OFFICIAL STATEMENT DATED FEBRUARY 20, 2020

NEW ISSUES – Book-Entry-Only **RATINGS: See "RATINGS"**

In the opinion of McCall, Parkhurst & Horton L.L.P., Bond Counsel to the Commission, interest on the Series 2020-A Bonds (defined herein) will be excludable from gross income for federal income tax purposes under statutes, regulations, published rulings and court decisions existing on the date hereof, subject to the matters discussed under "TAX MATTERS."

In the opinion of McCall, Parkhurst & Horton L.L.P., Bond Counsel to the Commission, the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds (both as defined herein) are not obligations described in Section 103(a) of the Internal Revenue Code of 1986. See "TAX MATTERS."

Texas Department of Transportation®

$683,780,000
TEXAS TRANSPORTATION COMMISSION
CENTRAL TEXAS TURNPIKE SYSTEM

$179,475,000 FIRST TIER REVENUE REFUNDING BONDS, SERIES 2020-A	**$225,000,000 FIRST TIER REVENUE REFUNDING PUT BONDS, TAXABLE SERIES 2020-B**	**$279,305,000 FIRST TIER REVENUE REFUNDING BONDS, TAXABLE SERIES 2020-C**

Interest Accrues from the Date of Delivery **Due**: As shown on pages iii, iv and v

The Texas Transportation Commission (the "*Commission*"), the governing body of the Texas Department of Transportation ("*TxDOT*"), is issuing its Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2020-A (the "*Series 2020-A Bonds*"), its Central Texas Turnpike System First Tier Revenue Refunding Put Bonds, Taxable Series 2020-B (the "*Taxable Series 2020-B Bonds*"), and its Central Texas Turnpike System First Tier Revenue Refunding Bonds, Taxable Series 2020-C (the "*Taxable Series 2020-C Bonds*" and together with the Series 2020-A Bonds and Taxable Series 2020-B Bonds, the "*Bonds*"). The Bonds are being issued pursuant to an Indenture of Trust, dated as of July 15, 2002 (the "*Master Indenture*") as supplemented including by the Eighth Supplemental Indenture of Trust, dated as of March 1, 2020 (the "*Eighth Supplemental Indenture*" and collectively, with the Master Indenture, the "*Indenture*") between the Commission and The Bank of New York Mellon Trust Company, National Association, as trustee (the "*Trustee*") and paying agent for the Bonds.

The Bonds are special, limited obligations of the Commission payable solely from gross Revenues (as defined herein), including Toll revenues, of the Central Texas Turnpike System (as defined herein) and funds held under the Indenture and are payable prior to the payment of Operating Expenses and Maintenance Expenses of the System (as such terms are defined herein). The Bonds, together with the outstanding First Tier Obligations (as defined herein), and any Additional First Tier Obligations (as defined herein) hereafter issued, are payable solely from and secured by a first lien on, pledge of, and security interest in such gross Revenues and funds. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Sources of Payment." The Commission has agreed to pay, subject to appropriation of funds by the Legislature in a manner that would allow their use, Operating Expenses to the extent of any deficiency in the Operating Account and all Maintenance Expenses of the Central Texas Turnpike System. See "SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION" and "FUNDING OF COMMISSION OBLIGATIONS."

Proceeds of the Bonds, together with existing funds of the System, will be used to (i) refund a portion of the outstanding Obligations (as defined herein), as further identified in Schedules IA, IB and IC attached hereto (the "*Refunded Obligations*"), and (ii) pay the costs of issuing the Bonds.

MATURITY SCHEDULE, INTEREST RATES, PRICES
AND OTHER TERMS FOR EACH SERIES OF BONDS
See pages iii, iv and v

This cover page contains information for quick reference only and is not a summary of the Bonds. Potential investors must read this Official Statement in its entirety to obtain information essential to making an informed investment decision. Investment in the Bonds is subject to certain investment considerations. See "INVESTMENT CONSIDERATIONS."

The Series 2020-A Bonds, the Taxable Series 2020-B Bonds and the Taxable Series 2020-C Bonds are each separate and distinct securities offerings being issued and sold independently except for this common Official Statement, and, while the Bonds share certain common attributes, each series of the Bonds is separate from the others and should be reviewed and analyzed independently, including the type of obligation being offered, its terms for payment, the federal income tax treatment of payments related thereto, the rights of owners, and other features. The sale and delivery of each series of the Bonds is not dependent upon the sale and delivery of the other series of the Bonds.

NONE OF THE STATE OF TEXAS, THE COMMISSION, TXDOT, OR ANY OTHER AGENCY OR POLITICAL SUBDIVISION OF THE STATE OF TEXAS IS OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS EXCEPT THE COMMISSION SOLELY FROM THE TRUST ESTATE AND CERTAIN FUNDS CREATED UNDER THE INDENTURE. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE STATE OF TEXAS OR ANY AGENCY OR POLITICAL SUBDIVISION THEREOF IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. NEITHER THE COMMISSION NOR TXDOT HAS ANY TAXING POWER. THE INDENTURE DOES NOT CREATE A MORTGAGE ON THE CENTRAL TEXAS TURNPIKE SYSTEM.

The Bonds are offered for delivery when, as, and if issued and accepted by the Underwriters (identified below), and subject to the approval of the Attorney General of the State and the respective opinions of McCall, Parkhurst & Horton L.L.P., Bond Counsel. Certain legal matters will be passed upon for the Commission by the General Counsel to the Commission and by McCall, Parkhurst & Horton L.L.P., Disclosure Counsel to the Commission. Certain legal matters will be passed upon for the Underwriters by their co-counsel Norton Rose Fulbright US LLP and Escamilla & Poneck, LLP. It is expected that the Bonds will be delivered on or about March 5, 2020 (the "Date of Delivery"), through the facilities of The Depository Trust Company, New York, New York.

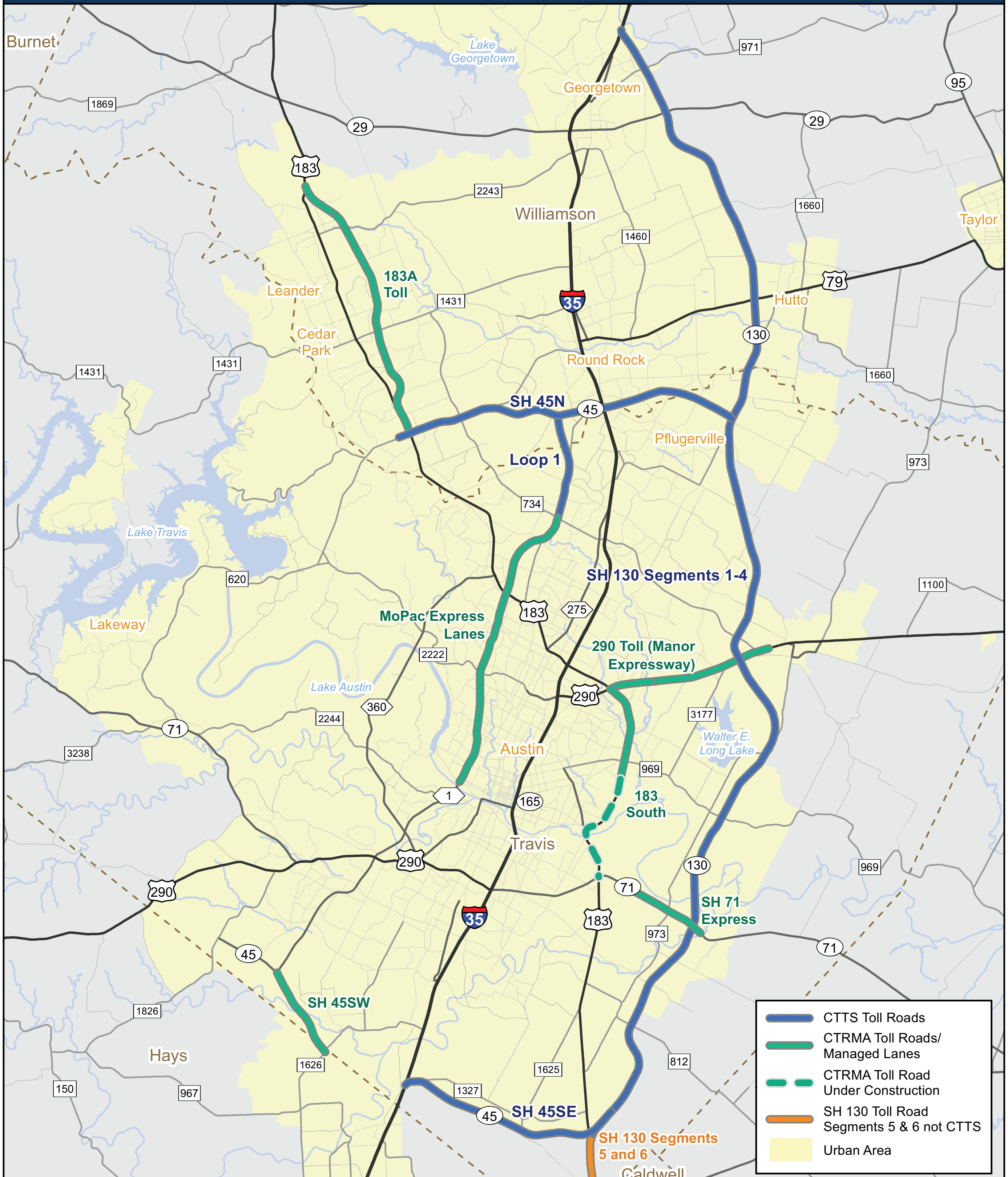
<u>Series 2020-A Bonds and Taxable Series 2020-C Bonds</u>

JEFFERIES		**CITIGROUP**
Frost Bank	**Mesirow Financial, Inc.**	**Piper Sandler & Co.**
Ramirez & Co., Inc.	**Raymond James**	**Siebert Williams Shank & Co., L.L.C.**

<u>Taxable Series 2020-B Bonds</u>

JEFFERIES **RAYMOND JAMES**

Central Texas Turnpike System (CTTS) and Regional Transportation Network



Texas Department of Transportation
Transportation Planning and Programming Division
Data Analysis, Mapping and Reporting Branch
January 28, 2020

MATURITY SCHEDULE, INTEREST RATES, PRICES AND OTHER TERMS FOR THE SERIES 2020-A BONDS

$179,475,000 FIRST TIER REVENUE REFUNDING BONDS, SERIES 2020-A

General. The $179,475,000 Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2020-A (the "*Series 2020-A Bonds*") are being issued as current interest bonds. Interest on the Series 2020-A Bonds will accrue from their Date of Delivery calculated on the basis of a 360-day year composed of twelve 30-day months and will be payable on February 15 and August 15 of each year, commencing August 15, 2020, until maturity or prior redemption. The Series 2020-A Bonds will be issued as fully registered obligations in denominations of $5,000 principal amount and integral multiples thereof within a maturity. See "THE SERIES 2020-A BONDS."

MATURITY SCHEDULE FOR THE SERIES 2020-A BONDS

Maturity (August 15)	Principal Amount	Interest Rate	Initial Yield	CUSIP No.[1]
2039	$129,475,000	5.00%	1.87%	88283KBH0
2040	50,000,000	3.00%	2.32%	88283KBJ6

(Interest accrues from the Date of Delivery)

Optional Redemption. The Series 2020-A Bonds are subject to optional redemption prior to maturity as more fully described herein. See "THE SERIES 2020-A BONDS – Redemption."

Special Redemption. The Series 2020-A Bonds are subject to Special Redemption (as defined herein) at the option of the Commission on any date prior to maturity as more fully described herein. See "GENERAL INFORMATION REGARDING THE BONDS – Special Redemption."

[1] Copyright of 2020 CUSIP Global Services. CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein is provided by CUSIP Global Services, managed by S&P Global Market Intelligence on behalf of American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services provided by CUSIP Global Services. CUSIP numbers are included herein solely for the convenience of the owners of the Series 2020-A Bonds. None of TxDOT, the Commission, the Financial Advisor or the Underwriters shall be responsible for the selection or correctness of the CUSIP numbers set forth herein. The CUSIP number for a specific maturity is subject to being changed after the issuance of the Series 2020-A Bonds as a result of various subsequent actions including, but not limited to, a refunding in whole or in part as a result of the procurement of secondary market portfolio insurance or other similar enhancement by investors that is applicable to all or a portion of certain maturities of the Series 2020-A Bonds.

MATURITY SCHEDULE, INTEREST RATES, PRICES AND OTHER TERMS FOR THE TAXABLE SERIES 2020-B BONDS

$225,000,000 FIRST TIER REVENUE REFUNDING PUT BONDS, TAXABLE SERIES 2020-B

General. The $225,000,000 Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Put Bonds, Taxable Series 2020-B (the "*Taxable Series 2020-B Bonds*") are being initially issued as a current interest bond. During the period that commences on the Date of Delivery and ends on the day immediately prior to the Mandatory Tender Date described below (the "*Initial Multiannual Period*"), interest on the Taxable Series 2020-B Bonds will accrue at the Initial Interest Rate specified below calculated on the basis of a 360-day year composed of twelve 30-day months and will be payable on February 15 and August 15 of each year, commencing August 15, 2020. The Taxable Series 2020-B Bonds will be issued as fully registered obligations in denominations of $5,000 principal amount and integral multiples thereof. See "THE TAXABLE SERIES 2020-B BONDS."

Maturity Date	Principal Amount	Initial Interest Rate	Initial Yield[1]	Mandatory Tender Date	CUSIP No.[2]
August 15, 2042	$225,000,000	1.980%	1.980%	August 15, 2022	88283KBK3

(Interest accrues from the Date of Delivery)

Optional and Mandatory Redemption. The Taxable Series 2020-B Bonds are not subject to redemption at the option of the Commission prior to the end of the Initial Multiannual Period; however, the Taxable Series 2020-B Bonds are subject to redemption at the option of the Commission on the Mandatory Tender Date set forth above and on any date during the Stepped Rate Period (as defined herein) at the redemption price equal to 100% of principal amount plus accrued interest to, but not including, the date of redemption. The Taxable Series 2020-B Bonds are subject to mandatory redemption prior to maturity as more fully described herein. See "THE TAXABLE SERIES 2020-B BONDS – Redemption."

Mandatory Tender. The Taxable Series 2020-B Bonds are subject to mandatory tender for purchase, without notice, by the Commission at a purchase price equal to 100% of the principal amount thereof plus accrued interest on the Mandatory Tender Date referred to above, subject to the successful remarketing of such Taxable Series 2020-B Bonds. See "THE TAXABLE SERIES 2020-B BONDS – Mandatory Tender and Purchase of Taxable Series 2020-B Bonds."

No Conversion. The Taxable Series 2020-B Bonds are not subject to conversion to another interest rate mode until purchased on or after the Mandatory Tender Date. See "THE TAXABLE SERIES 2020-B BONDS – Future Terms of Taxable Series 2020-B Bonds."

No Credit or Liquidity Facility. As of the date of this Official Statement, the Commission has not provided any credit or liquidity facility for the payment of the purchase price of the Taxable Series 2020-B Bonds payable upon the mandatory tender of the Taxable Series 2020-B Bonds on the Mandatory Tender Date, nor is there any requirement or expectation that such credit or liquidity facility will be obtained. The principal portion of the purchase price for the Taxable Series 2020-B Bonds is expected to be obtained from the remarketing thereof or from the issuance of refunding bonds. The obligation of the Commission to purchase Taxable Series 2020-B Bonds on the Mandatory Tender Date is subject to the successful remarketing of such Taxable Series 2020-B Bonds and a failed remarketing will not constitute an Event of Default under the Indenture. The Commission has no obligation to purchase Taxable Series 2020-B Bonds except from remarketing proceeds. If the Taxable Series 2020-B Bonds are not remarketed or refunded on the Mandatory Tender Date, the Taxable Series 2020-B Bonds will bear interest at the Stepped Coupon Rate of 9.00% per annum from the Mandatory Tender Date until purchased by the Commission through a remarketing or refunding.

(1) Yield calculated through the last day of the Initial Multiannual Period.

(2) Copyright of 2020 CUSIP Global Services. CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein is provided by CUSIP Global Services, managed by S&P Global Market Intelligence on behalf of American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services provided by CUSIP Global Services. CUSIP numbers are included herein solely for the convenience of the owners of the Taxable Series 2020-B Bonds. None of TxDOT, the Commission, the Financial Advisor or the Underwriters shall be responsible for the selection or correctness of the CUSIP numbers shown herein. The CUSIP number for a specific maturity is subject to being changed after the issuance of the Taxable Series 2020-B Bonds as a result of various subsequent actions including, but not limited to, a refunding in whole or in part as a result of the procurement of secondary market portfolio insurance or other similar enhancement by investors that is applicable to all or a portion of certain maturities of the Taxable Series 2020-B Bonds.

MATURITY SCHEDULE, INTEREST RATES, PRICES AND OTHER TERMS FOR THE TAXABLE SERIES 2020-C BONDS

$279,305,000 FIRST TIER REVENUE REFUNDING BONDS, TAXABLE SERIES 2020-C

General. The $279,305,000 Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Taxable Series 2020-C (the "*Taxable Series 2020-C Bonds*") are being issued as current interest bonds. Interest on the Taxable Series 2020-C Bonds will accrue from their Date of Delivery calculated on the basis of a 360- day year composed of twelve 30-day months and will be payable on February 15 and August 15 of each year, commencing August 15, 2020, until maturity or prior redemption. The Taxable Series 2020-C Bonds will be issued as fully registered obligations in denominations of $5,000 principal amount and integral multiples thereof within a maturity. See "THE TAXABLE SERIES 2020-C BONDS."

MATURITY SCHEDULE FOR THE TAXABLE SERIES 2020-C BONDS

Maturity (August 15)	Principal Amount	Interest Rate	Initial Yield	CUSIP No.[1]
2041	$279,305,000	3.029%	3.029%	88283KBL1

(Interest accrues from the Date of Delivery)

Optional and Mandatory Redemption. The Taxable Series 2020-C Bonds are subject to optional and mandatory redemption prior to maturity as more fully described herein. See "THE TAXABLE SERIES 2020-C BONDS – Redemption."

Special Redemption. The Taxable Series 2020-C Bonds are subject to Special Redemption (as defined herein) at the option of the Commission on any date prior to maturity as more fully described herein. See "THE TAXABLE SERIES 2020-C BONDS – Redemption – *Special Redemption at Make-Whole Redemption Price*" and "GENERAL INFORMATION REGARDING THE BONDS – Special Redemption."

[1] Copyright of 2020 CUSIP Global Services. CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein is provided by CUSIP Global Services, managed by S&P Global Market Intelligence on behalf of American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services provided by CUSIP Global Services. CUSIP numbers are included herein solely for the convenience of the owners of the Taxable Series 2020-C Bonds. None of TxDOT, the Commission, the Financial Advisor or the Underwriters shall be responsible for the selection or correctness of the CUSIP numbers shown herein. The CUSIP number for a specific maturity is subject to being changed after the issuance of the Taxable Series 2020-C Bonds as a result of various subsequent actions including, but not limited to, a refunding in whole or in part as a result of the procurement of secondary market portfolio insurance or other similar enhancement by investors that is applicable to all or a portion of certain maturities of the Taxable Series 2020-C Bonds.

TEXAS TRANSPORTATION COMMISSION

Name	Title	Term Expires
J. Bruce Bugg, Jr.	Chairman	February 1, 2021
Alvin New	Commissioner	February 1, 2021
Laura Ryan	Commissioner	February 1, 2023
Victor Vandergriff	Commissioner	February 1, 2019[(1)]
Robert C. Vaughn	Commissioner	February 1, 2025

TEXAS DEPARTMENT OF TRANSPORTATION

Name	Position	Total Years of Service with TxDOT
James M. Bass	Executive Director	35 years
Marc D. Williams, P.E.	Deputy Executive Director	8 years
Brian D. Ragland, CPA	Chief Financial Officer	14 years
Benjamin H. Asher	Director, Project Finance, Debt and Strategic Contracts Division	8 years
Stephen Stewart, CPA	Director, Financial Management Division	8 years
Jeff Graham	General Counsel	7 years

CONSULTANTS AND ADVISORS

Financial Advisor .... Estrada Hinojosa & Company, Inc., Austin, Texas
Bond Counsel and Disclosure Counsel .... McCall, Parkhurst & Horton L.L.P., Austin, Texas
Traffic Consultant………........ Stantec Consulting Services Inc., New York, New York
General Engineering Consultant………........ Atkins North America, Inc., Austin, Texas
Trustee………........ The Bank of New York Mellon Trust Company, National Association, Houston, Texas
Verification Agent .... Amtec Corp.

For additional information regarding the Commission or TxDOT, please contact either:

Mr. Brian D. Ragland
Chief Financial Officer
Texas Department of Transportation
125 E. 11th Street
Austin, Texas 78701-2483
(512) 305-9512

Mr. Paul Jack
Senior Managing Director
Estrada Hinojosa & Company, Inc.
3103 Bee Caves Road, Suite 133
Austin, Texas 78746
(512) 605-2444

(1) Mr. Vandergriff resigned as Commissioner on February 9, 2018. Pursuant to State law, Mr. Vandergriff continues to perform the duties of Commissioner until the earlier of (i) the date such Commissioner's successor shall be duly appointed and qualified or (ii) the last day of the first regular session of the State Legislature that begins after the expiration of such Commissioner's term (which date is May 31, 2021).

USE OF INFORMATION IN OFFICIAL STATEMENT

Use of Official Statement

No dealer, broker, salesman, or other person has been authorized by the Commission, the Financial Advisor or the underwriters set forth on the cover page hereof (collectively, the "*Underwriters*") to give any information or to make any representation other than those contained in this Official Statement, and, if given or made, such other information or representation must not be relied upon as having been authorized by the Commission, the Financial Advisor or the Underwriters. This Official Statement does not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of the Bonds by any person in any jurisdiction in which it is unlawful for such person to make such offer, solicitation, or sale. The information and expressions of opinion herein are subject to change without notice, and neither the delivery of this Official Statement, nor any sale made hereunder, shall, under any circumstances, create the implication that there has been no change in the affairs of the Commission since the date hereof. See "CONTINUING DISCLOSURE OF INFORMATION" herein for a description of the Commission's undertakings to provide certain information on a continuing basis.

This Official Statement is being distributed in connection with the sale of securities referred to herein and may not be reproduced or used for any other purpose. In no instance may this Official Statement be reproduced or used in part.

Certain information set forth in this Official Statement has been furnished by the State, the Commission, TxDOT and other sources which are believed to be reliable by the Commission, but such information is not to be construed as a representation by the Underwriters.

The Underwriters have provided the following sentence for inclusion in this Official Statement. The Underwriters have reviewed the information in this Official Statement in accordance with, and as part of, their responsibilities to investors under the federal securities laws as applied to the facts and circumstances of this transaction, but the Underwriters do not guarantee the accuracy or completeness of such information.

THIS OFFICIAL STATEMENT IS INTENDED TO REFLECT FACTS AND CIRCUMSTANCES ON THE DATE OF THIS OFFICIAL STATEMENT OR ON SUCH OTHER DATE OR AT SUCH OTHER TIME AS IDENTIFIED HEREIN. NO ASSURANCE CAN BE GIVEN THAT SUCH INFORMATION MAY NOT BE MISLEADING AT A LATER DATE. CONSEQUENTLY, RELIANCE ON THIS OFFICIAL STATEMENT AT TIMES SUBSEQUENT TO THE ISSUANCE OF THE BONDS DESCRIBED HEREIN SHOULD NOT BE MADE ON THE ASSUMPTION THAT ANY SUCH FACTS OR CIRCUMSTANCES ARE UNCHANGED.

NONE OF THE STATE, TXDOT, THE COMMISSION OR THE FINANCIAL ADVISOR MAKE ANY REPRESENTATION AS TO THE ACCURACY, ADEQUACY OR COMPLETENESS OF THE INFORMATION CONTAINED IN THIS OFFICIAL STATEMENT UNDER THE CAPTION "INFORMATION CONCERNING OFFERING RESTRICTIONS IN CERTAIN JURISDICTIONS OUTSIDE THE UNITED STATES" OR IN "APPENDIX D – BOOK-ENTRY-ONLY SYSTEM."

Neither the Commission nor the Financial Advisor makes any representation or warranty with respect to the information contained in this Official Statement regarding The Depository Trust Company, New York, New York ("*DTC*") or DTC's book-entry-only system, as provided for in "APPENDIX D - BOOK-ENTRY-ONLY SYSTEM," as such information was furnished by DTC.

The financial and other information contained herein has been obtained from the Commission's records and other sources which the Commission believes to be reliable. There is no guarantee that any of the assumptions or estimates contained herein will be realized. All of the summaries of the statutes, documents, and the Indenture contained in this Official Statement are made subject to all of the provisions of such statutes, documents, and the Indenture. These summaries do not purport to be complete statements of such provisions and reference is made to such documents for further information. Reference is made to original documents in all respects.

Marketability

THE PRICE AND OTHER TERMS RESPECTING THE OFFERING AND SALE OF THE BONDS MAY BE CHANGED FROM TIME TO TIME BY THE UNDERWRITERS AFTER SUCH BONDS ARE RELEASED FOR SALE, AND SUCH BONDS MAY BE OFFERED AND SOLD AT PRICES OTHER THAN THE INITIAL OFFERING PRICES, INCLUDING SALES TO DEALERS WHO MAY SELL SUCH BONDS INTO INVESTMENT ACCOUNTS. IN CONNECTION WITH THE OFFERING OF THE BONDS, THE UNDERWRITERS MAY OVERALLOT OR EFFECT TRANSACTIONS THAT STABILIZE OR MAINTAIN THE MARKET PRICE OF SUCH BONDS AT A LEVEL ABOVE THOSE WHICH MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME.

Securities Laws

NEITHER THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION (THE "*SEC*") NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THE BONDS OR PASSED UPON THE

ADEQUACY OR ACCURACY OF THIS OFFICIAL STATEMENT. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

No registration statement relating to the Bonds has been filed with the SEC under the Securities Act of 1933, as amended, in reliance upon an exemption provided thereunder. The Bonds have not been registered or qualified under the Securities Act of Texas in reliance upon various exemptions contained therein; nor have the Bonds been registered or qualified under the securities laws of any other jurisdiction. The Commission assumes no responsibility for registration or qualification for sale or other disposition of the Bonds under the securities laws of any jurisdiction in which the Bonds may be offered, sold, or otherwise transferred. This disclaimer of responsibility for registration or qualification for sale or other disposition of the Bonds shall not be construed as an interpretation of any kind with regard to the availability of any exemption from securities registration or qualification provisions.

The statements contained in this Official Statement, and in other information provided by the Commission, that are not purely historical, are forward-looking statements, including statements regarding the Commission's expectations, hopes, intentions, or strategies regarding the future. All forward-looking statements included in this Official Statement are based on information available to the Commission on the date of this Official Statement or such other dates of such forward-looking statements as described herein, as applicable, and neither the Commission nor TxDOT assume any obligation to update any such forward-looking statements. See "INVESTMENT CONSIDERATIONS – Forward-Looking Statements."

References to website addresses presented herein are for informational purposes only and may be in the form of a hyperlink solely for the reader's convenience. Unless specified otherwise, such websites and the information or links contained therein (or in any other document expressly incorporated herein) are not incorporated into, and are not part of, this Official Statement.

For purposes of providing additional background information with respect to the System (as defined herein), this Official Statement contains references to certain historical documents available online through TxDOT's website at http://txdot.gov/business/investors.html by following the links for Central Texas Turnpike System Bonds and System Reports, including but not limited to prior traffic and revenue reports and though the Electronic Municipal Market Access of the Municipal Securities Rulemaking Board at https://emma.msrb.org, using the EMMA Advanced Search function and entering the term "Texas Transportation Commission" in the Issuer Name field within the Security Information search filter. THE FOREGOING LINKS ARE NOT INCORPORATED BY REFERENCE, EITHER EXPRESSLY OR BY IMPLICATION, INTO THIS OFFICIAL STATEMENT, NOR ARE ANY MATERIALS ON SUCH WEBSITES. THE INFORMATION CONTAINED AT THE LINK'S LOCATIONS ARE DATED AS OF THE DATE OF SUCH REPORTS OR DOCUMENTS, AND THERE CAN BE NO ASSURANCE THAT SUCH INFORMATION WILL BE UPDATED IN THE FUTURE. THE COMMISSION, TXDOT, ITS FINANCIAL ADVISOR, AND THE UNDERWRITERS DISCLAIM ANY RESPONSIBILITY TO UPDATE SUCH INFORMATION. TXDOT, ITS FINANCIAL ADVISOR, AND THE UNDERWRITERS DISCLAIM ANY RESPONSIBILITY AS TO THE ACCURACY OR COMPLETENESS OF ANY MATERIAL CONTAINED ON OTHER INTERNET SITES ACCESSED THROUGH SUCH WEBSITE.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

INFORMATION CONCERNING OFFERING RESTRICTIONS IN CERTAIN JURISDICTIONS OUTSIDE THE UNITED STATES

THE COMMISSION MAKES NO REPRESENTATIONS AS TO THE ACCURACY OR ADEQUACY OF THE FOLLOWING INFORMATION.

THE UNDERWRITERS HAVE PROVIDED THE FOLLOWING SECTION IN THE OFFICIAL STATEMENT. REFERENCES IN THIS SECTION TO THE "COMMISSION" MEAN THE TEXAS TRANSPORTATION COMMISSION, THE GOVERNING BODY OF THE TEXAS DEPARTMENT OF TRANSPORTATION, AND REFERENCES TO "BONDS" OR "SECURITIES" MEAN THE BONDS OFFERED HEREBY. THE COMMISSION ASSUMES NO RESPONSIBILITY FOR THIS SECTION.

Minimum Unit Sales

THE BONDS WILL TRADE AND SETTLE ON A UNIT BASIS (ONE UNIT EQUALING ONE BOND OF $5,000 PRINCIPAL AMOUNT). FOR ANY SALES MADE OUTSIDE THE UNITED STATES, THE MINIMUM PURCHASE AND TRADING AMOUNT IS 30 UNITS (BEING 30 BONDS IN AN AGGREGATE PRINCIPAL AMOUNT OF $150,000).

Notice to Prospective Investors in the European Economic Area

THE BONDS ARE NOT INTENDED TO BE OFFERED, SOLD OR OTHERWISE MADE AVAILABLE TO AND SHOULD NOT BE OFFERED, SOLD OR OTHERWISE MADE AVAILABLE TO ANY RETAIL INVESTOR IN THE EUROPEAN ECONOMIC AREA ("EEA"). FOR THESE PURPOSES, A RETAIL INVESTOR MEANS A PERSON WHO IS ONE (OR MORE) OF: (I) A RETAIL CLIENT AS DEFINED IN POINT (11) OF ARTICLE 4(1) OF DIRECTIVE 2014/65/EU (AS AMENDED, "MIFID II"); OR (II) A CUSTOMER WITHIN THE MEANING OF DIRECTIVE 2002/92/EC (AS AMENDED, THE "INSURANCE MEDIATION DIRECTIVE"), WHERE THAT CUSTOMER WOULD NOT QUALIFY AS A PROFESSIONAL CLIENT AS DEFINED IN POINT (10) OF ARTICLE 4(1) OF MIFID II; OR (III) NOT A QUALIFIED INVESTOR AS DEFINED IN DIRECTIVE 2003/71/EC (AS AMENDED, THE "PROSPECTUS DIRECTIVE"). CONSEQUENTLY, NO KEY INFORMATION DOCUMENT REQUIRED BY REGULATION (EU) NO 1286/2014 (AS AMENDED, THE "PRIIPS REGULATION") FOR OFFERING OR SELLING THE BONDS OR OTHERWISE MAKING THEM AVAILABLE TO RETAIL INVESTORS IN THE EEA HAS BEEN PREPARED AND THEREFORE OFFERING OR SELLING THE BONDS OR OTHERWISE MAKING THEM AVAILABLE TO ANY RETAIL INVESTOR IN THE EEA MAY BE UNLAWFUL UNDER THE PRIIPS REGULATION.

THIS OFFICIAL STATEMENT HAS BEEN PREPARED ON THE BASIS THAT ALL OFFERS OF THE BONDS TO ANY PERSON THAT IS LOCATED WITHIN A MEMBER STATE OF THE EEA WILL BE MADE PURSUANT TO AN EXEMPTION UNDER ARTICLE 3 OF THE PROSPECTUS DIRECTIVE, AS IMPLEMENTED IN MEMBER STATES OF THE EEA, FROM THE REQUIREMENT TO PRODUCE A PROSPECTUS FOR OFFERS OF THE SECURITIES. ACCORDINGLY, ANY PERSON MAKING OR INTENDING TO MAKE ANY OFFER IN THE EEA OF THE BONDS SHOULD ONLY DO SO IN CIRCUMSTANCES IN WHICH NO OBLIGATION ARISES FOR THE COMMISSION OR ANY OF THE UNDERWRITERS TO PRODUCE A PROSPECTUS FOR SUCH OFFER. NEITHER THE COMMISSION NOR THE UNDERWRITERS HAVE AUTHORIZED, NOR DO THEY AUTHORIZE, THE MAKING OF ANY OFFER OF THE BONDS THROUGH ANY FINANCIAL INTERMEDIARY, OTHER THAN OFFERS MADE BY THE UNDERWRITERS, WHICH CONSTITUTE THE FINAL PLACEMENT OF THE BONDS CONTEMPLATED IN THIS OFFICIAL STATEMENT.

IN RELATION TO EACH MEMBER STATE OF THE EEA THAT HAS IMPLEMENTED THE PROSPECTUS DIRECTIVE (EACH, A "RELEVANT MEMBER STATE"), WITH EFFECT FROM AND INCLUDING THE DATE ON WHICH THE PROSPECTUS DIRECTIVE IS IMPLEMENTED IN THAT RELEVANT MEMBER STATE, THE OFFER OF ANY BONDS WHICH IS THE SUBJECT OF THE OFFERING CONTEMPLATED BY THIS OFFICIAL STATEMENT IS NOT BEING MADE AND WILL NOT BE MADE TO THE PUBLIC IN

THAT RELEVANT MEMBER STATE, OTHER THAN: (A) TO ANY LEGAL ENTITY WHICH IS A "QUALIFIED INVESTOR" AS SUCH TERM IS DEFINED IN THE PROSPECTUS DIRECTIVE; (B) TO FEWER THAN 150 NATURAL OR LEGAL PERSONS (OTHER THAN "QUALIFIED INVESTORS" AS SUCH TERM IS DEFINED IN THE PROSPECTUS DIRECTIVE), SUBJECT TO OBTAINING THE PRIOR CONSENT OF THE RELEVANT UNDERWRITER OR THE COMMISSION FOR ANY SUCH OFFER OR (C) IN ANY OTHER CIRCUMSTANCES FALLING WITHIN ARTICLE 3(2) OF THE PROSPECTUS DIRECTIVE; PROVIDED THAT NO SUCH OFFER OF THE BONDS SHALL REQUIRE THE COMMISSION OR THE UNDERWRITERS TO PUBLISH A PROSPECTUS PURSUANT TO ARTICLE 3 OF THE PROSPECTUS DIRECTIVE OR A SUPPLEMENT TO A PROSPECTUS PURSUANT TO ARTICLE 16 OF THE PROSPECTUS DIRECTIVE.

FOR THE PURPOSES OF THIS PROVISION, THE EXPRESSION AN "OFFER OF SECURITIES TO THE PUBLIC" IN RELATION TO THE BONDS IN ANY RELEVANT MEMBER STATE MEANS THE COMMUNICATION IN ANY FORM AND BY ANY MEANS OF SUFFICIENT INFORMATION ON THE TERMS OF THE OFFER AND THE BONDS TO BE OFFERED SO AS TO ENABLE AN INVESTOR TO DECIDE TO PURCHASE THE BONDS, AS THE SAME MAY BE VARIED IN THAT RELEVANT MEMBER STATE BY ANY MEASURE IMPLEMENTING THE PROSPECTUS DIRECTIVE IN THAT RELEVANT MEMBER STATE.

EACH SUBSCRIBER FOR OR PURCHASER OF THE SECURITIES IN THE OFFERING LOCATED WITHIN A RELEVANT MEMBER STATE WILL BE DEEMED TO HAVE REPRESENTED, ACKNOWLEDGED AND AGREED THAT IT IS A "QUALIFIED INVESTOR" WITHIN THE MEANING OF ARTICLE 2(1)(E) OF THE PROSPECTUS DIRECTIVE. THE COMMISSION AND EACH UNDERWRITER AND OTHERS WILL RELY ON THE TRUTH AND ACCURACY OF THE FOREGOING REPRESENTATION, ACKNOWLEDGEMENT AND AGREEMENT.

Notice to Prospective Investors in the United Kingdom

THIS OFFICIAL STATEMENT IS FOR DISTRIBUTION ONLY TO, AND IS DIRECTED SOLELY AT, PERSONS WHO (I) ARE INVESTMENT PROFESSIONALS AS SUCH TERM IN DEFINED IN ARTICLE 19(5) OF THE FINANCIAL SERVICES AND MARKETS ACT 2000 (FINANCIAL PROMOTION) ORDER 2005, AS AMENDED (THE "FINANCIAL PROMOTION ORDER"), (II) ARE PERSONS FALLING WITHIN ARTICLE 49(2)(A) TO (D) OF THE FINANCIAL PROMOTION ORDER, (III) ARE OUTSIDE THE UNITED KINGDOM, OR (IV) ARE PERSONS TO WHOM AN INVITATION OR INDUCEMENT TO ENGAGE IN INVESTMENT ACTIVITY (WITHIN THE MEANING OF SECTION 21 OF THE FINANCIAL SERVICES AND MARKETS ACT 2000 (THE "FSMA")) IN CONNECTION WITH THE ISSUE OR SALE OF ANY BONDS MAY OTHERWISE BE LAWFULLY COMMUNICATED OR CAUSED TO BE COMMUNICATED (ALL SUCH PERSONS TOGETHER BEING REFERRED TO AS "RELEVANT PERSONS"). THIS OFFICIAL STATEMENT IS DIRECTED ONLY AT RELEVANT PERSONS AND MUST NOT BE ACTED ON OR RELIED ON BY PERSONS WHO ARE NOT RELEVANT PERSONS. ANY INVESTMENT OR INVESTMENT ACTIVITY TO WHICH THIS OFFICIAL STATEMENT RELATES IS AVAILABLE ONLY TO RELEVANT PERSONS AND WILL BE ENGAGED IN ONLY WITH RELEVANT PERSONS. ANY PERSON WHO IS NOT A RELEVANT PERSON SHOULD NOT ACT OR RELY ON THIS OFFICIAL STATEMENT OR ANY OF ITS CONTENTS. THIS OFFICIAL STATEMENT HAS NOT BEEN APPROVED FOR THE PURPOSES OF SECTION 21 OF THE FSMA AND DOES NOT CONSTITUTE AN OFFER TO THE PUBLIC IN ACCORDANCE WITH THE PROVISIONS OF SECTION 85 OF THE FSMA.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Notice to Prospective Investors in Hong Kong

THE CONTENTS OF THIS OFFICIAL STATEMENT HAVE NOT BEEN REVIEWED BY ANY REGULATORY AUTHORITY IN HONG KONG. YOU ARE ADVISED TO EXERCISE CAUTION IN RELATION TO THE OFFER OF THE BONDS. IF YOU ARE IN ANY DOUBT ABOUT ANY OF THE CONTENTS OF THIS OFFICIAL STATEMENT, YOU SHOULD OBTAIN INDEPENDENT PROFESSIONAL ADVICE.

THIS OFFICIAL STATEMENT HAS NOT BEEN, AND WILL NOT BE, REGISTERED AS A PROSPECTUS (AS DEFINED IN THE COMPANIES (WINDING UP AND MISCELLANEOUS PROVISIONS) ORDINANCE (CHAPTER 32 OF THE LAWS OF HONG KONG)("CO")) IN HONG KONG NOR HAS IT BEEN REVIEWED OR APPROVED BY THE SECURITIES AND FUTURES COMMISSION OF HONG KONG PURSUANT TO THE SECURITIES AND FUTURES ORDINANCE (CHAPTER 571 OF THE LAWS OF HONG KONG) ("SFO"). ACCORDINGLY, THE BONDS MAY NOT BE OFFERED OR SOLD IN HONG KONG BY MEANS OF THIS OFFICIAL STATEMENT OR ANY OTHER DOCUMENT, AND THIS OFFICIAL STATEMENT MUST NOT BE ISSUED, CIRCULATED OR DISTRIBUTED IN HONG KONG, OTHER THAN TO "PROFESSIONAL INVESTORS" AS DEFINED IN THE SFO AND THE SUBSIDIARY LEGISLATION MADE UNDER THE SFO OR IN CIRCUMSTANCES THAT DO NOT CONSTITUTE AN OFFER OR INVITATION TO THE PUBLIC FOR PURPOSES OF THE CO OR THE SFO. IN ADDITION, UNLESS PERMITTED BY THE SECURITIES LAWS OF HONG KONG, NO PERSON MAY ISSUE OR HAVE IN ITS POSSESSION FOR THE PURPOSES OF ISSUE, WHETHER IN HONG KONG OR ELSEWHERE, ANY ADVERTISEMENT, INVITATION OR DOCUMENT RELATING TO THE BONDS, WHICH IS DIRECTED AT, OR THE CONTENTS OF WHICH ARE LIKELY TO BE ACCESSED OR READ BY, THE PUBLIC OF HONG KONG OTHER THAN WITH RESPECT TO BONDS WHICH ARE OR ARE INTENDED TO BE DISPOSED OF ONLY (A) TO PERSONS OUTSIDE HONG KONG, AND (B) TO "PROFESSIONAL INVESTORS" AS DEFINED IN THE SFO AND THE SUBSIDIARY LEGISLATION MADE UNDER THE SFO.

Notice to Prospective Investors in Switzerland

THIS OFFICIAL STATEMENT IS NOT INTENDED TO CONSTITUTE AN OFFER OR A SOLICITATION TO PURCHASE OR INVEST IN THE BONDS DESCRIBED HEREIN. THE BONDS MAY NOT BE PUBLICLY OFFERED, SOLD OR ADVERTISED, DIRECTLY OR INDIRECTLY, IN, INTO OR FROM SWITZERLAND AND WILL NOT BE LISTED ON THE SIX SWISS EXCHANGE LTD. OR ON ANY OTHER EXCHANGE OR REGULATED TRADING FACILITY IN SWITZERLAND. NEITHER THIS OFFICIAL STATEMENT NOR ANY OTHER OFFERING OR MARKETING MATERIAL RELATING TO THE BONDS CONSTITUTES A PROSPECTUS AS SUCH TERM IS UNDERSTOOD PURSUANT TO ARTICLE 652A OR ARTICLE 1156 OF THE SWISS CODE OF OBLIGATIONS OR A LISTING PROSPECTUS WITHIN THE MEANING OF THE LISTING RULES OF THE SIX SWISS EXCHANGE LTD. OR ANY OTHER REGULATED TRADING FACILITY IN SWITZERLAND, AND NEITHER THIS OFFICIAL STATEMENT NOR ANY OTHER OFFERING OR MARKETING MATERIAL RELATING TO THE BONDS MAY BE PUBLICLY DISTRIBUTED OR OTHERWISE MADE PUBLICLY AVAILABLE IN OR FROM SWITZERLAND. ACCORDINGLY, THIS OFFICIAL STATEMENT IS COMMUNICATED IN OR FROM SWITZERLAND TO A LIMITED NUMBER OF SELECTED INVESTORS ONLY. NEITHER THIS OFFICIAL STATEMENT NOR ANY OTHER OFFERING OR MARKETING MATERIAL RELATING TO THE OFFERING, NOR THE COMMISSION, NOR THE BONDS HAVE BEEN OR WILL BE FILED WITH OR APPROVED BY ANY SWISS REGULATORY AUTHORITY. THE BONDS ARE NOT SUBJECT TO SUPERVISION BY ANY SWISS REGULATORY AUTHORITY, E.G., THE SWISS FINANCIAL MARKET SUPERVISORY AUTHORITY FINMA, AND INVESTORS IN THE BONDS WILL NOT BENEFIT FROM PROTECTION OR SUPERVISION BY SUCH AUTHORITY.

Selling Restrictions for Offer of Securities in Singapore

NEITHER THIS OFFICIAL STATEMENT NOR ANY OTHER DOCUMENT OR MATERIAL IN CONNECTION WITH ANY OFFER OF THE BONDS HAS BEEN OR WILL BE LODGED OR REGISTERED AS A PROSPECTUS WITH THE MONETARY AUTHORITY OF SINGAPORE (MAS) UNDER THE

SECURITIES AND FUTURES ACT (CAP. 289) OF SINGAPORE (SFA). ACCORDINGLY, MAS ASSUMES NO RESPONSIBILITY FOR THE CONTENTS OF THIS OFFICIAL STATEMENT. THIS OFFICIAL STATEMENT IS NOT A PROSPECTUS AS DEFINED IN THE SFA AND STATUTORY LIABILITY UNDER THE SFA IN RELATION TO THE CONTENTS OF PROSPECTUSES WOULD NOT APPLY. PROSPECTIVE INVESTORS SHOULD CONSIDER CAREFULLY WHETHER THE INVESTMENT IS SUITABLE FOR THEM.

THIS OFFICIAL STATEMENT AND ANY OTHER DOCUMENTS OR MATERIALS IN CONNECTION WITH THIS OFFER AND THE BONDS MAY NOT BE DIRECTLY OR INDIRECTLY ISSUED, CIRCULATED OR DISTRIBUTED, NOR MAY THE BONDS BE OFFERED OR SOLD, OR BE MADE THE SUBJECT OF AN INVITATION FOR SUBSCRIPTION OR PURCHASE, WHETHER DIRECTLY OR INDIRECTLY, TO PERSONS IN SINGAPORE OTHER THAN (I) TO AN INSTITUTIONAL INVESTOR UNDER SECTION 274 OF THE SFA (INSTITUTIONAL INVESTOR); (II) TO A RELEVANT PERSON (AS DEFINED IN SECTION 275(2) OF THE SFA) (RELEVANT PERSON) PURSUANT TO SECTION 275(1) OF THE SFA, AND IN ACCORDANCE WITH THE CONDITIONS SPECIFIED IN SECTION 275, OF THE SFA; (III) TO ANY PERSON PURSUANT TO THE CONDITIONS OF SECTION 275(1A) OF THE SFA (PRESCRIBED INVESTOR); OR (IV) OTHERWISE PURSUANT TO, AND IN ACCORDANCE WITH, THE CONDITIONS OF, ANY OTHER APPLICABLE PROVISIONS OF THE SFA.

UNLESS SUCH BONDS ARE OF THE SAME CLASS AS OTHER BONDS OF THE COMMISSION THAT ARE LISTED ON AN APPROVED EXCHANGE AND IN RESPECT OF WHICH ANY OFFER INFORMATION STATEMENT, INTRODUCTORY DOCUMENT, SHAREHOLDERS' CIRCULAR FOR A REVERSE TAKE-OVER, DOCUMENT ISSUED FOR THE PURPOSES OF A SCHEME OF ARRANGEMENT, OR ANY OTHER SIMILAR DOCUMENT APPROVED BY AN APPROVED EXCHANGE (AS DEFINED IN THE SFA), WAS ISSUED IN CONNECTION WITH AN OFFER, OR THE LISTING FOR QUOTATION, OF THOSE BONDS, ANY SUBSEQUENT OFFERS IN SINGAPORE OF BONDS ACQUIRED PURSUANT TO AN INITIAL OFFER MADE IN RELIANCE ON AN EXEMPTION UNDER SECTION 274 OF THE SFA OR SECTION 275 OF THE SFA MAY ONLY BE MADE, PURSUANT TO THE REQUIREMENTS OF SECTION 276 OF THE SFA, FOR THE INITIAL SIX MONTH PERIOD AFTER SUCH ACQUISITION, TO PERSONS WHO ARE INSTITUTIONAL INVESTORS, RELEVANT PERSONS, OR PRESCRIBED INVESTORS. ANY TRANSFER AFTER SUCH INITIAL SIX-MONTH PERIOD IN SINGAPORE SHALL BE MADE IN RELIANCE ON ANY APPLICABLE EXEMPTION UNDER SUBDIVISION (4) OF DIVISION 1 OF PART XIII OF THE SFA (OTHER THAN SECTION 280 OF THE SFA).

IN ADDITION TO THE ABOVE, WHERE THE BONDS ARE SUBSCRIBED OR PURCHASED UNDER SECTION 275 OF THE SFA BY A RELEVANT PERSON WHICH IS:

(1)A CORPORATION (OTHER THAN A CORPORATION THAT IS AN ACCREDITED INVESTOR), THE SOLE BUSINESS OF WHICH IS TO HOLD INVESTMENTS AND THE ENTIRE SHARE CAPITAL OF WHICH IS OWNED BY ONE OR MORE INDIVIDUALS, EACH OF WHOM IS AN ACCREDITED INVESTOR; OR

(2) A TRUST (OTHER THAN A TRUST THE TRUSTEE OF WHICH IS AN ACCREDITED INVESTOR) WHOSE SOLE PURPOSE IS TO HOLD INVESTMENTS AND EACH BENEFICIARY OF THE TRUST IS AN INDIVIDUAL WHO IS AN ACCREDITED INVESTOR, SECURITIES (AS DEFINED IN SECTION 239(1) OF THE SFA) OF THAT CORPORATION OR THE BENEFICIARIES' RIGHTS AND INTEREST (HOWSOEVER DESCRIBED) IN THAT TRUST SHALL NOT BE TRANSFERRED WITHIN SIX MONTHS AFTER THAT CORPORATION OR THAT TRUST HAS ACQUIRED THE BONDS PURSUANT TO AN OFFER MADE UNDER SECTION 275 OF THE SFA EXCEPT:

(A) TO INSTITUTIONAL INVESTORS, RELEVANT PERSONS, OR PRESCRIBED INVESTORS;

(B) WHERE NO CONSIDERATION IS OR WILL BE GIVEN FOR THE TRANSFER;

(C) WHERE THE TRANSFER IS BY OPERATION OF LAW; OR

(D) SUCH BONDS ARE OF THE SAME CLASS AS OTHER BONDS OF THE COMMISSION THAT ARE LISTED ON AN APPROVED EXCHANGE AND IN RESPECT OF WHICH ANY OFFER INFORMATION STATEMENT, INTRODUCTORY DOCUMENT, SHAREHOLDERS' CIRCULAR FOR A REVERSE TAKE-OVER, DOCUMENT ISSUED FOR THE PURPOSES OF A SCHEME OF ARRANGEMENT, OR ANY OTHER SIMILAR DOCUMENT APPROVED BY AN APPROVED EXCHANGE, WAS ISSUED IN CONNECTION WITH AN OFFER, OR THE LISTING FOR QUOTATION, OF THOSE BONDS.

Notice to Prospective Investors in Japan

THE BONDS HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE FINANCIAL INSTRUMENTS AND EXCHANGE LAW OF JAPAN (LAW NO. 25 OF 1948, AS AMENDED, THE "FIEL"). NEITHER THE BONDS NOR ANY INTEREST THEREIN MAY BE OFFERED OR SOLD, DIRECTLY OR INDIRECTLY, IN JAPAN OR TO, OR FOR THE BENEFIT OF, ANY RESIDENT OF JAPAN (WHICH TERM AS USED HEREIN MEANS ANY PERSON RESIDENT IN JAPAN, INCLUDING ANY CORPORATION OR OTHER ENTITY ORGANIZED UNDER THE LAWS OF JAPAN), OR TO OTHERS FOR RE-OFFERING OR RESALE, DIRECTLY OR INDIRECTLY, IN JAPAN OR TO, OR FOR THE BENEFIT OF, ANY RESIDENT OF JAPAN, EXCEPT PURSUANT TO AN EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF, AND OTHERWISE IN COMPLIANCE WITH, THE FIEL AND ANY OTHER APPLICABLE LAWS, REGULATIONS AND MINISTERIAL GUIDELINES OF JAPAN.

THE PRIMARY OFFERING OF THE BONDS AND THE SOLICITATION OF AN OFFER FOR ACQUISITION THEREOF HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER PARAGRAPH 1, ARTICLE 4 OF THE FIEL. AS IT IS A PRIMARY OFFERING, IN JAPAN, THE BONDS MAY ONLY BE OFFERED, SOLD, RESOLD OR OTHERWISE TRANSFERRED, DIRECTLY OR INDIRECTLY TO, OR FOR THE BENEFIT OF A QUALIFIED INSTITUTIONAL INVESTOR ("QII") DEFINED IN ARTICLE 10 OF THE CABINET ORDINANCE CONCERNING DEFINITIONS UNDER ARTICLE 2 OF THE FIEL (ORDINANCE NO. 14 OF 1993, AS AMENDED). A PERSON WHO PURCHASED OR OTHERWISE OBTAINED THE BONDS CANNOT RESELL OR OTHERWISE TRANSFER THE BONDS IN JAPAN TO ANY PERSON EXCEPT ANOTHER QII.

Notice to Prospective Investors in Taiwan (The Republic of China)

THE OFFER OF THE BONDS HAS NOT BEEN AND WILL NOT BE REGISTERED WITH THE FINANCIAL SUPERVISORY COMMISSION OF TAIWAN (THE "FSC") PURSUANT TO APPLICABLE SECURITIES LAWS AND REGULATIONS OF TAIWAN AND THE BONDS, INCLUDING ANY COPY OF THIS OFFICIAL STATEMENT OR ANY OTHER DOCUMENTS RELATING TO THE BONDS, MAY NOT BE OFFERED, SOLD, DELIVERED OR DISTRIBUTED WITHIN TAIWAN (THE REPUBLIC OF CHINA) THROUGH A PUBLIC OFFERING OR IN CIRCUMSTANCES WHICH CONSTITUTE AN OFFER WITHIN THE MEANING OF THE SECURITIES AND EXCHANGE ACT OF TAIWAN THAT REQUIRES THE REGISTRATION WITH OR APPROVAL OF THE FSC. NO PERSON OR ENTITY IN TAIWAN (THE REPUBLIC OF CHINA) HAS BEEN AUTHORIZED TO OFFER, SELL, DISTRIBUTE, GIVE ADVICE REGARDING OR OTHERWISE INTERMEDIATE THE OFFERING, SALE OR DISTRIBUTION OF THE BONDS. TAIWAN INVESTORS WHO SUBSCRIBE AND PURCHASE THE BONDS SHALL COMPLY WITH ALL RELEVANT SECURITIES, TAX AND FOREIGN EXCHANGE LAWS AND REGULATIONS IN EFFECT IN TAIWAN.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

TABLE OF CONTENTS

OFFICIAL STATEMENT
relating to

$683,780,000
TEXAS TRANSPORTATION COMMISSION
CENTRAL TEXAS TURNPIKE SYSTEM REVENUE BONDS

$179,475,000 FIRST TIER REVENUE REFUNDING BONDS, SERIES 2020-A	$225,000,000 FIRST TIER REVENUE REFUNDING PUT BONDS, TAXABLE SERIES 2020-B	$279,305,000 FIRST TIER REVENUE REFUNDING BONDS, TAXABLE SERIES 2020-C

INTRODUCTION

General

This Official Statement (the "*Official Statement*") contains certain information relating to the offering by the Texas Transportation Commission (the "*Commission*"), the governing body of the Texas Department of Transportation ("*TxDOT*"), of three series of its bonds, entitled "Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2020-A" (the "*Series 2020-A Bonds*"), "Central Texas Turnpike System First Tier Revenue Refunding Put Bonds, Taxable Series 2020-B Bonds" (the "*Taxable Series 2020-B Bonds*"), and "Central Texas Turnpike System First Tier Revenue Refunding Bonds, Taxable Series 2020-C Bonds" (the "*Taxable Series 2020-C Bonds*" and together with the *Series 2020-A Bonds* and *Taxable Series 2020-B Bonds,* the "*Bonds*"). **Capitalized terms used in this Official Statement that are not otherwise defined herein have the meanings assigned to them in "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – DEFINITIONS."**

The Commission and TxDOT

The Commission is the governing body of TxDOT, which is a state agency charged with the responsibility to develop and maintain a statewide multimodal transportation network and administer federal funds for highway construction and maintenance. TxDOT is headquartered in Austin, Texas with 34 divisions and 25 district offices located throughout the State of Texas (the "*State*") managed by an Executive Director under the direction of the Commission. The Commission is composed of five commissioners appointed by the Governor of the State, with the advice and consent of the State Senate, serving six-year terms. See "APPENDIX A – THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE STATE HIGHWAY FUND" for general information regarding the Commission, TxDOT and the State Highway Fund. Any System related funding obligations of the Commission described herein have historically been paid from the State Highway Fund. See "SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION." **THE STATE HIGHWAY FUND IS NOT AVAILABLE TO PAY PRINCIPAL OF OR INTEREST ON THE BONDS, OUTSTANDING OBLIGATIONS OR ADDITIONAL OBLIGATIONS ISSUED BY THE COMMISSION FOR THE SYSTEM.**

Purpose and Authority

Proceeds of the Bonds, together with existing funds of the System, will be used to refund certain outstanding Obligations (as defined herein) and pay costs of issuance of the Bonds.

The Bonds are being issued by the Commission pursuant to the laws of the State, particularly Chapters 1207 and 1371, Texas Government Code, as amended, and Subchapter C of Chapter 228, Texas Transportation Code, as amended (collectively, the "*Acts*"), an authorizing minute order adopted by the Commission on July 25, 2019 and pursuant to an Indenture of Trust, dated as of July 15, 2002 (the "*Master Indenture*") as supplemented including by an Eighth Supplemental Indenture of Trust, dated as of March 1, 2020 (the "*Eighth Supplemental Indenture*," and collectively with the Master Indenture, the "*Indenture*"), between the Commission and The Bank of New York Mellon Trust Company, National Association, as trustee (the "*Trustee*").

Security

The Bonds are special, limited obligations of the Commission payable solely from gross Revenues, including Toll revenues, of the Central Texas Turnpike System (the "*System*") located in Travis and Williamson Counties, Texas, in the greater Austin, Texas metropolitan area and from funds held under the Indenture. The Bonds are payable from and secured by a first lien on, pledge of, and security interest in the Trust Estate (as defined herein) granted in the Indenture, on an equal and ratable basis with outstanding First Tier Obligations and such Additional First Tier Obligations as may hereafter be issued in accordance with the Master Indenture. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Sources of Payment."

Central Texas Turnpike System

The System currently consists of the following four elements: (i) Segments 1 through 4 of State Highway 130 (the "*SH 130 Element*"); (ii) State Highway 45 North (the "*SH 45N Element*"); (iii) the north extension of Loop 1 (the "*Loop 1 Element*"); and (iv) State Highway 45 Southeast (the "*SH 45SE Element*"). The SH 130 Element does ***not*** include Segments 5 and 6 of State Highway 130 ("*SH 130*"), which were financed and constructed, and are being operated and maintained by a private company pursuant to a concession agreement with TxDOT. See "THE SYSTEM."

Commission Operating and Maintenance Commitment

The Commission has covenanted, subject to funds appropriated by the Legislature in a manner that would allow their use, to (i) pay Operating Expenses to the extent of any deficiency in the Operating Account; (ii) pay all Maintenance Expenses when due and (iii) fund the Reserve Maintenance Account. This obligation of the Commission historically has been funded from the State Highway Fund. See "SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION" and "FUNDING OF COMMISSION OBLIGATIONS" and "APPENDIX A – THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE STATE HIGHWAY FUND."

Traffic and Revenue Study

Prior to the issuance of the Bonds, Stantec Consulting Services Inc. ("*Stantec*"), the current Traffic Consultant for the System, issued the Central Texas Turnpike System 2018 Traffic and Revenue Study dated August 29, 2018 (the "*2018 T&R Study*") to estimate traffic and Toll revenue for the System.

In connection with the issuance of the Bonds, Stantec prepared an update letter dated January 21, 2020 (the "*2020 Update Letter*") reviewing the 2018 T&R Study with respect to the forecast of traffic and revenue of the System to determine if changes to the underlying economics and other conditions warrant any material change to the original forecast in the 2018 T&R Study. From a review of recent development patterns and socioeconomic and econometrics data that underpin the 2018 T&R Study as well as the status of planned major network improvements, including the IH 35 capacity projects, and recent toll collection legislation, Stantec, in the 2020 Update Letter, affirmed the traffic and revenue estimate for the forecast period presented in the 2018 T&R Study. The 2018 T&R Study and the 2020 Update Letter are referred to herein collectively as the "*Traffic and Revenue Study.*" See "TRAFFIC AND REVENUE STUDY." A complete copy of the Traffic and Revenue Study is attached hereto as "APPENDIX E – TRAFFIC AND REVENUE STUDY."

PLAN OF FINANCE

General

Proceeds of the Bonds, together with existing funds of the System, will be used to: (i) refund a portion of the outstanding Obligations as further identified in Schedule IA, Schedule IB and Schedule IC attached hereto (the "*Refunded Obligations*") and (ii) pay costs of issuance of the Bonds. See Schedule IA hereto for the details of the specific series and maturity of Refunded Obligations expected to be refunded by the Series 2020-A Bonds and its redemption date and redemption price. See Schedule IB hereto for the details of the specific series and maturities of Refunded Obligations expected to be refunded by the Taxable Series 2020-B Bonds and their respective redemption dates and redemption prices. See Schedule IC hereto for the details of the specific series and maturities of Refunded Obligations expected to be refunded by the Taxable Series 2020-C Bonds and their respective redemption dates and redemption prices. For further details regarding the Bonds, see "THE SERIES 2020-A BONDS," "THE TAXABLE SERIES 2020-B BONDS," "THE TAXABLE SERIES 2020-C BONDS" and "GENERAL INFORMATION REGARDING THE BONDS."

Table 1 below shows the total currently outstanding Obligations issued to finance or refinance the System, and the amounts anticipated to be outstanding following the issuance of the Bonds to refund the Refunded Obligations.

The series, maturities and amounts of outstanding Obligations to be refunded and Bonds to be issued will depend on market conditions when the Bonds are sold and could differ materially from the information shown below.

Table 1 – Outstanding Obligations

Obligations	**Amount Currently Outstanding** (2)	**Amount Outstanding After Issuance of the Bonds**(3)
First Tier		
First Tier Revenue Bonds, Series 2002-A(1)	$ 499,414,943	$ 499,414,943
First Tier Revenue Refunding Bonds, Series 2012-A	585,330,000	123,235,000
First Tier Revenue Refunding Put Bonds, Series 2015-A	225,000,000	-
First Tier Revenue Refunding Bonds, Series 2015-B(1)	312,540,573	312,540,573
First Tier Revenue Refunding Bonds, Series 2020-A	-	179,475,000
First Tier Revenue Refunding Put Bonds, Taxable Series 2020-B	-	225,000,000
First Tier Revenue Bonds, Taxable Series 2020-C	-	279,305,000
Subtotal	$1,622,285,517	$1,618,970,516
Second Tier		
Second Tier Revenue Refunding Bonds, Series 2015-C	$1,157,320,000	$1,157,320,000
Total	**$2,779,605,517**	**$2,776,290,516**

Note: Totals may not add due to rounding

(1) Amounts for Series 2002-A Bonds and the Series 2015-B Bonds are shown using accreted values as of January 1, 2020.
(2) Includes the Refunded Obligations.
(3) Includes the Bonds and excludes the Refunded Obligations.

Refunding of Refunded Obligations

Series 2020-A Bonds. Proceeds of the Series 2020-A Bonds, together with existing funds of the System, will be deposited into a special escrow account held pursuant to an Escrow Agreement with the Trustee to refund and defease certain Refunded Obligations. See "SCHEDULE IA – OBLIGATIONS REFUNDED BY SERIES 2020-A BONDS." The principal of and interest due on such Refunded Obligations are to be paid on their redemption date from funds deposited to the account to accomplish the discharge and final payment of such Refunded Obligations on their scheduled redemption date. Such funds to be deposited with the Trustee will be irrevocably pledged to the payment of the principal of and interest on such Refunded Obligations and, until used, will be invested in direct noncallable obligations of the United States, including obligations that are unconditionally guaranteed by the United States (the "*Escrowed Securities*"). The escrow account will not be available to pay principal of or interest on the Bonds or any other obligations of the Commission or TxDOT, other than such Refunded Obligations.

Upon such deposit with the Trustee, such Refunded Obligations will no longer be entitled to the benefits of the Indenture (other than for payment from the escrow account, transfer and exchange) and no longer be considered Outstanding, and the Commission will have no further responsibility with respect to the payment of such Refunded Obligations including any insufficiency to receive payments when due on Escrowed Securities.

Taxable Series 2020-B Bonds. Proceeds of the Taxable Series 2020-B Bonds, together with existing funds of the System, will be deposited into a special escrow account held pursuant to an Escrow Agreement with the Trustee to refund and defease certain Refunded Obligations. See "SCHEDULE IB – OBLIGATIONS REFUNDED BY TAXABLE SERIES 2020-B BONDS." The principal of and interest due on such Refunded Obligations are to be paid on their respective maturity or redemption dates from funds deposited to the account to accomplish the discharge and final payment of such Refunded Obligations on their scheduled maturity or redemption dates. Such funds to be deposited with the Trustee will be irrevocably pledged to the payment of the principal of and interest on such Refunded Obligations and, until used, will be invested in Escrowed Securities. The escrow account will not be available to pay principal of or interest on the Bonds or any other obligations of the Commission or TxDOT, other than such Refunded Obligations.

Upon such deposit with the Trustee, such Refunded Obligations will no longer be entitled to the benefits of the Indenture (other than for payment from the escrow account, transfer and exchange) and no longer be considered Outstanding, and the Commission will have no further responsibility with respect to the payment of such Refunded Obligations including any insufficiency to receive payments when due on Escrowed Securities.

Taxable Series 2020-C Bonds. Proceeds of the Taxable Series 2020-C Bonds, together with existing funds of the System, will be deposited into a special escrow account held pursuant to an Escrow Agreement with the Trustee to refund and defease certain Refunded Obligations. See "SCHEDULE IC – OBLIGATIONS REFUNDED BY TAXABLE SERIES 2020-C BONDS." The principal of and interest due on such Refunded Obligations are to be paid on their respective maturity or redemption dates from funds deposited to the account to accomplish the discharge and final payment of such Refunded Obligations on their scheduled maturity or redemption dates. Such funds to be deposited with the Trustee will be irrevocably pledged to the payment of the principal of and interest on such Refunded Obligations and, until used, will be invested in Escrowed Securities. The escrow account will not be available to pay principal of or interest on the Bonds or any other obligations of the Commission or TxDOT, other than such Refunded Obligations.

Upon such deposit with the Trustee, such Refunded Obligations will no longer be entitled to the benefits of the Indenture (other than for payment from the escrow account, transfer and exchange) and no longer be considered Outstanding, and the Commission will have no further responsibility with respect to the payment of such Refunded Obligations including any insufficiency to receive payments when due on Escrowed Securities.

Verification of Mathematical Accuracy. AMTEC Corp., a nationally-recognized accounting firm, will verify at the time of delivery of the Bonds to the Underwriters the mathematical accuracy of the respective schedules of the Financial Advisor that demonstrate that the Escrowed Securities will mature and pay interest in such amounts which, together with uninvested funds, if any, in the respective escrow accounts will be sufficient to pay, when due, the principal of, premium on, if any, and interest on the Refunded Obligations, to and on their scheduled maturity or redemption dates. Such verification report will be based on information and assumptions supplied by the Commission, its Financial Advisor and the Underwriters, and such verifications, information and assumptions will be relied upon by Bond Counsel in rendering its opinions described herein. See "VERIFICATION OF MATHEMATICAL ACCURACY" and "TAX MATTERS."

Estimated Sources and Uses of Funds

The proceeds from the sale of the Bonds, together with existing funds of the System, are expected to be applied approximately as follows:

	Series 2020-A Bonds	Taxable Series 2020-B Bonds	Taxable Series 2020-C Bonds	Total
Sources of Funds				
Par Amount of Bonds	$179,475,000.00	$225,000,000.00	$279,305,000.00	$683,780,000.00
Original Issue Premium	41,422,757.50	-	-	41,422,757.50
System Contribution(1)	6,946,640.29(2)	1,181,075.62	1,415,143.11	9,542,859.02
Total	$227,844,397.79	$226,181,075.62	$280,720,143.11	$734,745,616.52
Uses of Funds				
Deposit to Escrow Accounts	$226,437,500.01	$224,930,110.42	$278,589,712.17	$729,957,322.60
Costs of Issuance(3)	1,406,897.78	1,250,965.20	2,130,430.94	4,788,293.92
Total	$227,844,397.79	$226,181,075.62	$280,720,143.11	$734,745,616.52

(1) Includes contribution from First Tier Debt Service Fund.
(2) Includes contribution from First Tier Debt Service Reserve Fund.
(3) Includes Underwriters' Discount.

THE SYSTEM

Description of the System

The System is a network of toll roads owned and operated by TxDOT in the Austin, Texas area. A map of the System, together with certain existing and future connector and complementary facilities which are not part of the System, is included on the inside cover page hereof. The four distinct elements of the System are summarized as follows:

SH 130 Element. The SH 130 Element extends from the IH 35/SH 195 junction at Georgetown, Texas in Williamson County, Texas (north of Austin) 49.0 miles southward, on the east side of Austin, Texas, to a junction with US 183 and SH 45SE in southern Travis County, Texas, south of Austin-Bergstrom International Airport. The SH 130 Element is a four-lane limited-access roadway with toll facilities, overpasses, underpasses, discontinuous non-tolled frontage roads and direct-connectors at interchanges where warranted, including the interchanges with IH 35 and SH 45N. The SH 130 Element has been divided into four segments. Segments 1 and 2 were opened to traffic in December 2006 and in October 2006, respectively. Segments 3 and 4 were opened to traffic in September 2007 and in April 2008, respectively. Currently, Segments 2 and 3 of the SH 130 Element are under construction to add an additional lane in each direction from the SH 45N Element to SH 71. The additional lanes are scheduled to be completed in late 2020 and estimated to cost approximately $73.2 million payable during Fiscal Years 2020-2021 from the Capital Contribution Account within the Construction Fund held under the Indenture. Three additional direct connectors and related improvements between the SH 130 Element and the Central Texas Regional Mobility Authority's ("*CTRMA*") US 290 toll project is another active project being constructed. One of the direct connectors (SB-WB) was completed and opened to traffic on January 11, 2020 and the remaining two are under construction and are expected to be completed in the fall of 2021. CTRMA is responsible for construction of all three direct connectors and related improvements while TxDOT is responsible for the costs of constructing only one direct connector as part of the SH 130 Element. The direct connector is currently anticipated to cost approximately $35.6 million during Fiscal Years 2020-2021 payable from the Capital Contribution Account within the Construction Fund. The SH 130 Element does ***not*** include Segments 5 and 6 of SH 130, which were financed and constructed and are being operated and maintained by a private company pursuant to a concession agreement with TxDOT.

SH 45N Element. The SH 45N Element is a 12.8 mile element located in Travis and Williamson Counties, Texas that extends from US 183 on the west to the SH 130 Element on the east, and is an east-west route. The SH 45N Element serves as a connector between the Cities of Austin, Round Rock, and Pflugerville, Texas, and consists of six-lane divided limited-access roadways except for one section, which is a four-lane divided limited-access roadway and discontinuous non-tolled frontage roads. The first four sections of the SH 45N Element opened to traffic in October 2006, and the remaining two sections opened to traffic in February 2007 and in April 2007, respectively.

Loop 1 Element. The Loop 1 Element is a 4.0 mile element located in Travis and Williamson Counties, Texas that extends northward from Loop 1 at Parmer Lane to the SH 45N Element and is a north-south route. The Loop 1 Element has three lanes in each direction on the southern end and four lanes in each direction on the northern end. The Loop 1 Element includes discontinuous non-tolled frontage roads, toll facilities, overpasses, underpasses and direct-connectors at the interchange with the SH 45N Element. The Loop 1 Element opened to traffic in October 2006.

SH 45SE Element. The SH 45SE Element links IH 35 at FM 1327, north of the City of Buda, Texas, to the junction of the SH 130 Element and US 183 near Mustang Ridge, Texas. The 7.0 mile long facility is a four-lane roadway with controlled access and a wide center median. The SH 45SE Element was funded from lawfully available funds of TxDOT, opened to traffic in May 2009 and was added to the System effective September 1, 2012.

The toll operations for the System are managed by the Toll Operations Division within TxDOT. The Toll Operations Division reports to TxDOT's Chief Financial Officer.

Payment Methods for Tolls; Enforcement

General. TxDOT currently allows all drivers to pay Tolls for the use of the System in two ways: (i) using an electronic toll collection ("*ETC*") transponder in the vehicle to debit a pre-paid account or (ii) paying an invoice for Tolls sent by mail ("*Pay by Mail*") as more fully described in "– *Pay by Mail Payment Method*" below. Prior to January 1, 2013, TxDOT also allowed drivers to pay Tolls on certain portions of the System in cash. In Fiscal Year 2019, 65.9% of the total transactions processed for the System were attributable to ETC transponder accounts and 34.1% were attributable to image-based transactions, consisting of invoiced Pay by Mail transactions and uninvoiced, unbillable transactions.

ETC Transponder Payment Method. The ETC transponder payment method requires that drivers attach a small sticker to the windshields of their vehicles containing a thin transponder which sends a signal to the electronic tolling equipment as the vehicle crosses a tolling point. TxDOT's ETC transponder is branded as a TxTag ("*TxTag*"). Each TxTag transponder is tied to a pre-paid customer toll account and funds are withdrawn daily by TxDOT from such account as tolls are incurred. A single toll account can have multiple TxTag transponders associated with such account. ETC transactions are processed on the System using TxTags as well as ETC transponders issued by other tolling entities. See "– Interoperability" below. As of August 31, 2019, there were 1,338,055 active toll accounts with 2,477,595 active TxTag transponders. As of August 31, 2019, the number of active TxTags increased approximately 10.7% over such number as of August 31, 2018.

Pay by Mail Payment Method. The Pay by Mail payment method was first instituted by TxDOT as a pilot program in January 2007 and was adopted as a permanent payment method effective September 1, 2012. When a driver crosses a tolling point and a valid ETC transponder is not recognized, an image of the vehicle's license plate is captured, and if there is an existing customer toll account for that license plate with sufficient funds, the transaction is posted to such account and processed as an ETC transponder payment. Pay by Mail is utilized when customers that use a System toll road without a valid and sufficiently funded transponder account are invoiced for the amount of the Toll due on a monthly basis. Effective January 1, 2020, drivers utilizing Pay by Mail are charged a 50% higher Toll rate than the ETC transponder toll rate (a "*Surcharge*"), which replaced the prior 33% surcharge, plus a per statement fee, in order to cover the additional costs to TxDOT attributable to image-based transactions incurred under this method. Certain image-based transactions that occur on the System are not able to be invoiced as Pay by Mail transactions because the license plate could not be read accurately, the vehicle was exempt from payment of Tolls or for other technical reasons. See "– Toll Operations, Collection Facilities and Technology." Customers who fail to pay the Toll amount due within thirty days of the date of the invoice are charged an administrative fee of $4 per unpaid invoice per month, with a maximum of $48 in administrative fees per person in a twelve-month period. See "– *Senate Bill 312*," "– *Habitual Violator Legislation*" and "– *Annual Discharge Policy*" below.

In addition to the Toll rates charged for the System, the Commission charges fees for various customer services related to utilizing the various toll facilities of TxDOT. The current fee structure includes the following:

Standard TxTag Fee - $7.99 only applies to accounts that are not enrolled in a prepayment option

Specialty TxTag Fee - $45.00 for motorcycles and license plates; includes $35.00 refundable deposit

Mailed Monthly Statement or Mailed/Faxed On-Demand Statement Fee - $1.15

Returned Check Fee - $30.00 per check

Administrative (late) Fee - $4.00 per unpaid monthly invoice

During Fiscal Year 2018, TxDOT began collecting administrative fees related to the toll collection operations of the System and other TxDOT owned or operated toll roads pursuant to the requirements of SB 312 (as defined and described below). During Fiscal Year 2019, TxDOT began depositing all fee revenues into the System Revenue Fund to offset the cost of toll collections. See "- *Senate Bill 312*" and "TRAFFIC AND REVENUE STUDY."

For Fiscal Year 2018, approximately 10.3% of all image-based transactions on the System could not be invoiced. Additionally, for Fiscal Year 2018, the collection rate for invoiced Pay by Mail transactions on the System was 50.7% and the collection rate for all image-based transactions (invoiced and non-invoiced) was 48.0%. See "– Toll Operations, Collection Facilities and Technology – *Toll Collection Facilities and Technology*" below. The 2018 T&R Study assumes a 51.1% collection rate for all image-based transactions (invoiced and non-invoiced) for all forecast years. As part of the review performed in the 2020 Update Letter, analysis was performed indicating that the lower collection rate observed in 2018 is largely offset by the higher Surcharge that became effective January 1, 2020. See "APPENDIX E – TRAFFIC AND REVENUE STUDY."

Senate Bill 312. The toll collection and billing procedures described above have been in effect for the System since March 1, 2018, and are in compliance with the requirements of Senate Bill 312 ("*SB 312*"), which was passed by the 85th Texas Legislature and was signed into law by the Governor on June 9, 2017. SB 312 imposes limitations on the amount of fees that can be assessed by TxDOT and obligates TxDOT to invoice customers for non-ETC toll transactions, rather than processing such transactions as violations, for certain toll roads that it operates. The Commission has adopted rule changes for TxDOT to comply with the changes prescribed by SB 312.

The change in transactions following the implementation of the revised toll collection and billing procedure changes required by SB 312 for Pay by Mail transactions on the System was reviewed by the Traffic Consultant for the System, in connection with the 2020 Update Letter. Note that the revenue estimates developed by the Traffic

Consultant for the System in the Traffic and Revenue Study include only Toll revenues and do not include any fee revenues that may be received by the Commission for the System in connection with the collection or enforcement of Tolls. See "TRAFFIC AND REVENUE STUDY."

Habitual Violator Legislation. In June 2013, legislation authorized additional toll enforcement tools to pursue habitual violators throughout Texas, which legislation was not impacted by SB 312. Habitual violators are those with more than 100 unpaid tolls in a one-year period and who have been sent at least two notices of non-payment. The 2013 legislation provides more authority to enforce non-payment, including publishing violator names, certain address information and amounts due on websites, and banning the vehicles from using toll roads operated by TxDOT, including the System. If caught driving on a prohibited toll road after being banned and ticketed, the violator's vehicle may be impounded. The legislation also includes authority to report habitual violators to county tax-assessor collectors and the Texas Department of Motor Vehicles (the *"DMV"*), who are responsible for vehicle registration. County tax-assessor collectors and the DMV have discretion, and are therefore not required, to block the renewal of habitual violators' vehicle registration based on non-payment of tolls.

As of November 2019, more than 3,000 individuals have been determined by TxDOT to be habitual violators on all toll roads owned or operated by TxDOT. Currently, TxDOT mails a notice of determination to individuals who meet the requirements for being determined a habitual violator. These notices provide the individuals thirty-five (35) days to fully resolve their unpaid balances, or to enter into an agreement with TxDOT for the monthly repayment of their balances owed. Individuals who either fail to contact TxDOT, resolve their balance in full, enter into an agreement, or continue to honor the terms of the agreement will be prohibited from using toll roads operated by TxDOT (including the System) through an order issued by the Commission. After the Commission has issued an order prohibiting the use of TxDOT's toll roads, TxDOT will mail a notice of prohibition to each prohibited individual. TxDOT has engaged in discussions with local law enforcement agencies regarding the possibility of entering into agreements with such agencies to enforce the Commission's orders of prohibition. No assurances can be provided regarding the timing or nature of the enforcement procedures that may be ultimately implemented under the habitual violator legislation to enforce payment of unpaid Toll transactions involving customers that use a System toll road without a valid and sufficiently funded transponder account.

Annual Discharge Policy. On August 30, 2019, TxDOT adopted a policy to formalize the process for the annual review and discharge of potentially uncollectable Tolls and fees in its back-office system. The discharge of Tolls and fees under this policy will not require any adjustments to the System's annual financial statements. On an annual basis, all amounts due for Tolls posted greater than four years old (from the date of the Toll transaction) on accounts with no activity in the past four years will be discharged in the back-office system. Any fees associated with the Tolls that are discharged will also be discharged, and enforcement activities will cease. The revenue estimates developed by the Traffic Consultant for the System in the Traffic and Revenue Study include only Toll revenues and do not include any fee revenues that may be received by the Commission for the System in connection with the collection or enforcement of Tolls. See "TRAFFIC AND REVENUE STUDY."

Toll Operations, Collection Facilities and Technology

Toll Operations. TxDOT owns and operates a statewide customer service center that receives information from various toll road operators in the State regarding the use of toll roads in the State, and provides clearinghouse services and back office functions relating to the operation of certain toll roads, including call center operations, account management and maintenance, transponder issuance and replacement, invoicing, toll collection, payment processing and enforcement, revenue handling, and accounting and customer service support.

Customer service is currently managed and overseen by TxDOT Toll Operations Division staff and Conduent State and Local Solutions, Inc. ("*Conduent*"), formerly known as Xerox State & Local Solutions, Inc., pursuant to an agreement between TxDOT and Conduent, which is a subsidiary of Conduent, Incorporated. The term of the Conduent agreement is currently scheduled to expire in June 2020, but may be extended pursuant to its terms at TxDOT's option through June 2023. Pursuant to TxDOT's agreement with Conduent, Conduent is obligated to provide and operate a turnkey customer service center and account for, invoice and collect tolls for certain TxDOT toll roads. Conduent's statewide customer service center responsibilities include all customer account management, customer service activities (for example, invoicing, printing and mailing services, payment processing and toll collection), and toll transaction processing. TxDOT's agreement with Conduent includes milestone payments for setup, postage and communications costs and fixed or tiered amounts per collected toll transaction. In addition, TxDOT pays Conduent a percentage of the collected revenue for transactions that are collected after the fourth invoice is mailed.

TxDOT may terminate its agreement with Conduent at any time and procure one or more new agreements to provide the services currently being provided by Conduent, as determined by TxDOT to be the most beneficial approach in terms of cost and other factors. TxDOT is in the process of making a fundamental change to its toll operations, and has issued, and plans to issue in the future, various requests for proposals and other solicitation documents in connection with the procurement of software, services and other activities to potentially replace various services or activities currently being provided by Conduent, including but not limited to, transaction processing, billing and customer service, and enforcement and collections processing for toll roads owned or operated by TxDOT, including the System. Specifically, TxDOT released a Request for Offer ("*RFO*") for a toll operations back-office system on February 5, 2018, which was awarded to IBM in December 2018. The implementation of this new back-office system will require extensive testing and integration with other aspects of TxDOT's toll operations. TxDOT currently anticipates that this new back-office system will become operational during the fourth quarter of Fiscal Year 2020, which is subject to change. Additionally, a Request for Proposal ("*RFP*") for a toll operations customer service center was released in January 2019 and was awarded to Faneuil, Inc. ("*Faneuil*") in November 2019. Faneuil will operate the customer service center, which manages TxDOT's TxTag and Pay By Mail programs as well as the toll enforcement program for unpaid tolls, including the Habitual Violators Program. Faneuil is projected to begin providing services on August 1, 2020, however, TxDOT may extend the term of the Conduent agreement in 2020 to allow for an overlapped transition from Conduent to the various other vendors. No assurances can be provided that TxDOT will enter into any agreement with any other provider to replace any of the services currently being provided to TxDOT by Conduent or to provide other toll operation, collection and enforcement services for the System.

This new back-office system will be funded through and owned by the System. TxDOT currently anticipates capital, implementation and support costs for such new toll operation back-office system of approximately $36.6 million over Fiscal Years 2020-2021. TxDOT anticipates that the customer service center, interoperability and administrative fees that, as a result of a policy change by the Commission, were deposited into the System Revenue Fund in August 2018 and September 2019, respectively, together with the customer service center, interoperability and administrative fee revenues expected to be collected during Fiscal Years 2019-2021, will be sufficient to pay the capital costs of the new back-office system project. See "Table 5 – Historical Revenues, Expenses and Debt Service Coverage." TxDOT anticipates expenses directly associated with the collection of the customer service center, interoperability and administrative fee revenues are to be shared among the TxDOT operated toll facilities and the allocation of such expenses remains subject to TxDOT policies to achieve an equitable allocation of expenses.

Toll Collection Facilities and Technology. TxDOT has equipped all lanes in the System with an automated electronic tolling system which utilizes an express ETC transponder (or tag) and image-based billing system equipment allowing toll collection to occur with no physical barriers or toll islands while vehicles travel at normal highway speeds. This system is similar in composition and functionality to those used on other Texas toll roads. Toll collection equipment is mounted in the pavement, outside the shoulder area or in overhead gantries. See "– Payment Methods for Tolls; Enforcement – *ETC Transponder Payment Method*" above. The image-based billing system is utilized in the System's Pay by Mail payment method. See "– Payment Methods for Tolls; Enforcement – *Pay by Mail Payment Method*" above. The equipment, installation and maintenance of the toll collection and enforcement system, which includes all preventative maintenance necessary to keep the tolling equipment in operation in accordance with the toll system performance requirements, is performed by TransCore, LP pursuant to the Toll System Integrator Agreement with TxDOT.

Toll Rates

Table 2 below sets out the Toll rates for each element of the System effective for calendar years 2019 and 2020. The rates shown are for ETC transactions for two-axle vehicles ("*Auto*") for all elements of the System. Drivers utilizing Pay by Mail are charged a 50% Surcharge applied to the Toll rates for each System element and pay point.

Table 2 – Auto ETC Toll Rates

		Full Length Toll Rates		Per Mile Toll Rates	
Element		2019	2020	2019	2020
SH 45N	(12.8 miles)	$2.24	$2.28	$0.18	$0.18
Loop 1	(4.0 miles)	$1.12	$1.14	$0.28	$0.29
SH 130	(49.0 miles)	$7.40	$7.52	$0.15	$0.15
SH 45SE	(7.0 miles)	$1.10	$1.12	$0.16	$0.16

The full length Toll rates include mainline plaza rates multiplied by the number of mainline tolling points for each element and exclude entrance and exit ramp charges. For a more detailed description of the System's current

Toll rates for each element, vehicle classification and particular tolling points, see the Commission's Minute Order Number 115622 dated October 31, 2019 on file with EMMA at https://emma.msrb.org using the EMMA advanced search function and entering the term "Texas Transportation Commission" in the Issuer Name file within the Security Information search filter. Minute Order Number 115622 is incorporated herein by reference.

More information on historical Toll rates for the System is available in the historical traffic and revenue reports available online at http://txdot.gov/business/investors.html. The information contained on http://txdot.gov/business/investors.html (or accessed through such website) is not incorporated herein and should not be construed as part of this Official Statement.

Toll Escalation Policy

The Commission adopted a Toll escalation policy for the System on August 30, 2012. Under the policy, and subject in all instances to the provisions, requirements and restrictions of the Indenture, on October 1 of each year (each a "*Toll Escalation Determination Date*"), a percentage increase in the Toll rates charged on all toll facilities in the System is to be determined in an amount equal to the Toll Rate Escalation Percentage based on changes in CPI (both as defined below). The Toll Rate Escalation Percentage, as calculated on each Toll Escalation Determination Date, is to be reported to the Commission each year at its October meeting. The percentage increase in the Toll rates will be effective automatically on January 1 of the next calendar year, and implemented by TxDOT's Executive Director, unless the Commission affirmatively votes prior to January 1 to modify such Toll Rate Escalation Percentage. If the Commission votes to modify a Toll Rate Escalation Percentage, the Toll rate increase, if any, to be effective on January 1 of the next calendar year will be based on the modified Toll Rate Escalation Percentage. The CPI used on the October 1 Toll Escalation Determination Date each year is based on the twelve-month period ending August 31 of the year preceding the effective date of any Toll increase. The Toll escalation policy provides a formula for future rate increases without further Commission action. The Toll escalation policy does not supersede the rate covenant in the Master Indenture. In the event a conflict exists, the covenant in the Master Indenture will prevail in determining Toll rates used on the System. The Commission may modify or terminate its Toll policies, including the Toll escalation policy, at any time provided that such change is made in accordance with the requirements of the Master Indenture.

A certification of the Traffic Consultant was received in 2012 in connection with the adoption of the Toll escalation policy and no further certification is required unless such policy is changed. See "– Traffic Consultant Certification" below.

For purposes of determining the Toll Rate Escalation Percentage, the following capitalized terms have the meanings provided below:

"*Toll Rate Escalation Percentage*" = a percentage amount equal to $(CPI^{t} – CPI^{t-12})/CPI^{t-12}$. In the event the Toll Rate Escalation Percentage is calculated to equal less than 0%, then the Toll Rate Escalation Percentage will be deemed to equal 0%.

"CPI^{t}" = the most recently published non-revised index of Consumer Prices for All Urban Consumers (CPI-U) before seasonal adjustment ("*CPI*"), as published by the Bureau of Labor Statistics of the U.S. Department of Labor ("*BLS*") prior to the Toll Escalation Determination Date for which such calculation is being made. The CPI is published monthly, and the CPI for a particular month is generally released and published during the following month. The CPI is a measure of the average change in consumer prices over time for a fixed market basket of goods and services, including food, clothing, shelter, fuels, transportation, charges for doctors' and dentists' services and drugs. In calculating the CPI, price changes for the various items are averaged together with weights that represent their importance in the spending of urban households in the United States. The contents of the market basket of goods and services and the weights assigned to the various items are updated periodically by the BLS to take into account changes in consumer expenditure patterns. The CPI is expressed in relative terms in relation to a time base reference period for which the level is set at 100.0. The base reference period for the CPI is the 1982-1984 average.

"CPI^{t-12}" = the CPI published by the BLS in the month that is 12 months prior to the month used to established CPI^{t}.

If the CPI is discontinued or substantially altered, as determined in the sole discretion of TxDOT, TxDOT will determine an appropriate substitute index or, if no such substitute index is able to be determined, the Commission may modify its Toll escalation policy. For more information on these future increases in Toll rates, see "– Traffic and Revenue Results" herein and "APPENDIX E – TRAFFIC AND REVENUE STUDY."

Traffic Consultant Certification

Prior to adopting any change in the Toll rate schedule, the Commission must obtain and file with the Trustee a certificate by the Traffic Consultant stating either: (A) in their opinion, that if such proposed Toll rate schedule had been in effect during the preceding annual period, and taking into effect the Revenues anticipated to be received in such annual period, as evidenced by a certificate of an authorized representative, it would not have caused a decrease in the Revenues for said preceding annual period; or (B) in their opinion, that the adoption of such proposed Toll rate schedule will not adversely affect the ability of the Commission to comply with its rate covenants. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Rate Covenant – *Certification by Traffic Consultant.*"

Toll Discounts

Veteran Toll Waiver Program. In compliance with the provisions of the Master Indenture and after consultation with the Traffic Consultant, the Commission has authorized free passage on the System for both TxTag and Pay by Mail customers who are disabled veterans or recipients of the Purple Heart, Congressional Medal of Honor, Air Force Cross, Distinguished Service Cross, Army Distinguished Service Cross or Navy Cross (Legion of Valor). To take advantage of this program, eligible veterans are required to register the license plates of their vehicles with the DMV. TxDOT has a monitoring program to identify eligible transactions and the associated revenue to be reimbursed. TxDOT reimburses the appropriate Master Indenture account for the cost of Tolls not paid by customers with such eligible plates.

Section 372.053 of the Texas Transportation Code, as amended, provides that the Legislature may appropriate funds from the general revenue fund to a toll project entity to defray the cost of providing free or discounted use of the entity's toll project under that section. Legislative appropriations partially funded the Veteran Toll Waiver Program in previous Fiscal Years; however, for the 2020-2021 biennium, the Legislature did not appropriate funds to TxDOT for such purpose. In order to account for and track costs associated with the Veteran Toll Waiver Program for the System, the Commission has established a program to direct funds from payments received from other toll projects, and interest earned on such payments from such toll projects, to be allocated to the costs of implementing the Veteran Toll Waiver Program on the System. Since the Legislature did not appropriate funds to TxDOT for the Veteran Toll Waiver Program, TxDOT has budgeted $9,285,000 and $11,140,000 in Fiscal Years 2020 and 2021, respectively, to reimburse the System for costs resulting from the Veteran Toll Waiver Program, which TxDOT estimates will be sufficient to cover the costs associated with such program. Since the program began in December 2012, TxDOT has reimbursed the System approximately $30,728,725 in revenue to pay for approximately 23,597,980 eligible veteran transactions. See "– Traffic Consultant Certification" above.

Senate Bill 1091 ("*SB 1091*"), which was passed by the 86th Texas Legislature and became effective on September 1, 2019, limits the number of transponders issued to a participant of the System's Veteran Toll Waiver Program to a maximum of two transponders (a default of one transponder per driver with an additional transponder upon a showing of hardship). SB 1091 requires TxDOT to adopt rules to establish and implement a transition plan that transitions drivers from a plate-based authentication system to tag-based transponder authentication system and TxDOT is in the process of preparing such rules for consideration by the Commission. Additionally, TxDOT will have to create hardship policies for drivers to qualify for the maximum number of transponders and the amount to charge drivers transitioning to the Veteran Toll Waiver Program transponders. TxDOT projects that the limitation on the number of transponders for the Veteran Toll Waiver Program being reduced to no more than two transponders per driver is estimated to reduce the cost of the Veteran Toll Waiver Program by up to five percent.

Interoperability

General. The System's toll collection system is interoperable with other Texas, Oklahoma and Kansas ETC systems so that customers with TxTags and customers with transponder tags issued by other entities are not required to have multiple transponders in their vehicles.

TxDOT and several other tolling entities within Texas (including the Harris County Toll Road Authority, the North Texas Tollway Authority, the CTRMA and the Fort Bend Grand Parkway Toll Road Authority) entered into an Interlocal Agreement in 2007 (the "*2007 Interoperability Agreement*") relating to the interoperability of the various toll collection systems within Texas and fees relating thereto. The 2007 Interoperability Agreement provided for the use of any tolling entity's transponder on any other tolling entity's toll road or system and the processing by each agency of tolls for the transactions of their own customers' transponders occurring on toll roads owned by other agencies.

Central Interoperability Agreement. In March 2017, a new interoperability agreement was executed among TxDOT, the other Texas tolling entities referenced above, the Oklahoma Turnpike Authority and the Kansas Turnpike

Authority, and is referred to as the Central US Interoperability Agreement (the "*Central Interoperability Agreement*"). The Central Interoperability Agreement replaced the 2007 Interoperability Agreement and revised the interoperability transaction fees paid by the toll road owner to the transponder issuer. TxDOT, the other Texas tolling entities and the Kansas Turnpike Authority implemented the terms of the Central Interoperability Agreement in May 2017, and the Oklahoma Turnpike Authority implemented the terms of such agreement in April 2019. The E-470 Public Highway Authority of Colorado (which is the toll operator of most toll roads in Colorado) is expected to join and implement the terms of the Central Interoperability Agreement in the future.

Pursuant to the terms of the Central Interoperability Agreement, in order to reimburse the costs to process these transactions and manage customer accounts, the Commission pays and receives from the transponder issuing agency a fee of 5 cents per transaction and 3% of the revenue generated for each interoperable transaction, with a minimum of 8 cents per transaction. This fee payable pursuant to the Central Interoperability Agreement is included in the estimated Operating Expenses of the System. Approximately 15% of Toll revenue of the System in Fiscal Year 2019 was from customers with transponder tags issued by other entities that used a TxDOT toll road. Toll revenues and interoperability fees for transactions occurring in a particular month are generally paid and invoiced among the partnering agencies by the end of the following month; however, the timing of invoicing the payment among the partnering agencies may extend beyond thirty days from the end of the month in which the related transactions occurred. During Fiscal Year 2019, approximately 66% of the total toll transactions processed for the System were ETC and approximately 12% of the total toll transactions for the System were interoperable partner tag transactions. The new fee structure under the Central Interoperability Agreement is lower than the fee structure that was in place under the 2007 Interoperability Agreement for transactions that exceed $1.00. The average toll amount per transaction for all interoperable transactions occurring on the System during Fiscal Year 2019 was approximately $1.90.

Additional Interoperability Agreements. TxDOT expects to enter into one or more additional interoperability agreements involving other states in order to comply with the federal Moving Ahead for Progress in the 21st Century Act, which requires that all toll facilities on federal-aid highways implement technologies or business practices that provide for the interoperability of ETC programs, meaning that all transponders can be read on all facilities and all facilities can read all transponders to provide a seamless process to all patrons on all facilities. In October 2017, TxDOT entered into a separate interoperability agreement with the same entities that are parties to the Central Interoperability Agreement as well as the Florida Turnpike Enterprise, related to the interoperability of their respective ETC programs through the use of the Central US Interoperability Hub and the Southeast US Interoperability Hub. The Southeast US Interoperability Hub is owned, operated and maintained by the Florida Turnpike Enterprise and provides for interoperability of transponders on multiple facilities in the states of Florida, North Carolina, South Carolina, Georgia and Alabama. TxDOT and the other parties to this new interoperability agreement are in the process of performing system integration testing. TxDOT's toll collection system will not be interoperable with the ETC programs participating in the Southeast US Interoperability Hub until such system integration testing has been completed.

Lockbox and Custodial Agreement

TxDOT's customer service center receives information from various toll road operators in the State, including TxDOT-owned toll roads such as the System, regarding the use of toll roads in the State. TxDOT also provides clearinghouse services and back office functions relating to the operation of certain toll roads including call center operations, account management and maintenance, transponder issuance and replacement for toll roads, invoicing, toll collection, violation processing and enforcement, revenue handling and accounting and customer service support.

In order to properly account for and disburse revenue received, TxDOT executed the Master Custodial Agreement with The Bank of New York Mellon Trust Company, National Association, to hold, administer and disburse funds from certain lockbox and custodial revenue accounts. Under the Master Custodial Agreement, the following toll revenues are deposited into segregated custodial accounts with the custodian under such agreement: (i) all toll revenues received from TxDOT TxTag users, including toll revenues derived from TxTag transponder transactions occurring on the System, other toll roads operated by TxDOT and toll roads operated by other toll authorities; (ii) all toll revenues received from a third-party transponder issuer in consideration for the use of toll roads that are not operated by such third-party transponder issuer; and (iii) all payments received from invoices mailed to users of toll roads operated by TxDOT, including the System. The funds received by the custodian under the Master Custodial Agreement are generally disbursed on a daily basis to the appropriate beneficiary (including the Trustee with respect to Toll transactions occurring on the System), however, TxTag Toll revenues on non-TxDOT owned toll roads are generally distributed by the custodian on a monthly basis under the terms of the Central Interoperability Agreement. The Master Custodial Agreement is currently scheduled to expire on November 8, 2022. For additional information regarding the Master Custodial Agreement, see "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Sources of Payment – *Interoperability, Lockbox and Other Agreements*."

Other Available System Funds

As of December 31, 2019, approximately $155 million was on deposit in the Construction Fund created under the Master Indenture and held by the Trustee. Such amount is comprised of TxDOT contributions and amounts received from local governments and other entities as well as accumulated interest earnings, but does not constitute proceeds of any Obligations and is not part of the Trust Estate. Approximately $108.8 million of these funds are being used to pay for the additional lanes on Segments 2 and 3 of the SH 130 Element and the direct connector and related improvements on the SH 130 Element at US 290. See "THE SYSTEM – Description of the System – *SH 130 Element*."

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Traffic and Revenue Results

The following tables set forth the unaudited total System transactions and Toll revenue by month for Fiscal Years 2015 through 2019 and the first quarter of Fiscal Year 2020.

Table 3 – Historical System Total Transactions[(1)]
(In Thousands)

	FY 2015		FY 2016		FY 2017		FY 2018		FY 2019		FY 2020	
Month	Total Transactions	% Change Over Prior Year	Total Transactions	% Change Over Prior Year	Total Transactions	% Change Over Prior Year	Total Transactions	% Change Over Prior Year	Total Transactions	% Change Over Prior Year	(First quarter)	% Change Over Prior Year
September	9,646	13%	11,195	16%	12,354	10%	12,626	2%	12,827	2%	14,245	11%
October	10,512	15	11,650	11	13,038	12	13,552	4	14,333	6	15,208	6
November	9,644	9	10,927	13	12,264	12	12,867	5	13,832	8	14,176	3
December	9,877	17	11,231	14	12,085	8	12,295	2	13,214	7		
January	9,182	14	10,657	16	11,614	9	11,739	1	13,177	12		
February	9,008	14	11,116	23	11,435	3	11,656	2	12,754	9		
March	10,694	14	12,643	18	13,503	7	14,218	5	14,846	4		
April	10,967	15	12,202	11	12,781	5	13,668	7	14,558	7		
May	10,867	11	12,543	15	13,452	7	14,435	7	15,068	4		
June	11,188	16	12,716	14	13,208	4	13,915	5	14,511	4		
July	11,554	18	12,442	8	12,730	2	13,751	8	14,740	7		
August	11,361	15	12,647	11	13,030	3	14,434	11	15,144	5		
Total	124,505	14%	141,973	14%	151,501	7%	159,161	5%	169,010	6%		

(1) System transactions are shown in the month in which they occur. System transactions occur when each vehicle crosses a tolling point within the System, including all ETC, Pay by Mail and non-invoiced transactions.

Table 4 – Historical System Toll Revenue[(1)]
(In Thousands)

	FY 2015		FY 2016		FY 2017		FY 2018		FY 2019		FY 2020	
Month	Toll Revenue	% Change Over Prior Year	Toll Revenue	% Change Over Prior Year	Toll Revenue	% Change over Prior Year	Toll Revenue	% Change Over Prior Year	Toll Revenue	% Change Over Prior Year	(First quarter)	% Change Over Prior Year
September	$9,921	-10%	$13,839	39%	$14,290	3%	$13,301	-7%	$15,781	19%	$18,423	17%
October	10,382	-9	13,582	31	16,570	22	15,433	-7	16,777	9	20,330	21
November	11,519	9	13,627	18	15,264	12	16,495	8	18,570	13	18,468	-1
December	12,152	32	13,506	11	15,644	16	16,128	3	16,417	2		
January	12,415	32	13,534	9	14,179	5	16,638	17	17,944	8		
February	12,247	30	13,625	11	14,813	9	15,633	6	16,926	8		
March	14,005	29	15,161	8	16,801	11	18,566	11	19,768	6		
April	13,310	24	13,970	5	16,016	15	16,510	3	19,347	17		
May	13,803	31	15,004	9	16,036	7	13,635	-15	19,898	46		
June	13,657	9	14,554	7	16,004	10	16,584	4	18,918	14		
July	13,981	42	14,368	3	15,366	7	16,703	9	19,563	17		
August	14,232	49	15,881	12	13,829	-13	20,358	47	19,703	-3		
Total	$151,630	21%	$170,656	13%	$184,817	8%	$195,990	6%	$219,619	12%		

(1) Toll revenues from ETC payment method are shown on an accrual basis. Toll revenues from Pay by Mail payment method are shown on a cash basis. Total annual Toll revenue differs from results shown in the audited financials of the System due to adjustment to reflect Pay by Mail revenues earned but not collected, less allowance for doubtful accounts.

Table 5 – Historical Revenues, Expenses and Debt Service Coverage[1]

The following table sets forth the historical Revenues, Expenses and Debt Service Coverage for Fiscal Years 2015 through 2019.

	Fiscal Years Ended August 31 (In Thousands)				
	2015	2016	2017	2018	2019
Revenues					
Toll Revenue	$152,306	$170,689	$185,010	$197,546	$220,690
Fee Revenue	10,952	1,546	15,704	23,911[2]	32,760[3]
Interest & Other Revenue[4]	6,180	6,670	7,388	9,571	12,097
Total	169,438	178,905	208,102	231,028	265,546
Debt Service[5]					
First Tier Obligations Debt Service	51,172	50,930	57,070	63,410	69,550
Second Tier Obligations Debt Service	30,701	57,866	57,866	57,866	57,866
Total	81,873	108,796	114,936	121,276	127,416
Coverage of First Tier Debt Service by Total Revenues	3.31x	3.51x	3.65x	3.64x	3.82x
Coverage of Total Debt Service by Total Revenues	2.07x	1.64x	1.81x	1.90x	2.08x
Revenues in Excess of Current Debt Service	87,565	70,109	93,166	109,752	138,130
Transfers (to) from Commission for Expenses					
Transfers from the Commission to the System	56,133	45,587	5,191[2]	25,933[2]	4
Transfers (to) the Commission from the System[6]	(54,426)	(43,520)	-	-	-
Net Transfers (to)/from Commission	1,707	2,067	5,191	25,933	4
Total Current Fiscal Year Available Revenues[7]	$ 89,272	$ 72,176	$ 98,357	$135,685	$138,134
System Operations, Maintenance and Capital Expenditures[8]	$ 56,399	$ 47,232	$ 51,572	$ 56,694	$108,014

[1] Revenues and expenses are reported on the accrual basis of accounting.

[2] Fiscal Year 2018 Fee Revenue excludes approximately $22.6 million in non-roadway specific customer service center and interoperability Fee Revenue which was collected in Fiscal Year 2016 and Fiscal Year 2017 and was previously retained by TxDOT and held outside the Trust Estate. While the Fiscal Year 2016 and Fiscal Year 2017 funds transferred to the System are excluded for purposes of calculating debt service coverage and to facilitate comparison to prior years, the customer service center and interoperability fees are Pledged Revenues recognized in Fiscal Year 2018 and Fiscal Years thereafter.

[3] Fiscal Year 2019 Fee Revenue also includes administrative Fee revenue. Such administrative Fee Revenue was not applicable to Fee Revenue in years prior to Fiscal Year 2019, so comparison to prior years Fee Revenue will be impacted by this change.

[4] Primarily consists of interest earnings on the First Tier Debt Service Reserve Fund but also includes earnings on the Second Tier Reserve Fund, Rate Stabilization Fund and Revenue Fund. Interest income excludes certain interest income which is not pledged for the payment of debt service.

[5] The debt service presented is based on scheduled cash payments of outstanding debt. Differences in debt service with the System Annual Financial Report are based on GAAP rules applicable to enterprise funds. See Table 1 - "Outstanding Obligations."

[6] In Fiscal Year 2015 and Fiscal Year 2016, transfers to the Commission represent payments by the System to reimburse the State Highway Fund for operations and maintenance expenses and capital expenditures. Transfers exclude certain transfers to Operating, Maintenance, and Reserve Maintenance Accounts held by the Commission outside of the Indenture which are required to be funded at two months of the ensuing year's budgeted amounts. Beginning in Fiscal Year 2017, System disbursements were made directly from the System Operating, Maintenance, and Reserve Maintenance Accounts and thus reimbursements to the State Highway Fund were not necessary.

[7] Revenues of the System after payment of Debt Service plus Net Transfers (to)/from the Commission.

[8] System Operations, Maintenance and Capital Expenditures shown do not reflect depreciation.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

System Forecasted Cash Flow and Debt Service Coverage

Table 6 on the following page shows forecasted Revenues for the Fiscal Years 2020 through 2042 as estimated by the current Traffic Consultant based upon the Traffic and Revenue Study, along with investment and other earnings for the same period as estimated by the Commission and Operating Expenses, Maintenance Expenses and Capital Expenditures as estimated by the System's current General Engineering Consultant, Atkins North America, Inc. Based on the forecasted Revenues and the Debt Service Requirements for the Obligations to be Outstanding after the issuance of the Bonds, estimated debt service coverage for each of the periods is set forth in the table. See "SCHEDULE II – DEBT SERVICE REQUIREMENTS" for the debt service requirements with respect to the Outstanding Obligations, including the Bonds and excluding the Refunded Obligations. See "APPENDIX E – TRAFFIC AND REVENUE STUDY."

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Table 6 – System Forecasted Cash Flow and Debt Service Coverage

(dollar amounts shown in millions)

Fiscal Year	Revenues[1]	1st Tier Debt Service[2]	1st Tier Coverage	Second Tier Debt Service	All Debt Service Coverage	Revenues Available for O&M	Total O&M Costs[3]	Capital Costs[4]	Available Revenues[5]
2020	$223.48	$68.01	3.29x	$57.87	1.78x	$97.60	$52.73	$19.80	$25.07
2021	238.94	72.20	3.31x	57.87	1.84x	108.87	55.09	17.44	36.35
2022	252.85	78.87	3.21x	60.07	1.82x	113.91	57.07	21.64	35.21
2023	260.47	89.20	2.92x	63.13	1.71x	108.13	58.72	6.20	43.21
2024	270.75	94.99	2.85x	66.14	1.68x	109.62	59.80	18.00	31.82
2025	280.68	100.67	2.79x	69.30	1.65x	110.71	61.48	5.58	43.65
2026	293.29	117.47	2.50x	66.27	1.60x	109.55	62.85	4.94	41.76
2027	307.29	124.62	2.47x	70.00	1.58x	112.67	64.39	10.81	37.48
2028	321.85	132.09	2.44x	68.64	1.60x	121.11	65.94	23.13	32.04
2029	336.96	137.30	2.45x	69.20	1.63x	130.46	67.50	25.91	37.05
2030	352.66	142.29	2.48x	70.14	1.66x	140.23	69.88	45.76	24.59
2031	371.71	40.36	9.21x	178.25	1.70x	153.10	71.85	28.17	53.08
2032	392.89	80.36	4.89x	144.50	1.75x	168.03	74.02	51.57	42.44
2033	414.93	38.36	10.82x	192.93	1.79x	183.64	76.20	2.41	105.03
2034	437.86	38.36	11.42x	184.50	1.96x	215.01	78.44	6.36	130.21
2035	461.71	151.88	3.04x	92.73	1.89x	217.11	81.59	13.02	122.50
2036	486.52	177.19	2.75x	74.47	1.93x	234.87	83.89	9.64	141.34
2037	512.32	171.45	2.99x	87.35	1.98x	253.51	86.21	15.43	151.87
2038	539.13	153.69	3.51x	105.98	2.08x	279.46	88.55	33.40	157.51
2039	567.01	184.94	3.07x	74.73	2.18x	307.34	90.95	52.95	163.44
2040	595.99	184.94	3.22x	74.73	2.30x	336.32	94.39	51.93	190.00
2041	625.24	184.94	3.38x	74.73	2.41x	365.57	96.62	36.92	232.03
2042	833.33	191.92	4.34x	74.73	3.13x	566.68	98.78	45.78	422.12
	$ 9,377.86	$ 2,756.11		$ 2,078.25		$ 4,543.50	$ 1,696.91	$ 546.79	$ 2,299.80

Note: Totals may not add due to rounding

(1) Revenues shown in this table constitute "Revenues" as defined in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Sources of Payments – *Revenues,*" which include Tolls, and interest earnings on the First Tier Debt Service Reserve Fund, the Second Tier Debt Service Reserve Fund and the Rate Stabilization Fund, but does not include customer service center revenues or Administrative Fees. Except as detailed below, interest earnings on money in the Rate Stabilization Fund, the First Tier Debt Service Reserve Fund and the Second Tier Debt Service Reserve Fund are assumed to be 1.0% per annum. Through Fiscal Year 2022, approximately $115 million of the First Tier Debt Service Reserve Fund will be invested pursuant to the Citigroup Master Repurchase Agreement and will earn 5.2% per annum. Interest earnings are assumed to be $7.3 million through Fiscal Year 2022 and $2.5 million thereafter. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *First Tier Debt Service Reserve Fund."* Fiscal Year 2042 Revenues include the balances of the First Tier Debt Service Reserve Fund and the Second Tier Debt Service Reserve Fund. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts." Toll revenues are derived from the projections in the Traffic and Revenue Study and are based on certain assumptions described therein. There can be no assurance that the Toll revenue projections will be realized. See "INVESTMENT CONSIDERATIONS – Traffic and Revenue Forecasts."

(2) Includes the Bonds and excludes the Refunded Obligations. For estimation purposes, debt service associated with the Taxable Series 2020-B Bonds after the end of the Initial Multiannual Period assumes a 4% interest rate, with principal of the Taxable Series 2020-B Bonds to be paid in mandatory sinking fund installments and at maturity.

(3) Operating Expenses exclude indirect costs of TxDOT to be paid from general TxDOT funds. Operating expenses have been estimated by TxDOT and the System's General Engineering Consultant, Atkins North America, Inc.

(4) Excludes capital expenditures funded from existing reserves. Increases in reserve capital expenditures in certain Fiscal Years include major scheduled maintenance for gantries, guardrails, lighting, pavement and toll equipment. See "THE SYSTEM – Other Available System Funds."

(5) Revenues remaining after all required deposits under the Master Indenture are to be deposited in the General Reserve Fund. For a description of the General Reserve Fund's application, see "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts – *General Reserve Fund*."

Financial Statements

The audited financial statements of the System for Fiscal Year 2019 are attached hereto as Appendix B. See "APPENDIX B – AUDITED FINANCIAL STATEMENTS OF THE SYSTEM FOR FISCAL YEAR ENDED AUGUST 31, 2019."

The System's financial statements for Fiscal Year 2019 have been audited by Crowe, LLP ("*Crowe*"). Crowe has not reviewed, commented on or approved, and is not associated with, this Official Statement. Crowe has not performed any procedures on such financial statements since the date of such report, and has not performed any procedures on any other financial information of the System, including without limitation, any of the information contained in this Official Statement, and has not been asked to consent to the inclusion of its report, or otherwise be associated with this Official Statement.

Inspection of the System

Pursuant to the Master Indenture, the Commission is required to cause the General Engineering Consultant to make an inspection of the System at least once in each Fiscal Year. Atkins North America, Inc., the current General Engineering Consultant, submitted to the Commission its Central Texas Turnpike System Annual Inspection Report for Fiscal Year 2019 (the "*2019 Inspection Report*").

The 2019 Inspection Report noted that the condition of the System was excellent with an overall rating of 90 out of 100, which is a weighted rating that combines the four elements of the System. The complete 2019 Inspection Report is available online at http://txdot.gov/business/investors/ctts-reports.html. The information contained on (or accessed through) such website is not incorporated herein and should not be construed as part of this Official Statement.

Insurance for the System

The Commission has covenanted in the Master Indenture to insure (including through self-insurance) the System and its use and operation at all times in such amounts, subject to such exceptions and deductibles and against such risks, as are customary for similar organizations, including business interruption insurance. Such insurance must be effected through policies written by responsible insurance companies or a self-insurance program that is actuarially sound in the opinion of an accredited actuary, as evidenced by a report filed with the Trustee annually. Since Substantial Completion of the 2002 Project, TxDOT has maintained a self-insurance program (the "*SIP*") taking into account available amounts in the Rate Stabilization Fund to satisfy this requirement. As of December 31, 2019, the Rate Stabilization Fund contained approximately $68 million, and TxDOT currently intends to use the balance in the Rate Stabilization Fund, if necessary, together with other available funds to continue to provide self-insurance for the System. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *Rate Stabilization Fund*."

The adequacy of the SIP is reviewed annually by an accredited actuary, most recently by a report as of June 30, 2019 by AMI Risk Consultants (the "*Actuarial Consultant*"). In such report, during the SIP period of July 1, 2019 to June 20, 2020 (the "*Review Period*"), the Actuarial Consultant considered certain probabilities and conducted simulations of assumed perils related to catastrophic property, general liability and business interruption (lost Toll revenues during the restoration of operations following some events) in relation to available funding sources. In particular, the Actuarial Consultant considered the funds available in the Revenue Fund, the General Fund, the Rate Stabilization Fund, First Tier Debt Service Reserve Fund and the Second Tier Debt Service Reserve Fund to pay the outstanding System obligations should Toll revenues be interrupted as well as the other funding sources available for property damage such as the Reserve Maintenance Account and the availability of funds from the State Highway Fund, subject to the appropriation of funds by the State Legislature, to pay for capital repairs and replacements as well as certain general liability claims. Based on the simulated probable maximum loss for the Review Period under two different modeling assumptions, the Actuarial Consultant determined that the chance of a SIP loss from events occurring during the Review Period exceeding the System's current reserves is less than 1%. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Particular Covenants – *Insurance*."

TRAFFIC AND REVENUE STUDY

Traffic Consultant's Executive Summary

Stantec, as the current Traffic Consultant for the System, prepared the 2018 T&R Study and, in connection with the issuance of the Bonds, subsequently performed a limited review and confirmed its conclusions in the 2018 T&R Study that can be relied upon in connection with the issuance of the Bonds, as described in the 2020 Update

Letter. The 2018 T&R Study and the 2020 Update Letter are referenced to herein collectively as the Traffic and Revenue Study. Following is an executive summary of the Traffic and Revenue Study prepared by Stantec. The summary does not purport to be comprehensive or definitive and is qualified in its entirety by reference to the Traffic and Revenue Study, a copy of which is attached hereto as "APPENDIX E – TRAFFIC AND REVENUE STUDY."

For the Traffic and Revenue Study, the travel demand modeling process used to forecast System traffic and Toll revenue for the System elements was updated by Stantec to reflect growth in the Austin region and the expansion of the System. Future Toll rates are based on (a) the Commission's Toll escalation policy adopted in 2012 and first implemented in January 2014, whereby Tolls are escalated annually based on changes in the CPI absent further Commission action and (b) assumptions regarding future growth of the CPI. See "THE SYSTEM – Toll Escalation Policy." Annual CPI-based Toll increases and the Pay by Mail Surcharge are consistent with other toll roads in the Austin area.

Prior to the preparation of the Traffic and Revenue Study, the Capital Area Metropolitan Planning Organization ("*CAMPO*") updated its study area to now include six counties in the CAMPO model area (Travis, Williamson, Hays, Bastrop, Caldwell and Burnet counties). In addition, Stantec included the five counties in the Alamo Area Metropolitan Planning Organization ("*AAMPO*") model area (Bexar, Guadalupe, Comal, Wilson and Kendall counties). Estimates of the traffic and Toll revenue for System elements include a combined CAMPO and AAMPO model that incorporates both the Austin and San Antonio regions.

Among the various assumptions in the 2018 T&R Study are (i) the construction and continued operation of certain complementary and competing roadway projects, (ii) a managed lane project on IH 35 will not be constructed, (iii) the socioeconomic growth described in Chapter 6 of such study will occur as forecasted, (iv) motor fuel will remain in adequate supply and motor fuel prices (regular gasoline), including federal and State motor fuel taxes, (in current dollars) will not exceed an average of $4.50 per gallon during the forecast period, (v) Toll rates will escalate at the assumed rate of inflation, (vi) the current policy that limits trucks to the 4-axle rate for the SH 130 Element and the SH 45SE Element will remain in place with no other discounts or changes to the truck policy, (vii) generally normal economic conditions will prevail in the State and the United States, and (viii) TxDOT will reimburse the System the costs of Tolls not paid by those customers with eligible specialty license plates under the Veteran Toll Waiver Program and TxDOT reimburses the System for the cost of Tolls not paid for any periodic truck toll rate discounts offered. As noted herein, two significant changes in assumptions in the 2020 Update Letter are the Capital Express project that would add lanes to IH 35 and the updated socioeconomic data.

The 2020 Update Letter shows that annual total System transactions in Fiscal Years 2018 and 2019 exceeded forecast by 1.9% and 3.71%, respectively, notwithstanding Toll increases in January 2018 and January 2019. Actual annual Revenues of the System for Fiscal Years 2018 and 2019 were, respectively, 1.8% and 5.8% higher than the forecast. In prior System revenue forecasts, estimates of revenue generated from customer services center fees were included as part of the System revenue forecasts in order to highlight that this additional revenue was available to offset some of the administrative and operations costs of the System. Given recent changes in administrative fees generated by SB 312 and the re-examination of the allocation of customer service center fee revenue, Stantec did not incorporate estimates of customer service center fees or administrative fees in the System forecasted revenue streams although the revenue from such fees will remain available to support System administrative costs. See "THE SYSTEM – Payment Methods for Tolls; Enforcement – *Senate Bill 312*."

The 2020 Update Letter reviewed, among other factors, (i) recent development patterns and socioeconomic and econometric data from Chapter 6 of the Central Texas Regional Mobility Authority 183A, 290E, SH 71 Express, SH 45 SW, and 183S 2019 Traffic and Revenue Study attached to the 2020 Update Letter, (ii) the status of planned major network improvements within the study area to determine whether any material changes had occurred in the implementation of such facilities and (iii) the latest available information related to efficiency of toll collections for the Pay by Mail transactions in light of recent changes in toll policies implemented in response to SB 312. See "THE SYSTEM – Payment Methods for Tolls; Enforcement – *Senate Bill 312*."

Based on the review of such data, Stantec did not identify any changes that would require a change to the traffic and revenue forecasts in the 2018 T&R Study. One significant change in assumptions, however, is the Capital Express project that, if constructed, would provide additional capacity on IH 35 through the central Austin corridor. While the funding for this multi-billion dollar project is not fully committed, the levels of detail now available permitted estimation of its impact via sensitivity analysis. From such sensitivity analysis, the impacts of the Capital Express project are estimated to be offset by the latest change in socioeconomic growth which has exceeded the values assumed in the forecast. See "CONSIDERATIONS REGARDING SYSTEM ELEMENTS – Future Development of IH 35 Corridor."

The forecasts in the Traffic and Revenue Study are shown for selected years in Table 7 below. Annual data are shown in "APPENDIX E –TRAFFIC AND REVENUE STUDY."

Table 7 – Forecasts of System Transactions and Toll Revenue(1)

(in thousands)

Fiscal Year	Total Transactions	Average Annual Growth Rate(2)	Toll Revenue(3)	Average Annual Growth Rate(2)
2020	166,915	2.4%	$216,186	4.2%
2025	191,453	2.9	278,222	5.7
2030	212,923	2.2	350,198	5.2
2035	243,365	2.9	459,255	6.2
2040	274,423	2.6	593,526	5.8

(1) Source: Table 8.21 of the 2018 T&R Study. See "APPENDIX E – TRAFFIC AND REVENUE STUDY."

(2) Average Annual Growth Rate for Fiscal Year 2020 represents the annual growth rate relative to Fiscal Year 2019. Average Annual Growth Rates for all other Fiscal Years shown in the table are calculated as the average of annual growth rates over the immediately preceding five year period.

(3) Revenue shown are projections from the Traffic and Revenue Study and include a Pay by Mail surcharge that is 33% of the ETC Toll on each System element. The Commission authorized an increase of the Pay by Mail surcharge over the ETC Toll to 50% of the ETC Toll on each System element beginning January 1, 2020. Other costs, such as fees associated with Pay by Mail invoicing are not included in the revenue estimates.

While the traffic and revenue forecasts within the Traffic and Revenue Study are stated year-by-year, they are intended to show the trends that may reasonably be anticipated on the basis of the assumptions described in the Traffic and Revenue Study. **For a discussion of certain factors that may impact the Traffic and Revenue Study's forecasted results, including the realization of the assumptions described therein, see "INVESTMENT CONSIDERATIONS" herein.**

Traffic Consultant

Stantec is one of the top global design firms as ranked by the Engineering News Record, having a professional staff of some 22,000 employees working in over 400 locations across six continents and has been serving public and private clients since 1954. Stantec has a group of over 2,400 transportation professionals of which more than 40 professionals are actively involved with toll facility clients. Stantec's toll facility experience is both broad and diverse, having worked with more than 120 clients in more than 35 states and internationally and Stantec has performed numerous traffic and revenue studies in the Austin area over the past 20 years. Drawing upon a depth in transportation planning and over 30 years of experience in the toll facility industry, Stantec staff advises clients on establishing screening criteria for potential toll facility corridors, completing traffic and revenue analyses at the investment-grade level, developing financial plans and appropriate toll structures, determining the extent to which a proposed toll facility could provide financing for itself and/or other highway projects, maximizing revenue potential, planning and designing for the future, and solving operational problems. Stantec's investment grade traffic and revenue reports have been the basis for the offering of over $56 billion in revenue bonds.

CONSIDERATIONS REGARDING SYSTEM ELEMENTS

Expansion of the System

The System will include any future Project to expand, enlarge or extend the System, any future Project pooled with the System pursuant to Texas Transportation Code, Chapter 228 and any other roads, bridges, tunnels or other toll facilities for which the Commission has operational responsibility and is collecting Tolls, unless the Commission declares in writing, delivered to the Trustee, that such roads, bridges, tunnels or other toll facilities are not part of the System for the purposes of the Master Indenture. The Commission currently has no plans to expand the System except the additional lanes and a direct connector and related improvements on the SH 130 Element under construction as described in "THE SYSTEM – Description of the System – *SH 130 Element*."

Future Development of IH 35 Corridor

History. The IH 35 corridor in the greater Austin area is one of the most congested highways in the State, and the Commission and TxDOT have been analyzing key elements of IH 35 improvements in the greater Austin area, including the scope of improvements as well as estimated costs. In 2008, the Commission appointed an advisory committee, "my35" that issued a report dated August 2011 that recommended, among other matters, adding additional tolled and non-tolled lanes to IH 35 as well as expanding the SH 130 Element and removing tolls on the SH 130 Element. The Commission has not taken any action related to this report.

In October 2014, TxDOT engaged consultants to analyze project feasibility of various IH 35 improvements in the greater Austin area including additional tolled express lanes and estimated costs and delivery methods for such improvements (the "*IH 35 Study*"). As a result of the IH 35 Study, in November 2017, TxDOT announced plans to add two lanes with variable tolls to each side of IH 35 from Round Rock, Texas to Buda, Texas and channeling such lanes below ground level through much of Central Austin. However, after such announcement, various statewide elected leaders requested the Commission and TxDOT continue building more roads but without adding more toll roads and the Commission has not taken any further action with respect tolling lanes on IH 35.

Capital Express Program. On August 29, 2019, the Commission approved the 2020 Unified Transportation Program (the "*2020 UTP*"), which includes funding for certain portions of the IH 35 Capital Express improvements (the "*Capital Express*"). The Capital Express consists of improvements to 27.4 miles of IH 35 stretching from SH 45 North to SH 45 Southeast. The project has three planned sections: North, South and Central. This project would require a significant reconstruction of IH 35 and cost estimates as of October, 2019, including design and right-of-way costs, are approximately $7.5 billion. The 2020 UTP included developing the Capital Express project as a non-tolled managed lane facility eligible to high occupancy vehicles ("*HOV2+*"). This facility generally adds two HOV2+ lanes in each direction, except for the 11.5-mile section north of US 290 to SH 45 North, which has only one lane per direction. Currently, TxDOT assumes that the project will be constructed in stages with completion by the end of 2027. Construction funding for the North and South sections has been provided within the 2020 UTP along with partial funding of construction costs for the Central section. Currently, funding covering approximately 17% of the current cost estimates has been allocated for the Capital Express project. At its February 27, 2020 meeting, the Commission discussed a plan to fully fund the Capital Express through the allocation of an additional $4.3 billion (bringing the total amount of allocated funding to $7.5 billion). This funding plan includes additional funds of the Commission and a reprioritization of funds by the Capital Area Metropolitan Planning Organization, each of which is subject to approval by each respective governing body. No assurances are given whether the Capital Express project will be constructed and whether such project will have a negative, neutral or positive effect on the System in the long term. See "APPENDIX E – TRAFFIC AND REVENUE STUDY."

System Transfer Conditions

Transfer to Governmental Toll Agency Considerations. Pursuant to Section 718 of the Master Indenture, the Commission has reserved the right to transfer all or a portion of the System, including revenue-producing portions of the System to another governmental tolling agency. Any such transfer of a portion of the System could occur without the retirement or redemption of all or a portion of the then Outstanding Obligations, including the Bonds. In connection with any such transfer of a part of the System, the Commission must comply with the transfer requirements set forth in the Master Indenture, including (a) confirmation of the ratings assigned to the then Outstanding Obligations, (b) a resulting Projected Debt Service Coverage Ratio that would be sufficient to permit each of the then Outstanding Obligations to be reissued in compliance with the terms of the Master Indenture and (c) repayment to the State Highway Fund of moneys paid by TxDOT for the design, construction, operation and maintenance of the transferred portion of the System, estimated to be $1.085 billion for the System as a whole as of August 31, 2019. See "GENERAL INFORMATION REGARDING THE BONDS – Special Redemption" as well as "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Reservation of Right to Transfer System" for a complete description of all conditions in connection with such partial transfer.

State Law Conditions Regarding the Transfer of all or a Part of the System. The Texas Transportation Code, as outlined below, sets forth the following statutory requirements, among others, that must be met, in addition to the conditions set forth in Section 718 of the Master Indenture, prior to any sale, conveyance or other disposition of all or any part of the System to another governmental tolling agency: (i) Section 228.151 of the Transportation Code requires that the Commission and the Governor of the State must approve such actions as being in the best interest of the State and the entity receiving the toll project element or system; (ii) Section 228.152 of the Texas Transportation Code further requires that an agreement to sell or convey a toll project element or system must provide for the discharge and final payment or redemption of outstanding bond indebtedness allocable to the element or system transferred (after issuance of the Bonds, there will be approximately $2.8 billion aggregate principal amount of debt outstanding in connection with the System); (iii) Section 228.153 of the Texas Transportation Code requires that the agreement to sell or convey a toll project element or system must provide for the repayment of any expenditures of TxDOT for financing, design, development, construction, operation or maintenance of the portion of a toll project element or system transferred which expenditures have not been reimbursed with the proceeds of bonds originally issued for such toll project element or system unless the Commission waives repayment of all or a portion of the expenditures if it finds that the transfer will result in substantial net benefits to the State, TxDOT and the public that equal or exceed the amount of repayment waived (as of August 31, 2019, TxDOT had expended an estimated $1.085 billion in connection with the construction, operation and maintenance of the System as a whole); and (iv) Section 228.154 of the Texas Transportation Code requires an agreement for the lease, sale or conveyance of a toll project element or system to be submitted to the Attorney General of the State for approval as part of the record of proceedings relating to the issuance of bonds of the governmental entity acquiring such toll project element or system. These provisions may be amended by future legislation.

Transfer Due to Concession or Other Public-Private Partnership Arrangements. Except as described above under "– *Transfer to Governmental Toll Agency Considerations*," the Commission is not permitted under the Master Indenture to transfer all or any part of the System, including in connection with a public-private partnership arrangement. Additionally, the Commission and TxDOT do not currently have legislative authority to enter into a concession or other public-private partnership arrangement in connection with the System.

If legislation is enacted in the future to authorize public-private partnership arrangement for the System, an analysis would be undertaken at that time to determine whether such a public-private partnership arrangement is feasible for the System considering the factors at that time including the existing contractual commitments TxDOT has in place with other toll roads in the Central Texas area. Additionally, to ensure compliance with the Commission's covenant to maintain the tax-exempt status of the outstanding Obligations, the Commission may be required to redeem and/or defease all outstanding Obligations if TxDOT implements a public-private partnership arrangement for the System. The Commission and TxDOT cannot predict whether legislation to authorize a transfer of the System pursuant to a public-private partnership arrangement would be enacted into law or what impact such legislation would have on the System. See "GENERAL INFORMATION REGARDING THE BONDS – Special Redemption."

SOURCES OF PAYMENT AND SECURITY FOR THE BONDS

Sources of Payment

Special, Limited Obligations. The First Tier Obligations, including the Bonds are special, limited obligations of the Commission and are payable solely from, and equally and ratably secured by a first lien on, pledge of and security interest in: (i) all Revenues and, to the extent set forth in a Supplemental Indenture, any Additional Obligation Security; (ii) all money, including investment earnings, deposited into any fund or account held by the Trustee under the Indenture as described below and in "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Granting Clauses;" (iii) any insurance proceeds and other money required to be deposited in the pledged funds listed in (ii) above; and (iv) all payments received by the Commission pursuant to any Approved Swap Agreements with respect to First Tier Obligations, all subject to the provisions in the Master Indenture limiting the use of funds and accounts (collectively, the "*Trust Estate*").

The Second Tier Obligations, which currently consists only of the Series 2015-C Bonds, are special, limited obligations of the Commission payable solely from, and equally and ratably secured by a lien on, pledge of and security interest in the Trust Estate, but the lien, pledge and security interest securing the Second Tier Obligations is subordinate and junior to the lien, pledge and security interest securing the First Tier Obligations.

The Commission may issue in the future Subordinate Lien Obligations under the Master Indenture which, if issued, will also be special, limited obligations of the Commission payable solely from, and secured solely by, a lien on, pledge of and security interest in the Trust Estate subordinate to the lien on, pledge and security interest in the Trust Estate pledged for the security and payment of the First Tier Obligations and the Second Tier Obligations. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Limitations on Other Indebtedness."

Consistent with the pledge of and security interest in the Trust Estate, debt service on Obligations, including the Bonds, is paid prior to the payment, of Operating Expenses and Maintenance Expenses. See "SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION."

Notwithstanding the foregoing, money deposited to the First Tier Debt Service Fund or First Tier Debt Service Reserve Fund may ***not*** be applied to pay any Obligations other than First Tier Obligations and money in the Second Tier Debt Service Fund or Second Tier Debt Service Reserve Fund may ***not*** be applied to any Obligations other than Second Tier Obligations so long as Obligations of such tier are outstanding.

NONE OF THE STATE, THE COMMISSION, TXDOT OR ANY OTHER AGENCY OR POLITICAL SUBDIVISION OF THE STATE IS OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR

INTEREST ON THE BONDS EXCEPT THE COMMISSION SOLELY FROM THE TRUST ESTATE. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE STATE OR ANY AGENCY OR POLITICAL SUBDIVISION THEREOF IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. NEITHER THE COMMISSION NOR TXDOT HAS ANY TAXING POWER. THE INDENTURE DOES NOT CREATE A MORTGAGE ON THE SYSTEM.

Other than the pledge of the Trust Estate, the Commission has not mortgaged, assigned or pledged any interest in any real or personal property or improvements, including any interest in the System or any expansions or extensions thereto, as security for payment of the Bonds.

Revenues. "*Revenues*" consist of all income and revenues derived from the operation of the System, including (a) all rates, rents, fees, charges, fines and other income derived by the Commission from vehicular usage of the System together with all rights of the Commission to receive the same (collectively, the "*Tolls*") received by or on behalf of the Commission, (b) any other sources of revenues or funds of the Commission derived from or attributable to the System or from the ownership or the holding of certain properties constituting a part of the System, (c) the proceeds of any insurance covering business-interruption loss relating to the System, (d) any other sources of revenues or funds of the Commission that the Commission chooses to designate as Revenues pursuant to a Supplemental Indenture, (e) the interest and income earned on any fund or account in which said interest or income is required to be credited to the Revenue Fund created under the Master Indenture and (f) transfers of excess funds from the Rate Stabilization Fund to the Revenue Fund as described under "– Funds and Accounts – *Rate Stabilization Fund*." "*Revenues*" do not include any Additional Obligation Security.

Interoperability, Lockbox and Other Agreements. The Master Indenture authorizes the Commission and TxDOT to enter into agreements with other entities with respect to the collection of Tolls or advances or prepayment of Tolls charged for trips over all or a portion of the System and to promote and maintain interoperability of all toll facilities within the State. Amounts received by the Commission and TxDOT from any such entity under such agreements less any interoperability fees are required to be deposited in the Revenue Fund and will constitute Revenues to the extent the Commission is not required to pay such amounts to another entity in accordance with such agreements. TxDOT has entered into an Interoperability Agreement with other toll agencies. See "THE SYSTEM – Interoperability." The Lockbox and Custodial Agreement holds, administers and disburses funds from certain lockbox and custodial revenue accounts. Funds received from TxDOT's TxTag users, Pay by Mail users and ETC transponder users from non-TxDOT owned toll roads are held by the Custodian in segregated lockbox and revenue accounts and are then disbursed on a daily basis to the appropriate beneficiary including any Revenues of the System to the Trustee of the Bonds. See "THE SYSTEM – Lockbox and Custodial Agreement."

Funds and Accounts

The Master Indenture establishes the "Revenue Fund," the "Rebate Fund," the "First Tier Debt Service Fund," the "First Tier Debt Service Reserve Fund," the "Second Tier Debt Service Fund," the "Second Tier Debt Service Reserve Fund," the "Subordinate Lien Debt Service Fund," the "Rate Stabilization Fund," the "General Reserve Fund" and the "Construction Fund," all of which are held by the Trustee. The Master Indenture also establishes the "Operating Account," the "Maintenance Account" and the "Reserve Maintenance Account," each to be held by the Commission outside of the Master Indenture. For additional details regarding the purpose and function of the various funds and accounts established pursuant to the Indenture and the flow of Revenues through such funds and accounts, see "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts."

First Tier Debt Service Reserve Fund. Money, investments and any First Tier DSRF Security (as defined below) held in the First Tier Debt Service Reserve Fund will be held and used for the purpose of paying interest on, maturing principal of, and mandatory sinking fund redemption price of First Tier Obligations whenever and to the extent that the money held for the credit of the First Tier Debt Service Fund, after making all required transfers from other Funds, is insufficient for such purpose.

The "*First Tier Debt Service Reserve Requirement*" is an amount equal to the least of (i) the maximum Annual Debt Service of all First Tier Obligations, (ii) 1.25 times the Average Annual Debt Service of all First Tier Obligations or (iii) 10% of the aggregate amount of the Outstanding First Tier Obligations, as determined on the date each Series of First Tier Obligations is issued. The First Tier Debt Service Reserve Requirement was funded with proceeds of the Obligations issued to finance the 2002 Project. If at any time the money and the principal amount of any First Tier DSRF Security held in the First Tier Debt Service Reserve Fund exceeds the First Tier Debt Service Reserve Requirement, subject to receipt of an opinion of Bond Counsel to the effect that such transfer and use will not adversely affect the tax treatment of any Outstanding Obligations, the Commission will direct whether such excess money is to be transferred by the Trustee to the credit of the First Tier Debt Service Fund, used to reduce the principal amount of any First Tier DSRF Security, if any, or, to the extent that such excess was derived from Revenues, transferred to the Revenue Fund or the General Reserve Fund.

In lieu of the deposit of money into the First Tier Debt Service Reserve Fund, the Commission may cause to be provided a surety bond, an insurance policy, a letter of credit or similar financial instrument (each, a "*First Tier DSRF Security*") payable to the Trustee for the benefit of the Secured Owners in an amount equal to the difference between the First Tier Debt Service Reserve Requirement and the amounts then on deposit in the First Tier Debt Service Reserve Fund. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts – *First Tier Debt Service Reserve Fund*." There is currently no First Tier DSRF Security.

As of December 31, 2019, approximately $125 million in investments was on deposit in the First Tier Debt Service Reserve Fund. In 2002, the Commission entered into a Master Repurchase Agreement (the "*Master Repurchase Agreement*") with Salomon Brothers Holding Company, and now with Citigroup Global Markets Holdings Inc. ("*Citigroup Holdings*"), with Citigroup Inc. ("*Citigroup*") acting as guarantor of Citigroup Holdings' obligations, as an investment of approximately $115 million in the First Tier Debt Service Reserve Fund to provide a fixed rate of return of 5.2% per annum through August 15, 2022. The First Tier Debt Service Reserve Fund also contains approximately $10 million invested in a J.P. Morgan U.S. government money market fund.

The Master Repurchase Agreement requires Citigroup Holdings to deliver securities to a custodian to secure its obligations to the Commission. As of January 1, 2020, Citigroup's long-term senior unsecured debt ratings were "A3" with a stable outlook by Moody's, "BBB+" with a stable outlook by S&P and "A" with a stable outlook by Fitch. Citigroup Holdings has provided notice of prior downgrades to the Commission, and as a result has delivered additional securities to the Commission as collateral, in an amount equal to 104% of the par amount of the Master Repurchase Agreement. The Commission has taken no additional action regarding such rating downgrades.

Second Tier Debt Service Reserve Fund. A Second Tier Debt Service Reserve Fund was established in connection with, and funded from a portion of, the proceeds of the Series 2015-C Bonds. One or more Second Tier Debt Service Reserve Funds may be created with respect to each Series of Additional Second Tier Obligations issued pursuant to any Supplemental Indenture. Money, investments and any Second Tier DSRF Security (as defined below), if any, held in the Second Tier Debt Service Reserve Fund will be held and used for the purpose of paying interest on, maturing principal of, and mandatory sinking fund redemption price of all outstanding Second Tier Obligations (unless excluded by a Supplemental Indenture) whenever and to the extent that the money held for the credit of the Second Tier Debt Service Fund, after making all required transfers from other Funds, is insufficient for such purpose. The Second Tier Debt Service Reserve Fund and the Second Tier Debt Service Reserve Fund Requirement, defined below, are both applicable to all Second Tier Obligations issued unless a series of Second Tier Obligation is specifically excluded pursuant to a Supplemental Indenture.

The "*Second Tier Debt Service Reserve Fund Requirement*" is an amount equal to the least of (i) 50% of maximum Annual Debt Service of all Second Tier Obligations, (ii) 50% of 125% Average Annual Debt Service of all Second Tier Obligations or (iii) 5% of aggregate par amount of the Outstanding Second Tier Obligations, as determined on the date each Series of Second Tier Obligations are issued. If at any time the money and the principal amount of any Second Tier DSRF Security held in the Second Tier Debt Service Reserve Fund exceeds the Second Tier Debt Service Reserve Requirement, subject to receipt of an opinion of Bond Counsel to the effect that such transfer and use will not adversely affect the tax treatment of any Outstanding Obligations, the Commission will direct whether such excess money is to be transferred by the Trustee to the credit of the Second Tier Debt Service Fund, used to reduce the principal amount of any Second Tier DSRF Security or, to the extent that such excess was derived from Revenues, transferred to the Revenue Fund or the General Reserve Fund.

In lieu of the deposit of money into the Second Tier Debt Service Reserve Fund, the Commission may cause to be provided a surety bond, an insurance policy, a letter of credit or similar financial instrument (each, a "*Second Tier DSRF Security*") payable to the Trustee for the benefit of the Secured Owners in an amount equal to the difference between the Second Tier Debt Service Reserve Requirement and the amounts then on deposit in the Second Tier Debt Service Reserve Fund. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts – *Second Tier Debt Service Reserve Fund*."

Rate Stabilization Fund. The Commission has covenanted in the Master Indenture to accumulate and maintain funds at least equal to the Rate Stabilization Fund Requirement in the Rate Stabilization Fund as described below. Money held in the Rate Stabilization Fund is intended to enable the Commission to allow rates and charges associated with the System to remain competitive and reasonable.

Rate Stabilization Fund Requirement. Except as described below, for so long as the Series 2002-A Bonds remain outstanding, the Rate Stabilization Fund Requirement will be equal to approximately $67.86 million, which represents all Revenues received through August 31, 2008. A Supplemental Indenture may increase the Rate Stabilization Fund Requirement (or, if the Series 2002-A Bonds are no longer outstanding, decrease it). Notwithstanding the foregoing, whenever amounts in the Rate Stabilization Fund are used to cure a deficiency in the First Tier Debt Service Fund, the Second Tier Debt Service Fund or the Subordinate Lien Debt Service Fund, the Rate Stabilization Fund Requirement will be reduced by such amount, but in no event shall the Rate Stabilization Fund Requirement be below $10,000,000.

Funding of Rate Stabilization Fund. In each Fiscal Year, after first having made or provided for all required deposits described in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Flow of Funds" and "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE," the Trustee will transfer from the Revenue Fund to the Rate Stabilization Fund in 24 approximately equal monthly deposits amounts sufficient to accumulate in the Rate Stabilization Fund an amount equal to the Rate Stabilization Fund Requirement.

Uses of Money in the Rate Stabilization Fund. Amounts on deposit in the Rate Stabilization Fund, if any, may be used to cure a deficiency in the First Tier Debt Service Fund, the Second Tier Debt Service Fund or the Subordinate Lien Debt Service Fund (prior to the amounts in the respective reserve funds being used for such purpose). Upon direction of the Commission, amounts held in the Rate Stabilization Fund may be (i) deposited to the Operating Account in any month that Revenues on deposit in the Revenue Fund are less than Projected Operating Expenses Capacity, (ii) used to pay Operating Expenses or Maintenance Expenses for which Revenues or amounts on deposit in the Operating Account or Maintenance Account are insufficient or (iii) used, to the extent such amounts exceed the Rate Stabilization Fund Requirement, for any other purpose for which Revenues are permitted to be used under applicable law and the Master Indenture. The Master Indenture specifies that the use of the amounts on deposit in the Rate Stabilization Fund for any of the foregoing purposes will not constitute an Event of Default. The Commission also currently relies on the balance in the Rate Stabilization Fund to provide self-insurance for the System. See "THE SYSTEM – Insurance for the System."

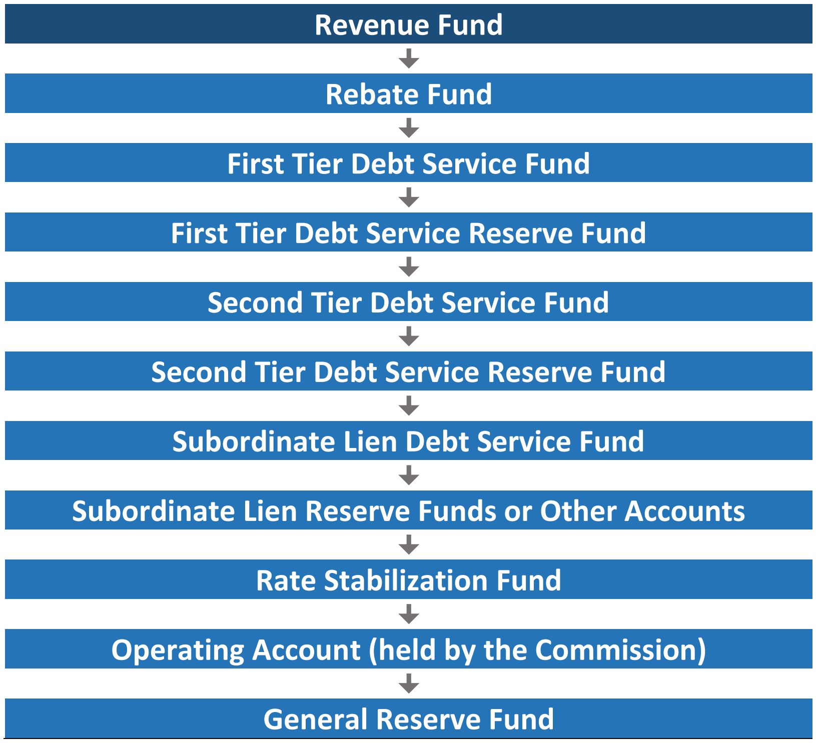
Flow of Funds

The Master Indenture establishes the Revenue Fund for the application and deposit of all Revenues. As far as practicable, the Commission will deposit all Revenues daily to the credit of the Revenue Fund.

In recognition that Obligations may come due on various dates and may have differing security interest and payment priorities, no transfer from the Revenue Fund to any fund, as required and in the order set forth in the following chart, other than the First Tier Debt Service Fund or the First Tier Debt Service Reserve Fund, may be made in any Fiscal Year unless, in the opinion of a Chief Financial Officer set forth in a certificate delivered to the Trustee, the transfer is not anticipated to result in the inability of the Commission to make a later transfer, as required by the Master Indenture, to a fund securing Obligations that have a security interest in the Trust Estate senior to that securing the Obligations that are secured by the fund into which the transfer is scheduled to be made. The chart below depicts the priority of transfers from the Revenue Fund to other funds under the Indenture. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts" for a full description of all funds and accounts, the timing of deposits and other information.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Flow of Funds Chart



In addition, the Maintenance Account and the Reserve Maintenance Account are held by the Commission and are funded in accordance with its obligations described under "SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION."

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Table 8 – Fund and Account Balances

Name of Fund or Account	Approximate Balance in Thousands (as of December 31, 2019)
Held by Trustee:	
Revenue Fund	$124,879
First Tier Debt Service Fund	75,957
First Tier Debt Service Reserve Fund	125,004
Second Tier Debt Service Fund	57,590
Second Tier Debt Service Reserve Fund	53,207
Subordinate Lien Debt Service Fund	-
Rate Stabilization Fund	68,524
General Reserve Fund	-
Construction Fund	154,693(1)
Held by Commission:	
Operating Account	65,624(2)
Maintenance Account	8,277(3)
Reserve Maintenance Account	52,494(4)

---

(1) See "THE SYSTEM – Other Available System Funds" for a discussion of the sources and available uses of funds in the Construction Fund.

(2) Represents approximately 87% of the adopted budget.

(3) Represents approximately 76% of the adopted budget.

(4) Represents approximately 91% of the adopted budget.

Rate Covenant

Maintenance of Rates. The Commission has covenanted in the Master Indenture that it will (a) adopt and maintain in effect a Toll rate schedule for the System, in substantial conformity with the recommendation of the Traffic Consultant and (b) establish charges for other uses of the property constituting a part of the System, such as real property leases, designed collectively to produce Revenues in each Fiscal Year in an amount at least equal to the sum of (i) and (ii) below as follows:

(i) the amounts required to be deposited in the First Tier Debt Service Reserve Fund, the Second Tier Debt Service Reserve Fund, the Rate Stabilization Fund and any other fund established by a Supplemental Indenture to be funded by Revenues; and

(ii) the greater of (a), (b) or (c) as follows:

(a) 140% of the Annual Debt Service (as defined below) on all Outstanding First Tier Obligations; or

(b) 110% of the Annual Debt Service on all Outstanding First Tier Obligations and all Outstanding Second Tier Obligations; or

(c) 100% of the Annual Debt Service on all Outstanding First Tier Obligations, all Outstanding Second Tier Obligations and all Outstanding Subordinate Lien Obligations.

In making the calculations in (a), (b) and (c) above, the Commission may take into account any amounts reasonably expected to be received in the Fiscal Year from or as a result of any Additional Obligation Security the Commission has pledged for the benefit of all Obligations or the Obligations of any particular Tier or Series; however, if the pledge is not for the benefit of all Obligations, the amounts reasonably expected to be received may be taken into account only when making the calculation for the affected Obligations.

"*Annual Debt Service*," for any annual period, means with respect to all Outstanding Obligations or to all First Tier Obligations, Second Tier Obligations, or Subordinate Lien Obligations, (i) the amount of principal and interest paid or payable with respect to such Obligations in the annual period, plus (ii) Reimbursement Obligations paid or payable by the Commission in such annual period (but only to the extent they are not duplicative of such principal and interest), plus (iii) the amounts, if any, paid or payable by the Commission in such annual period with respect to Approved Swap Agreements, minus (iv) the amounts, if any, paid or payable to the Commission in such annual period with respect to Approved Swap Agreements, provided that the difference between the amounts described in clauses (iii) and (iv) will be included only to the extent that such difference would not be recognized as a result of the application of the assumptions set forth below, and minus (v) all amounts which are deposited to the credit of a debt service fund or the Construction Fund for the payment of interest on First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations, as the case may be, from original proceeds from the sale of such Obligations or from any other lawfully available source (other than the Revenue Fund or any money that would constitute Revenues in the subject annual period), and that are used or scheduled to be used to pay interest on such Obligations during any annual period. The Master Indenture sets forth the following assumptions to be used in calculating Annual Debt Service:

(A) in determining the principal amount paid or payable with respect to Obligations or Reimbursement Obligations in each annual period, payment will be assumed to be made in accordance with any amortization schedule established for such Indebtedness, including amounts paid or payable pursuant to any mandatory redemption schedule for such Indebtedness;

(B) if any of the Indebtedness or proposed Indebtedness constitutes Balloon Indebtedness or Short-Term Indebtedness, then such amounts constituting Balloon Indebtedness or Short-Term Indebtedness will be treated as if such Indebtedness is to be amortized in substantially equal annual installments of principal and interest over the useful life of the improvements financed with the proceeds of such Balloon Indebtedness as calculated by, and set forth in a certificate of a Chief Financial Officer. Anything to the contrary herein notwithstanding, during the annual period preceding the final maturity date of such Balloon Indebtedness and in every case with respect to Short-Term Indebtedness, all of the principal thereof will be considered to be due on the Maturity or due date of such Balloon Indebtedness or Short-Term Indebtedness through the issuance of Long-Term Indebtedness, unless the Commission provides to the Trustee a certificate of a Financial Consultant certifying that, in its judgment, the Commission will be able to refund such Balloon Indebtedness or Short-Term Indebtedness through the issuance of Long-Term Indebtedness, in which event the Balloon Indebtedness or Short-Term Indebtedness will be amortized over the term of such proposed refunding Indebtedness and will bear the interest rate specified in the certificate of the Commission's Financial Consultant (no maturity of the Bonds shall constitute Balloon Indebtedness or Short-Term Indebtedness);

(C) as to any annual period prior to the date of any calculation, such requirements will be calculated solely on the basis of Obligations that were Outstanding as of the first day of such period; and as to any future annual period such requirements will be calculated solely on the basis of Obligations Outstanding as of the date of calculation plus any Obligations then proposed to be issued;

(D) if any of the Indebtedness or proposed Indebtedness constitutes Variable Rate Indebtedness, then subject to the following proviso, interest in future periods will be based on the Assumed Variable Rate; provided, however, that for any Approved Swap Agreement entered into by the Commission with respect to a Series of Obligations constituting Variable Rate Indebtedness, the fixed interest rate payable by the Commission under the Approved Swap Agreement will be assumed to be the interest rate on such Obligations if (i) the notional amount under the Approved Swap Agreement is equal to or greater than the Outstanding principal amount of the Obligations and reduces in the amounts and on the dates that the Obligations mature and (ii) the variable interest rate payable by the Commission on the Obligations is determined by the same formula or reference to the same index as the interest rate payable to the Commission under the Approved Swap Agreement, such that the Commission assumes no basis risk under the swap transaction (the Taxable Series 2020-B Bonds do not constitute Variable Rate Indebtedness during the Initial Multiannual Period); and

(E) termination or similar payments under an Approved Swap Agreement will not be taken into account in any calculation of Annual Debt Service.

Certification by Traffic Consultant. Prior to adopting any change in the schedule of rates or Tolls for the System, the Commission will obtain and file with the Trustee a certificate by the Traffic Consultant stating either (i) in their opinion, if such proposed Toll rate schedule had been in effect during the preceding annual period, and taking into effect the Revenues anticipated to be received in such annual period as estimated by the Commission, it would not have caused a decrease in the Revenues for said preceding annual period; or (ii) in the opinion of the Traffic Consultant, the adoption of such proposed Toll rate schedule will not adversely affect the ability of the Commission to comply with the Rate Covenant.

Any such certificate by the Traffic Consultant will be based on the opinion of the Traffic Consultant as to Revenues to be derived by the Commission from the ownership and operation of the System (which Revenues will be deemed to include all investment income previously described herein as constituting Revenues of the System, as estimated by the Commission), and upon certification by the Commission as to the amount of Operating Expenses paid or accrued during any pertinent annual period, assuming that the proposed Toll rate schedule had been in effect during such pertinent annual period.

In preparing its recommendations, the Traffic Consultant may rely upon written estimates of Revenues prepared by the other Consultants of the Commission. Copies of such written estimates signed by such Consultants will be attached to such recommendations. The Commission covenants in the Master Indenture that promptly after receipt of such recommendations and the adoption of any revised Toll rate schedule, certified copies thereof will be filed with the Trustee.

Stantec is acting as the current Traffic Consultant under the Master Indenture. See "THE SYSTEM – Toll Rates" and "APPENDIX E – TRAFFIC AND REVENUE STUDY."

No Immediate Event of Default for Failure to Comply with Rate Covenant. The failure of the System in any Fiscal Year to produce Revenues in the amounts contemplated by the Rate Covenant will not constitute an Event of Default under the Master Indenture if (i) certain other Events of Default (including failure to pay debt service and any defaults under a Supplemental Indenture) have not occurred as a result of such failure, (ii) the Commission, promptly after determining that the requirements of the Rate Covenant were not met, requests that the Traffic Consultant make written recommendations as to appropriate revisions to the Toll rate schedule necessary or appropriate to meet the requirements of the Rate Covenant and furnishes the Trustee with a copy of such request and (iii) the Commission complies with the recommendations of the Traffic Consultant with respect to Tolls. In addition to any other remedies the Trustee may have under the Master Indenture, if the Commission does not comply with the recommendations of the Traffic Consultant in respect of Tolls, the Trustee may, and upon the request of the Secured Owners of not less than 25% in principal amount of the First Tier Obligations then Outstanding and upon being indemnified to its satisfaction will institute and prosecute in a court of competent jurisdiction in Travis County, Texas, any appropriate action to compel the Commission to revise the Toll rate schedule. The Commission covenants in the Master Indenture that it will adopt and charge Tolls in compliance with any final order or decree entered in any such proceeding.

Additional Obligations

The Commission has agreed in the Master Indenture not to incur any indebtedness or swap obligations secured by a lien on, pledge of, or security interest in the Revenues of the System that is prior to or, except as described below, on a parity with First Tier Obligations or Second Tier Obligations.

Additional First Tier Obligations. The Commission is authorized under the Master Indenture to issue Additional First Tier Obligations constituting Short-Term Indebtedness and Long-Term Indebtedness as well as First Tier Approved Swap Agreements, subject to certain restrictions and conditions as described below.

Short-Term Indebtedness. The Commission has agreed in the Master Indenture that it will not issue any Additional First Tier Obligations constituting Short-Term Indebtedness unless immediately after the incurrence of such Short-Term Indebtedness the outstanding principal amount of (i) all Short-Term Indebtedness issued as First Tier Obligations or Second Tier Obligations, plus (ii) all First Tier Obligations or Second Tier Obligations Outstanding in the form of Variable Rate Indebtedness that do not constitute Short-Term Indebtedness, will not exceed 20% of the aggregate principal amount of all Outstanding Obligations. Short-Term Indebtedness issued pursuant to the provisions described in this paragraph will be on a parity with other First Tier Obligations.

Long-Term Indebtedness. The Commission has agreed in the Master Indenture that it will not issue any Additional First Tier Obligations constituting Long-Term Indebtedness (except as described under "*Completion Obligations*" below) unless it delivers specified documentation, including certain opinions, certificates, and the following:

(a) a letter from each Rating Agency then maintaining a rating on the Outstanding First Tier Obligations to the effect that the Additional First Tier Obligations have received an investment-grade rating from such Rating Agency, *and*

(b) either:

(i) a report of the Traffic Consultant to the effect that (A) the Revenues during the preceding annual period ending not more than 90 days prior to the date of delivery of the proposed Additional First Tier Obligations were sufficient to satisfy the requirements of the Rate Covenant (which report may assume that a revision of the Tolls that was approved and implemented by the Commission subsequent to the beginning of such annual period had been in effect for the entire annual period), and (B) the Projected Revenues for each Fiscal Year over the term of the proposed Additional First Tier Obligations are expected to produce a

Projected Debt Service Coverage Ratio of at least (1) 1.50 with respect to First Tier Obligations, (2) 1.20 with respect to First Tier Obligations and Second Tier Obligations and (3) 1.10 with respect to all Obligations; *or*

(ii) if the Long-Term Indebtedness is being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any Outstanding Long-Term Indebtedness, a certificate of a Chief Financial Officer certifying that the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Indebtedness is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Indebtedness.

Pursuant to the Master Indenture, the Commission has reserved the right to expand the System in the future as well as issue additional debt to finance improvements and additions to the System; however, the Commission currently has no plans to expand the System or issue any additional debt related to the System.

First Tier Approved Swap Agreements. The Master Indenture also permits the Commission to enter into First Tier Approved Swap Agreements, subject to certain conditions and restrictions. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Limitations on Other Indebtedness – *Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements*."

Completion Obligations. To finance the costs of completion of any improvements, extensions or enlargements to the System financed with the proceeds of Additional First Tier Obligations, the Commission may, without complying with the provisions described above under "– *Additional First Tier Obligations*," "– *Short-Term Indebtedness*" or "– *Long-Term Indebtedness*," issue Additional First Tier Obligations under certain conditions as described in "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Limitations on Other Indebtedness."

Additional Second Tier Obligations. The Master Indenture permits the Commission to issue Additional Second Tier Obligations constituting both Short-Term Indebtedness and Long-Term Indebtedness as well as Second Tier Approved Swap Agreements, subject to certain restrictions and conditions as follows.

Short-Term Indebtedness. With respect to Additional Second Tier Obligations constituting Short-Term Indebtedness, the Master Indenture restricts the amount of such Short-Term Indebtedness that may be issued to an amount that, when combined with other Short-Term Indebtedness and any Variable Rate Indebtedness then Outstanding, does not exceed 20% of the aggregate principal amount of all Outstanding Obligations. In addition, the Commission must deliver a letter from each Rating Agency then maintaining a rating on the Outstanding First Tier Obligations or Second Tier Obligations to the effect that the Additional Second Tier Obligations being issued as Short-Term Indebtedness have received an investment-grade rating.

Long-Term Indebtedness. With respect to Additional Second Tier Obligations constituting Long-Term Indebtedness, the Master Indenture conditions issuance on delivery of certain documents, opinions and certificates, including:

(a) a letter from each Rating Agency then maintaining a rating on the Outstanding First Tier Obligations or Second Tier Obligations to the effect that the Additional Second Tier Obligations have received an investment-grade rating from such Rating Agency, *and*

(b) either:

(i) a report of the Traffic Consultant to the effect that (A) the Revenues during the preceding annual period ending not more than 90 days prior to the date of delivery of the proposed Additional Second Tier Obligations were sufficient to satisfy the requirements of the Rate Covenant (which report may assume that a revision of the Tolls that was approved and implemented by the Commission subsequent to the beginning of such annual period had been in effect for the entire annual period), and (B) the Projected Revenues for each Fiscal Year over the term of the proposed Additional Second Tier Obligations are expected to produce a Projected Debt Service Coverage Ratio of at least (1) 1.20 with respect to First Tier Obligations and Second Tier Obligations and (2) 1.10 with respect to all Obligations; *or*

(ii) if the Long-Term Indebtedness is being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any Outstanding Long-Term Indebtedness, a certificate of a Chief Financial Officer certifying that the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Indebtedness is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Indebtedness.

Second Tier Approved Swap Agreements. The Master Indenture also permits the Commission to enter into Second Tier Approved Swap Agreements, subject to certain conditions and restrictions. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Limitations on Other Indebtedness – *Limitations on Issuance of Additional Second Tier Obligations and Execution of Second Tier Approved Swap Agreements*."

Additional Subordinate Lien Obligations. The Master Indenture also permits the Commission to issue Additional Subordinate Lien Obligations constituting both Short-Term Indebtedness and Long-Term Indebtedness as well as Subordinate Lien Approved Swap Agreements, subject to certain restrictions and conditions. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Limitations on Other Indebtedness – *Limitations on Issuance of Additional Subordinate Lien Obligations and Execution of Approved Subordinate Lien Swaps*."

Additional Covenants

In the Master Indenture, the Commission has made certain covenants regarding the use and maintenance of the System, the retention of a General Engineering Consultant and a Traffic Consultant, the duties of the General Engineering Consultant and inspections of the System, the repair and mitigation of damage or destruction of the System, the maintenance of records, the performance of an annual audit, not building competing systems and not encumbering or transferring the System. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Particular Covenants."

Default and Remedies

Events of Default. The occurrence and continuation of any of the following constitutes an "*Event of Default*" under the Master Indenture:

(a) failure by the Commission to pay the principal of and premium, if any, or interest on any of the Obligations or to pay Capital Payments when the same shall become due and payable, either at Stated Maturity, by proceedings for redemption or pursuant to the terms of the Obligation or any failure of the Commission to purchase or cause to be purchased any Tender Indebtedness (the Bonds do not constitute Tender Indebtedness for purposes of the Master Indenture), including any applicable Variable Rate Indebtedness, upon any optional or mandatory tender to the Commission or a tender agent of the Commission; or

(b) an event of default under a Credit Facility, a First Tier DSRF Security, a Second Tier DSRF Security, an Approved Swap Agreement or a Reimbursement Agreement; or

(c) the Commission unreasonably delays or fails to carry out with reasonable dispatch or discontinue the construction of any portion of the System for which Obligations have been issued and are then Outstanding; or

(d) substantially all or any major portion of the System is destroyed or damaged to the extent of impairing its efficient operation and materially adversely affecting the Revenues and is not promptly repaired, replaced or reconstructed (whether such failure promptly to repair, replace or reconstruct the same is due to the impracticability of such repair, replacement or reconstruction or to lack of funds therefor or for any other reason); or

(e) judgment for the payment of money is rendered against the Commission if such judgment is under any circumstances payable from Revenues and is in an amount such that its payment would, in the opinion of the Trustee, have a materially adverse effect upon the financial condition of the System and any such judgment is not discharged within ninety (90) days from the entry thereof or an appeal is not taken therefrom or from the order, decree or process upon which or pursuant to which such judgment has been granted or entered, in such manner as to set aside or stay the execution of or levy under such judgment, decree or process or the enforcement thereof; or

(f) a bankruptcy or insolvency event with respect to the Commission has occurred and has not been cured, vacated, discharged or stayed within sixty (60) days after the occurrence thereof; or

(g) the Commission fails to duly and punctually perform any other covenant, condition, agreement or provision contained in any Obligations or in the Master Indenture, and, (with the exception of covenants relating to the issuance of Additional Obligations, placing encumbrances upon Revenues, disposing of System property, preserving the tax-exempt status of interest on the outstanding First Tier Obligations and the Bonds and requiring the System to refrain from funding or approving capital projects on the State Highway System that would materially adversely affect the Commission's ability to comply with the Master Indenture), such failure continues for sixty (60) days after written notice specifying such failure and requiring it to be remedied has been given to the Commission by the Trustee, which may give such notice in its discretion and must give such notice at the written request of the Secured Owners of not less than ten percent (10%) in principal amount of the Obligations then Outstanding; and the Trustee will investigate and consider any allegation of such default or Event of Default of which any Bond Insurer of record notifies the Trustee in writing.

Remedies. Upon the happening and continuance of any Event of Default, the Trustee may proceed, and upon the written request of the Secured Owners of not less than twenty percent (20%) in principal amount of the Obligations then Outstanding must proceed (subject to certain provisions of the Master Indenture governing the rights of the Trustee) to protect and enforce its rights and the rights of the Secured Owners under the Acts and under the Indenture by such suits, actions or special proceedings in equity or at law, or by proceedings in the office of any board or officer having jurisdiction, either for mandamus or the specific performance of any covenant or agreement contained in the Indenture or in aid or execution of any power herein granted or for the enforcement of any proper legal or equitable remedy, as the Trustee, being advised by counsel, shall deem most effectual to protect and enforce such rights, to the extent permitted by law.

Subject to the Commission's sovereign immunity discussed below, in enforcing any remedy under the Indenture the Trustee is entitled to sue for, enforce payment of and receive any and all amounts then or during any default becoming, and at any time remaining, due from the Commission for principal, interest or otherwise under any of the provisions of the Indenture or of the Outstanding Obligations and unpaid, with interest on overdue payments, to the extent permitted by law, at the rate or rates of interest borne by such Obligations, together with any and all costs and expenses of collection and of all proceedings hereunder and under such Obligations, without prejudice, to any other right or remedy of the Trustee or of the Secured Owners, and to recover and enforce judgment or decree against the Commission, but solely as provided in the Indenture and in such Obligations, for any portion of such amounts remaining unpaid, with interest, costs, and expenses, and to collect (but solely from Revenues) in any manner provided by law, the money adjudged or decreed to be payable. See "INVESTMENT CONSIDERATIONS – Limited Available Remedies."

The enforcement of the remedy of mandamus may be difficult and time consuming and is subject to judicial discretion. No assurance can be given that a mandamus or other legal action to enforce a default under the Indenture would be successful.

Under current State law, the Commission has, and is not authorized to waive, sovereign immunity from suit or liability with respect to the Bonds, and the owners thereof and the Trustee are prevented from bringing a suit against the Commission to adjudicate a claim to enforce their rights under the Bonds or the Indenture or for damages for breach of the Commission's obligations relating to the Bonds. However, State courts have held that mandamus proceedings against a governmental unit, such as the Commission, as discussed above, are not prohibited by sovereign immunity. The Trustee is authorized to bring a mandamus action against the Commission to compel performance of their legal duties, if such duties are not reasonably in doubt. Further, the Commission has agreed to adopt and charge Tolls in compliance with any final order or decree entered in a proceeding to compel the Commission to revise the Toll rate schedule if Revenues are insufficient to comply with the Rate Covenant. See "INVESTMENT CONSIDERATIONS – Limited Available Remedies."

Pro Rata Application of Funds. If at any time the money in the First Tier Debt Service Fund, the Second Tier Debt Service Fund or the Subordinate Lien Debt Service Fund, along with money in the respective reserve funds and other funds established by the Master Indenture, is not sufficient to pay the principal of or the interest on the First Tier Obligations or the Second Tier Obligations as the same become due and payable, such money, together with any money then or thereafter available for such purpose, whether through the exercise of the remedies provided for in the Master Indenture or otherwise, will be applied as set forth in the Indenture. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Events of Default and Remedies – *Pro Rata Application of Funds*."

Majority of Secured Owners May Control Proceedings. Any other provisions of the Master Indenture notwithstanding, the Secured Owners of not less than a majority in principal amount of First Tier Obligations then Outstanding (or, if no First Tier Obligation is then Outstanding, then the Secured Owners of not less than a majority in principal amount of the Second Tier Obligations and Subordinate Lien Obligations then Outstanding) will have the right, subject to certain provisions of the Master Indenture regarding the Trustee's rights, to direct the method and place of conducting all remedial actions to be taken by the Trustee under the Master Indenture. However, the Trustee will have the right to decline to follow any such direction that in the opinion of the Trustee would be unjustly prejudicial to Secured Owners that are not parties to such direction.

Restrictions Upon Action by Individual Secured Owner. No Secured Owners of any of the Outstanding Obligations will have any right to institute any suit, action, mandamus or other proceeding in equity or at law for the execution of any trust under the Master Indenture or the protection or enforcement of any right under the Master

Indenture or any resolution or minute order of the Commission authorizing the issuance of Obligations, or any right under applicable laws of the State (except for an action for the recovery of overdue and unpaid principal, interest or redemption premium) unless (i) such Secured Owner gives the Trustee written notice of the event of default or breach of trust or duty on account of which such suit or action is to be taken, (ii) the Secured Owners of not less than twenty percent (20%) in principal amount of the Obligations then Outstanding have (A) made written request of the Trustee after the right to exercise such powers or right of action, as the case may be, has accrued, (B) afforded the Trustee a reasonable opportunity either to (1) proceed to exercise the powers granted under the Master Indenture or applicable laws of the State or (2) to institute such action, suit or proceeding in its or their name and (C) offered the Trustee reasonable security and indemnity satisfactory to it against the costs, expenses and liabilities to be incurred by it and (iii) the Trustee has refused or neglected to comply with the request described in clause (ii)(A) within a reasonable time.

SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION

The Commission has covenanted to (i) pay Operating Expenses to the extent of any deficiency in the Operating Account; (ii) pay all Maintenance Expenses when due, for which it may be reimbursed, and (iii) fund the Reserve Maintenance Account, all subject to funds appropriated by the Legislature in a manner that would allow their use. This obligation of the Commission historically has been funded from the State Highway Fund, however, since Fiscal Year 2013, the System has been self-supporting for all operation, maintenance and capital expenses. See "FUNDING OF COMMISSION OBLIGATIONS." The ability of the Commission to satisfy such covenant is dependent upon the continued appropriation and availability to the Commission of adequate funds for such purposes. In Fiscal Years 2020 and 2021, approximately $1.8 billion and $1.7 billion, respectively, was appropriated for operations and maintenance of the State's highway system. These funds, together with other funds, are available to the Commission to comply with the covenants discussed above in this paragraph, among other Commission obligations. See "- Table 9 – Operations, Maintenance and Capital Expenditures."

Covenant to Cover Shortfalls in Operating Account

The Commission has covenanted in the Master Indenture to make deposits to the Operating Account in amounts sufficient to keep a balance in the Operating Account equal to the Operating Account Requirement, to the extent that Revenues are insufficient to make the required deposits into the Operating Account in any month and the legislature has appropriated sufficient funds for that purpose. Further, the Commission has covenanted in the Master Indenture to include in its annual budget 110% of the amount, if any, by which Revenues are projected to be insufficient to pay Operating Expenses for the upcoming year. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Flow of Funds" and "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts – *Operating Account*."

Covenant to Fund Maintenance Account

The Commission has covenanted in the Master Indenture to (1) budget for and make monthly deposits to the Maintenance Account sufficient to keep a balance in the Maintenance Account sufficient to pay the following two months of Maintenance Expenses and (2) pay all Maintenance Expenses when due if the balance in the Maintenance Account is insufficient to do so, all subject to appropriation of funds by the Legislature which allows their use for such purpose. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts – *Maintenance Account*." The Commission may be reimbursed for Maintenance Expenses at the end of each Fiscal Year from and to the extent of funds available in the General Reserve Fund.

Covenant to Fund Reserve Maintenance Account

The Commission has covenanted in the Master Indenture to (1) budget for and make monthly deposits to the Reserve Maintenance Account sufficient to keep a balance in the Reserve Maintenance Account equal to the capital expenses of the System projected in the Annual Capital Budget for the ensuing two months and (2) pay all capital expenses of the System when due if the balance in the Reserve Maintenance Account is insufficient to do so, all subject to appropriation of funds by the Legislature which allows their use for such purpose. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Funds and Accounts – *Reserve Maintenance Account*." The Commission may be reimbursed for capital expenditures for repair and maintenance of the System at the end of each Fiscal Year from and to the extent of funds available in the General Reserve Fund.

System Operations, Maintenance and Capital Expenditures

Actual operations, maintenance and capital expenditures for the System in Fiscal Years 2016 through 2019, together with the budget for such expenditures for the System for Fiscal Year 2020 are set forth below in Table 9. The

Fiscal Year 2020 budget is subject to amendment and change upon approval by the Commission. The Commission adopted a Fiscal Year 2020 Operations, Maintenance and Five-Year Capital Plan Budget for the System in accordance with the Master Indenture. To the extent Revenues of the System are insufficient, for the 2020-2021 biennium, the Commission received appropriations that would cover any such insufficiency, as well as all the System's forecasted expenses.

Table 9 – Operations, Maintenance and Capital Expenditures (in thousands)[(1)]

Account	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Budgeted
Operations[(2)]	$41,890	$30,511	$39,820	$41,543	$75,800
Maintenance[(2)]	5,617	8,934	12,876	11,740	10,900
Operations and Maintenance	47,507	39,445	52,695	53,282	86,700
Reserve Maintenance[(3)]	5,396	4,299	3,204	44,799	164,500
Total	$52,903	$43,744	$55,899	$98,081	$251,200

(1) Table presentation has been updated to report cash expenditures from the referenced Indenture accounts rather than financial reporting amounts shown on an accrual basis. Differences in actuals provided in prior reports are primarily due to the difference in cash versus accrual basis of reporting.

(2) Excludes depreciation expense and maintenance expense associated with Reserve Maintenance.

(3) Includes maintenance expense associated with Reserve Maintenance and capital expenditures. The Commission budgets capital expenditures and unusual and extraordinary maintenance in the Reserve Maintenance Account for a rolling five-year period. Fiscal Year 2020 capital budget includes approximately $71 million for SH 130 additional lanes and approximately $35.6 million for the addition of the US 290 direct connector and related improvements payable from funds held in the System Capital Contribution Account within the Construction Fund. See "THE SYSTEM – Description of the System – *SH 130 Element*." In addition, the Fiscal Year 2020 capital budget includes approximately $33.8 million for back office development. Any budget for future Fiscal Years assuming use of TxDOT funds is subject to future legislative appropriation.

Since Fiscal Year 2013, the System has been self-supporting for all operation, maintenance and capital expenses. For administrative ease prior to Fiscal Year 2017, the Commission paid all operations, maintenance and capital expenses on behalf of the System, and the System periodically reimbursed the Commission from available revenues in excess of debt service from and to the extent of funds available in the General Reserve Fund. Beginning in Fiscal Year 2017, System expenses have been paid directly from the System Operating, Maintenance and Reserve Maintenance accounts and reimbursements to the State Highway Fund were not necessary. See "THE SYSTEM – Table 5 – Historical Revenues, Expenses and Debt Service Coverage, footnote 6."

FUNDING OF COMMISSION OBLIGATIONS

The System-related funding obligations of the Commission described above regarding payment of Operating Expenses to the extent of any deficiency, payment of Maintenance Expenses and funding the Reserve Maintenance Account are to be paid, subject to appropriation by the Legislature, from lawfully available funds of the Commission. Generally, all money available to the Commission, including the money necessary to pay such System-related funding obligations, is subject to appropriation by the Legislature before it may be drawn out of the State Treasury. The Legislature meets biennially in each odd numbered year, but may appropriate funds in special session if called by the Governor for such purpose. Legislative appropriations are limited to a period of two years. Generally, appropriations are made by the Legislature separately for each Fiscal Year of the State's biennium, but an appropriation may be made for a full biennium or for a part of the biennium other than a Fiscal Year. Legislative appropriations of funds from the State Highway Fund are the primary source of funding for the construction, maintenance, and operation of the State Highway System, including the System, and have historically been the primary source of funds for payment of any System-related funding obligations paid by the Commission. For further information regarding TxDOT and the State Highway Fund, see "APPENDIX A – THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE STATE HIGHWAY FUND."

INVESTMENT AUTHORITY AND PRACTICES OF THE COMMISSION

The Commission invests its funds in accordance with its investment policies and State law. See "APPENDIX F – INVESTMENT AUTHORITY AND INVESTMENT PRACTICES OF THE COMMISSION."

INVESTMENT CONSIDERATIONS

The Bonds are special, limited obligations of the Commission, payable solely from and secured exclusively by the Trust Estate. The following is a discussion of certain matters that should be considered in evaluating an investment in the Bonds. This discussion does not purport to be either comprehensive or definitive. The order in which investment considerations are presented is not intended to reflect either the likelihood that a particular event will occur or the relative significance of such an event. There may be other considerations associated with an investment in the Bonds in addition to those set forth herein.

Traffic and Revenue Forecasts

The traffic and revenue forecasts in the Traffic and Revenue Study are based upon certain assumptions as set forth in the study, including those discussed in Chapter 8 of the 2018 T&R Study. Based upon such assumptions, the Traffic Consultant has expressed its opinion that such forecasts are reasonable as of the date of the 2020 Update Letter, and have been prepared in accordance with accepted practices for such studies. Among the various assumptions in the 2018 T&R Study are (i) the construction and continued operation of certain complementary and competing roadway projects, (ii) a managed lane project on IH 35 will not be constructed, (iii) the socioeconomic growth described in Chapter 6 of the 2018 T&R Study will occur as forecasted, (iv) motor fuel will remain in adequate supply and motor fuel prices (regular gasoline), including federal and State motor fuel taxes, (in current dollars) will not exceed an average of $4.50 per gallon during the forecast period and (v) Toll rates will escalate at the assumed rate of inflation. The 2020 Update Letter examined the impacts of changes to several key forecast assumptions, including the more recent socioeconomic growth trends and an assumed implementation of the Capital Express project as a non-tolled managed lane facility, and determined that these changes did not materially impact the forecasts of the 2018 T&R Study. The Traffic and Revenue Study, however, is not a guarantee of any future events or trends, and the realization of the forecasted traffic and revenues described therein may be affected by future economic and social conditions, demographic developments and competition that cannot be predicted with any assurance, many of which are beyond the control of the Commission or TxDOT. If growth of the System area is slower than projected, or if motor vehicle fuel prices are higher than assumed or if the rate of inflation is inconsistent with the assumed rate, actual results could be less than forecasted. Failure to achieve or realize any of the other assumptions listed in Traffic and Revenue Study may also have an adverse effect upon the traffic and Toll revenues actually realized. See "APPENDIX E – TRAFFIC AND REVENUE STUDY." For these and other reasons, actual results may differ from those forecasted in the Traffic and Revenue Study, and the difference could be significant.

Ability of the Commission to Meet Funding Obligations

The Commission has pledged to use its available funds, to the extent appropriated, to operate and maintain the System. Any Commission payments of System operating and maintenance costs are expected to be paid from the State Highway Fund, the Commission's primary source of funding. The State Highway Fund receives constitutionally dedicated funds from a variety of sources including, without limitation, federal transportation funds from the Federal Highway Trust Fund (*"HTF"*) (funded through federal excise taxes on motor fuels and transfers from the U.S. Treasury). Deposits of such taxes into the HTF must periodically be reauthorized by Congress, and failure to replenish the HTF expeditiously may have an adverse impact on TxDOT and the Commission. Even when federal highway authorization legislation is enacted to provide for federal funding, such funding legislation is subject to possible federal rescission of funds. Any rescission of any future federal highway authorization legislation could reduce federal funds ultimately deposited into the State Highway Fund and have an adverse impact on TxDOT and Commission. See "FUNDING OF COMMISSION OBLIGATIONS."

Although the funds described above are constitutionally dedicated to the construction, maintenance, and operation of the State Highway System, all funds available to the Commission to satisfy the covenants described under "SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION" are subject to appropriation and could be appropriated by the Legislature in a manner that would make such funds unavailable for support of the System. While the appropriation of amounts in the State Highway Fund are not included in appropriations of general revenue of the State and, therefore, are not subject to reductions that could result from the legislative budget process, the appropriation of other funds for the Commission and TxDOT could be adversely affected. Any failure of the Legislature to timely appropriate sufficient funds for such purposes, the imposition by the Legislature of any significant restrictions on TxDOT's ability to transfer other TxDOT appropriations to such purposes or restrictions on such appropriation preventing support of the System, could result in insufficient funds being available to the Commission for it to satisfy such covenants in support of the System.

Cyber-Attack Risks

Computer hacking, cyber-attacks or other malicious activities could disrupt the operation of the System. Further, security breaches such as leakage and compromised personal and credit information of pre-paid ETC customers, loss of confidential or proprietary data and failure or disruption of information technology systems could materially and adversely affect the reputation and Revenues of the System, the Commission and TxDOT, which could lead to significant capital outlays and decreased performance of the System, or interruption or reduction in the receipt of Revenues that could exceed the self-insurance resources of the System.

Limited Available Remedies

Limits on Remedies. The remedies available to Owners of the Bonds upon an Event of Default under the Indenture are limited to the seeking of specific performance or a writ of mandamus or other suit, action or proceeding compelling and requiring the Commission and its officers to observe and perform any covenant, condition or obligation prescribed in the Indenture. **NO ACCELERATION REMEDY IS AVAILABLE TO THE TRUSTEE OR THE OWNERS OF THE BONDS UPON AN EVENT OF DEFAULT UNDER THE INDENTURE**. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Default and Remedies."

Enforceability of Remedies. The remedies available under the Indenture are in many respects dependent upon regulatory and judicial actions that are often subject to discretion and delay. Under existing law, such remedies may not be readily available. In addition, enforcement of such remedies (i) may be subject to general principles of equity which may permit the exercise of judicial discretion, (ii) are subject to the exercise in the future by the State and its agencies and political subdivisions of the police power inherent in the sovereignty of the State and (iii) are subject to the exercise by the United States of the powers delegated to it by the United States Constitution. The various legal opinions to be delivered concurrently with the delivery of the Bonds will be qualified to the extent that the enforceability of certain legal rights related to the Bonds is subject to limitations imposed by bankruptcy, reorganization, insolvency or other similar laws affecting the rights of creditors generally, by equitable remedies and proceedings generally and the exercise of judicial discretion.

Sovereign Immunity. Under current State law, the Commission and TxDOT are immune from suits for money damages and are prohibited from waiving their sovereign immunity from suit, including with respect to the Bonds. Consequently the Trustee and Owners are prevented from bringing such a suit against the Commission or TxDOT for damages for breach of the Commission's obligations under the Indenture. While the Trustee is directed to and may bring a mandamus action against the Commission and other TxDOT officials to compel them to perform their official duties, such an action may be barred if there is a legitimate dispute regarding Commission obligations, and courts have equitable discretion issuing mandamus orders. The remedy of mandamus is controlled by equitable principles and so rests with the discretion of the court, but may not be arbitrarily refused; provided, however, Texas case law suggests that a mandamus action to enforce a non-legislatively mandated contract may be unavailable. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Default and Remedies."

Risks of Competition

In the Master Indenture, the Commission agrees not to construct, operate, assist, provide funding for or support, and to use all its discretionary authority available to it under applicable law to dissuade other public and private entities from constructing, permitting, assisting or supporting, certain highway projects that would have the purpose or reasonably foreseeable effect of materially adversely affecting the ability of the Commission to comply with its covenants in the Master Indenture, subject to certain excepted projects and improvements. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Covenant Not to Build Competing System." The excepted projects and improvements, if constructed, could compete, either directly or indirectly, with the System. No assurances can be given that competing projects will not be constructed or that such competing projects, if constructed, will not adversely affect traffic volumes and Revenues generated by the System in a manner not contemplated by the Traffic and Revenue Study. See "CONSIDERATIONS REGARDING SYSTEM ELEMENTS – Future Development of IH 35 Corridor."

Forward-Looking Statements

The statements contained in this Official Statement, and in other information provided by the Commission and TxDOT, that are not purely historical (or descriptive of current conditions or facts), are forward-looking statements, including statements regarding the Commission and TxDOT's expectations, hopes, intentions or strategies regarding the future and the projections and forecasts in the Traffic and Revenue Study. All forward-looking statements included in this Official Statement are based on information available to the Commission and TxDOT on the date hereof, and the Commission and TxDOT assume no obligation to update any such forward-looking statements.

The forward-looking statements herein are necessarily based on various assumptions and estimates that are inherently subject to numerous risks and uncertainties, including risks and uncertainties relating to the possible invalidity of the underlying assumptions and estimates and possible changes or developments in social, economic, business, industry, market, legal and regulatory circumstances and conditions and actions taken or omitted to be taken by third parties, including customers, suppliers, business partners and competitors, and legislative, judicial and other governmental authorities and officials. Assumptions related to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions and future business decisions, all of which are difficult or impossible to predict accurately and, therefore, there can be no assurance that the forward-looking statements included in this Official Statement will prove to be descriptive of actual future events and results.

Operating Risks

The ability of the System to generate revenues in amounts sufficient to pay debt service on the Obligations issued under the Master Indenture, including the Bonds, when due will be subject to and could be materially adversely affected by the risks inherent in the operation of any toll facility. The ability to repay such Obligations will be dependent on the volume of traffic that utilizes the System and the ability of the System's toll facilities (including the computer systems of TxDOT, its vendors and the partnering agencies under interoperability agreements) to accurately process data. Revenues to be generated and collected through the use of the System will be influenced by numerous factors, including, among other things, the ability to manage toll evasion, toll leakage, and toll collection and enforcement practices; the ability to accurately record and process toll transactions and to collect toll revenues on a timely basis; population, employment and income trends within the region; the congestion on alternative freeways, highways, and streets; time savings experienced by motorists utilizing the toll facilities; toll rates; the availability and price of fuel; the construction of new or improved competitive roadways or transit facilities; improvements to transportation technology; and the ability to control operating expenses.

Maintenance Costs

Successful operation of the System will require timely and complete maintenance and replacement of components of such facilities. No assurance can be given that sufficient funds will be available to maintain the toll facilities adequately over the long term. Any significant deterioration in the toll facilities may result in increased operating costs and in reduced usage, as well as temporary lane closures, and may adversely affect the amount of funds available to pay debt service on the Obligations issued under the Indenture. Although the Indenture requires, subject to funds being appropriated by the Legislature in a manner that would allow their use for such purpose, the deposit of budgeted amounts to the Maintenance Account and the Reserve Maintenance Account, no assurance can be given that sufficient funds will be available to maintain the System adequately over the long term.

Rising Interest Rate Risk and Effects of a Failed Remarketing on Mandatory Tender Date for Taxable Series 2020-B Bonds

Substantially increased interest rates could adversely impact the ability of the Commission to remarket or refund the Taxable Series 2020-B Bonds on the Mandatory Tender Date (as identified on page (iv) hereof). If the Commission is unable to remarket or refund the Taxable Series 2020-B Bonds on such date, the interest rate on the Taxable Series 2020-B Bonds will increase to the Stepped Coupon Rate.

In the event that any Taxable Series 2020-B Bonds cannot be remarketed to new purchasers on the Mandatory Tender Date, the Commission has no obligation to purchase the Taxable Series 2020-B Bonds tendered on such date, the failed conversion and remarketing will not constitute an Event of Default under the Indenture, the mandatory tender will be deemed to have been rescinded for that date, and owners of the Taxable Series 2020-B Bonds will continue holding the Taxable Series 2020-B Bonds at the Stepped Coupon Rate and, in such case, no assurance can be given when or if the Taxable Series 2020-B Bonds may be remarketed or refunded. See "THE TAXABLE SERIES 2020-B BONDS – Mandatory Tender and Purchase of Taxable Series 2020-B Bonds – *Effects of a Failed Remarketing*."

THE SERIES 2020-A BONDS

General

The Series 2020-A Bonds are being issued as current interest bonds. The Series 2020-A Bonds mature on the dates and in the principal amounts shown on page iii hereof. Interest on the Series 2020-A Bonds will accrue from their Date of Delivery, calculated on the basis of a 360-day year comprised of twelve 30-day months, and will be payable on each February 15 and August 15, commencing August 15, 2020, until maturity or prior redemption and such interest will be calculated on the basis of a 360-day year consisting of twelve 30-day months.

Redemption

Optional Redemption of Series 2020-A Bonds. The Series 2020-A Bonds may be redeemed at the option of the Commission, with funds derived from any available source, in whole or in part, on August 15, 2030 or on any date thereafter, at a redemption price equal to 100% of the principal amount plus accrued interest of the Series 2020-A

Bonds to be redeemed plus accrued interest thereon to the date of redemption. If less than all of the Series 2020-A Bonds of the same maturity are to be optionally redeemed, the particular Series 2020-A Bonds of such maturity to be redeemed will be determined as set forth below under "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures – *Selection of Bonds to be Redeemed*."

Special Redemption of Series 2020-A Bonds. The Series 2020-A Bonds are subject to Special Redemption (as defined herein) at the option of the Commission at the Unamortized Premium Special Redemption Price (as defined below) on any date prior to maturity as more fully described below under "GENERAL INFORMATION REGARDING THE BONDS – Special Redemption." Such Special Redemption may occur before the first date on which the Series 2020-A Bonds may be redeemed as described under "*– Optional Redemption of Series 2020-A Bonds*" above.

Redemption Procedures. For a description of required notices of redemption, the selection of Series 2020-A Bonds to be redeemed if less than all, and the effect of a call for redemption, see "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures."

THE TAXABLE SERIES 2020-B BONDS

General

The Taxable Series 2020-B Bonds are being initially issued as a fully registered current interest bond. During the period which commences on their Date of Delivery and ends on the date immediately prior to the Mandatory Tender Date defined below (the "*Initial Multiannual Period*"), interest on the Taxable Series 2020-B Bonds will accrue from the Date of Delivery, calculated on the basis of a 360-day year composed of twelve 30-day months, and will be payable on February 15 and August 15 of each year, commencing August 15, 2020, at a rate of interest equal to the per annum Initial Interest Rate specified on page iv hereof. The "*Mandatory Tender Date*" is August 15, 2022.

The Taxable Series 2020-B Bonds will be subject to mandatory tender for purchase by the Commission at a price equal to 100% of the principal amount plus accrued interest, if any, on the Mandatory Tender Date subject to the successful remarketing of such Taxable Series 2020-B Bonds as described below under "– Mandatory Tender and Purchase of Taxable Series 2020-B Bonds." The purchase price of such Taxable Series 2020-B Bonds (the "*Purchase Price*") on the Mandatory Tender Date is equal to 100% of the principal amount of the Taxable Series 2020-B Bonds, plus accrued interest, if any, to the Purchase Date (defined herein). At that time, the Commission currently intends to either refund or remarket the Taxable Series 2020-B Bonds in one of the several interest rate modes authorized by the Eighth Supplemental Indenture, which include a Daily, Weekly, Monthly, Flexible, Quarterly, Semiannual, Multiannual, Index Floating Rate or Fixed Rate Mode (as such terms are defined in the Eighth Supplemental Indenture).

This Official Statement does not describe the terms and provisions of the Eighth Supplemental Indenture as they relate to the Taxable Series 2020-B Bonds following the Initial Multiannual Period except as described below in connection with the mandatory tender for purchase occurring at the end of the Initial Multiannual Period. The Taxable Series 2020-B Bonds may be remarketed or refunded following the Initial Multiannual Period with different terms, which may include a different interest rate or amortization. See "– Future Terms of Taxable Series 2020-B Bonds" below.

As of the date of this Official Statement, the Commission has not provided any credit or liquidity facility for the payment of the Purchase Price payable upon the mandatory tender of the Taxable Series 2020-B Bonds on the Mandatory Tender Date, nor is there any requirement or expectation that such credit or liquidity facility will be obtained. The obligation of the Commission to purchase Taxable Series 2020-B Bonds on the Mandatory Tender Date is subject to the successful remarketing of such Taxable Series 2020-B Bonds, and a failed remarketing will not constitute an Event of Default under the Indenture. The Commission has no obligation to purchase Taxable Series 2020-B Bonds except from remarketing proceeds. If the Taxable Series 2020-B Bonds are not remarketed or refunded on the Mandatory Tender Date, the interest rate on the Taxable Series 2020-B Bonds will be increased to the Stepped Coupon Rate (defined below under "– Mandatory Tender and Purchase of Taxable Series 2020-B Bonds – *Effects of a Failed Remarketing*") of 9.00% per annum until purchased by the Commission through a remarketing, or retired or redeemed.

Mandatory Tender and Purchase of Taxable Series 2020-B Bonds

Mandatory Tender and Purchase. The Taxable Series 2020-B Bonds are subject to mandatory tender for purchase, without notice, on the Mandatory Tender Date at the Purchase Price and must be tendered for purchase to the Trustee by the owners thereof, with no right of retention by such owners. The Commission is obligated to purchase the Taxable Series 2020-B Bonds on the Mandatory Tender Date at the Purchase Price from and to the extent of remarketing proceeds. **The obligation of the Commission to purchase Taxable Series 2020-B Bonds on the Mandatory Tender Date is subject to the successful remarketing of Taxable Series 2020-B Bonds at a price equal to the Purchase Price. The Commission has no obligation to effect the purchase of Taxable Series 2020-B Bonds except from remarketing proceeds. As of the date of this Official Statement, the Commission has not obtained any credit or liquidity facility to provide for the payment of the Purchase Price payable upon the mandatory tender of the Taxable Series 2020-B Bonds on the Mandatory Tender Date, nor is there any requirement or expectation that such credit or liquidity facility will be obtained. The principal portion of the Purchase Price for the Taxable Series 2020-B Bonds is expected to be obtained from the remarketing thereof or from the issuance of refunding bonds**.

The Commission has agreed to appoint one or more remarketing agents (each a "*Remarketing Agent*"), prior to the Mandatory Tender Date, to use its best efforts to have the Taxable Series 2020-B Bonds remarketed on the Mandatory Tender Date for a price sufficient to pay the Purchase Price, if the Taxable Series 2020-B Bonds are not redeemed on such date. Each Remarketing Agent must have a capitalization of at least $100,000,000 and be authorized by law to perform all the duties imposed upon it by the Eighth Supplemental Indenture. Such future Remarketing Agents may not remarket any Taxable Series 2020-B Bonds if a default in the payment of principal of or interest on the Taxable Series 2020-B Bonds has occurred and is continuing. The Remarketing Agent to be appointed by a Chief Financial Officer on behalf of the Commission will be required to use their best efforts to remarket the Taxable Series 2020-B Bonds on the Mandatory Tender Date at a rate not to exceed 9.00% per annum (the "*Taxable Series 2020-B Maximum Rate*") (and thereafter until the Taxable Series 2020-B Bonds have been remarketed for a price sufficient to pay the Purchase Price). If on the Mandatory Tender Date money sufficient to pay the Purchase Price is on deposit with the Trustee, acting as tender agent, the Taxable Series 2020-B Bonds will be deemed to have been tendered on such date for purchase and interest on such tendered Taxable Series 2020-B Bonds will cease to accrue. Taxable Series 2020-B Bonds that have been deemed tendered, but have not been delivered to the Trustee, will not be considered outstanding under the Indenture on the Purchase Date. See "– *Undelivered Taxable Series 2020-B Bonds*" below.

Payment of the Purchase Price of the Taxable Series 2020-B Bonds will be made by the Trustee on the Purchase Date provided that the Taxable Series 2020-B Bonds subject to purchase are delivered to the Trustee prior to 11:00 a.m., New York City time, on the Purchase Date. Payment will be made in immediately available funds (or by wire transfer). The principal portion of the Purchase Price of Taxable Series 2020-B Bonds tendered for purchase will be paid by the Trustee to the owners solely from the proceeds of the remarketing of the Taxable Series 2020-B Bonds.

Effects of a Failed Remarketing. In the event that all Taxable Series 2020-B Bonds cannot be remarketed on the Mandatory Tender Date, the Commission has no obligation to effect the purchase of the Taxable Series 2020-B Bonds subject to mandatory tender on the Mandatory Tender Date, the failed remarketing will not constitute an Event of Default under the Indenture, the mandatory tender will be deemed to have been rescinded for that date and such Taxable Series 2020-B Bonds (i) will continue to be outstanding, (ii) will be required to be tendered and purchased upon the availability of funds to be received from any subsequent remarketing of such Taxable Series 2020-B Bonds, (iii) will bear interest at the rate of 9.00% per annum (the "*Stepped Coupon Rate*") from the Mandatory Tender Date until purchased upon a subsequent remarketing (the "*Stepped Rate Period*"), (iv) will be subject to optional redemption and mandatory tender for purchase on any date during the Stepped Rate Period and (v) will be deemed to continue in a Multiannual Mode and in the Initial Multiannual Period, though bearing interest at the Stepped Coupon Rate through the day prior to the day they are purchased. In the event of a failed remarketing on the Mandatory Tender Date, the Commission has agreed that it will cause the Taxable Series 2020-B Bonds to be remarketed on the earliest possible date on which they can be sold at par, in such rate mode or modes as the Commission directs, at a rate not exceeding 9.00% per annum.

Undelivered Taxable Series 2020-B Bonds. If a Book-Entry-Only System is not in effect at the time any Taxable Series 2020-B Bond is subject to mandatory tender for purchase, and if the Trustee is in receipt of an amount sufficient to pay the Purchase Price, then such Taxable Series 2020-B Bond (or portion) will be deemed purchased on the Purchase Date, and ownership of such Taxable Series 2020-B Bond (or portion) shall be transferred to the purchaser thereof. Any registered owner who fails to deliver such Taxable Series 2020-B Bond for purchase will not be entitled to any payment other than the Purchase Price for such Taxable Series 2020-B Bond upon surrender of such Taxable Series 2020-B Bond to the Trustee, and such Taxable Series 2020-B Bond will no longer be outstanding and entitled to the benefits of the Indenture, except for the payment of the Purchase Price of such Taxable Series 2020-B Bond from money held by the Trustee for such payment upon presentation and surrender of the Taxable Series 2020-B Bond. Money which remains unclaimed three years after the due date will, at the request of the Commission, and if the Commission is not, at the time, to the knowledge of the Trustee, in default with respect to any covenant in the Indenture or the Taxable Series 2020-B Bonds, be paid to the Commission, and the owners of the Taxable Series 2020-B Bonds for which the deposit was made will thereafter be limited to a claim against the Commission.

Redemption

Optional Redemption of Taxable Series 2020-B Bonds. The Taxable Series 2020-B Bonds are not subject to redemption at the option of the Commission prior to the end of the Initial Multiannual Period, however the Taxable Series 2020-B Bonds are subject to redemption at the option of the Commission on the Mandatory Tender Date set forth above and on any date during the Stepped Rate Period (as defined herein) at the redemption price equal to 100% of principal amount plus accrued interest to, but not including, the date of redemption. If less than all of the Taxable Series 2020-B Bonds of the same maturity or sinking fund installment are to be optionally redeemed on or after the Mandatory Tender Date, the particular Taxable Series 2020-B Bonds of such maturity or sinking fund installment to be redeemed will be determined as set forth below under "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures – *Selection of Bonds to be Redeemed.*"

Mandatory Redemption of Taxable Series 2020-B Bonds. The Taxable Series 2020-B Bonds are subject to mandatory sinking fund redemption prior to maturity in the aggregate principal amounts and on the dates set forth in the following table, at a redemption price equal to 100% of the principal amount thereof plus accrued interest to, but not including, the redemption date, as follows:

Redemption Date (August 15)	Principal Amount
2041	$ 40,460,000
2042	184,540,000[1]

[1]Final Maturity

If less than all of the Taxable Series 2020-B Bonds of the same maturity or sinking fund installment are to be redeemed, the particular Taxable Series 2020-B Bonds of such maturity or sinking fund installment to be redeemed will be determined as set forth below under "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures – *Selection of Bonds to be Redeemed.*"

The principal amount of the Taxable Series 2020-B Bonds required to be redeemed on any redemption date pursuant to the operation of mandatory sinking fund redemption provisions will be reduced at the option of the Commission by the principal amount of any Taxable Series 2020-B Bond of the same maturity which, at least 45 days prior to the mandatory sinking fund redemption date, (1) has been acquired by the Commission and delivered to the Trustee for cancellation, (2) has been acquired and canceled by the Trustee, at the direction of the Commission, at a price not exceeding the principal amount of such Taxable Series 2020-B Bond plus accrued interest to the date of acquisition thereof, or (3) has been redeemed pursuant to the optional redemption provisions and not previously credited to a scheduled mandatory redemption.

Redemption Procedures. For a description of required notices of redemption, the selection of Taxable Series 2020-B Bonds to be redeemed if less than all and the effect of a call for redemption, see "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures."

Future Terms of Taxable Series 2020-B Bonds

The Taxable Series 2020-B Bonds are not convertible into any other interest rate mode during the Initial Multiannual Period. As described above under "– General," after the Initial Multiannual Period the Commission currently intends to remarket the Taxable Series 2020-B Bonds in one of the several interest rate modes authorized by the Eighth Supplemental Indenture including an additional multiannual period or refund the Taxable Series 2020-B Bonds. Pursuant to the Eighth Supplemental Indenture, no remarketing of the Taxable Series 2020-B Bonds after the Initial Multiannual Period may change the maturity of or mandatory redemption requirements for the Taxable Series 2020-B Bonds, or require that they be purchased prior to maturity except from and to the extent of proceeds of remarketing the Taxable Series 2020-B Bonds or result in the Taxable Series 2020-B Bonds bearing interest at a rate greater than 9.00% per annum. In addition, no Taxable Series 2020-B Bonds may be converted unless they are first purchased by the Commission at the Purchase Price. See "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Limitations on Other Indebtedness – *Conversions of Variable Rate Indebtedness to a Fixed Interest Rate*."

THE TAXABLE SERIES 2020-C BONDS

General

The Taxable Series 2020-C Bonds are being issued as current interest bonds. The Taxable Series 2020-C Bonds mature on the dates and in the principal amounts shown on page v hereof. Interest on the Taxable Series 2020-C Bonds will accrue from their Date of Delivery, calculated on the basis of a 360-day year comprised of twelve 30-day months, and will be payable on each February 15 and August 15, commencing August 15, 2020, until maturity or prior redemption.

Redemption

Optional Redemption of Taxable Series 2020-C Bonds. The Taxable Series 2020-C Bonds may be redeemed at the option of the Commission, with the funds derived from any available source, in whole or in part, on August 15, 2030 (the "*Taxable Series 2020-C Bonds Optional Redemption Date*") or on any date thereafter, at a redemption price equal to 100% of the principal amount of the Taxable Series 2020-C Bonds to be redeemed plus accrued interest thereon to the date of redemption. If less than all of the Taxable Series 2020-C Bonds of the same maturity are to be optionally redeemed, the particular Taxable Series 2020-C Bonds of such maturity or sinking fund installment to be redeemed will be determined as set forth below under "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures – *Selection of Bonds to be Redeemed*."

Mandatory Redemption of Taxable Series 2020-C Bonds. The Taxable Series 2020-C Bonds are subject to mandatory sinking fund redemption prior to maturity in the aggregate principal amounts and on the dates set forth in the following table, at a redemption price equal to 100% of the principal amount thereof plus accrued interest to, but not including, the redemption date, as follows:

Redemption Date (August 15)	Principal Amount
2031	$ 95,000
2032	95,000
2033	100,000
2034	100,000
2035	105,000
2036	110,000
2037	110,000
2038	115,000
2039	30,060,000
2040	116,915,000
2041	131,500,000[(1)]

[(1)]Final Maturity

If less than all of the Taxable Series 2020-C Bonds of the same maturity or sinking fund installment are to be redeemed, the particular Taxable Series 2020-C Bonds of such maturity or sinking fund installment to be redeemed will be determined as set forth below under "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures – *Selection of Bonds to be Redeemed.*"

The principal amount of the Taxable Series 2020-C Bonds required to be redeemed on any redemption date pursuant to the operation of mandatory sinking fund redemption provisions will be reduced at the option of the Commission by the principal amount of any Taxable Series 2020-C Bond of the same maturity which, at least 45 days prior to the mandatory sinking fund redemption date, (1) has been acquired by the Commission and delivered to the Trustee for cancellation, (2) has been acquired and canceled by the Trustee, at the direction of the Commission, at a price not exceeding the principal amount of such Taxable Series 2020-C Bond plus accrued interest to the date of acquisition thereof, or (3) has been redeemed pursuant to the optional redemption provisions and not previously credited to a scheduled mandatory redemption.

Special Redemption at Make-Whole Redemption Price. The Taxable Series 2020-C Bonds are subject to Special Redemption (as defined herein), in whole or in part, at the option of the Commission at the "Make-Whole Redemption Price" (as defined below), on any date. See "GENERAL INFORMATION REGARDING THE BONDS – Special Redemption." Such Special Redemption may occur before the first date on which the Series 2020-C Bonds may be redeemed as described under "*– Optional Redemption of Taxable Series 2020-C Bonds*" above.

Redemption Procedures. For a description of required notices of redemption, the selection of Taxable Series 2020-C Bonds to be redeemed if less than all, and the effect of a call for redemption, see "GENERAL INFORMATION REGARDING THE BONDS – Redemption Procedures."

GENERAL INFORMATION REGARDING THE BONDS

General

The Bonds will be issued as fully registered bonds, without coupons, and will be dated March 1, 2020, although interest thereon will accrue from the Date of Delivery. The Bonds will be issued in book-entry form pursuant to the book-entry-only system described in APPENDIX D – BOOK-ENTRY-ONLY SYSTEM. Beneficial owners of the Bonds will not receive physical delivery of the bond certificates. Beneficial ownership of the Bonds may be acquired in principal denominations of integral multiples of $5,000.

Record Date

The Record Date for the payment of interest with respect to the Taxable Series 2020-B Bonds during the Initial Multiannual Period and with respect to the Series 2020-A Bonds and Taxable Series 2020-C Bonds is the close of business on the last business day of the calendar month immediately preceding any Interest Payment Date.

Payments in the Event of Holidays

If the date for payment of the principal of or interest on the Bonds is a Saturday, Sunday, a legal holiday, or a day on which banking institutions in the city where the Trustee is located are authorized by law or executive order to close, then the date for such payment shall be the next succeeding day which is not such a Saturday, Sunday, legal holiday, or day on which banking institutions are authorized to close; and payment on such date shall have the same force and effect as if made on the original date payment was due.

Special Redemption

General. The Series 2020-A Bonds and Taxable Series 2020-C Bonds (collectively, the "*Special Redemption Bonds*") are subject to Special Redemption prior to maturity at the option of the Commission, in whole or in part (and, if in part, at the option of the Commission as to maturity) upon the occurrence of a Transfer Event as certified by a Chief Financial Officer to the Trustee ("*Special Redemption*"). If a Transfer Event occurs with respect to part of the System and less than all of the Special Redemption Bonds are redeemed, the principal amount to be redeemed shall be determined by, and in the sole discretion of, a Chief Financial Officer applying a reasonable allocation method of the Special Redemption Bonds and any other Obligations then outstanding to the portion of the System transferred. Only that portion of the Special Redemption Bonds so allocated to the portion of the System transferred are subject to a partial Special Redemption. If less than all of the Special Redemption Bonds of the same series and maturity are to be redeemed pursuant to such Special Redemption, the particular Special Redemption Bonds of such maturity or sinking fund installment in the case of term bonds, to be redeemed will be determined as set forth below under "– Redemption Procedures – Selection of Bonds to be Redeemed."

"*Transfer Event*" means the occurrence of (i) the sale, conveyance or other disposition of all or a part of the System, (ii) the transfer of the control of all or a part of the System through a concession or other long-term public-private partnership agreement or arrangement or (iii) any combination of (i) and (ii). See "CONSIDERATIONS REGARDING SYSTEM ELEMENTS – System Transfer Conditions" for a description of the conditions to transferring the System, or any portion thereof, including the condition that each rating agency that rates the Special Redemption Bonds must confirm that no such transfer will adversely affect its rating.

If a Transfer Event occurs, the Commission may redeem the Special Redemption Bonds before the first date on which such Special Redemption Bonds may be redeemed by optional redemption as described herein, and at such time investments available for the reinvestment of redemption proceeds may be available only at yields which are lower than the yields at which the Special Redemption Bonds have been purchased.

Series 2020-A Bonds. The Series 2020-A Bonds are subject to Special Redemption prior to maturity at the option of the Commission, in whole or in part (and, if in part, at the option of the Commission as to maturity) upon the occurrence of a Transfer Event at the Unamortized Premium Special Redemption Price (as defined below) plus, accrued interest on any date on or after the occurrence of a Transfer Event as certified by a Chief Financial Officer to the Trustee.

"*Unamortized Premium Special Redemption Price*" means the unamortized original issue price of the Series 2020-A Bonds to be redeemed as shown on Schedule III of this Official Statement. For any day other than a date shown on the applicable schedule, the Unamortized Premium Special Redemption Price shall be determined by a straight-line interpolation between the values for the applicable semiannual dates (based on 30-day months).

Taxable Series 2020-B Bonds. The Taxable Series 2020-B Bonds are *not* subject to Special Redemption prior to maturity.

Taxable Series 2020-C Bonds. The Taxable Series 2020-C Bonds are subject to Special Redemption prior to maturity at the option of the Commission, in whole or in part (and, if in part, at the option of the Commission as to maturity) upon the occurrence of a Transfer Event at the "Make-Whole Redemption Price" (as defined below) on any date on or after the occurrence of a Transfer Event as certified by a Chief Financial Officer to the Trustee.

The Commission will retain an independent certified public accountant or an independent municipal advisor to determine the Make-Whole Redemption Price and perform all actions and make all calculations required to determine the Make-Whole Redemption Price. The Trustee may conclusively rely on such independent certified public accountant's or independent municipal advisor's calculations in connection with, and its determination of, the Make-Whole Redemption Price, and neither the Commission nor the Trustee will have any liability for such reliance. The determination of the Make-Whole Redemption Price by such independent certified public accountant or independent municipal advisor will be conclusive and binding on the Commission, the Trustee and the owners of the Taxable Series 2020-C Bonds absent manifest error.

The "*Make-Whole Redemption Price*" means the greater of (1) 100% of the principal amount of the Taxable Series 2020-C Bonds to be redeemed or (2) the sum of the present value of the remaining scheduled payments of principal of and interest to the Taxable Series 2020-C Bonds Optional Redemption Date of such Taxable Series 2020-C Bonds to be redeemed, not including any portion of those payments of interest thereon accrued and unpaid as of the date on which the Taxable Series 2020-C Bonds are to be redeemed, discounted to the date on which the Taxable Series 2020-C Bonds are to be redeemed on a semiannual basis, assuming a 360-day year consisting of twelve 30-day months, at the "Treasury Rate" (as defined below) plus 37.5 basis points, plus, in each case, accrued and unpaid interest on the Taxable Series 2020-C Bonds to be redeemed on the date of redemption.

"*Treasury Rate*" means, with respect to any redemption date for a particular Taxable Series 2020-C Bond, the yield to maturity as of such redemption date of the United States Treasury securities with a constant maturity (as compiled and published in the Federal Reserve Statistical Release H.15 (519) that has become publicly available at least two Business Days, but not more than 45 calendar days, prior to the redemption date (excluding inflation indexed securities) (or, if such Statistical Release is no longer published, any publicly available source of similar market data as determined by a Chief Financial Officer)) most nearly equal to the period from the redemption date to the earlier of (1) the Maturity Date of the Taxable Series 2020-C Bonds to be redeemed or (2) the Taxable Series 2020-C Bonds Optional Redemption Date of the Taxable Series 2020-C Bonds to be redeemed.

Redemption Procedures

Notice of Redemption. At least 30 days (two days with respect to any Taxable Series 2020-B Bonds during a Stepped Rate Period) prior to the date fixed for optional or Special Redemption of any Bonds, as applicable, a written notice is required to be sent by the Trustee by United States mail, first-class postage prepaid, to the Registered Owner of each Bond to be redeemed at its address as it appeared in the registration books maintained by the Trustee on the 45th day prior to such redemption date; provided, however, that the failure to send, mail, or receive such notice, or any defect therein or in the sending or mailing thereof, will not affect the validity or effectiveness of the proceedings for the optional redemption of any such Bond. The mailing of such notice as required above in connection with the redemption of such Bonds prior to maturity at the option of the Commission will be the only notice actually required in connection with or as a prerequisite to such optional redemption of any Bonds or portions thereof. All redemption notices for the Bonds are required to contain a description of the Bonds to be redeemed including such items specified in the Indenture.

In addition to the foregoing notice, in the event the Bonds to be redeemed are not subject to redemption within the next succeeding 60 days, the Trustee must give further notice to the Registered Owners that the deposit required by the Master Indenture has been made and that such Bonds are deemed to have been paid in accordance with the Master Indenture.

So long as a Book-Entry-Only System is used for the Bonds, the Trustee will send any notices with respect to such Bonds only to DTC. Any failure by DTC to advise any DTC participant, or of any DTC participant or indirect participant to notify the beneficial owner, will not affect the validity of the redemption of such Bonds called for redemption or any other action premised on any such notice.

During any period in which ownership of the Bonds is determined by a book-entry at a securities depository for the Bonds, if fewer than all of the Bonds of the same maturity and bearing the same interest rate are to be redeemed, the particular Bonds of such maturity bearing such interest rate will be selected in accordance with the arrangements between the Commission and DTC.

Conditional Notice of Redemption. In the case of an optional or Special Redemption of the Bonds, as applicable, the notice may state (1) that it is conditioned upon the deposit of money with the Trustee, in an amount equal to the amount necessary to effect the redemption, no later than the redemption date or (2) that the Commission retains the right to rescind such notice at any time prior to the scheduled redemption date if the Commission delivers a certificate of a Chief Financial Officer to the Trustee instructing the Trustee to rescind the redemption notice (in either case, a "*Conditional Redemption*"), and such notice and optional redemption shall be of no effect if such money is not so deposited or if the notice is rescinded as described in the paragraph below.

Any Conditional Redemption may be rescinded in whole or in part at any time prior to the redemption date if the Commission delivers a certificate of a Chief Financial Officer to the Trustee instructing the Trustee to rescind the redemption notice. The Trustee is required to give prompt notice of such rescission or failure to deposit funds to the affected Registered Owners. Any Bonds subject to Conditional Redemption where redemption has been rescinded or funds to effect the redemption have not been deposited will remain outstanding and the rescission or failure to deposit funds will not constitute an event of default.

Selection of Bonds to be Redeemed. If the Bonds are registered in book-entry-only form and so long as DTC or a successor securities depository is the sole registered owner of such Bonds, if less than all of the Bonds of a particular Series, interest rate, sinking fund installment and maturity are called for prior redemption, the particular Bonds or portions thereof to be redeemed shall be allocated on a pro rata pass-through distribution of principal basis in accordance with DTC procedures, provided that, so long as the Bonds are held in book-entry form, the selection for redemption of such Bonds shall be made in accordance with the operational arrangements of DTC then in effect, and, if the DTC operational arrangements do not allow for redemption on a pro rata pass-through distribution of principal basis, the Bonds will be selected for redemption, in accordance with DTC procedures, by lot or such other method then required by DTC; provided that any such redemption must be performed such that all Bonds remaining outstanding will be in Authorized Denominations. For purposes of the calculation of the "pro rata pass-through distribution of principal," "pro rata" means, for any amount of principal to be paid, the application of a fraction to each denomination of the Bond where (a) the numerator of which is equal to the amount due to the respective owner on a payment date, and (b) the denominator of which is equal to the total original par amount of Bonds. The Commission intends that redemption allocations made by DTC with respect to the Bonds be made on a pro rata pass-through distribution of principal basis as described above. However, neither the Commission nor the Underwriters can provide any assurance that DTC, DTC's direct and indirect participants or any other intermediary will allocate the redemption of the Bonds on such basis. If the Bonds are no longer registered in book-entry-only form, each owner will receive an amount of Bonds, as applicable, equal to the original face amount then beneficially held by that owner, registered in such owner's name. Thereafter, in connection with the redemption of less than all of the maturities of any Series or sinking fund installments in the case of any Term Bonds of a Series, the maturities or sinking fund installments to be redeemed will be selected on a pro-rata basis, based on the portion of the original face amount of any such Bonds to be redeemed.

If a Bond is in a principal denomination in excess of $5,000, portions of the principal sum in amounts of $5,000 or any integral multiple thereof may be redeemed, and, if less than all of the principal sum is to be redeemed, there will be issued, without charge to the Registered Owner, upon the surrender of the Bond at the designated office of the Trustee, a new Bond of like maturity, Series, and interest rate in any Authorized Denominations provided by the Indenture for the then unredeemed balance of the principal amount.

If a Bond is selected for redemption, in whole or in part, neither the Commission nor the Trustee will be required to transfer such Bond to an assignee of the Registered Owner within 45 days of the redemption date; provided, however, that such limitation on transferability will not be applicable to any exchange by the Registered Owner of the unredeemed balance in the event of its redemption in part.

Effect of Redemption. If due provision has been made with the Trustee for the payment of the required redemption price for the Bonds or portions thereof which are to be redeemed, plus any accrued interest on the Bonds date fixed for redemption, and notice is duly given as provided above, the Bonds or portions thereof which are to be redeemed will automatically be treated as redeemed prior to their scheduled maturities, and they will not bear interest after the date fixed for redemption, and they will not be regarded as being outstanding except for the right of the

Registered Owners to receive the redemption price plus any accrued interest on the Bonds from the Trustee out of the funds provided for such payment.

Trustee

The Commission has covenanted to maintain and provide a Trustee at all times while Bonds are outstanding, and any successor Trustee must be a corporation or banking association, duly organized and doing business under the laws of the United States or of any state, authorized under such laws to exercise corporate trust powers and subject to supervision or examination by federal or state banking authority, of good standing, and having, at the time of its appointment, a combined capital and surplus aggregating not less than $100,000,000, or is an affiliate of, or has a contractual relationship with, a corporation or banking association meeting such capital and surplus requirement which guarantees the obligations and liabilities of the proposed trustee, and which is subject to supervision or examination by federal or state banking authority. In the event that the entity at any time acting as Trustee should resign or otherwise cease to act as such, the Commission will promptly appoint a successor Trustee by written instrument. If an instrument of acceptance has not been delivered to the resigning Trustee within 30 days after the giving of such notice of resignation, the resigning Trustee or any Secured Owner may petition a court of competent jurisdiction for the appointment of a successor Trustee.

For a description of limitations on the obligation of the Trustee to take action and exculpatory provisions, see "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE – MASTER INDENTURE – Trustee."

Transfer, Exchange and Registration

Beneficial ownership of the Bonds registered in the name of Cede & Co. will initially be transferred as described in "APPENDIX D – BOOK-ENTRY-ONLY SYSTEM."

As Bond Registrar, so long as any Obligations of a series remain outstanding, the Trustee will maintain a Bond Register for the registration and transfer of the Obligations of such series in accordance with the terms of the Indenture.

Upon surrender of any Bond at the designated office of the Trustee, together with an assignment duly executed by the current Registered Owner of such Bond or such Registered Owner's duly authorized representative, such Bond may, at the option of the Registered Owner, be exchanged for an equal aggregate principal amount of Bonds of the same maturity, of Authorized Denominations and bearing interest at the same rate and in the same form as the Bond being surrendered for exchange, registered in the name or names designated on the assignment; provided that the Trustee is not required to exchange or register the transfer of Bonds after the giving of notice calling such Bonds for redemption, in whole or in part.

The Trustee may make a charge to any Registered Owner requesting such exchange or registration in the amount of any tax or other governmental charge required to be paid with respect thereto and the Commission may charge such amount as it deems appropriate for each new Bond delivered upon such exchange or transfer, which charge or charges shall be paid before any new Bond shall be delivered.

The Trustee will not be required to transfer or exchange any Bond after the giving of notice calling such Bonds for redemption, in whole or in part.

Defeasance

Any Obligations and the interest thereon shall be deemed to be paid, retired and no longer outstanding (each a "*Defeased Obligation*") within the meaning of the Master Indenture, except to the extent provided in the third paragraph below under this section entitled "*Defeasance,*" when payment of the principal of such Defeased Obligation, plus interest thereon to the due date (whether such due date be by reason of Maturity or otherwise) either (i) shall have been made or caused to be made in accordance with the terms thereof, or (ii) shall have been provided for on or before such due date by irrevocably depositing with or making available to the Trustee (or other bank or similar institution with trust powers meeting the qualifications of a trustee under the Master Indenture) as escrow agent (the "*Escrow Agent*") in accordance with an escrow agreement or other instrument (the "*Future Escrow Agreement*") for such payment (1) lawful money of the United States sufficient to make such payment or (2) Defeasance Securities that mature as to principal and interest in such amounts and at such times as will insure the availability, without reinvestment, of sufficient money to provide for such payment, and when proper arrangements have been made by the Commission with the Escrow Agent for the payment of its services and those of the Trustee relating to such Defeased Obligations until such Defeased Obligations shall have become due and payable; provided, however, a Credit Facility shall not be deemed to have been paid and no longer Outstanding until all amounts due thereunder have been paid and the Credit Facility has been terminated in accordance with its terms. At such time as an Obligation shall be deemed to be a Defeased Obligation under the Master Indenture, as aforesaid, such Defeased Obligation and the interest thereon shall no longer be secured by, payable from, or entitled to the benefits of, the Trust Estate pledged as provided in the Master Indenture, and such principal and interest shall be payable solely from such money or Defeasance Securities. Notwithstanding any other provision of the Master Indenture to the contrary, it is provided that any determination not to redeem Defeased Obligations that is made in conjunction with the payment arrangements specified in clauses (i) or (ii) immediately above shall not be irrevocable, provided that, in the proceedings providing for such payment arrangements, the Commission (A) expressly reserves the right to call the Defeased Obligations for redemption; (B) gives notice of the reservation of that right to the owners of the Defeased Obligations immediately following the making of the payment arrangements; and (C) directs that notice of the reservation be included in any redemption notices that it authorizes.

Any money so deposited with the Escrow Agent may at the written direction of the Commission be invested in Defeasance Securities, maturing in the amounts and times as set forth above, and all income from such Defeasance Securities received by the Escrow Agent that is not required for the payment of the Defeased Obligations and interest thereon, with respect to which such money has been so deposited, shall be turned over to the Commission, or deposited as directed in writing by the Commission. Any Future Escrow Agreement pursuant to which the money, Defeasance Securities or a combination of the foregoing are held for the payment of Defeased Obligations may contain provisions permitting the investment or reinvestment of such money in Defeasance Securities or the substitution of other Defeasance Securities upon the satisfaction of the requirements specified in clauses (i) or (ii) in the preceding paragraph. All income from such Defeasance Securities received that is not required for the payment of the Defeased Obligations, with respect to which such money has been so deposited, shall be remitted to the Commission or deposited as directed in writing by the Commission.

Until all Defeased Obligations shall have become due and payable, the Trustee shall perform the services of Paying Agent for such Defeased Obligations the same as if they had not been defeased, and the Commission shall make proper arrangements to provide and pay for such services as required by the Master Indenture.

In the event that the Commission elects to defease less than all of the principal amount of a Series of Obligations of a Maturity with the same interest rate, the Trustee, or the Securities Depository if such Obligations are in book-entry-only form, shall select, or cause to be selected, such amount of such obligations by such random method as it deems fair and appropriate.

Book-Entry-Only

The information in this section concerning The Depository Trust Company, New York, New York ("DTC"), and DTC's book-entry-only system has been provided by DTC for use in disclosure documents such as this Official Statement. None of the Commission, the Financial Advisor, or the Underwriters make any representation as to its accuracy or completeness.

DTC will act as the initial securities depository for the Bonds.

The information set forth below is subject to any change in or reinterpretation of the rules, regulations and procedures of the DTC currently in effect and the Commission expressly disclaims any responsibility to update this Official Statement to reflect any such changes. The information herein concerning DTC has been obtained from sources that the Commission believes to be reliable, but none of the Commission, the Financial Advisor, or the Underwriters take any responsibility for the accuracy or completeness of the information set forth herein. Investors wishing to use the facilities of DTC are advised to confirm the continued applicability of the rules, regulations and procedures of DTC. The Commission will have no responsibility or liability for any aspect of the records relating to, or payments made on account of, beneficial ownership interests in the Bonds held through the facilities of DTC or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

The Beneficial Owners should confirm the following information with DTC or the DTC Participants.

So long as Cede & Co. is the registered holder of the Bonds, as nominee of DTC, references in this Official Statement, including the Appendices hereto, to the holders of the Bonds shall mean Cede & Co. and shall not mean the Beneficial Owners of the Bonds.

THE COMMISSION SHALL NOT HAVE ANY RESPONSIBILITY OR OBLIGATION TO DTC PARTICIPANTS, TO INDIRECT PARTICIPANTS, OR ANY BENEFICIAL OWNER, WITH RESPECT TO: (I)

THE ACCURACY OF ANY RECORDS MAINTAINED BY DTC, ANY DTC PARTICIPANT OR INDIRECT PARTICIPANT; (II) THE PAYMENT BY DTC OR ANY DTC PARTICIPANT OR INDIRECT PARTICIPANT OF ANY AMOUNT WITH RESPECT TO THE PRINCIPAL AND INTEREST DUE ON THE BONDS; (III) THE DELIVERY OF ANY NOTICE THAT IS PERMITTED OR REQUIRED TO BE GIVEN TO THE HOLDERS OF THE BONDS UNDER THE RESOLUTION; (IV) THE SELECTION BY DTC OR ANY DTC PARTICIPANT OR INDIRECT PARTICIPANT OF ANY PERSON TO RECEIVE PAYMENT IN THE EVENT OF A PARTIAL REDEMPTION OF THE BONDS; (V) ANY CONSENT GIVEN OR OTHER ACTION TAKEN BY DTC AS REGISTERED OWNER OF THE BONDS; OR (VI) ANY OTHER MATTER.

THE PAYING AGENT/REGISTRAR, AS LONG AS THE BOOK-ENTRY ONLY SYSTEM IS USED FOR THE BONDS, WILL SEND ANY NOTICE OF REDEMPTION AND ANY OTHER NOTICES ONLY TO DTC. ANY FAILURE OF DTC TO ADVISE ANY DTC PARTICIPANT, OR OF ANY DTC PARTICIPANT TO NOTIFY ANY BENEFICIAL OWNER, OF ANY NOTICE AND ITS CONTENT OR EFFECT WILL NOT AFFECT THE VALIDITY OR SUFFICIENCY OF THE PROCEEDINGS RELATING TO THE REDEMPTION OF BONDS CALLED FOR REDEMPTION OR OF ANY OTHER ACTION PREMISED ON SUCH NOTICE. See "APPENDIX D – BOOK-ENTRY-ONLY SYSTEM."

LITIGATION

There is no litigation, proceeding, inquiry or investigation pending by or before any court or other governmental authority or entity (or, to the best knowledge of the Commission, threatened) that affects the obligation of the Commission to deliver the Bonds or the validity of the Bonds. There is no litigation, proceeding, inquiry or investigation pending by or before any court or other governmental authority or entity (or, to the best knowledge of TxDOT, threatened) against or affecting the Commission or TxDOT or any of its agencies or instrumentalities that (i) affects the existence of the Commission or TxDOT or the right of the present commissioners and officers of the Commission or TxDOT to hold their offices, (ii) would affect the validity or enforceability of the provisions pursuant to which the Bonds are being issued, (iii) would have a material adverse effect upon the power of the Commission to issue the Bonds or (iv) if decided adversely to the Commission, could have a material adverse effect on the financial condition of the System.

LEGAL MATTERS

Legal matters incident to the authorization, issuance and sale of the Bonds are subject to approval of legality by the Attorney General of the State and of certain legal matters by McCall, Parkhurst & Horton L.L.P., Austin, Texas, Bond Counsel and Disclosure Counsel. Though it represents the Financial Advisor and the Underwriters from time to time in matters unrelated to the issuance of the Bonds, Bond Counsel has been engaged by and represents only the Commission in connection with the issuance of the Bonds. Attached hereto as "APPENDIX G – FORMS OF OPINIONS OF BOND COUNSEL" are the forms of opinions that Bond Counsel will render in connection with the issuance of the Bonds. In its capacity as Bond Counsel, such firm has reviewed the information relating to the Bonds, the Indenture and applicable law under the captions "INTRODUCTION," "PLAN OF FINANCE," (except for information under the subheadings "Table 1 - Outstanding Obligations" and "Estimated Sources and Uses of Funds"), "CONSIDERATIONS REGARDING SYSTEM ELEMENTS – System Transfer Conditions," "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS," "THE SERIES 2020-A BONDS," "THE TAXABLE SERIES 2020-B BONDS," "THE TAXABLE SERIES 2020-C BONDS," "GENERAL INFORMATION REGARDING THE BONDS," "LEGAL MATTERS," "TAX MATTERS," "CONTINUING DISCLOSURE OF INFORMATION" (except for information under the subheading "Compliance with Prior Undertakings of the Commission"), "LEGAL INVESTMENTS IN TEXAS," "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE," and "APPENDIX G – FORMS OF OPINIONS OF BOND COUNSEL" and such firm is of the opinion that the information, other than any financial, forecast, technical, engineering and statistical statements, tables and data contained under such captions as to which no view is expressed, contained under such captions and in such appendices is a fair and accurate summary of the information purported to be shown therein and is correct as to matters of law. The payment of a portion of legal fees to Bond Counsel in connection with the issuance of the Bonds is contingent on the sale and delivery of the Bonds. Certain legal matters will be passed upon for the Underwriters by Norton Rose Fulbright US LLP and Escamilla & Poneck LLP, co-counsel to the Underwriters. The payment of legal fees to Underwriters' Co-Counsel in connection with the issuance of the Bonds is contingent on the sale and delivery of the Bonds.

The various legal opinions to be delivered concurrently with the delivery of the Bonds express the professional judgment of the attorneys rendering the opinions as to the legal issues explicitly addressed therein. In rendering a legal opinion, the attorney does not become an insurer or guarantor of the expression of professional judgment, of the transaction opined upon or of the future performance of the parties to the transaction, nor does the rendering of an opinion guarantee the outcome of any legal dispute that may arise out of the transaction.

TAX MATTERS

General. The following discussion is a summary of certain expected material federal income tax consequences of the purchase, ownership and disposition of the Bonds and is based on the Internal Revenue Code of 1986 (the "*Code*"), the regulations promulgated thereunder, published rulings and pronouncements of the Internal Revenue Service ("*IRS*") and court decisions currently in effect. There can be no assurance that the IRS will not take a contrary view, and no ruling from the IRS, has been, or is expected to be, sought on the issues discussed herein. Any subsequent changes or interpretations may apply retroactively and could affect the opinion and summary of federal income tax consequences discussed herein.

The following discussion is not a complete analysis or description of all potential U.S. federal tax considerations that may be relevant to, or of the actual tax effect that any of the matters described herein will have on, particular holders of the Bonds and does not address U.S. federal gift or estate tax or (as otherwise stated herein) the alternative minimum tax, state, local or other tax consequences. This summary does not address special classes of taxpayers (such as partnerships, or other pass-thru entities treated as a partnerships for U.S. federal income tax purposes, S corporations, mutual funds, insurance companies, financial institutions, small business investment companies, regulated investment companies, real estate investment trusts, grantor trusts, former citizens of the U.S., broker-dealers, traders in securities and tax-exempt organizations, individual recipients of Social Security or Railroad Retirement benefits, taxpayers who may be subject to branch profits tax or personal holding company provisions of the Code or taxpayers qualifying for the health insurance premium assistance credit) that are subject to special treatment under U.S. federal income tax laws, or persons that hold Bonds as a hedge against, or that are hedged against, currency risk or that are part of hedge, straddle, conversion or other integrated transaction, or persons whose functional currency is not the "U.S. dollar." This summary is further limited to investors who will hold the Bonds as "capital assets" (generally, property held for investment) within the meaning of Section 1221 of the Code. This discussion is based on existing statutes, regulations, published rulings and court decisions, all of which are subject to change or modification, retroactively.

As used herein, the term "U.S. Holder" means a beneficial owner of a Bond who or which is: (i) an individual citizen or resident of the United States, (ii) a corporation or partnership created or organized under the laws of the United States or any political subdivision thereof or therein, (iii) an estate, the income of which is subject to U.S. federal income tax regardless of the source; or (iv) a trust, if (a) a court within the U.S. is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have the authority to control all substantial decisions of the trust, or (b) the trust validly elects to be treated as a U.S. person for U.S. federal income tax purposes. As used herein, the term "Non-U.S. Holder" means a beneficial owner of a Bond that is not a U.S. Holder.

THIS SUMMARY IS INCLUDED HEREIN FOR GENERAL INFORMATION ONLY AND DOES NOT DISCUSS ALL ASPECTS OF THE U.S. FEDERAL INCOME TAXATION THAT MAY BE RELEVANT TO A PARTICULAR HOLDER OF BONDS IN LIGHT OF THE HOLDER'S PARTICULAR CIRCUMSTANCES AND INCOME TAX SITUATION. PROSPECTIVE HOLDERS OF THE BONDS SHOULD CONSULT THEIR OWN TAX ADVISORS AS TO THE TAX TREATMENT WHICH MAY BE ANTICIPATED TO RESULT FROM THE PURCHASE, OWNERSHIP AND DISPOSITION OF THE BONDS BEFORE DETERMINING WHETHER TO PURCHASE BONDS. THE FOLLOWING DISCUSSION IS NOT INTENDED OR WRITTEN TO BE USED TO AVOID PENALTIES THAT MIGHT BE IMPOSED ON THE TAXPAYER IN CONNECTION WITH THE MATTERS DISCUSSED THEREIN. INVESTORS SHOULD CONSULT THEIR OWN TAX ADVISORS CONCERNING THE TAX IMPLICATIONS OF THE PURCHASE, OWNERSHIP OR DISPOSITION OF THE BONDS UNDER APPLICABLE STATE OR LOCAL LAWS, OR ANY OTHER TAX CONSEQUENCE.

FOREIGN INVESTORS SHOULD ALSO CONSULT THEIR OWN TAX ADVISORS REGARDING THE TAX CONSEQUENCES UNIQUE TO NON-U.S. HOLDERS.

Information Reporting and Backup Withholding

Subject to certain exceptions, information reports describing interest income, including original issue discount, with respect to the Bonds will be sent to each registered holder and to the IRS. Payments of interest and principal may be subject to withholding under sections 1471 through 1474 or backup withholding under Section 3406 of the Code if a recipient of the payments fails to furnish to the payor such owner's social security number or other taxpayer identification number ("*TIN*"), furnishes an incorrect TIN, or otherwise fails to establish an exemption from the backup withholding tax. Any amounts so withheld would be allowed as a credit against the recipient's federal income tax. Special rules apply to partnerships, estates and trusts, and in certain circumstances, and in respect of Non-U.S. Holders, certifications as to foreign status and other matters may be required to be provided by partners and beneficiaries thereof.

Series 2020-A Bonds

Opinion

On the date of initial delivery of the Bonds, McCall, Parkhurst & Horton L.L.P., Bond Counsel to the Commission, will render its opinion that, in accordance with statutes, regulations, published rulings and court decisions existing on the date thereof ("*Existing Law*"), (1) for federal income tax purposes, interest on the Series 2020-A Bonds will be excludable from the "gross income" of the holders thereof and (2) the Series 2020-A Bonds will not be treated as "specified private activity bonds" the interest on which would be included as an alternative minimum tax preference item under section 57(a)(5) of the Code. Except as stated above, Bond Counsel to the Commission will express no opinion as to any other federal, state or local tax consequences of the purchase, ownership or disposition of the Series 2020A Bonds. See "APPENDIX G — FORMS OF OPINIONS OF BOND COUNSEL."

In rendering its opinion, Bond Counsel to the Commission will rely upon (a) certain information and representations of the Commission, including information and representations contained in the Commission's federal tax certificate related to the Series 2020-A Bonds, (b) covenants of the Commission contained in the Series 2020-A Bond documents relating to certain matters, including arbitrage and the use of the proceeds of the Series 2020-A Bonds and the property financed or refinanced therewith, and (c) the verification report prepared by Amtec Corp. Failure by the Commission to observe the aforementioned representations or covenants could cause the interest on the Series 2020-A Bonds to become taxable retroactively to the date of issuance.

The Code and the regulations promulgated thereunder contain a number of requirements that must be satisfied subsequent to the issuance of the Series 2020-A Bonds in order for interest on the Series 2020-A Bonds to be, and to remain, excludable from gross income for federal income tax purposes. Failure to comply with such requirements may cause interest on the Series 2020-A Bonds to be included in gross income retroactively to the date of issuance of the Series 2020-A Bonds. The opinion of Bond Counsel to the Commission is conditioned on compliance by the Commission with such requirements, and Bond Counsel to the Commission has not been retained to monitor compliance with these requirements subsequent to the issuance of the Series 2020-A Bonds.

Bond Counsel's opinion regarding the Series 2020-A Bonds represents its legal judgment based upon its review of Existing Law and the reliance on the aforementioned information, representations and covenants. Bond Counsel's opinion related to the Series 2020-A Bonds is not a guarantee of a result. Existing Law is subject to change by the Congress and to subsequent judicial and administrative interpretation by the courts and TxDOT of the Treasury. There can be no assurance that Existing Law or the interpretation thereof will not be changed in a manner which would adversely affect the tax treatment of the purchase, ownership or disposition of the Series 2020-A Bonds.

A ruling was not sought from the IRS by the Commission with respect to the Series 2020-A Bonds or property financed with the proceeds of the Series 2020-A Bonds. No assurances can be given as to whether or not the IRS will commence an audit of the Series 2020-A Bonds, or as to whether the IRS would agree with the opinion of Bond Counsel. If an audit is commenced, under current procedures the IRS is likely to treat the Commission as the taxpayer and the owners may have no right to participate in such procedure. No additional interest will be paid upon any determination of taxability.

Federal Income Tax Accounting Treatment of Original Issue Discount

The initial public offering price to be paid for one or more maturities of the Series 2020-A Bonds may be less than the principal amount thereof or one or more periods for the payment of interest on the bonds may not be equal to the accrual period or be in excess of one year (the "*Original Issue Discount Bonds*"). In such event, the difference between (i) the "stated redemption price at maturity" of each Original Issue Discount Bond, and (ii) the initial offering price to the public of such Original Issue Discount Bond would constitute original issue discount. The "stated redemption price at maturity" means the sum of all payments to be made on the bonds less the amount of all periodic interest payments. Periodic interest payments are payments which are made during equal accrual periods (or during any unequal period if it is the initial or final period) and which are made during accrual periods which do not exceed one year.

Under existing law, any U.S. Holder who has purchased a Series 2020-A Bond as an Original Issue Discount Bond in the initial public offering is entitled to exclude from gross income (as defined in section 61 of the Code) an amount of income with respect to such Original Issue Discount Bond equal to that portion of the amount of such original issue discount allocable to the accrual period. For a discussion of certain collateral federal tax consequences, see discussion set forth below. In the event of the redemption, sale or other taxable disposition of such Original Issue Discount Bond prior to stated maturity, however, the amount realized by such U.S. Holder in excess of the basis of such Original Issue Discount Bond in the hands of such U.S. Holder (adjusted upward by the portion of the original issue discount allocable to the period for which such Original Issue Discount Bond was held by such initial owner) is includable in gross income.

Under Existing Law, the original issue discount on each Original Issue Discount Bond is accrued daily to the stated maturity thereof (in amounts calculated as described below for each accrual period and ratably within each such accrual period) and the accrued amount is added to an initial owner's basis for such Original Issue Discount Bond for purposes of determining the amount of gain or loss recognized by such owner upon the redemption, sale or other disposition thereof. The amount to be added to basis for each accrual period is equal to (a) the sum of the issue price and the amount of original issue discount accrued in prior periods multiplied by the yield to stated maturity (determined on the basis of compounding at the close of each accrual period and properly adjusted for the length of the accrual period) less (b) the amounts payable as current interest during such accrual period on such Original Issue Discount Bond.

All U.S. Holders of Original Issue Discount Bonds should consult their own tax advisors with respect to the determination for federal, state and local income tax purposes of the treatment of interest accrued upon redemption, sale or other disposition of such Original Issue Discount Bonds and with respect to the federal, state, local and foreign tax consequences of the purchase, ownership, redemption, sale or other disposition of such Original Issue Discount Bonds.

Collateral Federal Income Tax Consequences

Under section 6012 of the Code, U.S. Holders of tax-exempt obligations, such as the Series 2020-A Bonds, may be required to disclose interest received or accrued during each taxable year on their returns of federal income taxation.

Section 1276 of the Code provides for ordinary income tax treatment of gain recognized upon the disposition of a tax-exempt obligation, such as the Series 2020-A Bonds, if such obligation was acquired at a "market discount" and if the fixed maturity of such obligation is equal to, or exceeds, one year from the date of issue. Such treatment applies to "market discount bonds" to the extent such gain does not exceed the accrued market discount of such bonds; although for this purpose, a de minimis amount of market discount is ignored. A "market discount bond" is one which is acquired by the owner at a purchase price which is less than the stated redemption price at maturity or, in the case of a bond issued at an original issue discount, the "revised issue price" (i.e., the issue price plus accrued original issue discount). The "accrued market discount" is the amount which bears the same ratio to the market discount as the number of days during which the holder holds the obligation bears to the number of days between the acquisition date and the final maturity date.

Future and Proposed Legislation

Tax legislation, administrative actions taken by tax authorities, or court decisions, whether at the Federal or state level, may adversely affect the tax-exempt status of interest on the Series 2020-A Bonds under Federal or state law and could affect the market price or marketability of the Series 2020-A Bonds. Any such proposal could limit the value of certain deductions and exclusions, including the exclusion for tax-exempt interest. The likelihood of any such proposal being enacted cannot be predicted. Prospective purchasers of the Bonds should consult their own tax advisors regarding the foregoing matters.

Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds

Certain U.S. Federal Income Tax Consequences to U.S. Holders

Periodic Interest Payments and Original Issue Discount. The Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds are not obligations described in Section 103(a) of the Code. Accordingly, the stated interest paid on the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds or original issue discount, if any, accruing on the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds will be includable in "gross income" within the meaning of Section 61 of the Code of each owner thereof and be subject to federal income taxation when received or accrued, depending upon the tax accounting method applicable to such owner.

Disposition of Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds. An owner will recognize gain or loss on the redemption, sale, exchange or other disposition of a Bond equal to the difference between the redemption or sale price (exclusive of any amount paid for accrued interest) and the owner's tax basis in the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds. Generally, a U.S. Holder's tax basis in the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds will be the owner's initial cost, increased by income reported by such U.S. Holder, including original issue discount and market discount income, and reduced, but not below zero, by any amortized premium. Any gain or loss generally will be a capital gain or loss and either will be long-term or short-term depending on whether the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds has been held for more than one year.

Defeasance of the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds. Defeasance of any Taxable Series 2020-B Bond and Taxable Series 2020-C Bonds may result in a reissuance thereof, for U.S. federal income tax purposes, in which event a U.S. Holder will recognize taxable gain or loss as described above.

State, Local and Other Tax Consequences. Investors should consult their own tax advisors concerning the tax implications of holding and disposing of the Taxable Series 2020-B Bonds and Taxable Series 2020-C Bonds under applicable state or local laws, or any other tax consequence, including the application of gift and estate taxes. Certain individuals, estates or trusts may be subject to a 3.8% surtax on all or a portion of the taxable interest that is paid on the Bonds. PROSPECTIVE PURCHASERS OF THE BONDS SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE FOREGOING MATTERS.

Certain U.S. Federal Income Tax Consequences to Non-U.S. Holders

A Non-U.S. Holder that is not subject to U.S. federal income tax as a result of any direct or indirect connection to the U.S. in addition to its ownership of a Taxable Series 2020-B Bond and Taxable Series 2020-C Bonds, will not be subject to U.S. federal income or withholding tax in respect of such Taxable Series 2020-B Bond and Taxable Series 2020-C Bonds, provided that such Non-U.S. Holder complies, to the extent necessary, with identification requirements including delivery of a signed statement under penalties of perjury, certifying that such Non-U.S. Holder is not a U.S. person and providing the name and address of such Non-U.S. Holder. Absent such exemption, payments of interest, including any amounts paid or accrued in respect of accrued original issue discount, may be subject to withholding taxes, subject to reduction under any applicable tax treaty. Non-U.S. Holders are urged to consult their own tax advisors regarding the ownership, sale or other disposition of a Bond.

The foregoing rules will not apply to exempt a U.S. shareholder of a controlled foreign corporation from taxation on the U.S. shareholder's allocable portion of the interest income received by the controlled foreign corporation.

CONTINUING DISCLOSURE OF INFORMATION

In the Eighth Supplemental Indenture, the Commission has made the following agreements for the benefit of the holders and beneficial owners of the Bonds. The Commission is required to observe the agreements for so long as it remains obligated to advance funds to pay the Bonds. Under such agreements, the Commission will be obligated to provide certain updated financial information and operating data annually and timely notice of specified events to the Municipal Securities Rulemaking Board (the "*MSRB*"). This information will be available from the MSRB's EMMA System, which may be accessed at https://www.emma.msrb.org.

Annual Reports

The Commission will provide certain updated financial information and operating data to the MRSB. The Commission will provide annually to the MSRB, (i) within six months after the end of each Fiscal Year commencing with Fiscal Year ending in 2020, all quantitative financial information and operating data with respect to the Commission and the System of the general type included in this Official Statement, under the headings "THE SYSTEM," "SYSTEM-RELATED FUNDING OBLIGATIONS OF COMMISSION," "SCHEDULE II – DEBT SERVICE REQUIREMENTS," Tables 1 through 8 of "APPENDIX A – THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE STATE HIGHWAY FUND," and "APPENDIX B – AUDITED FINANCIAL STATEMENTS OF THE SYSTEM FOR FISCAL YEAR ENDED AUGUST 31, 2019" if audited financial statements are then available, and (ii) if not provided as part of such financial information and operating data, audited financial statements of the System, when and if available. Any financial statements to be so provided will be (i) prepared in accordance with generally accepted accounting principles or such other accounting principles as the Commission may be required to employ from time to time pursuant to the State law or regulation and (ii) audited, if the Commission commissions an audit of such statements and the audit is completed within the period during which they must be provided. If the audit of such financial statements is not complete within twelve months after the Fiscal Year-end, then the Commission will provide unaudited financial statements within such twelve-month period, and audited financial statements for the applicable Fiscal Year to the MSRB, when and if the audit report on such statements becomes available. In the annual filing the Commission will furnish (i) a table setting forth for such Fiscal Year, but not including any projection for any future period, the information shown in "Table 6 – System Forecasted Cash Flow and Debt Service Coverage", (ii) a copy of the General Engineering Consultant's annual report relating to its inspection of the System and (iii) a copy of the Toll rate schedule then in effect.

The current Fiscal Year-end for the Commission is August 31. Accordingly, the Commission must provide the updated financial information and operating data described above by the last day of February in each year, unless the Commission changes its Fiscal Year. If the Commission changes its Fiscal Year, it will notify the MSRB of the change (and of the date of the new Fiscal Year-end) prior to the next date by which the Commission otherwise would be required to provide such financial information and operating data.

The financial information and operating data to be provided by the Commission as described above may be set forth in full in one or more documents or may be included by specific reference to any document that is available to the public on the MSRB's internet web site or filed with the United States Securities and Exchange Commission ("*SEC*"). All documents provided by the Commission to the MSRB will be in an electronic format and accompanied by identifying information as prescribed by the MSRB.

Event Notices

The Commission will also provide timely notices of certain events to the MSRB. The Commission will file notice of any of the following events with respect to the Bonds in a timely manner (not in excess of ten business days after the occurrence of the event): (1) principal and interest payment delinquencies; (2) non-payment related defaults, if material; (3) unscheduled draws on debt service reserves reflecting financial difficulties; (4) unscheduled draws on credit enhancements reflecting financial difficulties; (5) substitution of credit or liquidity providers, or their failure to perform; (6) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the Bonds, or other events affecting the tax status of the Bonds; (7) modifications to rights of holders of the Bonds, if material; (8) Bond calls, if material, and tender offers; (9) defeasances; (10) release, substitution, or sale of property securing repayment of the Bonds, if material; (11) rating changes; (12) bankruptcy, insolvency, receivership, or similar event of the Commission and TxDOT; (13) the consummation of a merger, consolidation, or acquisition involving the Commission and TxDOT or the sale of all or substantially all of the assets of the Commission and TxDOT, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; (14) appointment of a successor or additional trustee or the change of name of a trustee, if material; (15) the incurrence of a Financial Obligation of the Commission for the System, if material, or an agreement to covenants, events of default, remedies, priority rights, or other similar terms of any such Financial Obligation, any of which affect security holders, if material; and (16) a default, event of acceleration, termination event, modification of terms, or other similar event under the terms of any such Financial Obligation of the Commission for the System, any of which reflect financial difficulties.

For these purposes, any event described in clause (12) of the immediately preceding paragraph is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent, or similar officer for the Commission and TxDOT in a proceeding under the United States Bankruptcy Code or in any other proceeding under state or federal law in which a court of governmental authority has assumed jurisdiction over substantially all of the assets or business of the Commission and TxDOT, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers of the Commission and TxDOT in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization, arrangement, or liquidation by a court or governmental authority having supervision or jurisdiction over substantially all of the asset or business of the Commission and TxDOT.

For the purposes of the events described in clauses (15) and (16) of the immediately preceding paragraph, the term "Financial Obligation" is defined in the Eighth Supplemental Indenture. See "APPENDIX C – DEFINITIONS AND SUMMARY OF CERTAIN PROVISIONS OF THE MASTER TRUST INDENTURE AND THE EIGHTH SUPPLEMENTAL INDENTURE –Definitions." The Eighth Supplemental Indenture further provides that the Commission intends the words used in such clauses (15) and (16) in the immediately preceding paragraph, and in the definition of Financial Obligation, to have the meanings ascribed to them in SEC Release No. 34-83885 dated August 20, 2018.

Neither the Bonds nor the Indenture currently make any provision for credit or liquidity enhancement.

In addition, the Commission will provide timely notice of any failure by the Commission to provide information, data, or financial statements in accordance with its agreement described above under "– Annual Reports." The Commission will provide each notice described in this "– Event Notices" caption to the MSRB in an electronic format and accompanied by identifying information as prescribed by the MSRB.

Availability of Information from the MSRB.

The Commission has agreed to provide the foregoing information only to the MSRB. The information will be available to owners of the Bonds through the MSRB's EMMA system at https://www.emma.msrb.org.

Limitations and Amendments

The Commission has agreed to update information and to provide notices of events only as described above. The Commission has not agreed to provide other information that may be relevant or material to a complete presentation of its financial results of operations, condition or prospects or agreed to update any information that is provided, except as described above. The Commission makes no representation or warranty concerning such information or concerning its usefulness to a decision to invest in or sell the Bonds at any future date. The Commission disclaims any contractual or tort liability for damages resulting in whole or in part from any breach of its continuing disclosure agreement or from any statement made pursuant to its agreement, although holders of Bonds may seek a writ of mandamus to compel the Commission to comply with its agreement.

The Commission may amend, supplement or repeal its continuing disclosure agreement to adapt to changed circumstances that arise from a change in legal requirements, a change in law or a change in the identity, nature, status or type of operations of the Commission, but only if (i) the agreement, as amended, would have permitted an underwriter to purchase or sell Bonds in the primary offering described herein in compliance with the Rule, taking into account any amendments or interpretations of the Rule to the date of such amendment, as well as such changed circumstances and (ii) either (a) the holders of a majority in aggregate principal amount of the outstanding Bonds consent to the agreement or (b) any person unaffiliated with the Commission (such as nationally-recognized bond counsel) determines that the amendment will not materially impair the interest of the holders and beneficial owners of the Bonds. The Commission may also amend or repeal its continuing disclosure agreement if the SEC amends or repeals the application provisions of the Rule or a court of final jurisdiction enters judgment that such provisions of the Rule are invalid, but only if and to the extent that the provisions of this sentence would not prevent an underwriter from lawfully purchasing or selling the Bonds in the primary offering of the Bonds.

Compliance with Prior Undertakings of the Commission

The Commission has previously entered into certain continuing disclosure agreements pursuant to the requirements of the Rule, related to bonds or other obligations issued directly by the Commission that are secured by or payable from various sources of funds. In addition, TxDOT has previously entered into certain continuing disclosure agreements (which are referred to herein collectively as the "*PT/TE Undertakings*") pursuant to the requirements of the Rule, related to bonds or other obligations issued by other entities, the payment of which is supported in whole or in part by payments made by TxDOT to such other entities pursuant to the terms of certain pass-through toll agreements or toll equity loan agreements, as applicable, entered into between such other entities and TxDOT. For additional information regarding these types of agreements, see "APPENDIX A – THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE STATE HIGHWAY FUND – The State Highway Fund." During the previous five years, TxDOT has not fully complied with certain PT/TE Undertakings as described below (which information below is presented irrespective of materiality).

Pursuant to the terms of certain of the PT/TE Undertakings, after the sale by TxDOT of bonds or other obligations that are secured in whole or in part by the State Highway Fund, TxDOT is obligated to notify the MSRB, in a timely manner, of any final official statement in connection with the offering and sale of such bonds or other obligations. Certain of the PT/TE Undertakings obligate TxDOT to file only such final official statements with the MSRB, and certain of the PT/TE Undertakings obligate TxDOT to file both these final official statements and notice of such official statements with the MSRB. In addition, certain of the PT/TE Undertakings obligate TxDOT to provide identifying information as prescribed by the MSRB with respect to these filings, and certain of the PT/TE Undertakings do not obligate TxDOT to provide such identifying information. TxDOT previously interpreted the foregoing filing obligations under the PT/TE Undertakings as appropriately satisfied upon the timely filing of any such final official statements with the MSRB by the underwriters with respect to the bonds or other obligations that were offered and sold pursuant to such official statements. During the previous five years, the Commission has issued multiple series of bonds that are secured by and payable from certain revenues deposited in the State Highway Fund (collectively, the "*SHF Bonds*") and which were offered and sold pursuant to separate, final official statements. TxDOT did not file these final official statements, or separate notices of such official statements, with identifying information as required by certain of the PT/TE Undertakings. The final official statements relating to the SHF Bonds were, however, accessible on the MSRB's EMMA System (through the filing thereof by the underwriters with respect to the SHF Bonds), and information regarding the issuance of the SHF Bonds was provided to investors through TxDOT's subsequent filings of annual financial information and operating data as required by the PT/TE Undertakings, though not made, in some instances, in a timely manner in respect of the date the SHF Bonds were offered and sold. TxDOT subsequently made a filing on EMMA in satisfaction of the foregoing filing obligations under the PT/TE Undertakings and has filed a related failure to file notice on EMMA with respect to the bonds for which TxDOT is obligated to provide such notice pursuant to the terms of the respective PT/TE Undertakings.

TxDOT's annual filings of financial information and operating data for Fiscal Years 2014 and 2015, as required by the PT/TE Undertakings, were accessible to investors through the annual filings made by TxDOT for those years with respect to the SHF Bonds, and to certain investors by accessing the financial disclosures tab under the homepage link for the respective issuers on EMMA. In addition, the final official statements provided to certain investors contained information (such as the six-digit CUSIP prefix) for how investors may access the annual filings made by TxDOT with respect to the SHF Bonds. However, TxDOT's annual filings of financial information and operating data for Fiscal Years 2014 and 2015, as required by the PT/TE Undertakings, did not reference the nine-digit CUSIP number for certain bonds and, accordingly, such filings were not accessible through the continuing disclosure tab for those bonds on EMMA. In addition, TxDOT's annual filing of financial information and operating data for Fiscal Year 2016 was not filed in a timely manner for certain bonds as required by the PT/TE Undertakings. TxDOT subsequently linked such annual filings for Fiscal Years 2014 and 2015 on EMMA to the nine-digit CUSIP numbers of the bonds for which such annual filings were not made and has filed a failure to file notice on EMMA related to the foregoing matters.

The PT/TE Undertakings obligate TxDOT to provide its financial statements on an annual basis. TxDOT filed its audited financial statements for Fiscal Year 2016 on EMMA in a timely manner with respect to the SHF Bonds. TxDOT intended to incorporate by reference the previously filed Fiscal Year 2016 audited financial statements in its annual filing for Fiscal Year 2016 (the "*TxDOT 2016 Annual Filing*"), which contains updated annual financial information and operating data required by the PT/TE Undertakings. TxDOT 2016 Annual Filing stated that TxDOT's audited financial statements for Fiscal Year 2016 were previously filed with the MSRB on December 30, 2016 with respect to the outstanding SHF Bonds, and that such financial statements may be accessed using the MSRB's EMMA system. The TxDOT 2016 Annual Filing also provided the six-digit CUSIP prefix for the SHF Bonds, for which TxDOT's financial statements had been previously filed on EMMA in a timely manner as described above. Further, the final official statements provided to certain investors contained information (such as the six-digit CUSIP prefix) for how investors may access the annual filings made by TxDOT with respect to the SHF Bonds. Although the TxDOT 2016 Annual Filing did not contain a hyperlink or web address specific to the location of TxDOT's audited financial statements for such period on the MSRB's EMMA system, TxDOT does not believe that the failure to provide such hyperlink or web address constitutes a failure to comply with the PT/TE Undertakings, due to the facts and circumstances described above. TxDOT subsequently submitted a filing on EMMA that provides a hyperlink to the specific location of TxDOT's audited financial statements for Fiscal Year 2016 on the MSRB's EMMA system.

LEGAL INVESTMENTS IN TEXAS

Section 1201.041 of the Public Security Procedures Act (Chapter 1201, Texas Government Code) provides that the Bonds are negotiable instruments governed by Chapter 8, Texas Business and Commerce Code, and are legal and authorized investments for insurance companies, fiduciaries and trustees, and for the sinking funds of municipalities or other political subdivisions or public agencies of the State. For political subdivisions in Texas that have adopted investment policies and guidelines in accordance with the Public Funds Investment Act, Chapter 2256, Texas Government Code, the Bonds may have to be assigned a rating of "A" or its equivalent as to investment quality by a national rating agency before such obligations are eligible investments for sinking funds and other public funds. See "RATINGS." In addition, various provisions of the Texas Finance Code provide that, subject to a prudent investor standard, the Bonds are legal investments for state banks, savings banks, trust companies with capital of $1,000,000 or more and savings and loan associations. The Bonds are eligible to secure deposits of any public funds of the State, its agencies and its political subdivisions, and are legal security for those deposits to the extent of their market value. No review by the Commission has been made of the laws in other states to determine whether the Bonds are legal investments for various institutions in those states.

The Commission makes no representation that the Bonds will be acceptable to banks, savings and loan associations or public entities for investment purposes or to secure deposits of public funds. The Commission has made no investigation of other laws, regulations or investment criteria that might apply to or otherwise limit the availability of the Bonds for investment or collateral purposes. Prospective purchasers are urged to carefully evaluate the investment quality of the Bonds and as to the acceptability of the Bonds for investment or collateral purposes.

RATINGS

Each Series of Bonds has received ratings (and outlooks) of "A3 (positive)" from Moody's, "A (stable)" from S&P Global Ratings, and "A (stable)" from Fitch. An explanation of the significance of each such rating may be obtained from the company furnishing the rating. The ratings reflect only the views of such companies at the time such ratings are given, and the Commission makes no representation as to the appropriateness of the ratings. A securities rating is not a recommendation to buy, sell or hold securities and may be subject to revisions or withdrawal at any time. There is no assurance that such ratings will continue for any given period of time or that they will not be revised downward or withdrawn entirely by such companies, if in the judgment of such companies, circumstances so warrant. Any such downward revision or withdrawal of any rating may have an adverse effect on the market price of the Bonds.

FINANCIAL ADVISOR

Estrada Hinojosa & Company, Inc. is serving as the Financial Advisor to the Commission (the "*Financial Advisor*") in connection with the issuance of the Bonds. The Financial Advisor's fee for services rendered with respect to the sale of the Bonds is not contingent upon the issuance and delivery of the Bonds. The Financial Advisor has not verified and does not assume any responsibility for the information, covenants and representations contained in any of the legal documents with respect to the federal income tax status of the Bonds, or the possible impact of any present, pending or future actions taken by any legislative or judicial bodies.

UNDERWRITING

The Underwriters of the Series 2020-A Bonds and the Taxable Series 2020-C Bonds, for which Jefferies LLC is acting as representative, have agreed, subject to certain conditions, to purchase the Series 2020-A Bonds and the Taxable Series 2020-C Bonds from the Commission. The purchase price of the Series 2020-A Bonds is $219,983,950.55 (which represents the par amount of the Series 2020-A Bonds plus a premium of $41,422,757.50 less an underwriting discount of $913,806.95). The purchase price of the Taxable Series 2020-C Bonds is $277,883,121.71 (which represents the par amount of the Taxable Series 2020-C Bonds less an underwriting discount of $1,421,878.29).

The Underwriters of the Taxable Series 2020-B Bonds, for which Jefferies LLC is acting as representative, have agreed, subject to certain conditions, to purchase the Taxable Series 2020-B Bonds from the Commission. The purchase price of the Taxable Series 2020-B Bonds is $224,360,833.75 (which represents the par amount of the Taxable Series 2020-B Bonds less an underwriting discount of $639,166.25).

The obligation of the respective Underwriters to purchase the Bonds is subject to conditions precedent, and the Underwriters will be obligated to purchase all of the Bonds of the respective series if any Bonds of such respective series are purchased. The Bonds to be offered to the public may be offered and sold to certain dealers (including the Underwriters and other dealers depositing Bonds into investment trusts) at prices lower than the public offering prices of the Bonds and such public offering prices may be changed, from time to time, by the Underwriters.

The Underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. Certain of the Underwriters and their respective affiliates have provided, and may in the future provide, a variety of these services to the Commission and to persons and entities with relationships with the Commission and TxDOT, for which they received or will receive customary fees and expenses. Under certain circumstances, the Underwriters and their affiliates may have certain creditor and/or other rights against the Commission in connection with such activities.

In the ordinary course of their various business activities, the Underwriters and their respective affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the Commission (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the Commission. The Underwriters and their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

Jefferies LLC has entered into an agreement (the "*Jefferies Distribution Agreement*") with E*TRADE Securities LLC ("*E*TRADE*") for the retail distribution of municipal securities. Pursuant to the Jefferies Distribution Agreement, Jefferies LLC may sell a portion of the Bonds to E*TRADE and will share a portion of its selling concession compensation with E*TRADE.

Citigroup Global Markets, Inc. has entered into a retail distribution agreement with Fidelity Capital Markets, a division of National Financial Services LLC (together with its affiliates, ("*Fidelity*"). Under this distribution agreement, Citigroup Global Markets Inc. may distribute municipal securities to retail investors at the original issue price through Fidelity. As part of this arrangement, Citigroup Global Markets Inc. will compensate Fidelity for its selling efforts.

Piper Sandler & Co., one of the underwriters of the Series 2020-A Bonds and the Taxable Series 2020-C Bonds, has entered into a distribution agreement (the "*Piper Distribution Agreement*") with Charles Schwab & Co., Inc. ("*CS&Co*") for the retail distribution of certain securities offerings including the Series 2020-A Bonds and the Taxable Series 2020-C Bonds, at the original issue prices. Pursuant to the Piper Distribution Agreement, CS&Co. will purchase Series 2020-A Bonds and the Taxable Series 2020-C Bonds from Piper at the original issue price less a negotiated portion of the selling concession applicable to any Series 2020-A Bonds and the Taxable Series 2020-C Bonds that CS&Co. sells.

VERIFICATION OF MATHEMATICAL ACCURACY

AMTEC Corp. (the "*Verification Agent*") will verify, from the information provided to them by the Financial Advisor, the mathematical accuracy as of the Date of Delivery on the Bonds of the computations contained in the provided schedules to determine that the anticipated receipts from the securities and cash deposits listed in the Financial Advisor's schedules, to be held in escrow, will be sufficient to pay, when due, the principal, interest, and call premium payment requirements, if any, of the Refunded Obligations. The Verification Agent will express no opinion on the assumptions provided to them, or as to the exemption from federal taxation of the interest on the Series 2020-A Bonds.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

OTHER MATTERS

The financial data and other information contained herein have been obtained from the Commission's records, financial statements, and other sources that are believed to be reliable. There is no guarantee that any of the assumptions or estimates contained herein will be realized. All summaries of documents do not purport to be complete statements of such documents and reference is made to such documents for further information. Reference is made to original documents in all respects. Copies may be obtained from the Commission.

TEXAS TRANSPORTATION COMMISSION

BY: /s/ Brian Ragland
Chief Financial Officer
Texas Department of Transportation

SCHEDULE IA

OBLIGATIONS REFUNDED BY SERIES 2020-A BONDS
Texas Transportation Commission
Texas Turnpike Authority
Central Texas Turnpike System
First Tier Revenue Bonds, Series 2015-A

Maturity Date	Interest Rate	Par Amount	Redemption/ Tender Date	Redemption Price	CUSIP[1]
August 15, 2042	5.000%	$225,000,000	April 1, 2020	100.000%	88283KAJ7

[1] CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein is provided by CUSIP Global Services, managed by S&P Global Market Intelligence on behalf of American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services provided by CUSIP Global Services. CUSIP numbers are included herein solely for the convenience of the owners of such bonds. None of TxDOT, the Commission, the Financial Advisor or the Underwriters shall be responsible for the selection or correctness of the CUSIP numbers shown herein. The CUSIP number for a specific maturity is subject to being changed as a result of various subsequent actions including, but not limited to, a refunding in whole or in part as a result of the procurement of secondary market portfolio insurance or other similar enhancement by investors that is applicable to all or a portion of certain maturities of such bonds.

SCHEDULE IB

OBLIGATIONS REFUNDED BY TAXABLE SERIES 2020-B BONDS

Texas Transportation Commission
Texas Turnpike Authority
Central Texas Turnpike System
First Tier Revenue Refunding Bonds, Series 2012-A

Maturity Date	Interest Rate	Par Amount	Redemption Date	Redemption Price	CUSIP[1]
08/15/2041	5.000%	$206,425,000	08/15/2022	100.000%	88283KAB4

[1] CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein is provided by CUSIP Global Services, managed by S&P Global Market Intelligence on behalf of American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services provided by CUSIP Global Services. CUSIP numbers are included herein solely for the convenience of the owners of such bonds. None of TxDOT, the Commission, the Financial Advisor or the Underwriters shall be responsible for the selection or correctness of the CUSIP numbers shown herein. The CUSIP number for a specific maturity is subject to being changed as a result of various subsequent actions including, but not limited to, a refunding in whole or in part as a result of the procurement of secondary market portfolio insurance or other similar enhancement by investors that is applicable to all or a portion of certain maturities of such bonds.

[THIS PAGE INTENTIONALLY LEFT BLANK]

SCHEDULE IC

OBLIGATIONS REFUNDED BY TAXABLE SERIES 2020-C BONDS
Texas Transportation Commission
Texas Turnpike Authority
Central Texas Turnpike System
First Tier Revenue Refunding Bonds, Series 2012-A

Maturity Date	Interest Rate	Par Amount	Redemption Date	Redemption Price	CUSIP[1]
08/15/2041	5.000%	$255,670,000	08/15/2022	100.000%	88283KAB4

[1] CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein is provided by CUSIP Global Services, managed by S&P Global Market Intelligence on behalf of American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services provided by CUSIP Global Services. CUSIP numbers are included herein solely for the convenience of the owners of such bonds. None of TxDOT, the Commission, the Financial Advisor or the Underwriters shall be responsible for the selection or correctness of the CUSIP numbers shown herein. The CUSIP number for a specific maturity is subject to being changed as a result of various subsequent actions including, but not limited to, a refunding in whole or in part as a result of the procurement of secondary market portfolio insurance or other similar enhancement by investors that is applicable to all or a portion of certain maturities of such bonds.

[THIS PAGE INTENTIONALLY LEFT BLANK]

SCHEDULE II

DEBT SERVICE REQUIREMENTS

Fiscal Year	Outstanding First Tier Obligations	Series 2020-A Bonds	Taxable Series 2020-B Bonds[1]	Taxable Series 2020-C Bonds	Total First Tier Obligations	Total Outstanding Second Tier Obligations	Total Debt Service
2020	$ 58,723,025	$ 3,543,889	$ 1,980,000	$ 3,760,066	$ 68,006,980	$ 57,866,000	$ 125,872,980
2021	51,310,650	7,973,750	4,455,000	8,460,149	72,199,549	57,866,000	130,065,549
2022	57,980,650	7,973,750	4,455,000	8,460,149	78,869,549	60,066,000	138,935,549
2023	63,770,650	7,973,750	9,000,000	8,460,149	89,204,549	63,131,000	152,335,549
2024	69,555,650	7,973,750	9,000,000	8,460,149	94,989,549	66,142,250	161,131,799
2025	75,240,650	7,973,750	9,000,000	8,460,149	100,674,549	69,299,500	169,974,049
2026	92,035,650	7,973,750	9,000,000	8,460,149	117,469,549	66,267,250	183,736,799
2027	99,185,650	7,973,750	9,000,000	8,460,149	124,619,549	70,001,000	194,620,549
2028	106,660,650	7,973,750	9,000,000	8,460,149	132,094,549	68,643,500	200,738,049
2029	111,870,650	7,973,750	9,000,000	8,460,149	137,304,549	69,198,750	206,503,299
2030	116,855,650	7,973,750	9,000,000	8,460,149	142,289,549	70,137,750	212,427,299
2031	14,830,650	7,973,750	9,000,000	8,555,149	40,359,549	178,248,250	218,607,799
2032	54,830,650	7,973,750	9,000,000	8,552,271	80,356,671	144,502,500	224,859,171
2033	12,830,650	7,973,750	9,000,000	8,554,393	38,358,793	192,931,000	231,289,793
2034	12,830,650	7,973,750	9,000,000	8,551,364	38,355,764	184,498,750	222,854,514
2035	126,350,650	7,973,750	9,000,000	8,553,335	151,877,735	92,725,500	244,603,235
2036	151,659,650	7,973,750	9,000,000	8,555,155	177,188,555	74,465,500	251,654,055
2037	145,929,400	7,973,750	9,000,000	8,551,823	171,454,973	87,353,750	258,808,723
2038	128,164,400	7,973,750	9,000,000	8,553,491	153,691,641	105,980,250	259,671,891
2039	-	137,448,750	9,000,000	38,495,008	184,943,758	74,729,500	259,673,258
2040	-	51,500,000	9,000,000	124,439,490	184,939,490	74,730,500	259,669,990
2041	-	-	49,460,000	135,483,135	184,943,135	74,727,750	259,670,885
2042	-	-	191,921,600	-	191,921,600	74,733,750	266,655,350
TOTAL	$1,550,616,225	$336,020,139	$414,271,600	$455,206,166	$2,756,114,130	$2,078,246,000	$4,834,360,130

(1) Interest on the Taxable Series 2020-B Bonds is assumed at 4.0% per annum following the Initial Multiannual Period.

[THIS PAGE INTENTIONALLY LEFT BLANK]

SCHEDULE III

UNAMORTIZED PREMIUM SPECIAL REDEMPTION PRICE

	Series 2020A Bonds	**Series 2020A Bonds**
Maturity date:	8/15/2039	8/15/2040
Call Date:	8/15/2030	8/15/2030
Interest Rate:	5.000%	3.000%
Initial Yield:	1.870%	2.320%

Redemption Date	Redemption Price	Redemption Price
3/5/2020	129.570%	106.274%
8/15/2020	128.426	106.037
2/15/2021	127.127	105.767
8/15/2021	125.816	105.494
2/15/2022	124.492	105.218
8/15/2022	123.156	104.938
2/15/2023	121.808	104.656
8/15/2023	120.447	104.370
2/15/2024	119.073	104.080
8/15/2024	117.686	103.788
2/15/2025	116.287	103.492
8/15/2025	114.874	103.192
2/15/2026	113.448	102.889
8/15/2026	112.009	102.583
2/15/2027	110.556	102.273
8/15/2027	109.090	101.959
2/15/2028	107.610	101.642
8/15/2028	106.116	101.321
2/15/2029	104.608	100.996
8/15/2029	103.086	100.668
2/15/2030	101.550	100.336
8/15/2030	100.000	100.000

[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX A

THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE STATE HIGHWAY FUND

[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX A

THE TEXAS DEPARTMENT OF TRANSPORTATION AND THE STATE HIGHWAY FUND

TxDOT

The Texas Department of Transportation ("*TxDOT*") is a public authority and body politic and corporate created in 1917 as the "Texas Highway Department" by an act of the Texas Legislature (the "*State Legislature*") to administer federal funds for highway construction and maintenance. In 1975, the State Legislature merged the Texas Highway Department with the "Texas Mass Transportation Commission" to form the "State Department of Highways and Public Transportation," and in 1991, the State Legislature combined the State Department of Highways and Public Transportation, the Department of Aviation, and the Texas Motor Vehicle Commission to create TxDOT. In 2009, the State Legislature created the Texas Department of Motor Vehicles (the "*TxDMV*") as a separate agency of the State of Texas (the "*State*"), and moved vehicle title and registration; motor carrier registration and enforcement; licensing of motor vehicle dealers, manufacturers, distributors, and other similar entities; and auto theft reduction efforts from TxDOT to the TxDMV. Capitalized terms used in this Appendix A and not otherwise defined herein shall have the meaning given to such terms in the forepart of this Official Statement or in "APPENDIX C – SUMMARY OF CERTAIN PROVISIONS OF THE TRUST INDENTURE" to this Official Statement.

The Commission

The Texas Transportation Commission (the "*Commission*") is the policy-making body governing TxDOT and is composed of five commissioners appointed by the Governor of the State (the "*Governor*") with the advice and consent of the Texas Senate. Commissioners serve staggered six year terms. One member is designated by the Governor as the Chair and serves as the presiding officer of the Commission. A person is not eligible to be a member of the Commission if the person or the person's spouse is employed by or manages a business that is regulated by or receives funds from TxDOT; directly or indirectly owns or controls more than a 10% interest in a business that is regulated by or receives funds from TxDOT; uses or receives a substantial amount of goods, services, or funds from TxDOT; or is registered, certified, or licensed by TxDOT.

The State Legislature created the "State Highway Commission" on April 4, 1917, for the purpose of adopting and implementing a comprehensive system of State highways and promoting the construction of a State highway system by cooperation with counties or independently by the State Highway Commission. In 1975, the State Legislature changed the name of the State Highway Commission to the "State Highway and Public Transportation Commission." In 1991, the State Legislature changed the name again to the "Texas Transportation Commission," as it remains today.

The current members of the Commission are listed below. Their terms end on the dates specified on page vi of this Official Statement.

J. Bruce Bugg, Jr., Chairman

Mr. Bugg was appointed to the Commission by Governor Abbott on February 13, 2015. Mr. Bugg is chairman and trustee of The Tobin Endowment, a private charitable foundation, in San Antonio, Texas and chairman and co-founder of the Bexar County Performing Arts Center Foundation, owner of the $205 million Tobin Center for the Performing Arts in San Antonio. Mr. Bugg currently serves as a member of the board of directors of the San Antonio Chamber of Commerce, the board of trustees of the Texas Biomedical Research Institute and board of trustees of St. Mary's Hall, a private school in San Antonio, Texas, and chairman of the Endowment Investment Committee and a member of the board of directors of The Santa Fe Opera in Santa Fe, New Mexico. He is former chairman of the board of Governors of Cancer Therapy & Research Center, former officer and trustee of the Texas Research and Technology Foundation, and a trustee emeritus of the board of Trustees of the McNay Art Museum. Mr. Bugg is also chairman, president and chief executive officer of Southwest Bancshares, Inc., a Texas bank holding company for The Bank of San Antonio, and chairman of The Bank of San Antonio; and chairman, president and chief executive officer of Texas Hill Country Bancshares, Inc., a Texas bank holding company for Texas Hill Country Bank. In addition, Mr. Bugg also serves as chairman of San Antonio Capital & Trust Co., L.L.C. and chairman and chief executive officer of Argyle Investment Co., L.L.C., a private investment firm. Mr. Bugg was appointed to serve as chairman and president of the Texas Economic Development Corporation and a senior advisor to Governor Perry on the State of Texas' economic development strategies and initiatives from 2012 to May, 2014. Prior to this appointment, Mr. Bugg was appointed to serve as the Governor's appointee on the board of directors of Humanities Texas in Austin, Texas. Mr. Bugg is a member of the State Bar of Texas and holds Juris Doctorate and Bachelor of Business Administration degrees from Southern Methodist University.

Alvin New, Commissioner

Mr. New was appointed to the Commission by Governor Abbott on February 20, 2018. Mr. New is a business investor, rancher and former Mayor of the City of San Angelo, Texas. He is a life-long resident of West Texas and was born in Brownfield, Texas. Mr. New has lived mostly in or near San Angelo since 1981. Mr. New spent most of his career with Town & Country Food Stores. He started as a clerk while getting his business administration degree from Angelo State University. Mr. New worked his way up to chief executive officer and part owner. He and his partners sold their stake in the convenience store chain about a decade ago. Mr. New currently serves as a member of the Texas Tech University Foundation Board and the Goodfellow Air Force Base Advisory Council. Mr. New earned his bachelor's degree in business administration in management from Angelo State University.

Laura Ryan, Commissioner

Ms. Ryan was initially appointed to the Commission by Governor Abbott in July of 2016 and was reappointed to the Commission by Governor Abbott in March of 2017. Ms. Ryan is vice president of market representation and dealer development for Gulf States Toyota, Inc. She previously served as a member of the TxDMV Board and was also designated by the Governor as chair of the TxDMV Board. During her tenure as chair of the TxDMV Board, Ms. Ryan initiated many processes to make the TxDMV more innovative, customer-oriented, and efficient. Ms. Ryan has held various executive level positions during her twenty-plus years in the automotive industry, including both manufacture and retail operations. Ms. Ryan is involved with her community through several volunteer and charity organizations such as Boys and Girls Country, Operation Interdependence, and National Charity League. Ms. Ryan attended Penn State University and has been engaged in the following continuous executive education programs: Gallup Organization Strengths Training, University of Texas Future Leaders, and Columbia University - Finance.

Victor Vandergriff, Commissioner[1]

Mr. Vandergriff was appointed to the Commission by Governor Perry in March of 2013. Mr. Vandergriff is an attorney and private businessman specializing in business development and legislative issues. From 2009 to 2013, Mr. Vandergriff served as the chairman of the TxDMV Board. He was also a board member for the North Texas Tollway Authority from 2007 to 2013 and served as chairman from 2010 to 2011. He formerly served as Vice President of V.T., Inc. and Automotive Investment Group, the largest private retail automotive group in the United States. He was involved as an owner, dealer and executive manager in the automobile industry for more than 25 years. Mr. Vandergriff and his family have owned and operated automobile dealerships for more than 80 years in the Dallas-Fort Worth region. Mr. Vandergriff attended The University of Southern California, where he received a degree from the School of Public Administration in Public Affairs. He received his law degree from Southern Methodist University in Dallas.

Robert C. Vaughn, Commissioner

Mr. Vaughn was appointed to the Commission by Governor Abbott on August 12, 2019. Mr. Vaughn is the owner of Vaughn Capital Partners LLC and Vaughn Petroleum Ltd. He has served as chair of the TexNet Technical Advisory Committee. He is a member of the University of Texas System Chancellor's Council Executive Committee and the University of Texas at Austin McDonald Observatory and Department of Astronomy Board of Visitors. He is a life

(1) Mr. Vandergriff resigned as Commissioner on February 9, 2018. Pursuant to State law, Mr. Vandergriff continues to perform the duties of Commissioner until the earlier of (i) the date such Commissioner's successor shall be duly appointed and qualified or (ii) the last day of the first regular session of the State Legislature that begins after the expiration of such Commissioner's term (which date is May 31, 2021).

member of the University of Texas at Austin Development Board and serves on the Longhorn Foundation Advisory Council. Mr. Vaughn serves on a variety of nonprofit boards, including the Culver Educational Foundation and Perot Museum of Nature and Science, and as a trustee for The First Tee. He holds a Bachelor of Business Administration from the University of Texas at Austin.

General Information Concerning TxDOT

The mission of TxDOT is "Connecting You With Texas". TxDOT's core goals and objectives are: to implement effective planning and forecasting processes that deliver the right projects on time and on budget; to focus on the customer because people are at the center of everything TxDOT does; to foster stewardship by ensuring efficient use of State resources; to optimize system performance by developing and operating an integrated transportation system that provides reliable and accessible mobility and enables economic growth; to preserve its assets by delivering preventative maintenance for TxDOT's system and capital assets to protect its investments; to champion a culture of safety; and to value its employees by respecting and caring for their well-being and development.

The Texas Sunset Act (Chapter 325, Texas Government Code) (the "*Sunset Act*") provides that virtually all agencies of the State, including TxDOT, are subject to periodic review by the State Legislature, and that each agency subject to sunset review will be abolished unless the State Legislature specifically determines to continue its existence. TxDOT will be subject to its next sunset review in 2029. Pursuant to the Sunset Act, the State Legislature specifically recognizes the State's continuing obligation to pay bonded indebtedness and all other obligations incurred by TxDOT. Accordingly, in the event that a sunset review results in TxDOT being abolished, the Governor would be required by law to designate an appropriate state agency that would continue to carry out all covenants contained in TxDOT's bonded indebtedness (and in all other obligations) and the performance of all other obligations to complete the construction of projects or the performance of other obligations of TxDOT, including lease, contract and other written obligations. The designated State agency would provide payment from the sources of payment of TxDOT's bonded indebtedness in accordance with the terms thereof and would provide payment from the sources of payment of all other obligations in accordance with their terms, until the principal of and interest on such bonded indebtedness are paid in full and all other obligations, including lease, contract and other written obligations, are performed and paid in full.

TxDOT's comprehensive annual financial report for the fiscal year ending August 31, 2019 was audited by Crowe Horwath, LLP. Crowe LLP has not been engaged to perform, and has not performed, any procedures on such financial statements since the date of its report included thereon. Crowe LLP also has not performed any procedures relating to this Official Statement. TxDOT is currently not required to commission an annual audit of its financial statements, however, TxDOT could elect or be required to have audited financial reports prepared in the future. Under current State law, the State Auditor's Office has the first right to perform audits requested by TxDOT and if it declines, TxDOT can select an external auditor. No assurances can be given as to whether any such financial reports of TxDOT will be audited in the future. The fiscal year of the State and TxDOT is currently September 1 through August 31 of the following year (each, a "*Fiscal Year*").

TxDOT is headquartered in Austin, Texas, with 34 divisions and 25 district offices located throughout the State. Each district is responsible for the planning, design, construction, operation and maintenance of its area's transportation systems. TxDOT is managed by an Executive Director, subject to and under the direction of the Commission. The Executive Director and other key TxDOT personnel are listed below.

James M. Bass, Executive Director

Effective January 1, 2016, James M. Bass was appointed Executive Director by the Commission on December 17, 2015. Under the direction of the Commission, Mr. Bass manages, directs and implements TxDOT policies, programs and operating strategies. Mr. Bass also represents TxDOT before the State Legislature and other entities. Prior to his appointment as Executive Director, Mr. Bass served as TxDOT's Chief Financial Officer. Mr. Bass began his career with TxDOT in 1985 in the Fort Worth District where he maintained records and audited field measurements. He also worked part-time as an engineering aide for the Austin District while earning his bachelor's degree in accounting from The University of Texas at Austin. After graduation in 1991, Mr. Bass served as an accounting clerk in TxDOT's financial planning operations division (the "*Finance Division*"). In 1997, Mr. Bass became a manager in the Budget and Forecasting Branch, and in that position was responsible for preparation of

TxDOT's Legislative Appropriations Request and Operating Budget, and working with the Texas Legislative Budget Board, State Auditor's Office, and the Comptroller of Public Accounts of the State. He also worked on TxDOT's Cash Forecasting System for the State Highway Fund. Mr. Bass was named Finance Division Director in 1999 and his title was changed to Chief Financial Officer in 2005. Mr. Bass also served as Interim Executive Director of TxDOT from January 17, 2014 to April 23, 2014.

Marc D. Williams, P.E., Deputy Executive Director

As Deputy Executive Director, Mr. Williams is responsible for assisting the Executive Director in all phases of directing, managing, and implementing TxDOT's policies, programs, and operating strategies. He assists in oversight of the management and operation of all transportation systems for which the agency is responsible to ensure that systems are adequate, safe, and constructed and maintained for the traveling public in the most cost-effective manner. Mr. Williams started with TxDOT in February 2012 as the Director of Planning within TxDOT's Planning and Projects Office. His career experience in transportation planning and program efforts includes public and private-sector organizations involving state, county and local jurisdictions. Mr. Williams has served in leadership positions with two state departments of transportation as well as worked with national private-sector transportation engineering organizations. His professional assignments have included directing statewide transportation planning and programming efforts as well as managing project specific highway and multimodal transportation plans and programs. Mr. Williams has worked extensively with public and agency outreach, transportation plans of various modes, regional and corridor-level plans and programs, environmental planning and approval, economics and finance, project design and development, along with work in the areas of construction management, operations and maintenance. Mr. Williams received both a Master's degree in Civil Engineering and a Bachelor's degree in Civil Engineering from Texas A&M University.

Brian D. Ragland, Chief Financial Officer

Mr. Ragland was selected as TxDOT's Chief Financial Officer on March 11, 2016. Mr. Ragland has financial oversight responsibility for TxDOT including TxDOT's Financial Management Division; Project Finance, Debt and Strategic Contracts Division; and Toll Operations Division. Mr. Ragland began his career with The University of Texas System Administration as an accountant/auditor in their Oil and Gas department and then became the Financial Manager of their Employee Group Insurance section where he served until 1996. He then became Chief Financial Officer for the State Preservation Board where he oversaw all financial, human resources, enterprise, and information resource functions of that agency. Mr. Ragland began his career with TxDOT as the Director of TxDOT's Claims Management Section of the Financial Management Division in 2003. He left TxDOT in 2005 to pursue an opportunity as Senior Vice President and Chief Financial Officer of Walden Affordable Group, LLC, an affordable housing management firm but returned to TxDOT in 2008 as the Director of the Financial Management Division. Mr. Ragland served as an elected trustee of the Employees Retirement System of Texas from September 1, 2011 until August 31, 2017. Mr. Ragland received a bachelor's degree in Accounting from The University of Texas at Austin in 1990 and a Masters of Business Administration degree from Southwest Texas State University in 1999. He is a licensed Certified Public Accountant and a member of the American Institute of CPAs (AICPA), the Texas State Agency Business Administrators Association (TSABAA) and the State Agency Coordinating Council (SACC).

Benjamin H. Asher, Director, Project Finance, Debt and Strategic Contracts Division

As director of the Project Finance, Debt and Strategic Contracts Division, Mr. Asher is responsible for the management of TxDOT's project financing, debt management and strategic contracts programs. This includes the management of TxDOT's various debt and financial assistance programs, including TIFIA loan activity, the State Infrastructure Bank, toll equity, and pass-through financings, as well as several aspects of TxDOT's alternative delivery programs, including procurement and contract processes. Mr. Asher and his team partner with TxDOT districts and State and local entities to finance and deliver major transportation projects throughout the State. Prior to joining TxDOT in June 2012, Mr. Asher worked for Public Resources Advisory Group, an independent financial advisory firm, most recently as a partner and senior managing director in New York. Previously, Mr. Asher worked in investment banking on a broad range of financings. Mr. Asher received his Bachelor of Arts in history from Columbia University and an M.B.A. in finance from Columbia University Graduate School of Business.

Stephen Stewart, Director, Financial Management Division

As TxDOT's Director of the Financial Management Division, Mr. Stewart is responsible for the management and control of budget, revenue, disbursements, and accounting for TxDOT as well as letting management of all transportation projects. Mr. Stewart has over 16 years of state governmental experience and has been involved with many key initiatives since he began with TxDOT in March of 2012. Mr. Stewart has held previous roles as Manager of Financial Reporting and Director of Accounting positions within the Financial Management Division. Within each of those roles, he has worked to collaborate with other districts, divisions, and other State agencies to produce required audited financial statements and statutory reports needed for TxDOT as well as assisting with the implementation of the PeopleSoft Financial Supply Chain Management (FSCM) system. Prior to joining TxDOT, Mr. Stewart worked for the Comptroller of Public Accounts of the State of Texas assisting in the production of the State's Comprehensive Annual Financial Report where he gained insight and experience working with various agencies across the State. Aside from governmental accounting, Mr. Stewart has also gained business and management experience from owning his own CPA firm which focused on bookkeeping and tax services. Prior to his accounting experiences, Mr. Stewart worked at Texas State University in the information technology division as a network administrator and systems programmer where he was responsible for administration of Active Directory domains consisting of over 70,000 users and various SAP, e-mail, and database servers. Mr. Stewart received a Bachelor's degree in Computer Science from Southwest Texas State University in 2003 and a Master's degree in Accounting from Texas State University in 2007. He is a licensed Certified Public Accountant and a member of the American Institute of CPAs (AICPA).

Jeff Graham, General Counsel

Mr. Graham assumed the position of General Counsel on July 16, 2012. Under his direction, the General Counsel Division renders legal advice to the Commission and TxDOT. He also drafts TxDOT rules, reviews legislation, and serves as counsel at Commission meetings. Previously, Mr. Graham served as Division Chief for the Financial and Taxation Litigation Division, under Texas Attorney General Greg Abbott. Prior to that, he served as the Division Chief for the Financial Litigation Division of the Office of Attorney General. In 2011, the Taxation Division and the Texas Workforce Commission Section were added to the Financial Litigation Division, resulting in the combined Financial and Taxation Litigation Division. In 2012, the Charitable Trust Section was also added to his portfolio. Jeff began his career at the Office of the Attorney General in 1997, and has lived in Austin since 1986. He is a graduate of Washington University School of Law in St. Louis, Missouri and The University of Texas at Austin.

The State Highway Fund

General

The State Highway Fund is the general source for a substantial portion of funding for the State highway system, TxDOT and the administration of State laws relating to traffic and safety on public roads. The State Highway Fund receives revenue from a variety of sources, including, without limitation, certain federal transportation program funds received from the United States Department of Transportation (the "*USDOT*"), State motor fuels tax funds, State motor vehicle registration funds and State motor lubricants tax funds.

Pursuant to Article VIII, Section 7-a of the Texas Constitution, (i) 75% of the net revenues generated from the State motor fuels tax (net of enforcement, administrative and refund charges), (ii) the State tax on motor lubricants and (iii) the net revenues generated from the State motor vehicle registration fees (net of collection charges and the portion of such fees that is reserved for counties within the State) are dedicated for acquiring rights-of-way; constructing, maintaining, and policing public roadways; and for the administration of laws pertaining to the supervision of traffic and safety on such roads. Also, pursuant to Article VIII, Section 7-b of the Texas Constitution, all revenues received from the federal government as reimbursement for State expenditures of funds that are themselves dedicated for acquiring rights-of-way and constructing, maintaining and policing public roadways are constitutionally dedicated and may be used only for those purposes.

The State Highway Fund is the general operating fund of TxDOT through which, generally, all revenues dedicated or appropriated to the purposes of TxDOT are deposited and all of TxDOT's administration, maintenance and operating expenses are paid. In prior years, certain expenses of the Texas Mobility Fund were processed through the State Highway Fund, whereby the Texas Mobility Fund transferred amounts for such expenses to the State Highway Fund prior to such expenses being paid (except in situations where the Texas Mobility Fund was reimbursing the State Highway Fund for expenses incurred by the State Highway Fund). Beginning in Fiscal Year 2013, these expenditures are reported as capital outlays from the Texas Mobility Fund instead of transfers to the State Highway Fund. TxDOT's ongoing "pay as you go" construction program is also paid from the State Highway Fund. Such expenses include payroll, repairs and maintenance, costs of materials and supplies, professional fees or commitments, utilities, rent and lease payments and intergovernmental payments. To accomplish all of these purposes, money in the State Highway Fund is appropriated by the State Legislature to TxDOT and certain other agencies of the State.

Except as described herein, and with the exception of certain restricted funds held in special accounts or subaccounts in the State Highway Fund (collectively, "*Restricted Revenues*"), amounts deposited into the State Highway Fund are pledged to secure payment of Senior Obligations (as defined under the caption "– State Highway Fund Obligations") and such amounts may also be used to pay debt service on and other costs associated with certain subordinate obligations issued or incurred by the Commission or TxDOT. See "– Uses of the State Highway Fund" and "– State Highway Fund Obligations" below.

Restricted Revenues include amounts held in the State Infrastructure Bank account established as an account in the State Highway Fund pursuant to Subchapter D of Chapter 222, Texas Transportation Code, which had a balance of approximately $356 million as of August 31, 2019, and amounts held in special accounts or subaccounts established pursuant to Section 228.012, Texas Transportation Code, for payments received by TxDOT under comprehensive development agreements ("*CDA's*"), surplus revenues of certain toll projects or systems, and payments received under former Section 228.0111(g)(2) and (i)(2) of the Texas Transportation Code (which was repealed by legislation enacted in 2011) for the right to develop, finance, construct and operate toll projects. TxDOT has created subaccounts in the State Highway Fund in accordance with Section 228.012, Texas Transportation Code, and certain of those subaccounts have the following balances as of August 31, 2019: (i) under the State Highway 130 CDA for segments 5 and 6 totaling approximately $34 million, (ii) from the North Texas Tollway Authority for the right to develop, finance, design, construct, operate, and maintain the State Highway 121 toll project totaling approximately $623 million and the State Highway 161 toll project (also known as the Chisholm Trail Parkway project) totaling approximately $44 million, (iii) under the State Highway 288 CDA totaling approximately $12 million, and (iv) under the North Tarrant Express CDA totaling approximately $10 million, pending distribution of such funds from time to time for their designated purposes. Restricted Revenues must be used for certain limited purposes and are not available to pay debt service on Senior Obligations or to make advances under any toll equity loan agreement with TxDOT, including the TELA between TxDOT and the Grand Parkway Transportation Corporation (the "*Corporation*"). See "– Toll Equity Obligations" below.

The Commission's current policy is designed to accelerate the development and construction of public highways by using available funds to deliver such projects as quickly as possible. A recognized result of this policy is that the balance of the State Highway Fund, at each fiscal year-end, may be a nominal or negative amount, as the Commission utilizes available funds for development and construction of projects.

In November 2014, State voters approved an amendment to the State Constitution ("*Proposition 1*") transferring a portion of certain oil and natural gas production tax revenues to the State Highway Fund. As a result of Proposition 1, approximately $440 million, $734 million and $1.38 billion of oil and natural gas production tax revenues were transferred to the State Highway Fund for Fiscal Years 2017, 2018 and 2019, respectively. Amounts deposited in the State Highway Fund pursuant to Proposition 1 may only be used for constructing, maintaining and acquiring rights-of-way for public roadways other than toll roads. In recognition of the more restrictive limitations on the permitted uses of amounts transferred to the State Highway Fund pursuant to Proposition 1 (relative to the permitted purposes for which Senior Obligations may be and have been issued), TxDOT created a special account in the State Highway Fund to segregate such amounts from State Highway Fund revenues, and such amounts are not pledged to secure, or available to make payments on, Senior Obligations or to make advances under any toll equity loan agreement with TxDOT, including the TELA.

In November 2015, State voters approved an amendment to the State Constitution ("*Proposition 7*"), which added Section 7-c to Article VIII thereof ("*Section 7-c*"). Section 7-c directs the Comptroller of Public Accounts of the State (the "*Comptroller*") to deposit to the credit of the State Highway Fund, for each State Fiscal Year specified therein, net revenues in the amounts specified therein derived from (i) the imposition of State sales and use tax on the sale, storage, use or other consumption in the State of taxable items under Chapter 151 of the Texas Tax Code (or its successor), and (ii) the tax authorized by Chapter 152 of the Texas Tax Code (or its successor) and imposed on the sale, use, or rental of a motor vehicle. As a result of Proposition 7, approximately $939 million and $4.06 billion were transferred to the State Highway Fund for Fiscal Years 2018 and 2019, respectively. Amounts deposited in the State Highway Fund pursuant to Proposition 7 may only be used for constructing, maintaining or acquiring rights-of-way for public roadways other than toll roads or for repaying principal and interest on general obligation bonds issued pursuant to Article III, Section 49-p of the State Constitution. In recognition of the more restrictive limitations on the permitted uses of amounts transferred to the State Highway Fund pursuant to Proposition 7 (relative to the permitted purposes for which Senior Obligations may be and have been issued), TxDOT created a special account in the State Highway Fund to segregate such amounts from State Highway Fund revenues, and such amounts are not pledged to secure, or available to make payments on, Senior Obligations or to make advances under any toll equity loan agreement with TxDOT, including the TELA.

Unless extended by the State Legislature, the transfers to the State Highway Fund pursuant to Proposition 1 and Proposition 7 are scheduled to expire in certain future years. Further, such transfers pursuant to Proposition 1 are subject to the Economic Stabilization Fund achieving a certain threshold balance, and such transfers pursuant to Proposition 7 are subject to the applicable revenue streams exceeding certain threshold amounts, in each case, which are subject to amendment by the State Legislature. Accordingly, no assurances can be provided regarding the amount of any future transfers to the State Highway Fund pursuant to Proposition 1 and Proposition 7.

Previously, certain money in the State Highway Fund was appropriated to the Department of Public Safety ("*DPS*") to police the State highway system and to administer State laws relating to traffic and safety on public roads. House Bill 20 ("*HB 20*"), which was approved during the 84th regular legislative session and became effective June 3, 2015, ended such diversions to the DPS from the State Highway Fund. See "– Uses of the State Highway Fund – Capital Planning and Funding" below.

Sources of Revenue in the State Highway Fund

The following Table 1 displays the amount of total State Highway Fund Revenues, which are derived from each of the following sources for the last five Fiscal Years: State motor fuels tax, State motor vehicle registration fees, other State revenue sources, and reimbursements from federal funds. Such sources are affected by a number of economic, demographic and environmental factors, including population growth in the State. Revenues in the following tables are presented on the modified accrual basis of accounting, unless otherwise indicated, and exclude Restricted Revenues. The table below reflects "Pledged Revenues" as reported in total within the notes of TxDOT's annual financial statements. Total State Highway Fund Revenues have increased at an average annual rate of approximately 4.9% over the last five Fiscal Years.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Table 1 - State Highway Fund Revenues by Source
For Fiscal Years Ended August 31
(in millions)

	2015	2016	2017	2018	2019
State Motor Fuels Tax	$2,538.3	$2,580.9	$2,631.0	$2,697.3	$2,759.2
State Motor Vehicle Registration Fees	1,386.2	1,426.5	1,442.8	1,501.1	1,584.7
Other State Revenue Sources(1)	340.9	323.5	594.3	362.9	392.3
Subtotal, excluding Federal Reimbursements	4,265.4	4,330.9	4,668.1	4,561.3	4,736.2
Reimbursements from Federal Funds(2)	3,161.5	3,935.9	3,781.9	3,845.3	4,207.8
Total Fund Revenues	$7,426.9	$8,266.8	$8,450.0	$8,406.6	$8,944.0

(1) Excludes Proposition 1 funding, Proposition 7 funding, loan repayments received by the State Infrastructure Bank and amounts credited to the State Highway Fund from the Texas Mobility Fund for payment to contractors. For administrative purposes, expenses of the Texas Mobility Fund are paid through the State Highway Fund and reimbursed from the Texas Mobility Fund. Other State Revenue Sources include numerous separate and miscellaneous revenue sources that fluctuate from year to year and in the aggregate may increase or decrease significantly from one year to the next. For a description of such Other State Revenue Sources and a description of Proposition 1 and Proposition 7 receipts, see "– The State Highway Fund – General" and "– The State Highway Fund – Sources of Revenue in the State Highway Fund – Other State Revenue Sources."

(2) Reimbursements from Federal Funds fluctuate from year to year due to the amount of expenditures for major construction projects that are eligible for federal reimbursement and the timing of when such costs are incurred and when reimbursements are received. See "– The State Highway Fund – Sources of Revenue in the State Highway Fund – Federal Funds." Excludes funds received for projects financed through the American Recovery and Reinvestment Act (ARRA) for Fiscal Years 2015 through 2017.

The following Table 2 displays the amount of each source of State Highway Fund revenues as a percentage of total State Highway Fund revenues (excluding reimbursements from federal funds) for the last five Fiscal Years.

Table 2 - State Highway Fund Revenues as a Percentage of Total Fund Revenues (Excluding Federal Funds)
For Fiscal Years Ended August 31

	2015	2016	2017	2018	2019
State Motor Fuels Tax	59.5%	59.6%	56.4%	59.1%	58.3%
State Motor Vehicle Registration Fees	32.5%	32.9%	30.9%	32.9%	33.5%
Other State Revenue Sources	8.0%	7.5%	12.7%	8.0%	8.3%

The following Table 3 displays the amount of each source of State Highway Fund revenues as a percentage of total State Highway Fund revenues (including reimbursements from federal funds) for the last five Fiscal Years.

Table 3 - State Highway Fund Revenues as a Percentage of Total Fund Revenues (Including Federal Funds)
For Fiscal Years Ended August 31

	2015	2016	2017	2018	2019
State Motor Fuels Tax	34.2%	31.2%	31.1%	32.1%	30.9%
State Motor Vehicle Registration Fees	18.7%	17.3%	17.1%	17.9%	17.7%
Other State Revenue Sources	4.6%	3.9%	7.0%	4.3%	4.4%
Reimbursements from Federal Funds	42.5%	47.6%	44.8%	45.7%	47.0%

State Motor Fuels Tax. The State currently levies a motor fuels tax of $0.20 per gallon on gasoline and diesel fuel, and $0.15 per gallon equivalent on liquefied natural gas and compressed natural gas. Sales of motor fuels for the exclusive use of the federal government or a public school district in the State are exempt, and sales of liquefied natural gas for the exclusive use of the federal government, local county government or a public school district in the State are exempt. The Comptroller retains 1% of the gross receipts for administration and enforcement, and after providing for refunds or non-highway use collections, distributes the remainder as hereinafter described. Pursuant to Article VIII, Section 7-a of the Texas Constitution, 25% of the net revenues generated from the State motor fuels tax (net of enforcement, administrative and refund charges) are deposited to the credit of the "Available School Fund" in support of the State's primary and secondary schools, and 50% of such revenues are deposited to the credit of the State Highway Fund. The remaining 25% is deposited to the county and road district highway fund, which is administered by the Comptroller, until a maximum of $7.3 million annually has been deposited, after which the remaining amount is deposited to the State Highway Fund. See Tables 1, 2 and 3 above for information regarding the amount of the State motor fuels tax credited to the State Highway Fund for the last five Fiscal Years.

The State motor fuels tax on gasoline and diesel fuel is imposed (i) upon the removal of fuel from a storage and distribution facility through a rack mechanism to a transport vehicle, railcar or other transfer means outside the bulk transfer/terminal system (no tax is imposed on qualified bulk transfers); (ii) upon the importation of fuel into the State for delivery in the State, other than by qualified bulk transfer; (iii) upon the removal of fuel from the bulk transfer/terminal system; (iv) upon fuel brought into the State in fuel supply tanks of an interstate trucker; and (v) upon the fuel used in the blending of fuel not in the bulk transfer/terminal system. The tax is due to the Comptroller on or before the 25th day of the month following a calendar month (except the tax from interstate truckers which is due after each calendar quarter). Licensed distributors and importers of the motor fuels tax on gasoline and diesel fuel that remit the tax in a timely manner may retain 1.75% of the tax. Suppliers that remit the tax on gasoline and diesel fuel may retain 2% of the tax. Licensed dealers and interstate truckers that remit the tax on liquefied natural gas and compressed natural gas in a timely manner may retain 1% and 0.5% of the tax, respectively. Certain taxpayers that remit the tax in a timely manner are entitled to retain 1.75% of the tax they pay to cover administrative expenses.

The State motor fuels tax on liquefied gas is imposed upon the user of the vehicle using such fuel and is collected by a licensed dealer at the time of delivery into a motor vehicle's fuel supply tank.

The State motor fuels tax on compressed natural gas and liquefied natural gas is imposed (i) on the dealer upon the sale of sale of compressed natural gas or liquefied natural gas that is delivered into the fuel supply tank of a motor vehicle in connection with a sale of the compressed natural gas or liquefied natural gas and (ii) on a fleet user or other dealer upon the delivery of compressed natural gas or liquefied natural gas into the fuel supply tank of a motor vehicle by a fleet user or other dealer not in connection with a sale of the compressed natural gas or liquefied natural gas.

Total motor fuel consumption has increased at an average annual rate of approximately 2.4% over the past five Fiscal Years, with gasoline consumption increasing at an average annual rate of approximately 2.1% and diesel consumption increasing at an average annual rate of approximately 3.5% during such period. The following Table 4 shows the amount of the taxable gasoline and diesel fuel consumption in the State for the last five Fiscal Years.

Table 4 - Taxable Gasoline and Diesel Fuel Consumption in Texas
(in millions of gallons)

Fiscal Year	Gasoline	Diesel
2015	13,720.6	5,209.9
2016	14,190.2	5,132.5
2017	14,337.6	5,539.2
2018	14,588.7	5,797.5
2019	14,886.6	5,965.6

State Motor Vehicle Registration Fees. The State currently charges motor vehicle registration fees under a number of statutory provisions. The TxDMV shares motor vehicle registration responsibilities with county governments that assist with this function. Revenues from vehicle registrations are shared between the State Highway Fund and the counties. The total amount of State motor vehicle registration and license fees credited to the State Highway Fund, as a percentage of the total amount of such fee collections net of refunds, for the State, counties, and for specialty license plates, was approximately 77%, 77%, 78%, 78% and 78% for Fiscal Years 2015, 2016, 2017, 2018 and 2019, respectively. See Tables 1, 2 and 3 above for information regarding the amount of the State motor vehicle registration fees credited to the State Highway Fund for the last five Fiscal Years.

Effective September 1, 2011, the base vehicle registration fee for cars and light trucks was changed to $50.75 per vehicle, regardless of the age or weight of the vehicle. For trucks other than light trucks, higher fees apply based on weight. Prior to September 1, 2011, the base registration fee for cars and light trucks ranged from approximately $29 to $59, depending on the age (for cars) or weight (for light trucks) of the vehicle.

Every owner of a motor vehicle, unless otherwise exempted, is required to register such vehicle each year the vehicle is used or is to be used on the public roads of the State. Registration fees are collected by the tax assessor-collector of the county in which the owner of a vehicle resides. The collecting county annually retains 100% of such registration fees collected up to an amount equal to: (i) $60,000 plus (ii) $350 for each mile of county road maintained by such county, not to exceed 500 miles. After such amount is retained by the county, the collecting county then shall retain an additional amount equal to 50% of State vehicle registration fees collected until the amount retained for the calendar year equals $125,000 and the remaining 50% (i.e., $125,000) shall be deposited to the credit of the State Highway Fund. After this second amount of $125,000 is retained by the collecting county, 100% of State vehicle registration fees are to be remitted to the credit of the State Highway Fund. Counties are also authorized to impose an additional road and bridge fee, not to exceed $10 for most counties, for registering a vehicle in the county, and retain the revenue from said fee. In 2013, the 83rd State Legislature passed House Bill 2202 ("*HB 2202*"), which authorized the TxDMV to collect a processing and handling fee to cover the expenses of collecting registration fees. The TxDMV adopted rules establishing the new processing and handling fee effective January 1, 2017. Pursuant to HB 2202, such fee replaces $1.90 of each registration fee that was previously retained by county tax assessor-collectors pursuant to Chapter 520 of the Texas Transportation Code. As a result, $1.90 of each registration fee is instead deposited to the credit of the State Highway Fund, which began in January 2017 when the new processing and handling fee became effective.

The following Table 5 shows the number of vehicles registered in the State for the last five Fiscal Years, which has increased at an average annual rate of 1.4% over the last five Fiscal Years.

Table 5 - Vehicles Registered in Texas
(in millions)

Fiscal Year	Number of Vehicles
2015	23.8
2016	24.1
2017	24.6
2018	24.9
2019	25.1

In 2013, the 83rd State Legislature passed House Bill 2305 (amending Chapter 548 of the Texas Transportation Code), which replaced the former dual certification system of separate motor vehicle inspection and registration decals with a single, combined certification system, known as the "single sticker rule." Beginning March 1, 2015, vehicles are no longer issued a separate inspection decal, and a single registration decal for each motor vehicle will signify that the vehicle has passed the required inspection and is registered in the State. Drivers who cannot pass an inspection cannot obtain a registration decal under the single sticker rule.

Other State Revenue Sources. The State also generates or receives funds from a variety of sources that are credited to the State Highway Fund. Such sources of funds include, without limitation, sales taxes on motor lubricants, funds from local governments that are participating in State highway projects, interest earnings on the dedicated funds deposited to the credit of the State Highway Fund, oversize and overweight trailer permit fees, vehicle title certificate fees, revenues from Texas Highways magazine, and other reimbursements received by TxDOT. With the exception of the sales tax on motor lubricants and interest earnings on dedicated funds, these other revenue sources are not dedicated or committed by constitutional provision to the State Highway Fund. See Tables 1, 2 and 3 above for information regarding the amount of funds generated from these sources and credited to the State Highway Fund for the last five Fiscal Years.

For a description of amounts deposited to the State Highway Fund from Proposition 1 and Proposition 7, see "– The State Highway Fund – General" above. Amounts deposited to the State Highway Fund from Proposition 1 and Proposition 7 are not pledged to secure, or available to make payments on, Senior Obligations or to make advances under any toll equity loan agreement with TxDOT, including the TELA.

Federal Funds. Federal transportation funds are made available to the State by the federal government. The Federal-Aid Highway Program ("*FAHP*") is an "umbrella" term that encompasses most of the federal programs providing highway funds to the states. The Federal Highway Administration ("*FHWA*") is the federal agency within the USDOT responsible for administering the FAHP. The FAHP is financed from the transportation user-related revenues deposited in the Federal Highway Trust Fund ("*HTF*"). Federal government funding for infrastructure projects is usually accomplished through federal highway authorization legislation, which establishes funding over a multi-year period.

The FAHP is a reimbursement program. Once projects are approved by FHWA and funds are obligated, the federal government makes payments to the states for costs as they are incurred on projects, which may include debt service on obligations issued to finance a project. With few exceptions, the federal government does not pay for the entire cost of a federal-aid project. Federal reimbursements are typically to be matched with state and/or local funds. The maximum federal share is specified in the federal legislation authorizing the program. Under current law, most projects have an 80 percent federal share, while Highway Safety Improvement Program projects, as well as certain interstate highway construction projects, are funded with a 90 percent federal share.

Funding under the FAHP is provided to states through a multi-step funding cycle that includes: (i) multi-year or short-term authorization by Congress of the funding for various highway programs; (ii) apportionment and allocation of funds to the states each federal fiscal year ("*FFY*") according to statutory formulas or, for some funding categories, through administrative action; (iii) obligation of funds, which is the federal government's legal commitment (or promise) to pay or reimburse states for the federal share of a project's eligible costs; (iv) appropriations by Congress specifying the amount of funds available for the year to liquidate and meet its obligations; (v) program implementation which covers the programming and authorization phases; and (vi) reimbursement by the federal government of the eligible project costs. The FAHP is subject to federal rescission of funds enacted by federal law which reduces the amount of funds available under an existing appropriation or authorization act.

The primary source of revenues in the HTF is derived from federal excise taxes on motor fuels, including certain alternative fuels. The HTF is a dedicated federal fund with revenues dedicated for reimbursement of expenditures by the states, including Texas, for costs of eligible transportation projects, including highway projects, and was created as a user-supported fund intended to finance highways with taxes paid by users of highways. Deposits of such taxes into the HTF must periodically be reauthorized by Congress. Historically, the HTF and its constituent taxes have been authorized to operate for limited periods of time.

Failure to replenish the HTF expeditiously and maintain the flow of federal revenues to states may have an adverse impact on TxDOT and the Commission. In addition, funding appropriations may be revised and federal funding for infrastructure projects may be reduced which may impact the funding available to TxDOT for payment of its obligations, including obligations to developers pursuant to pass-through toll agreements and obligations to advance funds as required by and subject to the limitations under toll equity agreements, including the TELA, and obligations to support the operations of the Central Texas Turnpike System. See "– State Highway Fund Obligations" below.

The current federal highway authorization legislation, the "Fixing America's Surface Transportation Act" (the "*FAST Act*"), became law on December 4, 2015 and reauthorizes the FAHP through September 30, 2020. Prior to the enactment of the FAST Act, the last multi-year authorization of the FAHP was the "Moving Ahead for Progress in the 21st Century Act" ("*MAP-21*"), which provided funding through September 30, 2014. MAP-21 replaced the "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users" ("*SAFETEA-LU*"), which expired in 2009, but was reauthorized through passage of temporary short-term extensions until June 30, 2012. In periods between multi-year authorizations, Congress consistently has used short-term authorizations to fund the FAHP.

Prior federal highway authorization and appropriation legislation has included rescissions of unused contract authority, including reductions to funding under SAFETEA-LU and multiple appropriation bills in each of the years 2006 through 2011. MAP-21 did not include a rescission. The FAST Act put in place a $7.5 billion rescission of unused contract authority at the end of the authorized period in 2020; however, in November 2019, Congress repealed the FAST Act rescission as part of the "Further Continuing Appropriations Act, 2020, and Further Health Extenders Act of 2019." In addition, the Balanced Budget and Emergency Deficit Control Act of 1985, as amended, required certain automatic reductions in federal spending that impacted MAP-21 funding. See "– Sequestration Effects on the State Highway Fund" below.

State law currently provides that federal funds appropriated for public road construction in the State may only be spent by and under the supervision of TxDOT. Such funds are deposited to the credit of the State Highway Fund as reimbursements. See Tables 1 and 3 above for information regarding the amount of federal reimbursement funds credited to the State Highway Fund for the last five Fiscal Years.

The Equity Bonus Program in SAFETEA-LU was removed from MAP-21. In its place, MAP-21 made an adjustment to part of the apportionment formula (which was carried forward through the FAST Act), such that no state receives less than a 95% share of the state's attributed share of highway user tax revenue contributed to the Highway Account of the HTF. Due to recent federal general revenue transfers to the HTF, almost every state is now receiving more funds than were deposited into the HTF. Texas is the only state still below the 100% threshold of funds received. Funds from the HTF support a variety of federal transportation programs that, for purposes of this discussion, are grouped into three broad categories: (i) funds distributed proportionally to states through a dedicated formula program ("*Guaranteed Highway Programs*"); (ii) discretionary funds ("*Discretionary Programs*") and (iii) Transit Programs.

The allocation of funds using a formula provided in law is called apportionment. Most federal-aid funds are formula allocated to states through apportionment. Each FFY, the FHWA has responsibility for apportioning authorized funding for the various highway programs among the states according to formulas established in the authorizing statute, currently the FAST Act. When there are no formulas in law, the non-formula allocation (discretionary) of funds may be made at any time during the FFY. In most cases, non-formula allocated funds are divided among states with qualifying projects applying general administrative criteria provided in the law. The annual apportionments to TxDOT under SAFETEA-LU, MAP-21, extensions of MAP-21 and the FAST Act were $3.3 billion, $3.57 billion, $3.81 billion, $3.83 billion and $3.79 billion in FFY 2015 through 2019, respectively. The FAST Act contains a $7.5 billion rescission at the end of the authorization period in 2020; however, in November 2019, Congress repealed the FAST Act rescission as part of the "Further Continuing Appropriations Act, 2020, and Further Health Extenders Act of 2019." It is possible for additional rescissions to be added to the one included in the FAST Act via the appropriations process.

The following Table 6 provides a history of the apportionments and allocations, as applicable, to TxDOT for certain federal highway funding programs in the State for the last five FFYs. The data for the following table was obtained from the USDOT. Such table includes federal funds apportioned and allocated for the State's Guaranteed Highway Programs, Transit Programs and Discretionary/Allocated Highway Programs, but excludes the State's Aviation and Ferry Boat Programs. The amounts shown for Transit Programs reflect funds that are administered by or flow through TxDOT and awarded to sub-recipients; funds given directly to sub-recipients in the State are excluded.

Table 6 - Federal Transportation Funds Apportioned and Allocated to TxDOT
(in millions)

Federal Fiscal Year	Guaranteed Highway Programs	Discretionary/ Allocated Highway Programs	Transit Programs	Total
2015	$3,342.5	$10.2	$64.4	$3,417.1
2016	3,511.8	19.5	65.6	3,596.9
2017	3,828.4	9.9	66.9	3,905.2
2018	3,850.9	9.5	71.4	3,931.8
2019	3,812.7	2.9	67.6	3,883.2

Obligation authority is the commitment (or promise) of the federal government to pay, through reimbursement to a state, the federal share of an approved project's eligible costs, which may include debt service on obligations issued to finance a project. This process is important to the states because it allows states to award contracts with assurance that the federal government will reimburse its share of incurred costs. Once an obligation is made, the federal government is to reimburse the states when bills or payments become due. However, Congress places a restriction or "ceiling" on the amount of federal assistance that may be obligated (promised) in an individual year.

This is a statutory budgetary control that does not affect the apportionment or allocation of funds. Rather, it controls the rate at which these funds can be used.

FHWA distributes obligation authority to states proportionately based on each state's share of apportioned and allocated revenues. During the FFY, states submit requests to FHWA to obligate funds, representing the federal share of specific projects. As a state obligates funds, its balance of obligation authority is reduced. A state's obligation authority (unlike its apportionments and allocations of authorized funding) must be used before the end of the FFY for which it is made available; if not, it will be distributed to other states to ensure that the total limitation nationwide will be used. Although a ceiling on obligations restricts how much funding may be used in a FFY, the state has flexibility within the overall limitation to mix and match the type of program funds it obligates, based on its individual needs, as long as it does not exceed the ceiling in total.

The following Table 7 provides a history of the obligation authority to TxDOT for Guaranteed Federal Highway Programs in the State for the last five FFYs. The data for the following table was obtained from the USDOT. The following table excludes obligation authority limitation for the State's Aviation and Ferry Boat Programs.

Table 7 - Federal Transportation Obligation Authority for TxDOT Guaranteed Highway Programs
(in millions)

FFY	Amount[1]
2015	$3,333.8
2016	3,408.4
2017	3,820.1
2018	3,758.5
2019	3,916.6

(1) The overall obligation authority limitation received for the Guaranteed Highway Program has historically been less than the apportionment for such Program.

The amounts shown in Table 6 above represent federal funds that have been "apportioned" or "allocated" to the State pursuant to federal legislation. Amounts shown in Table 7 above represent federal funds that have been "obligated" to the State by the FHWA pursuant to federal legislation, but do not represent funds actually credited to TxDOT for any given period. For federal reimbursements credited to TxDOT during the last five Fiscal Years, see Table 1 above.

Uses of the State Highway Fund

General. Funds that are required to be used for public roadways by State or federal law and that are deposited to the credit of the State Highway Fund, may be used only (i) to improve the State highway system or (ii) to mitigate adverse environmental effects that result directly from the construction or maintenance of a state highway by TxDOT. Money in the State Highway Fund that is not so restricted may be used for any functions performed by TxDOT, including expenses relating to TxDOT's "pay as you go" construction program, payroll, repairs and maintenance expenses, costs of materials and supplies, professional fees or commitments, utilities, rents and lease payments and intergovernmental payments. Debt service on State Highway Fund revenue bonds and other obligations and financial commitments are also paid from the State Highway Fund. To accomplish these purposes, money in the State Highway Fund is appropriated by the State Legislature to TxDOT and certain other State agencies. See "– General" and "– State Highway Fund Obligations."

The following Table 8 sets out the appropriation of funds by the State Legislature to TxDOT for the five most recent State biennia, including the current State biennium and the approximate percentage of total appropriations from the State Highway Fund represented by such appropriations.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Table 8 - Appropriations to TxDOT from the State Highway Fund
(dollar amounts shown in millions)

State Biennium	Amount Appropriated[1]	Percentage of Total State Highway Fund Appropriations
2012-13	$12,060.3	87.97%
2014-15[2]	16,491.4	92.86
2016-17[3]	17,208.3	100.00
2018-19[3]	19,933.5	100.00
2019-20	21,277.5	100.00

(1) Amounts include appropriations made to other State agencies (e.g., the Employees Retirement System of Texas) for the benefit of TxDOT. Minor revisions reflect final adjustments to the State's General Appropriations Act.
(2) TxDOT received an increase in State Highway Fund appropriations in State Biennium 2014-2015 mainly due to increased federal funds, and higher registration fee revenue.
(3) Previously, certain money in the State Highway Fund was appropriated to DPS to police the State highway system and to administer State laws relating to traffic and safety on public roads. House Bill 20, which was approved during the 84th regular legislative session and became effective June 3, 2015, ended such diversions to the DPS from the State Highway Fund. See "– General" above.

Budget Process. TxDOT operates under a two-year budget cycle. In preparing its Legislative Appropriations Request ("*LAR*"), TxDOT relies upon its cash flow forecast for the State Highway Fund, which delineates current and future obligations of TxDOT and forecasts the monthly revenue, expenditure, lowest daily balance, and ending balance for the State Highway Fund. From the forecast, the amount of expenditures (appropriations) that can be handled by the State Highway Fund can be determined. After accounting for existing obligations, the Commission then allocates the projected available resources among the competing needs identified by the various TxDOT offices, including obligations under pass-through toll agreements and toll equity agreements. Once these funding priorities have been determined, the data is entered into TXDOT's LAR and submitted to the State Legislature for consideration in enacting the State appropriations bill. Once the appropriations bill takes effect, it is implemented as the State budget for the next two-year biennium, taking effect on the next September 1. Though it is not codified and does not otherwise appear in Vernon's Texas Statutes, the budget is law and State agencies are bound by it. The Legislative Budget Board and the State Auditor's Office are responsible for monitoring compliance.

Capital Planning and Funding. As required by various State and federal laws, the funding priorities of the Commission are outlined in various transportation plans approved by the Commission and various metropolitan planning organizations ("*MPOs*") within the State. The statewide transportation plan ("*Statewide Transportation Plan*") is a long-range plan outlining the transportation goals of the Commission over a 25-year period. From such plan, the Commission develops the Unified Transportation Program ("*UTP*") that covers transportation projects over a period of 10 years. The UTP contains "Construct" transportation projects to be constructed over the next four years and for which funding is firm and "Develop" transportation projects to be developed over the following six years and for which full funding is yet to be authorized. At the same time, the 25 MPOs each approve a four-year Transportation Improvement Program ("*TIPs*"). The TIPs approved by MPOs are used to create the Statewide Transportation Improvement Program ("*STIP*") for projects to be constructed by the Commission over the next four year period as part of the "Construct" UTP projects. All projects funded by TxDOT and reimbursed by the FHWA must be included in the STIP.

The Commission has funded a greater number of highway projects, through its Strategic Priority Funds, by funding projects over a 15 to 20 year time frame (and committing the use of the Strategic Priority Funds over such longer period), thereby decreasing the annual cost by extending the period in which a project will be paid. The Commission has used a number of different financing mechanisms to implement this strategy, including pass-through toll agreements and toll equity agreements. The Commission has also accelerated development and construction of highways through the issuance of obligations secured by and payable from the State Highway Fund and general revenues of the State. See "– General" and "– State Highway Fund Obligations."

During the 84th regular legislative session the State Legislature passed HB 20, which requires the Commission, by rule, to implement a performance-based planning and programming process dedicated to providing

State executive and legislative branches with indicators that quantify and qualify progress toward attaining all TxDOT goals and objectives established by the State Legislature. HB 20 requires the Commission, by rule, to develop and implement performance metrics and performance measures as part of the review of strategic planning in the Statewide Transportation Plan, rural transportation plans and the UTP. The Commission must also, by rule, implement performance metrics and performance measures as part of the evaluation of decision-making on projects selected for funding in the UTP, the STIP and for project delivery for projects in TxDOT's letting schedule. Additionally, HB 20 requires each MPO or, for an area that is not within the boundaries of an MPO, the TxDOT district that serves the area to develop a 10-year transportation plan for the use of the funding allocated to such area plan under the UTP as well as develop project recommendation criteria.

The Commission has the ability to finance its continuing construction program through a number of methods. Pursuant to Section 222.003, Texas Transportation Code (the "*State Highway Fund Revenue Bond Act*"), the State Legislature has authorized the Commission to issue up to $6 billion in aggregate principal amount of bonds and other public securities to finance (i) State highway improvement projects, (ii) reserve and contingency funds for such bonds and other public securities and (iii) the costs of issuing such bonds or securities and entering into credit agreements related to such bonds and securities. The State Highway Fund Revenue Bond Act provides that such bonds and public securities issued, and credit agreements entered into, are secured by a pledge of and payable from revenues deposited to the credit of the State Highway Fund and amounts needed for payments due on such bonds, public securities, and credit agreements are appropriated from the State Highway Fund by Section 49-n (as defined below) for that purpose. No authorized amount currently remains under the State Highway Fund Revenue Bond Act for new money purposes, unless such Act is amended by the State Legislature to modify or remove such limitation. The Commission may issue bonds or other public securities during the next twelve months as additional Senior Obligations for refunding purposes. See "– State Highway Fund Obligations – Senior Obligations" below. The Commission may also issue State general obligation indebtedness to refinance a portion of the Commission's capital program. In addition, the Commission may enter into certain agreements and commitments, including pass-through toll agreements, toll equity agreements and multi-year construction contracts and agreements, to finance, assist in the financing, or outright develop and construct, highway projects. See "– State Highway Fund Obligations – Subordinate Obligations" and "– State Highway Fund Obligations – Other State Highway Fund Obligations and Commitments."

State Highway Fund Obligations

Senior Obligations. Section 49-n of Article III, Texas Constitution, as approved by voters in the State in 2003 ("*Section 49-n*"), permits the State Legislature to authorize the Commission to issue bonds and other public securities to fund State highway improvement projects payable from certain revenues deposited to the credit of the State Highway Fund. The State Highway Fund Revenue Bond Act was amended by the State Legislature in 2007 to increase the maximum principal amount of bonds and other public securities, if any (collectively, "*Senior Obligations*"), that may be issued by the Commission pursuant to Section 49-n. The Commission is currently authorized to issue Senior Obligations in an aggregate principal amount not to exceed $6 billion; provided that the Commission may not issue more than $1.5 billion aggregate principal amount of Senior Obligations in any year. Further, the State Highway Fund Revenue Bond Act currently provides that Senior Obligations may not have a principal amount or terms that, at the time Senior Obligations are issued, are expected by the Commission to cause annual debt service expenditures with respect to Senior Obligations to exceed 10% of the amount deposited to the credit of the State Highway Fund in the immediately preceding year. Section 49-n does not restrict the authority of the State Legislature to modify or remove the limitations on the issuance of Senior Obligations contained in the State Highway Fund Revenue Bond Act. As described above, no authorized amount currently remains under the State Highway Fund Revenue Bond Act for new money purposes, unless such Act is amended by the State Legislature to modify or remove such limitation.

As of January 1, 2020, approximately $3.83 billion in aggregate principal amount of Senior Obligations in the form of State Highway Fund Revenue Bonds was outstanding. Senior Obligations are currently rated "Aaa" by Moody's Investors Service, Inc. and "AAA" by S&P Global Inc.

Subordinate Obligations. The Texas Constitution (Article III, Section 49-m) and the Texas Transportation Code (Section 201.115) currently authorize the Commission to borrow money from any source to carry out the functions of TxDOT. A loan incurred pursuant to Section 201.115 may be in the form of an agreement, a note, a contract, or another form, as determined by the Commission. The term of a loan may not exceed two years, and the amount of a loan, combined with any other loans issued and outstanding pursuant to Section 201.115, may not exceed an amount that is two times the average monthly revenue deposited to the State Highway Fund for the 12 months preceding the month in which the loan is made. A loan incurred pursuant to Section 201.115 is payable from legislative appropriation of amounts on deposit in the State Highway Fund for that purpose. As of the date of this Official Statement, TxDOT has no outstanding loan balances pursuant to Section 201.115.

Additionally, the Texas Transportation Code (Sections 201.961, et seq.) currently authorizes the Commission to issue highway tax and revenue anticipation notes ("*HTRANs*") if the Commission anticipates a temporary cash flow shortfall in the State Highway Fund during any Fiscal Year. The HTRANs are subject to the approval of the Cash Management Committee (consisting of the Governor, the Lieutenant Governor, the Speaker of the House (a non-voting member) and the Comptroller), which also approves cash flow borrowings for the State. HTRANs must mature during the fiscal biennium in which they are issued, and HTRAN proceeds must be placed in a special fund in the State Treasury and transferred as necessary to the State Highway Fund to pay authorized expenditures. HTRANs and related credit agreements are payable from amounts on deposit in the State Highway Fund. To date, the Commission has not issued, and does not expect to issue, any HTRANs.

The obligation of TxDOT to pay debt service on any obligations incurred pursuant to Section 201.115 (or Sections 201.961, et seq., relating to HTRANs) is (i) subordinate to the pledge of State Highway Fund revenues securing Senior Obligations and (ii) prior to the pecuniary obligations of the Commission and TxDOT in respect of other State Highway Fund obligations described below under "– Other State Highway Fund Obligations and Commitments."

Other State Highway Fund Obligations and Commitments. In addition to Senior Obligations and any subordinate obligations (described above), TxDOT has the ability to issue and incur additional bonds, credit agreements, short-term obligations (including commercial paper notes, direct lending obligations or tax and revenue anticipation notes) that are senior to its obligations under toll equity loan agreements, including the TELA. Additionally, TxDOT has the ability to establish additional liens for obligations that may be senior to or on parity with its obligations under any toll equity loan agreement, including the Amended and Restated Toll Equity Loan Agreement dated as of May 16, 2018, between the Corporation and TxDOT (the "TELA"). TxDOT may also enter into other toll equity loan agreements, pass-through toll agreement obligations, CDAs and other obligations that are payable from the State Highway Fund. Some of these long-term obligations and commitments are described below.

Neither the Commission nor TxDOT have adopted any policy limiting the ability to enter into toll equity or other agreements payable from the State Highway Fund.

Central Texas Turnpike System

The Commission has a toll equity commitment with the Central Texas Turnpike System (the "*CTTS*"), subject to the appropriation of available funds, to pay operation and maintenance expenses, current capital expenditures and certain unusual or extraordinary maintenance costs as determined by the Commission ("*CTTS Reserve Maintenance*"), all of which constitute subordinate obligations (as described above) to the extent the CTTS toll revenues are not sufficient to pay such expenses. However, the Commission does not currently anticipate making unreimbursed payments pursuant to such commitment for any CTTS operation and maintenance expenses or CTTS Reserve Maintenance from the State Highway Fund.

SH 249 System

The Commission has covenanted in connection with the State Highway 249 System ("*SH 249*"), subject to the appropriation of available funds, to (i) pay costs necessary to complete SH 249 if the initial obligations issued in the aggregate principal amount of $249,251,954.40 and other funds made available are not sufficient, (ii) pay operating and maintenance expenses to the extent of any deficiency in revenues to pay such costs, and (iii) maintain the required balance in the major maintenance account to the extent such balance is insufficient to pay the required expenditures. The SH 249 commitments constitute subordinate obligations (as described above) to the extent SH 249 toll revenues are not sufficient to pay such costs and expenses.

Austin Campus Consolidation Project

The Commission has authorized TxDOT to request and obtain financing from the Texas Public Finance Authority ("*TPFA*") for the purpose of constructing and equipping the Austin Campus Consolidation Project (the "*Campus Project*") on land owned or to be owned by TxDOT in Austin, Texas for such purpose. The Campus Project is anticipated to include the construction of multiple buildings and structures to support the relocation of over 2,000 TxDOT employees and contractors. TPFA is authorized to issue revenue bonds or other obligations on behalf of TxDOT in an amount not to exceed $326 million for the purpose of constructing and equipping the Campus Project. The State Legislature has appropriated $4.2 million in Fiscal Year 2020 and $19.6 million in Fiscal Year 2021 from the State Highway Fund to be used by TxDOT to make lease payments to TPFA for debt service payments on the revenue bonds or other obligations issued by TPFA to construct the Campus Project. No assurances can be provided that TPFA will issue any such obligations for the Campus Project or that the Campus Project will eventually be constructed.

Toll Equity Obligations

TxDOT is authorized to spend money from any available source, including the State Highway Fund, for the construction, maintenance, and operation of toll facilities. Under Texas Transportation Code, Section 222.103, as amended ("*Section 222.103*"), and pursuant to the terms and conditions established by the Commission, TxDOT may participate in the acquisition, construction, maintenance, or operation of a toll facility with a public or private entity authorized by State law to construct or maintain a toll facility. Prior to its amendment by Senate Bill 312 ("*SB 312*"), which was signed into law by the Governor on June 9, 2017, Section 222.103 required the Commission to recoup any money spent by TxDOT for the cost of a toll facility owned by a private entity, but provided the Commission with the option of requiring repayment of any money spent by TxDOT for the cost of a publicly owned toll facility. Thus, moneys provided by TxDOT under Section 222.103 (prior to its amendment by SB 312) may have been in the form of loans (to either public or private entities) or grants (to public entities only). SB 312 amended Section 222.103 and added Texas Transportation Code, Section 372.002 to provide that any contributions provided by TxDOT on or after September 1, 2017 as participation in the cost of a toll project must be repaid; provided, however, toll project entities (including regional tollway authorities, regional mobility authorities and certain counties) are not required to repay funds contributed by TxDOT for a toll project from a subaccount created under Transportation Code, Section 228.012, or if a toll project entity commenced the environmental review process for the project on or before January 1, 2014.

Transportation Code Section 222.103 limits the amount of money that TxDOT may grant each Fiscal Year to no more than the amount that, together with amounts granted for the preceding four Fiscal Years, results in an average annual expenditure of $2 billion. Toll equity loans under Section 222.103 are not included in the calculation of the limitation. The Commission anticipates entering into additional toll equity agreements in the future, and it is currently anticipated that all toll equity obligations will be funded from the State Highway Fund. All toll equity obligations (including the TELA with the Corporation) are subject to the appropriation of lawfully available funds to make such payments; and such payments are subordinate to (i) Senior Obligations, which have a prior lien on and pledge of the revenues deposited into the State Highway Fund, (ii) obligations issued or incurred pursuant to Section 201.115, Texas Transportation Code, and (iii) HTRANs.

As of August 31, 2019, the Commission had outstanding toll equity grant commitments and toll equity loan commitments payable from the State Highway Fund totaling approximately $173.4 million and $9.4 billion, respectively. The outstanding amount for toll equity loan commitments relates solely to the TELA with the Corporation. As of the date of this Official Statement, TxDOT has no outstanding toll equity loan commitments other than the TELA with the Corporation. As described above, TxDOT may enter into additional toll equity loan agreements in the future, and neither the Commission nor TxDOT have adopted any policy limiting the ability to enter into toll equity or other agreements payable from the State Highway Fund.

The TELA with the Corporation, which was originally approved by the Commission on September 27, 2012 (and was amended and restated in 2018) authorizes an original maximum aggregate principal loan amount (referred to therein as the "*Maximum Available Aggregate Amount*") of approximately $9.6 billion (with an outstanding commitment of approximately $9.243 billion as of the Date of Delivery of the 2020 Bonds), payable as advances made from time to time on the terms and conditions set forth in the TELA. Pursuant to the terms of the TELA, TxDOT has committed to provide funds to the Corporation to pay for certain costs relating to the development, construction, operation, maintenance and financing of certain Segments (or portions thereof) of the Grand Parkway System, and a negotiated maximum amount each year (referred to therein as the "*Maximum Available Annual Amount*") should Revenues of the System and certain fund balances under the Trust Agreement be insufficient to cover debt service on outstanding TELA Supported Bonds, certain TELA Supported Junior Operating Expenses (which consist of all Junior Operating Expenses for the System facilities that comprise the Initial Project), and certain Major Maintenance Expenses (for the System facilities that comprise the Initial Project and Segments H and I), subject to the TELA Limitations and other provisions of the TELA. The Maximum Available Annual Amounts under the TELA for each year equal or exceed the total debt service for the TELA Supported Bonds plus currently estimated TELA Supported Junior Operating Expenses described above for each such year. Notwithstanding the foregoing, there are no assurances that the Maximum Available Annual Amount of the TELA will be sufficient to cover all TELA Supported Junior Operating Expenses that are actually incurred in any particular year. While Major Maintenance Expenses are an Eligible Cost under the TELA, the Maximum Available Annual Amount under the TELA is not sufficient to cover the combination of total debt service for the TELA Supported Bonds plus currently estimated TELA Supported Junior Operating Expenses entitled to the benefit of the TELA plus Major Maintenance Expenses in any given year. As of the date of this Official Statement, no drawdowns of funding have been requested by the Corporation under the TELA.

Once established, the Maximum Available Aggregate Amount under the TELA with the Corporation may not be increased unless approved by the Commission. Therefore, the maximum amount of money that can be paid by TxDOT under the TELA is equal to the aggregate amount of costs that are authorized under Article 3, Section 52-b of the Texas Constitution and Section 222.103 of the Texas Transportation Code, *i.e.*, the "Eligible Costs." Periodic advances under the TELA with the Corporation, when combined with all previous advances thereunder, are limited to an amount not to exceed (i) the Maximum Available Aggregate Amount under the TELA and (ii) the aggregate amount of Eligible Costs under the TELA, taking into account all prior advances thereunder, as described in the TELA. In addition, draws under the TELA with the Corporation in any year cannot exceed the Maximum Available Annual Amount under such agreement for that period, and if the total amount of periodic draws in any year is less than the Maximum Available Annual Amount under the TELA, the difference will not be carried forward, and will not be available for future periodic draws under the TELA.

Pursuant to the terms of the Trust Agreement, the Corporation, without the consent of any Owner, reserves the right to amend or supplement any Toll Equity Note and the related Toll Equity Loan Agreement (including the TELA with the Corporation), in any manner provided that, as certified by the Corporation Representative, (i) the annual Debt Service Requirements for all Outstanding First Tier TELA Obligations, Second Tier TELA Obligations and Subordinate Tier TELA Obligations and the estimated TELA Supported Junior Operating Expenses (as certified by the General Engineering Consultant) for the current Fiscal Year and in each Fiscal Year any Toll Equity Loan Supported Obligations are Outstanding is less than or equal to the applicable aggregate Maximum Available Annual Amount for each such Fiscal Year as set forth in any outstanding Toll Equity Loan Agreements (including the TELA with the Corporation), as amended or supplemented or (ii) if prior to any amendment or supplement, there is any Fiscal Year (including the then current Fiscal Year) in which the applicable aggregate Maximum Available Annual Amount for such Fiscal Year as set forth in any outstanding Toll Equity Loan Agreements (including the TELA with the Corporation) is less than the annual Debt Service Requirements for all Outstanding First Tier TELA Obligations, Second Tier TELA Obligations and Subordinate Tier TELA Obligations and the estimated TELA Supported Junior Operating Expenses (as certified by the General Engineering Consultant for the current Fiscal Year and in each Fiscal Year any Toll Equity Loan Supported Obligations are Outstanding) for any such Fiscal Year (in each such Fiscal Year, a "*TELA Coverage Deficit*"), then the amendment or supplement to any outstanding Toll Equity Loan Agreements (including the TELA with the Corporation) must (A) reduce the TELA Coverage Deficit in each Fiscal Year such a deficit occurs and (B) for all other Fiscal Years that do not have a TELA Coverage Deficit, not create a TELA Coverage Deficit in any such Fiscal Year. Pursuant to the TELA with the Corporation, the TELA may be amended in a written instrument signed and delivered by the Corporation and TxDOT, it being understood that any such amendment may require Commission action.

If a request were made for a loan advance under the TELA with the Corporation, TxDOT expects to have sufficient advance notice to ensure funds are available to make such advances. TxDOT has budgetary flexibility to plan for expected draws in advance of such draw requests including deferring, reducing or eliminating construction lettings for projects throughout the State and deferring or reducing the amount of planned pass through financing commitments. Because TxDOT's budget does not provide appropriations for specific expenditures, TxDOT also has the flexibility to reprogram funds during each Fiscal Year in the biennium. As described above, TxDOT's annual obligations under the TELA with the Corporation are limited, which provides greater certainty with respect to its ability to plan for future draws. Further, if reductions in project lettings or reprogramming of funds are insufficient to make advances requested under the TELA, TxDOT currently has the authority to issue HTRANs and other short-term obligations pursuant to Section 201.115. See "– State Highway Fund Obligations – Subordinate Obligations."

The disbursements by TxDOT pursuant to any toll equity loan agreement (including the TELA) will be subject to appropriation and such payments are subordinate to (i) Senior Obligations, which have a prior lien on State Highway Fund revenues, (ii) obligations issued or incurred pursuant to Section 201.115, Texas Transportation Code, and (iii) HTRANs.

The following Table 9 shows the expected deposits to and uses of revenues in the State Highway Fund during the term of the TELA with the Corporation.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

Table 9 - Analysis of Impact of Toll Equity Obligations on the State Highway Fund

Fiscal Year Ending 8/31	Total Forecasted SHF Revenues[1][2]	SHF Senior Obligations Debt Service[3]	Other Existing Obligations[1][4]	Other Agencies[1][5]	Current Letting Cashflow Commitments[1]	Revenue After All Obligations[6]	Grand Parkway TELA MAAA[7]	% TELA MAAA Total Forecasted SHF Revenues	% TELA MAAA Revenue After All Obligations
	A	B	C	D	E	F=A-B-C-D-E	G	H=G/A	I=G/F
2020	$10,901,423,041	$ 428,246,850	$1,471,617,727	$492,802,663	$5,198,106,771	$ 3,310,649,031	$118,667,530	1.09%	3.58%
2021	9,823,120,752	428,240,302	1,021,877,973	492,140,621	2,919,278,026	4,961,583,829	120,147,530	1.22	2.42
2022	9,509,903,942	427,563,272	578,737,981	493,771,083	1,349,755,176	6,660,076,430	120,981,530	1.27	1.82
2023	9,106,705,723	426,896,447	452,567,808	495,307,833	752,909,914	6,979,023,722	166,027,780	1.82	2.38
2024	8,958,315,791	425,748,086	333,498,221	496,860,500	533,935,536	7,168,273,448	269,511,479	3.01	3.76
2025	8,747,045,973	425,392,364	80,441,422	498,428,250	366,746,978	7,376,036,959	199,855,318	2.28	2.71
2026	8,751,639,987	425,218,184	57,254,237	500,011,917	229,480,133	7,539,675,515	201,487,632	2.30	2.67
2027	8,890,944,003	424,889,479	44,426,728	501,611,583	174,243,819	7,745,772,393	203,331,150	2.29	2.63
2028	8,928,709,953	421,210,477	23,096,330	503,227,250	70,096,995	7,911,078,901	205,363,747	2.30	2.60
2029	9,025,739,523	415,523,295	17,336,146	504,858,917	39,946,570	8,048,074,594	207,206,260	2.30	2.57
2030	9,155,669,036	409,399,671	8,471,662	506,506,583	15,149,062	8,216,142,057	211,097,735	2.31	2.57
2031	9,301,395,152	218,698,981	1,107,293	508,171,167	661,644	8,572,756,067	226,468,940	2.43	2.64
2032	9,469,946,987	184,044,379	-	509,851,833	-	8,776,050,774	236,491,556	2.50	2.69
2033	9,649,517,042	181,868,250	-	511,549,417	-	8,956,099,375	244,249,037	2.53	2.73
2034	9,839,337,459	181,865,250	-	513,264,000	-	9,144,208,209	257,142,974	2.61	2.81
2035	10,039,618,642	-	-	514,995,583	-	9,524,623,058	270,303,810	2.69	2.84
2036	10,244,528,623	-	-	516,745,083	-	9,727,783,540	281,436,738	2.75	2.89
2037	10,455,713,572	-	-	518,511,667	-	9,937,201,905	289,387,258	2.77	2.91
2038	10,676,196,952	-	-	520,296,167	-	10,155,900,785	298,980,719	2.80	2.94
2039	10,904,159,999	-	-	522,098,667	-	10,382,061,332	304,461,056	2.79	2.93
2040	11,143,306,842	-	-	523,919,167	-	10,619,387,675	307,224,020	2.76	2.89
2041	11,375,439,184	-	-	525,757,667	-	10,849,681,518	309,008,225	2.72	2.85
2042	11,612,210,641	-	-	527,614,167	-	11,084,596,474	308,072,519	2.65	2.78
2043	11,786,393,801	-	-	527,614,167	-	11,258,779,634	287,509,340	2.44	2.55
2044	11,963,189,708	-	-	527,614,167	-	11,435,575,541	243,463,612	2.04	2.13
2045	12,142,637,553	-	-	527,614,167	-	11,615,023,387	309,508,410	2.55	2.66
2046	12,324,777,117	-	-	527,614,167	-	11,797,162,950	307,070,585	2.49	2.60
2047	12,509,648,773	-	-	527,614,167	-	11,982,034,607	301,161,395	2.41	2.51
2048	12,697,293,505	-	-	527,614,167	-	12,169,679,338	299,492,190	2.36	2.46
2049	12,887,752,908	-	-	527,614,167	-	12,360,138,741	292,563,770	2.27	2.37
2050	13,081,069,201	-	-	527,614,167	-	12,553,455,035	280,400,710	2.14	2.23
2051	13,277,285,239	-	-	527,614,167	-	12,749,671,073	457,303,300	3.44	3.59
2052	13,476,444,518	-	-	527,614,167	-	12,948,830,351	557,252,667	4.14	4.30
2053	13,678,591,186	-	-	527,614,167	-	13,150,977,019	549,885,627	4.02	4.18
Total / Avg	$ 366,335,672,326	$5,424,805,288	$4,090,433,528	$17,502,057,618	$11,650,310,625	$327,668,065,268	$9,242,516,151	2.52%	2.82%

(1) Source: TxDOT, as of September 1, 2019.

(2) Excludes Proposition 1 and Proposition 7 revenues; includes federal subsidy associated with the Commission's Series 2010 Bonds. A 5.9% reduction in federal subsidy payments has been announced by the federal government for the federal fiscal year ending September 30, 2020 and, in Table 9 above, is assumed to apply to the federal subsidy payments beginning with the April 1, 2020 payment and continuing through the federal fiscal year ending September 30, 2029 (October 1, 2029 payment). See "– Sequestration Effects on the State Highway Fund."

(3) Gross debt service shown. Interest on the Commission's Series 2016-B Bonds is assumed at 3.5% per annum following the initial multiannual rate period. Interest on the Commission's variable rate Series 2014-B Bonds is assumed at 3.5%, which is inclusive of remarketing and liquidity fees, as applicable. The Series 2014-B Bonds and the Series 2016-B Bonds represent a portion of the Commission's outstanding Senior Obligations.

(4) Other Existing Obligations is comprised of financial assistance for toll facilities (other than the TELA), pass-through obligations, payments for the delivery of CDA projects, and similar obligations.

(5) Other Agencies is comprised of transfers to the Employees Retirement System of Texas for TxDOT employee benefits and transfers to the Texas Emissions Reduction Plan account for grant programs administered by the Texas Commission on Environmental Quality.

(6) Money available for TxDOT operations and other obligations.

(7) Represents the Maximum Available Annual Amounts for the TELA with the Corporation.

Pass-Through Financing Agreements

Section 222.104 of the Texas Transportation Code, as amended ("*Section 222.104*"), provides for the payment of a "Pass-Through Toll," a per vehicle fee or per vehicle mile fee determined by the number of vehicles using a highway, for specific purposes. First, pursuant to Section 222.104 and subject to Commission rules, TxDOT may enter into an agreement with a public or private entity that provides for the payment of Pass-Through Tolls ("*Pass-Through Financing*") to reimburse a public or private entity for expenditures made by the public or private entity for the design, development, construction, maintenance or operation of a toll or non-toll facility on the State highway system. Second, TxDOT may enter into an agreement with a private entity that provides for the payment of Pass-Through Tolls by the private entity to TxDOT as reimbursement for TxDOT expenditures for the design, development, construction, maintenance or operation of a toll or non-toll facility on the State highway system. TxDOT may use any available funds, including money on deposit within the State Highway Fund, for the purpose of making a Pass-Through Toll payment. It is currently anticipated that all Pass-Through Toll commitments will be paid from the State Highway Fund. As of August 31, 2019, TxDOT had approximately 29 active Pass-Through Financings with terms ranging from four to 20 years and total pass-through reimbursements owed of approximately $1.0 billion with aggregate annual reimbursements of no greater than $170 million.

TxDOT's pecuniary obligations under Pass-Through Financings do not provide for the payment of, or obligate TxDOT to pay, amounts sufficient to pay debt service on bonds or other public securities secured by such payments and, such payments are subordinate to (i) Senior Obligations, which have a prior lien on State Highway Fund revenues, (ii) obligations issued or incurred pursuant to Section 201.115, Texas Transportation Code, and (iii) HTRANs. The amount of payments owed by TxDOT under Pass-Through Financings will be determined by the terms and conditions of the relevant agreement, without regard to the actual debt service payable in respect of any bonds issued by the governmental entity receiving the payments. TxDOT's obligation to pay amounts owed under the terms of Pass-Through Financings are currently payable from the State Highway Fund and are subject to appropriation by the State Legislature of sufficient funds to discharge the obligations of TxDOT.

Sequestration Effects on the State Highway Fund

Pursuant to the requirements of the Balanced Budget and Emergency Deficit Control Act of 1985, as amended by the Bipartisan Budget Act of 2013 (the "*Budget Act*"), certain automatic, annual reductions in federal spending (the "*Sequester Cuts*") took effect as of March 1, 2013. The Sequester Cuts affected the subsidy payments to be made by the federal government to issuers of "direct-pay" tax credit bonds, such as Build America Bonds ("*BABs*"), including the Commission's State Highway Fund First Tier Revenue Bonds, Series 2010 (Build America Bonds – Direct Payment) (the "*Series 2010 Bonds*"). The Series 2010 Bonds were issued as taxable BABs and the Commission elected to receive a subsidy payment from the United States Treasury equal to 35% of the amount of each interest payment on the Series 2010 Bonds (the "*BAB Subsidy Payments*"). The BAB Subsidy Payments are not available to make payments under any toll equity loan agreement, including the TELA. As a result of the Sequester Cuts, the BAB Subsidy Payments received by the Commission in Fiscal Years 2014 through 2019 for the Series 2010 Bonds were reduced in amounts ranging between $1,729,864 and $2,148,815. The BAB Subsidy Payment in respect of the October 1, 2019 debt service payment on the Series 2010 Bonds was reduced by approximately $837,903. A 5.9% reduction in BAB Subsidy Payments has been announced by the federal government for the federal fiscal year ending September 30, 2020, and will apply to the BAB Subsidy Payments to be received by the Commission in respect of the April 1, 2020 debt service payment on the Series 2010 Bonds. If the Sequester Cuts continue, the Commission will be required to expend additional State Highway Fund revenues or other sources of funds in order to pay debt service on the Series 2010 Bonds resulting from a reduction in BAB Subsidy Payments.

As a result of the Sequester Cuts for Fiscal Year 2019, TxDOT also experienced a reduction of approximately $3.6 million in funding from the National Highway Performance Program, which is administered by the FHWA for highway projects that are located on the National Highway System. In addition, emergency relief funds authorized from the Highway Trust Fund for certain disaster events are also subject to the Sequester Cuts. The Sequester Cuts were originally set to expire in 2021. However, on August 2, 2019, the Budget Act was amended by Congress to, among other things, extend the planned Sequester Cuts to September 30, 2029. There can be no assurances as to whether the Sequester Cuts will remain in effect and cause a reduction in receipts of federal funds or BAB Subsidy Payments for any future year.

The federal Statutory Pay-As-You-Go Act of 2010 (the "*PAYGO Act*"), enacted on February 12, 2010, requires that all new direct spending and revenue legislation enacted into law during a congressional session, taken together, must not increase projected deficits. Under the PAYGO Act, if the Office of Management and Budget ("*OMB*") determines that new legislation creates a net increase in the deficit under the mandated scorecard system, OMB is required to order a sequestration of non-exempt direct spending programs sufficient to eliminate the overage. If such sequestration under the PAYGO Act were to go into effect, the Commission may not receive all or a portion of the BAB Subsidy Payments in respect of the Series 2010 Bonds. In addition, a portion of the funding from the National Highway Performance Program that TxDOT receives and certain emergency relief funds authorized from the Highway Trust Fund and available to TxDOT may also be reduced if such sequestration under the PAYGO Act were to go into effect. There can be no assurances as to whether any new direct spending and revenue legislation will be enacted and result in sequestration of the aforementioned payments or funds under the PAYGO Act.

TxDOT did not experience any reduction in federal funds during Fiscal Year 2019 due to sequestration under the PAYGO Act. The total amount of federal funds that were available to TxDOT during Fiscal Year 2019 and subject to potential reduction from Sequester Cuts under the Budget Act or sequestration under the PAYGO Act (which was comprised of the BAB Subsidy Payments in respect of the Series 2010 Bonds, funding from the National Highway Performance Program and certain emergency relief funds authorized from the Highway Trust Fund), before giving effect to the Sequester Cuts under the Budget Act for such period, was approximately $83.0 million, which is approximately 1.0% of the total State Highway Fund revenues for Fiscal Year 2019 shown in Table 1 above in this Appendix A.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

APPENDIX B

AUDITED FINANCIAL STATEMENTS OF THE SYSTEM FOR FISCAL YEAR ENDED AUGUST 31, 2019

[THIS PAGE INTENTIONALLY LEFT BLANK]

CENTRAL TEXAS TURNPIKE SYSTEM

An enterprise fund of the Texas Department of Transportation

Annual Financial Report

For The Fiscal Year Ended August 31, 2019

(With Independent Auditor's Report)

Texas Department of Transportation

[Inside of Cover]

Central Texas Turnpike System

An Enterprise Fund of the Texas Department of Transportation

FINANCIAL STATEMENTS
For the Fiscal Year Ended
August 31, 2019

Prepared by:
Financial Management Division of the Texas Department of Transportation

This page is intentionally blank.

CENTRAL TEXAS TURNPIKE SYSTEM

Annual Financial Report

For the Fiscal Year Ended August 31, 2019

TABLE OF CONTENTS

This page is intentionally blank.

Section One

Introductory Section

This page is intentionally blank.

125 EAST 11TH STREET, AUSTIN, TEXAS 78701-2483 | 512.463.8588 | WWW.TXDOT.GOV

December 17, 2019

To: The Citizens of the State of Texas and the Creditors of the Central Texas Turnpike System

The audited annual financial statements of the Central Texas Turnpike System (CTTS) for the year ended August 31, 2019 are enclosed in accordance with the Indenture of Trust dated July 15, 2002. The Indenture of Trust, as supplemented by the first through seventh Supplemental Indentures (Indenture), requires the preparation and submission of audited annual financial statements.

An external audit firm, Crowe LLP, performed an independent audit, in accordance with generally accepted auditing standards, of CTTS' basic financial statements for the year ended August 31, 2019. The audit opinion is presented in this report preceding the financial statements. This report was prepared by the accounting staff in the Financial Management Division of the Texas Department of Transportation (TxDOT). CTTS' internal accounting controls provide reasonable assurance regarding the safeguarding of assets against loss from unauthorized use or disposal and the reliability of financial records for preparing financial statements. The concept of reasonable assurance recognizes that the cost of a control should not exceed the resulting benefit.

Management is responsible for the accuracy of the data in this report as well as for the completeness and fairness of the presentation. Consequently, management assumes full responsibility for the completeness and fairness of all of the information presented in the financial statements. To the best of my knowledge and belief, the financial statements are accurate in all material respects, are reported in a manner that presents fairly the financial position and results of operations of CTTS and provide disclosures that enable the reader to understand CTTS' financial condition.

The Management's Discussion and Analysis (MD&A) provides a narrative introduction, overview and analysis of the financial activities of TxDOT. We encourage readers to consider the information in this letter of transmittal in conjunction with the MD&A.

Profile of the Government

This report includes financial statements for CTTS, a fund within TxDOT's reporting entity. TxDOT is an agency of the state of Texas. TxDOT is managed by an executive director and is governed by the five-member Texas Transportation Commission. All members of the Commission are appointed by the Governor. The Commission is authorized to issue general obligation and revenue bonds per statutory and constitutional provisions.

Texas Transportation Code grants the Commission the authority to study, plan, design, construct, finance, operate and maintain turnpikes in all 254 counties of the state as a part of the state's highway system. The Commission can issue turnpike revenue bonds to pay all or a part of the cost of a turnpike project, to enter into comprehensive development agreements to execute projects and to acquire right of way through quick-take procedures. Such revenue bonds were issued to fund a portion of the costs of constructing the CTTS roadways.

Budgetary Controls

Annual budgets are approved by the Texas Transportation Commission in accordance with the indenture and reviewed by the general engineering consultants. These budgets are entered and maintained in the statewide accounting system as collected revenues or reimbursements. Controls are maintained at the agency level, with additional control at the fund and appropriation level to ensure expenditures do not exceed collected amounts.

Information Useful in Assessing CTTS' Financial Condition

The following are the active sub-accounts of CTTS, established in accordance with the Indenture:

- Revenue Fund – Monies from CTTS tolls and fees are deposited into the Revenue Fund and flow through the Master Trust Indenture flow of funds. To the extent all funds have the required balances, any monies on deposit in the Revenue Fund can be transferred to the General Reserve Fund and used for the purposes allowed by the General Reserve Fund. The General Reserve Fund currently has no deposits.

- First Tier Debt Service Fund – Monies on deposit may be used solely for principal and interest debt service on First Tier obligations.

- First Tier Debt Service Reserve Fund – Monies on deposit may be used solely to pay debt service on First Tier obligations to the extent funds are not otherwise available.

- Second Tier Debt Service Fund – Monies on deposit may be used solely for principal and interest debt service on Second Tier Obligations.

- Second Tier Debt Service Reserve Fund – Monies on deposit may be used solely to pay debt service on Second Tier Obligations to the extent funds are not otherwise available.

- Rate Stabilization Fund – Monies on deposit in this account are intended to assure rates and charges remain competitive and reasonable. Permissible uses: (i) cure deficiency in debt service funds, (ii) deposit into operating account under certain conditions, (iii) pay operating expenses or maintenance expenses if operating account and maintenance account are insufficient and (iv) for any other purpose for which revenues are permitted to be used under applicable law under the CTTS Master Indenture (includes self-insurance). The balance for this fund must at least equal $67.9 million, which represents all revenues received through Aug. 31, 2008, unless amounts in the fund are used to cure a debt service deficiency for any tier. In no event shall the fund balance be reduced below $10 million.

- Operating Account – Monies used for operating expenses, held outside the Trust.

- Maintenance Account – Monies used for maintenance expenses, held outside the Trust.

- Reserve Maintenance Account – Monies used for Annual Capital Budget and unusual or extraordinary maintenance, held outside the Trust.

- Construction Fund-Capital Contributions Account – Monies on deposit are mainly comprised of TxDOT contributions and accumulated interest earnings. The funds may only be used for lawful purposes of the system.

TxDOT and the Trustee are responsible for ensuring that funds maintain the proper minimum balances as set forth in the Indenture and for investing in securities required to meet liquidity requirements. The criteria for suitable investments for each fund type are detailed in the Commission's investment strategies.

All monies in the revenue fund, debt service funds, rate stabilization fund and construction fund – capital contributions account are invested in money market funds, government securities and investment pools that are in compliance with the Commission’s investment policy.

The debt service reserve fund is invested in an investment pool and a repurchase agreement collateralized by U.S. Treasury and Agency Securities.

December 17, 2019

Acknowledgements

The preparation of the report requires the efforts of individuals throughout TxDOT, including the dedicated efforts of the management and staff of the TxDOT Financial Reports Section and other sections of the Financial Management Division and the Project Finance, Debt & Strategic Contracts Division. I sincerely appreciate the efforts of all these individuals who continue to help make TxDOT a leader in quality financial reporting.

Sincerely,

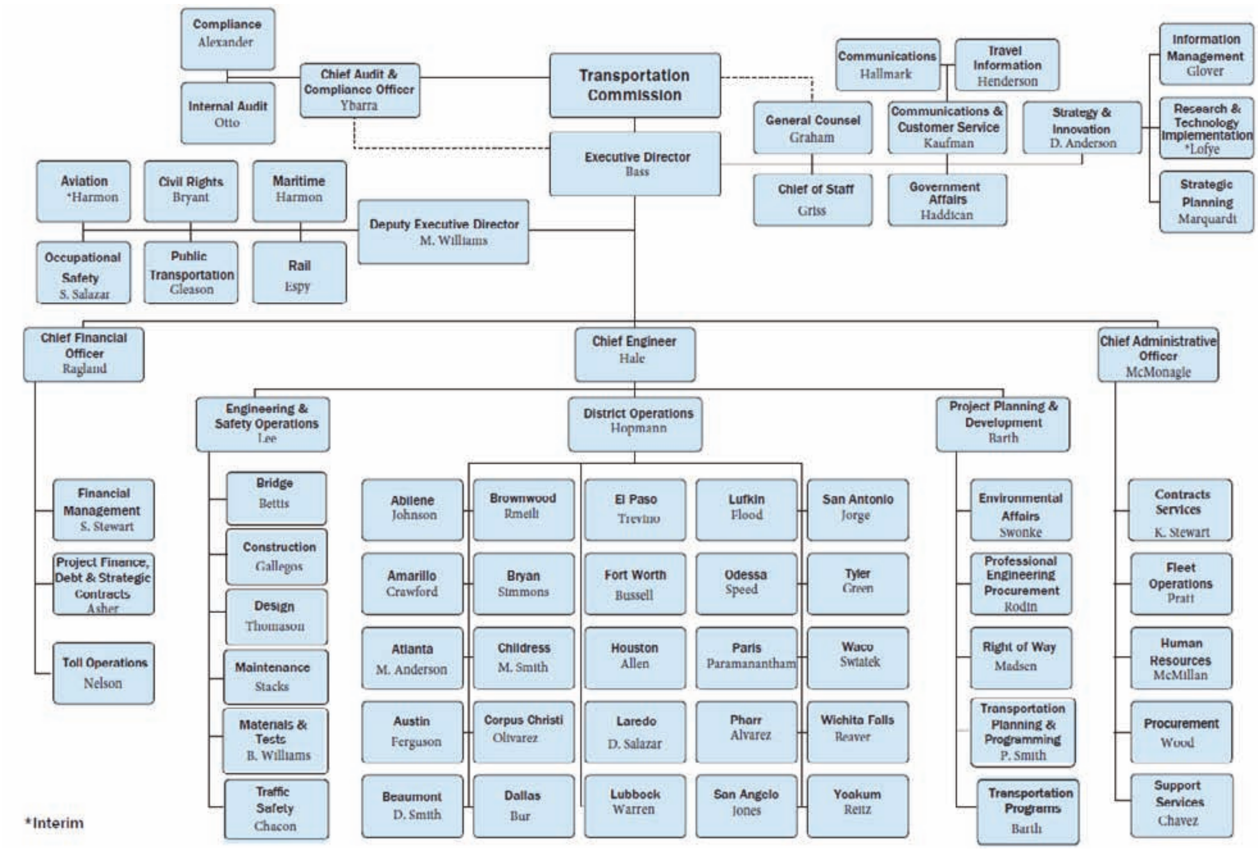
James M. Bass

James M. Bass
Executive Director

OUR VALUES: *People* • *Accountability* • *Trust* • *Honesty*
OUR MISSION: *Connecting You With Texas*

An Equal Opportunity Employer

Texas Department of Transportation
Organization Chart as of August 31, 2019



Commission and Key Personnel
as of August 31, 2019

TEXAS TRANSPORTATION COMMISSION

J. BRUCE BUGG, JR ....Chairman
San Antonio

ALVIN NEW. ....Commissioner
San Angelo

LAURA RYAN ....Commissioner
Houston

VICTOR VANDERGRIFF*...Commissioner
Arlington

ROBERT C. VAUGHN..Commissioner
Dallas

TEXAS DEPARTMENT OF TRANSPORTATION

JAMES M. BASS .... Executive Director
MARC D. WILLIAMS.. Deputy Executive Director
MARY A. GRISS ....Chief of Staff
BRIAN D. RAGLAND... Chief Financial Officer
BENITO YBARRA ....Chief Audit and Compliance Officer
WILLIAM L. HALE... Chief Engineer
RICHARD C. MCMONAGLE .... Chief Administrative Officer
ROBERT S. KAUFMAN .... Director of Communications and Customer Service
JEFFREY M. GRAHAM ....General Counsel
GERARD J. HADDICAN II..Director of Government Affairs
DARRAN T. ANDERSON .... Director of Strategy and Innovation

*Resigned

This page is intentionally blank

Section Two

Financial Section

Crowe LLP
Independent Member Crowe Global

INDEPENDENT AUDITOR'S REPORT

Members of the Texas Transportation Commission
State of Texas

Report on the Financial Statements

We have audited the accompanying financial statements of the Central Texas Turnpike System (System), an enterprise fund of the Texas Department of Transportation (TxDOT), an agency of the State of Texas, as of and for the year ended August 31, 2019, and the related notes to the financial statements, which collectively comprise the System's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the System, as of August 31, 2019, and the changes in its financial position and its cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Note 1, the financial statements present only the Central Texas Turnpike System, an enterprise fund of the Texas Department of Transportation, an agency of the State of Texas, and do not purport to, and do not, present fairly the financial position of TxDOT or the State of Texas, as of August 31, 2019, the changes in its financial position or, where applicable, its cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the *Management's Discussion and Analysis* on pages 12-15 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the System's basic financial statements. The introductory section is presented for purposes of additional analysis and is not a required part of the basic financial statements.

The introductory section has not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated December 17, 2019 on our consideration of the System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the System's internal control over financial reporting and compliance.

Crowe LLP

Crowe LLP

Dallas, Texas
December 17, 2019

This page is intentionally blank.

Section Two (Continued)

Management's Discussion & Analysis (Unaudited)

Management's Discussion and Analysis

As management of the Texas Department of Transportation (TxDOT), we offer readers of the Central Texas Turnpike System's (CTTS) financial statements this narrative overview and analysis of its financial activities for the year ended Aug. 31, 2019, with selected comparative information for the year ended Aug. 31, 2018. The information presented should be read in conjunction with our letter of transmittal, the financial statements and the accompanying notes to the financial statements.

Highlights

During fiscal 2019 CTTS generated $220.7 million in toll revenues (net of allowance), an increase of $23.1 million or 11.7 percent over fiscal 2018. Toll revenues increased due to a 6.2 percent increase in overall toll transactions, with 169 million transactions recorded on CTTS roadways in fiscal 2019.

CTTS' indenture requires certain operating, maintenance, and reserve maintenance funds to be held separate and apart from its other funds and accounts. As of Aug. 31, 2019, CTTS had increased these reserves to $153.9 million. These balances will enable CTTS to pay directly for budgeted expenses throughout the coming year.

The assets and deferred outflows of CTTS exceeded its liabilities by $393.1 million as of Aug. 31, 2019, an increase of $39.9 million or 11.3 percent from fiscal 2018. The majority of the increase is attributable to an increase in operating revenues of 14.5 percent.

Overview of the Financial Statements

The annual financial report consists of two parts: management's discussion and analysis (this section) and the basic financial statements with their accompanying notes.

Fund Financial Statements

A fund is a group of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. TxDOT, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. Proprietary funds are used to account for a government's business-type activities. The activities related to CTTS are accounted for in an enterprise fund, which is a type of proprietary fund used to report activities in which a fee is charged to external users for goods and services.

Financial Analysis

The overall financial position and operations of CTTS for the past two years is summarized as follows.

Statement of Net Position
August 31, 2019 and 2018 (Amounts in Thousands)

		2019		2018
ASSETS				
Assets Other Than Capital Assets	$	766,839	$	717,510
Capital Assets		2,599,872		2,596,517
Total Assets		3,366,711		3,314,027
DEFERRED OUTFLOWS OF RESOURCES		26,264		28,183
LIABILITIES				
Current Liabilities		64,967		47,637
Noncurrent Liabilities		2,934,886		2,941,335
Total Liabilities		2,999,853		2,988,972
NET POSITION				
Net Investment in Capital Assets		579,689		557,881
Restricted for Debt Service		128,820		123,247
Restricted for Operations and Maintenance		153,959		124,923
Unrestricted		(469,346)		(452,813)
Total Net Position	$	393,122	$	353,238

Changes in Net Position
For the Fiscal Years Ended August 31, 2019 and 2018 (Amounts in Thousands)

		2019		2018
OPERATING REVENUES				
Toll Revenue-Pledged	$	220,690	$	197,546
Fee Revenue-Pledged		32,760		23,911
Other Revenue		21		
Total Operating Revenue		253,471		221,457
OPERATING EXPENSES				
Contracted Services		24,421		25,029
Depreciation and Amortization		54,485		54,472
Other Operating Expenses		30,907		31,665
Total Operating Expenses		109,813		111,166
Operating Income (Loss)		143,658		110,291
Total Nonoperating Revenues (Expenses)		(107,918)		(113,126)
Income (Loss) before Transfer		35,740		(2,835)
Transfers		4,144		25,933
Change in Net Position		39,884		23,098
Net Position – Beginning		353,238		330,140
Net Position – Ending	$	393,122	$	353,238

Net position may serve over time as a useful indicator of CTTS' financial position. Net position will decline as additional noncurrent liabilities are accrued via principal accretion on outstanding CTTS debt and assets are depreciated. Debt service was $127.4 million in fiscal 2019 and is scheduled to increase to $133.8 million in fiscal 2020. Operations and maintenance expense (excluding depreciation) is estimated to increase approximately $31.4 million.

Capital Assets and Debt Administration

Capital Assets

As of Aug. 31, 2019, CTTS had approximately $2.6 billion in net capital assets.

Capital Assets-Net of Depreciation and Amortization
August 31, 2019 and 2018 (Amounts in Thousands)

	2019	2018
Land	$ 668,831	$ 668,798
Construction in Progress	65,851	8,558
Land Use Rights	19,466	19,466
Infrastructure-Roadways and Bridges	1,842,204	1,895,814
Buildings	3,520	3,881
Total Capital Assets	$ 2,599,872	$ 2,596,517

The increase in net capital assets of $3.4 million mostly reflects an increase in construction in progress of $57.3 million less depreciation of $54.5 million. The increase in Construction in Progress relates to several ongoing projects, including infrastructure and software.

The major infrastructure projects in progress on the CTTS system are construction of a direct connector from eastbound US 290 to southbound SH 130, and an additional toll lane in each direction on SH130 segments 2 and 3.

The software project in progress is a new system to handle toll transactions, billing and customer service for TxDOT's toll customers. The system will be owned by CTTS. The lead contract on this project was awarded to IBM to develop, implement, host and maintain the system. See Notes 2 and 9 for more information

Debt Administration

The Commission has issued revenue bonds backed by the pledged revenues and restricted assets specified in the bond resolutions. As of Aug. 31, 2019, CTTS had approximately $3.0 billion of outstanding revenue bond debt. See Notes 4 & 5 for more information.

Outstanding Debt Obligations
August 31, 2019 and 2018 (Amounts in Thousands)

	2019	2018
Revenue Bonds Payable	$ 2,973,768	$ 2,973,867
Total Outstanding Debt	$ 2,973,768	$ 2,973,867

Bond Credit Ratings

The outstanding bonds of CTTS were rated by each of the three major Nationally Recognized Statistical Rating Organizations. As of Aug. 31, 2019, the CTTS bonds carried the following ratings:

CTTS Credit Ratings as of August 31, 2019
(Amounts in Thousands)

	August 31, 2019			
Bond Description	**Net Outstanding**	**Moody's**	**S & P**	**Fitch**
First Tier Revenue Bonds Series 2002-A				
Non-Callable Capital Appreciation Bonds	$ 490,169	A3	A-	A
First Tier Revenue Refunding Bonds, Series 2012-A	623,623	A3	A-	A
First Tier Revenue Refunding Put Bonds, Series 2015-A	255,746	A3	A-	A
First Tier Revenue Refunding Bonds, Series 2015-B	220,838	A3	A-	A
First Tier Revenue Refunding Bonds, Series 2015-B				
Capital Appreciation Bonds	112,875	A3	A-	A
Second Tier Revenue Refunding Bonds, Series 2015-C	1,270,517	Baa1	BBB+	BBB+
Total	$ 2,973,768			

An explanation of the significance of each rating may be obtained from the company furnishing the rating. The ratings reflect only the views of such companies at the time such ratings are given, and the Commission makes no representation as to the appropriateness of the ratings. There is no assurance that such ratings will continue for any given period of time or that they will not be revised downward or withdrawn entirely by such companies if, in the judgment of such companies, circumstances so warrant.

Requests for Information

This financial report is designed to provide a general overview of CTTS' finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the TxDOT Financial Management Division at the following address:

Texas Department of Transportation
Financial Management Division - Accounting Management Section
125 East 11th Street
Austin, Texas 78701-2483

This page is intentionally blank.

Section Two (Continued)

Basic Financial Statements

Central Texas Turnpike System
Statement of Net Position
August 31, 2019 (Amounts in Thousands)

ASSETS	
Current Assets:	
Cash and Cash Equivalents	$ 335,010
Short-Term Investments	45,454
Restricted:	
Cash and Cash Equivalents	53,221
Short-Term Investments	108,222
Receivables:	
Accounts Receivable	32,814
Interest and Dividends	905
Due from Other Funds (Note 7)	212
Consumable Inventory	1,507
Total Current Assets	577,345
Noncurrent Assets:	
Investments	39,785
Restricted:	
Investments	149,709
Capital Assets:	
Non-Depreciable Capital Assets (Note 2)	754,148
Depreciable Capital Assets, Net (Note 2)	1,845,724
Total Noncurrent Assets	2,789,366
Total Assets	3,366,711
DEFERRED OUTFLOWS OF RESOURCES	
Deferred Outflows of Resources	
Loss on Bond Refunding	26,264
Total Deferred Outflows of Resources	26,264
LIABILITIES	
Current Liabilities:	
Payables:	
Accounts	19,641
Interest	4,460
Due to Other Funds (Note 7)	1,984
Revenue Bonds Payable (Notes 4, 5)	38,882
Total Current Liabilities	64,967
Noncurrent Liabilities:	
Revenue Bonds Payable (Notes 4, 5)	2,934,886
Total Noncurrent Liabilities	2,934,886
Total Liabilities	2,999,853
NET POSITION	
Net Investment in Capital Assets	579,689
Restricted for:	
Debt Service	128,820
Operations and Maintenance	153,959
Unrestricted	(469,346)
Total Net Position	$ 393,122

The accompanying notes to the financial statements are an integral part of this financial statement.

Central Texas Turnpike System
Statement of Revenues, Expenses and Changes in Net Position
For the Fiscal Year Ended August 31, 2019 (Amounts in Thousands)

OPERATING REVENUES	
Toll Revenue - Pledged	$ 228,172
Discounts and Allowances	(7,482)
Fee Revenue - Pledged	32,760
Other Sales Goods & Services	21
Total Operating Revenues	253,471
OPERATING EXPENSES	
Salaries	1,485
Professional Fees and Services	10,571
Travel	7
Materials and Supplies	1,611
Communication and Utilities	709
Repairs and Maintenance	7,817
Rentals and Leases	3
Contracted Services	24,421
Advertising	2,011
Depreciation and Amortization	54,485
Other Operating Expenses	6,693
Total Operating Expenses	109,813
Operating Income (Loss)	143,658
NONOPERATING REVENUES (EXPENSES)	
Lease Revenue	13
Interest and Investment Income	21,434
Net Decrease in Fair Value of Investments	(87)
Amortization	12,167
Interest Expense	(141,403)
Other Financing Fees	(42)
Total Nonoperating Revenues (Expenses)	(107,918)
Income (Loss) before Transfers	35,740
TRANSFERS	
Transfers In (Note 7)	4,144
Total Transfers	4,144
Change in Net Position	39,884
Net Position, September 1, 2018	353,238
Net Position, August 31, 2019	$ 393,122

The accompanying notes to the financial statements are an integral part of this financial statement.

Central Texas Turnpike System

Statement of Cash Flows

For the Fiscal Year Ended August 31, 2019 (Amounts in Thousands)

CASH FLOWS FROM OPERATING ACTIVITIES		
Proceeds from Customers	$	237,970
Payments to Suppliers for Goods and Services		(50,426)
NET CASH PROVIDED BY OPERATING ACTIVITIES		187,544
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES		
Proceeds from Lease Revenue		13
Payments for Purchase of Capital Assets		(47,622)
Payments for Principal on Debt		(20,365)
Payments of Interest on Debt		(107,051)
Payments for Interfund Services		(254)
NET CASH USED BY CAPITAL AND RELATED FINANCING ACTIVITIES		(175,279)
CASH FLOWS FROM INVESTING ACTIVITIES		
Proceeds from Sales of Investments		382,832
Proceeds from Interest and Investment Income		17,494
Payments to Acquire Investments		(345,885)
NET CASH PROVIDED BY INVESTING ACTIVITIES		54,441
NET INCREASE IN CASH AND CASH EQUIVALENTS		66,706
CASH AND CASH EQUIVALENTS - BEGINNING		321,525
CASH AND CASH EQUIVALENTS - ENDING	$	388,231

Central Texas Turnpike System

Statement of Cash Flows (concluded)

For the Fiscal Year Ended August 31, 2019 (Amounts in Thousands)

RECONCILIATION OF OPERATING INCOME TO NET CASH PROVIDED BY OPERATING ACTIVITIES		
Operating Income	$	143,658
Adjustments:		
Depreciation		54,485
Other non-cash operating costs		2,614
Increase in Receivables		(15,501)
Increase in Inventories		(176)
Increase in Payables		3,991
Decrease in Due to Other Funds		(1,527)
Total Adjustments		43,886
Net Cash Provided by Operating Activities	$	187,544

NONCASH INVESTING, CAPITAL, AND FINANCING ACTIVITIES:		
Transfer in of capital assets from other fund	$	1,530
Net change in Fair Market Value of Investments	$	(87)
Amortization of Premium/Discount On Investments	$	3,853

The accompanying notes to the financial statements are an integral part of this financial statement.

This page is intentionally blank.

Central Texas Turnpike System
Notes to Financial Statements

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Reporting Entity

The accompanying financial statements reflect the financial position of the Central Texas Turnpike System (CTTS). CTTS is an enterprise fund of the Texas Department of Transportation (TxDOT), an agency of the state of Texas. The Texas Transportation Commission (Commission), the governing body of TxDOT, has the authority to commit CTTS to various legal agreements.

As of Aug. 31, 2019, CTTS consists of State Highway 130 Segments 1 through 4, State Highway 45 North, the tolled portion of Loop 1 and State Highway 45 Southeast. A portion of the costs of planning, designing, engineering, developing and constructing of the first three elements was financed by bonds issued by the Commission. In fiscal 2013, State Highway 45 Southeast was transferred to CTTS. In the future, at the Commission's discretion, additional projects may be added to CTTS.

CTTS does not have any employees, although labor costs are included in the cost of constructing, operating and maintaining CTTS. When TxDOT staff members perform work on behalf of CTTS, the proportionate cost of that labor is reported as an expense of CTTS. TxDOT's risk financing and insurance programs apply to CTTS.

The records of CTTS are maintained in accordance with the practices set forth in the provisions of the indentures of the outstanding revenue bonds. These practices are modeled after generally accepted accounting principles that are similar to private business enterprises.

Basis of Presentation and Basis of Accounting

The accompanying financial statements were prepared in conformance with generally accepted accounting principles (GAAP) as prescribed by the Governmental Accounting Standards Board (GASB). Financial reporting for CTTS is based on all GASB pronouncements. The data in this report is combined and consolidated by the Texas Comptroller's Office with similar data from other state agencies and universities in the preparation of the state of Texas Comprehensive Annual Financial Report (CAFR).

GASB Statements Effective for Fiscal 2019

In fiscal 2019 CTTS adopted the following new GASB pronouncements:

- *GASB Statement No. 83, Certain Asset Retirement Obligations.* This statement addresses accounting and financial reporting for certain asset retirement obligations (AROs). The statement establishes criteria for determining the timing and pattern of recognition of a liability and a corresponding deferred outflow of resources for AROs. An ARO is a legally enforceable liability associated with the retirement of a tangible capital asset. The legal obligations to perform future asset retirement activities is recorded when the liability is both incurred and reasonably estimable. The determination of when the liability is incurred is based on the occurrence of external laws, regulations, contracts, or court judgments, together with the occurrence of an internal event that obligates a government to perform asset retirement activities.

- *GASB Statement No. 88, Certain Disclosures Related to Debt, including Direct Borrowings and Direct Placements.* This statement is to improve the information that is disclosed in notes to government financial statement related to debt, including direct borrowings and direct placements. It defines debt for note disclosure purposes as a liability that arises from a contractual obligation to pay cash to settle an amount that is fixed at the date the contractual obligation is established. The statement requires additional information related to debt, including unused lines of credit, assets pledged as collateral for the debt, and terms specified in debt agreements related to significant default events and significant termination events with finance-related consequences, and significant subjective acceleration clauses.

- *GASB Statement No. 89, Accounting for Interest Cost Incurred before the End of a Construction Period.* This statement is effective for reporting periods beginning after December 15, 2019, or fiscal 2021. TxDOT decided to early implement the statements in fiscal 2019. The statement supersedes GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements,* paragraphs 5-22. For financial statements prepared using the economic resources measurement focus, the statement requires that interest cost incurred before the end of a construction period be recognized as an expense in the period in which the cost is incurred. As a result, interest cost incurred before the end of a construction period will not be included in the historical cost of a capital asset reported in a business-type activity or enterprise fund.

These financial statements present only the financial position, changes in financial position and cash flows of CTTS. They are not intended to, and do not, present fairly the financial position, changes in financial position or cash flows of TxDOT. The reporting period is for the state fiscal year ended Aug. 31, 2019.

Fund Structure

The activity of CTTS is reported in a proprietary fund. Proprietary funds are accounted for using the economic resources measurement focus and the accrual basis of accounting. Under the accrual basis, revenues are recognized when earned and expenses are recognized at the time liabilities are incurred.

A proprietary fund distinguishes operating from nonoperating items. Operating revenues and expenses result from providing services or producing and delivering goods in connection with the proprietary fund's principal ongoing operations. Operating expenses for an enterprise fund include cost of sales and services, administrative expenses and depreciation on capital assets.

Assets, Deferred Outflows of Resources, Liabilities and Net Position

Cash and Cash Equivalents

Short-term highly liquid investments with an original maturity of three months or less are considered cash equivalents. On the statement of cash flows, cash and cash equivalents are considered to be cash on hand, cash in bank and money market funds with original maturities of three months or less from the date of acquisition.

Investments

Short-term investments are investments with a maturity greater than 90 days but less than one year at the time of purchase. Short-term investments are recorded on an amortized cost basis. Long-term investments are investments with a maturity of one year or more at the time of purchase. Long-term investments are recorded at fair value based upon quoted market prices as of the fiscal year end. All investment income, including changes in the fair value of investments, is recognized as nonoperating revenue in the Statement of Revenues, Expenses and Change in Net Position. See Note 3 for more information.

Accounts Receivable

The accounts receivable asset is comprised of toll operations revenue earned but not yet received by CTTS of $78.6 million, net of an allowance for doubtful accounts of $45.8 million, as of Aug. 31, 2019.

Consumable Inventory

Consumable inventory is comprised of toll tags. The consumption method of accounting is used to account for inventory. The costs of these items are expensed when the items are consumed.

Restricted Assets

Restricted assets include monies or other resources restricted by legal or contractual requirements. These assets include proceeds of enterprise fund notes/loans, revenue bonds and revenues set aside for statutory or contractual requirements. CTTS may receive funding whose related expenditure is restricted to certain activities. In situations where both restricted and unrestricted resources are available to cover expenses, CTTS will first expend the restricted resources and cover additional costs with unrestricted resources. CTTS reserves the right to selectively defer the use of restricted assets.

Capital Assets

Capital assets, which include buildings, construction in progress, infrastructure, land and permanent land-use rights are capitalized and reported in the financial statements.

Capital assets are assets with a cost above a set minimum capitalization threshold that, when acquired, have an estimated useful life of more than one year. Land, permanent land-use rights and construction in progress do not have a capitalization threshold and are not depreciated. The capitalization thresholds and useful lives of CTTS' depreciable capital assets are as follows:

Capitalization of Assets		
Type	**Capitalization Threshold**	**Estimated Useful Life**
Buildings and Building Improvements	$100,000	22 years
Infrastructure, Depreciable	$500,000	40 years

All capital assets are capitalized at cost or estimated historical cost if actual historical cost is not available. Donated capital assets are recorded at acquisition value at the date of donation. Costs of normal maintenance and repairs that do not add value to the asset or materially extend the asset's useful life are not capitalized.

CTTS uses the depreciation approach for reporting both highways and highway bridges of the infrastructure assets. Under the depreciation approach, infrastructure assets are depreciated over a 40-year life, and certain preservation costs are capitalized. The capitalization threshold of $500,000 is used for both highway bridges and roadways.

CTTS also holds three years of costs in construction in progress at all times. At the fourth year, the first year is moved to depreciable infrastructure. The three-year assumption is based on a 2.7 year contract life when using the weighted dollar analysis of project costs and completion dates over the ten-year history.

Internally generated software costs are recorded as construction in progress during the application development stage of the project. Development costs are moved to Computer Software the year the asset in placed into service. See Note 2 for more information on Capital Assets.

Deferred Outflows of Resources

Deferred outflows of resources are a consumption of net position by the government that is applicable to a future reporting period. Deferred outflows of resources increase net position, similar to assets. Loss on refunding debt is reported as deferred outflows of resources.

Due to Other Funds

Due to other funds represents amounts due to other funds within TxDOT, for a variety of costs. See Note 7 for more information.

Revenue Bonds Payable

Revenue bonds payable are reported at par less unamortized discount or plus unamortized premium. Payables are reported separately as either current or noncurrent in the statement of net position. See Notes 4 and 5 for more information.

Net Position

Proprietary funds report net position as the residual amount in a statement of net position. The categories of net position reported in this report include:

Net Investment in Capital Assets

Net investment in capital assets consists of capital assets (net of accumulated depreciation), and deferred outflow of resources, reduced by outstanding balances for bonds, notes and other debt that are attributed to the acquisition, construction or improvement of those assets.

Restricted

Restricted net position results when constraints placed on net position's use are either externally imposed by creditors, grantors, contributors and the like, or imposed by law through constitutional provisions or enabling legislation. The restricted component of net position represents restricted assets reduced by liabilities related to those assets.

Unrestricted

Unrestricted net position consists of the assets and liabilities that are not included in the determination of net investment in capital assets or the restricted component of net position.

Revenues, Expenses, Contributions and Transfers

Operating Revenues

Operating revenues consist of toll revenues earned by CTTS of $228.2 million, net of the increase for allowance for doubtful accounts of $7.5 million for fiscal 2019, and fees of $32.8 million.

Operating Expenses

Operating expenses include expenses incurred in operating the toll roads and the customer service center, and depreciation on capital assets.

Nonoperating Revenues/Expenses

Nonoperating revenues are mainly comprised of interest and investment revenue and lease revenue. Nonoperating expenses are any expenses not classified as operating, including bond interest expense and accretion on capital appreciation bonds.

Transfers

Transfers In represents the flow of assets between funds within TxDOT. See Note 7 for more information.

NOTE 2 – CAPITAL ASSETS

The table below presents the composition of CTTS' capital assets, reclassifications, additions and deletions during fiscal 2019. The reclassifications column represents completed construction projects and transfers of capital assets between the governmental and business-type activities of TxDOT. The additions column includes current year purchases, depreciation and amortization. The deletions column represents assets removed during the current fiscal year via sale or disposition.

Capital Assets Activity
For the fiscal year ended August 31, 2019
(Amounts in Thousands)

	Balance 09/1/2018	Reclass-ifications	Additions	Deletions	Balance 08/31/2019
Non-Depreciable Assets					
Land	$ 668,798	$ 33			$ 668,831
Construction in Progress	8,558	984	56,309		65,851
Land Use Rights	19,466				19,466
Total Non-Depreciable Assets	696,822	1,017	56,309	0	754,148
Depreciable Assets					
Buildings	8,360				8,360
Infrastructure	2,283,763	513			2,284,276
Total Depreciable Assets	2,292,123	513	0	0	2,292,636
Less Accumulated Depreciation for:					
Buildings	(4,479)		(361)		(4,840)
Infrastructure	(387,949)		(54,123)		(442,072)
Total Accumulated Depreciation	(392,428)	0	(54,484)	0	(446,912)
Depreciable Assets, Net	1,899,695	513	(54,484)	0	1,845,724
Total Capital Assets, Net	$ 2,596,517	$ 1,530	$ 1,825	$ 0	$ 2,599,872

NOTE 3 - DEPOSITS, INVESTMENTS, AND REPURCHASE AGREEMENTS

CTTS is authorized by statute to make investments following the "prudent person rule". CTTS has complied, in all material respects, with statutory authorization, bond documents, constraints and commission policies during the period.

Investments

Measurement

CTTS categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset. The three-tiered fair value hierarchies are as follows.

- Level 1 – Quoted prices in active markets for identical investments
- Level 2 – Significant other observable inputs other than quoted market prices
- Level 3 – Significant unobservable inputs

As of Aug. 31, 2019, the measurements of CTTS's investments are summarized below:

Investment Fair Value and Maturities
August 31, 2019 (Amounts in Thousands)

Investment Type		Fair Value Hierarchy Level 1		Other Measurement Amortized Cost		Total
Money Market Mutual Funds	$		$	1,447	$	1,447
U.S. Treasuries		74,495		124,033		198,528
U.S. Governement Agency Obligations				29,643		29,643
Government Investment Pools				232,884		232,884
Repurchase Agreements				268,899		268,899
Total Investments	**$**	**74,495**	**$**	**656,906**	**$**	**731,401**

U.S. treasury securities investments of $74.5 million with maturities of one year or more are valued at quoted market prices (Level 1 input).

As of Aug. 31, 2019, CTTS also have the following two types of investments which are excluded from measurement at fair value according to GASB 72.

- Investments in money market mutual funds, U.S. treasuries, U.S. government agency obligations, government investment pools and repurchase agreements of $541.9 million with maturities less than one year are valued at amortized cost.
- CTTS entered into a repurchase agreement of $115.0 million in August 2002 with U.S. government and agency securities. Collateral for the repurchase agreement is held by the Bank of New York Mellon Trust Company (the trustee bank) with the underlying securities being the property of the Citigroup Global Markets Inc. (the direct counterparty), held in trust for CTTS. CTTS can direct the trustee bank to designate repurchase dates on any business day on or before the final repurchase date in August 2022. The agreement is measured at cost.

Custodial Credit Risk - Investments

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty, the Commission will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. The Commission's investment policy states that all securities purchased by the Commission shall be designated as assets of the Commission and shall be protected through the use of a third-party custody/safekeeping agent, which may be a Trustee.

The long term repurchase agreement is collateralized with U.S. government and agency securities. Collateral for the repurchase agreement is held by the Bank of New York Mellon Trust Company with the underlying securities being the property of the Citigroup Global Markets Inc. (the direct counterparty), held in trust for the Commission. As of Aug. 31, 2019, Citigroup Global Markets Inc. is rated A1, A+ and A+ by Moody's, Standard and Poor's (S & P) and Fitch Ratings respectively.

Credit Risk - Investments

Direct credit risk for investments is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The investment policy prohibits the Commission from entering into long-term investment agreements or other ongoing investment transactions with a final maturity or termination date of longer than six months with any financial institution that initially has a long-term rating category of less than "A" and that does not have at least one long-term rating of at least "AA" by a nationally recognized statistical rating organization (NRSRO). All investments made by the Commission have been made through a firm on the then-current list of qualified financial institutions approved by the Commission.

The Commission's policy does not limit the amount of investment in obligations of the United States or its agencies. The long term repurchase agreement is a guaranteed investment contract (GIC) with Citigroup Global Markets Inc. as the counterparty. In addition, Citigroup Global Markets Inc. has collateralized the GIC with U.S. government and agency securities.

As of Aug. 31, 2019, CTTS' investments had the following ratings:

Investment Credit Ratings
August 31, 2019 (Amounts in Thousands)

Investment Type		Valuation	Moody's	Standard & Poor's	Fitch
Money Market Mutual Funds:					
JPMorgan US Government Fund	$	842	Aaa-mf	AAAm	AAAmmf
Morgan Stanley Government Fund		605	Aaa-mf	AAAm	AAAmmf
Government Sponsored Entities:					
Federal Home Loan Bank Discount Note		29,643	P-1	A-1+	NR
Government Securities:					
U.S. Treasury Notes		174,339	Aaa	AA+	AAA
U.S. Treasury Bills		24,189	NR	A-1+	F1+
Government Investment Pools:					
Lone Star		22,941	NR	AAAm	NR
TexPool		132,663	NR	AAAm	NR
TexPool Prime		77,280	NR	AAAm	NR
Repurchase Agreements :					
Long term (Citigroup GIC)		114,999	A1	A+	A+
Repo (TTSTC)		153,900	NR	AAAf	NR
Total	$	**731,401**			

NR= Not Rated

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of a government's investment in a single issuer. Assets held shall be diversified to eliminate the risk of loss resulting from over-concentration of assets in a specific maturity, a specific issuer or a specific class of securities. As of Aug. 31, 2019, the following investments exceeded five percent of the total portfolio: TexPool, TexPool Prime, U.S. Treasury Notes, and the Repurchase Agreements.

The Commission addresses diversification in the Commission's Investment Policy. Diversification strategies shall be determined and revised periodically by the investment officer.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The Commission has addressed interest rate risk in its various accounts by matching as closely as possible anticipated cash flows with income and return of principal on investments. Investment maturities are noted in the investment table. Approximately 74 percent of the investments mature within one year. Market value fluctuation of the overall portfolio is minimized by keeping the weighted average maturity low.

NOTE 4 - LONG-TERM LIABILITIES

As of Aug. 31, 2019, CTTS had five bond issues outstanding. Additional detail is provided in the sections that follow. As detailed below, the following changes occurred in long-term liabilities during the year ended Aug. 31, 2019.

Changes in Bonds Payable
For the Fiscal Year Ended August 31, 2019 (Amounts in Thousands)

	Bonds Outstanding 08/31/2018	Adjustments*	Bonds Issued**	Bonds Matured or Retired	Bonds Refunded or Extinguished	Bonds Outstanding 08/31/2019	Due Within One Year
Revenue Bonds Payable	$ 2,973,867	$ (12,167)	$ 32,433	$ (20,365)	$	$ 2,973,768	$ 38,882
Total	$ 2,973,867	$ (12,167)	$ 32,433	$ (20,365)	$ 0	$ 2,973,768	$ 38,882

*Includes current year amortization of premiums and discounts.
** Includes current year amortization of accretion.

NOTE 5 – BONDED INDEBTEDNESS

Revenue Bonds

Transportation Code, Chapter 228 Subchapter C authorizes the Commission to issue revenue bonds to pay a portion of the costs of planning, designing, engineering, developing and constructing the CTTS. The bonds are payable from and secured solely by a first and second lien on, as applicable, and pledge of the trust estate. The trust estate consists of all project revenues and all project earnings including investment earnings deposited into the revenue fund, construction fund (except for any amounts held in a sub-account containing monies derived from the state highway fund or any monies received by the Commission that are restricted to another use), the debt service fund, the debt service reserve fund, the rate stabilization fund, and the general reserve fund.

In an event of default under the terms of the Indenture of Trust dated as of July 15, 2002, the Trustee may take the following actions and upon the written request of the owners of not less than 20 percent in principal amount of outstanding obligations shall proceed to:

(i) Protect and enforce its rights and the rights of the owners under the state law and the Indenture by such suits, actions or special proceedings in equity or at law, or by proceedings in the office of any board or officer having jurisdiction, either for mandamus or the specific performance of any covenant or agreement contained in the Indenture or in aid or execution of any power granted by the Indenture or for the enforcement of any proper legal or equitable remedy, as the Trustee, being advised by counsel, shall deem most effectual to protect and enforce such rights.

(ii) In the enforcement of any remedy under the Indenture the Trustee shall be entitled to sue for, enforce payment of and receive any and all amounts then or during any event of default becoming, and at any time remaining, due from the Commission.

Miscellaneous Bond Information
(Amounts in Thousands)

Description of Issue		Bonds Issued to Date	Date Issued	Range of Interest Rates		Maturities First Year	Maturities Last Year	First Call Date
First Tier Revenue Bonds Series 2002-A								
Non-Callable Capital Appreciation Bonds*	$	680,837	8/29/2002	4.47%	5.75%	2012	2030	n/a
Callable Capital Appreciation Bonds**		325,494	8/29/2002	6.00%	6.10%	2025	2038	8/15/2012
First Tier Revenue Refunding Bonds, Series 2012-A		585,330	11/27/2012	4.00%	5.00%	2038	2041	8/15/2022
First Tier Revenue Refunding Put Bonds, Series 2015-A		225,000	2/4/2015	5.00%	5.00%	2041	2042	4/1/2020
First Tier Revenue Refunding Bonds, Series 2015-B		198,025	2/4/2015	5.00%	5.00%	2032	2037	8/15/2024
First Tier Revenue Refunding Bonds, Series 2015-B								
Capital Appreciation Bonds		112,875	2/4/2015	4.36%	4.38%	2036	2037	8/15/2024
Second Tier Revenue Refunding Bonds, Series 2015-C		1,157,320	2/4/2015	5.00%	5.00%	2022	2042	8/15/2024
Total	$	3,284,881						

* Bonds issued to date include interest accreted to principal.
** These bonds are not outstanding as of 8/31/2019.

Neither the state, Commission, TxDOT nor any other agency or political subdivision of the state is obligated to pay the principal, premium, discount or interest on the CTTS revenue bonds except from the trust estate. The bond indenture does not create a mortgage on the CTTS. Debt service requirements for the First Tier Revenue Bonds as of Aug. 31, 2019, are detailed in the following table:

Debt Service Requirements - Revenue Bonds (Amounts in Thousands)						
Year		Principal		Interest		Total
2020	$	26,715	$	107,051	$	133,766
2021		36,480		107,051		143,531
2022		45,350		107,051		152,401
2023		54,315		106,941		161,256
2024		63,380		106,673		170,053
2025-2029		474,975		525,202		1,000,177
2030-2034		682,470		471,800		1,154,270
2035-2039		1,013,675		304,873		1,318,548
2040-2044		731,190		74,308		805,498
		3,128,550		1,910,950		5,039,500
Unamortized Accretion		(359,832)				(359,832)
Unamortized Premium		205,050				205,050
Total	$	2,973,768	$	1,910,950	$	4,884,718

Pledged Future Revenues

Pledged revenues are those specific revenues that are formally committed to directly secure the payment of bond debt service. The table below provides information on pledged revenue and pledged future revenue of the CTTS revenue bonds.

Pledged Future Revenue (Amounts in Thousands)		
Pledged Revenue Required for Future Principal and Interest on Existing Bonds	$	5,039,500
Term of Commitment, Ending:		8/15/2042
Percentage of Revenue Pledged		96.59%
Current Year Pledged Revenue	$	265,546
Current Year Principal and Interest Paid	$	127,416

Put Bonds

In February 2015, the Commission issued the Central Texas Turnpike System Series 2015-A refunding put bonds. The proceeds were used to refund a portion of the CTTS Series 2002-A capital appreciation bonds and the CTTS Series 2012-B put bonds. The Series 2015-A bonds were issued in a multiannual mode which terminates on the mandatory tender date of April 1, 2020. At the termination of the initial multiannual period, the Series 2015-A bonds are subject to mandatory tender and purchase. Upon such mandatory tender and purchase, the Series 2015-A bonds are expected to be remarketed unless otherwise redeemed.

The Commission has not provided any credit or liquidity facility for the payment of the purchase price of the bonds payable upon the mandatory tender date. The principal portion of the purchase price for the bonds is expected to be obtained from the remarketing proceeds.

If the bonds are not remarketed, the interest rate on the bonds will be increased to the stepped coupon rate of 8 percent per annum. The impact of such a rate change to the debt service payments on the bonds is disclosed below.

Put Bonds (Amounts in Thousands)

Description of Issue	Mandatory Tender Date	Initial Rate	Initial Period Interest	Stepped Coupon Rate	Stepped Rate Period Interest**
Central Texas Turnpike System First Tier Revenue Put Bonds, Series 2015-A	4/1/2020	5.00% per annum*	$11,250	8.00% per annum	$18,000

*Multiannual Mode
**Assumes a full year of interest

Defeased Bonds

The Commission has defeased various bond issues by placing funds in irrevocable trusts with external financial institutions to provide for all future debt service payments on the old bonds. As of Aug. 31, 2019, the amount of CTTS defeased bonds that remain outstanding are presented in the table below.

Defeased Bonds Outstanding (Amount in Thousands)

Description	Par Value
Revenue Bonds	
Central Texas Turnpike System Capital Appreciation Bonds	$ 52,062 *
Total	$ 52,062

* Includes $31,508 of accreted interest.

NOTE 6 - RETIREMENT PLAN AND POSTEMPLOYMENT BENEFITS OTHER THAN PENSIONS

CTTS, an enterprise fund of the Texas Department of Transportation (TxDOT), is part of the TxDOT's reporting entity. CTTS does not have any employees and does not make contributions to any retirement plans or other postemployment benefits (OPEB) plans. TxDOT employees provide all accounting and administrative services for CTTS. Those employees are members of the Employee Retirement System of Texas defined benefit pension plan (ERS Plan) and the State Retiree Health Plan (SRHP). CTTS is not obligated in any form for the funding of the pension benefits provided by the ERS Plan or the postemployment benefits provided through the SRHP. Allocation of the pension and OPEB liabilities and expense for CTTS is deemed unnecessary and not required.

The details are disclosed in the TxDOT's Comprehensive Annual Financial Report for the pension plan in Note 8 and the OPEB plan in Note 10.

NOTE 7 – INTERFUND ACTIVITY

Interfund transfers represent the flow of assets (cash or goods) between funds. In fiscal 2019, the state highway fund (SHF) transferred assets to CTTS totaling $4.1 million, as detailed below:

Transfers
August 31, 2019 (Amounts in Thousands)

Category	SHF to CTTS	
Construction	$	1,530
Feasibility Study		2,614
Total	$	4,144

Due To State Highway Fund at the end of fiscal 2019 was $2.0 million (net) and Due From State Infrastructure Bank was $212 thousand, detailed as follows:

Interfund Balance
August 31, 2019 (Amounts in Thousands)

Category	Due To (From) SHF	
Due to SHF - Operations and Maintenance	$	2,704
Due from SHF - Veterans Waiver		(720)
Net due to SHF from CTTS	$	1,984
Category	**Due From Fund 0099**	
Due From Fund 0099	$	212
Total	$	212

NOTE 8 – CONTINUANCE SUBJECT TO REVIEW

TxDOT is currently subject to a continuance review. Under the Texas Sunset Act, TxDOT will be abolished effective Sept. 1, 2029, unless continued in existence by the 91st Legislature as provided by the Act. If abolished, TxDOT may continue until Sept. 1, 2030 to wind down its operations. In the event that TxDOT is abolished pursuant to the Texas Sunset Act or other law, Texas Government Code, Section 325.017(f), acknowledges that such action will not alter the obligation of the state to pay bonded indebtedness and all other obligations of the abolished agency.

NOTE 9 – COMMITMENTS & CONTINGENCIES

Lawsuits and Claims

CTTS is contingently liable in respect to lawsuits and claims in the ordinary course of business which, in the opinion of TxDOT's management, will not have a material adverse effect on the financial statements.

Arbitrage

Rebatable arbitrage defined by Internal Revenue Code (IRC), Section 148, is earnings on tax exempt bond proceeds in excess of the yield on the bond. The rebatable arbitrage must be repaid to the federal government. Pursuant to the applicable bond Indenture of Trust, a Rebate Fund will be established under the Indenture to which deposits will be made upon the determination by a verification agent that a rebate payment may be due. The amount of rebate due to the federal government is determined and payable during each five-year period and upon final payment of the tax-exempt bonds. IRC Section 148 also provides for certain rebate exceptions, including an exception if certain spend-out requirements of the bond proceeds are met. TxDOT estimates that rebatable arbitrage liability, if any, will be immaterial to the agency's overall financial condition. No arbitrage liability has been determined or payable for the current reporting period.

Significant Contract Commitments

TxDOT and Central Texas Regional Mobility Authority entered into a funding agreement dated June 18, 2018 for the construction of a direct connector from eastbound US 290 to southbound SH 130. In addition, two construction contracts were executed with OHL USA Inc. on May 14, 2018 and December 18, 2018 respectively. These will add one extra lane each to segments 2 and 3.

Also, a contract was entered with IBM Corporation effective January 1, 2019 to design and implement a new software system for the Toll Customer Service Center.

Disclosure of the construction-related commitment as of Aug. 31, 2019 is displayed below:

CTTS Construction-Related Contract Commitments
August 31, 2019 (Amounts in Thousands)

Contractor	Project Description	Contract Commitment	Cash Paid through 8/31/19	Remaining Commitment
Central Texas Regional Mobility Authority	Direct connector from eastbound US 290 to southbound SH 130	$41,100	$5,519	$35,581
OHL USA, Inc.	SH 130 Expansion Project, Segment 2	$36,726	$15,091	$21,635
OHL USA, Inc.	SH 130 Expansion Project, Segment 3	$56,174	$10,704	$45,470
IBM Corporation	Toll Ops Back-Office Software System	$77,142	$12,361	$64,781

NOTE 10 - RISK FINANCING & RELATED INSURANCE

The Central Texas Turnpike System ("CTTS") is a toll system financed by the Texas Transportation Commission and owned and operated by TxDOT. CTTS does not have any employees. TxDOT provides all accounting, debt financing and administrative services.

TxDOT is exposed to a wide range of risks due to the size, scope and nature of its activities. Some of these risks include, but are not limited to, property and casualty losses, workers' compensation and health benefit claims, theft, damage of assets, etc. CTTS self-insures through funds on deposit within the Rate Stabilization Fund. The amount of funds held on deposit in the rate stabilization fund for self-insurance has been certified as actuarially sound by AMI Risk Consultants, Inc. To date, CTTS has not had to draw upon the funds in the rate stabilization fund to settle any claims and therefore settlements have not exceeded self-insurance coverage.

During the fiscal year, the Texas Transportation Commission maintained Not-for-Profit Entity and Directors, Officers Liability Insurance Policy Including Employment Practices Claims Coverage in connection with the CTTS.

This page is intentionally blank.

125 East 11th Street. Austin TX 78701

www.txdot.gov

Produced by the **Texas Department of Transportation's Financial Management Division.**

Copies of this publication have been deposited with the Texas State Library in compliance with the State Depository Law.

[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX C

SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE

The following statements summarize certain provisions of the Master Indenture and the Eighth Supplemental Indenture. These statements do not purport to be comprehensive or definitive and are qualified in their entirety by reference to the Master Indenture and the Eighth Supplemental Indenture, respectively. Copies of the Master Indenture and the Eighth Supplemental Indenture are available for examination at the offices of the Commission.

TABLE OF CONTENTS – APPENDIX C

DEFINITIONS

"*Accounting Principles*" – "Generally Accepted Accounting Principles" for governmental entities in the United States, which are promulgated by the Governmental Accounting Standards Board ("*GASB*"), the Financial Accounting Standards Board ("*FASB*") and, when applicable, such other accounting principles as the Commission or the State, as applicable, may be required to employ from time to time, in order to comply with the terms of the Indenture, or pursuant to State law or regulation or as the Commission or the State, as applicable, may otherwise elect, provided such election does not cause a violation of the Rule.

"*Acts*" – Chapters 1207 and 1371, Texas Government Code, as amended and Subchapter C of Chapter 228, Texas Transportation Code, as amended.

"*Additional First Tier Obligations*" – First Tier Obligations, in addition to the Series 2002-A Bonds, the Series 2012-A Bonds, the Series 2015-B Bonds, the Series 2020-A Bonds, the Taxable Series 2020-B Bonds and the Taxable Series 2020-C Bonds, authorized to be issued or incurred under the Master Indenture and secured by a first lien on, pledge of and security interest in the Trust Estate.

"*Additional Obligation Security*" – any credit enhancement for specified Obligations and any funds received or obligations payable to the Commission, other than Revenues, which the Commission chooses to include as security for specified First Tier Obligations, Second Tier Obligations and/or Subordinate Lien Obligations pursuant to a Supplemental Indenture.

"*Additional Second Tier Obligations*" – Second Tier Obligations, in addition to the Series 2015-C Bonds, authorized to be issued or incurred under the Master Indenture and secured by a lien on, pledge of and security interest in the Trust Estate, subject to the lien on, pledge of and security interest in the Trust Estate established for the benefit and security of the First Tier Obligations.

"*Additional Subordinate Lien Obligations*" – Subordinate Lien Obligations authorized to be issued or incurred under the Master Indenture and secured by a lien on, pledge of and security interest in the Trust Estate, subject and subordinate to the lien on, pledge of and security interest in the Trust Estate established for the benefit and security of the First Tier Obligations and the Second Tier Obligations, respectively.

"*Alternate Liquidity Agreement*" – Any substitute or replacement liquidity agreement securing the payment of the Purchase Price of a Series of Variable Rate Bonds, delivered in accordance with the provisions of this Eighth Supplemental Indenture in substitution and replacement for the existing Liquidity Agreement, if any, for such Series.

"*Annual Capital Budget*" – the capital budget adopted by the Commission for the System as described under the caption "Particular Covenants – Annual Operating Budget; Annual Maintenance Budget; Annual Capital Budget" of this Appendix C.

"*Annual Debt Service*" – for any annual period with respect to all Outstanding Obligations or to all First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations, (a) the amount of principal and interest paid or payable with respect to such Obligations in the annual period, plus (b) Reimbursement Obligations paid or payable by the Commission in such annual period (but only to the extent not duplicative of such principal and interest), plus (c) the amounts, if any, paid or payable by the Commission in such annual period with respect to Approved Swap Agreements, minus (d) the amounts, if any, paid or payable to the Commission in such annual period with respect to Approved Swap Agreements, provided that the difference between the amounts described in clauses (c) and (d) shall be included only to the extent that such difference would not be recognized as a result of the application of the assumptions set forth in clauses (1) through (5) below, and minus (e) all amounts that are deposited to the credit of a debt service fund or the Construction Fund for the payment of interest on First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations, as the case may be, from original proceeds from the sale of such Obligations or from any other lawfully available source (other than the Revenue Fund or any money that would constitute Revenues in the subject annual period), and that are used or scheduled to be used to pay interest on such Obligations during any annual period. The following assumptions shall be used to determine the Annual Debt Service becoming due in any annual period:

(1) in determining the principal amount paid or payable with respect to Obligations or Reimbursement Obligations in each annual period, payment shall be assumed to be made in accordance with any amortization schedule established for such Indebtedness, including amounts paid or payable pursuant to any mandatory redemption schedule for such Indebtedness;

(2) if any of the Indebtedness or proposed Indebtedness constitutes Balloon Indebtedness or Short-Term Indebtedness, then such amounts thereof as constitute Balloon Indebtedness or Short-Term Indebtedness shall be treated as if such Indebtedness is to be amortized in substantially equal annual installments of principal and interest over the useful life of the improvements financed with the proceeds of such Balloon Indebtedness as calculated by, and set forth in a certificate of a Chief Financial Officer. Anything to the contrary in the Master Indenture notwithstanding, during the annual period preceding the final maturity date of such Balloon Indebtedness and, in the case of Short-Term Indebtedness in each annual period, all of the principal thereof shall be considered to be due on Maturity or due date of such Balloon Indebtedness or Short-Term Indebtedness unless the Commission provides to the Trustee, prior to the beginning of such annual period, a certificate of a Financial Consultant certifying that, in its judgment, the Commission will be able to refund such Balloon Indebtedness or Short-Term Indebtedness through the issuance of Long-Term Indebtedness, in which event the Balloon Indebtedness or Short-Term Indebtedness shall be amortized over the term of such proposed refunding Indebtedness and shall be deemed to bear the interest rate specified in the certificate of the Financial Consultant;

(3) as to any annual period prior to the date of any calculation, such requirements shall be calculated solely on the basis of Obligations which were Outstanding as of the first day of such period; and as to any future annual period such requirements shall be calculated solely on the basis of Obligations Outstanding as of the date of calculation plus any Obligations then proposed to be issued;

(4) if any of the Indebtedness or proposed Indebtedness constitutes Variable Rate Indebtedness, then, subject to the following proviso, interest in future periods shall be based on the Assumed Variable Rate; provided, however, if the Commission has entered into an Approved Swap Agreement with respect to a Series of Obligations constituting Variable Rate Indebtedness, the fixed interest rate payable by the Commission under the Approved Swap Agreement shall be assumed to be the interest rate on such Obligations if (i) the notional amount under the Approved Swap Agreement is equal to or greater than the Outstanding principal amount of the Obligations and reduces in the amounts and on the dates that the Obligations mature and (ii) the variable interest rate payable by the Commission on the Obligations is determined by the same formula or reference to the same index and computed on the same date as the interest rate payable to the Commission under the Approved Swap Agreement, such that the Commission assumes no basis risk under the swap transaction; and

(5) termination or similar payments under an Approved Swap Agreement shall not be taken into account in any calculation of Annual Debt Service.

"*Annual Maintenance Budget*" – the budget of maintenance expenditures adopted by the Commission for the System described under the caption "Particular Covenants – Annual Operating Budget; Annual Maintenance Budget; Annual Capital Budget" in this Appendix C.

"*Annual Operating Budget*" – the operating budget adopted by the Commission for the System described under the caption "Particular Covenants – Annual Operating Budget; Annual Maintenance Budget; Annual Capital Budget" in this Appendix C.

"*Annual Period*" – the Fiscal Year or any consecutive twelve-month period.

"*Approved Swap Agreement*" – a Swap Agreement secured by or payable from Revenues for which the Commission has filed the with the Trustee the items described in subsection (e) under the caption "Limitations on Other Indebtedness – *Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements*" in this Appendix C.

"*Assumed Variable Rate*" – in the case of:

(a) Outstanding Obligations in the form of Variable Rate Indebtedness, the greater of (1) the average interest rate on such Indebtedness for the most recently completed sixty (60) month period or the period such Variable Rate Indebtedness has been Outstanding if it is less than sixty (60) months, or (2) the rate to be determined pursuant to clause (b) below assuming the Outstanding Variable Rate Indebtedness were being issued on the date of calculation; and

(b) proposed Obligations in the form of Variable Rate Indebtedness either:

(1) to be issued on the basis that, in the opinion of Bond Counsel to be delivered at the time of the issuance thereof, interest on such Variable Rate Indebtedness would be excluded from gross income for federal income tax purposes, the greater of (i) the average of the Bond Market Association Swap Index ("*BMA Index*") for the twelve (12) month period ending seven (7) days preceding the date of calculation plus 100 basis points, or (ii) the average of the BMA Index for the sixty (60) month period ending seven (7) days preceding the date of calculation plus 100 basis points, or

(2) to be issued as Variable Rate Indebtedness not described in clause (1), the greater of the (i) average of the London Interbank Offered Rate ("*LIBOR*") for the time period most closely resembling the reset period for the Variable Rate Indebtedness for the twelve (12) month period ending seven (7) days preceding the date of calculation plus 100 basis points, or (ii) average of LIBOR for the time period most closely resembling the reset period for the Variable Rate Indebtedness for the sixty (60) month period ending seven (7) days preceding the date of calculation plus 100 basis points; and provided that if the BMA Index or LIBOR shall cease to be published, the index to be used in its place shall be that index which the Commission in consultation with the Financial Consultant determines most closely replicates such index, as set forth in a certificate of a Chief Financial Officer filed with the Trustee. Notwithstanding the foregoing, in no event shall the Assumed Variable Rate be in excess of the maximum interest rate allowed by law on obligations of the Commission.

"*Authorized Denominations*" – with respect to any Obligations, those denominations specified in the Master Indenture or a Supplemental Indenture. With respect to the Bonds, $5,000 in principal amount, or any integral multiple thereof.

"*Average Annual Debt Service*" – with respect to First Tier Obligations, Second Tier Obligations, Subordinate Lien Obligations or all Obligations, at any point in time the average amount of Annual Debt Service paid or payable in each Annual Period to the Stated Maturity of the respective Outstanding Obligations.

"*Award Certificate*" – means (i) in connection with the Bonds each certificate by a Chief Financial Officer to be executed and delivered pursuant to the Eighth Supplemental Indenture or (ii) in connection with any other Series of Obligations, the certificate executed by the TTA Representative authorized by the Commission in a manner that delegates the establishment of the terms of such Obligations and the acquisition of a DSRF Security in connection with the issuance of such Obligations to a TTA Representative.

"*Balloon Indebtedness*" – Long-Term Indebtedness of a particular issue or Series of Obligations of which 25% or more of the principal matures in the same annual period and is not required by the documents pursuant to which such Indebtedness was issued to be amortized by payment or redemption prior to that annual period, provided that such Indebtedness will not constitute Balloon Indebtedness and will be assumed to amortize in accordance with its stated terms if the Trustee is provided a certificate of a TTA Representative certifying that such Indebtedness is not to be treated as Balloon Indebtedness.

"*Bank*" or "*Banks*" – as to any particular Series of Obligations, each Person (other than a Bond Insurer) providing a Credit Facility as designated in the Supplemental Indenture providing for the issuance of such Obligations.

"*Bankruptcy Law*" – Title 9 of the United States Code, as amended from time to time, and any successor to or replacement of such Title and any other applicable federal or state bankruptcy, insolvency or similar law.

"*Bankruptcy-Related Event*" – the occurrence of any of the following: (a) the application by or consent of the Commission to the appointment of a receiver, trustee, liquidator or custodian or the like is appointed for the Commission; or (b) the Commission becomes unable to pay its debts generally as they become due; or (c) the Commission is adjudicated a bankrupt or insolvent; or (d) the Commission commences a voluntary proceeding under the Bankruptcy Law, or files a voluntary petition or answer seeking reorganization, an arrangement with creditors or an order for relief or seeking to take advantage of any insolvency law or admits the material allegations of a petition filed against the Commission in any state or federal bankruptcy, reorganization or insolvency proceeding or takes corporate action for the purpose of effecting any of the foregoing.

"*Beneficial Owner*," "*Beneficial owner*" or "*beneficial owner*" – any person who acquires a beneficial ownership interest in a Bond held by DTC. In determining the Beneficial Owner of any Bond, the Trustee and the Commission may rely conclusively upon representations made and written information given to the Trustee or the Commission by DTC or a DTC Participant with respect to any Bond held by DTC in which a beneficial interest is claimed.

"*Bond Counsel*" – any attorney or firm of attorneys engaged by TxDOT whose experience in matters relating to the issuance of obligations by states and their political subdivisions is nationally-recognized.

"*Bond Insurer*" – Ambac Assurance Corporation with respect to the Series 2002-A Bonds and, with respect to other Obligations, as to any particular maturity or any particular Series of Obligations, the Person undertaking to insure such Obligations as designated in an Award Certificate, the authorizing minute order or in a Supplemental Indenture providing for the issuance of such Obligations.

"*Bond Purchase Fund*" – a fund established with the Trustee pursuant to the provisions of a Supplemental Indenture to be used in connection with the tender and purchase of Tender Indebtedness.

"*Bond Register*" – the register maintained pursuant to the Indenture by the Bond Registrar.

"*Bond Registrar*" – with respect to any Series of Obligations, that Person which maintains the Bond Register or such other entity designated by the Bond Registrar to serve such function and, initially, the Trustee.

"*Bonds*" – collectively, the Series 2020-A Bonds, the Taxable Series 2020-B Bonds and the Taxable Series 2020-C Bonds.

"*Book-Entry Obligations*" or "*Book-Entry First Tier, Second Tier or Subordinate Lien Obligations*" – all of the Obligations or those Obligations of a particular lien subject to the Book-Entry-Only System.

"*Book-Entry-Only System*" – a system similar to the system described in the Indenture pursuant to which Obligations are registered in book-entry form.

"*Business Day*" – any day other than a Saturday, a Sunday or a day on which banking institutions are required or authorized by law or executive order to remain closed in the State or the City of New York or in the city in which the designated office of the Trustee or the Securities Depository is located; provided, however, such term may have a different meaning for purposes of a Credit Facility.

"*Capital Appreciation Bonds*" – the Obligations of an issue or Series of Obligations on which interest accretes from their date of initial delivery to the Stated Maturity but is not payable prior to the Stated Maturity, maturing variously in each of the years and in the Maturity Amount set forth in an Award Certificate or Supplemental Indenture relating to such Obligations.

"*Capital Payments*" – payments under Approved Swap Agreements and Reimbursement Obligations other than Operating Expenses.

"*Central Texas Turnpike System*" – see definition of System.

"*Chief Financial Officer*" – the Chief Financial Officer of the Department, the Director of the Project Finance, Debt and Strategic Contracts Division of TxDOT, the Deputy Director, Innovative Financing/Debt Management Office, or such other officer or employee of TxDOT or such other individual so designated by the Commission to perform the duties of Chief Financial Officer under the Eighth Supplemental Indenture.

"*Code*" – the Internal Revenue Code of 1986, as amended, and the regulations proposed or adopted from time to time with respect thereto.

"*Commission*" – the Texas Transportation Commission and its successors and assigns.

"*Commission Official*" – any member of the Commission or any director, officer or employee of TxDOT authorized to perform specific acts or duties by minute order duly adopted by the Commission.

"*Compounding Dates*" – the semi-annual dates set forth in the Award Certificate relating to the issuance of Capital Appreciation Bonds.

"*Construction and Ramp-Up Period*" – the period commencing with the delivery of Obligations to finance the costs of expanding, enlarging or extending the System and ending forty-eight (48) months after Substantial Completion of the improvements financed with the proceeds of such Obligations.

"*Construction Fund*" – the Construction Fund established pursuant to the Master Indenture and described in "– MASTER INDENTURE – Funds and Accounts – *Construction Fund*" of this Appendix C.

"*Consultant*" – a Person who shall be independent, employed by TxDOT as needed, being qualified and having a nationwide and favorable reputation for skill and experience in such work for which the Consultant was appointed. In those situations in which a Consultant is appointed to survey risks and to recommend insurance coverage, such Consultant may be a broker or agent with whom TxDOT transacts business.

"*Conversion*" or "*conversion*" – a change from one Mode to another with respect to a Taxable Series 2020-B Bonds, and with respect to a Taxable Series 2020-B Bonds in the Multiannual Mode, a change from one Interest Rate Period to another.

"*Conversion Date*" – the day a Conversion becomes effective.

"*Cost*" or "*Costs*" – with respect to the System, all or any part of:

(a) the cost of study, design, construction, expansion, enlargement, extension, reconstruction, restoration, repair and rehabilitation of the System or portion thereof (including, but not limited to, indemnity and surety bonds, permits, taxes, licenses, insurance premiums, or other municipal or governmental charges lawfully levied or assessed during construction);

(b) the cost of acquisition of all real or personal property, rights, right-of-way, franchises, easements and interests acquired or used for the System or portion thereof;

(c) the cost of demolishing or removing any structures on land so acquired, including the cost of acquiring any land to which the structures may be removed;

(d) any cost of borings and other preliminary investigations necessary or incident to determining the feasibility or practicability of constructing the System or portion thereof and any cost necessary or desirable to satisfy conditions associated with the issuance of any permit for the construction thereof (including the costs of environmental related mitigation required in connection therewith);

(e) the cost of all machinery and equipment, vehicles, materials and rolling stock;

(f) Issuance Costs;

(g) provisions for working capital and interest on Obligations and on any Reimbursement Obligation for the period prior to, during and for a period of up to one year after acquisition or completion of construction as determined by the Commission, and reserves for principal and interest for extensions, enlargements, additions, replacements, renovations and improvements to the System;

(h) the cost of architectural, engineering, environmental feasibility, traffic and revenue, economic and demographic, appraisal, financial, and legal services;

(i) planning, investigations, studies, evaluations, plans, specifications, estimates, and administrative and other expenses that are necessary or incidental to the determination of the feasibility of constructing the System or portion thereof or incidental to the obtaining of construction contracts or to the construction (including construction administration and inspection), acquisition or financing thereof and that constitute capital costs;

(j) Operating Expenses and Maintenance Expenses occurring during and for a period of up to one year after acquisition or completion of construction, as determined by the Commission, provided that, if applicable, the Trustee has received an opinion of Bond Counsel (which opinion may address either specific Operating Expenses or Maintenance Expenses or categories of Operating Expenses or Maintenance Expenses) to the effect that the treatment of such Operating Expenses or Maintenance Expenses as a Cost will not adversely affect the exclusion of interest on any Obligations from gross income for federal income tax purposes;

(k) the repayment or reimbursement of any Obligation, loan or advance for any of the foregoing; and

(l) with respect to the use of proceeds of Obligations, such other costs and expenses as are permitted by the Enabling Acts at the time such Obligations are issued.

"*Counsel*" – an attorney or law firm (who may be counsel to the Commission) satisfactory to the Trustee.

"*Credit Facility*" – any letter of credit, line of credit, standby letter of credit, indemnity or surety insurance policy or agreement to purchase a debt obligation or any similar extension of credit, credit enhancement or liquidity support obtained by the Commission from a responsible financial or insurance institution, to provide for or to secure payment of principal and purchase price of, and/or interest on Obligations pursuant to the provisions of a Supplemental Indenture under which such Obligations are issued. The use of such definition is not intended to preclude the Commission from providing the credit or liquidity support with respect to one or more Series of Obligations directly rather than through a financial or insurance institution.

"*Current Interest Bonds*" – Obligations paying current interest and maturing in each of the years and in the aggregate principal amounts set forth in the Award Certificate or the Supplemental Indenture relating to such Obligations.

"*Daily Mode*" – the Mode in which the interest rate on any Taxable Series 2020-B Bonds is set at the Daily Rate pursuant to the Eighth Supplemental Indenture.

"*Date of Delivery*" – the date of delivery of the Bonds to the initial purchasers thereof.

"*Defeasance Securities*" – (a) Government Obligations, (b) noncallable obligations of an agency or instrumentality of the United States, including obligations that are unconditionally guaranteed or insured by the agency or instrumentality and that, on the date of the purchase thereof, are rated as to investment quality by a nationally-recognized investment rating firm not less than AAA or its equivalent, and (c) noncallable obligations of a state or an agency or a county, municipality, or other political subdivision of a state that have been refunded and that, on the date the Commission adopts or approves the proceedings authorizing the financial arrangements, are rated as to investment quality by a nationally-recognized investment rating firm not less than AAA or its equivalent.

"*Defeased Obligation*" – Obligations deemed to be paid, retired and no longer Outstanding pursuant to the provisions of the Master Indenture.

"*Department*" – the Texas Department of Transportation or its successors.

"*DSRF Security*"– a First Tier DSRF Security or a Second Tier DSRF Security.

"*DTC*" – The Depository Trust Company and it successors and assigns.

"*Enabling Acts*" – Chapters 222 and 228, Texas Transportation Code, as amended, and Chapter 1371, Texas Government Code, as amended.

"*Event of Default*" – those events specified under the caption "Events of Default and Remedies – *Events of Default*" in this Appendix C, and such other events specified in any Supplemental Indentures.

"*Flexible Mode*" – the Mode in which the interest rate on the Taxable Series 2020-B Bonds is set at the Flexible Rate.

"*Flexible Rate*" – a rate of interest on any Taxable Series 2020-B Bonds in the Flexible Mode set by the Remarketing Agent pursuant to the Eighth Supplemental Indenture for periods from 1 to 270 days.

"*Financial Consultant*" – any financial advisor or firm of financial advisors of favorable national reputation for skill and experience in performing the duties for which a Financial Consultant is required to be employed pursuant to the provisions of the Master Indenture and who is retained by TxDOT as a Financial Consultant for the purposes of the Master Indenture.

"*Financial Obligation*" – a (a) debt obligation; (b) derivative instrument entered into in connection with, or pledged as security or a source of payment for, an existing or planned debt obligation; or (c) guarantee of a debt obligation or any such derivative instrument; provided that "financial obligation" shall not include municipal securities (as defined in the Securities Exchange Act of 1934, as amended) as to which a final official statement (as defined in the Rule) has been provided to the MSRB consistent with the Rule.

"*First Tier Approved Swap Agreement*" – an Approved Swap Agreement entered into as a First Tier Obligation.

"First Tier Debt Service Fund" – the fund created by the Master Indenture to secure payment of First Tier Obligations and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts."

"*First Tier Debt Service Reserve Fund*" – the fund created by the Master Indenture and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts."

"*First Tier Debt Service Reserve Requirement*" – the lesser of (i) the maximum Annual Debt Service of all the First Tier Obligations, (ii) 1.25 times the Average Annual Debt Service of all First Tier Obligations or (iii) ten percent (10%) of the aggregate principal amount of the Outstanding First Tier Obligations, as determined on the date each Series of First Tier Obligations is issued and delivered.

"*First Tier DSRF Security*" – a surety bond, an insurance policy, a letter of credit or similar financial instrument satisfactory to the Rating Agency (as evidenced by a letter from the Rating Agency confirming that the First Tier DSRF Security will not result in the rating on any outstanding First Tier Obligations being downgraded).

"*First Tier Interest Account*" – the account of that name created pursuant to the Master Indenture and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts."

"*First Tier Obligations*" – the Series 2020-A Bonds, the Taxable Series 2020-B Bonds, the Taxable Series 2020-C Bonds, the Series 2015-B Bonds, the Series 2012-A Bonds, the Series 2002-A Bonds and all Indebtedness of any kind or class, including bonds, notes, bond anticipation notes, commercial paper and other obligations, issued or incurred as Additional First Tier Obligations under the Master Indenture and includes all obligations of the Commission owed to Secured Owners of (i) First Tier Obligations, (ii) Reimbursement Obligations secured by the Trust Estate on a parity with First Tier Obligations and (iii) obligations of the Commission under First Tier Approved Swap Agreements.

"*First Tier Principal Account*" – the account of that name created pursuant to the Master Indenture as described under the caption "– MASTER INDENTURE – Funds and Accounts – *First Tier Debt Service Fund*" of this Appendix C.

"*First Tier Swap Agreement Counterparty*" – the counterparty to a First Tier Approved Swap Agreement with the Commission or with the Trustee.

"Fiscal Year" – the fiscal year of TxDOT, currently the period commencing on the first day of September and ending on the last day of August of the following year.

"*Fitch*" – Fitch, Inc., its successors and assigns, and, if such corporation shall for any reason no longer perform the functions of a securities rating agency, "Fitch" shall be deemed to refer to any other nationally-recognized rating agency designated by the Commission.

"*Fixed Rate Mode*" – the Mode in which the interest rate on any Taxable Series 2020-B Bonds is fixed from the Conversion Date to the Maturity Date.

"*General Engineering Consultant*" or "*GEC*" – an engineer or firm of engineers of favorable reputation for skill and experience in performing the duties for which a General Engineering Consultant is required to be employed pursuant to the provisions of the Master Indenture and who is retained by TxDOT as the General Engineering Consultant for purposes of the Master Indenture.

"*General Reserve Fund*" – the fund of such name created by the Master Indenture and set forth in "– MASTER INDENTURE – Funds and Accounts – *General Reserve Fund*" of this Appendix C.

"*Government Obligations*" – direct obligations of, or obligations the principal or interest on which are unconditionally guaranteed by, the United States (including interest strips of the Resolution Funding Corporation).

"*IH 35*" – Interstate Highway 35.

"*Indebtedness*" – all indebtedness of the Commission payable from Revenues incurred or assumed by the Commission for borrowed money (including indebtedness arising under Credit Facilities) and all other financing obligations of the Commission related to the System that, in accordance with Accounting Principles, are included as a liability on a balance sheet for the System books and records, but excluding noncash accounting adjustments. For the purpose of determining the "Indebtedness" payable from the Revenues, any Defeased Obligation shall be excluded.

"*Indenture*" – collectively, the Master Indenture and the Eighth Supplemental Indenture.

"*Index*" – with respect to Index Floating Rate Bonds (i) on any date, the SIFMA Index or (ii) such other interest rate index designated in an Award Certificate for the Taxable Series 2020-B Bonds.

"*Index Determination Date*" – with respect to (i) the SIFMA Index, Wednesday of each week or, if Wednesday is not a U.S. Government Securities Business Day, the next preceding U.S. Government Securities Business Day or (ii) any other Index, the day of the week on which such Index is announced or otherwise made available to the Calculation Agent, as specified in an Award Certificate establishing such other Index.

"*Index Floating Rate*" – the rate of interest that is set on any Taxable Series 2020-B Bonds while such Taxable Series 2020-B Bonds are in the Index Floating Rate Mode pursuant to the Eighth Supplemental Indenture determined from time to time by adding the Applicable Spread to (or, if applicable, subtracting the Applicable Spread from) the Index on each Reset Date, as calculated by the Calculation Agent.

"*Index Floating Rate Mode*" – a Mode in which a Taxable Series 2020-B Bond bears interest at an Index Floating Rate.

"*Index Floating Rate Period*" – each period during which an Index Floating Rate is in effect for a Taxable Series 2020-B Bond.

"*Interest Payment Date*" – with respect to each Series of Obligations, the dates that are defined as such in the Master Indenture or in a Supplemental Indenture under which First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations are issued or in Award Certificate relating to any such Obligations. However, in each case, if the date specified above is not a Business Day then the Interest Payment Date shall be the Business Day next succeeding the date specified above. With respect to the Series 2020-A Bonds, the Taxable Series 2020-B Bonds during the Initial Multiannual Period described in this Official Statement, and the Taxable Series 2020-C Bonds: (i) August 15, 2020, and each February 15 and August 15 thereafter; and (ii) the Maturity Date.

"*Interest Rate Period*," "*Rate Period*," or "*Period*" – when used with respect to any particular rate of interest for a Bond, the period during which such rate of interest determined for such Bond will remain in effect as described in the Eighth Supplemental Indenture.

"*Investment Policy*" – the investment policy of the Commission relating to the funds of the System adopted pursuant to the Public Funds Investment Act, Chapter 2256, Texas Government Code, as amended.

"*Issuance Costs*" – costs incurred by or on behalf of the Commission in connection with the issuance of Obligations including, without limitation, the following: payment of financial, rating agency, legal, accounting and appraisal fees and expenses; the Commission's fees and expenses attributable to the issuance of the Obligations; the cost of printing, engraving and reproduction services; fees and expenses incurred in connection with any Credit Facility and any Approved Swap Agreement; legal fees and expenses of Bond Counsel, Commission's counsel, Trustee's counsel and remarketing agent's counsel relating to the issuance of the Obligations; the initial or acceptance fee of the Trustee; and all other fees, charges and expenses incurred in connection with the issuance of the Obligations and the preparation of the Master Indenture and any Supplemental Indentures entered into in connection with the issuance of Obligations.

"*Legislature*" or "*State Legislature*" – the Legislature of the State.

"*Letter of Representations*" – the letter of representations or similar document executed by the Commission and delivered to the Securities Depository (and any amendments thereto or successor agreements) for one or more Series of Book-Entry Obligations.

"*Liquidity Agreement*" – each standby bond purchase agreement, irrevocable letter of credit, surety bond, insurance policy or similar instrument securing the payment of the Purchase Price of Variable Rate Bonds as originally executed with the original issuance of Variable Rate Bonds and any extensions thereof, as from time to time amended and supplemented, and any Alternate Liquidity Agreement, as originally executed and as such agreement may from time to time be amended and supplemented. A Liquidity Agreement is not a "Credit Facility" within the meaning of the Indenture.

"*Long-Term Indebtedness*" – all Indebtedness that is not Short-Term Indebtedness.

"*Maintenance Account*" – the Central Texas Turnpike System Maintenance Account as described under the caption "– MASTER INDENTURE – Funds and Accounts – *Maintenance Account*" of this Appendix C.

"*Maintenance Expenses*" – the Commission's reasonable and necessary expenses of repair and maintenance of the System, including, without limiting the generality of the foregoing, periodic roadway resurfacing and repair, replacement of toll collection, vehicle identification, toll integration and video enforcement equipment and all administrative and engineering expenses relating to repair and maintenance of the System and any other expenses required to be paid by the Commission as shown in the Annual Maintenance Budget for the System.

"*Master Indenture*" – the Indenture of Trust, dated July 15, 2002 by and between the Commission and the Trustee, as supplemented and amended from time to time.

"*Maturity*" – the date on which the principal of an Obligation becomes due and payable as provided therein and as provided in the Master Indenture, whether at Stated Maturity, by redemption, or otherwise.

"*Maturity Amount*" – of any Capital Appreciation Bond means the principal amount thereof plus accrued (including compounded) interest thereon due on its Maturity Date.

"*Maturity Date*" – the final maturity date of the applicable Bonds.

"*Mode*" – the period for and the manner in which the interest rates on the Taxable Series 2020-B Bonds, or any portion of the Taxable Series 2020-B Bonds, are set and includes the Daily Mode, the Flexible Mode, the Weekly Mode, the Monthly Mode, the Quarterly Mode, the Semiannual Mode, the Multiannual Mode, Index Floating Rate Mode and the Fixed Rate Mode.

"*Monthly Mode*" – the Mode in which the interest rate on any Taxable Series 2020-B Bonds is set at the Monthly Rate.

"*Monthly Rate*" – the rate of interest that is set on any Taxable Series 2020-B Bonds while they are in the Monthly Mode pursuant to the Eighth Supplemental Indenture.

"*Moody's*" – Moody's Investors Service, its successors and their assigns, and, if such corporation shall for any reason no longer perform the functions of a securities rating agency, "Moody's" shall be deemed to refer to any other nationally-recognized rating agency designated by the Commission.

"*MSRB*" – the Municipal Securities Rulemaking Board or its successor or assignee.

"*Multiannual Mode*" – the Mode in which the interest rate on any Taxable Series 2020-B Bonds is fixed for periods of one year more as designated by a Chief Financial Officer.

"*Multiannual Rate*" – the rate of interest that is set on any Taxable Series 2020-B Bonds while they are in the Multiannual Mode pursuant to the Eighth Supplemental Indenture.

"*Obligations*" – Indebtedness issued or incurred as First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations.

"*Operating Account*" – the Central Texas Turnpike System Operating Account as described under the caption "– MASTER INDENTURE – Funds and Accounts – *Operating Account*" of this Appendix C.

"*Operating Account Requirement*" – an amount sufficient to bring the balance in the Operating Account to the amount contemplated by the Annual Operating Budget and a certificate of a TTA Representative, dated no later than five days prior to the last Business Day of the month, to be necessary to pay Operating Expenses for the ensuing two months.

"*Operating Expenses*" – the Commission's reasonable and necessary expenses of operation of the System, including, without limiting the generality of the foregoing, expenses for toll collection, all premiums for insurance and payments into any self-insurance reserve fund, all administrative and engineering expenses relating to operation of the System, fees and expenses of the Traffic Consultant, the General Engineering Consultant, the Trustee and of the Paying Agents, Policy Costs, legal expenses, expenses for Public Safety Officers and any other expenses required to be paid by the Commission as shown in the Annual Operating Budget for the System.

"*Outstanding*" or "*outstanding*" in connection with Obligations – all Obligations that have been authenticated and delivered under the Master Indenture, except:

(a) Obligations theretofore canceled or delivered to the Trustee for cancellation under the Master Indenture;

(b) Obligations that are deemed to be no longer Outstanding in accordance with the Master Indenture; and

(c) Obligations in substitution for which other Obligations have been authenticated and delivered pursuant to the Master Indenture.

In determining whether the Secured Owners of a requisite aggregate principal amount of Obligations Outstanding have concurred in any request, demand, authorization, direction, notice, consent or waiver under the provisions of the Master Indenture, Obligations that are held by or on behalf of the Commission (unless all of the Outstanding Obligations are then owned by the Commission) shall be disregarded for the purpose of any such determination.

"*Paying Agent*" – with respect to any Series of Obligations, that Person appointed pursuant to the Master Indenture to make payments to Registered Owners of interest and/or principal pursuant to the terms of the Master Indenture or any Supplemental Indenture, which initially shall be the Trustee.

"*Person*" – an individual, public body, corporation, partnership, association, joint stock company, trust and any unincorporated organization.

"*Policy Costs*" – a periodic fee or charge required to be paid to maintain a DSRF Security.

"*Project*" – the 2002 Project and any improvements to the System to be financed or refinanced with the proceeds of Obligations, including refundings authorized by law.

"*Projected Annual Debt Service*" – when applied to First Tier Obligations, Second Tier Obligations, Subordinate Lien Obligations or all Obligations, for each annual period, shall equal the sum of (a) the amount of Annual Debt Service on all such First Tier Obligations, Second Tier Obligations, Subordinate Lien Obligations or all Obligations, as the case may be, then Outstanding, plus (b) the Annual Debt Service on any Obligations of such character then proposed to be issued.

"*Projected Debt Service Coverage Ratio*" – when applied to First Tier Obligations, Second Tier Obligations, Subordinate Lien Obligations or a combination of the foregoing, for each of the Fiscal Years commencing with the Fiscal Year following the end of any period during which interest was fully capitalized on the Obligations proposed to be issued and ending with the latest Fiscal Year in which any Obligation is scheduled to mature or for any other annual period, the ratio determined by dividing Projected Revenues for such annual period by the Projected Annual Debt Service for each such annual period.

"*Projected Operating Expenses*" – the Operating Expenses for each monthly period or the entire Fiscal Year as shown in the Annual Operating Budget to be adopted each Fiscal Year by the Commission pursuant to the Master Indenture.

"*Projected Operating Expenses Capacity*" – for any Fiscal Year, the portion of Operating Expenses estimated to be paid with Revenues, as reflected in the Annual Operating Budget.

"*Projected Revenues*" – Revenues projected by the Traffic Consultant to be received in the annual period in question, taking into account (i) any revisions of the Tolls that have been approved by the Commission and that will be effective during such annual period, (ii) any additional Tolls that the Traffic Consultant estimates will be received by the Commission following the completion of any Project then being constructed or proposed to be constructed, (iii) any revisions of the Tolls expected to be implemented by the Commission, as evidenced by a certificate of a TTA Representative delivered to the Trustee, and included as assumptions in a traffic and revenue report of the Traffic Consultant and (iv) for each Fiscal Year in any Construction and Ramp-Up Period, the amounts projected by a TTA Representative or the Traffic Consultant to be on deposit in the Rate Stabilization Fund and the General Reserve Fund.

"*Public Safety Officers*" – licensed public safety officers in the employment of or under contract to TxDOT for the purpose of performing public safety duties in connection with the System.

"*Purchase Date*" – the date upon which Taxable Series 2020-B Bonds are required to be purchased pursuant to a mandatory or optional tender, in accordance with the provisions of the Eighth Supplemental Indenture.

"*Purchase Price*" – the purchase price of the Taxable Series 2020-B Bonds pursuant to mandatory or optional tender as set forth in the Eighth Supplemental Indenture.

"*Quarterly Mode*" – the Mode in which the interest rate on any Taxable Series 2020-B Bonds is set at the Quarterly Rate.

"*Quarterly Rate*" – the rate of interest that is set on any Taxable Series 2020-B Bonds while they are in the Quarterly Mode pursuant to the Eighth Supplemental Indenture.

"*Rate Covenant*" – means the rate covenants of the Commission set for in the first paragraph under "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Rate Covenant."

"*Rate Stabilization Fund*" – the fund of that name created under the Master Indenture and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *Rate Stabilization Fund*."

"*Rate Stabilization Fund Requirement*" – (i) an amount equal to the greater of (A) all Revenues received, less the required deposits, if any, into the First Tier Debt Service Fund and the First Tier Debt Service Reserve Fund, through August 31, 2008, or (B) $10,000,000, or (ii) such other amount as set forth in a Supplemental Indenture, which amount may be less than the amount established in (i) above if the Series 2002-A Bonds are no longer Outstanding. Provided, however, to the extent that amounts on deposit in the Rate Stabilization Fund are transferred to the First Tier Debt Service Fund, the Second Tier Debt Service Fund or the Subordinate Lien Debt Service Fund to cure a deficiency, the Rate Stabilization Fund Requirement shall be reduced to the greater of (i) the resulting balance in the Rate Stabilization Fund after such transfer or (ii) $10,000,000.

"*Rating Agency*" – Fitch, Moody's or S&P or such other nationally-recognized securities rating agency as may be so designated in writing to the Trustee by a TTA Representative.

"*Rating Category*" – each major rating classification established by the Rating Agency, determined without regard to gradations such as "1," "2" and "3" or "plus" (+) and "minus" (-).

"*Rebate Fund*" – the fund of that name created under the Indenture.

"*Redemption Date*" – the date fixed for redemption of Bonds subject to redemption in any notice of redemption given in accordance with the terms of the Eighth Supplemental Indenture.

"*Refunded Obligations*" – all or any portion of the Obligations actually refunded as provided in Schedules IA, IB and IC in this Official Statement.

"*Regional Tollway Authority*" – a regional tollway authority established under Chapter 366, Texas Transportation Code.

"*Registered Owner*" or "*Owner*" (or the lower case version of the same) – the Person in whose name any Obligations are registered on the Bond Register maintained by the Bond Registrar.

"*Reimbursement Agreement*" – an agreement between the Commission and one or more Banks pursuant to which, among other things, such Bank or Banks issue a Credit Facility with respect to Obligations of one or more Series and the Commission agrees to reimburse such Bank or Banks for any drawings made thereunder.

"*Reimbursement Obligation*" or "*Reimbursement Obligations*" – the obligation of the Commission pursuant to a Reimbursement Agreement to repay any amounts drawn under a Credit Facility and to pay interest on such drawn amounts pursuant to such Reimbursement Agreement, which Reimbursement Obligation is secured by the Trust Estate on a parity with the First Tier Obligations, the Second Tier Obligations or Subordinate Lien Obligations, as appropriate.

"*Remarketing Agent*" – the Remarketing Agent or Remarketing Agents designated by a Chief Financial Officer pursuant to the Eighth Supplemental Indenture, and any successor remarketing agent appointed in accordance therewith.

"*Remarketing Agreement*" – any remarketing agreement executed by the Commission and the Remarketing Agent pursuant to the Eighth Supplemental Indenture.

"*Reset Date*" – (i) the day immediately succeeding the Index Determination Date or, if such day is not a Business Day, the immediately preceding Business Day, or (ii) such other date as specified in an Award Certificate for the Taxable Series 2020-B Bonds or, in connection with a conversion, in a certificate of the Chief Financial Officer.

"*Reserve Maintenance Account*" – the fund of that name created under the Master Indenture and set forth in "– MASTER INDENTURE – Funds and Accounts – *Reserve Maintenance Account*" of this Appendix C.

"*Revenue Fund*" – the fund of that name created under the Master Indenture and set forth in "– MASTER INDENTURE – Funds and Accounts – *Revenue Fund*" of this Appendix C.

"*Revenues*" – all income and revenues derived from the operation of the System, including (a) all Tolls received by or on behalf of the Commission, (b) any other sources of revenues or funds of the Commission derived from or attributable to the System or from the ownership or the holding of certain properties constituting a part of the System, (c) the proceeds of any insurance covering business interruption loss relating to the System, (d) any other sources of revenues or funds of the Commission that the Commission chooses to designate as "Revenues" pursuant to a Supplemental Indenture, (e) the interest and income earned on any fund or account where said interest or income is required to be credited to the Revenue Fund pursuant to the Master Indenture and (f) transfers of excess funds from the Rate Stabilization Fund to the Revenue Fund pursuant to the Master Indenture. As more fully set forth in the caption "Agreement With Other Turnpikes" in this Appendix C, in the event the Commission receives advances or prepayments or otherwise operates or participates in a system in which funds are collected prior to the actual usage of the System, such funds shall not be deemed to be Revenues until the usage occurs or the funds are earned pursuant to the agreement under which the Commission receives such funds. Revenues does not include Additional Obligation Security.

"*Rule*" – Rule 15c2-12 of the SEC under the Securities Exchange Act of 1934, as amended from time to time.

"*SEC*" – the United States Securities and Exchange Commission or its successors.

"*Second Tier Approved Swap Agreement*" – an Approved Swap Agreement entered into as a Second Tier Obligation.

"*Second Tier Debt Service Fund*" – the fund of that name created under the Master Indenture and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *Second Tier Debt Service Fund*."

"*Second Tier Debt Service Reserve Fund*" – the fund created by the Master Indenture to secure the payment of Additional Second Tier Obligations and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *Second Tier Debt Service Reserve Fund*."

"*Second Tier Debt Service Reserve Requirement*" – the amount set forth in the Supplemental Indentures authorizing the Additional Second Tier Obligations. The Eighth Supplement sets the requirements as described under "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *Second Tier Debt Service Fund*."

"*Second Tier DSRF Security*" – a surety bond, an insurance policy, a letter of credit or similar financial instrument satisfactory to the Rating Agency (as evidenced by a letter from the Rating Agency confirming that the Second Tier DSRF Security will not result in the rating on any outstanding Second Tier Obligations being downgraded) payable to the Trustee for the benefit of the Secured Owners in an amount equal to the difference between the Second Tier Debt Service Reserve Requirement and the amounts then on deposit in the Second Tier Debt Service Reserve Fund.

"*Second Tier Interest Account*" – the account of that name created under the Master Indenture and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Flow of Funds – *Second Tier Debt Service Fund*."

"*Second Tier Obligations*" – the Series 2015-C Bonds and all Indebtedness of any kind or class, including bonds, notes, bond anticipation notes, commercial paper and other obligations issued or incurred as Additional Second Tier Obligations and includes all obligations of the Commission owed to Secured Owners of Second Tier Obligations, Reimbursement Obligations secured by the Trust Estate on a parity with Second Tier Obligations and obligations of the Commission under Second Tier Swap Agreements.

"*Second Tier Principal Account*" – the account of that name created under the Master Indenture and set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *Second Tier Debt Service Fund*."

"*Second Tier Swap Agreement Counterparty*" – the counterparty to a Second Tier Approved Swap Agreement with the Commission or with the Trustee.

"*Secured Owner*" or "*Secured Owners*" – (a) with respect to First Tier Obligations, each Person who is a Registered Owner of any First Tier Obligations, each First Tier Swap Agreement Counterparty providing a First Tier Swap Agreement, each Bank providing a Credit Facility secured on a parity with the First Tier Obligations and each Bond Insurer providing a bond insurance policy with respect to a First Tier Obligation (b) with respect to Second Tier Obligations, each Person who is a Registered Owner of any Second Tier Obligations, each Second Tier Swap Agreement Counterparty providing a Second Tier Swap Agreement, each Bank providing a Credit Facility secured on a parity with the Second Tier Obligations and each Bond Insurer providing a bond insurance policy with respect to a Second Tier Obligation and (c) with respect to Subordinate Lien Obligations, each Person who is a Registered Owner of any Subordinate Lien Obligations, each Second Tier Swap Agreement Counterparty providing a Second Tier Swap Agreement, each Bank providing a Credit Facility secured on a parity with the Subordinate Lien Obligations and each Bond Insurer providing a bond insurance policy with respect to a Subordinate Lien Obligation.

"*Securities Depository*" – a Person that is registered as a clearing agency under Section 17A of the Securities Exchange Act of 1934 or whose business is confined to the performance of the functions of a clearing agency with respect to exempted securities, as defined in Section 3(a)(12) of such act for the purposes of Section 17A thereof.

"*Semiannual Mode*" –the Mode in which the interest rate on any Taxable Series 2020-B Bonds is set at the Semiannual Rate.

"*Semiannual Rate*" shall mean the rate of interest that is set on any Taxable Series 2020-B Bonds while they are in the Semiannual Mode pursuant to the Eighth Supplemental Indenture.

"*Series*" – one or more Obligations issued at the same time, or sharing some other common term or characteristic, and designated as a separate Series of Obligations.

"*Series 2002-A Bonds*" – the Texas Turnpike Authority[1] Central Texas Turnpike System First Tier Revenue Bonds, Series 2002-A.

---

[1]The Texas Transportation Code previously provided for a separate board of directors of the Texas Turnpike Authority that was authorized to issue bonds for toll projects. Effective November 6, 2001, the separate board of directors of the Texas Turnpike Authority was abolished by S.B. 342 (77th Texas Legislature, Regular Session) and all powers, duties, obligations, rights, contracts, leases, records, employees, and real or personal property of the board, including the ability to issue bonds for toll projects, were transferred to the Commission. The Toll Operations Division of TxDOT, formerly the Texas Turnpike Authority Division, currently operates the System.

"*Series 2012-A Bonds*" – the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2012-A.

"*Series 2015-A Bonds*" – the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Put Bonds, Series 2015-A.

"*Series 2015-B Bonds*" – the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2015-B.

"*Series 2015-C Bonds*" – the Texas Transportation Commission Central Texas Turnpike System Second Tier Revenue Refunding Bonds, Series 2015-C.

"*Series 2020-A Bonds*" – the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2020-A authorized by the Eighth Supplemental Indenture.

"*Short-Term Indebtedness*" – all Indebtedness that matures in less than 365 days and are issued as Short-Term Indebtedness pursuant to the Master Indenture. In the event a Bank has extended a line of credit or the Commission has undertaken a commercial paper or similar program, only amounts actually borrowed under such line of credit or program and repayable in less than 365 days shall be considered Short-Term Indebtedness and the full amount of such commitment or program shall not be treated as Short-Term Indebtedness to the extent that such facility remains available but undrawn.

"*SIFMA Index*" or "*SIFMA Municipal Swap Index*" – for any day, the level of the most recently effective index rate which is issued weekly and which is compiled from the weekly interest rate resets of tax-exempt variable rate issues included in a data base maintained by Municipal Market Data which meet specific criteria established from time to time by the Securities Industry and Financial Markets Association and issued on each Index Determination Date. If such index is no longer published, the SIFMA Index for any day will mean the level of the most recently effective S&P Municipal Bond 7-Day High Grade Rate Index maintained by Standard & Poor's Securities Evaluations Inc. for a 7-day maturity as published on the day which is one U.S. Government Securities Business Day immediately preceding the effective date of such index. The effective date for each such index is every Thursday (or any other day specified by the Securities Industry and Financial Markets Association, in the case of the first such index), or if any Thursday is not a U.S. Government Securities Business Day, the next succeeding U.S. Government Securities Business Day.

"*Standard & Poor's*" or "*S&P Global Ratings*" or "*S&P*" – Standard & Poor's Ratings Services, a Standard & Poor's Financial Services LLC business, its successors and their assigns, and, if such corporation shall for any reason no longer perform the functions of a securities rating agency, "S&P" shall be deemed to refer to any other nationally-recognized securities rating agency designated by the Commission.

"*State*" – the State of Texas.

"*State Highway Fund*" – the fund established by the laws of the State known as State Highway Fund (006) held in the State Treasury by the Texas Comptroller of Public Accounts.

"*State Highway System*" – the system of highways referred to in the Texas Transportation Code as the State Highway System.

"*Stated Maturity*" – when used with respect to any Obligations, the scheduled maturity or mandatory sinking fund redemption of such Obligations.

"*Subordinate Lien Approved Swap Agreements*" – an Approved Swap Agreement entered into as a Subordinate Lien Obligation.

"*Subordinate Lien Debt Service Fund*" – the fund created under the Master Indenture to secure payment of the Subordinate Lien Obligations.

"*Subordinate Lien Obligations*" – all Indebtedness of any kind or class, including bonds, notes, bond anticipation notes, commercial paper and other obligations issued or incurred as Additional Subordinate Lien Obligations under the Master Indenture and includes all obligations of the Commission owed to Secured Owners of Subordinate Lien Obligations, Reimbursement Obligations secured by the Trust Estate on a parity with Subordinate Lien Obligations and obligations of the Commission under Subordinate Lien Approved Swap Agreements.

"*Subordinate Lien Swap Agreement Counterparty*" – a counterparty to a Subordinate Lien Approved Swap Agreement.

"*Substantial Completion*" – as evidenced by the certificate of a TTA Representative pursuant to the Master Indenture, the point in time when the 2002 Project or any additional Project has been partially opened to traffic to the extent that the portions of such Project open to traffic were projected to produce 80% of the Revenues of such Project in the Traffic and Revenue Report issued at the time of the issuance of Obligations to finance the cost of such Project.

"*Supplemental Indenture*" or "*Supplement*" – any supplemental indenture to the Master Indenture, now or hereafter duly authorized and entered into in accordance with the provisions of the Master Indenture.

"*Swap Agreement*" – a contract having an interest rate, currency, cash-flow, or other basis desired by the Commission.

"*System*" – the Central Texas Turnpike System, the 2002 Project, SH 45SE and any Project to expand, enlarge or extend the Central Texas Turnpike System, any Project pooled with the Central Texas Turnpike System pursuant to the Chapter 228 of the Transportation Code, as amended, and any other roads, bridges, tunnels or other toll facilities for which the Commission has operational responsibility and is collecting Tolls, unless the Commission identifies, in writing delivered to the Trustee, such roads, bridges, tunnels or other toll facilities as not being part of the System for the purposes of the Master Indenture.

"*Taxable Series 2020-B Bonds*" – the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Put Bonds, Taxable Series 2020-B authorized by the Eighth Supplemental Indenture.

"*Taxable Series 2020-C Bonds*" – the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Taxable Series 2020-C authorized by the Eighth Supplemental Indenture.

"*Tender Agent*" – The Tender Agent for the Series 2020-A Bonds appointed by a Chief Financial Officer. "Principal Office" of the Tender Agent shall mean the office thereof designated in writing by the Tender Agent or the Commission and Remarketing Agent.

"*Tender Indebtedness*" – any Obligations (the Bonds do not constitute Tender Indebtedness):

(a) the terms of which include (i) an option or an obligation on the part of the Secured Owner to tender all or a portion of such Obligation to the Commission, the Trustee, the Paying Agent or another fiduciary or agent for payment or purchase and (ii) a requirement on the part of the Commission to purchase or cause to be purchased such Obligation or portion thereof if properly presented; and

(b) that are rated in either (i) one of the two highest long-term Rating Categories by a Rating Agency or (ii) the highest short-term, note or commercial paper Rating Category by a Rating Agency.

"*Tier*" – the designation of the lien status of the Obligations, and includes First Tier Obligations, Second Tier Obligations and Subordinate Lien Obligations.

"*Toll*" or "*Tolls*" – all rates, rents, fees, charges, fines or other income derived by the Commission from vehicular usage of the System, and all rights of the Commission to receive the same.

"*Traffic and Revenue Report*" – a report of the Traffic Consultant setting forth the estimated traffic and revenue for the System or a Project.

"*Traffic Consultant*" – any traffic and revenue consultant or firm or firms of traffic and revenue consultants of favorable national reputation for skill and experience in performing the duties for which a Traffic Consultant is required to be employed pursuant to the provisions of the Master Indenture and who are retained by TxDOT as a Traffic Consultant for the purposes of the Master Indenture.

"*Trust Estate*" – shall have the respective meanings set forth in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Sources of Payment – *Special, Limited Obligations*" with respect to the First Tier Obligations, Second Tier Obligations and Subordinate Lien Obligations, respectively.

"*Trustee*" – The Bank of New York Mellon Trust Company, National Association, as successor in interest to Bank One, National Association.

"*TTA Representative* " – the Executive Director, each Deputy Executive Director and each assistant executive director of TxDOT or such other individuals so designated by the Commission to perform the duties of the TTA Representative under the Master Indenture.

"*2002 Project*" – the initial project financed with the proceeds of Obligations, designated as the Central Texas Turnpike Project, a turnpike project composed of three elements, Loop 1, State Highway 45 North and State Highway 130, as further described in the GEC's project report.

"*U.S. Government Securities Business Day*" – any day, except for a Saturday, a Sunday, or a day on which the SIFMA recommends that the fixed income departments of its members be closed for the entire day for purposes of trading in U.S. government securities.

"*U.S.*" – United States of America.

"*Variable Rate Bonds*" - Bonds in the Daily Mode, the Flexible Mode, the Weekly Mode, the Monthly Mode, the Quarterly Mode, the Semiannual Mode, the Multiannual Mode, Index Floating Rate Mode, the Fixed Rate Mode or such other mode, interest rate or other provisions and terms as set forth in each Award Certificate.

"*Variable Rate Indebtedness*" – any Obligation the interest rate on which fluctuates from time to time subsequent to the time of incurrence. Variable Rate Indebtedness may include, without limitation, (a) "auction rate" Obligations (i) the interest rate applicable to which (after an initial period following the issuance thereof or the conversion thereof to such an interest rate mode) is reset from time to time through an auction or bidding system and (ii) which the Commission has no obligation to repurchase in connection with the resetting of the interest rate applicable thereto except to the extent proceeds are available for such purpose either from the remarketing of such Obligations or from such other sources as identified in the Supplemental Indenture pursuant to which such Obligations were issued; (b) Tender Indebtedness (specifically excluding the Bonds); (c) commercial paper Obligations which are intended to be reissued and refinanced periodically; or (d) other forms of Obligations on which the interest fluctuates or is subject to being set or reset from time to time, not more frequently than annually.

"*Weekly Mode*" – the Mode in which the interest rate on any Taxable Series 2020-B Bonds is set at the Weekly Rate.

"*Weekly Rate*" – the rate of interest that is set on any Taxable Series 2020-B Bonds while they are in the Weekly Mode pursuant to the Eighth Supplemental Indenture.

MASTER INDENTURE

Granting Clauses

To secure all the covenants, agreements and conditions expressed or implied in the Master Indenture and contained in the Obligations, the Commission pledges and assigns to the Trustee and grants to the Trustee a security interest in all right, title and interest of the Commission in and to (i) all Revenues and, to the extent set forth in a Supplemental Indenture, any Additional Obligation Security; (ii) all moneys, including investment earnings, deposited into accounts or funds created in the Construction Fund and other funds created under the Master Indenture or in a Supplemental Indenture to be held by or on behalf of the Trustee subject to the provisions of the Master Indenture relating to each of such funds and accounts (but excluding moneys on deposit in a Bond Purchase Fund, the Rebate Fund, amounts held in a subaccount of the Construction Fund containing moneys derived from the State Highway Fund or any other moneys received by the Commission that are restricted to another use, such as right-of-way contributions that may be used for only that purpose); (iii) any insurance proceeds and other moneys required to be deposited in such accounts and funds under the Master Indenture provisions pertaining to damage or destruction of the System or the provisions of a Supplemental Indenture; and (iv) all payments received by the Commission pursuant to Approved Swap Agreements (collectively, the "*Trust Estate*"),

FIRST: for the equal and proportionate benefit and security of all First Tier Obligations, all of which, regardless of the time or times of their delivery, maturity or other due date, shall be of equal rank without preference, priority or distinction as to lien or otherwise of any First Tier Obligation over any other First Tier Obligation, except as otherwise permitted by or provided for in the Master Indenture, and except that any funds held by the Trustee for the payment of specific First Tier Obligations which are deemed to have been paid pursuant to the provisions of governing discharge and defeasance under the Master Indenture and any funds deposited with the Trustee hereunder specifically to be held in escrow or otherwise to provide additional security or an additional source of payment for specified First Tier Obligations shall be held and used only to pay or provide security for the First Tier Obligations for which such deposit was made and shall not be held as security on a parity for all First Tier Obligations; and provided further, that the Trustee shall apply the Trust Estate hereunder to the payment of the principal of, and interest on, and other payments with respect to the First Tier Obligations and for the purposes and uses and in the order of priority set forth herein prior to the payment of the principal of, and interest on, and other payments with respect to Second Tier Obligations or Subordinate Lien Obligations;

SECOND: subject to the security interest in the Trust Estate pledged for the security and payment of the First Tier Obligations, for the equal and proportionate benefit and security of all Second Tier Obligations, all of which, regardless of the time or times of their delivery, maturity or other due date, shall be of equal rank without preference priority or distinction as to lien or otherwise of any Second Tier Obligation over any other Second Tier Obligation, except as otherwise permitted by or provided for in the Master Indenture, and except that any funds held by the Trustee for the payment of specific Second Tier Obligations that are deemed to have been paid pursuant to the provisions of discharge and defeasance under the Master Indenture and any funds deposited with the Trustee hereunder specifically to be held in escrow or otherwise to provide additional security or an additional source of payment for specified Second Tier Obligations shall be held and used only to pay or provide security for the Second Tier Obligations for which such deposit was made and shall not be held as security on a parity for all Second Tier Obligations; and provided further, that the Trustee shall apply the Trust Estate hereunder to the payment of the principal of, and interest on, and other payments with respect to the Second Tier Obligations and for the purposes and uses and in the order of priority set forth herein subordinate to the payment of the First Tier Obligations but prior to the payment of the principal of, and interest on, and other payments with respect to Subordinate Lien Obligations; and

THIRD: subject to the security interest in the Trust Estate pledged for the security and payment of the First Tier Obligations and the Second Tier Obligations for the equal and proportionate benefit and security of all Subordinate Lien Obligations, all of which, regardless of the time or times of their delivery, maturity or other due date, shall be of equal rank without preference priority or distinction as to lien or otherwise of any Obligation over any other Obligation, as to lien or otherwise of any Subordinate Lien Obligation over any other Subordinate Lien Obligation, and except that any funds held by the Trustee for the payment of specific Subordinate Lien Obligations which are deemed to have been paid pursuant to the provisions of discharge and defeasance under the Master Indenture and any funds deposited with the Trustee hereunder specifically to be held in escrow or otherwise to provide additional security or an additional source of payment for specified Subordinate Lien Obligations shall be held and used only to pay or provide security for the Subordinate Lien Obligations for which such deposit was made and shall not be held as security on a parity for all Subordinate Lien Obligations; and provided further, that the Trustee shall apply the Trust Estate hereunder to the payment of the principal of, and interest on, and other payments with respect to the Subordinate Lien Obligations and for the purposes and uses and in the order of priority set forth herein subordinate to the payment of the First Tier Obligations and the Second Tier Obligations.

The Trustee is a fiduciary solely for the benefit of the Registered Owners of the Obligations; the Trustee is not a fiduciary of the other Secured Owners who are not Registered Owners. Upon compliance with the provisions of the Master Indenture, the First Tier Obligations, the Second Tier Obligations or the Subordinate Lien Obligations of such other Secured Owners shall be secured by the same collateral, namely the Trust Estate, on a parity (on an equal and ratable basis) with all other First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations, as the case may be, of such other Secured Owners unless stated otherwise in the Master Indenture.

Funds and Accounts

First Tier Debt Service Fund. The Master Indenture creates two separate accounts in the First Tier Debt Service Fund to be known as the "First Tier Interest Account" and the "First Tier Principal Account." The Trustee and the Commission may create such additional accounts in the First Tier Debt Service Fund pursuant to a Supplemental Indenture as they deem necessary or appropriate, including, but not limited to, (i) an account into which drawings on a Credit Facility are to be deposited and from which principal (including redemption price) of and interest on the Series of First Tier Obligations secured by such Credit Facility are to be paid (and upon such payment, amounts on deposit in the First Tier Principal Account and First Tier Interest Accounts for such First Tier Obligations shall be used to repay the provider of the Credit Facility for such payments), and (ii) an account into which payments to the Commission from any First Tier Swap Agreement Counterparty are to be deposited and from which payments from the Commission to such First Tier Swap Agreement Counterparty are to be paid.

On or before the last Business Day preceding each Interest Payment Date or principal (or sinking fund redemption) payment date for the First Tier Obligations or such other day as set forth in a Supplemental Indenture, the Trustee shall withdraw from the Revenue Fund and deposit to the applicable Account in the First Tier Debt Service Fund (or to a fund or account created to pay or repay amounts owed under a Credit Facility entered into in connection with a Series of First Tier Obligations) the amounts due on any First Tier Obligation.

The moneys in the First Tier Interest Account and First Tier Principal Account shall be held by the Trustee in trust for the benefit of the First Tier Obligations, to the moneys are payable from such accounts, and, to said extent and pending application, shall be subject to a lien and charge in favor of the Secured Owners of the First Tier Obligations until paid out or transferred as provided in the Master Indenture. There shall be withdrawn from the First Tier Interest Account (and from the Construction Fund to the extent of any available capitalized interest in the Construction Fund) and the First Tier Principal Account from time to time and set aside or deposited with the Trustee sufficient money for paying the interest on and the principal of and premium on the First Tier Obligations as the same shall become due, except to the extent such interest, principal or other amounts are payable from a fund or account other than the First Tier Debt Service Fund as provided in any Supplemental Indenture.

If at the time the Trustee is required to make a withdrawal from the First Tier Debt Service Fund and the moneys therein shall not be sufficient for such purpose, the Trustee shall withdraw the amount of such deficiency from the moneys on deposit in the following funds or accounts and transfer the same to the First Tier Debt Service

Fund in the following order: the Revenue Fund; the General Reserve Fund; the Rate Stabilization Fund and the First Tier Debt Service Reserve Fund.

First Tier Debt Service Reserve Fund. In each Fiscal Year, after first having made the deposits provided by the provisions under the Master Indenture governing the Rebate fund and the First Tier Debt Service Fund, the Trustee shall transfer from the Revenue Fund on or before the last Business Day of each month to the credit of the First Tier Debt Service Reserve Fund (a) the amount, if any, required to make the amount on deposit in the First Tier Debt Service Reserve Fund equal to the First Tier Debt Service Reserve Requirement, which restoration is intended to occur within eighteen (18) months of the occurrence of any such deficiency; and (b) the amount set forth in a Supplemental Indenture if an amount different from the First Tier Debt Service Reserve Requirement is required.

Moneys, investments and First Tier DSRF Security held in the First Tier Debt Service Reserve Fund shall be held and used for the benefit of all First Tier Obligations. Moneys held in the First Tier Debt Service Reserve Fund shall be used for the purpose of paying interest on, maturing principal and mandatory sinking fund redemption price of First Tier Obligations whenever and to the extent that the moneys held for the credit of the First Tier Debt Service Fund, after making all required transfers from other Funds, shall be insufficient for such purpose. If at any time the moneys and the principal amount of any First Tier DSRF Security held in the First Tier Debt Service Reserve Fund shall exceed the First Tier Debt Service Reserve Requirement, subject to the receipt of an opinion of Bond Counsel to the effect that such transfer and use will not adversely affect the treatment of interest on any Outstanding Obligations for federal income tax purposes, the Commission shall direct whether such excess moneys shall be transferred by the Trustee to the credit of the First Tier Debt Service Fund, used to reduce the principal amount of any First Tier DSRF Security or, to the extent that such excess was derived from Revenues, transferred to the Revenue Fund or the General Reserve Fund.

In lieu of the deposit of moneys into the First Tier Debt Service Reserve Fund, the Commission may cause to be provided a surety bond, an insurance policy, a letter of credit or similar financial instrument satisfactory to the Rating Agency (as evidenced by a letter from the Rating Agency confirming that the First Tier DSRF Security will not result in the rating on any outstanding First Tier Obligations being downgraded) (each, a "First Tier DSRF Security") payable to the Trustee for the benefit of the Secured Owners in an amount equal to the difference between the First Tier Debt Service Reserve Requirement and the amounts then on deposit in the First Tier Debt Service Reserve Fund. The First Tier DSRF Security shall be payable (upon the giving of notice as required thereunder) on any Interest Payment Date, principal payment date or redemption date on which moneys will be required to be withdrawn from the First Tier Debt Service Reserve Fund and applied to the payment of the principal of or interest on any First Tier Obligations to the extent that such withdrawals cannot be made by amounts on deposit in the First Tier Debt Service Reserve Fund.

If a disbursement is made pursuant to a First Tier DSRF Security, the Commission shall be obligated either (a) to cause the reinstatement to the maximum limits of such First Tier DSRF Security or (b) to deposit into the First Tier Debt Service Reserve Fund, funds in the amount of the disbursement made under such First Tier DSRF Security, or a combination of such alternatives, as shall provide that the amount credited to the First Tier Debt Service Reserve Fund equals the First Tier Debt Service Reserve Requirement within eighteen (18) months.

If the rating on the First Tier Obligations is downgraded or threatened to be downgraded as a result of the First Tier DSRF Security, the Commission shall use reasonable efforts to replace such First Tier DSRF Security with one that would not cause the rating on the First Tier Obligations to be downgraded, but shall not be obligated to pay, or commit to pay, increased fees, expenses or interest in connection with such replacement or to deposit Revenues in the First Tier Debt Service Reserve Fund in lieu of replacing such First Tier DSRF Security with another.

Second Tier Debt Service Fund. The Master Indenture creates two separate accounts in the Second Tier Debt Service Fund designated the "Second Tier Interest Account" and the "Second Tier Principal Account" and permits the Trustee and the Commission, pursuant to a Supplemental Indenture, to create additional accounts in the First Tier Debt Service Fund as they deem necessary or appropriate, including, but not limited to, (i) an account into which drawings on a Credit Facility are to be deposited and from which principal (including redemption price) of and interest on the Series of Second Tier Obligations secured by such Credit Facility are to be paid (and upon such payment, amounts on deposit in the Second Tier Principal Account and Second Tier Interest Account for such Second Tier Obligations shall be used to repay the provider of the Credit Facility for such payments), and (ii) an account into which payments to the Commission from any Second Tier Swap Agreement Counterparty are to be deposited and from which payments from the Commission to such Second Tier Swap Agreement Counterparty are to be paid.

After first having made or provided for the deposits required by the Rebate Fund and the First Tier Debt Service Reserve Fund, on or before the last Business Day preceding each Interest Payment Date or principal (or sinking fund redemption) payment date for any Second Tier Obligations or such other day as set forth in a Supplemental

Indenture, the Trustee shall withdraw from the Revenue Fund and deposit to the applicable account in the Second Tier Debt Service Fund (or to a fund or account created to pay or repay amounts owed under a Credit Facility entered into in connection with a Series of Second Tier Obligations) the amounts due on any Second Tier Obligation.

The moneys in the Second Tier Principal Account and the Second Tier Interest Account shall be held by the Trustee in trust for the benefit of the Second Tier Obligations, to the extent the moneys are payable from such accounts, and, to said extent and pending application, shall be subject to a lien and charge in favor of the Secured Owners of the Second Tier Obligations until paid out or transferred as provided under the Master Indenture. There shall be withdrawn from the Second Tier Interest Account (and from the Construction Fund to the extent of any available capitalized interest) and the Second Tier Principal Account from time to time and set aside or deposited with the Trustee sufficient money for paying the interest on and the principal of and premium on the Second Tier Obligations as the same shall become due, except to the extent such interest, principal or other amounts are payable from a fund or account other than the Second Tier Debt Service Fund as provided in any Supplemental Indenture.

If at the time the Trustee is required to make a withdrawal from the Second Tier Debt Service Fund and the moneys therein shall not be sufficient for such purpose, subject to the requirements of the Revenue Fund, the First Tier Debt Service Fund and the First Tier Debt Service Reserve Fund, the Trustee shall withdraw the amount of such deficiency from the moneys on deposit in the following funds or accounts and transfer the same to the Second Tier Debt Service Fund in the following order: the Revenue Fund; the General Reserve Fund; the Rate Stabilization Fund and the Second Tier Debt Service Reserve Fund.

Second Tier Debt Service Reserve Fund. In each Fiscal Year, after first having made the deposits required under the Master Indenture for the Rebate Fund, First Tier Debt Service Fund, First Tier Debt Service Reserve Fund, and the Second Tier Debt Service Fund, the Trustee shall transfer from the Revenue Fund on or before the last Business Day of each month to the credit of the Second Tier Debt Service Reserve Fund, if one is provided for in a Supplemental Indenture, the amounts set forth in the Supplemental Indenture establishing the Second Tier Debt Service Reserve Requirement or authorizing Additional Second Tier Obligations.

Subordinate Lien Debt Service Fund. The Master Indenture creates two separate accounts in the Subordinate Lien Debt Service Fund designated the "Subordinate Lien Interest Account" and the "Subordinate Lien Principal Account" and permits the Trustee and the Commission, pursuant to a Supplemental Indenture, to create additional accounts in the Subordinate Lien Debt Service Fund as they deem necessary or appropriate, including, but not limited to, (i) an account into which drawings on a Credit Facility are to be deposited and from which principal (including redemption price) of and interest on the Series of Subordinate Lien Obligations secured by such Credit Facility are to be paid (and upon such payment, amounts on deposit in the Subordinate Lien Principal Account and Subordinate Lien Interest Account for such Subordinate Lien Obligations shall be used to repay the provider of the Credit Facility for such payments), and (ii) an account into which payments to the Commission from any Subordinate Lien Swap Agreement Counterparty are to be deposited and from which payments from the Commission to such Subordinate Lien Swap Agreement Counterparty are to be paid.

After first having made the deposits required under the Master Indenture for the Rebate Fund and the Second Tier Debt Service Reserve Fund, on or before the last Business Day preceding each Interest Payment Date or principal (or sinking fund redemption) payment date for the Subordinate Lien Obligations or such other day as set forth in a Supplemental Indenture, the Trustee shall withdraw from the Revenue Fund and deposit to the applicable account in the Subordinate Lien Debt Service Fund (or to a fund or account created to pay or repay amounts owed under a Credit Facility entered into in connection with a Series of Subordinate Lien Obligations) the amounts due on any Subordinate Lien Obligation.

The moneys in the Subordinate Lien Principal Account and the Subordinate Lien Interest Account shall be held by the Trustee in trust for the benefit of the Subordinate Lien Obligations, to the extent the moneys are payable from such accounts, and, to said extent and pending application, shall be subject to a lien and charge in favor of the Owners of the Subordinate Lien Obligations until paid out or transferred as provided under the Master Indenture. There shall be withdrawn from the Subordinate Lien Interest Account (and from the Construction Fund to the extent of any available capitalized interest) and the Subordinate Lien Principal Account from time to time and set aside or deposited with the Trustee sufficient money for paying the interest on and the principal of and premium on the Subordinate Lien Obligations as the same shall become due, except to the extent such interest, principal or other amounts are payable from a fund or account other than the Subordinate Lien Debt Service Fund as provided in any Supplemental Indenture.

If at the time the Trustee is required to make a withdrawal from the Subordinate Lien Debt Service Fund and the moneys therein shall not be sufficient for such purpose, subject to Master Indenture's requirements for the Rebate Fund, the First Tier Debt Service Fund and the Second Tier Debt Service Reserve Fund, the Trustee shall withdraw the amount of such deficiency from the moneys on deposit in the following funds or accounts and transfer the same to the Subordinate Lien Debt Service Fund in the following order: the Revenue Fund; the General Reserve Fund; the Rate Stabilization Fund and the respective Subordinate Lien Debt Service Reserve Funds, if any, established for a special series of Subordinate Lien Obligations.

Operating Account. The Commission shall establish an account known as the "Central Texas Turnpike System Operating Account" that shall be held by the Commission in the name of the Commission outside of the Indenture, but separate and apart from its other funds and accounts, until applied as directed under the Master Indenture. After first having made or provided for the deposits required under the Master Indenture for the Rebate Fund, First Tier Debt Service Fund, First Tier Debt Service Reserve Fund, Second Tier Debt Service Fund, Second Tier Debt Service Reserve Fund, Subordinate Lien Debt Service Fund, Subordinate Lien Debt Service Reserve Fund, and the Rate Stabilization Fund, the Trustee shall transfer from the Revenue Fund on or before the last Business Day of each month to the credit of the Operating Account an amount sufficient to bring the balance in the Operating Account to the amount contemplated by the Annual Operating Budget and a certificate of a TTA Representative, dated no later than five days prior to the last Business Day of the month, to be necessary to pay Operating Expenses for the ensuing two months (the "Operating Account Requirement"). However, in any Fiscal Year in which the Projected Operating Expenses Capacity is equal to less than the Projected Operating Expenses, the amount required to be transferred from the Revenue Fund to the Operating Account each month shall be limited to the amount set forth in the Annual Operating Budget for that Fiscal Year. In recognition that the System is a part of the Texas State Highway System, to the extent that the Revenues are insufficient to make the required deposits into the Operating Account each month or the transfer is limited to the Projected Operating Expenses Capacity amount for that month, the Commission covenants that, subject to funds being appropriated by the Legislature in a manner that would allow their use for this purpose, it will include in its annual budget provisions for and will make deposits to the Operating Account from lawfully available funds in amounts sufficient to cause the balance in the Operating Account to equal the Operating Account Requirement.

In making payments from the Operating Account, the Commission shall be deemed to be certifying that obligations in the stated amounts have been incurred by the Commission and that each item thereof was properly incurred in operating the System, and has not been paid previously.

Maintenance Account. The Master Indenture requires the Commission to establish the (Central Texas Turnpike System Maintenance Account) which shall be held by the Commission in the name of the Commission outside of the Indenture, but separate and apart from its other funds and accounts. In recognition that the System is a part of the State Highway System, the Commission covenants that, subject to funds being appropriated by the Legislature in a manner that would allow their use for this purpose, it will include in its annual budget provisions for and, on or before the last Business Day of each month, will deposit to the Maintenance Account from lawfully available funds amounts sufficient to cause the balance in the Maintenance Account to equal to the Maintenance Expenses for the ensuing two months and, to the extent that the balance in the Maintenance Account is at any time insufficient to pay the required Maintenance Expenses, to pay all Maintenance Expenses when due.

In making payments from the Maintenance Account, the Commission shall be deemed to be certifying that obligations in the stated amounts have been incurred by the Commission and that each item thereof was properly incurred in maintaining and repairing the System, and has not been paid previously.

Reserve Maintenance Account. The Commission shall establish an account known as the "Central Texas Turnpike System Reserve Maintenance Account" which shall be held by the Commission in the name of the Commission outside of the Indenture, but separate and apart from its other funds and accounts. In recognition that the System is a part of the State Highway System, the Commission covenants that, subject to funds being appropriated by the Legislature in a manner that would allow their use for this purpose, it will include in its annual budget provisions for and, on or before the last Business Day of each month, will deposit to the Reserve Maintenance Account from lawfully available funds amounts sufficient to cause the balance in the Reserve Maintenance Account to equal the expenses projected in the Annual Capital Budget for the ensuing two months and, to the extent that the balance in the Reserve Maintenance Account is at any time insufficient to pay the required capital expenses, to pay all such capital expenses when due.

Moneys in the Reserve Maintenance Account shall be disbursed to pay current capital expenditures shown in the Annual Capital Budget for the System, plus the cost of unusual or extraordinary maintenance (as determined solely by the Commission) and shall be disbursed only for such purposes which include, but are not be limited to, paying the cost of constructing, repairing, replacing, improving and reconstructing improvements and betterments to all parts of the System now or hereafter open to vehicular traffic, including, without limitation, additional lanes, tunnels, interchanges, toll plazas, bridges, connecting roads, transit interface facilities, safety rails and other safety improvements, illumination, signage, and any equipment and other improvements deemed necessary or desirable by the Commission.

General Reserve Fund. After making the deposits required under the Master Indenture for the Rebate Fund, First Tier Debt Service fund, First Tier Debt Service Reserve Fund, Second Tier Debt Service Fund, Second Tier Debt Service Reserve Fund, Subordinate Lien Debt Service Fund, Subordinate Lien Debt Service Reserve Fund, the Rate Stabilization Fund, and the Operating Account and, subject to the following conditions, on or before the last Business Day of each Fiscal Year (or more frequently if every condition set forth below has been satisfied) the Trustee shall transfer from the Revenue Fund to the credit of the General Reserve Fund any Revenues that a TTA Representative determines, in a certificate delivered to the Trustee, to be in excess of the amount required to be reserved therein, for future transfers to the First Tier Debt Service Fund, the Second Tier Debt Service Fund, the Subordinate Lien Debt Service Fund or any fund or account established for the payment or security of any Obligations. The certificate of the TTA Representative must also state that, as of the date of the transfer:

(i) no Event of Default currently exists, and

(ii) every fund and account established by or required to be established by the Indenture contains at least the amount then required to be on deposit therein.

Moneys in the General Reserve Fund shall be used by the Trustee as provided in the Master Indenture for the First Tier Debt Service Fund and the Second Tier Debt Service Fund, and to restore deficiencies in any funds or accounts created under the Master Indenture. Any moneys remaining in the General Reserve Fund on the last day of a Fiscal Year, after satisfying the requirements of the first sentence of this paragraph, shall first be used to repay to the Commission the amount expended by the Commission in that Fiscal Year to pay Maintenance Expenses. After satisfying those requirements, such moneys may be expended for any of the following purposes, with no one item having priority over any of the others:

(i) to purchase or redeem First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations;

(ii) to pay Maintenance Expenses;

(iii) to make payments into the Construction Fund;

(iv) to fund improvements, extensions and replacements of the System; or

(v) for any other lawful purpose.

The Trustee is authorized to apply moneys on deposit in the General Reserve Fund for any of such purposes upon receipt of a requisition signed by a TTA Representative, stating in respect of each payment to be made:

(i) the name of the Person to whom payment is to be made or, if the payment is to be made to a fund or account held by the Trustee under the Master Indenture or to a fund or account held by the Commission and not subject to the Indenture, the name of such fund or account,

(ii) the amount to be paid, and

(iii) the purpose for which the payment is to be made.

Construction Fund. The Master Indenture creates two separate accounts in the Construction Fund designated the "Bond and Replacement Proceeds Account" and the "Capital Contribution Account." The Commission shall deposit the amounts received from any Person to pay Costs of the Project to the Capital Contribution Account of the Construction Fund. The Commission further covenants to deposit to the Capital Contribution Account of the Construction Fund in monthly installments commencing September 2003, the Commission's capital obligation required under the Master Indenture.

Payment of the Costs of any Project shall be made from the Construction Fund. A special account shall be created and identified for each such Project, although funds, at the written direction of the Commission, may be transferred from one such account in the Construction Fund to another account in such fund.

Tolls, Revenues and Funds

Rate Covenant

(a) <u>Establishment of Rates</u>. The Commission covenants that it will (i) adopt and maintain in effect a Toll rate schedule for the System, in substantial conformity with the recommendation of the Traffic Consultant and (ii) establish charges for other uses of the property constituting a part of the System, such as property leases, designed, collectively, to produce Revenues in each Fiscal Year in an amount at least equal to the sum of (i) and (ii) below as follows:

(i) the amounts required to be deposited in the First Tier Debt Service Reserve Fund, the Second Tier Debt Service Reserve Fund, the Rate Stabilization Fund, and any other fund established by a Supplemental Indenture to be funded by Revenues; and

(ii) the greater of (1), (2) or (3) as follows:

(1) one hundred forty percent (140%) of the Annual Debt Service on all Outstanding First Tier Obligations; or

(2) one hundred ten percent (110%) of the Annual Debt Service on all Outstanding First Tier Obligations, all Outstanding Second Tier Obligations; or

(3) one hundred percent (100%) of the Annual Debt Service on all Outstanding First Tier Obligations, all Outstanding Second Tier Obligations and all Outstanding Subordinate Lien Obligations.

In making the calculations in (1), (2) and (3) above, the Commission may take into account any amounts reasonably expected to be received in the Fiscal Year from or as a result of any Additional Obligation Security the Commission has pledged for the benefit of all Obligations or the Obligations of any Tier or Series, but, if the pledge is not for the benefit of all Obligations, the amounts reasonably expected to be received may only be taken into account when making the calculation for the affected Obligations.

(b) Changes to Toll Rates. Prior to adopting any change in the Toll rate schedule, the Commission shall obtain and file with the Trustee a certificate by the Traffic Consultant stating either:

(i) in their opinion, that if such proposed Toll rate schedule had been in effect during the preceding annual period, and taking into effect the Revenues anticipated to be received in such annual period, as evidenced by a certificate of a TTA Representative, it would not have caused a decrease in the Revenues for said preceding annual period; or

(ii) in their opinion, that the adoption of such proposed Toll rate schedule will not adversely affect the ability of the Commission to comply with its covenants in the "Establishment of Rates" provision above .

Any such certificate by the Traffic Consultant shall be based on the opinion of the Traffic Consultant as to Revenues to be derived by the Commission from the ownership and operation of the System (which Revenues shall be deemed to include all investment income previously described herein as constituting Revenues of the System, as estimated by the TTA Representative), and a certificate of the TTA Representative filed with the Trustee, stating the opinion of the Commission as to the amount of Operating Expenses paid or accrued during any pertinent annual period, assuming that the proposed Toll rate schedule had been in effect during such pertinent Annual Period.

(c) The failure of the System in any Fiscal Year to produce Revenues in the amounts contemplated by the Rate Covenant, which failure may continue during the succeeding Fiscal Year, shall not constitute an Event of Default under the Master Indenture if:

(i) no Event of Default has occurred under the following as a result of such failure;

(1) failure by the Commission to pay the principal of and premium, if any, or interest on any of the Obligations or to pay Capital Payments when the same shall become due and payable, either at Stated Maturity, by proceedings for redemption or pursuant to the terms of the Obligation or any failure of the Commission to purchase or cause to be purchased any Tender Indebtedness, including any applicable Variable Rate Indebtedness, upon any optional or mandatory tender to the Commission or a tender agent of the Commission; or

(2) the occurrence and continuance of an Event of Default under a Credit Facility, First Tier DSRF Security, Second Tier DSRF Security, Approved Swap Agreement or Reimbursement Agreement

(ii) the Commission, promptly after determining that the requirements of the Rate Covenant were not met, requests that the Traffic Consultant make written recommendations as to appropriate revisions to the Toll rate schedule necessary or appropriate to meet the requirements of the Rate Covenant and furnishes the Trustee with a copy of such request; and

(iii) the Commission complies with the recommendation of the Traffic Consultant in respect of Tolls.

In addition to any other remedies the Trustee may have under the Master Indenture, if the Commission does not comply with the recommendations of the Traffic Consultant in respect of Tolls, the Trustee may, and upon the request of the Secured Owners of not less than twenty-five percent (25%) in principal amount of the First Tier Obligations then Outstanding and upon being indemnified to its satisfaction shall, institute and prosecute in a court of competent jurisdiction in Travis County, Texas any appropriate action to compel the Commission to revise the Toll rate schedule. The Commission covenants that it will adopt and charge Tolls in compliance with any final order or decree entered in any such proceeding.

In the event that the Traffic Consultant shall fail to file with the Commission such recommendations in writing within sixty (60) days after its retention by the Commission, the Trustee may designate and appoint a different Traffic Consultant at the expense of the Commission to make recommendations as to an adjustment of the Toll rate schedule, which recommendations shall be reported in writing to the Commission and to the Trustee within sixty (60) days after such retention. Such written report shall for all purposes be considered to be the equivalent of and substitute for the recommendations of the Traffic Consultant retained by the Commission.

In preparing its recommendations, the Traffic Consultant may rely upon written estimates of Revenues prepared by the other Consultants of the Commission. Copies of such written estimates signed by such Consultants shall be attached to such recommendations. The Commission covenants that promptly after receipt of such recommendations and the adoption of any Toll rate schedule, certified copies thereof will be filed with the Trustee.

Flow of Funds

The Master Indenture establishes the Revenue Fund for the application and deposit of all Revenues. As far as practicable, the Commission will deposit all Revenues daily to the credit of the Revenue Fund.

In recognition that Obligations may come due on various dates, First Tier Obligations have a security interest in the Trust Estate senior to the Second Tier Obligations and the Subordinate Lien Obligations; that the security interest in the Trust Estate securing any Second Tier Obligations is superior to the security interest securing the Subordinate Lien Obligations; and that Second Tier Obligations and Subordinate Lien Obligations, or interest thereon, may become due and payable on a date or dates in a Fiscal Year prior to the date a First Tier Obligation or the interest thereon is due and Subordinate Lien Obligations may come due prior to First Tier Obligations and Second Tier Obligations, the Commission has covenanted that no transfer from the Revenue Fund to any fund, other than the First Tier Debt Service Fund or the First Tier Debt Service Reserve Fund, will be made in any Fiscal Year unless, in the opinion of a Chief Financial Officer set forth in a certificate delivered to the Trustee, the transfer is not anticipated to result in the inability of the Commission to make a later transfer, as required by the Master Indenture, to a fund securing Obligations that have a security interest in the Trust Estate senior to that securing the Obligations that are secured by the fund into which the transfer is scheduled to be made.

Except as provided above, the Trustee will transfer amounts on deposit in the Revenue Fund to the following funds and in the following order of priority:

(1) **First**, to the Rebate Fund from time to time, money that the Commission determines to deposit to this fund for purposes of compliance with any amendments to section 148(a) of the Code or as the Commission otherwise deems necessary or appropriate to provide funds for payments to the United States of amounts due under section 148 of the Code and to pay costs related to the calculation of such amounts.

(2) **Second**, to the applicable account of the First Tier Debt Service Fund (or to a fund or account created to pay or repay amounts owed under a Credit Facility entered into in connection with a Series of First Tier Obligations) on or before the last Business Day preceding each Interest Payment Date or principal (or sinking fund redemption) payment date for the First Tier Obligations (or such other day as set forth in a Supplemental Indenture), the amounts due on any First Tier Obligation.

(3) **Third**, to the First Tier Debt Service Reserve Fund on or before the last Business Day of each month, the amount, if any, required to make the amount on deposit in the First Tier Debt Service Reserve Fund equal to the First Tier Debt Service Reserve Requirement, which restoration is intended to occur within 18 months of the occurrence of any deficiency, and the amount set forth in a Supplemental Indenture if an amount different from the First Tier Debt Service Reserve Requirement is required.

(4) **Fourth**, to the applicable account of the Second Tier Debt Service Fund (or to a fund or account created to pay or repay amounts owed under a Credit Facility entered into in connection with a Series of Second Tier Obligations) on or before the last Business Day preceding each Interest Payment Date or principal (or sinking fund redemption) payment date for the Second Tier Obligations (or such other day as set forth in a Supplemental Indenture), the amounts due on any Second Tier Obligation.

(5) **Fifth**, to the Second Tier Debt Service Reserve Fund on or before the last Business Day of each month the amount set forth in a Supplemental Indenture establishing the Second Tier Debt Service Reserve Requirement is required.

(6) **Sixth**, to the applicable account of the Subordinate Lien Debt Service Fund (or to a fund or account created to pay or repay amounts owed under a Credit Facility entered into in connection with a Series of Subordinate Lien Obligations) on or before the last Business Day preceding each Interest Payment Date or principal (or sinking fund redemption) payment date for the Subordinate Lien Obligations (or such other day as set forth in a Supplemental Indenture), the amounts due on any Subordinate Lien Obligation.

(7) **Seventh**, to any reserve fund or other funds or accounts created under Supplemental Indentures for the security of Subordinate Lien Obligations.

(8) **Eighth**, to the Rate Stabilization Fund on or before the last Business Day of each month, amounts sufficient to accumulate in or restore the balance in such fund, as soon as possible, to an amount equal to the Rate Stabilization Fund Requirement.

(9) **Ninth**, to the Operating Account on or before the last Business Day of each month, an amount sufficient to make the balance in the Operating Account equal to the amount contemplated by (i) the Commission's Annual Operating Budget and (ii) a certificate of a Chief Financial Officer, to be necessary to pay Operating Expenses for the ensuing two months (the "*Operating Account Requirement*"); however, in any Fiscal Year in which the portion of Operating Expenses estimated to be paid with Revenues for such period is equal to less than the Projected Operating Expenses, the amount required to be transferred from the Revenue Fund to the Operating Account each month will be limited to the amount set forth in the Annual Operating Budget for that Fiscal Year. The Commission has covenanted in the Master Indenture to cover shortfalls in the Operating Account.

(10) **Tenth**, to the General Reserve Fund (after retaining such funds in the Revenue Fund as are required by the Master Indenture and subject to certain conditions as described above in "Funds and Accounts – *General Reserve Fund*") on or before the last Business Day of each Fiscal Year (or more frequently if every such condition has been satisfied), any Surplus Revenues from the Revenue Fund. "*Surplus Revenues*" are those funds held in the Revenue Fund that a Chief Financial Officer determines, in a certificate (the "*Surplus Revenues Certificate*") delivered to the Trustee, to be in excess of the amount required to be reserved therein for future transfers to the First Tier Debt Service Fund, the Second Tier Debt Service Fund, or any fund or account established for the payment or security of any Obligations. The Surplus Revenues Certificate must also state that as of the date of the transfer no Event of Default has occurred and is continuing and every fund and account contains the amount then required to be on deposit.

The Commission has covenanted in the Master Indenture that no transfer from the Revenue Fund to any fund, other than the First Tier Debt Service Fund or the First Tier Debt Service Reserve Fund, will be made in any year if the result of the transfer is anticipated, in the opinion of a Chief Financial Officer, to result in the inability of the Commission to make a later transfer, as required by the Master Indenture, to a fund securing Obligations that have a security interest in the Trust Estate senior to that securing the Obligations that are secured by the fund into which the transfer is scheduled to be made.

Investments of Funds

Moneys held in any fund or account may be retained uninvested, if deemed necessary by the Commission, as trust funds and secured pursuant to the Master Indenture or may be invested in investments permitted under the Master Indenture. All investments shall be made by the Trustee upon the oral request of a TTA Representative, which request is confirmed in writing by a TTA Representative specifying the account or fund from which moneys are to be invested and designating the specific permitted investments to be acquired. Such investment instructions may take the form of standing investment directions.

Investments shall be subject to withdrawal or shall mature or be subject to repurchase or redemption by the Commission, not later than the earlier of:

(i) the date or dates set forth for similar investments in the applicable Supplemental Indenture; or

(ii) the date on which the moneys may reasonably be expected to be needed for the purposes of the Master Indenture

Investments acquired with moneys in any fund or account are part of that fund or account and will be valued at fair market for purposes of determining amounts in such fund or account. Interest income remains in each fund or account unless a Supplemental Indenture provides otherwise. The Trustee, upon written direction from the Commission, or upon a determination of the Trustee, shall withdraw redeem or sell all or a portion of any investment, the proceeds of which shall be deposited by the Trustee to the appropriate fund or account to be paid pursuant to the provisions of the Master Indenture.

The Trustee shall withdraw, redeem or sell all or a portion of any investment upon receipt of the written direction from the Commission or upon a determination by the Trustee that moneys in such fund or account are to be applied or paid by the Trustee pursuant to the provisions of the Master Indenture, and the proceeds thereof shall be deposited by the Trustee in the appropriate fund or account. The Trustee shall not be liable or responsible for any depreciation in the value of the permitted investments.

Uniformity of Tolls

(a) Classification. The Commission covenants that Tolls will be classified in a reasonable way to cover all traffic, so that the Tolls may be uniform in application to all traffic falling within any reasonable class regardless of the status or character of any Person participating in the traffic; provided that the foregoing shall not be interpreted to restrict the Commission's right, in its discretion in connection with its management of the System, to establish and maintain flexible Toll schedules including, but not limited to, provisions for utilizing or otherwise taking into account, peak and nonpeak pricing, introductory pricing, vehicle weight, number of axles, method of payment, frequency, car pooling, electronic and other Toll collection technologies, traffic management systems and similar classifications.

Any change in classification that results in a reduced Toll or any new classification shall be subject to a Traffic Consultant approving the same before it is implemented unless the same is temporary (i.e., having a duration of less than one year from the effective date). In all events, the Commission shall not make a change in classification or any new classification unless the Commission determines that such change is not expected to result in the receipt of Revenues in amounts less than that contemplated by the Rate Covenant.

(b) Free Passage or Reduced Tolls. Notwithstanding provision (a), the Commission shall not grant free passage or reduced Tolls within a class except, in its discretion, it may:

(1) reduce Tolls through the use of commutation or other tickets or privileges based upon frequency or volume if the reduction is expected to result in an increase in Revenues;

(2) grant free passage or reduce Tolls for operational, emergency or safety reasons;

(3) grant free passage to members, officers and employees of the Department acting in the discharge of their official duties related to the State Highway System;

(4) grant free passage for use by the Army, Air Force, Navy, Coast Guard, Marine Corps or militia or any branch thereof in time of war or other emergency;

(5) grant free passage to public safety officers of the United States, the State and its agencies and political subdivisions when any of them (1) are acting in the discharge of their official duties, (2) can provide proper identification, (3) are using marked public safety vehicles and (4) are traveling under flashing lights and sirens;

(6) grant temporary free access for agents and contractors of the Department acting on behalf of the Department in connection with the construction, improvement, maintenance or operation of the System; and

(7) grant temporary free passage to any vehicle using department toll projects for a period not to exceed the duration of the reconstruction, maintenance, or repair of the toll project, subject to the limitations allowed under a trust agreement or indenture related to such department toll project.

Reduced Tolls under (b)(1) will be reviewed by the Commission with the Traffic Consultant before they are implemented unless the reduced toll is temporary, having a duration of less than two months. Additionally, in the event the Commission did not meet the Rate Covenant for the preceding Fiscal Year, any reduced Toll will be subject to the Traffic Consultant's approval before it is implemented by the Commission unless the Commission reasonably determines that the circumstances require immediate implementation, in which event the Commission shall obtain an approval promptly following implementation. In all events, the Commission covenants not to reduce Tolls unless the Commission determines that such reduction is not expected to result in the receipt of Revenues in amounts less than that contemplated by the Rate Covenant.

(c) Discretion of Commission. The Commission's covenant as to uniformity of Tolls shall not be construed as requiring Tolls for any given class of traffic as being identical in amount throughout the entire System for trips of approximately identical lengths. The Commission may fix and place in effect a Toll rate schedule for any given class of traffic. The Commission's may charge Tolls for travel on a given section of the System in amounts different from the Tolls charged on another section of the System notwithstanding the fact that both of said sections shall be of identical or approximately identical length.

(d) Approval by the Traffic Consultant. Approval by the Traffic Consultant means that the Traffic Consultant has undertaken an analysis of the impact of the contemplated action of the Commission and determined that it would not adversely affect the ability of the Commission to meet the Rate Covenant. The Commission shall file a copy of each approval by the Traffic Consultant with the Trustee promptly after receipt.

Agreement with Other Turnpikes. Under the Master Indenture, the Commission may enter into agreements with any commission, authority or other similar legal body operating a turnpike, whether or not connected to the System, with respect to the establishment of a combined Toll rate schedule and/or for the collection and application of Tolls charged for trips over all or a portion of both combined turnpikes. Revenues to be received by any such agreement, will result in the receipt by the Commission of its allocable portion of such Tolls (less fees and expenses associated with such arrangement).

To the extent now or hereafter authorized by law, the Commission also may enter into agreements with other Persons with respect to the collection of Tolls or advances or prepayment of Tolls charged for trips over all or a portion of the System. Revenues to be received from any such agreement, will result in the receipt by the Commission of the appropriate Tolls for such trips. Unless approved by a Traffic Consultant, no agreement establishing a combined Toll rate schedule shall restrict the ability of the Commission to implement an increase in its Tolls at least once in each Fiscal Year.

Amounts received from agreements with other turnpikes shall constitute Revenues to the extent the Commission will not be required to pay moneys to the other party in accordance with the agreement. Moneys due to another commission under a combined turnpike agreement, shall be withdrawn by the Trustee from the Revenue Fund upon delivery to the Trustee of a certificate of a TTA Representative that such withdrawal is required pursuant to the terms of an agreement entered into pursuant to this section and shall be paid by the Trustee in accordance with directions contained in such certificate. Any agreement entered into pursuant to this section shall be made available to the Trustee upon its request.

Additional Security. Except as otherwise provided or permitted herein, the Trust Estate securing all First Tier Obligations, shall be shared on a parity with other First Tier Obligations on an equal and ratable basis, Second Tier Obligations, shall be shared on a parity with other Second Tier Obligations on an equal and ratable basis but subordinate and junior to the lien on, pledge of and security in the Trust Estate for the benefit of the Secured Owners of the First Tier Obligations and Subordinate Lien Obligations, shall be shared on a parity with other Subordinate Lien Obligations on an equal and ratable basis but subordinate and junior to the lien on, pledge of and security in the Trust Estate for the benefit of the Secured Owners of the First Tier Obligations and Second Tier Obligations.

The Commission may provide Additional Obligation Security, but shall have no obligation to provide such additional security or credit enhancement to other Obligations, except that no Additional Obligation Security shall be provided unless there shall have been first delivered to the Trustee an opinion of Bond Counsel that the exclusion from gross income of interest on any Obligations for federal income tax purposes will not be adversely affected thereby.

Reconstruction; Application of lnsurance Proceeds. If any material portion of the System shall be damaged or destroyed, the Commission shall, unless the Commission determines that it would not be beneficial to the System, as expeditiously as possible, cause the reconstruction or replacement thereof to be prosecuted continuously and diligently in accordance with plans and specifications approved by the General Engineering Consultant and the Commission if such plans and specifications are deemed necessary by such General Engineering Consultant and the Commission.

Proceeds of any insurance not applied within 18 months after receipt by the Commission to repairing or replacing damaged or destroyed property, or in respect to which notice in writing of intention to apply the same to the work of repairing or replacing the property damaged or destroyed shall not have been given by the Commission within such 18 months, or which the Commission shall at any time determine are not to be so applied, shall be deposited in the Revenue Fund and applied pursuant to the Flow of Funds above. The proceeds of any business interruption insurance shall be deposited in the Revenue Fund and applied pursuant to the flow of funds above.

Limitations on Other Indebtedness

Approved Swap Agreements.

The Commission may enter into one or more contracts having an interest rate, currency, cash-flow, or other basis desired by the Commission (a "*Swap Agreement*"), including, without limitation, interest rate swap agreements, currency swap agreements, forward payment conversion agreements, futures contracts, contracts providing for payments based on levels of or changes in interest rates, currency exchange rates, stock or other indices, or contracts to exchange cash flows or a series of payments, and contracts including, without limitation, interest rate floors or caps, options, puts or calls to hedge payment, currency rate, spread or similar exposure. In the event the Swap Agreement is to be secured by or payable from Revenues, the Commission shall file with the Trustee the following conditions provided below on or before entering into the Swap Agreement (in which event, such Swap Agreement shall constitute an "*Approved Swap Agreement*").

Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements.

(a) Short-Term Indebtedness. The Commission agrees that it will not issue any Additional First Tier Obligations constituting Short-Term Indebtedness unless immediately after the incurrence of such Short-Term Indebtedness, the Outstanding Principal amount of all Obligations Outstanding in the form of Short-Term Indebtedness plus all Obligations Outstanding in the form of Variable Rate Indebtedness that does not constitute Short-Term Indebtedness, will not exceed twenty percent (20%) of the aggregate principal amount of all Outstanding Obligations. Short-Term Indebtedness issued in accordance with the limitations set forth in this paragraph will be on a parity with other First Tier Obligations.

(b) Long-Term Indebtedness. The Commission agrees that it will not issue any Additional First Tier Obligations constituting Long-Term Indebtedness unless prior to or contemporaneously with the incurrence thereof, the following items are delivered to the Trustee:

(i) a letter from each Rating Agency then maintaining a rating on the Outstanding First Tier Obligations to the effect that the Additional First Tier Obligations have received an investment grade rating from such Rating Agency; and either

(ii) a report of the Traffic Consultant to the effect that (A) the Revenues during the preceding Annual Period ending not more than ninety (90) days prior to the date of delivery of the proposed Additional First Tier Obligations were sufficient to satisfy the requirements of the Rate Covenant (which report may assume that a revision of the Tolls that was approved and implemented by the Commission subsequent to the beginning of such Annual Period had been in effect for the entire Annual Period), and (B) the Projected Revenues for each Fiscal Year over the term of the proposed Additional First Tier Obligations is expected to produce a Projected Debt Service Coverage Ratio of at least (1) 1.50 with respect to First Tier Obligations, (2) 1.20 with respect to First Tier Obligations and Second Tier Obligations and (3) 1.10 with respect to all Obligations; or:

(iii) if the Long-Term Indebtedness is being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any Outstanding Long-Term Indebtedness, a certificate of a TTA Representative certifying the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Indebtedness is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Indebtedness.

(c) Completion Obligations. To finance the costs of completion of any improvements, extensions or enlargements to the Central Texas Turnpike System financed with the proceeds of Additional First Tier Obligations, the Commission may, without complying with any other provisions of paragraph (b) above, issue Additional First Tier Obligations in a principal amount not in excess of 10% of the principal amount of the original First Tier Obligations issued to finance such facilities, if prior to the issuance thereof there is delivered to the Trustee a certificate of a TTA Representative stating: (i) that at the time the original First Tier Obligations for the facilities to be completed were issued, the Commission had reason to believe that the proceeds of such First Tier Obligations together with other money then expected to be available would provide sufficient money for the completion of such facilities; (ii) the amount estimated to be needed to so complete the facilities; and (iii) that the proceeds of such First Tier Obligations to be applied to the completion of the facilities, together with a reasonable estimate of investment income to be earned on such proceeds and available to pay such Costs, the amount of money, if any, committed to such completion from available cash or marketable securities and reasonably estimated earnings thereon, enumerated bank loans (including letters or lines of credit), and any other money reasonably expected to be available, will be in an amount not less than the estimated amount needed to complete the facilities set forth in such certificate of a TTA Representative. The principal amount of the Completion Obligations to be used in assessing whether the test set forth in this paragraph has been met shall include the amount required to (i) provide completed and equipped facilities of substantially the same type and scope contemplated at the time such prior First Tier Obligations were originally issued, (ii) provide for capitalized interest during the period of construction, (iii) provide the required deposit, if any, to cause the balance in the First Tier Debt Service Reserve Fund to equal the First Tier Debt Service Reserve Requirement, and (iv) pay the costs and expenses of issuing such First Tier Obligations.

(d) Additional Items Required for Trustee. In conjunction with the issuance of Additional First Tier Obligations (other than First Tier Approved Swap Agreements), Commission shall also file the following with the Trustee:

(i) A certified copy of the Commission's minute order(s) authorizing (1) the execution and delivery of a Supplemental Indenture establishing or providing for the establishment of, among other things, the date, rate or rates of interest on, interest payment dates, Stated Maturity dates and redemption provisions of such Additional First Tier Obligations, and (2) the issuance, sale, execution and delivery of the Additional First Tier Obligations;

(ii) An original executed Supplemental Indenture and Award Certificate, if authorized by the Supplement;

(iii) An opinion(s) of Bond Counsel to the effect that (1) issuance of the Additional First Tier Obligations is permitted under the Master Indenture, (2) each of the Supplemental Indenture and the Additional First Tier Obligations has been duly authorized, executed and delivered and is a valid, binding and enforceable obligation of the Commission, subject to bankruptcy, equitable principles and other standard legal opinion exceptions and (3) if applicable, interest on the Additional First Tier Obligations is not included in gross income for federal income tax purposes under the Code;

(iv) A signed request from the Commission to authenticate and deliver the Additional First Tier Obligations to such Person named therein upon such conditions as are set forth in the request and authorization, including, if applicable, confirmation of payment to the Trustee for the account of the Commission of a specified sum (which may include directions as to the disposition of such of such sum of money);

(v) A certificate of the Commission that the Commission is not in default under the Master Indenture or, upon the issuance of such Additional First Tier Obligations, any existing default will be cured, and evidence satisfactory to the Trustee that, upon issuance of the Additional First Tier Obligations, amounts will be deposited in the funds under the Master Indenture adequate for the necessary balances therein after issuance of the Additional First Tier Obligations (including any amount necessary to satisfy the First Tier Debt Service Reserve Requirement);

(vi) A certificate of the Commission identifying the Additional First Tier Obligations as Short-Term Indebtedness or Long-Term Indebtedness and demonstrating with reasonable detail that the applicable provisions described in subsections (a), (b) and (c) of this caption entitled "*Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements*" have been met for the issuance of such Additional First Tier Obligations; and

(vii) Such further documents, money and securities as are required by the provisions of the Supplemental Indenture.

(e) First Tier Approved Swap Agreements. The Commission agrees that it will not enter into any First Tier Approved Swap Agreement as a First Tier Obligation unless prior to or contemporaneously with the incurrence thereof, there are delivered to the Trustee the certificates or reports required in paragraph (b)(iii) above, which certificates or reports take into account, in calculating Annual Debt Service, the expected payments to be made by and to the Commission pursuant to such First Tier Approved Swap Agreement, and the following items:

(i) A certified copy of the Commission's minute order(s) authorizing the execution and delivery of the Swap Agreement (no Supplemental Indenture is required unless the Commission determines it to be necessary) and specifying therein that payments owed by the Commission shall be secured by a pledge of and lien on the Trust Estate on a parity with other First Tier Obligations;

(ii) An original executed counterpart of the Swap Agreement;

(iii) An opinion of Bond Counsel addressed to the Commission and to the Trustee, to the effect that execution of the Swap Agreement is permitted under the laws of the State and will not adversely affect the exclusion from gross income of interest on any Outstanding First Tier Obligations for federal income tax purposes, including any Additional First Tier Obligations issued simultaneously with the delivery of the Swap Agreement;

(iv) A certificate of the Commission, signed by a TTA Representative, that the Commission is not under default under the Master Indenture;

(v) Evidence that the execution of the Swap Agreement will not result in a reduction or withdrawal of the rating then assigned to any First Tier Obligations by the Rating Agency;

(vi) Evidence that the other provisions of this subsection (e) entitled "First Tier Approved Swap Agreements" have been met; and

(vii) Such further documents as are required by the Swap Agreement or Bond Counsel, including evidence that all required legal approvals have been obtained.

In the event the Commission wishes to enter into an Approved Swap Agreement and to have its Obligations thereunder be on parity with the First Tier Obligations, it shall file with the Trustee the items set forth above, together with, if deemed necessary by the Commission, a Supplemental Indenture granting such parity position (in which event, such Swap Agreement shall constitute a "*First Tier Swap Agreement*"). Upon entering into a First Tier Swap Agreement, unless otherwise provided in the Supplemental Indenture, the Commission shall pay to the Trustee for deposit into the First Tier Interest Account the net amount payable, if any, to the First Tier Swap Agreement Counterparty as if such amounts were additional amounts of interest due; and the Trustee shall pay on behalf of the Commission to the First Tier Swap Agreement Counterparty, to the extent required under the First Tier Swap Agreement, the amounts deposited in the First Tier Interest Account. Net amounts received by the Commission or the Trustee from the counterparty pursuant to a First Tier Swap Agreement shall be deposited to the credit of the First Tier Interest Account or to such other account as designated by a TTA Representative.

Limitations on Issuance of Additional Second Tier Obligations and Execution of Approved Second Tier Swap Agreements.

(a) Short-Term Indebtedness. The Commission agrees that it will not issue any Additional Second Tier Obligations constituting Short-Term Indebtedness unless (i) immediately after the incurrence of such Short-Term Indebtedness, the Outstanding Principal amount of all Obligations Outstanding in the form of Short-Term Indebtedness plus all Obligations Outstanding in the form of Variable Rate Indebtedness that does not constitute Short-Term Indebtedness, will not exceed twenty percent (20%) of the aggregate principal amount of all Outstanding Obligations and (ii) and the Commission delivers to the Trustee a letter from each Rating Agency then maintaining a rating on the Outstanding First Tier Obligations or Second Tier Obligations to the effect that the Additional Second Tier Obligations being issued as Short-Term Indebtedness are rated no lower than the lowest short-term investment grade rating of such Rating Agency. Short-Term Indebtedness issued in accordance with the limitations set forth in this paragraph will be on a parity with other Second Tier Obligations.

(b) Long-Term Indebtedness. The Commission agrees that it will not issue any Additional Second Tier Obligations constituting Long-Term Indebtedness unless prior to or contemporaneously with the incurrence thereof, there is delivered to the Trustee:

(i) a letter from each Rating Agency then maintaining a rating on the Outstanding First Tier Obligations or Second Tier Obligations to the effect that the Additional Second Tier Obligations have received an investment grade rating from such Rating Agency; and either

(ii) a report of the Traffic Consultant to the effect that (A) the Revenues during the preceding Annual Period ending not more than ninety (90) days prior to the date of delivery of the proposed Additional Second Tier Obligations were sufficient to satisfy the requirements of the Rate Covenant (which report may assume that a revision of the Tolls that was approved and implemented by the Commission subsequent to the beginning of such Annual Period had been in effect for the entire annual period), and (B) the Projected Revenues for each Fiscal Year over the term of the proposed Additional Second Tier Obligations is expected to produce a Projected Debt Service Coverage Ratio of at least (1) 1.20 with respect to First Tier Obligations and Second Tier Obligations and (2) 1.10 with respect to all Obligations; or

(iii) if the Long-Term Indebtedness is being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any outstanding Long-Term Indebtedness, a certificate of a TTA Representative certifying the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Indebtedness is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Indebtedness.

(c) Additional Items Required for Trustee. In conjunction with the issuance of Additional Second Tier Obligations (other than Second Tier Approved Swap Agreements), Commission shall also file with the Trustee those items described above under "Limitations on Other Indebtedness – *Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements* – Additional Items Required for Trustee" are met (with the exception that wherever the term "First Tier" appears it shall be read as "Second Tier").

(d) Second Tier Approved Swap Agreements. The Commission agrees that it will not enter into any Second Tier Approved Swap Agreement as a Second Tier Obligation unless prior to or contemporaneously with the incurrence thereof, the provisions described above under "Limitations on Other Indebtedness – *Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements*" are met (with the exception that wherever the term "First Tier" appears it shall be read as "Second Tier") and there are delivered to the Trustee the certificates or reports required in paragraph (b)(ii) above, which certificates or reports take into account, in calculating Annual Debt Service, the expected payments to be made by and to the Commission pursuant to such Second Tier Approved Swap Agreement.

Limitations on Issuance of Additional Subordinate Lien Obligations and Execution of Approved Subordinate Lien Swaps.

(a) Short-Term Indebtedness. The Commission agrees that it will not issue any Additional Subordinate Lien Obligations constituting Short-Term Indebtedness unless (i) immediately after the incurrence of such Short-Term Indebtedness, the outstanding principal amount of all Obligations Outstanding in the form of Short-Term Indebtedness plus all Obligations Outstanding in the form of Variable Rate Indebtedness that does not constitute Short-Term Indebtedness, will not exceed twenty percent (20%) of the aggregate principal amount of all Outstanding Obligations and (ii) the Commission delivers to the Trustee a letter from each Rating Agency then maintaining a rating on any Outstanding Obligations to the effect that the Additional Subordinate Lien Obligations being issued as Short-Term Indebtedness are rated no lower than the lowest short-term investment grade rating of such Rating Agency. Short-Term Indebtedness issued in accordance with the limitations set forth in this paragraph will be on a parity with other Subordinate Lien Obligations.

(b) Long-Term Indebtedness. The Commission agrees that it will not issue any Additional Subordinate Lien Obligations constituting Long-Term Indebtedness unless prior to or contemporaneously with the incurrence thereof, there is delivered to the Trustee:

(i) a report of the Traffic Consultant to the effect that (A) the Revenues during the preceding Annual Period ending not more than ninety (90) days prior to the date of delivery of the proposed Additional Subordinate Lien Obligations were sufficient to satisfy the requirements of the Rate Covenant (which report may assume that a revision of the Tolls that was approved and implemented by the Commission subsequent to the beginning of such Annual Period had been in effect for the entire Annual Period), and (B) the Projected Revenues for each Fiscal Year over the term of the proposed Additional Subordinate Lien Obligations is expected to produce a Projected Debt Service Coverage Ratio of at least 1.10 with respect to all Obligations or

(ii) if the Long-Term Indebtedness is being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any Outstanding Long-Term Indebtedness, a certificate of a TTA Representative certifying the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Indebtedness is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Indebtedness.

(c) Additional Items Required for Trustee. In conjunction with the issuance of Additional Subordinate Lien Obligations (other than Subordinate Lien Approved Swap Agreements), the Commission shall also file with the Trustee those items described above under "Limitations on Other Indebtedness – *Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements* – Additional Items Required for Trustee" are met (with the exception that wherever the term "First Tier" appears it shall be read as "Subordinate Lien").

(d) Subordinate Lien Approved Swap Agreements. The Commission agrees that it will not enter into any Approved Swap Agreement as a Subordinate Lien Obligation unless prior to or contemporaneously with the incurrence thereof, the provisions described above under "Limitations on Other Indebtedness – *Limitations on Issuance of Additional First Tier Obligations and Execution of First Tier Approved Swap Agreements*" are met (with the exception that wherever the term "First Tier" appears it shall be read as "Subordinate Lien") and there are delivered to the Trustee the certificates or reports required in paragraph (b)(ii) above, which certificates or reports take into account, in calculating Annual Debt Service, the expected payments to be made by and to the Commission pursuant to such Subordinate Lien Approved Swap Agreement.

Conversions of Variable Rate Indebtedness to a Fixed Interest Rate. The Commission may convert Variable Rate Indebtedness to a fixed interest rate if permitted by and pursuant to the terms of the applicable supplemental indenture thereof and if the Commission, treating the proposed conversion to a fixed interest rate as if it constituted the issuance of Additional First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations, as the case may be, can satisfy the requirements set forth in this Appendix C under "Limitations on Other Indebtedness – *Limitations on Issuance of Additional First Tier Obligations and Execution of Approved Swap Agreements* – Long-Term Indebtedness," "Limitations on Other Indebtedness – *Limitations on Issuance of Additional Second Tier Obligations and Execution of Approved Second Tier Swap Agreements* – Long-Term Indebtedness," or "Limitations on Other Indebtedness – *Limitations on Issuance of Additional Subordinate Lien Obligations and Execution of Approved Subordinate Lien Swaps* – Long-Term Indebtedness," depending on whether the Obligation being converted is a First Tier Obligation, a Second Tier Obligation, or a Subordinate Lien Obligation, as the case may be.

Particular Covenants

Annual Operating Budget; Annual Maintenance Budget; Annual Capital Budget.

(a) Annual Operating Budget. The Commission covenants that on or before August 31 in each Fiscal Year (or such other date as is consistent with the Commission's policies then in effect) it will adopt an Annual Operating Budget for the System for the ensuing Fiscal Year. Prior to adopting the Operating Budget, the Commission shall provide a draft of such budget to the General Engineering Consultant sufficiently in advance of the adoption of such Annual Operating Budget in order for the General Engineering Consultant to provide comments before such adoption. The Commission further covenants that it will prepare each such Annual Operating Budget on the basis of monthly requirements, so that it will be possible to determine the estimated Operating Expenses for each month during the following Fiscal Year.

If for any reason the Commission shall not have adopted the Annual Operating Budget before the first day of any Fiscal Year, the budget for the preceding Fiscal Year shall, until the adoption of the new Annual Operating Budget, be deemed to be in force and shall be treated as the Annual Operating Budget.

Subject to the review and comment of the General Engineering Consultant, the Commission may adopt an amended or supplemental Annual Operating Budget at any time for the remainder of the then current Fiscal Year, which must be provided to the Trustee.

If the estimate of Revenues and Commission payments for Operating Expenses to be received in the Fiscal Year, as reflected in the Annual Operating Budget, shows that such amounts are expected to be insufficient to allow the Commission to pay all Operating Expenses, the Commission shall take the actions provided under "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Rate Covenant" as though the projected shortfall in Revenues has been experienced so that Revenues can be increased to an amount sufficient to provide for the payment of Operating Expenses. However, the Commission will not be required to take such actions if the Commission includes in an amended general budget for the Commission for such Fiscal Year an amount sufficient to pay the Operating Expenses.

In recognition that Revenues are not expected to be sufficient to pay all Operating Expenses for a number of years and that the Commission has covenanted to pay the Operating Expenses to the extent Revenues are not sufficient for such purpose, but solely from lawfully available funds, the Commission covenants to include in its general budget for such Fiscal Year one hundred and ten percent (110%) of the difference between the projected Operating Expenses and the Projected Operating Expenses Capacity.

(b) Annual Maintenance Budget. The Commission covenants that on or before August 31 in each Fiscal Year (or such other date as is consistent with the Commission's policies then in effect) it will adopt an Annual Maintenance Budget for the System for the ensuing Fiscal Year, which must be provided to the Trustee. Prior to adopting the Maintenance Budget, the Commission shall provide a draft of such budget to the General Engineering Consultant sufficiently in advance of the adoption of such Annual Maintenance Budget in order for the General Engineering Consultant to provide comments before such adoption. The Commission further covenants that it will prepare each such Annual Maintenance Budget on the basis of monthly requirements, so that it will be possible to determine the estimated Maintenance Expenses for each month during the following Fiscal Year.

If for any reason the Commission shall not have adopted the Annual Maintenance Budget before the first day of any Fiscal Year, the budget for the preceding Fiscal Year, shall, until the adoption of the new Annual Maintenance Budget, be deemed to be in force and shall be treated as the Annual Maintenance Budget.

Subject to the review and comment of the General Engineering Consultant, the Commission may adopt an amended or supplemental Annual Maintenance Budget at any time for the remainder of the then current Fiscal Year, which must be provided to the Trustee.

If the estimate of Commission payments for Maintenance Expenses in the Fiscal Year, as reflected in the Annual Maintenance Budget, shows that Commission's payments for Maintenance Expenses are expected to be insufficient to pay all Maintenance Expenses, the Commission shall take the actions set forth under "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Rate Covenant" as though a projected shortfall in Revenues has been experienced so that Revenues can be increased to an amount sufficient to provide for the payment of Maintenance Expenses. However, the Commission will not be required to take such actions if the Commission includes in an amended general budget for the Commission for such Fiscal Year an amount sufficient to pay the Maintenance Expenses.

(c) Annual Capital Budget. The Commission further covenants that it will adopt an Annual Capital Budget for the System on or before August 31 of each Fiscal Year (or such other date as is consistent with the Commission's policies then in effect). The Annual Capital Budget will detail the Commission's planned capital expenditures over a period of at least five (5) years and the portion of capital expenditures expected to be funded from the Reserve Maintenance Account. The Annual Capital Budget for each Fiscal Year shall include the expected beginning balance in the Reserve Maintenance Account, the amounts to be transferred by the Trustee to the Reserve Maintenance Account from the General Reserve Fund, the amount of proceeds of Indebtedness expected to become available during the Fiscal Year, the amounts expected to be transferred monthly by the Commission to the Reserve Maintenance Account, and the desired year-end balance in the Reserve Maintenance Account. Prior to adopting the Annual Capital Budget, the Commission shall provide a draft of the capital budget to the General Engineering Consultant sufficiently in advance of the Commission's adoption of the Annual Capital Budget in order for the General Engineering Consultant to provide comments before the date of such adoption. The Commission may adopt amendments or supplements to the Annual Capital Budget at any time, which must be provided to the Trustee.

Use and Operation of System. The Commission covenants that

(a) it will maintain and operate the System in an efficient and economical manner,

(b) it will maintain the System in good repair and will make all necessary repairs, renewals and replacements, to the extent funds are available therefor; and

(c) it will comply with laws and all rules, regulations, orders and directions of any legislative, executive, administrative or judicial body applicable to such System, subject to the right of the Commission to contest the same in good faith and by appropriate legal proceedings.

Inspection of the System and Duties of General Engineering Consultant. The Commission shall cause the General Engineering Consultant to make an inspection of the System at least once in the Fiscal Year following the Substantial Completion of the 2002 Project and in each Fiscal Year thereafter; provided, however, with the advice and consent of the Commission the obligations of the GEC required by this paragraph may be modified or lessened to the extent that the obligations of the GEC have been performed by other parties otherwise retained by the Commission to carry out inspections in accordance with the National Bridge Inspection Program (NBI). Following each inspection and on or before the 90th day prior to the end of each Fiscal Year, the General Engineering Consultant shall submit to the Commission a report setting forth (a) their findings as to whether the System has been maintained in good repair, working order and condition and (b) their advice and recommendations as to the proper maintenance, repair and operation of the System during the ensuing Fiscal Year and (c) an estimate of the amount of money necessary for such purposes, including their recommendations as to the total amounts and classifications of items and amounts that should be provided for in the Annual Operating Budget, the Annual Maintenance Budget and Annual Capital Budget for the next ensuing Fiscal Year. Copies of such reports shall be provided to the Trustee, except, with the advice and consent of the Commission, the obligations of the GEC, as described in this paragraph, may be modified and lessened by the performance of the NBI, in accordance with applicable Federal law, by parties otherwise retained by the Commission to perform NBIs in the geographic region of the 2002 Project.

Construction of Projects. The Commission covenants that:

(a) it will proceed with diligence to construct any Projects in conformity with law; all requirements of all governmental authorities having jurisdiction; and the policies, rules and regulations of the Commission.

(b) the Commission shall involve the General Engineering Consultant or another Consultant to assist in quality assurance matters in connection with design, construction or both of any Project or portion thereof to the extent the Commission determines necessary or appropriate.

Employment of General Engineering Consultant and Traffic Consultant. The Commission covenants to employ an independent engineer or engineering firm or corporation having a national reputation for skill and experience in such work to perform any functions of the General Engineering Consultant and the Traffic Consultant under the Master Indenture. The General Engineering Consultant and the Traffic Consultant shall be independent of one another.

Insurance. The Commission covenants that it will keep the System and its use and operation thereof insured (including through self-insurance) at all times in such amounts, subject to such exceptions and deductibles and against such risks, as are customary for similar organizations, including business interruption insurance. All insurance policies shall be carried with a responsible insurance company or companies authorized to do business in the State or shall be provided under a self-insurance program; any self-insurance program shall be actuarially sound in the written opinion of an accredited actuary, which opinion shall be filed with the Trustee at least annually. At any time and from time to time, the Commission may elect to terminate self-insurance of a given type. Upon making such election, the Commission shall, to the extent then deemed necessary by a Consultant, obtain and maintain comparable commercial insurance.

On the July 1 following the Substantial Completion of the 2002 Project and every three years thereafter (except with respect to self-insurance, which shall be annually), the Commission shall cause the Consultant referred to in the preceding paragraph to certify to the Trustee that (a) it has reviewed the adequacy of the Commission's insurance, listing the types and amounts of insurance, and (b) it finds such coverage to be reasonable and customary for similar organizations. If the Consultant concludes that coverage other than that currently carried by the Commission should be carried, the Commission shall obtain such insurance coverage unless it determines in good faith that it is unreasonable or uneconomical to obtain such coverage and TTA Representative certifies the same in writing to the Trustee.

The Commission covenants that it will take actions as it deems necessary to demand, collect and sue for any proceeds that may become due and payable to it under any policy. To the extent that the Commission receives insurance payments under a business interruption insurance policy or liquidated damages for delayed completion under a construction contract relating to the acquisition or construction of a Project, such amounts shall be deposited into the First Tier Debt Service Fund.

Damage or Destruction. Immediately after any damage to or destruction of any part of the System that materially adversely affects the Revenues, the Commission will promptly take action to repair, reconstruct or replace the damaged or destroyed property or to otherwise ameliorate the adverse impact on Revenues.

Records; Annual Audit. The Commission covenants that it will maintain books and accounts reflecting the operations of the System, as a separate enterprise, in accordance with Accounting Principles. The books and records of the System may form a part of the books and records of the Commission but shall be maintained as a separate enterprise account.

In addition, the Commission covenants that as soon as practicable, but in no event more than one hundred twenty (120) days after the last day of each Fiscal Year, beginning the Fiscal Year ending August 31, 2003, it will prepare or cause to be prepared a financial report of the results of operations of the System for such Fiscal Year in accordance with Accounting Principles, certified by a Certified Public Accountant approved by the Commission, and containing an audited balance sheet as of the end of such Fiscal Year, an audited statement of operations for such Fiscal Year, and an audited statement of cash flows of such Fiscal Year, showing in each case, in comparative form, the financial figures for the preceding Fiscal Year. A copy of such audit shall be filed with the Trustee promptly after the receipt by the Commission for such purpose.

Encumbrance of Revenues; Sale, Lease or Other Disposition of Property. The Commission covenants that so long as any Obligations are Outstanding under the Master Indenture,

(a) (1) it will not create or suffer to be created any lien or charge upon any Revenues, except the lien and charge of the First Tier Obligations, the Second Tier Obligations and the Subordinate Lien Obligations secured hereby; and (2) from such Revenues or other funds available under the Master Indenture, it will pay or cause to be discharged, or will make adequate provision to pay or discharge, within ninety (90) days after the same shall accrue, all lawful claims and demands for labor, materials or supplies that, if unpaid, might by law become a lien upon any Revenues; provided, however, that the Commission shall not be required to pay or discharge, or make provision for such payment or discharge of, any such lien or charge so long as the validity thereof shall be contested in good faith and by appropriate legal proceedings; provided further, that in recognition that amounts on deposit in the General Reserve Fund may be used for any lawful purpose, the Commission retains the right to issue bonds or notes or otherwise incur debt secured by and payable from amounts to be deposited in the General Reserve Fund. Any encumbrance of amounts on deposit in the General Reserve Fund in addition to that created by the other provisions of the Master Indenture, shall be subject and subordinate to the security interest in, pledge of and lien on the Trust Estate established for the benefit of the Obligations and to the other provisions of the Master Indenture relating to the use of Revenues and the amounts on deposit in the General Reserve Fund.

(b) subject to the provisions of the Indenture described under "CERTAIN FEDERAL INCOME TAX MATTERS" of this Official Statement and "– Reservation of Right to Transfer System" of this Appendix C, it will not sell or otherwise dispose of any real estate or personal property comprising a portion of the System unless the TTA Representative determines in the case of property with a value of $1 million or less or the Commission determines in the case of property with a value in excess of $1 million that

(1) such property (i) has become obsolete or worn out or is reasonably expected to become so within one year after the date of such disposition, (ii) is no longer used or useful in the operation of the System or in the generation of Revenues or (iii) is to be or has been replaced by other property; or

(2) by minute order that such action will not materially adversely affect the Projected Revenues.

The Commission shall have the discretion to deposit the proceeds of such sale or disposition in a fund or account held under the Master Indenture or a Commission account held outside the Master Indenture, as it deems appropriate. In the event the Commission did not meet the Rate Covenant during the preceding Fiscal Year, however, then the Commission shall notify the Trustee of the sale or disposition of any property that generated Revenues in excess of one percent of the Commission's Revenues during the prior Fiscal Year, and all proceeds from such sale or disposition shall be deposited in the Revenue Fund.

(c) subject to the provisions of the Indenture described under "CERTAIN FEDERAL INCOME TAX MATTERS" of this Official Statement and "– Reservation of Right to Transfer System" of this Appendix C, it will not lease any real estate or personal property comprising a portion of the System unless the Commission determines by minute order that such action will not materially adversely affect the Revenues.

Without intending to limit the foregoing, the Commission also may enter into contracts or other forms of agreement for the use of any real estate comprising a portion of the System including, but not limited to, rights of way for telephone, telegraph, optic fiber and other forms of communication, electric, gas transmission and other lines, towers, or facilities for utilities, and other uses that do not materially adversely affect the operation of the System and the payments received in connection with the same shall, to the extent permitted by law, constitute Revenues. The Commission also covenants to ensure that all necessary real property filings are made in connection with any such lease or other agreement relating to the use of real estate comprising a portion of the System to protect the interest of the Commission in such property.

Reservation of Right to Transfer System

Under the Master Indenture, the Commission reserves the right to transfer all or any part of the System to a Regional Mobility Authority established under the Texas Transportation Code, a Regional Tollway Authority or another governmental entity authorized by law to own and operate toll facilities, but only upon satisfaction of the following conditions:

(a) the General Engineering Consultant issues a report in which it estimates the Operating Expenses and Maintenance Expenses for the System following such transfer for each Fiscal Year that any Obligations are scheduled to be Outstanding;

(b) the Traffic Consultant issues a traffic and revenue projection showing the Projected Revenues for the System following such transfer for each Fiscal Year that any Obligations are scheduled to be Outstanding;

(c) a TTA Representative delivers a certificate, based upon the reports of the General Engineering Consultant and the Traffic Consultant required by (a) and (b), to the effect that (i) the Projected Debt Service Coverage Ratio would be sufficient on that day to allow each of the then-Outstanding Obligations to be issued in compliance with the terms of the Master Indenture if such Obligations were being issued on the date of such certificate and (ii) the Commission is not in default under any of the provisions of the Master Indenture;

(d) each Rating Agency then maintaining a rating on the Outstanding Obligations issues a letter to the Commission to the effect that such transfer would not have the effect of causing the Rating Agency to lower the existing rating;

(e) any money paid by the Department for the design, construction, operation and maintenance of the transferred property is repaid to the State Highway Fund;

(f) the Commission delivers an opinion of Counsel to the Trustee to the effect that the transfer is authorized by law; and

(g) the Commission delivers an Opinion of Bond Counsel to the Trustee to the effect that the transfer will not adversely affect the treatment for federal income tax purposes of interest on any Outstanding Obligations.

Covenant Not to Build Competing System

Under the Master Indenture, the Commission covenants not to directly or indirectly construct, operate or assist any entity from constructing, operating, permitting, assisting, supporting, aligning or enhancing any State Highway Capital Projects that will or foreseeably could have the effect of materially adversely affecting the ability of the Commission from complying with the covenants in the Master Indenture, except for:

(a) any State Highway System improvements necessary for improved safety, maintenance or operational purposes;

(b) any intercity, intra city, commuter, urban, high speed rail projects or any combination of the foregoing supported by the State and/or others; and

(c) any HOV exclusive lanes operationally required by environmental regulatory agencies.

"*Capital Projects*" for purposes of this section means those projects undertaken to construct a transportation facility for motorized vehicular traffic where no such facility existed previously or to construct a portion of a transportation facility where additional or widened traffic lanes are physically added on to existing traffic lanes on an already constructed facility, but excluding any projects included in the Capital Area Metropolitan Planning Organization's "CAMPO 2025 Transportation Plan" issued in 2000 (the "*CAMPO 2025 Transportation Plan*"), a planning guide that contains transportation policy and projects to 2025, or any projects undertaken to increase traffic capacity by modifying existing facilities through the installation of traffic sensors, metering devices, intersection grade separations, and Intelligent Transportation Systems equipment or work involving the re-striping of traffic lanes, medians, and shoulders.

Notwithstanding the non-compete provisions in the Master Indenture and without causing the occurrence of an Event of Default under the Master Indenture through violation of the non-compete provisions, the Commission may take any action otherwise not permitted by the non-compete provisions or fail to take any action otherwise required by the non-compete provisions (any such action or inaction, a "*Permitted Breach*"), if:

(a) it engages the Traffic Consultant to study and report on the anticipated annual effect on Revenues of the Permitted Breach; and

(b) it deposits with the Trustee the amount, if any, shown by the report of the Traffic Consultant to be the amount by which Revenues will be reduced by the Permitted Breach. In computing the amount of the deposit, the Commission may take into account investment earnings anticipated to be earned by the amount deposited if such amount is invested in Defeasance Securities and an independent certified public accountant certifies that the amount of the deposit, together with investment earnings on the Defeasance Securities, will produce in each year an amount equal to the amount by which the Traffic Consultant estimates that Revenues will be reduced in each of such years as a result of the Permitted Breach.

Events of Default and Remedies

Events of Default. The occurrence and continuation of the following events shall constitute an Event of Default under the Master Indenture:

(a) failure by the Commission to pay the principal of and premium, if any, or interest on any of the Obligations or to pay Capital Payments when the same shall become due and payable, either at Stated Maturity, by proceedings for redemption or pursuant to the terms of the Obligation or any failure of the Commission to purchase or cause to be purchased any Tender Indebtedness, including any applicable Variable Rate Indebtedness, upon any optional or mandatory tender to the Commission or a tender agent of the Commission; or

(b) the occurrence and continuance of an event of default under a Credit Facility, First Tier DSRF Security, Second Tier DSRF Security, Approved Swap Agreement or Reimbursement Agreement; or

(c) unreasonable delay or failure of the Commission to carry on with reasonable dispatch or discontinues the construction of any portion of the System for which Obligations have been issued and are then outstanding; or

(d) destruction or damage of substantially all or any major portion of the System to the extent of impairing its efficient operation and materially adversely affecting the Revenues that shall not be promptly repaired, replaced or reconstructed (whether such failure promptly to repair, replace or reconstruct the same be due to the impracticability of such repair, replacement or reconstruction or to lack of funds therefor or for any other reason); or

(e) judgment for the payment of money rendered against the Commission if such judgment is under any circumstances payable from Revenues and is in an amount that its payment would, in the opinion of the Trustee, have a materially adverse effect upon the financial condition of the System and any such judgment shall not be discharged within ninety (90) days from the entry thereof or an appeal shall not be taken therefrom or from the order, decree or process upon which or pursuant to which such judgment shall have been granted or entered, in such manner as to set aside or stay the execution of or levy under such judgment, decree or process or the enforcement thereof, or

(f) the occurrence of a Bankruptcy-Related Event that shall not have been cured, vacated, discharged or stayed within sixty (60) days after the occurrence thereof; or

(g) failure of the Commission to duly and punctually perform any other of the covenants, conditions, agreements and provisions contained in any Obligations or in the Master Indenture on the part of the Commission to be performed, and (with the exception of covenants, conditions, agreements and provisions set forth under "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Additional Obligations," "Limitations on Other Indebtedness" in this Official Statement and "Particular Covenants – *Encumbrance of Revenues, Sale, Lease, or Other Disposition of Property*" and "Covenant Not to Build Competing System" in this Appendix C, and Commission's covenants regarding tax exemption, a failure to perform with respect to which is not stayed) the continuation of such failure for sixty (60) days after written notice specifying such failure and requiring same to be remedied shall have been given to the Commission by the Trustee, which may give such notice in its discretion and shall give such notice at the written request of the Secured Owners of not less than ten per centum (10%) in principal amount of the Obligations then Outstanding; and the Trustee shall investigate and consider any allegation of such default or Event of Default of which any Bond Insurer of record notifies the Trustee in writing.

Remedies Applicable. The Secured Owners shall be entitled to the remedies set forth under the caption "*Events of Default and Remedies*" of this Appendix C. To the extent that a Series of Obligations is secured by a Credit Facility, a First Tier DSRF Security or a Second Tier DSRF Security, the Bank or the Bond Insurer shall be considered the Secured Owner of such Obligation for all purposes of exercising any remedy or giving any directions to the Trustee.

Enforcement of Remedies. Upon the occurrence of any Event of Default set forth under the caption "Event of Default and Remedies – *Events of Default*" of this Appendix C, then and in every such case the Trustee may proceed, and upon the written request of the Secured Owners of not less than twenty percent (20%) in principal amount of the Obligations then Outstanding shall proceed, subject to certain provisions of the Master Indenture, to protect and enforce its rights and the rights of the Secured Owners under the Enabling Acts and under the Master Indenture by such suits, actions or special proceedings in equity or at law, or by proceedings in the office of any board or officer having jurisdiction, either for mandamus or the specific performance of any covenant or agreement contained in the Master Indenture or in aid or execution of any power in the Master Indenture granted or for the enforcement of any proper legal or equitable remedy, as the Trustee, being advised by Counsel, shall deem most effectual to protect and enforce such rights.

In the enforcement of any remedy under the Master Indenture, the Trustee shall be entitled to sue for, enforce payment of and receive any and all amounts then or during any Event of Default becoming, and at any time remaining, due from the Commission for principal, interest or otherwise under any of the provisions of the Master Indenture or of the Outstanding Obligations and unpaid, with interest on overdue payments, to the extent permitted by law, at the rate or rates of interest borne by such Obligations, together with any and all costs and expenses of collection and of all proceedings under the Master Indenture and under such Obligations, without prejudice, to any other right or remedy of the Trustee or of the Secured Owners, and to recover and enforce judgment or decree against the Commission, but solely as provided in the Master Indenture and in such Obligations, for any portion of such amounts remaining unpaid, with interest, costs and expenses, and to collect (but solely from Revenues) in any manner provided by law, the money adjudged or decreed to be payable.

Pro Rata Application of Funds. If at any time the money in the First Tier Debt Service Fund, the Second Tier Debt Service Fund or the Subordinate Lien Debt Service Fund, and the respective reserve funds and other funds established by the Master Indenture shall not be sufficient to pay the principal of or the interest on any Obligations as the same become due and payable, such money, together with any money then available or thereafter becoming available for such purpose, whether through the exercise of the remedies provided by the Master Indenture or otherwise, shall be applied (subject to the provisions of the Master Indenture relating to the payment of fees and expenses of the Trustee on other costs of the Trustee) as set forth in (a) through (f) below; provided, however, amounts on deposit in a fund or account (i) dedicated to the payment or security of the First Tier Obligations, the Second Tier Obligations, or the Subordinate Lien Obligations or (ii) constituting Additional Obligation Security for the benefit of one or more specific Series of Obligations shall not be applied as provided in (a) through (f) below but shall be used only for the purpose for which such deposits were made:

(a) Unless the principal of all the First Tier Obligations shall then be due and payable, all such money shall be applied first: to the payment to the persons entitled thereto of all installments of interest then due on the First Tier Obligations, in the order of the Maturity of the installments of such interest, and, if the amount available shall not be sufficient to pay in full any particular installment, then to the payment ratably, according to the amounts due on such installment, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the First Tier Obligations; and second: to the payment of the principal of any First Tier Obligations which have matured, and, if the amount available shall not be sufficient to pay all of such matured First Tier Obligations, then to the payment thereof ratably, according to the amount due: or if no First Tier Obligations have matured, to the retirement of First Tier Obligations.

(b) If the principal of all the First Tier Obligations shall then be due and payable, all such money shall be applied to the payment of the principal and interest then due and unpaid upon the First Tier Obligations, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any First Tier Obligations over any other First Tier Obligations, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto without any discrimination or preference except as to any difference in the respective rates of interest specified in the First Tier Obligations.

(c) If there is no default existing in the payment of the principal of, premium, if any, or interest on the First Tier Obligations but the principal of, premium, if any, or interest on Second Tier Obligations has not been paid when due, unless the principal of all the Second Tier Obligations shall then be due and payable, all such money shall be applied first: to the payment to the persons entitled thereto of all installments of interest then due on the Second Tier Obligations, in the order of the Maturity of the installments of such interest, and, if the amount available shall not be sufficient to pay in full any particular installment, then to the payment ratably, according to the amounts due on such installment, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Second Tier Obligations; and second: to the payment of the principal of any Second Tier Obligations which have matured, and, if the amount available shall not be sufficient to pay all of such matured Second Tier Obligations, then to the payment thereof ratably, according to the amount due: or if no Second Tier Obligations have matured, to the retirement of Second Tier Obligations.

(d) If there is no Event of Default existing in the payment of the principal of, premium, if any, or interest on the First Tier Obligations but the principal of all the Second Tier Obligations shall then be due and payable, all such money shall be applied to the payment of the principal and interest then due and unpaid upon the Second Tier Obligations, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Second Tier Obligations over any other Second Tier Obligations, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto without any discrimination or preference except as to any difference in the respective rates of interest specified in the Second Tier Obligations.

(e) If there is no Event of Default existing in the payment of the principal of, premium, if any, or interest on the First Tier Obligations or the Second Tier Obligations but the principal of, premium, if any, or interest on Subordinate Lien Obligations has not been paid when due, unless the principal of all the Subordinate Lien Obligations shall then be due and payable, all such money shall be applied first: to the payment to the persons entitled thereto of all installments of interest then due on the Subordinate Lien Obligations, in the order of the Maturity of the installments of such interest, and, if the amount available shall not be sufficient to pay in full any particular installment, then to the payment ratably, according to the amounts due on such installment, to the persons entitled thereto, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Subordinate Lien Obligations; and second: to the payment of the principal of any Subordinate Lien Obligations that have matured, and, if the amount available shall not be sufficient to pay all of such matured Subordinate Lien Obligations, then to the payment thereof ratably, according to the amount due: or if no Subordinate Lien Obligations have matured, to the retirement of Subordinate Lien Obligations.

(f) If there is no Event of Default existing in the payment of the principal of, premium, if any, or interest on the First Tier Obligations or Second Tier Obligations but the principal of all the Subordinate Lien Obligations shall then be due and payable, all such money shall be applied to the payment of the principal and interest then due and unpaid upon the Subordinate Lien Obligations, without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Subordinate Lien Obligations over any other Subordinate Lien Obligations, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto without any discrimination or preference except as to any difference in the respective rates of interest specified in the Subordinate Lien Obligations.

Whenever money is to be applied by the Trustee as described under the caption "Events of Default and Remedies – *Pro Rata Application of Funds*" of this Appendix C, such money shall be applied by the Trustee at such times, and from time to time, as the Trustee in its sole discretion shall determine, having due regard to the amount of such money available for application and the likelihood of additional money becoming available for such application in the future; the deposit of such money with the Trustee, or otherwise setting aside such money, in trust for the proper purpose shall constitute proper application by the Trustee; and the Trustee shall incur no liability whatsoever to the Commission, to any Secured Owner or to any other person for any delay in applying any such money, so long as the Trustee acts with reasonable diligence, having due regard to the circumstances, and ultimately applies the same in accordance with such provisions of the Master Indenture as may be applicable at the time of application by the Trustee. Whenever the Trustee shall exercise such discretion in applying such money, it shall fix the date (which shall be an Interest Payment Date unless the Trustee shall deem another date more suitable) upon which such application is to be made and upon such date interest on the amounts of principal to be paid to such date shall cease to accrue. The Trustee shall give such notice as it may deem appropriate of the fixing of any such date, and shall not be required to make payment to the Secured Owner of any unpaid Obligation or the interest thereon unless such Obligation shall be presented to the Trustee for appropriate endorsement or for cancellation if fully paid.

Effect of Discontinuance of Proceedings. In case any action taken by the Trustee on account of any Event of Default shall have been discontinued or abandoned for any reason, then and in every such case the Commission, the Trustee, any Bond Insurer of record, and the Secured Owners shall be restored to their former respective positions and rights under the Master Indenture, and all rights, remedies, powers and duties of the Trustee shall continue as though no such action had been taken.

Majority of Secured Owners May Control Proceedings. Anything in the Master Indenture to the contrary notwithstanding, the Secured Owners of not less than a majority in principal amount of the First Tier Obligations then Outstanding (or, if no First Tier Obligations are then Outstanding, then the Secured Owners of not less than a majority in principal amount of the Second Tier Obligations and Subordinate Lien Obligations then Outstanding) shall have the right, subject to certain rights of the Trustee and the Bond Insurer set forth in the Master Indenture, by an instrument or concurrent instruments in writing executed and delivered to the Trustee, to direct the method and place of conducting all remedial actions to be taken by the Trustee under the Master Indenture, provided that such direction shall not be otherwise than in accordance with law or the provisions of the Master Indenture, and that the Trustee shall have the right to decline to follow any such direction that in the opinion of the Trustee would be unjustly prejudicial to Secured Owners not parties to such direction.

Restrictions Upon Action by Individual Secured Owner. No Secured Owners of any of the Outstanding Obligations shall have any right to institute any suit, action, mandamus or other proceeding in equity or at law for the execution of any trust under the Master Indenture or the protection or enforcement of any right under the Master Indenture or any resolution or minute order of the Commission authorizing the issuance of Obligations, or any right under the Enabling Acts or other laws of the State, excepting only an action for the recovery of overdue and unpaid principal, interest or redemption premium, unless such Secured Owner previously shall have given to the Trustee written notice of the Event of Default or breach of trust or duty on account of which such suit or action is to be taken, and unless the Secured Owners of not less than twenty percent (20%) in principal amount of the Obligations then Outstanding shall have made written request of the Trustee after the right to exercise such powers or right of action, as the case may be, shall have accrued, and shall have afforded the Trustee a reasonable opportunity either to proceed to exercise the powers in the Master Indenture granted or granted by the Enabling Acts or by the other laws of the State, or to institute such action, suit or proceeding in its or their name, and unless, also, there shall have been offered to the Trustee reasonable security and indemnity satisfactory to it against the costs, expenses and liabilities to be incurred therein or thereby, and the Trustee shall have refused or neglected to comply with such request within a reasonable time; and such notification, request and offer of indemnity are hereby declared in every such case, at the option of the Trustee, to be conditions precedent to the execution of the powers and trusts of the Master Indenture or for any other remedy under the Master Indenture or under the Enabling Acts or by the other laws of the State. It is understood and intended that no one or more Secured Owners shall have any right in any manner whatever by his or their action to affect, disturb or prejudice the security of the Master Indenture, or to enforce any right under the Master Indenture or under the Enabling Acts or by the other laws of the State with respect to the Obligations or the Master Indenture, except in the manner provided in the Master Indenture, and that all proceedings at law or in equity shall be instituted, had and maintained in the manner in the Master Indenture provided and for the benefit of all Secured Owners of the Outstanding Obligations, except as otherwise permitted in the Master Indenture with reference to overdue and unpaid principal, interest or redemption premium.

Actions by Trustee. All rights of action under the Master Indenture or under any of the Obligations, enforceable by the Trustee, may be enforced by it without the possession of any of the Obligations or the production thereof on the trial or other proceeding relative thereto, and any such suit, action or proceeding instituted by the Trustee shall be brought in its name for the benefit of all the holders of such Obligations, subject to the provisions of the Master Indenture.

No Remedy Exclusive. No remedy conferred upon or reserved to the Trustee, any Bond Insurer, or to the Secured Owners of the Obligations is intended to be exclusive of any other remedy or remedies, and each and every such remedy shall be cumulative and shall be in addition to every other remedy given under the Master Indenture or now or hereafter existing at law or in equity or by statute.

No Delay or Omission Construed to be a Waiver; Repeated Exercise of Powers and Remedies; Waiver of Default. No delay or omission of the Trustee or of any Secured Owner of the Obligations to exercise any right or power accruing upon any default shall impair any such right or power or shall be construed to be a waiver of any such default or any acquiescence therein; and every power and remedy given by the Master Indenture to the Trustee and the Secured Owners of the Obligations may be exercised from time to time and as often as may be deemed expedient.

The Trustee may, and upon written request of the Secured Owners of not less than a majority in principal amount of the Outstanding Obligations shall waive any default which in its opinion shall have been remedied before the completion of the enforcement of any remedy under the Master Indenture, but no such waiver shall extend to or affect any other existing or any subsequent default or defaults or impair any rights or remedies consequent thereon.

Notice of Default. The Trustee shall mail to each Bond Insurer, and each Secured Owner written notice of the occurrence of any Event of Default, within thirty (30) days after the Trustee has knowledge of any such Event of Default. If in any Fiscal Year the total amount of deposits to a debt service fund shall be less than the amounts required so to be deposited under the provisions of the Master Indenture, the Trustee, on or before the first day of the second month of the next succeeding Fiscal Year, shall mail to each Bond Insurer and all Secured Owners written notice of the failure to make such deposits.

Bond Insurer's Rights. Notwithstanding any other provisions described under the caption "Events of Default and Remedies – *Events of Default*" of this Appendix C, if there has been filed with the Trustee a bond insurance policy, or a certified copy thereof, with respect to any Obligation, all enforcement remedies and rights to waive defaults with respect to such Obligation may be exercised by the Secured Owners only with the written consent of such Bond Insurer, and, in the alternative, at the option of the Bond Insurer, such Bond Insurer may enforce any such remedies or waive any default with respect to such Obligation without the consent of the Secured Owners, and in such event such Bond Insurer shall be deemed to be the Secured Owner for such purpose. Any Bond Insurer under a bond insurance policy, or certified copy thereof, that has been filed with the Trustee shall, for all purposes of the Master Indenture, constitute and may be called a Bond Insurer.

Supplemental Indentures

Supplemental Indentures Without Secured Owners' Consent. The Commission and the Trustee may from time to time and at any time enter into Supplemental Indentures, without the consent of or notice to any Secured Owner, to effect any one or more of the following:

(a) cure any ambiguity, defect or omission or correct or supplement any provision in the Master Indenture or in any Supplemental Indenture;

(b) grant to or confer upon the Trustee for the benefit of the Secured Owners any additional rights, remedies, powers, authority or security that may lawfully be granted to or conferred upon the Secured Owners or the Trustee which are not contrary to or inconsistent with the Master Indenture as then in effect or to subject to the pledge and lien of the Master Indenture additional revenues, properties or collateral, including Defeasance Securities;

(c) add to the covenants and agreements of the Commission in the Master Indenture other covenants and agreements thereafter to be observed by the Commission or to surrender any right or power in the Master Indenture reserved to or conferred upon the Commission which are not contrary to or inconsistent with the Master Indenture as then in effect;

(d) permit the appointment of a co-trustee under the Master Indenture;

(e) modify, alter, supplement or amend the Master Indenture in such manner as shall permit the qualification of the Master Indenture, if required, under the Trust Indenture Act of 1939, the Securities Act of 1933 or any similar federal statute hereafter in effect;

(f) make any other change in the Master Indenture that is determined by the Commission not to be materially adverse to the interests of the Secured Owners, including changes or amendments requested by any Rating Agency as a condition to the issuance or maintenance of a rating or requested by the Texas Attorney General's office as a condition to the approval of any Additional First Tier Obligation, Additional Second Tier Obligation or Subordinate Lien Obligation;

(g) implement the issuance of Additional First Tier Obligations, Additional Second Tier Obligations or Additional Subordinate Lien Obligations permitted under the Master Indenture; or

(h) if all First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations in a Series are Book-Entry Obligations, amend, modify, alter or replace any Letter of Representations or other provisions relating to Book-Entry Obligations.

The Trustee shall not be obligated to enter into any such Supplemental Indenture that adversely affects the Trustee's own rights, duties or immunities under the Master Indenture.

Supplemental Indentures Requiring Secured Owners' Consent. The Commission and the Trustee, at any time and from time to time, may execute and deliver a Supplemental Indenture for the purpose of making any modification or amendment to the Master Indenture, but only with the written consent, given as provided under the caption "Supplemental Indentures – *Consents of Secured Owners and Opinions*" of this Appendix C, of the Secured Owners of at least a majority in aggregate principal amount of the Obligations Outstanding at the time such consent is given, and in case less than all of the Obligations then Outstanding are affected by the modification or amendment, of the Secured Owners of at least a majority in aggregate principal amount of the Obligations so affected and Outstanding at the time such consent is given; provided, however, that if such modification or amendment will, by its terms, not take effect so long as any Obligations so affected remain Outstanding, the consent of the Secured Owners of such Obligations shall not be required and such Obligations shall not be deemed to be Outstanding for the purpose of any calculation of Outstanding Obligations under this paragraph. Notwithstanding the foregoing, no modification or amendment contained in any such Supplemental Indenture shall permit any of the following, without the consent of each Secured Owner whose rights are affected thereby:

(a) a change in the terms of stated Maturity or redemption of any Obligation or of any installment of interest thereon;

(b) a reduction in the principal amount of or redemption premium on any Obligation or in the rate of interest thereon or a change in the coin or currency in which such Obligation is payable;

(c) the creation of a lien on or a pledge of any part of the Trust Estate which has priority over or parity with (to the extent not permitted under the Master Indenture) the lien or pledge granted to the Secured Owners under the Master Indenture (but this provision shall not apply to the release of any part of the Trust Estate as opposed to the creation of a prior or parity lien or pledge);

(d) the granting of a preference or priority of any First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligation, as the case may be, over any other First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations, except to the extent permitted in the Master Indenture;

(e) a reduction in the aggregate principal amount of Obligations of which the consent of the Secured Owners is required to effect any such modification or amendment; or

(f) a change in the provisions of this paragraph.

Notwithstanding the foregoing, the Secured Owner of any Obligation may extend the time for payment of the principal of or interest on such Obligation; provided, however, that upon the occurrence of an Event of Default, funds available under the Master Indenture for the payment of the principal of and interest on such Obligations shall not be applied to any payment so extended until all principal and interest payments which have not been extended have first been paid in full. Notice of any Supplemental Indenture executed pursuant to this paragraph shall be given to the affected Secured Owners promptly following the execution thereof.

Consents of Secured Owners and Opinions. Each Supplemental Indenture executed and delivered pursuant to the provisions described under the caption "Supplemental Indentures – *Supplemental Indentures Requiring Secured Owners' Consent*" of this Appendix C shall take effect only when and as provided in this section entitled "*Consents of Secured Owners and Opinions*." A copy of such Supplemental Indenture (or brief summary thereof or reference thereto in form approved by the Trustee), together with a request to Secured Owners for their consent thereto in form satisfactory to the Trustee, shall be sent by the Trustee to Secured Owners, at the expense of the Commission, by first class mail, postage prepaid, provided that a failure to mail such request shall not affect the validity of the Supplemental Indenture when consented to as provided. Such Supplemental Indenture shall not be effective unless and until there shall have been filed with the Trustee (a) the written consents of Secured Owners of the percentage of Obligations specified under the caption "Supplemental Indentures – *Supplemental Indentures Requiring Secured Owners' Consent*" of this Appendix C given as provided in the Master Indenture, and (b) the opinion of Counsel described under the caption "– Supplemental Indentures" of this Appendix C. Any such consent shall be binding upon the Secured Owner giving such consent and upon any subsequent Secured Owner of such Obligations and of any Obligations issued in exchange therefor or in lieu thereof (whether or not such subsequent Secured Owner has notice thereof), unless such consent is revoked in writing by the Secured Owner giving such consent or a subsequent Secured Owner of such Obligations by filing such revocation with the Trustee prior to the date the Trustee receives the material required in subsections (a) and (b) of this section entitled "– *Consents of Secured Owners and Opinions*."

Notwithstanding anything else in the Master Indenture, if a Supplemental Indenture is to become effective as described under the caption "– Supplemental Indentures – *Supplemental Indentures Requiring Secured Owners' Consent*" of this Appendix C on the same date as the date of issuance of Additional First Tier Obligations, Additional Second Tier Obligations or Subordinate Lien Obligation, the consents of the underwriters or purchasers of such Additional First Tier Obligations, Additional Second Tier Obligations or Subordinate Lien Obligation, as the case may be, shall be counted for purposes described under the caption "Supplemental Indentures – *Supplemental Indentures Requiring Secured Owners' Consent*" of this Appendix C and this section entitled "*Consents of Secured Owners and Opinions*."

Effect of Supplemental Indentures. Upon the execution and delivery of any Supplemental Indenture as described under the caption "Supplemental Indentures" of this Appendix C, the Master Indenture shall be modified in accordance therewith, and such Supplemental Indenture shall form a part of the Master Indenture for all purposes; and every Secured Owner of any Obligation theretofore or thereafter authenticated and delivered under the Master Indenture shall be bound thereby.

Trustee

Duties and Responsibilities of the Trustee

(a) Prior to the occurrence of an Event of Default of which the Trustee has or is deemed to have notice of, and after the curing or waiver of any Event of Default that may have occurred, the Trustee undertakes to perform the duties of the Trustee as provided for in the Indenture, and no implied covenants or obligations shall be read into the Indenture against the Trustee. In the absence of bad faith on the part of the Trustee, the Trustee may conclusively rely on the truthfulness of the certificates or opinions furnished to it that conform to the requirements of the Indenture; but the Trustee is under a duty to examine such certificates or opinions in determining whether they conform to the Indenture.

(b) In an Event of Default of which the Trustee has or is deemed to have notice of has occurred, the Trustee shall exercise the rights and powers vested in the Trustee by the Indenture, and use the same degree of care and skill in the Trustee's exercise, as a prudent person would exercise or use in the conduct of such person's own affairs.

(c) No provision of the Indenture shall be construed to relieve the Trustee from liability for its own negligent acts or negligent failures to act, or its own willful misconduct. However, the Trustee will not be liable for any error of judgment made in good faith by a responsible officer, unless it is proven that the Trustee was negligent in ascertaining the pertinent facts.

(d) With respect to any action the Trustee takes or omits to take in accordance with the direction of the Secured Owners under any provision of the Indenture relating to time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee under the Indenture, the Trustee shall not be liable if such action or omission to act was in good faith.

(e) Every provision relating to the conduct or affecting the liability of or affording protection to the Trustee is subject to the provisions of the Indenture governing the Duties and Responsibilities of the Trustee.

(f) no provision of this Indenture shall require the Trustee to expend or risk its own funds or otherwise incur any liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers, if it has reasonable grounds for believing that the repayment of such funds or adequate indemnity against such risk or liability is not reasonably assured to it.

Certain Rights of the Trustee. Except as otherwise provided for in the "— *Duties and Responsibilities of the Trustee*" section above, or in the accordance with the applicable provisions of the Master Indenture, the following rights pertain to the Trustee:

(a) the Trustee may rely and is protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, approval, bond, debenture or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

(b) any request, direction, order or demand of the Commission under this Indenture shall be sufficiently evidenced by a certificate of a TTA Representative (unless other evidence thereof is specifically prescribed) and any resolution of the Commission may be sufficiently evidenced by a copy thereof certified by a TTA Representative, as appropriate;

(c) the Trustee may, in the administration of the Indenture, rely upon a certificate of a Commission Official or TTA Representative whenever it deems it necessary to have a matter proved or established prior to taking, suffering or omitting any action so long as the Trustee acts in good faith;

(d) the Trustee may consult with Counsel and the written advice of such Counsel or an opinion of Counsel shall be full and complete authorization and protection for any action taken, suffered or omitted by it in good faith and in accordance with such advice or opinion;

(e) the Trustee is not obligated to exercise any of the rights or powers vested in it by the Indenture at the request or direction of any of the Secured Owners unless such Secured Owners have offered to the Trustee security or indemnity satisfactory to the Trustee as to its terms, coverage, duration, amount and otherwise with respect to the costs, expenses and liabilities which may be incurred by it in compliance with such request or direction principal amount;

(f) the Trustee is not required to take notice or deemed to have notice of any Event of Default, except for Events of Default discussed in subsection (a) and (b) in "Events of Default and Remedies – *Events of Default*" of this Appendix C, unless a responsible officer of the trustee has actual knowledge thereof or has received notice in writing of such default or Event of Default from the Commission or the Secured Owners of at least 25% in aggregate principal amount of the Outstanding Obligations, and in the absence of any such notice, the Trustee may conclusively assume that no such Event of Default exists;

(g) the Trustee's immunities and protections from liability and its right to indemnification in connection with the performance of its duties under this Indenture shall extend to the Trustee's officers, directors, agents, attorneys and employees, including any Responsible Officer. Such immunities and protections and right to indemnification, together with the Trustee's right to compensation, shall survive the Trustee's resignation or removal, the defeasance or discharge of this Indenture and final payment of the Obligations;

(h) the Trustee is not required to make any inquiry or investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, approval, bond, debenture or other paper or document but the Trustee, in its discretion, may make such further inquiry or investigation into such facts or matters as it may deem necessary or advisable and, if the Trustee determines to make such further inquiry or investigation, it is entitled to examine the books, records and premises of the Commission, in person or by agent or attorney;

(i) the Trustee may execute any of its trusts or powers or perform any duties under this Indenture either directly or by or through agents or attorneys, and may in all cases pay, subject to reimbursement as allowed under the Master Indenture, such reasonable compensation as it deems proper to all such agents and attorneys reasonably employed or retained by it, and the Trustee shall not be responsible for any misconduct or negligence of any agent or attorney appointed with due care by it; and

(j) except for information provided by the Trustee concerning the Trustee, the Trustee shall have no responsibility for any information in any offering memorandum or other disclosure material distributed with respect to the Obligations, and the Trustee shall have no responsibility for compliance with any state or federal securities laws in connection with the Obligations.

EIGHTH SUPPLEMENTAL INDENTURE

Supplemental Indentures Without Secured Owners' Consent

Subject to the Master Indenture and as otherwise provided in the Eighth Supplemental Indenture, the Commission and the Trustee may from time to time and at any time enter into Supplemental Indentures, without the consent of or notice to any Secured Owner, to effect any one or more of the following:

(a) cure any ambiguity, defect or omission or correct or supplement any provision herein or in any Supplemental Indenture;

(b) grant to or confer upon the Trustee for the benefit of the Secured Owners any additional rights, remedies, powers, authority or security that may lawfully be granted to or conferred upon the Secured Owners or the Trustee which are not contrary to or inconsistent with this Indenture as then in effect or to subject to the pledge and lien of this Indenture additional revenues, properties or collateral, including Defeasance Securities;

(c) add to the covenants and agreements of the Commission in this Indenture other covenants and agreements thereafter to be observed by the Commission or to surrender any right or power herein reserved to or conferred upon the Commission which are not contrary to or inconsistent with this Indenture as then in effect;

(d) permit the appointment of a co-trustee under this Indenture;

(e) modify, alter, supplement or amend this Indenture in such manner as shall permit the qualification of this Indenture, if required, under the Trust Indenture Act of 1939, the Securities Act of 1933 or any similar federal statute hereafter in effect;

(f) make any other change herein that is determined by the Commission not to be materially adverse to the interests of the Secured Owners, including changes or amendments requested by any Rating Agency as a condition to the issuance or maintenance of a rating or requested by the Texas Attorney General's office as a condition to the approval of any Additional First Tier Obligation, Additional Second Tier Obligation or Subordinate Lien Obligation;

(g) implement the issuance of Additional First Tier Obligations, Additional Second Tier Obligations or Additional Subordinate Lien Obligations permitted hereunder; or

(h) if all First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations in a Series are Book-Entry Obligations, amend, modify, alter or replace any Letter of Representations as provided in Section 209 or other provisions relating to Book-Entry Obligations.

The Trustee shall not be obligated to enter into any such Supplemental Indenture that adversely affects the Trustee's own rights, duties or immunities under this Indenture.

Notice of any amendment pursuant to this Section shall be sent to the Rating Agencies then maintaining a rating on the Bonds.

Supplemental Indentures Requiring Secured Owners' Consent

Subject to the Master Indenture and as otherwise provided in the Eighth Supplemental Indenture, the Commission and the Trustee, at any time and from time to time, may execute and deliver a Supplemental Indenture for the purpose of making any modification or amendment to this Master Indenture, but only with the written consent, given as provided in the Master Indenture, of the Secured Owners of at least a majority in aggregate principal amount of the Obligations Outstanding at the time such consent is given, and in case less than all of the Obligations then Outstanding are affected by the modification or amendment, of the Secured Owners of at least a majority in aggregate principal amount of the Obligations so affected and Outstanding at the time such consent is given; provided, however, that if such modification or amendment will, by its terms, not take effect so long as any Obligations so affected remain Outstanding, the consent of the Secured Owners of such Obligations shall not be required and such Obligations shall not be deemed to be Outstanding for the purpose of any calculation of Outstanding Obligations under this section. Notwithstanding the foregoing, no modification or amendment contained in any such Supplemental Indenture shall permit any of the following, without the consent of each Secured Owner whose rights are affected thereby:

(a) a change in the terms of stated Maturity or redemption of any Obligation or of any installment of interest thereon;

(b) a reduction in the principal amount of or redemption premium on any Obligation or in the rate of interest thereon or a change in the coin or currency in which such Obligation is payable;

(c) the creation of a lien on or a pledge of any part of the Trust Estate which has priority over or parity with (to the extent not permitted hereunder) the lien or pledge granted to the Secured Owners hereunder (but this provision shall not apply to the release of any part of the Trust Estate as opposed to the creation of a prior or parity lien or pledge);

(d) the granting of a preference or priority of any First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligation, as the case may be, over any other First Tier Obligations, Second Tier Obligations or Subordinate Lien Obligations, except to the extent permitted herein;

(e) a reduction in the aggregate principal amount of Obligations of which the consent of the Secured Owners is required to effect any such modification or amendment; or

(f) a change in the provisions of this section.

Notwithstanding the foregoing, the Secured Owner of any Obligation may extend the time for payment of the principal of or interest on such Obligation; provided, however, that upon the occurrence of an Event of Default, funds available hereunder for the payment of the principal of and interest on such Obligations shall not be applied to any payment so extended until all principal and interest payments which have not been extended have first been paid in full. Notice of any Supplemental Indenture executed pursuant to the Master Indenture shall be given to the affected Secured Owners promptly following the execution thereof.

Notice of any amendment pursuant to this Section shall be sent to the Rating Agencies then maintaining a rating on the Bonds.

Consent of Secured Owners and Opinions

Each Supplemental Indenture executed and delivered pursuant to the Master Indenture shall take effect only when and as provided in the "EIGHTH SUPPLEMENTAL INDENTURE – Supplemental Indentures Requiring Secured Owners' Consent." A copy of such Supplemental Indenture (or brief summary thereof or reference thereto in form approved by the Trustee), together with a request to Secured Owners for their consent thereto in form satisfactory to the Trustee, shall be sent by the Trustee to Secured Owners, at the expense of the Commission, by first class mail, postage prepaid, provided that a failure to mail such request shall not affect the validity of the Supplemental Indenture when consented to as provided hereinafter. Such Supplemental Indenture shall not be effective unless and until there shall have been filed with the Trustee (a) the written consents of Secured Owners of the percentage of Obligations specified in "EIGHTH SUPPLEMENTAL INDENTURE – Supplemental Indentures Requiring Secured Owners' Consent" given as provided in the Master Indenture, and (b) the opinion of Counsel described in the Master Indenture. Any such consent shall be binding upon the Secured Owner giving such consent and upon any subsequent Secured Owner of such Obligations and of any Obligations issued in exchange therefor or in lieu thereof (whether or not such subsequent Secured Owner has notice thereof), unless such consent is revoked in writing by the Secured Owner giving such consent or a subsequent Secured Owner of such Obligations by filing such revocation with the Trustee prior to the date the Trustee receives the material required in subsections (a) and (b) of this section.

Notwithstanding anything else herein, if a Supplemental Indenture is to become effective under "EIGHTH SUPPLEMENTAL INDENTURE – Supplemental Indentures Requiring Secured Owners' Consent" on the same date as the date of issuance of Additional First Tier Obligations, Additional Second Tier Obligations or Subordinate Lien Obligation, the consents of the underwriters or purchasers of such Additional First Tier Obligations, Additional Second Tier Obligations or Subordinate Lien Obligation, as the case may be, shall be counted for purposes of "EIGHTH SUPPLEMENTAL INDENTURE – Supplemental Indentures Requiring Secured Owners' Consent" and this section.

Exclusion of Certain Obligations for the Purpose of Consent, Etc.

Obligations that are to be disregarded under the last sentence of the definition of "Outstanding" shall not be deemed Outstanding for the purpose of consent or other action or any calculation of Outstanding Obligations provided for in in Article X of the Master Indenture. At the time of any consent or other action taken under Article X or elsewhere in the Master Indenture, the Commission shall furnish the Trustee a certificate of a Commission Official or TTA Representative, upon which the Trustee may rely, describing all Obligations so to be excluded.

Effect of Supplemental Indentures

Upon the execution and delivery of any Supplemental Indenture under Article X of the Master Indenture, this Master Indenture shall be modified in accordance therewith, and such Supplemental Indenture shall form a part of this Master Indenture for all purposes; and every Secured Owner of any Obligation theretofore or thereafter authenticated and delivered hereunder shall be bound thereby.

Limited Obligations

The Series 2020-A Bonds, the Taxable Series 2020-B Bonds and the Taxable Series 2020-C Bonds are limited obligations of the Commission constituting a Series of First Tier Obligations, payable solely from a first lien on, pledge of and security interest in the Trust Estate. The Series 2020-A Bonds, the Taxable Series 2020-B Bonds and the Taxable Series 2020-C Bonds, as a series of First Tier Obligations, shall constitute a valid claim of the respective Secured Owners thereof against the Trust Estate, which is pledged to secure the payment of the principal of, redemption premium, if any, and interest on the First Tier Obligations, and which shall be utilized for no other purpose, except as expressly authorized in the Master Indenture and the Eighth Supplemental Indenture.

The Bonds shall not constitute general obligations of the Commission or the State and under no circumstances shall the Bonds be payable from, nor shall the Secured Owners thereof have any rightful claim to, any income, revenues, funds or assets of the Commission other than those pledged under the Eighth Supplemental Indenture as security for the payment of First Tier Obligations and Second Tier Obligations, as applicable. Neither the full faith and credit nor the taxing power of the State is pledged to the payment of the principal of, premium, if any, or interest on the Bonds.

Taxable Series 2020-B Bond Purchase Fund

The Eighth Supplemental Indenture creates and establishes with the Tender Agent a separate "Texas Transportation Commission Central Texas Turnpike System Taxable Series 2020-B Bond Purchase Fund" (the "Taxable Series 2020-B Bond Purchase Fund") with respect to the Taxable Series 2020-B Bonds, to be held as a separate escrow fund, in trust and administered and distributed by the Tender Agent. All moneys deposited into the Taxable Series 2020-B Bond Purchase Fund shall be used solely for the purposes set forth in the Eighth Supplemental Indenture and such moneys shall not constitute a part of the trust security under the Indenture. The Taxable Series 2020-B Bond Purchase Fund shall secure and be used solely for the Taxable Series 2020-B Bonds.

The Remarketing Agent shall pay or cause to be paid to the Tender Agent, in immediately available funds, by the time indicated in the Eighth Supplemental Indenture on the Purchase Date of tendered Taxable Series 2020-B Bonds, all amounts representing Remarketing Proceeds of such Taxable Series 2020-B Bonds, and all such Remarketing Proceeds shall be deposited by the Tender Agent directly into the Taxable Series 2020-B Bond Purchase Fund. All moneys received by the Tender Agent as Remarketing Proceeds shall be deposited by the Tender Agent in the Taxable Series 2020-B Bond Purchase Fund as provided in the Eighth Supplemental Indenture and shall be used solely for the payment of the Purchase Price of tendered Taxable Series 2020-B Bonds and shall not be commingled with other funds held by the Tender Agent.

The Tender Agent shall deposit or cause to be deposited into the Taxable Series 2020-B Bond Purchase Fund, when and as received, all moneys delivered to the Tender Agent as and for the Purchase Price of remarketed Taxable Series 2020-B Bonds by or on behalf of the Remarketing Agent. The Tender Agent shall disburse moneys from the Taxable Series 2020-B Bond Purchase Fund to pay the Purchase Price of the related Taxable Series 2020-B Bonds properly tendered for purchase upon surrender of such Taxable Series 2020-B Bonds in immediately available moneys by close of business on the Purchase Date.

THE COMMISSION RESERVES THE RIGHT, BUT DOES NOT HAVE THE OBLIGATION, TO PURCHASE SERIES TAXABLE 2020-B BONDS TENDERED FOR PURCHASE. No purchase of Taxable Series 2020-B Bonds by the Tender Agent or the Commission or advance use of any funds to effectuate any such purchase shall be deemed to be a payment or redemption of such Taxable Series 2020-B Bonds or any portion thereof, and such purchase will not operate to extinguish or discharge the indebtedness evidenced by such Taxable Series 2020-B Bonds unless it is expressly stated in a certificate of a Chief Financial Officer delivered to the Tender Agent that the Purchase Price paid by the Commission shall be deemed the payment and discharge of the purchased Taxable Series 2020-B Bonds and directs the Tender Agent to cancel such Taxable Series 2020-B Bonds.

The moneys in the Taxable Series 2020-B Bond Purchase Funds shall not be part of the security under the Indenture, but shall be used solely to pay the Purchase Price of the related Taxable Series 2020-B Bonds as aforesaid and may not be used for any other purposes. The Tender Agent shall hold the moneys in the Taxable Series 2020-B Bond Purchase Fund for the benefit of the Registered Owners of the related Taxable Series 2020-B Bonds which have been properly tendered for purchase or deemed tendered on the Purchase Date. If sufficient funds to pay the Purchase

Price for the Taxable Series 2020-B Bonds shall be held by the Tender Agent in the Taxable Series 2020-B Bond Purchase Fund for the benefit of the Registered Owners thereof, each such Registered Owner shall thereafter be restricted exclusively to that Taxable Series 2020-B Bond Purchase Fund for any claim of whatever nature on such Registered Owner's part under the Eighth Supplemental Indenture or on, or with respect to, such tendered Taxable Series 2020-B Bonds. Tendered Taxable Series 2020-B Bonds in the Multiannual Mode which are not supported by a Liquidity Agreement or Credit Facility and that are not remarketed or purchased on a Purchase Date shall bear interest at 10% until purchased or redeemed. The Commission will use its best efforts to have such Taxable Series 2020-B Bonds remarketed or purchased as soon as reasonably possible and until such time each Business Day will constitute a Purchase Date for such Taxable Series 2020-B Bonds that have not been remarketed or purchased.

Moneys held in the Taxable Series 2020-B Bond Purchase Fund for the benefit of Registered Owners of the related untendered Taxable Series 2020-B Bonds shall be held in trust and shall be invested overnight at the direction of the Commission in any bonds or other obligations which as to principal and interest constitute direct obligations of, or are unconditionally guaranteed by, the United States of America, including Treasury Receipts evidencing ownership of future interest and principal payments due on direct obligations of the United States of America. Moneys in the Taxable Series 2020-B Bond Purchase Fund which remain unclaimed three (3) years after the applicable Purchase Date shall, at the request of the Commission, and if the Commission is not at the time, to the knowledge of the Tender Agent, in default with respect to any material covenant in the Eighth Supplemental Indenture, be paid to the Commission, and the Registered Owners of the Taxable Series 2020-B Bonds for which the deposit was made shall thereafter be limited to a claim against the Commission.

Remarketing Agent for Taxable Series 2020-B Bonds

Each Remarketing Agent shall act as remarketing agent as provided in the Eighth Supplemental Indenture, and, in accordance with the Remarketing Agreement between the Remarketing Agent and the Commission, shall use its best efforts to remarket Taxable Series 2020-B Bonds required to be purchased pursuant to the Eighth Supplemental Indenture. A Chief Financial Officer shall appoint any successor Remarketing Agent for the Taxable Series 2020-B Bonds, subject to the conditions set forth in the Eighth Supplemental Indenture and the approval of each Credit Provider or Liquidity Provider for such Taxable Series 2020-B Bonds. Each Remarketing Agent shall designate its principal office to the Tender Agent and signify its acceptance of the duties and obligations imposed upon it under Eighth Supplemental Indenture by a written instrument of acceptance delivered to the Commission and the Tender Agent under which the Remarketing Agent will agree, particularly, to:

(a) determine the Flexible Rates, Daily Rates, Weekly Rates, Monthly Rates, Quarterly Rates, Semiannual Rates, Multiannual Rates, Index Floating Rates and Fixed Rates and give notice of such rates in accordance with the Eighth Supplemental Indenture;

(b) keep such books and records with respect to its duties as Remarketing Agent as shall be consistent with prudent industry practice; and

(c) remarket Taxable Series 2020-B Bonds in accordance with the Eighth Supplemental Indenture and the Remarketing Agreement.

Each Remarketing Agent shall have a capitalization of at least $100,000,000 and be authorized by law to perform all the duties imposed upon it by the Eighth Supplemental Indenture. A Remarketing Agent may at any time resign and be discharged of the duties and obligations created by the Eighth Supplemental Indenture by giving at least ten (10) days' written notice to the Commission and the Tender Agent. A Remarketing Agent may be removed at any time by the Commission, upon at least seven (7) days' notice by an instrument filed with the Remarketing Agent, the Tender Agent, each Liquidity Provider and/or Credit Provider of record for the related Taxable Series 2020-B Bonds, and the Rating Agencies.

In the event of the resignation or removal of a Remarketing Agent, such Remarketing Agent shall pay over, assign, and deliver any moneys and Taxable Series 2020-B Bonds held by it in such capacity to its successor or, if there is no successor, to the Tender Agent.

In the event that a Remarketing Agent shall resign or be removed, or be dissolved, or if the property or affairs of a Remarketing Agent shall be taken under the control of any state or federal court or administrative body because of bankruptcy or insolvency or for any other reason, and the Commission shall not have appointed its successor as Remarketing Agent, the Tender Agent shall ipso facto be deemed to be the Remarketing Agent for the related Taxable Series 2020-B Bonds for the sole and limited purpose of setting the default interest rate pursuant to the Eighth Supplemental Indenture until the appointment by the Commission of a Remarketing Agent or a successor Remarketing Agent, as the case may be.

[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX D

BOOK-ENTRY-ONLY SYSTEM

This Appendix describes how ownership of the Bonds is to be transferred and how the principal of, premium, if any, and interest on the Bonds are to be paid to and credited by The Depository Trust Company, New York, New York ("DTC"), while the Bonds are registered in its nominee name. The information in this Appendix concerning DTC and the book-entry-only system has been provided by DTC for use in disclosure documents such as this Official Statement. The Commission and the Underwriters believe the source of such information to be reliable, but take no responsibility for the accuracy or completeness thereof.

The Commission and the Underwriters cannot and do not give any assurance that (1) DTC will distribute payments of debt service on the Bonds, or redemption or other notices, to DTC Participants (as defined herein), (2) DTC Participants or others will distribute debt service payments paid to DTC or its nominee (as the registered owner of the Bonds), or redemption or other notices, to the Beneficial Owners, or that they will do so on a timely basis, or (3) DTC will serve and act in the manner described in this Official Statement. The current rules applicable to DTC are on file with the Securities and Exchange Commission, and the current procedures of DTC to be followed in dealing with DTC Participants are on file with DTC.

Book-Entry Only System

DTC will act initially as securities depository for the Bonds. The Bonds will be issued as fully-registered securities registered in the name of Cede & Co. (DTC's partnership nominee) or such other name as may be requested by an authorized representative of DTC. One fully-registered Bond certificate will be issued for each serial installment or maturity of the Bonds of each Series with the same interest rate and will be deposited with DTC.

DTC, the world's largest securities depository, is a limited-purpose trust company organized under the New York Banking Law, a "banking organization" within the meaning of the New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934. DTC holds and provides asset servicing for over 3.5 million issues of U.S. and non-U.S. equity issues, corporate and municipal debt issues, and money market instruments (from over 100 countries) that DTC's participants ("Direct Participants") deposit with DTC. DTC also facilitates the post-trade settlement among Direct Participants of sales and other securities transactions in deposited securities, through electronic computerized book-entry transfers and pledges between Direct Participants' accounts. This eliminates the need for physical movement of securities certificates. Direct Participants include both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation ("*DTCC*"). DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation, all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others such as both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, and clearing corporations that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly ("Indirect Participants"). DTC has a Standard & Poor's rating of "AA+." The DTC Rules applicable to its Participants are on file with the Securities and Exchange Commission. More information about DTC can be found at www.dtcc.com.

Purchases of Bonds under the DTC system must be made by or through Direct Participants, which will receive a credit for the Bonds on DTC's records. The ownership interest of each actual purchaser of each Bond ("Beneficial Owner") is in turn to be recorded on the Direct and Indirect Participants' records. Beneficial Owners will not receive written confirmation from DTC of their purchase. Beneficial Owners are, however, expected to receive written confirmations providing details of the transaction, as well as periodic statements of their holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the Bonds are to be accomplished by entries made on the books of Direct and Indirect Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive certificates representing their ownership interests in Bonds, except in the event that use of the book-entry system for the Bonds is discontinued.

To facilitate subsequent transfers, all Bonds deposited by Direct Participants with DTC are registered in the name of DTC's partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of Bonds with DTC and their registration in the name of Cede & Co. or such other DTC nominee do not affect any change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Bonds; DTC's records reflect only the identity of the Direct Participants to whose accounts such Bonds are credited, which may or may not be the Beneficial Owners. The Direct and Indirect Participants will remain responsible for keeping account of their holdings on behalf of their customers.

Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time. Beneficial Owners of Bonds may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the Bonds, such as redemptions, tenders, defaults, and proposed amendments to the Bond documents. For example, Beneficial Owners of Bonds may wish to ascertain that the nominee holding the Bonds for their benefit has agreed to obtain and transmit notices to Beneficial Owners. In the alternative, Beneficial Owners may wish to provide their names and addresses to the Paying/Agent Registrar and request that copies of notices be provided directly to them.

Redemption notices shall be sent to DTC. If less than all of the Bonds within a Series and maturity with the same interest rate are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant to be redeemed, unless a pro rata pass-through distribution of principal basis is selected in accordance with DTC's procedures.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to Bonds unless authorized by a Direct Participant in accordance with DTC's MMI Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to the Commission as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts Bonds are credited on the record date (identified in a listing attached to the Omnibus Proxy).

All payments on the Bonds will be made to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit Direct Participants' accounts upon DTC's receipt of funds and corresponding detail information from the Commission or the Paying Agent/Registrar, on payable date in accordance with their respective holdings shown on DTC's records. Payments by Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of such Participant and not of DTC, the Paying Agent/Registrar, or the Commission, subject to any statutory or regulatory requirements as may be in effect from time to time. All payments to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) are the responsibility of the Commission or the Paying Agent/Registrar, disbursement of such payments to Direct Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners will be the responsibility of Direct and Indirect Participants.

DTC may discontinue providing its services as depository with respect to the Bonds at any time by giving reasonable notice to the Commission or the Paying Agent/Registrar. Under such circumstances, in the event that a successor depository is not obtained, Bond certificates are required to be printed and delivered.

To the extent permitted by law, the Commission may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, Bond certificates will be printed and delivered to DTC.

Use of Certain Terms in Other Sections of this Official Statement

In reading this Official Statement it should be understood that while the Bonds are in the Book-Entry Only System, references in other sections of this Official Statement to registered owners should be read to include the person for which the DTC Participant acquires an interest in any Bonds, but (i) all rights of ownership must be exercised through DTC and the Book-Entry Only System, and (ii) except as described above, notices that are to be given to registered owners under the Indenture will be given only to DTC.

Effect of Termination of Book-Entry Only System

In the event that the Book-Entry Only System is discontinued by DTC or the Commission, the following provisions will be applicable to the Bonds: the Bonds may be transferred and exchanged on the registration books of the Paying Agent/Registrar only upon presentation and surrender thereof to the Paying Agent/Registrar in Dallas, Texas (the "Designated Trust Office") and such transfer or exchange shall be without expense or service charge to the registered owner, except for any tax or other governmental charges required to be paid with respect to such registration, exchange and transfer. A Bond may be assigned by the execution of an assignment form on the Bond or by other instrument of transfer and assignment acceptable to the Paying Agent/Registrar. A new Bond or Bonds will be delivered by the Paying Agent/Registrar, in lieu of the Bond being transferred or exchanged, at the principal office of the Paying Agent/Registrar, or sent by United States mail, first class, postage prepaid, to the new registered owner or the designee thereof. To the extent possible, new Bonds issued in an exchange or transfer of Bonds will be delivered to the registered owner or assignee of the registered owner in not more than three business days after the receipt of the Bonds to be canceled, and the written instrument of transfer or request for exchange duly executed by the registered owner or his duly authorized agent, in form satisfactory to the Paying Agent/Registrar. New Bonds registered and delivered in an exchange or transfer shall be in any integral multiple of $5,000 for any one maturity and for a like aggregate principal amount as the Bond or Bonds surrendered for exchange or transfer.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX E

TRAFFIC AND REVENUE STUDY

[THIS PAGE INTENTIONALLY LEFT BLANK]

Stantec

Stantec Consulting Services, Inc.
400 Davis Drive, Suite 400
Plymouth Meeting, PA 19462

January 21, 2020
File: 193410456 200.202

Attention: *Benjamin Asher*
Director - Project Finance, Debt and Strategic Contracts
Texas Department of Transportation
125 E 11th Street, Austin, Tx 78701

Dear Mr. Asher,

Reference: Evaluation and confirmation of CTTS 2018 Traffic and Revenue Study Forecast

In connection with the offering by the Texas Transportation Commission of one or more series of Central Texas Turnpike System Revenue Refunding Bonds (collectively, the "Bonds"), Stantec Consulting Services, Inc. ("Stantec"), acting as Traffic Consultant to the Texas Transportation Commission under the Indenture of Trust, as supplemented, related to the Bonds, has been requested to review the report we prepared titled *Central Texas Turnpike System 2018 Traffic & Revenue Study* (the "2018 Report") and dated August 29, 2018 with respect to the forecast of traffic and revenue for the Central Texas Turnpike System ("CTTS") contained therein (the "2018 Report forecast") to determine if changes to the underlying economics and other conditions warrant any change to the original forecast. The 2018 Report, attached hereto as Attachment 1, and this letter (this "2020 Update Letter") together constitute an investment grade study.

As discussed within this 2020 Update Letter, Stantec conducted a review of the recent development patterns and socioeconomic and econometric data that underpins our 2018 Report forecast. Stantec also reviewed the status of planned major network improvements within the region to determine if any material changes have occurred in the implementation of these facilities that underly our 2018 Report forecast. Lastly, Stantec reviewed the latest available information related to efficiency of toll collections for the Pay By Mail transactions in light of the recent changes in toll policies that have been implemented in response to Senate Bill 312 ("SB 312") which was passed by the 85th Texas Legislature and was signed into law by the Governor on June 9, 2017.

From this review, except as described herein, it appears that most of the anticipated development trends and econometric data have occurred generally in line with our assumptions. The observed [actual] transactions and revenue for FY 2018 and FY 2019 have exceeded our forecasts. One significant change in our assumptions, however, has been a new highway improvement project that provides additional capacity on I-35 through central Austin. While the funding for this multi-billion dollar project is not fully committed, the planned facility has been designed to a level of detail which permits estimation of its impacts. From the sensitivity analysis, the impacts of this new project would be offset by the latest changes in socioeconomic growth, which has exceeded the values assumed in our original 2018 Report forecast. A summary of the key elements that impacted the original forecast is listed in the following table. From this analysis, Stantec affirms the future traffic and revenue estimates for the forecast period in the 2018 Report.

Reference: **Evaluation and confirmation of CTTS 2018 Traffic and Revenue Study Forecast**

Forecast Variable	Revised Condition	Forecast Impact
Socioeconomic Data (Population, Employment)	Higher Forecasts	Positive
Highway Network (I-35 Capital Express)	Addition of HOV Lanes	Negative

While this 2020 Update Letter provides a summary of the elements reviewed as part of this effort, a more comprehensive understanding of the CTTS and the depth of analysis performed for the original CTTS 2018 Report is found within the attached document. The evaluation of the existing forecasts should be reviewed with a thorough understanding of information provided in the 2018 Report and this 2020 Update Letter. Note that the 2018 Report has two sections (Sections 8.6 and 8.7) documenting key assumptions and disclaimers associated with those forecasts. The remaining sections of this 2020 Update Letter provide a summary discussion of the analysis performed and provide the basis for our opinion of the adequacy of the existing original 2018 Report forecasts.

CURRENT TRANSACTION AND REVENUE STATISTICS

For the first two years of the 2018 Report forecast which includes Fiscal Year ("FY") 2018 and FY 2019, the CTTS has exceeded the forecasted transactions and revenue, as shown in Table 1. The average weekday transactions have exceeded forecasts by approximately 1.2% for FY 2018 and 3.5% for FY 2019. On an annual basis, the total transactions have exceeded the forecast by approximately 1.9% and 3.7%, respectively, for FY 2018 and FY 2019. Similarly, revenue has also exceeded projections by 1.8% and 5.8% for FY 2018 and FY 2019, respectively.

Table 1 – CTTS Transaction and Revenue Comparison - Forecasted vs Actual

Fiscal Year	Average Weekday Total Transactions			Annual Total Transactions			Annual Revenue		
	TxDOT CTTS 2018 T&R Study	Actual[1]	% Difference	TxDOT CTTS 2018 T&R Study	Actual[1]	% Difference	TxDOT CTTS 2018 T&R Study	Actual[1]	% Difference
2018	484,152	490,153	1.2%	156,144,000	159,161,595	1.9%	$192,455,000	$195,990,298	1.8%
2019	505,388	522,875	3.5%	163,010,000	169,010,703	3.7%	$207,500,000	$219,620,179	5.8%

Notes:

(1) - 2018 FY Annual Report, FY 2019 Voluntary Quarterly Report of Actual Traffic and Toll Revenue, and 2019 Monthly Data

While the system as a whole has exceeded the forecasts, the growth on individual elements of the CTTS have demonstrated some variation. Loop 1 and SH 45 N have shown significant growth, while growth has been more moderate on SH 130 and SH 45 SE.

Reference: **Evaluation and confirmation of CTTS 2018 Traffic and Revenue Study Forecast**

SOCIOECONOMIC CONDITIONS AND FORECASTS

For the 2018 Report forecasts, an independent socioeconomic data review was conducted. This analysis was performed at the county level and applied to more disaggregate zonal level forecasts. These forecasts were prepared in mid-2017 using the available 2016 data along with knowledge of the local market conditions at that time. Subsequently another independent review of socioeconomic data was performed for the Austin region. This review was conducted for the Central Texas Regional Mobility Authority ("CTRMA") in conjunction with a system refinancing, scheduled for early 2020. This study, titled *183A, 290E, SH 71 Express, SH 45SE, and 183S 2019 Traffic and Revenue Study*, was conducted by the same firm, using a consistent methodology. CTRMA has granted TxDOT permission to reference and utilize this socioeconomic data as part of the evaluation of the CTTS 2018 traffic and revenue forecasts. Chapter 6 of the CTRMA Study, which summarizes the revised socioeconomic data, is attached to the 2020 Update Letter as Attachment 2. Table 2 provides a comparison summary for population and employment for the counties in the Austin region for 2017, which is the base year for the CTRMA forecasts (2016 served as the base year for the 2018 Report).

Table 2 – 2017 Population and Employment Comparison by County

County	2017 Population				2017 Employment			
	TxDOT CTTS 2018 T&R Study(1)	CTRMA T&R Study(2)	Actual(3)	Actual vs. CTTS 2018 T&R Study	TxDOT CTTS 2018 T&R Study(1)	CTRMA T&R Study(2)	Actual(3)	Actual vs. CTTS 2018 T&R Study
Bastrop	82,327	82,541	84,761	3.0%	19,229	17,916	17,987	-6.5%
Burnet	45,557	45,550	46,804	2.7%	13,608	13,882	13,874	2.0%
Caldwell	39,981	39,922	42,338	5.9%	8,756	8,380	8,456	-3.4%
Hays	211,123	210,810	214,485	1.6%	66,036	66,079	67,054	1.5%
Travis	1,228,988	1,227,897	1,226,698	-0.2%	719,209	725,832	725,880	0.9%
Williamson	540,615	540,010	547,545	1.3%	161,746	164,627	165,256	2.2%
Total	**2,148,591**	**2,146,730**	**2,162,631**	**0.7%**	**988,584**	**996,716**	**998,507**	**1.0%**

Notes:

(1) Obtained from CTTS 2018 T&R Study, 2017 population and employment data was interpolated from 2016 and 2020 values

(2) Obtained from Central Texas Regional Mobility Authority 183A, 290E, SH 71 Express, SH 45SE, and 183S 2019 Traffic and Revenue Study - Draft Report, year 2017

(3) Population data obtained from the Census Website. Employment Data obtained from Bureau of Labor Statistics - Quarterly Census of Employment and Wages

The table above lists the actual 2017 values along with 2017 estimates prepared for CTRMA and interpolated 2017 values from the data in the 2018 Report. While the results vary slightly by county, the CTTS 2018 Report's interpolated values are less than the actual values for both population and employment.

Table 3 provides a comparison of the future year projections for population, households, and employment between the 2018 Report and the more recent data set prepared for the CTRMA study. For 2020, the population and household estimates are nearly identical on a regional basis while employment is nearly 1% higher in the CTRMA forecasts. For the horizon years of 2030 and 2040, population and households on a regional basis are minimally higher in the CTRMA forecast but the employment is approximately 2% higher in both years. From the comparisons in Tables 2 and 3, recent growth (i) exceeded our estimates in the near-term, (ii) supports our estimates and the forecasts for the more distant horizon years, and (iii) is generally in line with the assumptions used for the 2018 Report transaction and revenue forecasts.

Using the latest available forecasts, Stantec conducted sensitivity analysis to determine the impacts of the new socioeconomic data. The use of the new forecasts in the modeling process generated a slight increase in transactions and revenue of approximately between 3% and 4% for the individual future years from 2020 to 2040. Analysis of the new forecasts at a more disaggregate basis revealed that the new forecasts have an increasing share of future employment located along the CTTS facilities which is generating more transactions and revenue.

Table 3 – Future Year Socioeconomic Data Growth Comparison

POPULATION

County	2020			2030			2040		
	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference
Bastrop	88,109	90,229	2.4%	105,696	108,699	2.8%	125,672	127,967	1.8%
Burnet	46,683	48,214	3.3%	51,639	53,639	3.9%	55,412	57,621	4.0%
Caldwell	43,480	44,629	2.6%	50,339	52,331	4.0%	57,616	59,415	3.1%
Hays	231,129	235,956	2.1%	295,569	315,786	6.8%	399,673	412,066	3.1%
Travis	1,314,093	1,287,284	-2.0%	1,563,432	1,506,623	-3.6%	1,801,138	1,734,755	-3.7%
Williamson	583,417	598,758	2.6%	757,309	793,397	4.8%	984,479	1,031,343	4.8%
Total	**2,306,911**	**2,305,070**	**-0.1%**	**2,823,984**	**2,830,475**	**0.2%**	**3,423,990**	**3,423,167**	**0.0%**

HOUSEHOLD

County	2020			2030			2040		
	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference
Bastrop	31,865	32,601	2.3%	38,516	39,628	2.9%	45,982	46,804	1.8%
Burnet	18,452	19,164	3.9%	20,384	21,160	3.8%	21,858	22,716	3.9%
Caldwell	15,304	15,703	2.6%	17,609	18,339	4.1%	20,153	20,761	3.0%
Hays	82,195	84,264	2.5%	105,692	113,411	7.3%	144,203	148,840	3.2%
Travis	533,615	522,632	-2.1%	631,851	609,033	-3.6%	723,506	696,782	-3.7%
Williamson	214,099	220,548	3.0%	279,864	294,506	5.2%	365,210	384,621	5.3%
Total	**895,530**	**894,912**	**-0.1%**	**1,093,916**	**1,096,077**	**0.2%**	**1,320,912**	**1,320,524**	**0.0%**

EMPLOYMENT

County	2020			2030			2040		
	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference	TxDOT CTTS 2018 T&R Study[1]	CTRMA T&R Study[2]	Percent Difference
Bastrop	20,352	19,495	-4.2%	25,446	25,829	1.5%	32,732	33,086	1.1%
Burnet	14,880	14,827	-0.4%	18,135	17,602	-2.9%	22,099	20,492	-7.3%
Caldwell	9,285	9,368	0.9%	11,517	11,409	-0.9%	14,561	13,998	-3.9%
Hays	73,095	72,719	-0.5%	98,021	94,047	-4.1%	124,711	118,530	-5.0%
Travis	762,715	768,530	0.8%	883,257	900,376	1.9%	991,374	1,020,649	3.0%
Williamson	176,480	181,063	2.6%	225,362	237,157	5.2%	281,677	293,562	4.2%
Total	**1,056,807**	**1,066,002**	**0.9%**	**1,261,738**	**1,286,420**	**2.0%**	**1,467,154**	**1,500,317**	**2.3%**

Notes:

[1] Obtained from CTTS 2018 T&R Study

[2] Obtained from Central Texas Regional Mobility Authority 183A, 290E, SH 71 Express, SH 45SE, and 183S 2019 Traffic and Revenue Study - Draft Report.

ECONOMETRIC DATA

Several econometric datapoints are key drivers for the traffic and revenue forecasts. In assessing our forecast, Stantec reviewed recent changes to both the Consumer Price Index ("CPI") as well as fuel prices.

Consumer Price Index (CPI)

The CPI is used to estimate future year toll increases as well as the change in household income. The 2018 Report forecast assumes that tolls will increase in line with the CPI change, per the adopted CTTS toll escalation policy, and that median household income will also increase at the same rate as changes in CPI. Thus, effectively travelers' ability to pay increasing tolls will track the general rate of inflation.

Per the adopted toll escalation policy, CTTS toll rates are escalated annually based on the year over year ("YOY") change in August CPI-U values. Following the approved process, the YOY change in August CPI-U from 2017 to 2018 (shown in Table 4 as 2.7%) was the escalation percentage for tolls effective January 1, 2019. Similarly, the escalation of 1.7% for 2020 was derived from the actual YOY change between August 2018 and 2019 CPI-U.

Table 4 – 2017-2019 CPI Growth

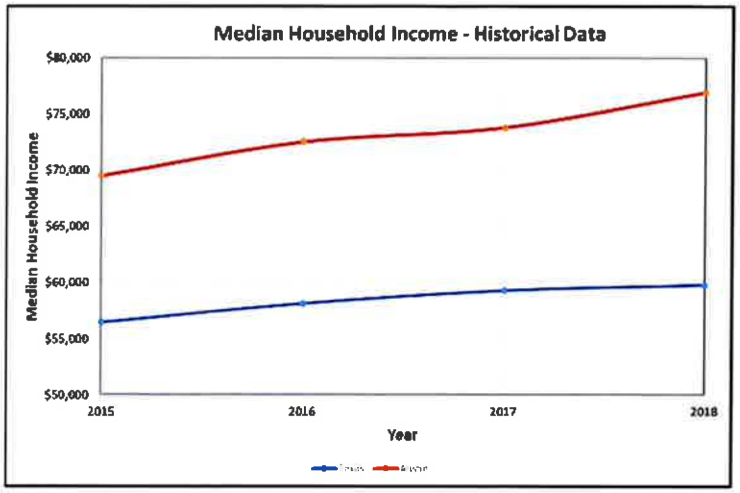
	CPI Values			YOY Percent Change	
Month	2017	2018	2019	2018	2019
Jan	242.839	247.867	251.712	2.1%	1.6%
Feb	243.603	248.991	252.776	2.2%	1.5%
Mar	243.801	249.554	254.202	2.4%	1.9%
Apr	244.524	250.546	255.548	2.5%	2.0%
May	244.733	251.588	256.092	2.8%	1.8%
Jun	244.955	251.989	256.143	2.9%	1.6%
Jul	244.786	252.006	256.571	2.9%	1.8%
Aug	***245.519***	***252.146***	***256.558***	***2.7%***	***1.7%***
Sep	246.819	252.439	256.759	2.3%	1.7%
Oct	246.663	252.885	257.346	2.5%	1.8%
Nov	246.669	252.038		2.2%	
Dec	246.524	251.233		1.9%	
Average				2.4%	1.7%

The 2018 Report assumed toll escalation of 2.2% for 2019 and 2.3% for 2020. Averaging the actual escalation of 2.7% and 1.7% for 2018 and 2019, respectively from Table 4 yields a value of 2.2% which is generally consistent with the rates in the 2018 Report forecast.

Stantec also analyzed the change in median household incomes. Figure 1 provides the household income values for both the Austin Metropolitan Statistical Area ("MSA") and Texas for the years 2015 through 2018, as provided by the Census Bureau and other sources.

Reference: **Evaluation and confirmation of CTTS 2018 Traffic and Revenue Study Forecast**

Figure 1 – Median Household Income by Year



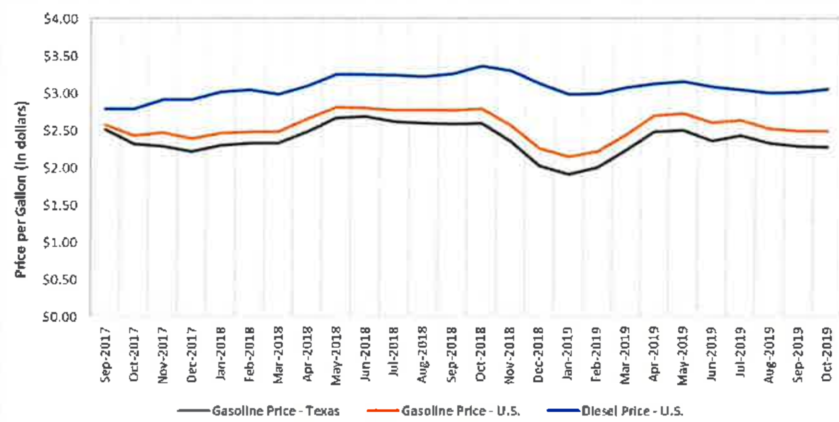
For the Austin MSA the median household incomes have increased over this period from $69,525 to $76,925, which is a compounded annual growth rate of 3.4%. For the state of Texas, the income values have grown from $56,473 to $59,785, which implies a compounded annual growth rate of 1.9%. While Texas at the statewide level shows incomes closely tracking inflation, consistent with our assumptions, the Austin region has income growth significantly higher than the assumed CPI growth. With incomes increasing faster than inflation, the toll costs are less burdensome to households, which further supports the existing 2018 Report forecast.

Fuel Prices

The cost of fuel is a determinant in the overall amount of travel. The cost of fuel over the last 2-year period has been relatively stable both nationally and within Texas. As shown in Figure 2 the price of gasoline both within Texas and nationally has been within a tight range around $2.50 a gallon. Diesel fuel has been slightly more expensive at approximately $3.00 per gallon. Despite several international incidents in the Middle East over the last several months, the availability and price of fuel has remained relatively stable. Given recent trends in US domestic oil production, it is anticipated that fuel costs will be stable and that adequate supplies will be available for the foreseeable future period, consistent with the assumptions used in the 2018 Report forecast.

Reference: **Evaluation and confirmation of CTTS 2018 Traffic and Revenue Study Forecast**

Figure 2 – Monthly Fuel Cost Trends



REGIONAL HIGHWAY NETWORK IMPROVEMENTS

The 2018 Report forecast assumed the completion of several major highway improvements in the Austin region, as listed in Table 5. These projects included the widening of SH 130 Segments 2 and 3 which provides an additional travel lane in each direction from SH 45 North to SH 71, a series of 'Flyover' Direct Connector ("DC") ramps linking the 290 East Toll Road to SH 130, and the Bergstrom Expressway which is a new toll road within the US 183 alignment between the 290 East Toll Road and SH 71 near the Bergstrom International Airport. These projects are under construction and are generally on schedule for completion as assumed in the 2018 Report forecast. The current status of projects in Table 5 reflects information available as of November 2019.

Table 5 – Regional Highway Improvement Project Status

Agency / Project Name	CTTS 2018 T&R Study Assumptions	Current Status
TxDOT SH 130 Widening Project *(Segments 2 and 3 Widening)*	Both segments were assumed to be completed in 2021.	Segment 2 anticipated completion in 2020. Segment 3 anticipated completion in 2020.
CTRMA 290/130 Flyovers Project *(SH 130 Direct Connector Ramps)*	All direct connectors were assumed to be completed in 2021.	Still on-schedule. Anticipated completion in 2021.
CTRMA 183 South Project *(Bergstrom Toll Road)*	Interim-Build completion year was 2019 and Full-Build completion year was 2020.	Still on-schedule. Interim-Build was completed in 2019. Full-Build anticipated completion in 2020.
CTRMA 183 North Project *(Tolled Managed Lanes)*	Was assumed to be completed in 2024	Anticipated completion in 2025.
TxDOT I-35 Capital Express Project Non-Tolled Managed Lanes *(HOV2+ lanes between SH 45SE and SH 45N)*	This project was not included in the CTTS 2018 T&R Study	Assumed completion in 2027.

The remaining two projects shown at the bottom of Table 5 are still in design and approval process. The US 183 N Express Lanes project was originally assumed to be completed in 2024 and is currently scheduled for completion in 2025. A planned financing for this project is anticipated in 2020.

The last project in the table is the I-35 Capital Express which is a planned improvement of 27.4 miles stretching from SH 45 N to SH 45 SE. The project has three planned sections; North, South and Central. The North Section extends from SH45 N to US 290 E. The Central Section continues southward from US 290 to SH 71. The South Section extends from SH 71 to SH 45 SE. This project would require a significant reconstruction of I-35 and current cost estimates as of October 27, 2019, including design and right-of-way costs, are approximately $7.5 billion. During the preparation of the 2018 Report forecast, the status of this project both from a design and operations perspective was uncertain and no committed funds were in place at that time. Therefore I-35 Capital Express was not included in the 2018 Report. On August 29, 2019, the Texas Transportation Commission (the "Commission") formally adopted the 2020 Unified Transportation Program ("UTP"), which included developing this project as a non-tolled managed lane facility eligible to HOV2+ vehicles. This would generally add 2 HOV2+ lanes in each direction, except for the 11.5-mile section north of US 290 to SH 45 North, which would add only 1 lane per direction. Currently, TxDOT assumes that the project will be constructed in stages with completion by the end of 2027. Construction funding for the North section ($400 million) and South section ($300 million) has been provided within the 2020 UTP along with partial funding of construction costs for the Central section ($560 million of $4.34 billion). The remaining costs for design and right-of-way acquisition are not yet funded. Overall, funding covering approximately 17% of the current cost estimates has been allocated for this facility.

While this facility as currently planned would only be eligible to HOV2+ vehicles, the added capacity along I-35 would relieve some congestion and thus provide competition for both the Loop 1 Toll Road and SH 130 elements of the CTTS. In order to quantify the impacts of this project, Stantec conducted sensitivity trials for several horizon years, assuming all sections of this facility were complete by the end of 2027. This analysis indicated that this project would reduce CTTS revenue by approximately 0.5% in 2030 and 2.1% in 2040. The estimates for modeled horizon year of 2040 reflects the final years of the debt service, as the CTTS debt matures in FY 2042. Considering this project is not fully funded, along with the updated socioeconomic data described above that is projected to generate an offsetting increase in revenue, the impacts of this project would not significantly alter the projected revenue stream in the existing 2018 Report forecast.

TOLL POLICY AND COLLECTION EFFICIENCY

Overall revenue is sensitive to the efficiency of collections for the Pay By Mail ("PBM") transactions. As the CTTS 2018 Report's transactions and revenue forecast was being prepared, new legislation was proposed that required changes in the methods used to assess charges for delinquent PBM transactions. These changes were codified in SB 312, which was passed by the 85th Texas Legislature and has been in effect since March 1, 2018. Shortly thereafter, in August of 2018, invoices for PBM transactions reflected the new collection policies with new administrative fees. The implications of these new requirements and the impacts to toll collections efficiency could not be quantified at the time the CTTS 2018 Report was completed. The legislation included a number of provisions related to invoicing and administrative fees for TxDOT toll roads. The most significant toll policy changes to the CTTS were related to the assessment and limitations of administrative fees, the requirement to allow electronic invoicing, and a restriction to only take an individual to court once per year for non-payment of tolls. Prior to the implementation of SB 312, administrative fees were transaction-based and the violation, collection and court fee per transaction could escalate from $5 to $25 to $100 per transaction if the individual did not pay and the transaction was filed in court. SB 312 changed

Reference: **Evaluation and confirmation of CTTS 2018 Traffic and Revenue Study Forecast**

the administrative fee structure from a transaction-based fee to an invoice-based fee and included a maximum administrative fee of $48 per twelve-month period per registered owner. Table 6 provides a summary of the collection efficiency statistics for FY 2016 and FY 2018. Note that FY 2016 was the most recent complete FY for collection statistics with appropriate aging that was available for the 2018 Report. Similarly, FY 2018 is the latest available year with transactions that have appropriate aging where the new collection policies from SB 312 were active. However, the first invoices with the new policies were sent in August 2018, so the impacts in FY 2018 were limited since FY 2019 began shortly thereafter in September 2018.

Table 6 – Collection Efficiency Summary

Transaction Statistic	Values by Fiscal Year		
	2016	2018	Percent Change
Total Transactions (000)	141,974	159,087	12.1%
Transponder Percentage	61.6%	62.8%	1.8%
Pay-BY-Mail Percentage	38.4%	37.2%	-3.1%
Pay By Mail Collection Percentage	51.1%	48.0%	-6.1%
Total Transaction Collection Percentage	80.8%	79.9%	-1.1%

The statistics in the table indicate that the transponder percentage has increased between these 2 FYs along with the corresponding reduction in the PBM percentage. There has been a decline in the collection efficiency for the PBM transactions and overall collections efficiency has also decreased slightly. Note that PBM transactions currently incur a 33% toll surcharge and on October 31, 2019, the Commission approved increasing the PBM surcharge amount to 50%, effective on January 1, 2020. Analysis performed by Stantec as part of evaluating the impacts of this increased surcharge indicated that total revenue would be increased annually by approximately 2.0%, thus offsetting the slight decline in collections efficiency. In general, the toll collection efficiency is in line with the assumptions in our 2018 Report forecast and the increase in the surcharge will increase overall revenue.

As a result of the discussion and analysis above, we affirm the future traffic and revenue estimates for the forecast period in the 2018 Report that was provided on August 29, 2018, including, specifically, Table 8.21 of Chapter 8 thereof, as supplemented by this 2020 Update Letter, and may be relied upon in the offering of the Bonds.

Regards,

STANTEC CONSULTING SERVICES INC.

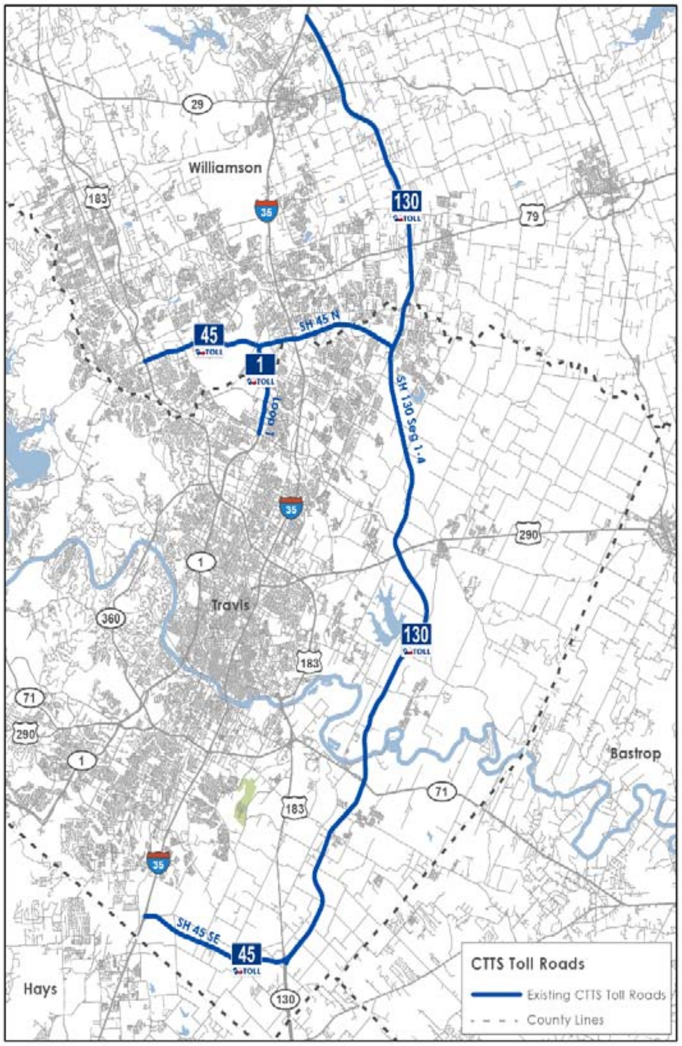
David Schellinger, PE
Principal
Phone: (610) 862-7704
David.schellinger@stantec.com

Attachment 1 - 2018 CTTS Traffic and Revenue Study.pdf
Attachment 2 -183A, 290E, SH 71 Express, SH 45SE, and 183S 2019 Traffic and Revenue Study

ATTACHMENT 1

CENTRAL TEXAS TURNPIKE SYSTEM 2018 TRAFFIC & REVENUE STUDY

Central Texas Turnpike System
2018 Traffic & Revenue Study



Prepared by:

Stantec Consulting Services Inc.

August 29, 2018

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

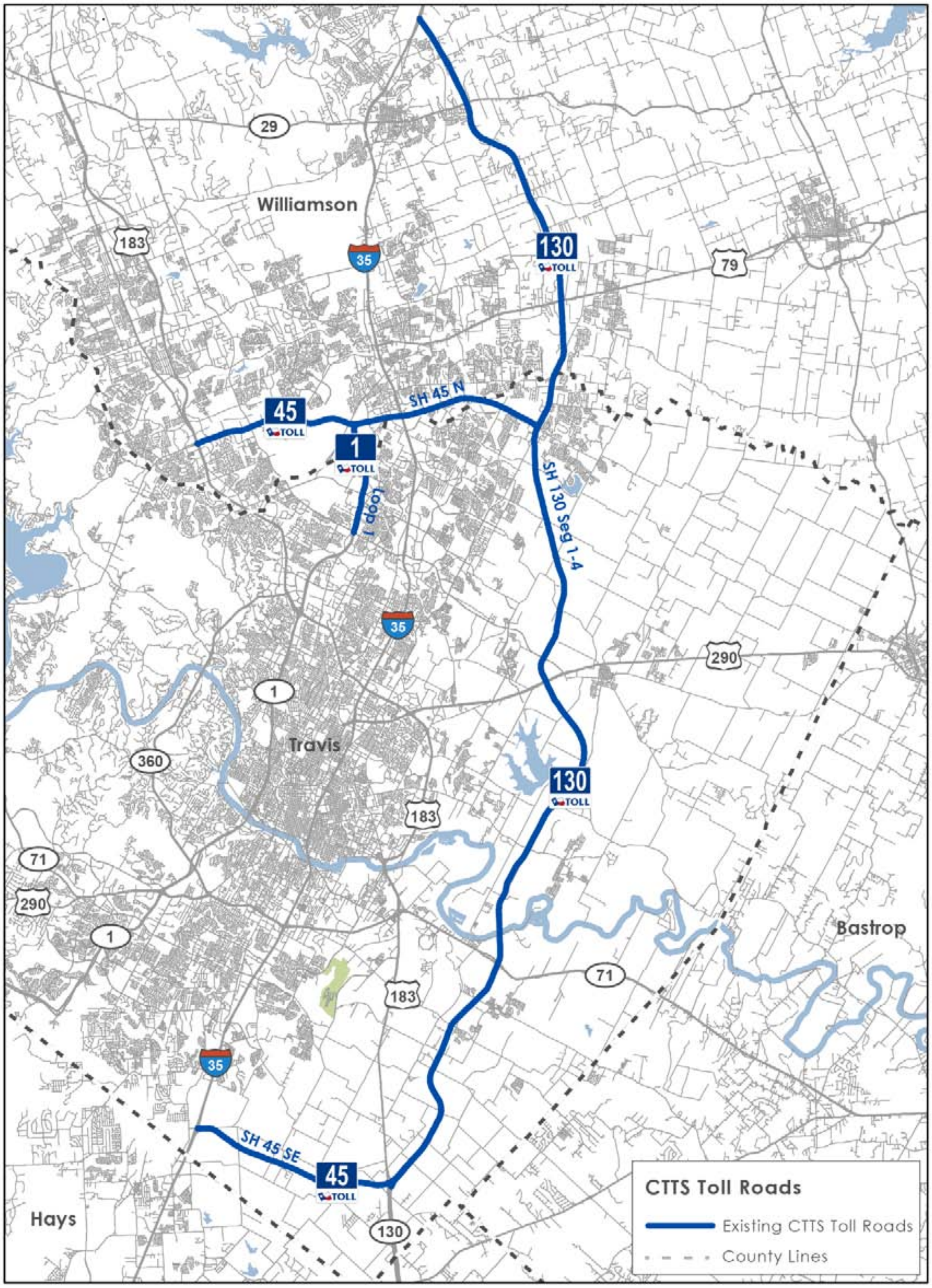
Stantec Consulting Services Inc. (Stantec) conducted this comprehensive Level 2+ Study to develop projections of traffic and toll revenues through 2042 for the Central Texas Turnpike System (CTTS) in the Austin area. The CTTS is owned by the Texas Transportation Commission, the governing body of the Texas Department of Transportation (TxDOT) and operated by TxDOT. There are other toll roads operating in the Austin region which are owned by the Central Texas Regional Mobility Authority (CTRMA). TxDOT is the only toll authority providing transponders in central Texas, branded as TxTag, and in that role TxDOT works collaboratively to provide a seamless system of toll facilities for serving local and regional travel in Austin.

Introduction (Chapter 1)

The CTTS is a 72.8-mile toll road system in the Austin area with four existing elements, as shown in Figure ES. 1:

- SH 45 N extends from US 183 east to SH 130 (12.8 miles);
- Loop 1 extends from SH 45 N south to Parmer Lane (4 miles);
- SH 130 extends from IH-35 in Georgetown south to US 183/SH 45 SE south of the Austin-Bergstrom International Airport (49 miles); and
- SH 45 SE extends from US 183/SH 130 west to IH-35 (7 miles).

Figure ES. 1 CTTS Toll Roads and Study Area



SH 45 N, Loop 1, and SH 130 opened in segments starting in 2006. SH 45 SE opened in May 2009 and became part of the CTTS in September 2012. The CTTS serves both commuter and through traffic in the Austin area.

On each of the CTTS elements, toll collection is by Electronic Toll Collection (ETC) and Pay by Mail (PBM), whereby the toll for the PBM transaction is billed after the trip, based on the identification of the vehicle owner via the vehicle's license plate.

Regional Transportation Network (Chapter 2)

Toll roads in the Austin area, in addition to the CTTS toll roads owned and operated by TxDOT, include 183A, 290E, MoPac North (MoPac N) Express Lanes, and SH 71 E Express Lanes owned and operated by Central Texas Regional Mobility Authority (CTRMA) and SH 130 Segments 5 & 6 south of Austin. SH 130 Segments 5 & 6 was financed, constructed, and is operated by SH 130 Concession Company, LLC (the SH 130 Concession), a private concessionaire, pursuant to a 52-year concession agreement executed in 2007. TxDOT provides a common transponder tag (TxTag) for all of these toll facilities and also provides back office services to the concessionaire.

The major non-tolled routes in the Austin area which act as either feeder or competing routes with the CTTS elements include: IH-35, US 183 (Bell Boulevard/Research Boulevard), FM 734 (Parmer Lane/Ronald Reagan Boulevard), County Route 30 (Gattis School Road), US 79 (Palm Valley Boulevard), FM 1431 (Whitestone Boulevard) and FM 973. In some cases, one of these roads can be a feeder to one CTTS element and a competing route for a different CTTS element.

The latest available plans for proposed toll road projects were obtained from CTRMA and TxDOT. For other roadway projects, Stantec used the Capital Area Metropolitan Planning Organization (CAMPO) 2040 Regional Transportation Plan (RTP), adopted May 11, 2015, along with amendments in September of 2015. Based on the degree of commitment (feasibility studies, funding, ROW status, and program inclusion) and status updates following the RTP update, judgments were made as to whether or not to include projects in the future highway networks. Assumptions regarding future key network improvements reflect the most current information available and were reviewed and approved by TxDOT at the time of this study.

Existing Travel Patterns (Chapter 3)

For the 2018 Study, traffic counts were recorded at over 230 locations along a series of screenlines and other key locations in the Austin region and on competing and feeder routes. Additional data sources included approximately 480 counts from recent CTRMA studies, about 150 counts along the IH-35 corridor, data collected during prior studies for the CTTS projects, as well as data obtained through the TxDOT traffic database. The TxDOT database contributed 2,922 Annual Average Daily Traffic (AADT) counts from the TxDOT 2015 count maps, 154 classification counts from TxDOT's truck count program, and 247 counts from the TxDOT Automatic Traffic Recorder (ATR) & Vehicle Classification (VC) count databases. Stantec also obtained transaction data for all toll roads that were in operation in 2017. While there was some overlap in the actual count locations, in total, traffic count data was available for 4,673 highway links for purposes of model calibration including 397 counts that were detailed vehicle classification counts used to quantify truck volumes.

Travel time and speed data were collected using both the Nokla's proprietary HERE travel time database and SigAlert's database for sections of the primary non-tolled routes that compete with the CTTS system, which include IH-35, the non-tolled section of Loop 1, US 183, FM 973, SH 360, Parmer Lane, US 79, and RM 620. HERE data for autos are obtained from a number of sources including mobile phones, vehicles, and portable navigation devices. For trucks, data are obtained from the American Transportation Research Institute leveraging embedded fleet systems.

Toll Collection (Chapter 4)

Since January 2013, TxDOT has operated the CTTS elements as cashless facilities, using only two methods of toll collection: ETC and PBM. Drivers using ETC automatically pay the toll with their TxTag or other tags covered under interoperability agreements, while drivers without a recognizable transponder have their license plate photographed at the pay points. TxDOT then mails a bill to the registered owner of the vehicle to collect payment.

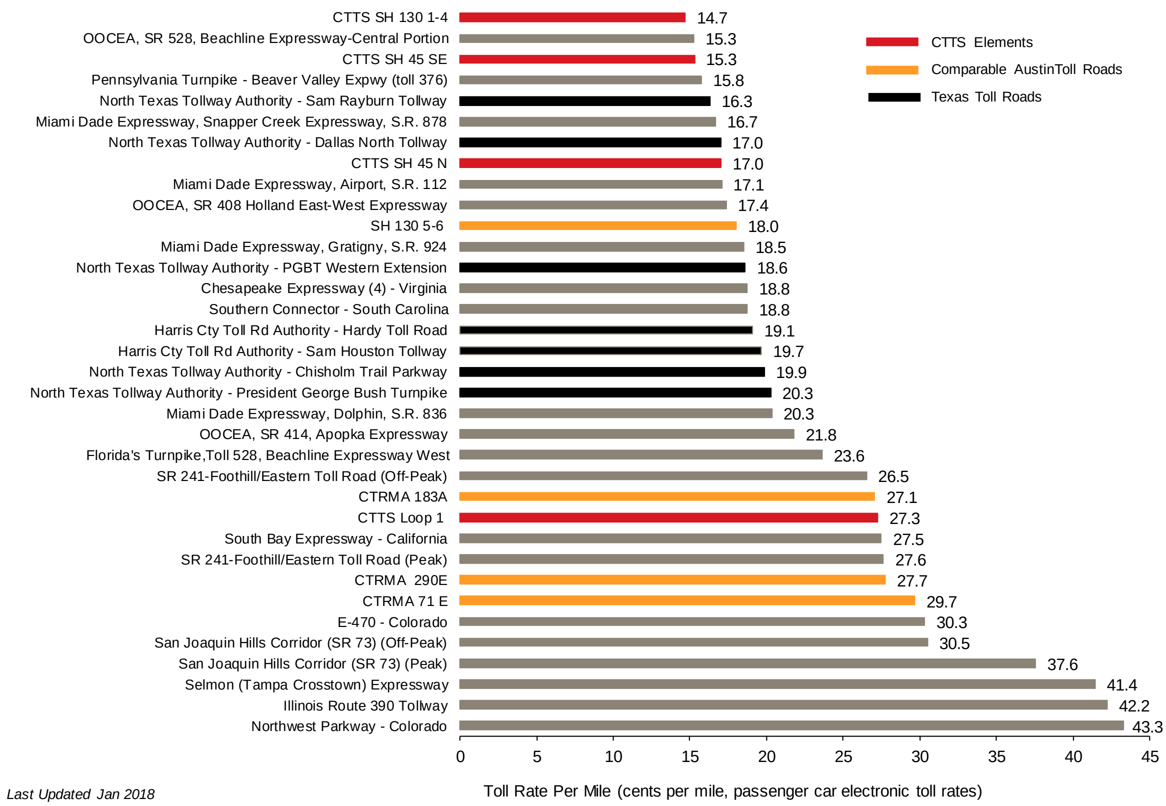
Current passenger ETC toll rates for a full-length trip on each of the CTTS elements is shown in Table ES. 1. There is a 33 percent surcharge on PBM transactions. Vehicles with more than two axles pay a higher toll based on the (n - 1) formula whereby the toll is equal to the passenger car toll times the vehicle's number of axles less one. For SH 130 and SH 45 SE, the maximum toll charge is limited to the rate for a 4-axle vehicle to encourage truck usage.

Table ES. 1 2018 Passenger Car Toll Rates on CTTS Elements

CTTS Element	Full Length Distance (miles)	Full Length Toll	Per Mile Rate
SH 45 N	12.8	$2.18	$0.17
Loop 1	4.0	$1.09	$0.27
SH 130 Segments 1 - 4	49.0	$7.20	$0.15
SH 45 SE	7.0	$1.07	$0.15

Passenger car ETC toll rates for the CTTS elements are compared to rates for similar toll roads in Figure ES. 2.

Figure ES. 2 Toll Rates per Mile on CTTS Elements and Comparable Toll Roads



The future toll rates for the CTTS facilities are based on the current toll rates in 2018, escalated annually at the annual inflation rate. This escalation policy was adopted by the Texas Transportation Commission in 2013 whereby tolls are escalated annually on January 1st based on the Toll Rate Escalation Percentage, as calculated on each Toll Escalation Determination Date. The Toll Rate Escalation Percentage is the Consumer Price Index – Urban (CPI-U) on October 1st, the Toll Escalation Determination Date of each year, based on the twelve-month period ending August 31st of the current year. Figure ES. 3 shows historical annual CPI-U growth trends and the forecasted trend used for the 2018 Study, while Table ES. 2 shows, in detail, the recent and projected annual CPI-U growth rates used for developing future toll rates for the 2018 Study. For the 27-year period, from 1990 to the present, the average annual growth rate is calculated to be 2.4 percent. For the 37-year period from 1980 to the present, the average annual growth rate is greater, at 3.0 percent.

Figure ES. 3 Annual Consumer Price Index - Historical and Projected

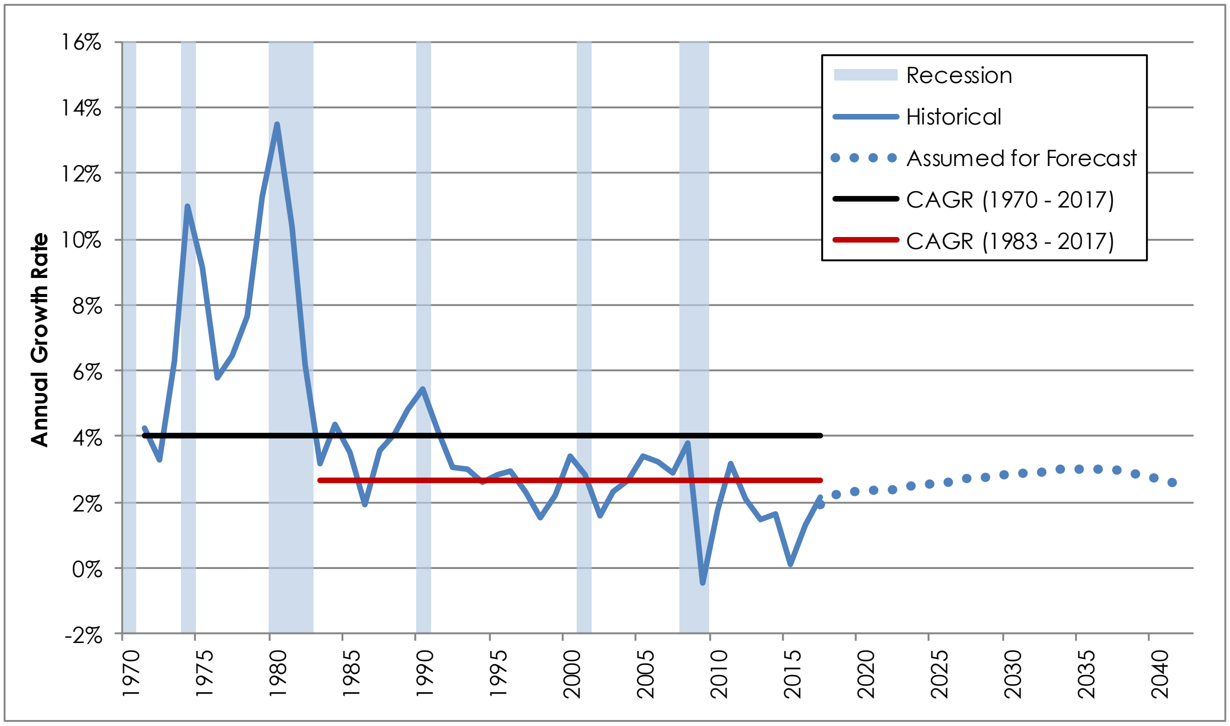


Table ES. 2 Annual Toll Escalation – Recent and Projected

Year	Annual Escalation
2014 (Aug 2012 - Aug 2013)	1.5%
2015 (Aug 2013 - Aug 2014)	1.7%
2016 (Aug 2014 - Aug 2015)	0.2%
2017 (Aug 2015 - Aug 2016)	1.1%
2018 (Aug 2016 - Aug 2017)	1.9%
2019	2.2%
2020	2.3%
2021	2.3%
2022	2.4%
2023	2.4%
2024	2.5%
2025	2.5%
2026	2.6%
2027	2.6%
2028	2.7%
2029	2.7%
2030	2.8%
2031	2.8%
2032	2.9%
2033	2.9%
2034	3.0%
2035	3.0%
2036	3.0%
2037	3.0%
2038	3.0%
2039	2.9%
2040	2.8%
2041	2.7%
2042	2.6%
2017 - 2042	2.7%

Socioeconomic Data (Chapter 6)

The study area included in the regional transportation model used for the CTTS traffic forecast includes six counties in the CAMPO model area (Travis, Williamson, Hayes, Bastrop, Caldwell, and Burnet) and five counties in the Alamo Area Metropolitan Planning Organization (AAMPO) model area (Bexar, Guadalupe, Comal, Wilson, and Kendall).

Starting with the estimated population for 2016, growth is anticipated to taper down from the annual average rate of 2.6 percent between 2010 and 2016 to 2.0 percent between 2016 and 2020. After that, it continues to slow down, reaching an annual growth rate of 1.8 percent between 2020 and 2030, and 1.7 percent between 2030 and 2040. The forecast of future population and average annual growth rate for the eleven counties are presented in Table ES. 3.

Table ES. 3 Population Forecast for the Study Area, 2016 – 2040

Region	County	Population Control Totals			
		2016	2020	2030	2040
CAMPO	Bastrop	81,710	88,109	105,696	125,672
	Burnet	45,182	46,683	51,639	55,412
	Caldwell	39,848	43,480	50,339	57,616
	Hays	205,074	231,129	295,569	399,673
	Travis	1,204,220	1,314,093	1,563,432	1,801,138
	Williamson	526,718	583,417	757,309	984,479
	Total	2,102,752	2,306,911	2,823,984	3,423,990
AAMPO	Bexar	1,928,696	2,045,074	2,351,596	2,678,541
	Comal	134,782	147,364	183,147	225,827
	Guadalupe	155,264	170,618	217,790	271,000
	Kendall	42,542	47,586	60,288	73,221
	Wilson	48,481	51,684	60,348	71,589
	Total	2,309,765	2,462,326	2,873,169	3,320,178
Study Area Total		**4,412,517**	**4,769,237**	**5,697,153**	**6,744,168**
Region	**County**	**Growth Rates**			
		2016	**2020**	**2030**	**2040**
CAMPO	Bastrop		1.9%	1.8%	1.7%
	Burnet		0.8%	1.0%	0.7%
	Caldwell		2.2%	1.5%	1.4%
	Hays		3.0%	2.5%	3.1%
	Travis		2.2%	1.8%	1.4%
	Williamson		2.6%	2.6%	2.7%
	Total		2.3%	2.0%	1.9%
AAMPO	Bexar		1.5%	1.4%	1.3%
	Comal		2.3%	2.2%	2.1%
	Guadalupe		2.4%	2.5%	2.2%
	Kendall		2.8%	2.4%	2.0%
	Wilson		1.6%	1.6%	1.7%
	Total		1.6%	1.6%	1.5%
Study Area Total			**2.0%**	**1.8%**	**1.7%**

Employment growth is anticipated to taper down from the rate of 2.1 percent between 2016 and 2020 to 1.8 percent between 2020 and 2030. After that, growth continues to slow down, reaching an annual growth rate of 1.6 percent between 2030 and 2040. The forecast of future employment for the eleven counties is presented in Table ES. 4.

Table ES. 4 Employment Forecast for the Study Area, 2016 – 2040

Region	County	Employment Control Totals			
		2016	2020	2030	2040
CAMPO	Bastrop	18,855	20,352	25,446	32,732
	Burnet	13,184	14,880	18,135	22,099
	Caldwell	8,579	9,285	11,517	14,561
	Hays	63,683	73,095	98,021	124,711
	Travis	704,707	762,715	883,257	991,374
	Williamson	156,834	176,480	225,362	281,677
	Total	965,842	1,056,807	1,261,738	1,467,154
AAMPO	Bexar	841,664	905,194	1,060,224	1,231,801
	Comal	53,131	60,328	82,300	107,492
	Guadalupe	38,631	43,281	56,050	69,948
	Kendall	14,873	16,980	22,744	29,053
	Wilson	7,636	8,342	10,154	12,028
	Total	955,935	1,034,125	1,231,472	1,450,322
Study Area Total		**1,921,777**	**2,090,932**	**2,493,210**	**2,917,476**

Region	County	Growth Rates			
		2016	2020	2030	2040
CAMPO	Bastrop		1.9%	2.3%	2.5%
	Burnet		3.1%	2.0%	2.0%
	Caldwell		2.0%	2.2%	2.4%
	Hays		3.5%	3.0%	2.4%
	Travis		2.0%	1.5%	1.2%
	Williamson		3.0%	2.5%	2.3%
	Total		2.3%	1.8%	1.5%
AAMPO	Bexar		1.8%	1.6%	1.5%
	Comal		3.2%	3.2%	2.7%
	Guadalupe		2.9%	2.6%	2.2%
	Kendall		3.4%	3.0%	2.5%
	Wilson		2.2%	2.0%	1.7%
	Total		2.0%	1.8%	1.6%
Study Area Total			**2.1%**	**1.8%**	**1.6%**

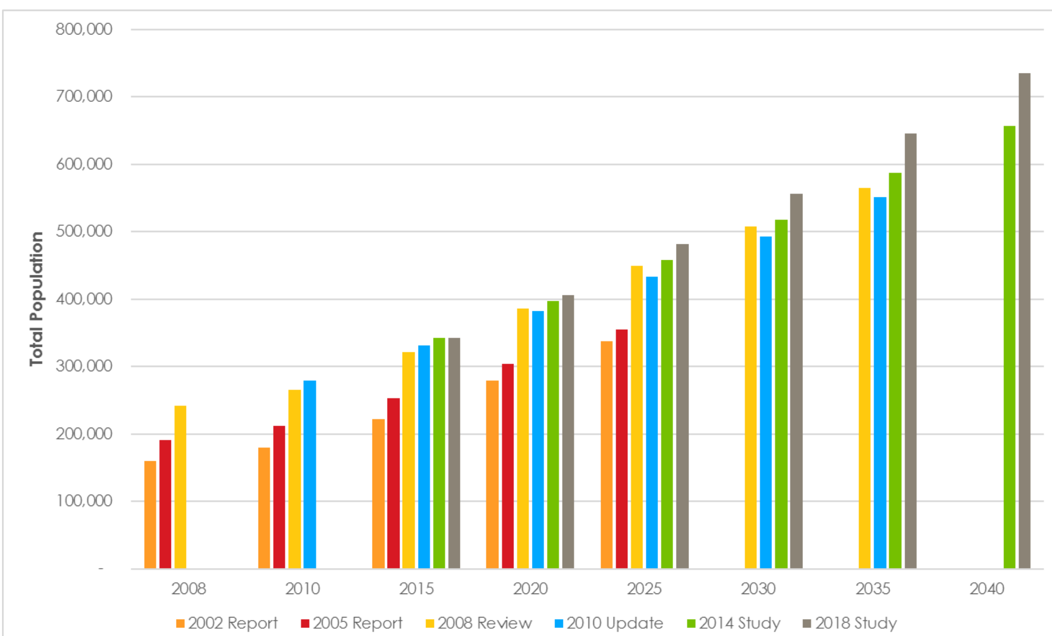
As part of Stantec's review of previous socioeconomic forecasts, Stantec compared the population and employment forecasts from all of the previous reports in the rapidly developing 'greenfield' corridor served by SH 130 Segments 1 – 4. In Table ES. 5 and Figure ES. 4, the population estimates developed for each of the CTTS forecasts prepared since the initial forecasts in 2002 are provided by horizon year. A comparison of "known" data to previous forecasts shows that the previous estimates have been consistently lower than the actual growth within the corridor. For example, the forecasted 2008 population was estimated to be 190,431 for the 2005 Report. In 2010, when the 2008 data was available for use, the population in 2008 was adjusted upwards to 241,651. The "known" data is shown in yellow in the tables below.

Table ES. 5 Comparison of SH 130 Corridor Population Forecasts

Traffic T & R Forecast Study	Population Forecast by Year							
	2008	2010	2015	2020	2025	2030	2035	2040
2002 Report	159,233	179,944	221,540	279,286	337,031			
2005 Report	190,431	212,047	252,764	303,911	355,057			
2008 Review	241,651	264,792	321,591	385,541	449,490	507,450	565,410	
2010 Update		278,729	331,458	382,188	432,918	492,174	551,430	
2014 Study			342,412	396,864	457,428	517,991	587,372	656,752
2018 Study			342,199	405,669	480,993	556,316	645,428	734,540

Source: (1) Michael Bomba, PhD.
Note: (1) Where inputs were not developed for the specific forecast year, values were interpolated using available estimates. The 2015 population estimates for the 2018 Study were interpolated using the 2010 estimates from the 2012 Update and the estimates for 2020 developed by Dr. Bomba for the 2018 Study.

Figure ES. 4 Comparison of SH 130 Corridor Population Forecasts



Source: (1) Michael Bomba, PhD.

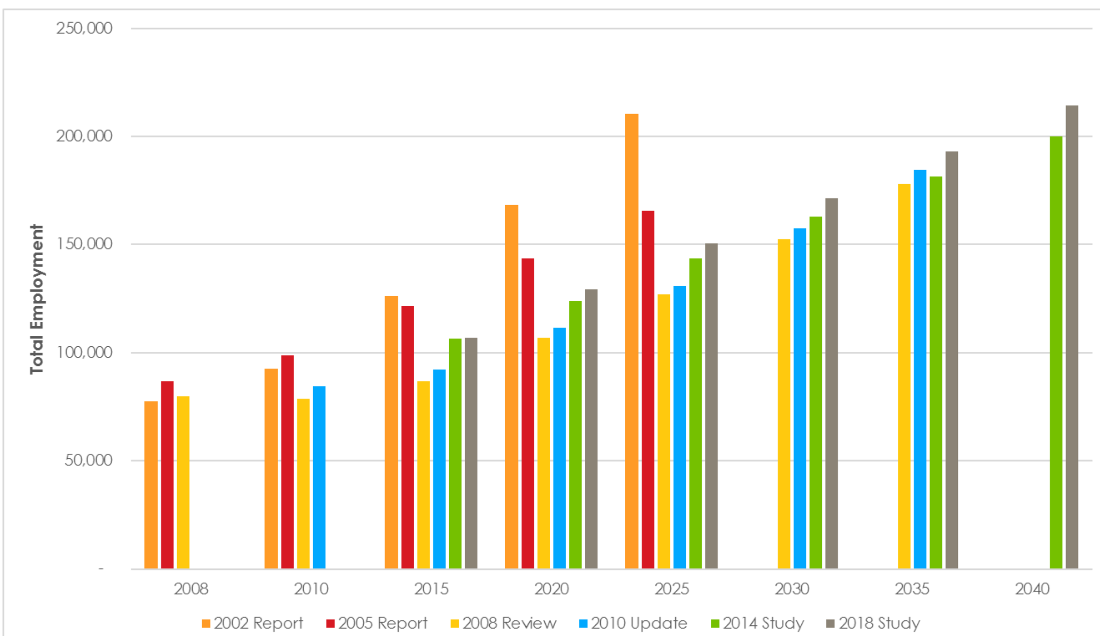
Similarly, the employment forecasts shown in Table ES. 6 and in Figure ES. 5 have been revised upwards for subsequent updates to better reflect known conditions, except for the 2008 forecasts produced in 2005 which did not account for the impending recession. The fact that forecasts are consistently adjusted upwards once data is known underscores the conservative approach taken in developing population and employment forecasts.

Table ES. 6 Comparison of SH 130 Corridor Employment Forecasts

Traffic T & R Forecast Study	Employment Forecast by Year							
	2008	2010	2015	2020	2025	2030	2035	2040
2002 Report	77,619	92,752	126,152	168,376	210,599			
2005 Report	86,866	98,637	121,764	143,660	165,555			
2008 Review	80,009	78,698	86,598	106,774	126,949	152,436	177,923	
2010 Update		84,295	92,317	111,578	130,839	157,685	184,531	
2014 Study			106,627	123,857	143,488	163,119	181,499	199,879
2018 Study			106,865	129,435	150,458	171,480	192,944	214,408

Source: (1) Michael Bomba, PhD.
Note: (1) Where inputs were not developed for the specific forecast year, values were interpolated using available estimates. The 2015 population estimates for the 2018 Study were interpolated using the 2010 estimates from the 2012 Update and the estimates for 2020 developed by Dr. Bomba for the 2018 Study.

Figure ES. 5 Comparison of SH 130 Corridor Employment Forecasts



Source: (1) Michael Bomba, PhD.

Model Validation and Refinement (Chapter 7)

In preparing estimates of traffic and toll revenue for the CTTS elements, it was necessary to update the travel demand modeling process to reflect growth in the Austin region and the expansion of the toll road system. The model development effort included combining the CAMPO and the Alamo Area Metropolitan Planning Organization (AAMPO) models to include the areas encompassed by both the Austin and San Antonio regions.

The new model utilized the existing toll diversion process as the basis for estimating tolled traffic. For the 2016 model calibration year, the temporary discounts for trucks using SH 130 and SH 45 SE were included since the discounts were applicable for eight months of that year. Several adjustments to the existing procedures were implemented as part of the development process. As an initial step, the value of time for each purpose was adjusted to reflect the increase in household incomes for the current calibration year 2016. Two payment methods are currently available, ETC and PBM. For the PBM market segment, the relevant surcharge was applied to the base toll at each pay point, and the positive bias term associated with transponder payments was also applied since these trips have the convenience of not needing to stop to pay tolls as they would if paying by cash. In addition, the diversion model was modified to permit toll choice to occur where time savings were minimal or negative based on the observed 2016 ETC transaction data. Under the revised model, toll choice is permitted for paths where the toll path is up to two minutes longer than the non-toll path. The diversion model transitions the estimated choice shares towards zero as the time savings approaches the minimum permitted value to ensure that the toll traffic and revenue stream has a lower contribution from trips with minimal or negative time savings. Lastly, since the individual toll facilities have now been in operation for more than five years, a general bias against toll roads by those trips that have the highest frequency or are work related are not incorporated into the choice evaluation. These travelers, due to their frequency of travel, are now assumed to elect to use or avoid the toll road based strictly on the time savings and associated costs.

Based on data collected from field studies, toll road records, and model output, the model was calibrated to ensure that the modeling process adequately replicates both the observed traffic volumes and the observed speeds by time-of-day for each of the project corridors. The calibration was also structured to replicate the observed traffic and transactions by payment method to the extent feasible for each toll road by pay point.

To develop toll elasticity curves for the 2018 Study, the transportation model was run using a range of toll values above and below the existing toll rates for the 2016 calibration year, as well as with the future toll rates and networks for the year 2030. These elasticity estimates for each year are a function of both the overall travel demand and network conditions, in terms of competing roadways and congestion that exist for both years. For this analysis, a number of alternative toll rates were expressed as multiples of the base tolls. The multiples range from 0.25 to 6.0 and reveal how traffic and revenues change at different toll levels. The results were plotted for the four facilities as shown in Figure ES. 6 through Figure ES. 9. The transactions and revenues for 2016 are shown in solid lines while the dashed lines represent the same values in 2030 horizon year.

Figure ES. 6 Toll Sensitivity – SH 130

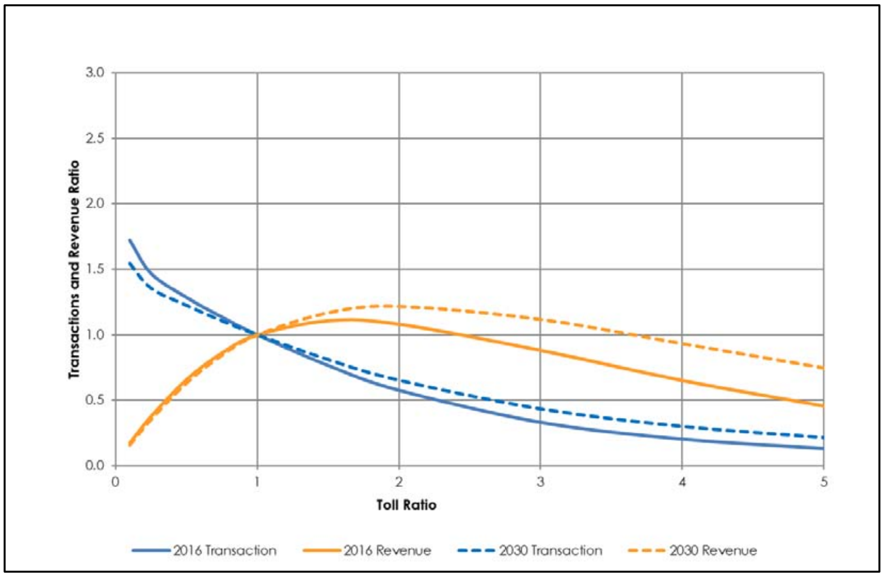


Figure ES. 7 Toll Sensitivity – SH 45 N

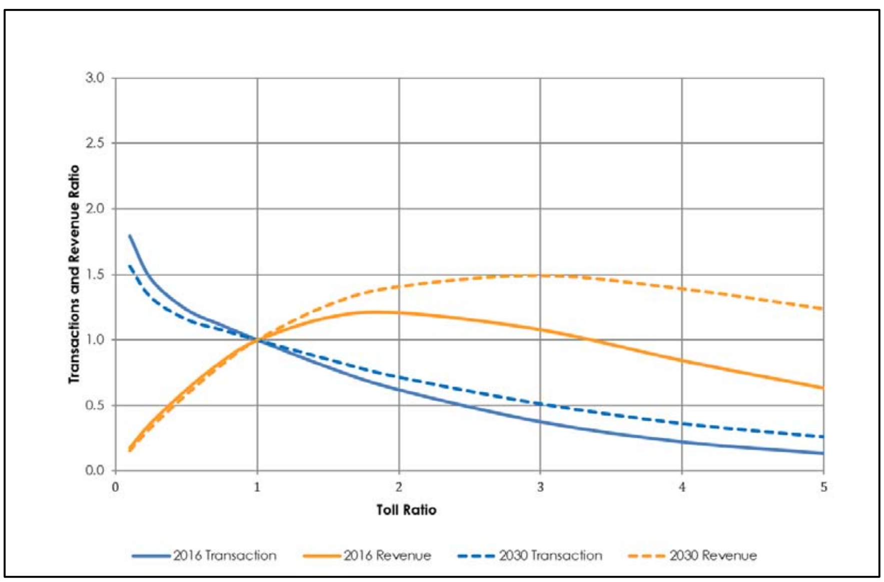


Figure ES. 8 Toll Sensitivity – Loop 1

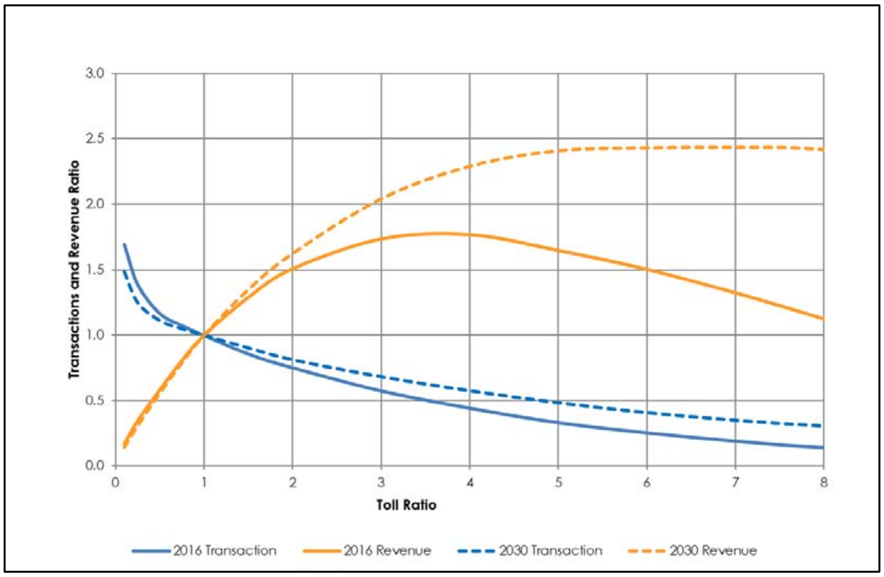
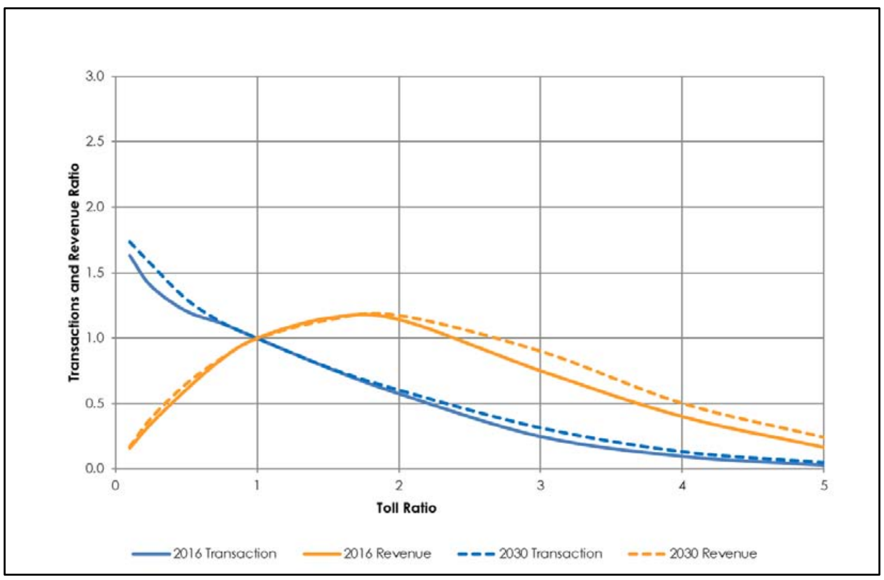


Figure ES. 9 Toll Sensitivity – SH 45 SE



For the future year 2030 conditions, the elasticity values decline indicating that the roadways become less elastic, primarily due to increasing congestion on the competing roadways as a result of on-going development and growth in traffic. Loop 1 has the lowest elasticity, while SH 130 has a much higher elasticity. The inelasticity of Loop 1 can be attributed primarily to the level of congestion on the competing roads, such as US 183, Parmer Lane, and IH-35.

Traffic & Revenue Forecasts (Chapter 8)

Stantec developed traffic and toll revenue forecasts for each of the CTTS elements based on the travel demand model which incorporated future year network assumptions and revised socioeconomic forecasts. The travel demand modeling process, including the application of the individual MPO models and the toll diversion model, were applied to selected horizon years (2018 to 2025, 2030, and 2040) to create annual traffic estimates from FY 2018 to FY 2042. Model years other than 2020, 2030, and 2040 were used to estimate the impact of key toll facility network improvements such as MoPac N Express Lanes (2017), SH 71 E (2017), 183S toll road (2019 to 2020), 290E Phase III (2021), SH 130 widening (2021), 183N Express Lanes (2024), and MoPac S Express Lanes (2024). Intermediate year estimates were developed via interpolation techniques and the years beyond 2040 were estimated via extrapolation.

Stantec reviewed the model-based forecasts, summarized the estimated traffic for each of the corridor screenlines and reviewed the detailed schematic diagrams for each horizon year. To prepare the final transactions and revenue streams by vehicle type and payment type, the model-based forecasts were reviewed and adjusted as necessary to account for any unacceptable model variation. Transaction and revenue streams prepared for each CTTS roadway include the key metrics related to payment type and vehicle type, along with both average weekday and annual estimates for total transactions and paying transactions using collection efficiency statistics provided by TxDOT. These statistics reflect TxDOT's current collection trends over the latest full fiscal year (FY 2016) for which adequate aging of PBM invoices is available.

The estimates of traffic and toll revenue presented in this report are based on certain tolling and traffic assumptions for each CTTS element derived from observed traffic conditions. Estimates also take into account future toll road assumptions, as well as local and national conditions. Assumptions for future years are based on discussions with TxDOT and local government agencies, as well as Stantec's professional judgment. The 2018 base case assumptions are summarized in Table ES. 7.

Table ES. 7 Summary of Tolling and Traffic Characteristic Assumptions: Base Case – 2018

Assumptions Related to	Element			
	SH 45 N	Loop 1	SH 130	SH 45 SE
Vehicle Type Distribution				
Autos	97.0%	98.3%	90.0%	89.4%
Trucks	3.0%	1.7%	10.0%	10.6%
Payment Type Distribution - Passenger Cars				
PBM	27.7%	27.8%	37.2%	31.6%
ETC	72.3%	72.2%	62.8%	68.4%
Payment Type Distribution - Trucks				
PBM	27.7%	31.0%	39.6%	47.6%
ETC	72.3%	69.0%	60.4%	52.4%
Toll Ratios				
Truck/Auto Ratio - ETC	2.86	2.79	2.72	2.75
Truck/Auto Ratio - PBM	2.98	3.00	2.79	2.80
PBM/ETC Toll Rate	1.33	1.33	1.33	1.33
Collection Rates				
PBM	51.1%	51.1%	51.1%	51.1%
ETC	99.3%	99.3%	99.3%	99.3%
Full Length Trip				
Distance	12.8	4.0	49.0	7.0
Rate per Mile	$0.17	$0.27	$0.15	$0.15
Toll Cost (ETC)	$2.18	$1.09	$7.20	$1.07
Annualization Factor	320	320	325	325

The forecasts prepared for the 2014 Study and the 2018 Study are shown in Table ES. 8. Average weekday paying transactions for FY 2016 and FY 2017 were 5 and 7 percent higher than forecasted in the 2014 Study. In the 2018 Study, the system-wide value of paying transactions is approximately 8 percent higher in the early years of the forecast due primarily to the higher level of recent growth in both SH 130 and SH 45 SE. The difference in paying transactions does decrease to about 2 percent by FY 2030 and generally is about 3 to 8 percent higher thereafter to 2042. In contrast, revenue is approximately 9 percent higher in FY 2018 and then gradually declines to equal the values from the 2014 Study by FY 2028. This gradual decline towards the prior forecast values is due to several changes in the forecasting assumptions from the conditions used in the prior forecasts.

These changes include:

- Lower toll escalation rates in the early forecast years;
- Lower share of ETC transactions;
- Lower annualization factors on both SH 130 and SH 45 SE; and
- Reduced share of SH 130 truck traffic.

Table ES. 8 Comparison of 2014 and 2018 CTTS Transaction and Toll Revenue Forecasts

Fiscal Year	Average Weekday Paying Transactions			Annual Toll Revenue (in $000s)		
	2014 Study	2018 Study	% Difference	2014 Study	2018 Study	% Difference
2008	*186,366*	*186,366*	0%	***$48,906***	***$48,906***	0%
2009	*204,433*	*204,433*	0%	***$58,914***	***$58,914***	0%
2010	*217,953*	*217,953*	0%	***$66,144***	***$66,144***	0%
2011	*228,905*	*228,905*	0%	***$68,822***	***$68,822***	0%
2012	*246,593*	*246,593*	0%	***$75,695***	***$75,695***	0%
2013	*266,619*	*266,619*	0%	***$103,985***	***$103,985***	0%
2014	*278,516*	*278,516*	0%	***$125,163***	***$125,163***	0%
2015	320,983	*323,450*	1%	$140,665	***$151,630***	8%
2016	339,503	*357,930*	5%	$152,900	***$170,657***	12%
2017	356,732	*383,178*	7%	$165,020	***$184,818***	12%
2018	373,638	403,177	8%	$177,330	$192,455	9%
2019	389,942	422,226	8%	$189,621	$207,500	9%
2020	405,435	432,317	7%	$201,669	$216,186	7%
2021	419,040	450,649	8%	$213,939	$231,650	8%
2022	431,900	466,328	8%	$226,707	$245,561	8%
2023	444,839	479,314	8%	$240,119	$258,008	7%
2024	457,859	486,675	6%	$254,159	$268,295	6%
2025	470,965	494,437	5%	$268,800	$278,222	4%
2026	484,160	505,009	4%	$284,637	$290,828	2%
2027	497,445	516,054	4%	$301,477	$304,835	1%
2028	510,823	527,100	3%	$319,104	$319,387	0%
2029	524,295	538,144	3%	$337,549	$334,501	-1%
2030	537,863	549,189	2%	$356,850	$350,198	-2%
2031	549,931	563,585	2%	$376,822	$369,246	-2%
2032	561,271	579,655	3%	$397,611	$390,429	-2%
2033	572,670	595,725	4%	$419,370	$412,471	-2%
2034	584,130	611,796	5%	$442,139	$435,403	-2%
2035	595,651	627,866	5%	$465,962	$459,255	-1%
2036	607,234	643,937	6%	$490,885	$484,064	-1%
2037	618,881	660,007	7%	$516,956	$509,858	-1%
2038	630,592	676,079	7%	$544,224	$536,675	-1%
2039	642,369	692,149	8%	$572,739	$564,553	-1%
2040	654,212	708,219	8%	$602,557	$593,526	-1%
2041	665,668	721,859	8%	$632,448	$622,777	-2%
2042	676,943	734,300	8%	$662,988	$652,787	-2%
FY 18-42 Total	13,307,756	14,085,796	6%	$9,496,662	$9,528,670	0%

Notes: (1) SH 45 SE opened in May 2009 but did not become part of the CTTS until September 2012; therefore, it is not included in CTTS totals until FY 2013.

(2) Revenue includes PBM surcharge (33 percent of ETC toll).

(3) ***Actual Annual Revenue (may not equal the sum of values shown for each facility due to rounding)***

Sensitivity Analysis (Chapter 9)

In addition to the assumptions used for the base case, a broad range of alternative assumptions could be used in preparing the traffic and revenue for the CTTS elements. For the 2018 Study, three sensitivity trials were run to assess the impacts of the following changes to the forecasts:

- Reduced CPI growth: 0.25 percent lower than the base case;
- Reduced trip growth: 20 percent less than the base case; and
- Reduced Value of Time: 10 percent less than the base case.

Average weekday toll revenues for each sensitivity trial and the corresponding percent change in toll revenue when compared to the base case are provided in Table ES. 9.

Table ES. 9 Average Weekday Revenue Comparison for the Sensitivity Trials

Model Year	Average Weekday Toll Revenue						
	Base Revenue	Sensitivity 1 (Reduced CPI)		Sensitivity 2 (Reduced Growth)		Sensitivity 3 (Reduced VOT)	
		Revenue	% Difference	Revenue	% Difference	Revenue	% Difference
2020	$696,817	$691,770	-0.7%	$675,476	-3.1%	$663,120	-4.8%
2030	$1,144,145	$1,107,979	-3.2%	$1,051,352	-8.1%	$1,098,072	-4.0%
2040	$2,009,355	$1,900,854	-5.4%	$1,803,465	-10.2%	$1,957,864	-2.6%

1.0 INTRODUCTION

Acting as Traffic Consultant to the Texas Transportation Commission under the Indenture of Trust dated July 15, 2002, as amended and supplemented, Stantec Consulting Services Inc. (Stantec) prepared this comprehensive Level 2+ Study. The study includes projections of traffic and toll revenues through 2042 for the Central Texas Turnpike System (CTTS) in the Austin area. The CTTS is owned by the Texas Transportation Commission, which is the governing body of the Texas Department of Transportation (TxDOT) and is operated by TxDOT. The CTTS comprises four tolled elements - SH 45 N, Loop 1, SH 130 (Segments 1 – 4), and SH 45 SE.

1.1 CENTRAL TEXAS TURNPIKE SYSTEM

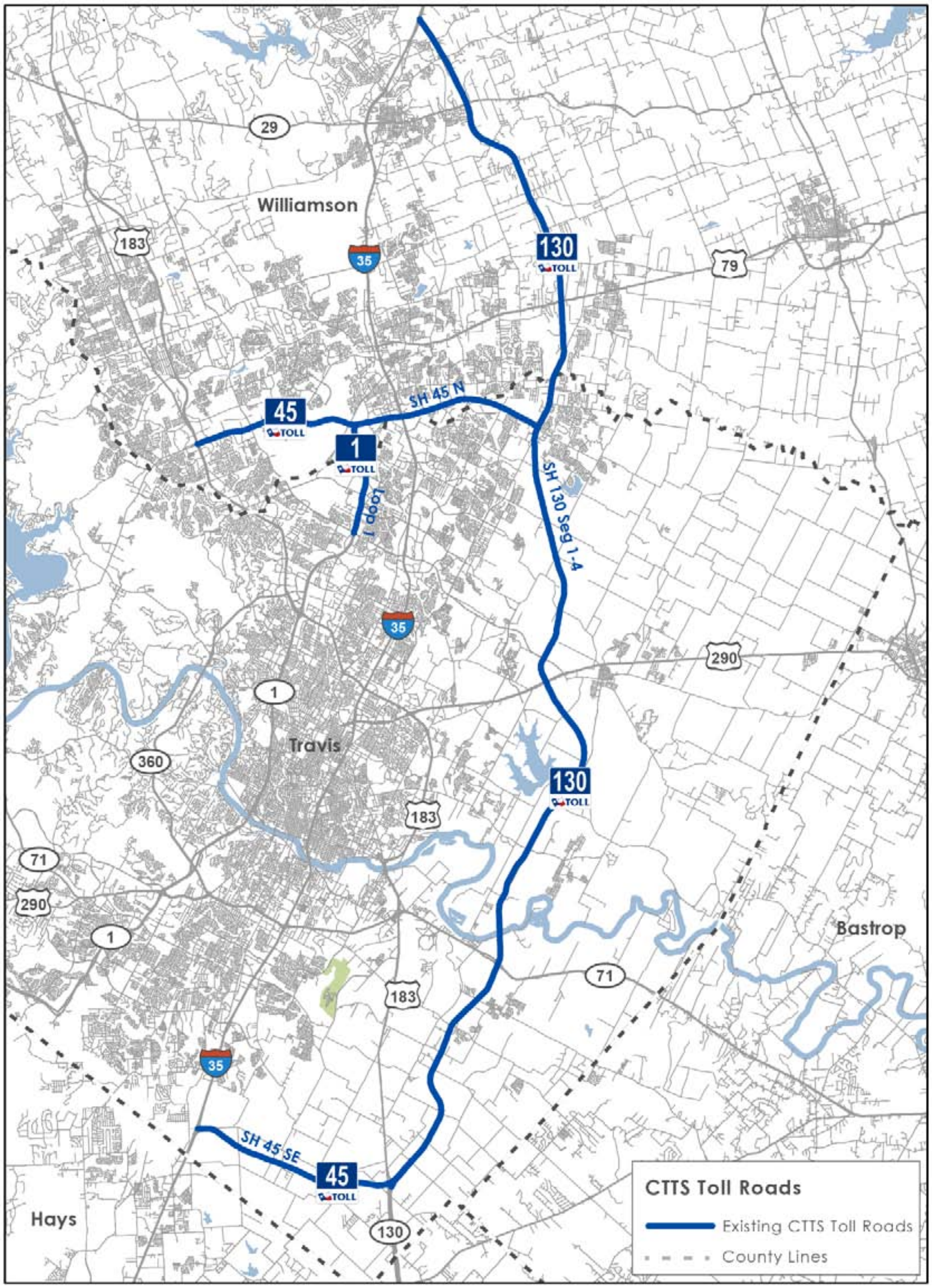
The CTTS is a 72.8-mile turnpike system in the Austin area with four existing elements:

- SH 45 N extends from US 183 east to SH 130 (12.8 miles);
- Loop 1 extends from SH 45 N south to Parmer Lane (4 miles);
- SH 130 (Segments 1 - 4) extends from IH-35 in Georgetown south to US 183/SH 45 SE south of the Austin-Bergstrom International Airport (49 miles); and
- SH 45 SE extends from US 183/SH 130 west to IH-35 (7 miles).

SH 45 N, Loop 1, and SH 130 opened in segments starting in late 2006 and tolling commenced in January of 2007. SH 45 SE opened in May 2009 and became part of the CTTS in September 2012. The CTTS serves both commuter and through traffic in the Austin area. The CTTS elements in the Austin area are shown in Figure 1.1.

On each of the CTTS elements, toll collection is by Electronic Toll Collection (ETC) and Pay by Mail (PBM), whereby the patron is billed after the trip based on the identification of the vehicle's license plate. Cash collection was an option on SH 45 N, Loop 1, and SH 130 until being discontinued on January 1, 2013.

Figure 1.1 CTTS Toll Roads and Study Area



1.2 STUDY PURPOSE, METHODOLOGY, AND HISTORY

The purpose of this study is to provide an update to the traffic and revenue forecasts prepared previously in 2014 in connection with a prior bond financing of the CTTS. The projections presented in this report have taken into account: historical traffic and toll revenue performance; toll structure; economic, population, employment and other demographic forecasts in the Austin/San Antonio metropolitan areas; traffic capacities of the roadway network in the region; and current and programmed construction activities on the regional toll roads (CTTS, Central Texas Regional Mobility Authority (CTRMA) and SH 130 Concession Company LLC (the SH 130 Concession)) and the non-toll highway network in the region.

The transportation model used for the forecasting process was developed by Stantec for the CTTS based on the model developed by the Capital Area Metropolitan Planning Organization (CAMPO) and supplemented by an extension to the south to include the San Antonio region. The modeled area within the San Antonio region was obtained from the regional model prepared by the Alamo Area Metropolitan Planning Organization (AAMPO).

Previous studies for the CTTS prepared by Stantec staff date back to 2002 for the original financing of the system. At that time, there were no toll roads in Austin. After CTTS opened to traffic and was expanded, updated studies were prepared in 2005, 2008, 2010, 2012, and most recently, in 2014. These studies, including the current study, and the terms used to reference them in this report are shown in Table 1.1.

Table 1.1 CTTS Traffic & Revenue Studies

Date	Report Title	Reference Used Herein[1]
July 22, 2002	Central Texas Turnpike System 2002 Project Traffic and Revenue Forecast	2002 Report
December 8, 2005	Central Texas Turnpike System 2002 Project Traffic and Revenue Forecast, 2005 Update	2005 Report
February 11, 2009	Central Texas Turnpike System 2008 Project Review	2008 Review
December 20, 2010	Central Texas Turnpike System 2010 Project Traffic and Revenue Forecast	2010 Update
September 20, 2012	Central Texas Turnpike System 2012 Project Traffic and Revenue Forecast	2012 Update
December 30, 2014	Central Texas Turnpike System 2014 Traffic and Revenue Study	2014 Study
February 28, 2018	Central Texas Turnpike System 2018 Traffic and Revenue Study	2018 Study

Notes: (1) The 2002 Report, 2005 Report, 2008 Review, 2010 Update, 2012 Update, and 2014 Study are all collectively referred to as "the previous reports".

1.3 ORGANIZATION OF THE REPORT

The remainder of this report is organized in the following chapters:

Chapter 2 – Regional Transportation Network. This chapter describes the CTTS, other toll roads, and the non-toll highway system in the Austin area and proposed key network improvements.

Chapter 3 – Existing Travel Patterns. This chapter presents a summary of traffic counts, travel time data and other information used in developing the forecasts and discusses travel patterns in the area.

Chapter 4 – Toll Collection. This chapter presents the methods of toll collection and toll rates on the CTTS system and future toll policy.

Chapter 5 – Historical CTTS Toll Transactions and Revenue. This chapter presents the history of toll road traffic performance in terms of number and type of transactions, payment type, and daily and seasonal traffic activity. This chapter also presents historical toll revenues for the CTTS elements.

Chapter 6 – Socioeconomic Review. This chapter describes historical trends as well as existing and forecasted socioeconomic conditions, and the assumptions used to assess future development in the CTTS study area.

Chapter 7 – Model Validation and Refinement. This chapter explains the methodology used to produce travel demand forecasts for the CTTS study area, based upon Stantec's integrated model developed from the CAMPO and AAMPO models. The toll diversion model developed by Stantec staff and the results of the model validation are also described.

Chapter 8 – Traffic and Revenue Forecasts. This chapter presents updates to the 35-year forecasts of traffic and revenue for each of the CTTS elements and summarizes the assumptions and conditions used in preparing the forecasts. Also included is an allocation process for preparing monthly forecasts of transactions and toll revenue.

Chapter 9 – Sensitivities. This chapter shows the changes in the traffic and revenue forecast using different underlying parameters, such as value of time or roadway development timing.

1.4 CONSULTANT TEAM

Stantec, founded in 1954, provides professional consulting services in planning, engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, project management, and project economics for infrastructure and facilities projects, including studies within the Austin area for more than 15 years. Stantec supports public and private sector clients in a diverse range of markets, at every stage, from initial concept and financial feasibility to project completion and beyond. Stantec services are offered through approximately 22,000 employees operating out of more than 400 locations on 6 continents. Stantec trades on the New York Stock Exchange and on the Toronto Stock Exchange under the symbol STN.

Stantec has prepared traffic and revenue financing studies that have been the basis for the sale of more than $42 billion in revenue bonds. Drawing upon a depth in transportation planning and over 35 years of experience in the toll facility industry, Stantec staff advises clients on establishing screening criteria for potential toll facility corridors, completing investment-grade traffic and revenue analyses, developing financial plans and appropriate toll structures, determining the extent to which a proposed toll facility could provide financing for itself and/or other highway projects, maximizing revenue potential, planning and designing for the future, and solving operational problems.

Stantec led the team for the 2018 Study and was responsible for project management, coordination, model development and forecasting traffic and revenues for the CTTS. Stantec staff prepared the current report as well as all prior studies and updates.

Three firms assisted in the preparation of this study. These firms were involved in previous traffic and revenue studies for CTTS. They are:

- Michael S. Bomba., PhD., (Dr. Bomba) provided the socioeconomic review and employment and population projections used in the traffic model. Income projections for the future year were also provided.
- Ally General Solutions, LLC (AGS) provided traffic counts for non-toll locations within the study area.
- Alliance Transportation Group (ATG) provided local engineering support in identifying regional highway network improvements.

2.0 REGIONAL TRANSPORTATION NETWORK

The regional transportation network in the Austin area consists of tolled and non-tolled roads. Toll roads in the Austin area, in addition to the CTTS toll roads owned and operated by TxDOT, include 183A, 290E, MoPac North (MoPac N) Express Lanes, and SH 71 E Express Lanes owned and operated by Central Texas Regional Mobility Authority (CTRMA) and SH 130 Segments 5 & 6 south of Austin. SH 130 Segments 5 & 6 was financed, constructed, and is operated by SH 130 Concession Company, LLC (the SH 130 Concession), a private concessionaire, pursuant to a 52-year concession agreement executed in 2007. TxDOT provides a common transponder tag (TxTag) for all of these toll facilities and also provides back office services to the concessionaire. The existing toll road network in the Austin area is shown in Figure 2.1. This chapter includes a description of the existing network and the proposed key network improvements.

2.1 CTTS

The CTTS is a 72.8-mile toll road system in the Austin metropolitan area comprised of four elements: SH 45 N, Loop 1, SH 130 (Segments 1 – 4) and SH 45 SE. SH 130 opened in phases between 2006 and 2008; Loop 1 and SH 45 N East, the portion east of Loop 1, opened in 2006 and SH 45 N West, the portion west of Loop 1, opened in 2007. SH 45 SE opened in May 2009 and became part of the CTTS in September 2012. Since the CTTS elements were the first toll roads in the Austin area, the roads opened with reduced rate tolls or toll-free. Tolls were gradually introduced as the public became more familiar with the advantages of using the toll facilities. Toll payment on all CTTS elements is by ETC or PBM; there are no operational cash toll booths. A chronology of major events for the CTTS elements is shown in Table 2.1.

SH 45 N is an east-west route located in southern Williamson and northern Travis counties, northeast of Austin. The 12.8-mile toll road extends from US 183 eastward to SH 130. SH 45 N connects with the north/south routes SH 130, IH-35, Loop 1, and US 183/183A. The western section serves commuter traffic from central Austin to the northern and western suburbs as well as several shopping areas and through traffic. The eastern section serves the northeast suburbs of Austin and through traffic.

The eastern portion of SH 45 N was opened to traffic in November 2006 and the remaining western portion was completed and opened in spring 2007. The O'Connor Drive interchange opened to traffic on August 21, 2014. The road has three main lanes plus three frontage road lanes in each direction, except for one section which has two main lanes in each direction from SH 130 to west of Heatherwilde Boulevard in the westbound direction and from west of A.W. Grimes Boulevard to SH 130 in the eastbound direction. Frontage roads are parallel to the mainline both east and west of the Loop 1 interchange; however, they are not continuous through the Loop 1 interchange and at the east end of SH 45 N. Direct access and egress is provided for certain movements to and from local streets, while others require frontage road connections. There are two mainline pay points and gantries on ramps serving seven interchanges on SH 45 N.

Figure 2.1 Existing CTTS and Other Toll Roads in Study Area

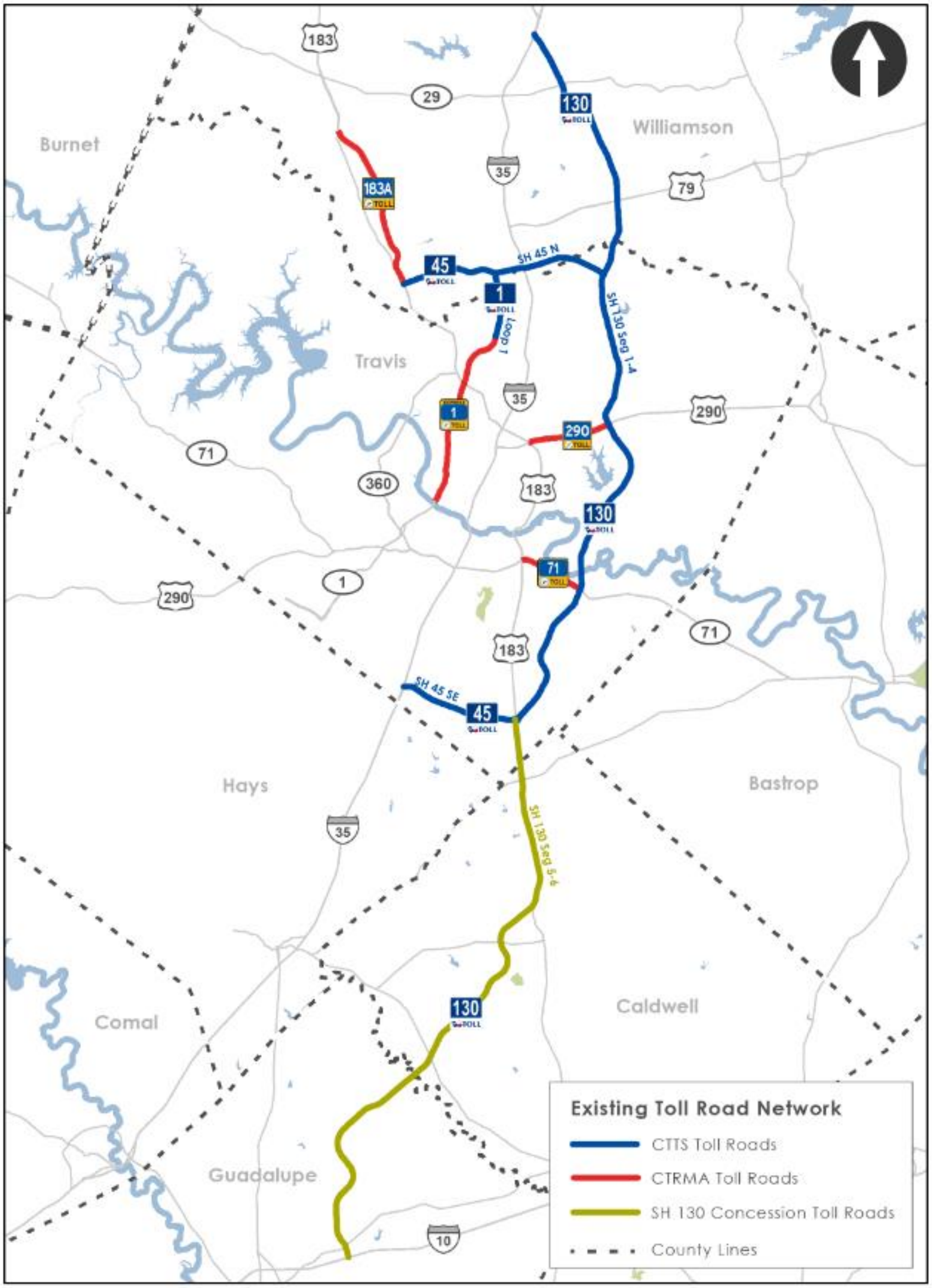


Table 2.1 Chronology of CTTS Events

Date	Event
October 2006	Loop 1, SH 45 N East and SH 130 Segment 2 open toll free
December 2006	SH 130 Segment 1 opens toll free
January 2007	Begin tolling - cash tolls full rate and ETC toll free for all open toll facilities
January 2007	PBM pilot program established
February 2007	Cash tolls full rate and ETC half rate for all open facilities
March 2007	Full rate tolls for all open facilities
August 2007	SH 45 N West opens with full rate tolls
September 2007	SH 130 Segment 3 opens with full rate tolls
April 2008	SH 130 Segment 4 opens with full rate tolls
September 2008	SH 45 N Heatherwilde Boulevard ramps open with full rate tolls
May 2009	SH 45 SE opens as TxDOT toll road; ETC toll free, PBM full rate, no cash tolls (shape-based rates)
June 2009	SH 45 SE ETC half rate and PBM full rate
July 2009	SH 45 SE full rate tolls
March 2011	Truck tolls discounted (capped at 4-Axle rate) on SH 130 & SH 45 SE
2011	Signalization improvements on SH 45 N frontage road at A.W. Grimes Boulevard
Sept/Oct 2011	Speed limits changed from 70 mph to 75 mph on SH 45 N; from 65/70 to 75 mph on IH-35 north of Georgetown
December 2011	Truck tolls discounted (pay auto rate) on SH 130 & SH 45 SE - 1 Month Pilot Program
January 2012	SH 130 Cameron Road ramps open with full rate tolls (shape based-rates)
March 2012	Speed limits changed from 75 mph to 80 mph on SH 130 Segments 1 - 4 and SH 45 SE
August 2012	New toll escalation policy adopted
August 2012	System-wide cashless operations adopted
August 2012	January 2013 toll increases adopted
September 2012	SH 45 SE becomes part of CTTS
September 2012	PBM adopted as a permanent payment method
December 2012	Introduction of toll free program for Disabled Veterans and Medal of Honor and Purple Heart recipients paid by the State Highway Fund (SHF)
January 2013	System-wide toll increases are implemented along with cashless operations
February 2013	Truck tolls discounted (pay auto rate) on SH 130 & SH 45 SE - 1 Month Pilot Program
April - December 2013	Truck tolls discounted (pay auto rate) on SH 130 & SH 45 SE - Extended Pilot Program
April 2013	Shape-based toll rate replaced by axle-based toll rates on SH 45 SE and SH 130 Cameron Road ramps
January 2014	First toll increase based on the CPI-U following adoption of annual toll escalation policy
August 2014	Opening of SH 45 N/O'Connor Drive ramps
April - October 2016	Truck tolls discounted (pay 3-axle rate) on SH 130 & SH 45 SE - Pilot Program Phase I
November 2016 - August 2017	Truck tolls discounted (pay 2-axle rate for ETC owners) on SH 130 & SH 45 SE - Pilot Program Phase II

Loop 1 is a north-south route extending some 23 miles from SH 45N in Williamson County to SH 45 in south west Austin. The route provides a western bypass around Austin for commuter and other traffic between the northern and western suburbs and downtown Austin. The 4-mile tolled section of Loop 1 that is part of the CTTS extends southward from a connection with SH 45 N to the intersection with Parmer Lane and opened to traffic in November 2006. It serves as a connector between SH 45 N and the MoPac N Express Lanes and the non-tolled Loop 1 general purpose lanes to the south. The Loop 1 Toll Road has three lanes in each direction on the southern end and four lanes in each direction on the northern end. Access and egress is via parallel frontage roads south of Shoreline Drive. There are pay points at one mainline location and on ramps serving two interchanges.

SH 130 Segments 1 – 4 extend from IH-35 in Georgetown in Williamson County on the north side of Austin to US 183/SH 45 SE south of Austin-Bergstrom International Airport in Travis County. On its southern end, the 49-mile toll road connects with SH 45 SE, which provides access to IH-35. SH 130 also connects with SH 130 Segments 5 & 6, a toll road operated by the SH 130 Concession. The full 90-mile SH 130 toll route provides an alternate route to IH-35 and a bypass of the city of Austin for through trips. The route also serves local trips in the corridor east of Austin. There are pay points at four mainline locations and on ramps at 16 interchanges on SH 130 Segments 1 - 4.

SH 130 opened in phases between November 2006 and May 2008. The Cameron Road interchange opened to traffic in January 2012. Discontinuous frontage roads parallel the four-lane toll road.

SH 45 SE serves as a 7-mile connector for traffic between the southern end of SH 130 Segment 4 and IH-35 in Travis County south of Austin. The four-lane toll road has one mainline pay point near its western terminus and two sets of ramps with pay points at the N. Turnersville Road and FM 1625 interchanges. SH 45 SE was constructed using state highway funds and opened in May 2009 and operated by TxDOT independently of the CTTS until September 2012 when it became part of CTTS.

2.2 OTHER TOLL ROADS IN AUSTIN AREA

Other toll roads in the Austin area include 183A, 290E, MoPac N Express Lanes, and SH 71 E Express Lanes owned and operated by CTRMA and SH 130 Segments 5 & 6 financed, constructed, and operated by a concessionaire pursuant to a 52-year concession agreement executed in March 2007.

183A is a six-lane, controlled access highway approximately 11.6 miles long that functions as a central arterial through Leander and Cedar Park in Williamson County. 183A interacts with CTTS through its interchange at the western terminus of SH 45 N. The road is primarily a commuter route, but it also provides access to and egress from the northwest Austin shopping areas.

Phase I of 183A opened to traffic in March 2007 providing mainline and frontage road service from SH 45 N to just north of FM 1431. The toll road was opened with reduced rate tolls and full tolling began in July 2007. Phase II opened in April 2012 and extended the mainline toll lanes from FM 1431 to CR 276, approximately 5.1 miles. In December 2008, cash tolls were eliminated; all toll payments are either by ETC or PBM.

290E is a six-lane, controlled access highway approximately 6.2 miles in length with associated ramps, frontage roads and toll collection facilities located in the City of Austin, Travis County. Tolling is at two mainline locations and at four interchanges. Currently two phases of the final project configuration have been completed:

- *290E Phase I/Phase II Interim Milestone:* The 290E Phase I project is four tolled direct connectors and associated pavement at the US 183 interchange that provides direct access to and from 290E Project mainlines. Phase II Interim Milestone extends 290E from the direct connectors about 1.4 miles east to Chimney Hill Boulevard. This phase opened January 2013.

- *290E Phase II:* The 290E Phase II Project is an approximately 6.2-mile toll road project located along the existing US 290 corridor between US 183 and just east of SH 130. Within these limits, the corridor consists of three tolled mainline lanes and three free frontage road lanes in each direction. This phase of the project opened May 2014.

MoPac N Express Lanes are 11-mile long, variably-priced, tolled lanes in each direction between Cesar Chavez Street and Parmer Lane. Drivers can access the MoPac N Express Lanes at Cesar Chavez Street, Far West Boulevard and Anderson Lane, or at Parmer Lane. The northbound portion of the northbound express lane opened on October 15, 2016; the entire northbound express lane opened on October 7, 2017; the southbound express lane opened two weeks later on October 21, 2017.

SH 71 E Express Lanes are a four-mile long toll road with one to two lanes in each direction along SH 71 from Presidential Boulevard to SH 130 in east Austin. The project also includes overpasses at FM 973 and SH 130, a reconfigured intersection at FM 973, reconstructed frontage roads, and improved pedestrian and bike access on both sides of the highway. The SH 71 E Express Lanes opened to traffic on February 28, 2017, with the first full month being March of 2017.

SH 130 Segments 5 & 6, operated by the SH 130 Concession, extend 41 miles from the southern terminus of the CTTS SH 130 element to a connection with I-10 northeast of Seguin. SH 130 Segments 5 & 6 opened to traffic in October 2012 and consist of two toll lanes in each direction. US 183 serves as a parallel frontage road system from the Segment 4 terminus of SH 130 to Lockhart, primarily within the limits of Segment 5. There are pay points at two mainline locations and on ramps serving seven interchanges on the road. The toll collection system is structured to collect tolls by either ETC or PBM. In contrast to all other Austin area toll roads, toll rates for SH 130 segments 5 & 6 are based on the shape of the vehicle (passenger car, single unit or tractor trailer) rather than the number of axles.

The full SH 130 route (the CTTS SH 130 Segments 1 - 4 and Segments 5 & 6 of the SH 130 Concession) and a segment of I-10 provide a long-distance eastern bypass around the City of Austin. The SH 130 Concession Segments 5 & 6 interact with the CTTS SH 130 element since together the roads provide the major portion of an alternative to IH-35 for long distance traffic between Austin and San Antonio. SH 130 Segments 5 & 6 also interact with SH 45 SE, providing a continuous limited access facility from Lockhart into Austin via IH-35.

2.3 NON-TOLL ROADWAY NETWORK IN AUSTIN

The major routes in the Austin area which act as either feeder or competing routes with the CTTS elements include: IH-35, US 183 (Bell Boulevard/Research Boulevard), FM 734 (Parmer Lane), CR 30 (Gattis School Road), US 79 (Palm Valley Boulevard), FM 1431 (Whitestone Boulevard) and FM 973. In some cases, one of these roads can be a feeder to one CTTS element and a competing route for a different CTTS element.

Stantec has developed two broad categories to provide an indication of how various highway elements relate to each other as "feeders" (F) or "competitors" (C) for specific trip patterns. Generally speaking, if a roadway intersects with another roadway they are considered feeders to each other for selected travel movements, while if two roadways are parallel and in some close proximity to each other, they are considered to be competitors for some portion of trip patterns. Due to the increasingly complex system of roadways in the Austin region, each new or expanded roadway serves multiple trip patterns and the interrelationship seldom fits neatly into one or the other category (i.e., the new or expanded roadway may carry both feeder and competitor traffic).

A quantitative method of determining the interrelationships would be to remove individual roadway elements from the travel demand model and compare the traffic forecasts without the element in place. The multitude of projects planned for this region would make this approach impractical. For purposes of this study, Stantec has applied a more qualitative method of using engineering judgment to establish the effect of roadway improvements on individual CTTS elements or segments within CTTS elements, noting that a new or expanded roadway may function as a feeder to one CTTS element/segment and a competitor to another. The limitation is that the scale of the impact cannot be estimated easily and, in the case of competitive elements, the impact applies differently to drivers depending on the specific trip pattern for which the elements are truly competitive. The relationships between these routes and the CTTS elements are summarized in Table 2.2.

Table 2.2 Relationships between Existing Non-Toll Routes and CTTS Elements

Route #	Route Name	Effect on CTTS Element	
		F/C[1]	Element
IH-35	-	C	SH 130
		C	Loop 1
US 183	Bell Boulevard/Research Boulevard	F	SH 45 N
		C	SH 130
		C	Loop 1
FM 734	Parmer Lane	F	SH 45 N
		F	SH 130
CR 30	Gattis School Road	F	SH 130
		C	SH 45 N
US 79	Palm Valley Blvd.	F	SH 130
		C	SH 45 N
FM 1431	Whitestone Blvd.	C	SH 45 N
FM 973	-	C	SH 130

Notes: (1) F = feeder; C = competitor
(2) Classification of a project as a feeder/collector based on qualitative professional judgment.

IH-35, a major north-south US route from Canada to Mexico, carries local traffic in the Austin area in addition to long distance traffic. The route has two to six lanes in each direction, plus frontage roads. In addition to the surface route, there is an elevated four-lane express route through the Austin Central Business District (CBD). IH-35 is a competing route to SH 130 for long distance through trips. According to TxDOT, in 2017, IH-35 in Travis County was the second most congested road in Texas for all traffic and the most congested road in Texas for trucks.

US 183 (Bell Boulevard/Research Boulevard) begins at US 90 in Luling, continues northward to Lockhart and then intersects SH 130 Segment 5 acting as its frontage road until it reaches SH 45 SE. At the southern terminus of Segment 4 of SH 130, US 183 continues along the east side of downtown Austin and then turns northwest just north of the city. The route is a 4-lane divided highway with frontage roads between US 290 and SH 45 N.

US 183 interacts with three elements of the CTTS. At the western terminus of SH 45 N, US 183 acts as a competing route to both Loop 1 and the western section of SH 45 N for certain travel patterns. For other trip patterns US 183 would be considered a feeder route for SH 45 N. It is parallel to Loop 1 and, therefore, the section of US 183 between SH 45 N and Loop 1 is a competitor to that CTTS element. US 183 is also a competitor to the southern sections of SH 130.

Parmer Lane (FM 734) extends from US 290 east of Austin in a northwesterly direction to the suburbs northwest of Austin. The road intersects with SH 130; Loop 1, at the northern terminus of the CTRMA owned and operated MoPac N Express Lanes and south of the CTTS tolled portion; and with SH 45 N. The road is an arterial with four lanes on its eastern and western ends and six lanes in the more populated central portion. Parmer Lane is a feeder route for SH 45 N and SH 130.

Gattis School Road (CR 30) and US 79 (Palm Valley Boulevard) compete with the eastern section of SH 45 N. Gattis School Road is an east/west 4-lane arterial route north of Austin, between IH-35 and SH 130. It is approximately three miles north of SH 45 N and the nearest competing route to the eastern section of SH 45 N. US 79 also extends from IH-35 easterly to SH 130, parallel to the eastern section of SH 45 N. The road is a 4-lane arterial approximately one mile north of SH 45 N. Both Gattis School Road and US 79 have interchanges with SH 130 and therefore act as feeder routes to that CTTS element.

FM 1431 (Whitestone Boulevard) competes with the western section of SH 45 N. Whitestone Boulevard is a 4-lane arterial approximately five miles north of SH 45 N, extending from US 183 east to IH-35. The section between Parmer Lane and Sam Bass Road was recently upgraded to a six-lane arterial.

FM 973 competes with SH 130 between US 290 and US 183. FM 973 is a north/south 2-lane arterial extending over 20 miles from its southern terminus with US 183 to US 290. The roadway was recently realigned and widened at its intersection with SH 71 as part of the SH 71 E Express Lane Project. The roadway parallels the alignment of SH 130 through mostly rural farmland.

2.4 TRANSIT

The Capital Metropolitan Transportation Authority (Capital Metro), operator of Austin's regional public transportation system, provides limited bus and light rail service in the area. MetroRail, the 32-mile light rail line, operates between Leander and downtown Austin on Monday through Friday and between Lakeline and downtown Austin on Saturday. The system has nine stations and three Park & Ride facilities. The MetroRail line is also shared with freight line service. The route parallels sections of 183A, SH 45 N and Loop 1; however, it provides limited competition to the CTTS elements due to the limited schedule.

Average daily ridership on a weekday in Spring 2017 (mid-January to early June) is approximately 3,000 passengers, according to Capital Metro's ridership reports. In January 2018, Capital Metro added more capacity to morning and evening service by running two paired trips, six times a day. Three paired trips run out of the Leander Station in the morning, and three paired trips depart from the Downtown Station in the evening.

2.5 RECENT AND PROPOSED KEY NETWORK IMPROVEMENTS

Stantec used a regional transportation planning model originally developed by CAMPO and expanded to include the region in the AAMPO model encompassing San Antonio. Key recent and proposed improvements to toll roads and toll-free routes in the region were applied to the networks used for the base model year 2016 and for future model years 2020, 2030, and 2040 (all model years discussed in this section represent calendar years).

The latest available plans for proposed toll road projects were obtained from CTRMA and TxDOT. For other roadway projects, Stantec used the CAMPO 2040 Regional Transportation Plan (RTP), adopted May 11, 2015, along with the September 2015 amendment. Based on the degree of commitment (feasibility studies, funding, ROW status, and program inclusion) and status updates following the RTP update, judgments were made as to whether or not to include projects in the future highway networks, or whether to defer project completion to the following calendar year to allow for delays in actual construction. As an example, in some cases projects with anticipated completion dates late in a given year were modeled as opening in the following year in order to be conservative for revenue estimation. Assumptions regarding future key network improvements were approved by TxDOT at the time of this study and do reflect the information available as of June 2018 about the status of the projects.

Several toll road projects in the Austin area, including managed lanes with dynamic pricing, as well as expressways, are currently in the planning or development stages. These new facilities will be owned and operated by CTRMA. In addition, widening of SH 130 Segments 2 & 3 is also planned project being implemented by TxDOT as part of maintaining acceptable levels of service given the strong growth in the SH 130 corridor. The description and anticipated schedule for these projects, as currently envisioned, are shown in Table 2.3.

Table 2.3 Proposed Toll Facilities in Austin Area

Roadway	Tolling Plan Concept Managed Lane (Dynamic Pricing) or Toll Road (Fixed Toll Rate)	Anticipated Opening Date	Length (approximate)	Full Length Toll	Toll Rate per mile	Lane Configuration	Operator
183S	Toll Road	Aug 1, 2019 (Interim Build), Aug 1, 2020 (Full Build)	8.0	$2.31 (in 2020$)	$0.29 (in 2020$)	3 lanes per direction from US 290 to SH 71. Direct connectors on 183S to 290E (NB to EB and WB to SB) and 183S to SH 71 E (SB to WB and EB to NB)	CTRMA
290E Phase III	Toll Road	2021	-	$0.61 (in 2021$) on SB-WB and NB-WB DCs, EB-SB DC Toll-free	-	3 1-lane direct connectors between SB SH 130 and WB 290E, between NB SH 130 and WB 290E, and between EB 290E and SB SH 130	CTRMA/ TxDOT
SH 130 Widening[1]	Toll Road	Aug 2020 (Segment 2) Sep 2020 (Segment 3)	Seg 2 & 3	No change	No change	1 additional lane in both directions, Segment 2 from SH 45 N (just north of FM 685) to US 290, Segment 3 from US 290 to just north of SH 71 interchange (SB 3rd lane tapers out just after SH 71 exit ramp, NB lane comes on as free lane where SH 71 merges in)	TxDOT
SH 45 SW	Toll Road	Jan, 2020	3.4	$0.98 (in 2020$)	$0.29 (in 2020$)	2 lanes per direction from Loop 1 to FM 1626	CTRMA
183N Express Lanes	Managed Lane (3+ axle vehicles not allowed)	2024	8.0	$0.60 (in 2024$) (minimum rate)	No maximum, dynamic pricing	1 express lane per direction from Northern Terminus to Lake Creek Parkway, 2 express per direction from Lake Creek Parkway to Loop 1. Direct connectors on 183N to MoPac N Express Lanes (SB to SB and NB to NB).	CTRMA
MoPac S Express Lanes	Managed Lane (3+ axle vehicles not allowed)	2024	8.0	$0.90 (in 2024$) (minimum rate)	No maximum, dynamic pricing	Two express lanes with elevated ramps near Barton Skyway, tolled direct connectors to Oak Hill Pkwy (SB to WB and EB to NB)	CTRMA

Notes: (1) The widening of SH 130 Segments 2 & 3 were both coded in the 2021 model year.

2.5.1 2013 – 2016 Key Network Improvements

A number of major network changes have been completed and opened to traffic between 2013 and 2016. These improvements were incorporated into the model to update it to the base year 2016:

- Phase II of 290E, a limited-access toll road, was opened to traffic in May 2014. The project is constructed within the expanded median of US 290 and connects US 183 and SH 130 (see Section 2.2 for further information about this roadway).
- The O'Connor Drive interchange on SH 45 N opened to traffic in August 2014, providing an improved connection between SH 45 N/Loop 1 toll roads and FM 620.
- A new northbound frontage road from Westinghouse Road to SH 29 along IH-35 was completed in November 2015.
- New frontage roads and interchange improvements were completed on SH 71 from Montopolis Drive to US 183 in 2015.
- SH 195 was upgraded to a four-lane divided facility from the Bell County Line to IH-35. Phase 1 – from the Bell County Line to south of SH 138 – was opened to traffic in October 2014. Phase 2 – from SH 138 to south of Ronald Reagan Boulevard – was opened to traffic in 2016. Phase 3 – from south of Ronald Reagan Boulevard to IH-35 reached substantial completion in July 2015.
- Howard Lane was extended as a 4-lane divided arterial from Harris Branch Parkway to SH 130 in January 2016.
- The 290E Phase III interim intersection improvement project, completed in September 2016, added a second turn lane from the southbound SH 130 frontage road to the eastbound 290E frontage road to relieve congestion for southbound SH 130 drivers trying to access the 290E toll road on-ramp into Austin.
- In October 2016, a portion of the northbound MoPac N Express Lanes, from RM 2222 (Northland Drive) to FM 734 (Parmer Lane), opened to traffic.

2.5.2 2017 – 2020 Key Network Improvements

Several toll road projects have been completed or are scheduled to be completed between 2017 and 2020. The SH 71 E Express Lanes between Presidential Boulevard and SH 130 opened to traffic on February 28, 2017 and the MoPac N Express Lanes between Cesar Chavez Street and FM 734 (Parmer Lane) were completed in October 2017. 183S, which is currently under construction and is scheduled to be completed in phases between 2019 and 2020, will provide toll lanes in the center of US 183 between US 290 and SH 71. The SH 45 SW toll road is planned to open between Loop 1 and FM 1626 in 2020.

Non-toll road projects include the construction of direct connectors between IH-35 and US 183, the widening of FM 620, FM 1626, and FM 969, as well as the realignment and widening of FM 1460 from Quail Valley Drive to University Boulevard, and the construction of the Southwest Bypass in Georgetown. The improvements listed in Table 2.4 and shown in Figure 2.2 were included in the 2020 regional transportation model. Table 2.4 includes their relationship to the CTTS elements, based on professional judgment.

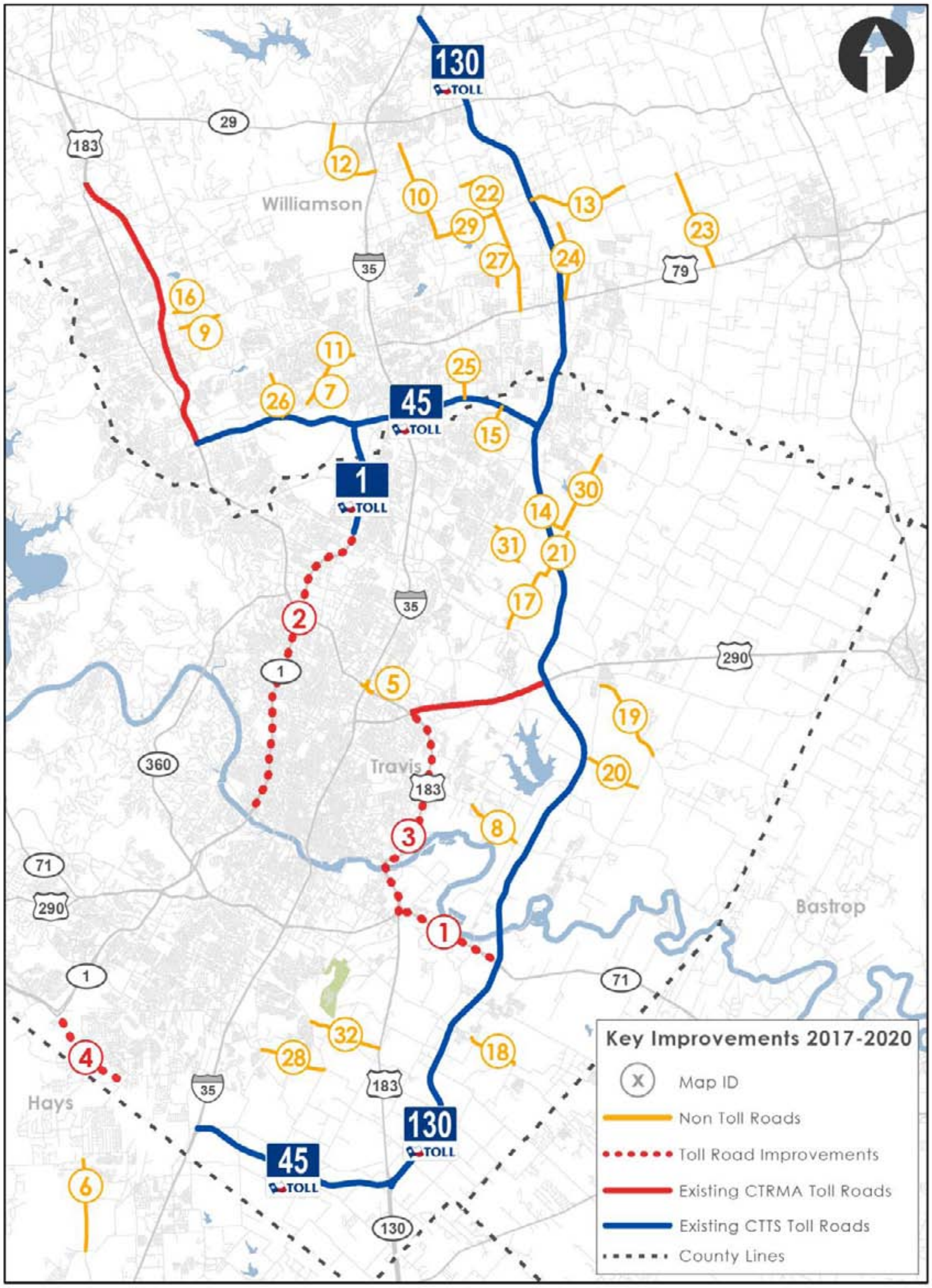
As demonstrated in this section and the following sections covering more distant horizon years, there are a multitude of planned projects in the Austin area over the course of the forecast period. While Stantec has provided judgment regarding whether individual projects act as competitors or feeders to the CTTS, the estimated future system-wide traffic, as well as the transactions and revenue discussed in Chapter 8, reflect the interaction of all the projects. Independent studies attempting to isolate the impacts of any single improvement project may result in different conclusions regarding the level of competition or support an individual project provides to CTTS. These differences can arise from any number of different conditions, including refinements to planned improvements and changes in tolling policies from the sponsoring agencies. Refer to Section 2.3 for additional discussion of the limitations of the qualitative method for determining feeder and competitor routes utilized in this study.

Table 2.4 Key Network Improvements, 2017 – 2020

Map ID	Route Name/Number	Planned Improvement	Limits	Opening Year	Effect on CTTS Element	
					F/C[1]	Element
Toll Roads						
1	SH 71 E Express Lanes	New Toll Road	Between Presidential Blvd and SH 130	2017	F	SH 130
2	MoPac N Express Lanes	New Managed Lanes	Between Fm 734 (Parmer Ln) and Cesar Chavez St	2017	F	Loop 1
3	183S	New Toll Road	Between US 290 and SH 71; Direct connectors to/from 290E and SH 71 E Express Lanes	Phased 2019 to 2020	C	SH 130
4	SH 45 SW	New Toll Road	Between Loop 1 and FM 1626	2020	NA	-
Non Toll Roads						
US Highways						
5	IH-35/US 183	Construct Direct Connectors	From IH-35 SB to US 183 SB and US 183 NB and from US 183 NB to IH-35 NB.	2020	C	SH 130
State Highways						
6	FM 1626	Widening project	FM 967 to FM 2770	2017	NA	-
7	RM 620	Widening project	Cornerwood Dr to Wyoming Springs	2018	F	SH 45 N
8	FM 969	Widening project	FM 3177 (Decker Lane) to FM 973	2019	F	SH 130
9	FM 1431	Widening project	Cottonwood Creek Trail to Market Street	2019	NA	-
10	FM 1460	Realignment and widening project	Quail Valley Drive to University Blvd	2020	C	SH 130
11	RM 620	Widening project	Wyoming Springs Drive to Deep Wood Drive	2020	F	SH 45 N
12	Southwest Bypass	New segment	SH 29 to IH-35	2020	NA	-
Other						
13	Chandler Road	Widening project	SH 130 to FM 1660	2017	F	SH 130
14	E. Pecan Street	Upgrade project	SH 130 to Weiss Lane	2017	F	SH 130
15	Heatherwilde Blvd	Widening project	SH 45 N to Wilke Ln	2017	F	SH 45 N
16	New Hope Drive	New segment	Cottonwood Creek Trail to Ronald Reagan Blvd	2018	NA	-
17	Cameron Road	Widening project and new segment	Howard Ln to SH 130	2019	F	SH 130
18	Elroy Road	Widening project	Ross Rd to Fagerquist Rd	2019	F	SH 130
19	Blake-Manor Rd	Widening project	FM 973 to Taylor Ln	2020	F	SH 130
20	Braker Ln	New segment	FM 973 to Taylor Ln	2020	F	SH 130
21	Cameron Road	Widening project	SH 130 to Pflugerville East Rd	2020	F	SH 130
22	Red Bud Ln	Widening project	CR 110 to Old Settlers Blvd	2020	C	SH 130
23	CR 101	Widening project	US 79 to Chandler Ln	2020	C	SH 130
24	CR 108	Widening project	US 79 to CR 118	2020	C	SH 130
25	Kenny Fort Boulevard	New segment	Forest Creek Drive to SH 45 N	2020	F	SH 45 N
					C	SH 130
26	Pearson Ranch Road	New segment	Avery Ranch Boulevard to SH 45 N/RM 620	2020	F	SH 45 N
27	Southwestern Blvd/CR 110	Widening project	CR 111/Westinghouse Rd - US 79	2020	C	SH 130
28	Slaughter Lane	New segment	Pleasant Vally Rd to McKinney Falls Pkwy	2020	C	SH 45 SE
29	University Boulevard	Widening project	FM 1460 to CR 110	2020	F	SH 130
30	Weiss Ln	Widening project	Cele Rd to Cameron Rd	2020	C	SH 130
31	Wells Branch Parkway	Widening project	Immanuel Rd to Killingsworth Ln	2020	F	SH 130
32	William Cannon Drive	Widening project and new segment	Running Water Dr to US 183	2020	C	SH 45 SE

Notes: (1) F = feeder; C = competitor
(2) Classification of a project as a feeder/competitor based on qualitative professional judgment.

Figure 2.2 Key Network Improvements Map 2017-2020



2.5.3 2021 – 2030 Key Network Improvements

During the period between 2020 and 2030 several new toll facilities and improvements to existing toll roads will be completed. In late 2020, SH 130 will add an additional travel lane in each direction within Segment 2 from SH 45 N to US 290, and within Segment 3 between US 290 and SH 71. However, for modeling purposes, both projects were coded in the travel demand model as opening in 2021. Both The 183N Express Lanes and the MoPac S Express Lanes are scheduled to open in in 2024.

Additionally, 290E Phase III will be open in 2021, and involves the construction of three 1-lane direct connectors between southbound SH 130 and westbound 290E, between northbound SH 130 and westbound 290E, and from eastbound 290E and southbound SH 130. TxDOT is funding the US 290 eastbound-southbound direct connector with available CTTS revenues, which will be non-tolled. CTRMA will finance the construction of the tolled direct connector bridges from northbound and southbound SH 130 to the westbound 290E toll road.

Major non-toll road projects scheduled to open between 2021 and 2030 include widening US 79 from IH-35 to east of FM 1460, as well as widening US 183 from SH 71 to SH 130 to a six-lane divided or Super 6, as well as the Oak Hill Parkway. Other non-toll road projects include completing the upgrade and widening of SH 29, SE 1, and the SE Inner Loop, the realignment and widening of FM 1660, and the realignment and construction of FM 973, in addition to the widening of FM 969 and FM 812. TxDOT also plans to widen RM 620 from US 183 to SH 71 W from four to six lanes in 2030. Additionally, SH 21 will be widened through several projects from SH 80 in San Marcos to SH 71 in Bastrop, from a two-lane undivided roadway to a four-lane divided roadway. While this improvement is further south of Austin than most other improvements, these projects along SH 21 effectively improve the roadway's attractiveness as a southern bypass route around southeast Austin, making it a competitor to SH 45 SE for some long-distance trips.

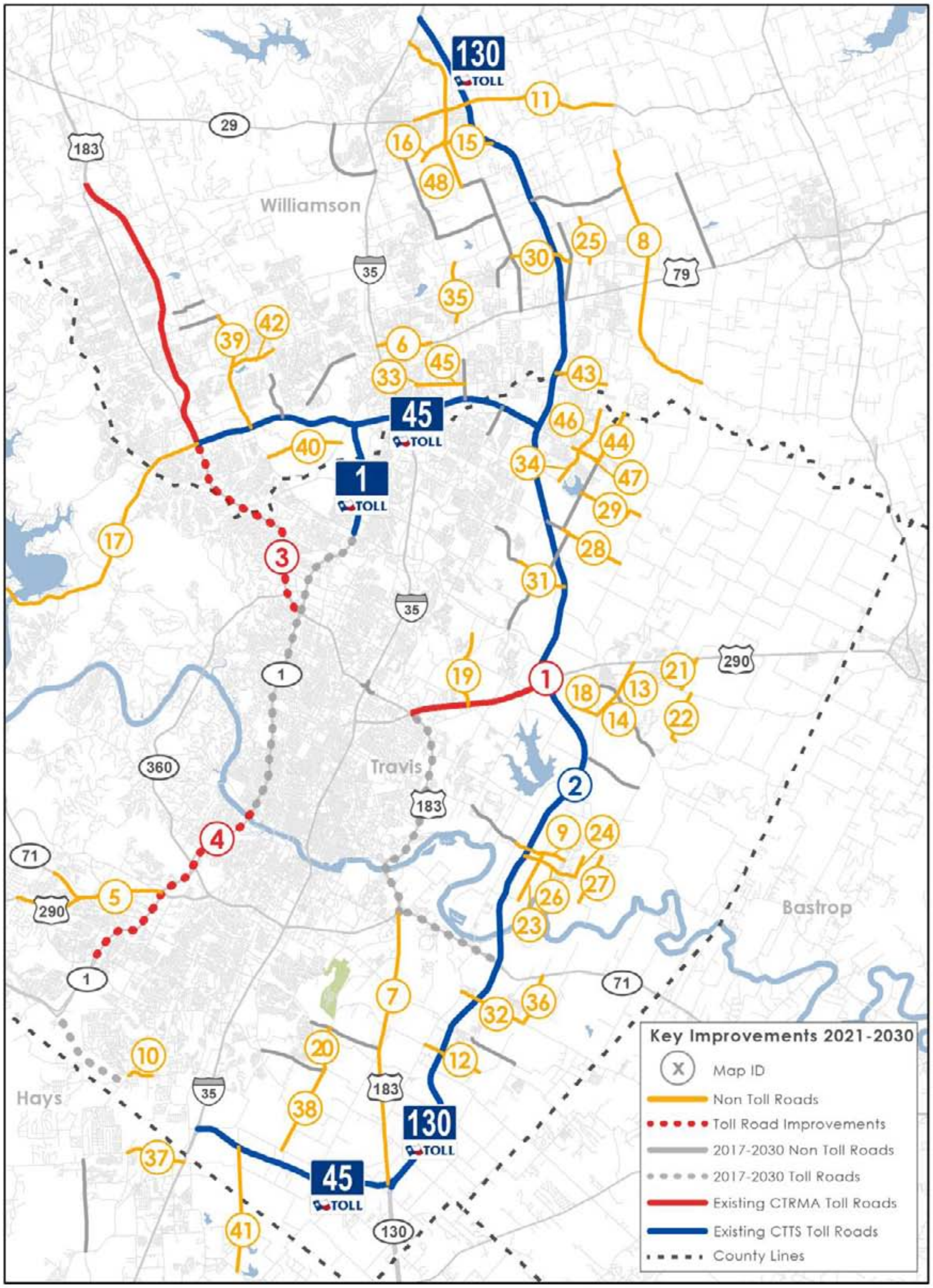
Other roadways scheduled for improvements are Parmer Lane, Anderson Mill Road, McKinney Falls Parkway, and Turnersville Road. These projects and the others noted in Table 2.5 and shown in Figure 2.3 were included in the regional highway network for 2030. Also shown in Table 2.5 is the relationship to the CTTS elements, based on professional judgment. In order to better visualize how the network will be built out over time, improvements from the previous forecast period are displayed on the map in grey.

Table 2.5 Key Network Improvements, 2021 – 2030

Map ID	Route Name/Number	Planned Improvement	Limits	Opening Year	Effect on CTTS Element	
					F/C[1]	Element
Toll Roads						
1	290E Phase III	Connector ramps	Between 290E and SH 130	2021	F	SH 130
2	SH 130	Widening project	Segments 2 & 3 (SH 45 N to SH 71)	2021	NA	-
3	183N Express Lanes	New Managed Lanes	Loop 1 to Lake Creek Parkway; Direct connectors to MoPac N Express Lanes	2024	C	SH 45 N/Loop 1
4	MoPac S Express Lanes	New Managed Lanes	Cesar Chavez St to Slaughter Lane; Direct connectors to 290W	2024	C	SH 130
					F	Loop 1
Non Toll Roads						
US Highways						
5	Oak Hill Parkway / US 290	Widening project	FM 1826 to Loop 1; Direct connectors to SH 71	2023	NA	-
6	US 79	Widening project	IH-35 to east of FM 1460	2024	C	SH 45 N
7	US 183 South	Widening project	SH 71 to SH 130	2027	C	SH 130
State Highways						
8	FM 1660	Upgrade and realignment project	CR 101 to FM 3349	2021	C	SH 130
9	FM 969	Widening project	FM 973 to Hunters Bend Rd	2021	F	SH 130
10	FM 1626	Widening project	Manchaca Rd to Brodie Ln	2021	NA	-
11	SH 29	Widening project	Haven Ln to FM 1660	2023	F	SH 130
12	FM 812	Widening project	FM 973 to Maha Loop Rd	2027	F	SH 130
13	FM 973 Relocation	Upgrade and realignment project	US 290 to FM 973	2027	C	SH 130
14	FM 973	New segment	FM 973 to Blake Manor Rd	2029	C	SH 130
15	SE 1	New segment	SE Inner Loop to SH 130	2030	F	SH 130
16	SE Inner Loop Seg 2 & 3	Widening project	Sam Houston Ave to SH 29	2030	F	SH 130
17	RM 620	Widening	US 183 to SH 71	2030	F	SH 45 N
-	SH 21	Widening	SH 80 to SH 71	2030	C	SH 45 SE
Other						
18	Wild Horse Connector	New segment	FM 973 to Parmer Ln	2021	F	SH 130
19	Arterial A	New segment	US 290 to Samsung Blvd	2022	NA	-
20	McKinney Falls Pkwy	Widening project and new segment	William Cannon Dr to Slaughter Ln	2022	F	SH 45 SE
21	Old Kimbro Rd	Widening project	US 290 to Littig Rd	2023	NA	-
22	Parsons Rd	Widening project and new segment	Littig Rd to Lockwood Rd	2023	NA	-
23	Arterial B	New segment	FM 969 to Harold Green Rd	2024	C	SH 130
24	Arterial C	New segment	FM 969 to Deaf Smith Blvd	2024	NA	-
25	CR 119	New segment	CR 100 to CR 164	2024	C	SH 130
26	Deaf Smith Blvd	New segment	Arterial C to SH 130	2025	F	SH 130
27	Dunlap Rd	Upgrade project	FM 969 to S Dunlap Rd	2025	NA	-
28	E. Pecan Street	Widening project	Weiss Ln to Cameron Rd	2025	F	SH 130
29	Jesse Bohls Rd	Widening project	Weiss Ln to Cameron Rd	2025	F	SH 130
30	Limmer Loop	Widening project	CR 110 to CR 108	2025	F	SH 130
31	Wells Branch Parkway	New segment	Killingsworth Ln to SH 130	2025	F	SH 130
32	Pearce Ln	Widening project	FM 973 to Maha Loop Rd	2026	F	SH 130
33	Gattis School Rd	Widening project	Greenlawn Blvd to Double Creek Dr	2027	C	SH 45 N
34	Hidden Lake Blvd	New segment	Kelly Ln to Pflugerville Pkwy	2027	C	SH 130
35	Kenny Fort Blvd	New segment	CR 112 to Chandler Creek Dr	2027	C	SH 130
					F	SH 45 N
36	Maha Loop/Kellam Rd	Widening project	SH 71 to Pearce Ln	2027	C	SH 130
37	Manchaca Springs Rd	New segment	FM 967 to IH-35	2027	NA	-
38	McKinney Falls Pkwy	Widening project	Slaughter Ln to FM 1327	2027	F	SH 45 SE
39	Parmer Ln	Widening project	RM 1431 to SH 45 N	2027	F	SH 45 N
40	Anderson Mill Rd	New segment	Parmer Ln to RM 620	2027	C	SH 45 N
41	Turnersville Rd	Widening project and new segment	SH 45 SE to FM 2001	2027	F	SH 45 SE
42	Brushy Creek Rd	Widening project	Parmer Ln to Ranch Trails	2030	C	SH 45 N
43	Gattis School Rd	Widening project	SH 130 to Hodde/Weiss Ln	2030	F	SH 130
44	Weiss Ln	Widening project	Rowe Ln to Kelly Ln	2030	F	SH 130
45	Gattis School Rd	Widening project	Double Creek Dr to Kenney Fort Blvd	2030	C	SH 45 N
46	Jake's Hill Rd	New segment	Rowe Ln to Kelly Ln	2030	C	SH 130
47	Kelly Ln	Widening project	Moorlynch Ave to Weiss Ln	2030	F	SH 130
					F	SH 45 N
48	Southwestern Blvd	Widening project	Inner Loops to CR 111/Westinghouse Rd	2030	C	SH 130

Notes: (1) F = feeder; C = competitor
(2) Classification of a project as a feeder/competitor based on qualitative professional judgment.

Figure 2.3 Key Network Improvements Map 2021-2030



One significant project still in the early development stages is a capacity improvement to a 33-mile segment of IH-35 from Georgetown to San Marcos. The project (named Capital Express which is a part of the Mobility35 Program) generally adds two lanes in each direction through Travis and Southern Williamson counties. The lane type for the additional lanes has not been finalized but is intended to be some type of managed lane. The overall project has many separate elements which include some isolated spot improvements such as auxiliary lanes and collector-distributor lanes at critical locations. There are several stand-alone projects that are a part of the Mobility35 program that are currently under construction, and more in various earlier stages of project development. Since the full scope of the project has not been determined, the cost of the project and funding sources also remain undetermined. However, it is assumed that due to the congested traffic conditions on IH-35, the project would likely be built in phases, with the most critical segment in central Austin contingent on the construction of other improvements that would provide additional capacity as bypasses during the construction phase. Those contingent facilities are the 183S (assumed to be completed by 2020 for the current study) and the MoPac N Express Lanes which opened to traffic in 2017.

In terms of the construction schedule, a project of this magnitude could be constructed in upwards of ten years; however, and as stated above, the scope and funding sources have not yet been identified. Assuming that project construction will require significant detours of existing traffic for extensive periods of time, it is anticipated that, should this project actually be constructed, it would have a potential positive impact on CTTS revenue during the construction period. After construction is completed, some of the diverted traffic will likely continue to use CTTS elements producing a long-term revenue increase. Given the uncertainty of the project and significant construction costs that lack committed funding at this time, a decision was made not to include this project in the background network for the forecast of future traffic.

2.5.4 2031 – 2040 Key Network Improvements

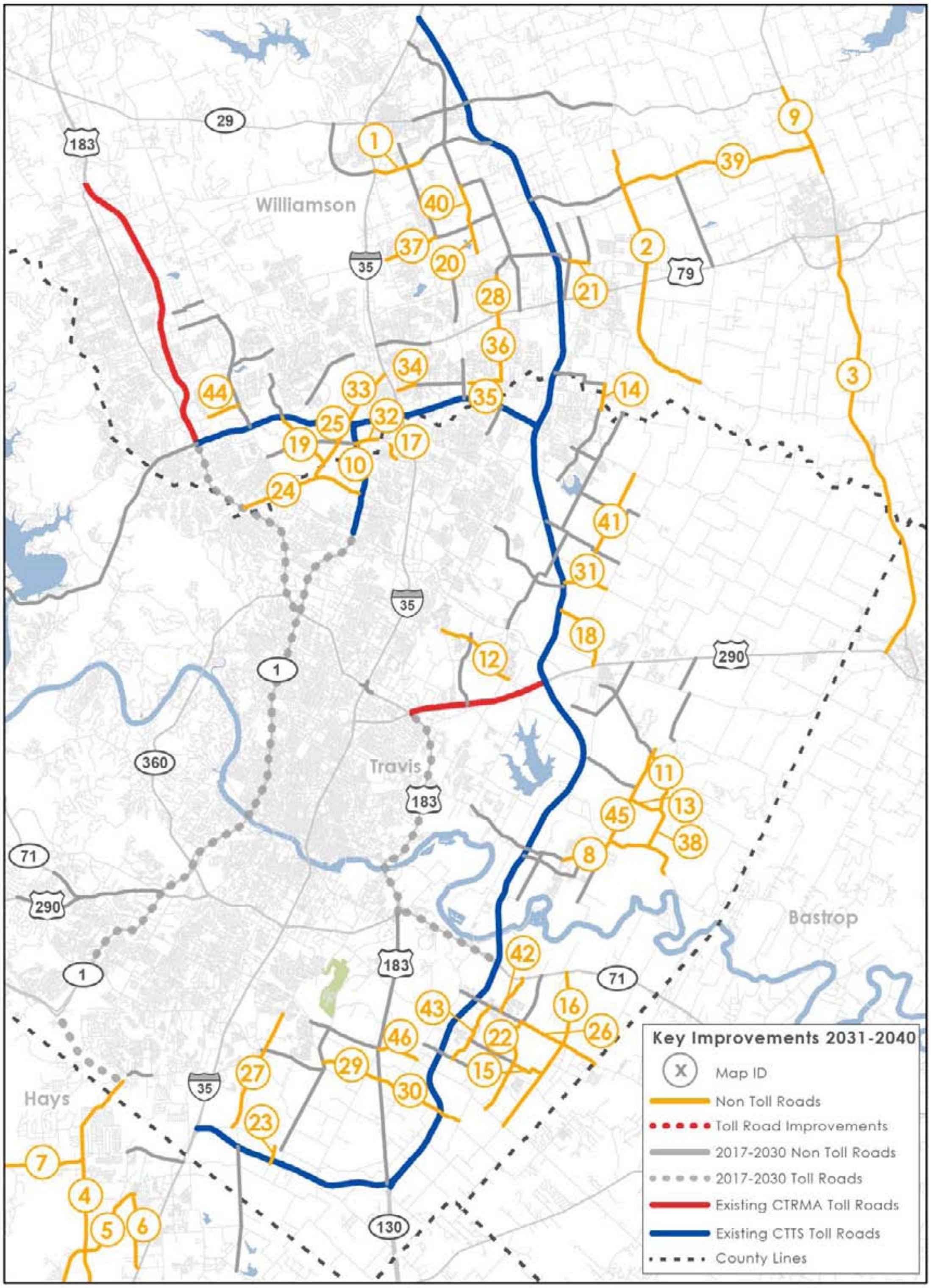
There are no toll roads scheduled for completion during the period 2031 through 2040; however major non-toll road projects include widening SH 95 from Elgin to Taylor, as well as from SH 29 to FM 397. Additional upgrades are programmed for the SE Inner Loop, FM 1660, FM 967, FM 969, and FM 1626 and FM 2770 in Hays County. These projects and the others listed in Table 2.6 and shown in Figure 2.4 have been included in the highway network for the 2040 model year. The relationship of these projects to the CTTS element is also shown in Table 2.6.

Table 2.6 Key Network Improvements, 2031 – 2040

Map ID	Route Name/Number	Planned Improvement	Limits	Opening Year	Effect on CTTS Element	
					F/C[1]	Element
Non Toll Roads						
State Highways						
1	SE Inner Loop Seg 1	Widening project	IH-35 to Sam Houston Ave	2032	F	SH 130
2	FM 1660	Widening project	CR 101 to FM 3349	2035	C	SH 130
3	SH 95	Upgrade and widening project	Elgin to Taylor	2035	C	SH 130
4	FM 1626	Upgrade and widening project	SH 45 SW to IH-35	2040	NA	-
5	FM 2770	Upgrade and Widening project	Main St to FM 150	2040	NA	-
6	FM 967	Widening project	Goforth Rd to IH-35	2040	NA	-
7	FM 967	Widening project	FM 1826 to FM 1626	2040	NA	-
8	FM 969	Widening project	Hunters Bend to Webberville City Limit	2040	F	SH 130
9	SH 95	Upgrade and widening project	SH 29 to FM 397	2040	C	SH 130
Other						
10	Anderson Mill	New segment	Loop 1 Crossover	2032	F	Loop 1
					C	SH 45 N
11	Blake-Manor Rd	Widening project	Taylor Ln to Burleson Manor Rd	2032	NA	-
12	Braker Ln	New segment	Dessau Rd to Harris Branch Pkwy	2032	F	SH 130
13	Braker Ln	New segment	Taylor Ln to Burleson Manor Rd	2032	NA	-
14	CR 137/Arterial A	Widening project	CR 138 to Rowe Ln	2032	NA	-
15	Fagerquist Rd	Widening project	Elroy Rd to Four Daughters Rd	2032	F	SH 130
16	Four Daughters Rd	New segment	SH 71 to FM 812	2032	C	SH 130
17	Grand Ave Pkwy	Upgrade project and new segment	Existing Grand Ave Pkwy/Anderson Mill Rd to Bratton Ln	2032	F	Loop 1
					C	SH 45 N
18	Gregg-Manor Rd	Upgrade project and new segment	SH 130 to US 290	2032	F	SH 130
19	Howard Ln	Upgrade project and new segment	SH 45 N to Loop 1	2032	F	SH 45 N
					C	Loop 1
20	Kenny Fort Blvd	New segment	University Blvd to CR 112	2032	C	SH 130
21	Limmer Loop/CR 164	Upgrade project	CR 108 to CR 119	2032	F	SH 130
22	Maha Loop Rd	Upgrade project and new segment	Pearce Ln to FM 812	2032	C	SH 130
23	McKinney Falls Pkwy	Widening project	FM 1327 to Turnersville	2032	F	SH 45 SE
24	McNeil Dr	Widening project	US 183 to Howard Ln	2032	C	SH 45 N
					F	Loop 1
25	McNeil Rd	Widening project	McNeil Dr/Howard Ln to SH 45 N	2032	F	SH 45 N
					C	Loop 1
26	Pearce Ln	Widening project	Maha Loop Rd to Wolf Ln	2032	F	SH 130
27	Pleasant Valley Rd	Upgrade project and new segment	Onion Creek Dr to CR 105/Turnersville Rd	2032	F	SH 45 SE
28	Red Bud Ln	Widening project	CR 117 to US 79	2032	C	SH 130
					F	SH 45 N
29	Slaughter Ln	New segment	McKinney Falls Pkwy to FM 973	2032	F	SH 130
					C	SH 45 SE
30	Slaughter Ln/Moore Rd	Widening project	FM 973 to Maha Loop Rd	2032	F	SH 130
31	Wells Branch Pkwy	New segment	SH 130 to Fuchs Grove Rd	2032	F	SH 130
32	Anderson Mill	New segment	Loop 1 to Grand Ave Pkwy	2033	F	Loop 1
					C	SH 45 N
33	McNeil Rd	Widening project	Travis County Line to IH-35	2035	F	SH 45 N
34	Gattis School Rd	Widening project	Mays St to Greenlawn Blvd	2037	F	SH 130
					C	SH 45 N
35	Gattis School Rd	Widening project	Kenny Fort Blvd to Red Bud Lane	2037	F	SH 130
					C	SH 45 N
36	Red Bud Ln	Widening project	US 79 to Gattis School Rd	2037	C	SH 130
					F	SH 45 N
37	University Blvd	Widening project	Sunrise Rd to FM 1460	2037	F	SH 130
38	Burleson-Manor Rd	New segment	Blake-Manor Rd to FM 969	2040	NA	-
39	Chandler Rd	Widening project	FM 1660 to SH 95	2040	F	SH 130
40	Kenny Fort Blvd	New segment	Round Rock ETJ to University Blvd	2040	C	SH 130
41	Melber Ln	New segment	Kelly Ln and Cameron Rd	2040	C	SH 130
42	Ross Rd	Widening project	SH 71 to Elroy Rd	2040	C	SH 130
43	Ross Rd	New segment	Elroy Rd to McAngus Rd	2040	C	SH 130
44	Lakeline Blvd	Widening project	Lyndhurst to Parmer Ln	2040	C	SH 45 N
45	Taylor Ln	Widening project	Lockwood Rd to FM 969	2040	C	SH 130
46	William Cannon Dr	New segment	US 183 to FM 812	2040	F	SH 130

Notes: (1) F = feeder; C = competitor
(2) Classification of a project as a feeder/competitor based on qualitative professional judgment.

Figure 2.4 Key Network Improvements Map 2031-2040



3.0 EXISTING TRAVEL PATTERNS

An extensive traffic data collection program was undertaken to obtain information for validating the output of the regional transportation model. Surveys conducted in the Austin region included traffic and vehicle classification counts using Automatic Traffic Recorder (ATR) tubes and video cameras. Data for speeds were obtained from independent sources, including HERE and SigAlert databases.

3.1 TRAFFIC VOLUMES

The data collection program for the 2018 Study was conducted by Ally General Solutions, LLC (AGS). The data were gathered in the May – June 2017 period. Traffic counts were recorded at over 230 locations. Traffic counts were collected along a series of screenlines and other key locations along the traffic corridors of the toll roads in the Austin region and on competing and feeder routes.

Locations of screenlines are shown in Figure 3.1 and Figure 3.2. Figure 3.1 displays the screenlines used as part of the overall regional model calibration, which covers the long-distance travel between Austin and San Antonio southward into the areas where IH-35 competes with segments 5 & 6 of SH 130. Figure 3.2 displays the screenlines and counts in the focused area served by the CTTS roadways.

Additional data sources were available for use in the 2018 study. These sources included approximately 480 counts from recent CTRMA studies, about 150 counts along the IH-35 corridor for a recent TxDOT study, data collected for the previous reports, as well as data obtained through the TxDOT traffic database. The TxDOT database contributed 2,922 Annual Average Daily Traffic (AADT) counts from the TxDOT 2015 count maps, 154 classification counts from TxDOT's truck count program, and 247 counts from the TxDOT ATR & Vehicle Classification (VC) count databases. Stantec also obtained transaction data for all toll roads that were in operation in 2017. While there was some overlap in the actual count locations, in total, traffic count data was available for 4,673 highway links for purposes of model calibration including 397 counts that were detailed vehicle classification counts used to quantify truck volumes.

Figure 3.1 Overall Screenline Map

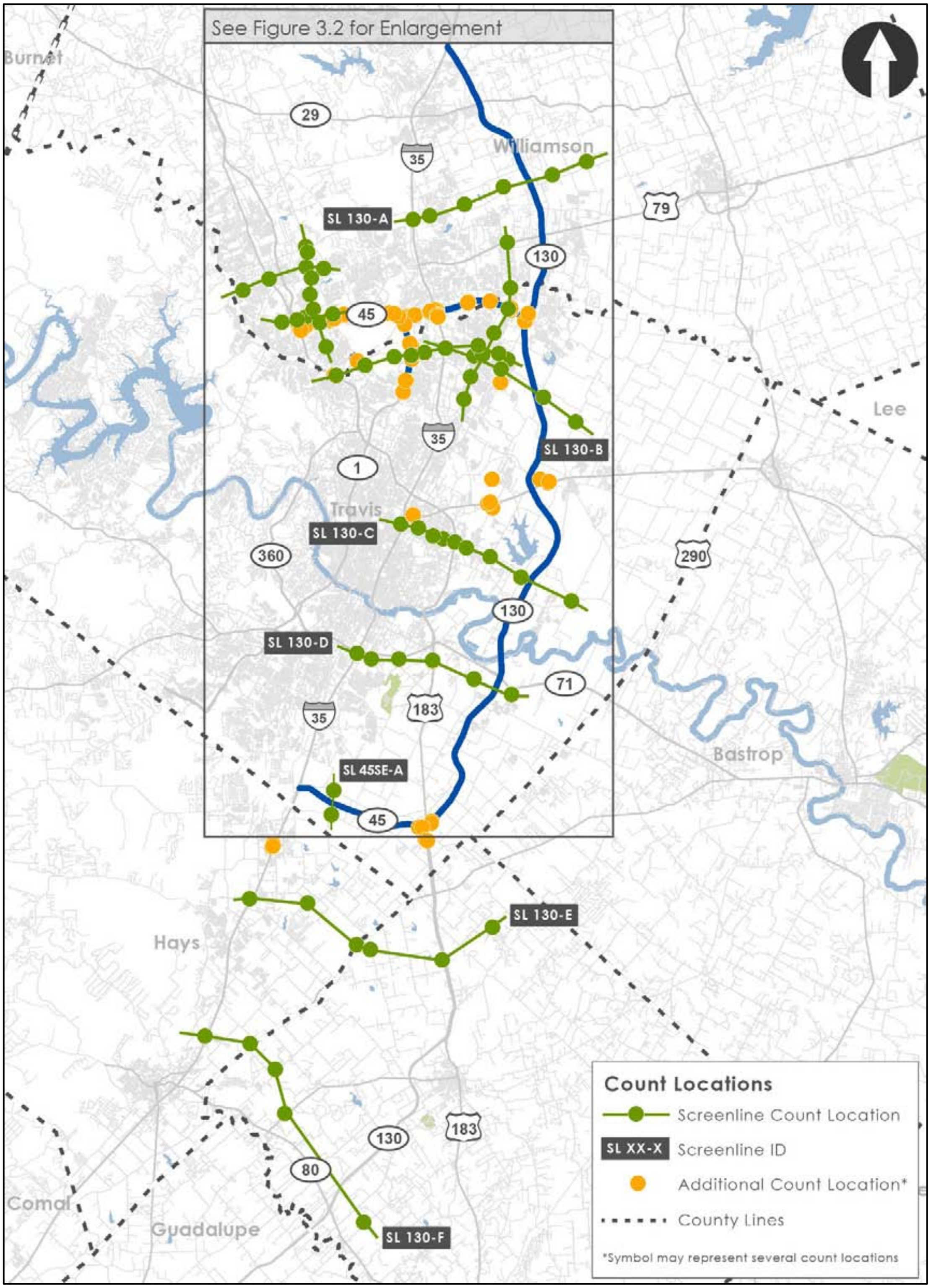
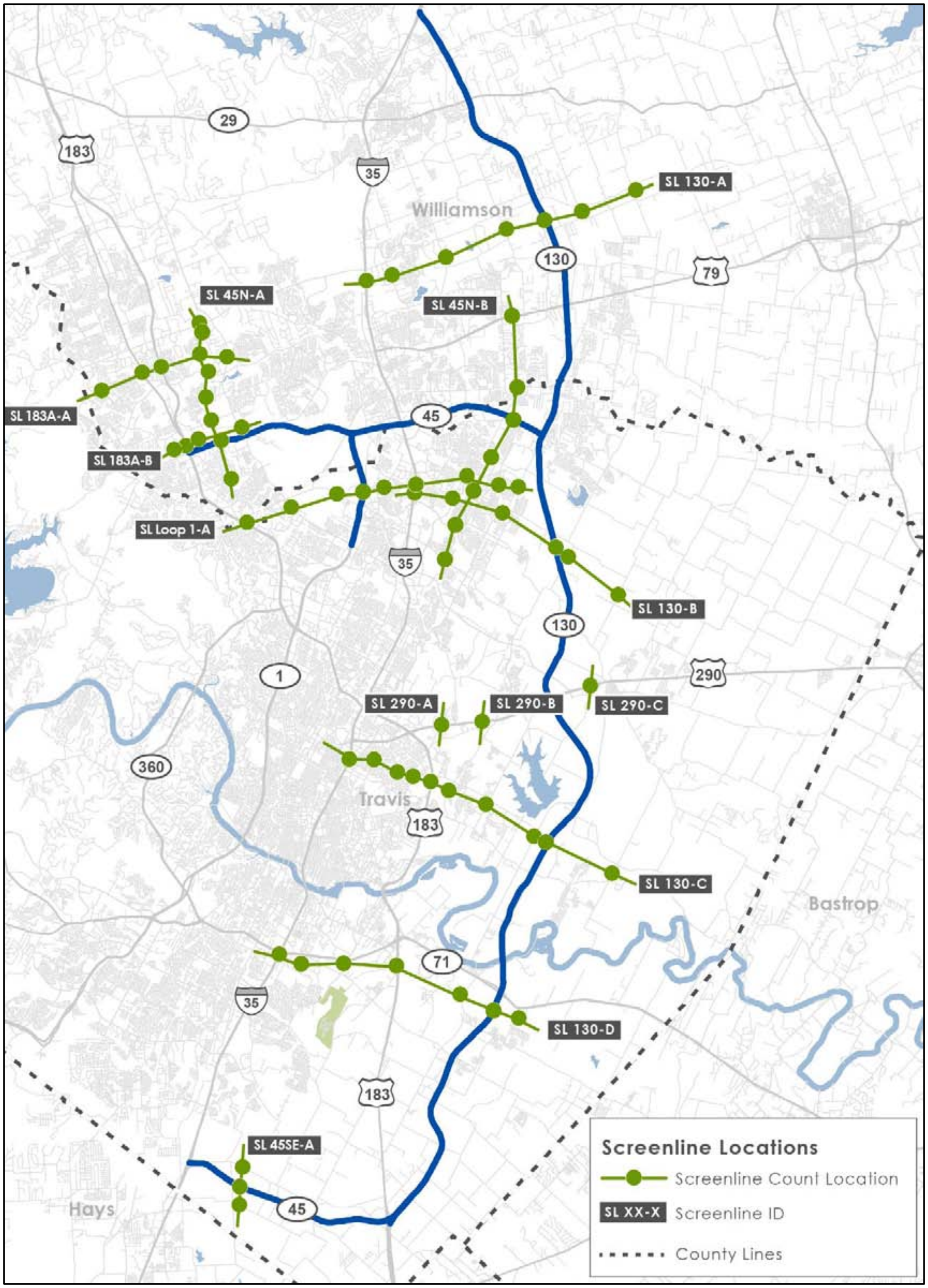


Figure 3.2 Project Area Screenline Map



The screenline locations are intended to capture the toll road traffic at the respective mainline toll pay points and the non-toll road traffic on adjacent competing roadways. The observed average weekday traffic volumes, broken down by vehicle type for each screenline count location, are shown in Table 3.1 for SH 130 and Table 3.2 for SH 45 N, Loop 1, and SH 45 SE. Table 3.3 shows the observed traffic volumes at key locations along 183A and 290E.

Table 3.1 lists the screenline volumes for the CTTS SH 130 element (Segments 1 - 4) as well as the two screenlines for the southern section that is operated separately as a concession (Segments 5 & 6), and which is not part of the CTTS. The 2017 counts collected for this study were adjusted uniformly to reflect the 2016 volumes used in calibration. Trucks, which are defined as vehicles with three or more axles, are generally between 8 and 15 percent of all traffic. For the CTTS SH 130 element, the toll road captures approximately 9 to 18 percent of the total traffic along the screenlines. For Segments 5 & 6, the toll road share of screenline traffic is lower at approximately 4 to 6 percent.

Table 3.2 shows the screenline volumes for SH 45 N, Loop 1, and SH 45 SE. For these screenlines, the toll roads tend to have a larger share of the overall traffic ranging between 10 percent and 24 percent, except for the SH 45 SE screenline which has few alternatives and as a result captures 57 percent. The share of trucks on these toll roads tends be much lower, ranging from approximately 2 to 5 percent, except for SH 45 SE which is a feeder route for long-distance traffic to SH 130. Notes:

(1) Truck volumes shown include 3+ axle vehicles.

Table 3.3 lists screenline volumes across 290E and 183A, which are owned and operated by CTRMA. Along 290E, the mainlines and frontage roads tend to have a similar share of overall traffic, with volumes ranging from approximately 20,000 on both the mainlines and frontage roads east of Parmer Ln to approximately 35,000 on both the mainlines and frontage roads west of Springdale Road. However, truck shares are greater on the frontage roads than the tolled mainline. For the 183A screenlines, the toll road carries the largest share of traffic ranging from 24 percent to 36 percent, followed closely by US 183 which represents a non-tolled parallel facility, ranging from 21 percent to 24 percent.

Table 3.1 2016 Average Weekday Screenline Volumes for SH 130

Screenline	Route	Auto	Truck	% Truck	Total	% of Total
SH 130						
Screenline 130-A	IH 35	138,501	19,385	12.3%	157,886	69.2%
Screenline 130-A	CR 115	16,609	1,077	6.1%	17,686	7.8%
Screenline 130-A	FM 1460	14,817	852	5.4%	15,669	6.9%
Screenline 130-A	CR 110	4,634	390	7.8%	5,024	2.2%
Screenline 130-A	**SH 130**	**24,422**	**4,411**	**15.3%**	**28,833**	**12.6%**
Screenline 130-A	CR 100	704	44	5.8%	748	0.3%
Screenline 130-A	FM 1660	1,887	418	18.1%	2,306	1.0%
Screenline 130-A	Total	201,574	26,578	11.6%	228,152	100.0%
Screenline 130-B	IH 35	157,400	18,286	10.4%	175,686	63.3%
Screenline 130-B	Heatherwilde Blvd	11,150	324	2.8%	11,475	4.1%
Screenline 130-B	Dessau / FM 685	22,074	2,042	8.5%	24,116	8.7%
Screenline 130-B	Immanuel	6,029	601	9.1%	6,630	2.4%
Screenline 130-B	**SH 130**	**44,912**	**5,752**	**11.4%**	**50,664**	**18.3%**
Screenline 130-B	Cameron Rd	4,014	178	4.2%	4,192	1.5%
Screenline 130-B	Fuchs Grove	3,776	791	17.3%	4,567	1.6%
Screenline 130-B	Total	249,356	27,974	10.1%	277,330	100.0%
Screenline 130-C	IH 35	222,372	19,413	8.0%	241,785	54.1%
Screenline 130-C	Cameron Rd.	14,636	1,407	8.8%	16,044	3.6%
Screenline 130-C	Berkman Dr.	13,407	1,168	8.0%	14,576	3.3%
Screenline 130-C	Manor Rd.	9,471	710	7.0%	10,181	2.3%
Screenline 130-C	Springdale Rd.	9,847	688	6.5%	10,535	2.4%
Screenline 130-C	US 183	67,230	3,816	5.4%	71,046	15.9%
Screenline 130-C	Johnny Morris Rd.	5,060	326	6.1%	5,386	1.2%
Screenline 130-C	FM 3177	14,190	980	6.5%	15,170	3.4%
Screenline 130-C	FM 973	8,006	1,010	11.2%	9,016	2.0%
Screenline 130-C	**SH 130**	**40,767**	**5,687**	**12.2%**	**46,454**	**10.4%**
Screenline 130-C	FM 969	5,559	813	12.8%	6,372	1.4%
Screenline 130-C	Total	410,546	36,019	8.1%	446,565	100.0%
Screenline 130-D	IH 35	177,527	21,342	10.7%	198,869	61.7%
Screenline 130-D	Todd Ln.	12,524	1,750	12.3%	14,274	4.4%
Screenline 130-D	Stassney Ln.	23,102	2,175	8.6%	25,277	7.8%
Screenline 130-D	US 183	29,315	4,236	12.6%	33,551	10.4%
Screenline 130-D	FM 973	11,715	1,152	9.0%	12,867	4.0%
Screenline 130-D	**SH 130**	**25,890**	**4,864**	**15.8%**	**30,754**	**9.5%**
Screenline 130-D	Ross Rd.	6,177	569	8.4%	6,747	2.1%
Screenline 130-D	Total	286,249	36,089	11.2%	322,338	100.0%
Screenline 130-E	IH 35	125,424	15,368	10.9%	140,792	79.1%
Screenline 130-E	Goforth Rd (FM 157)	3,072	139	4.3%	3,211	1.8%
Screenline 130-E	SH 21	8,913	1,684	15.9%	10,597	6.0%
Screenline 130-E	FM 2001	1,383	164	10.6%	1,547	0.9%
Screenline 130-E	US 183 - SH130 Frontage	9,341	1,058	10.2%	10,399	5.8%
Screenline 130-E	**SH 130 Seg 5 ML**	**8,859**	**2,356**	**21.0%**	**11,215**	**6.3%**
Screenline 130-E	FM 1854	282	19	6.4%	301	0.2%
Screenline 130-E	Total	157,274	20,788	11.7%	178,062	100.0%
Screenline 130-F	IH 35	107,529	19,881	15.6%	127,410	83.6%
Screenline 130-F	SH 21	7,938	1,923	19.5%	9,861	6.5%
Screenline 130-F	FM 1984	1,419	64	4.3%	1,483	1.0%
Screenline 130-F	SH 1342	5,288	347	6.2%	5,635	3.7%
Screenline 130-F	**SH 130 Seg 6 ML**	**4,778**	**1,907**	**28.5%**	**6,685**	**4.4%**
Screenline 130-F	State Park Rd (FM 20)	1,330	34	2.5%	1,365	0.9%
Screenline 130-F	Total	128,282	24,156	15.8%	152,438	100.0%

Notes: [1] Truck volumes shown include 3+ axle vehicles.

Table 3.2 2016 Average Weekday Screenline Volumes for SH 45 N, Loop 1, and SH 45 SE

	Route	Auto	Truck	% Truck	Total	% of Total
SH 45 N						
Screenline 45N-A	FM 1431	34,376	3,758	9.9%	38,133	18.1%
	Colonial Parkway	6,522	119	1.8%	6,641	3.2%
	Brushy Creek Rd.	12,829	440	3.3%	13,269	6.3%
	Avery Ranch Blvd.	15,127	1,104	6.8%	16,232	7.7%
	Lakeline Blvd.	9,242	640	6.5%	9,882	4.7%
	SH 45 NW Mainline	**49,571**	**1,740**	**3.4%**	**51,311**	**24.4%**
	SH 45 NW Frontage	29,025	1,178	3.9%	30,203	14.4%
	Anderson Mill Rd.	16,422	626	3.7%	17,048	8.1%
	McNeil Dr.	25,842	1,776	6.4%	27,618	13.1%
	Total	198,956	11,382	5.4%	210,338	100.0%
Screenline 45N-B	US 79	29,800	2,041	6.4%	31,841	17.1%
	CR 168/Gattis School Rd.	17,404	826	4.5%	18,231	9.8%
	SH 45 NE Mainline	**40,891**	**2,003**	**4.7%**	**42,894**	**23.1%**
	SH 45 NE Frontage	12,401	643	4.9%	13,044	7.0%
	Pflugerville Loop Rd.	16,726	1,063	6.0%	17,789	9.6%
	FM 1825/Pecan St.	15,926	1,950	10.9%	17,876	9.6%
	Wells Branch Pkwy	20,383	852	4.0%	21,235	11.4%
	Howard Lane	21,396	1,478	6.5%	22,873	12.3%
	Total	174,927	10,857	5.8%	185,784	100.0%
Loop 1						
Screenline Loop 1-A	US 183	190,698	5,592	2.8%	196,290	30.8%
	Parmer Lane	39,452	3,859	8.9%	43,311	6.8%
	Howard Lane	17,233	800	4.4%	18,033	2.8%
	FM 1325/Loop 1 SR	21,220	1,051	4.7%	22,272	3.5%
	Loop 1 Mainline	**66,147**	**1,277**	**1.9%**	**67,424**	**10.6%**
	Bratton Lane	9,683	868	8.2%	10,551	1.7%
	IH 35	157,400	18,286	10.4%	175,686	27.5%
	Heatherwilde	16,201	380	2.3%	16,581	2.6%
	N Railroad Rd	5,749	271	4.5%	6,020	0.9%
	FM 685	29,610	1,843	5.9%	31,453	4.9%
	SH 130	44,912	5,752	11.4%	50,664	7.9%
	Total	598,305	39,980	6.3%	638,285	100.0%
SH 45 SE						
Screenline 45SE-A	FM 1327	12,321	1,465	10.6%	13,785	40.5%
	SH 45 SE Mainline	**16,735**	**2,490**	**13.0%**	**19,225**	**56.5%**
	Turnersville Rd.	1,014	30	2.8%	1,043	3.1%
	Total	30,069	3,984	11.7%	34,054	100.0%

Notes: (1) Truck volumes shown include 3+ axle vehicles.

Table 3.3 2016 Average Weekday Screenline Volumes for 290E and 183A

	Route	Auto	Truck [1]	% Truck	Total	% of Total
290E Corridor						
290E Mainline	West of Springdale Rd. [2]	33,460	2,506	7.0%	35,966	21.1%
290E Mainline	West of Giles Ln.	30,699	1,521	4.7%	32,220	18.9%
290E Mainline	East of Parmer Ln.	18,502	1,126	5.7%	19,628	11.5%
290E Frontage	West of Springdale Rd. [2]	32,939	3,994	10.8%	36,934	21.6%
290E Frontage	West of Giles Ln.	22,936	2,503	9.8%	25,440	14.9%
290E Frontage	East of Parmer Ln.	17,874	2,704	13.1%	20,578	12.1%
Total		156,411	14,354	8.4%	170,765	100%
183A						
Screenline 183A-A	Lakeline Blvd	23,919	1,157	4.6%	25,076	15.2%
Screenline 183A-A	US 183	36,285	3,621	9.1%	39,906	24.1%
Screenline 183A-A	**183A Mainline**	**57,767**	**2,308**	**3.8%**	**60,075**	**36.3%**
Screenline 183A-A	Vista Ridge Blvd	7,040	204	2.8%	7,245	4.4%
Screenline 183A-A	Parmer Ln	30,905	2,126	6.4%	33,031	20.0%
Screenline 183A-A	Total	155,917	9,417	5.7%	165,333	100%
Screenline 183A-B	Pecan Park Blvd	7,739	216	2.7%	7,955	4.0%
Screenline 183A-B	US 183	38,657	4,279	10.0%	42,936	21.3%
Screenline 183A-B	**183A Mainline**	**46,193**	**1,371**	**2.9%**	**47,564**	**23.6%**
Screenline 183A-B	US 183 SB On-Ramp	29,009	968	3.2%	29,977	14.9%
Screenline 183A-B	US 183/SH 45 DC	19,201	1,397	6.8%	20,598	10.2%
Screenline 183A-B	Lake Creek Pkwy	13,713	909	6.2%	14,622	7.3%
Screenline 183A-B	Parmer Ln	33,882	3,645	9.7%	37,527	18.7%
Screenline 183A-B	Total	188,395	12,785	6.4%	201,180	100%

Notes: (1) Truck volumes shown include 3+ axle vehicles.
(2) Auto and truck volumes estimated; total volumes are actual.

3.2 TRAVEL SPEEDS

Travel time and speed data were collected using both the HERE and SigAlert databases for sections of the primary non-tolled routes that compete with the CTTS system, which include IH-35, the non-tolled section of Loop 1, US 183, FM 973, SH 360, Parmer Lane, US 79, and RM 620. The HERE data, provided by TxDOT, were available for the locations shown in

Figure 3.3. The HERE data for autos are obtained from a number of sources including mobile phones, vehicles, and portable navigation devices. For trucks, data are obtained from the American Transportation Research Institute leveraging embedded fleet systems.

SigAlert is a publicly available website that provides real-time traffic speeds on freeways and some major arterials. Stantec has been continuously gathering data for all interstates and arterials in the Austin region over the last five years and has an extensive monthly database for each roadway. SigAlert data rely primarily on monitoring real-time traffic performance devices maintained by public agencies in each region. The SigAlert data from October 2016 were used to supplement and validate the HERE data. Both SigAlert and the HERE data sets are estimates of travel time and given the different sources of data, there is some variation in the estimated travel times.

Table 3.4 summarizes the average speeds across segments of each roadway for both AM and PM peaks, midday, and nighttime periods. As expected, speeds for SH 130, SH 45 N, and SH 45 SE are well above 65 MPH throughout the day. Loop 1 has slightly slower speeds because the data include both the tolled and non-tolled sections of Loop 1. In the table, IH-35 is summarized by three segments, each of which includes shorter, more congested portions during particular time periods. While midday and nighttime speeds for IH-35 generally range between 50 to 70 MPH, the peak period congested speeds in the peak travel direction are reduced to less than 45 MPH.

Speeds by smaller, individual sections of these roadways in the primary project area are shown for the AM peak period, PM peak period, midday period, and nighttime period in Figure 3.4 through Figure 3.7. From the figures, it is clear that IH-35 has congestion through central Austin for all periods of the day, with speeds below 25 mph, and that Loop 1 and US 183 within Austin also have significant congestion during the peak periods.

Figure 3.3 Travel Time Data Location Map

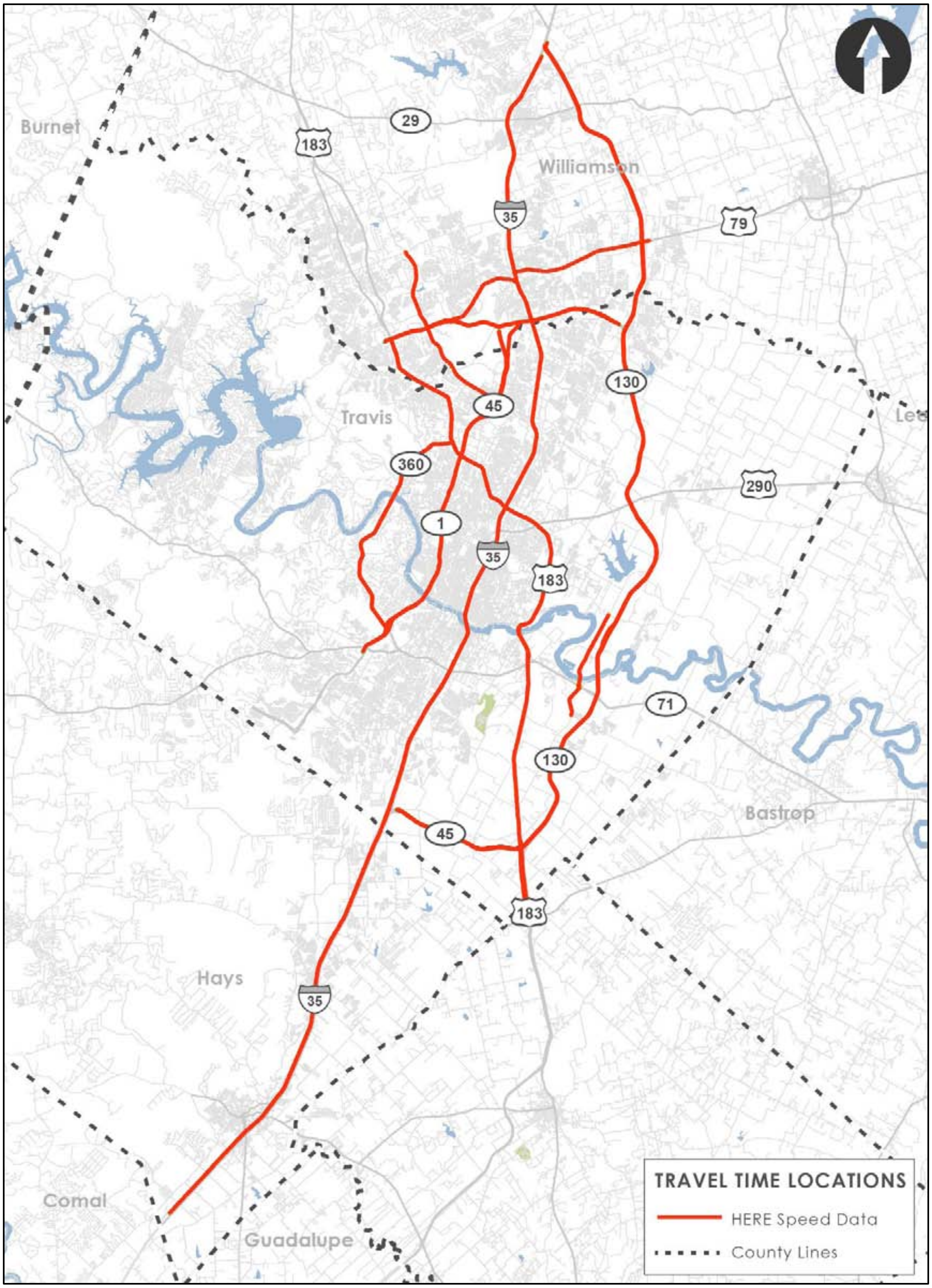


Table 3.4 Existing Speeds – Averages by Segments (mph)

Route	Section Limits		Direction	Distance (mi)	AM (6AM-10AM)		Midday (10AM-3PM)		PM (3PM-7PM)		Nighttime (7PM-6AM)	
					HERE	SigAlert	HERE	SigAlert	HERE	SigAlert	HERE	SigAlert
IH 35	SH 130	MLK Blvd.	NB	29	63	73	62	73	46	63	63	73
			SB	29	46	62	58	70	45	69	58	73
	MLK Blvd.	SH 80	NB	29	44	61	53	65	43	59	62	71
			SB	30	64	73	59	70	40	60	59	71
	SH 80	FM 1102 (HERE) or Loop 1604 (SigAlert)	NB	9	67	70	66	69	65	68	65	70
			SB	9	67	66	66	68	65	67	66	68
Loop 1	SH 45 N	US 290 W	NB	19	50	60	56	63	36	52	54	64
			SB	20	47	56	59	64	37	53	59	65
SH 130	IH 35	US 183	NB	47	69	78	69	78	68	77	66	78
			SB	47	69	77	69	77	68	76	69	77
SH 45 N	US 183	SH 130	EB	13	70	75	69	75	70	75	66	75
			WB	13	69	77	70	78	71	77	70	78
US 183	SH 45 N	Manor Rd.	NB	14	57	64	60	65	40	56	60	65
			SB	14	48	59	60	66	57	64	60	66
	Manor Rd.	SH 130	NB	17	36	52	41	56	34	50	46	61
			SB	17	39	52	42	55	31	46	42	57
	SH 130	FM 1185 (HERE) or IH 10 (SigAlert)	NB	3	43	55	40	55	40	55	37	55
			SB	3	52	57	53	56	54	56	53	58
SH 360	US 183	Loop 1	NB	13	37	50	36	50	26	41	43	55
			SB	13	35	48	39	52	29	43	39	56
US 79	IH 35	SH 130	EB	7	35	51	36	52	32	49	39	53
			WB	7	34	49	33	48	31	45	33	51
FM 973	Pearce Ln.	FM 969	NB	6	27	--	27	--	28	--	30	--
			SB	6	23	--	27	--	29	--	27	--
FM 620	US 183 (SigAlert) or SH 45 N (HERE)	IH 35	EB	6	32	49	32	52	29	45	33	54
			WB	6	34	50	33	49	31	47	33	52
FM 974/ Parmer Ln.	FM 1431	Loop 1	NB	10	32	--	34	--	31	--	36	--
			SB	10	33	--	35	--	30	--	35	--
Loop 1 Frontage	SH 45 EB Frontage	US 183	NB	5	26	--	30	--	28	--	31	--
			SB	5	27	--	28	--	27	--	28	--
SH 45 SE	IH 35	US 183	EB	7	70	77	68	77	69	77	66	77
			WB	7	69	78	69	78	70	78	69	78

Figure 3.4 AM Existing Speeds

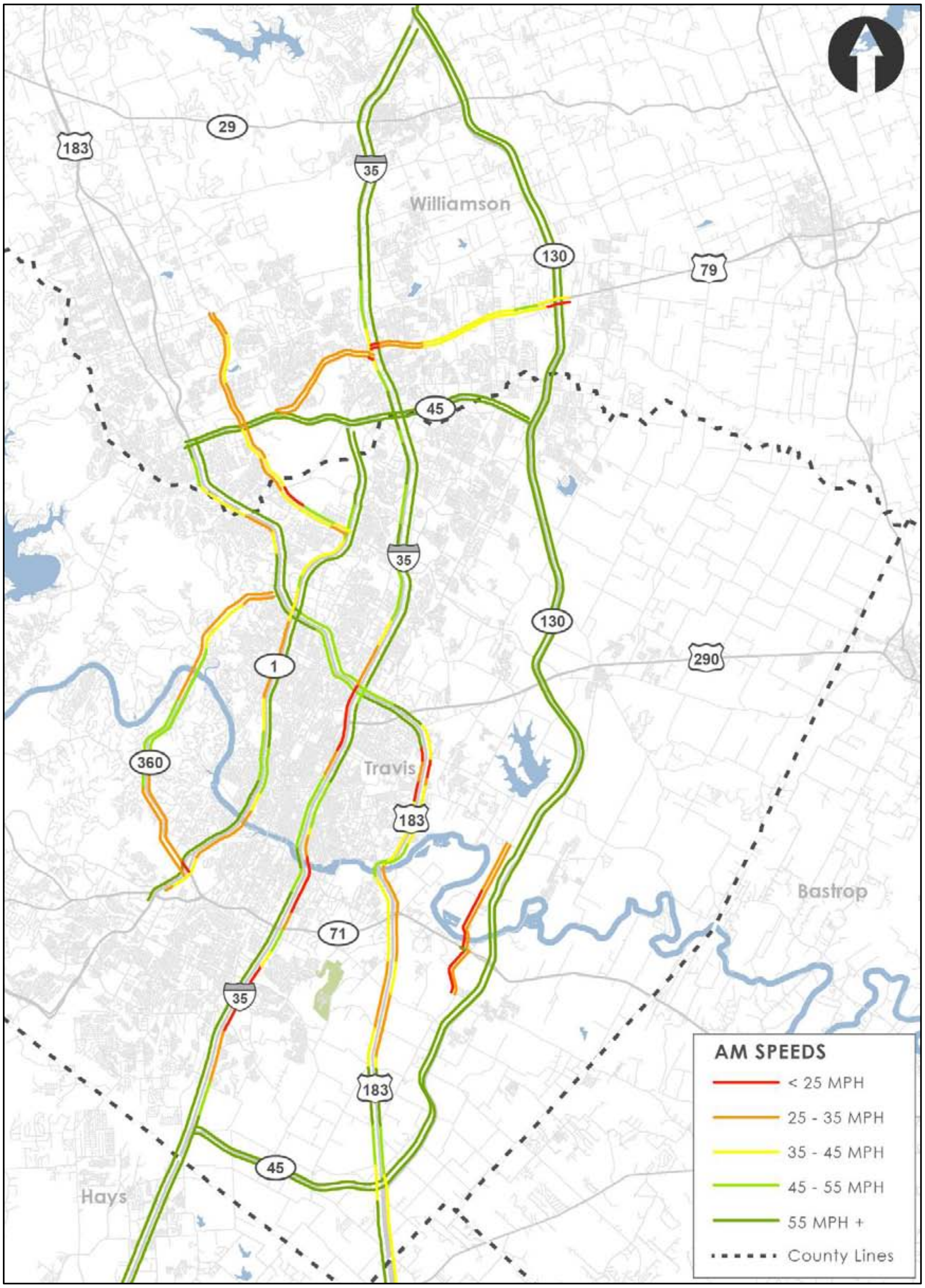


Figure 3.5 PM Existing Speeds

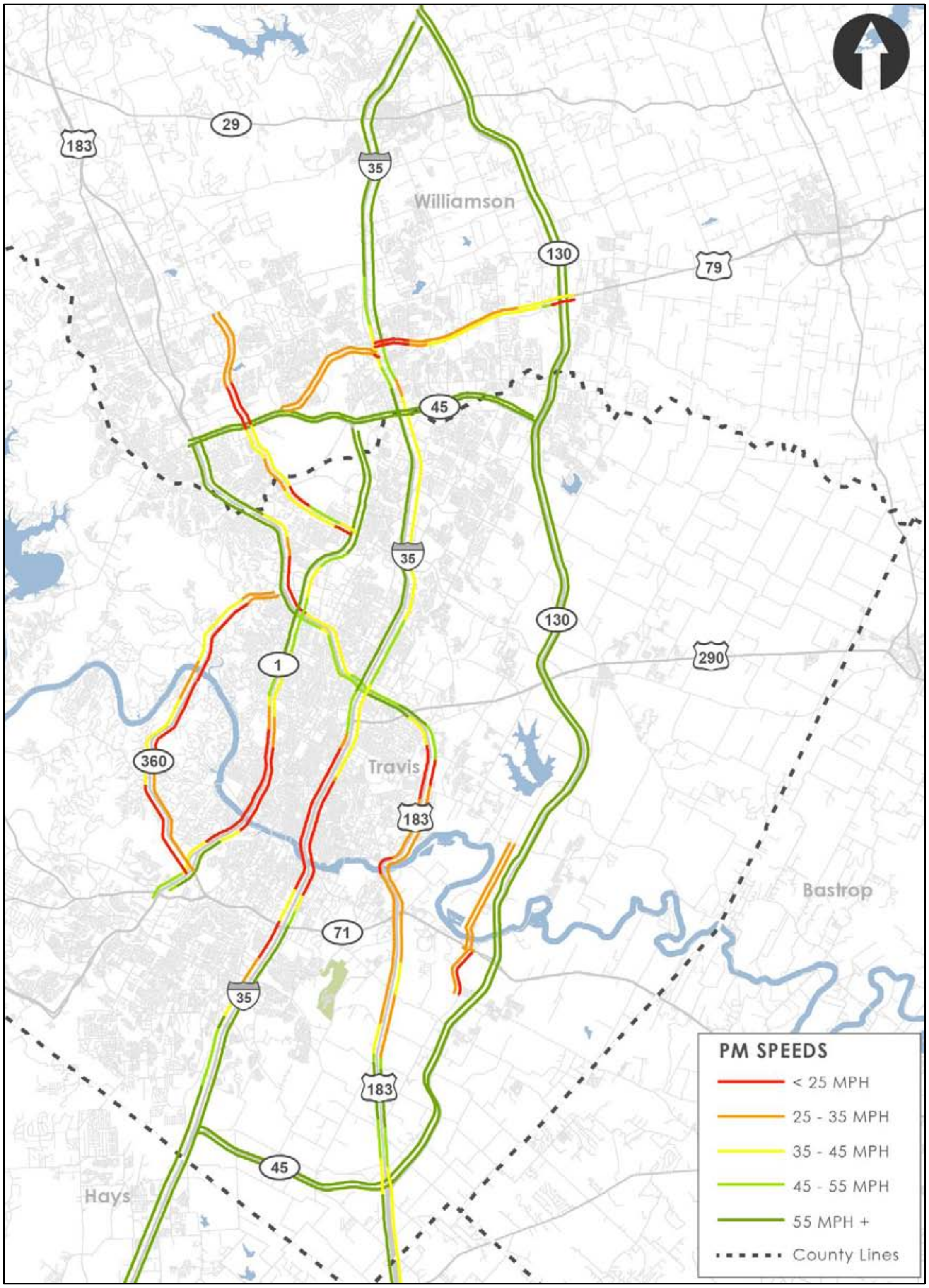


Figure 3.6 Midday Existing Speeds

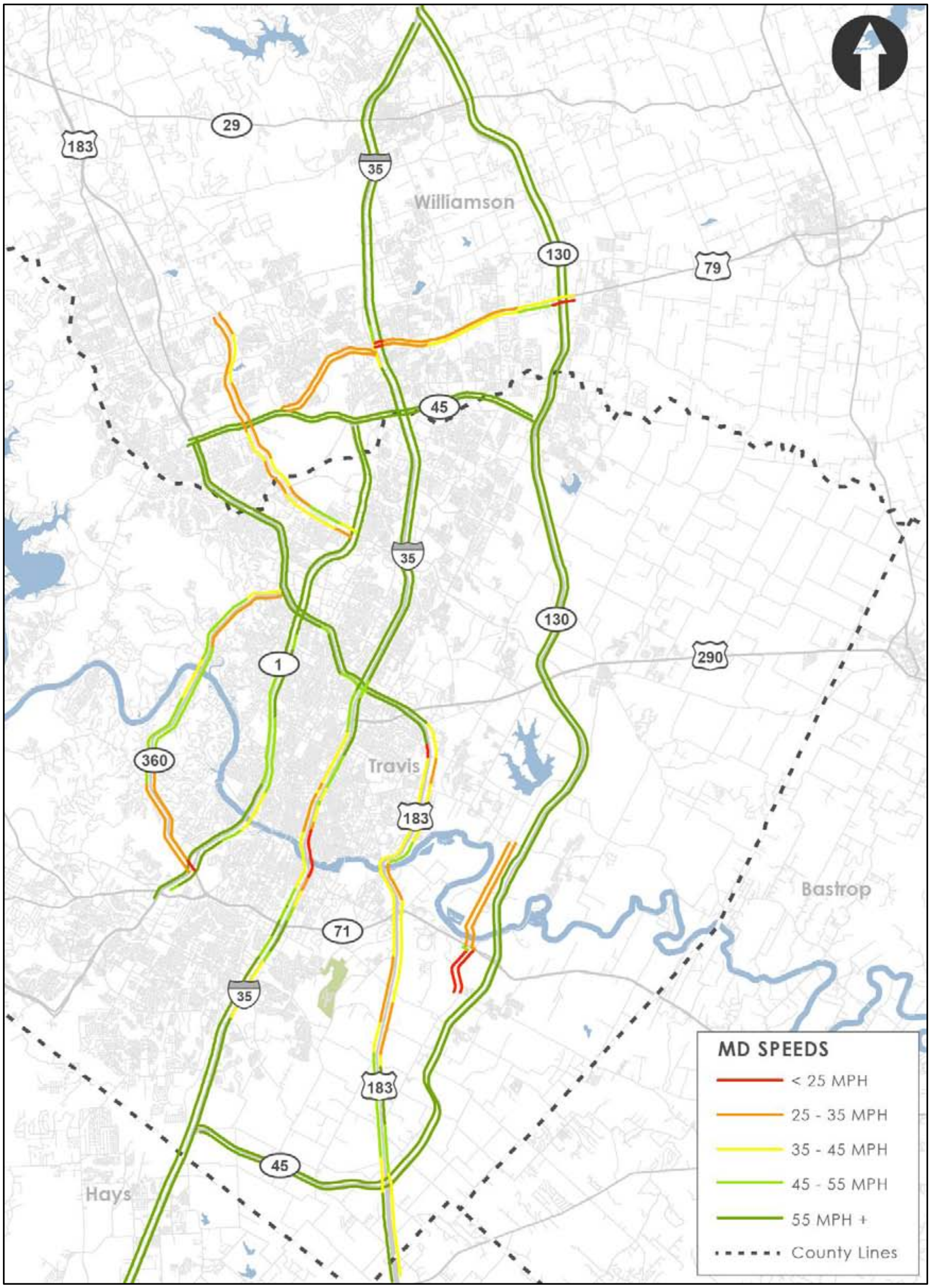
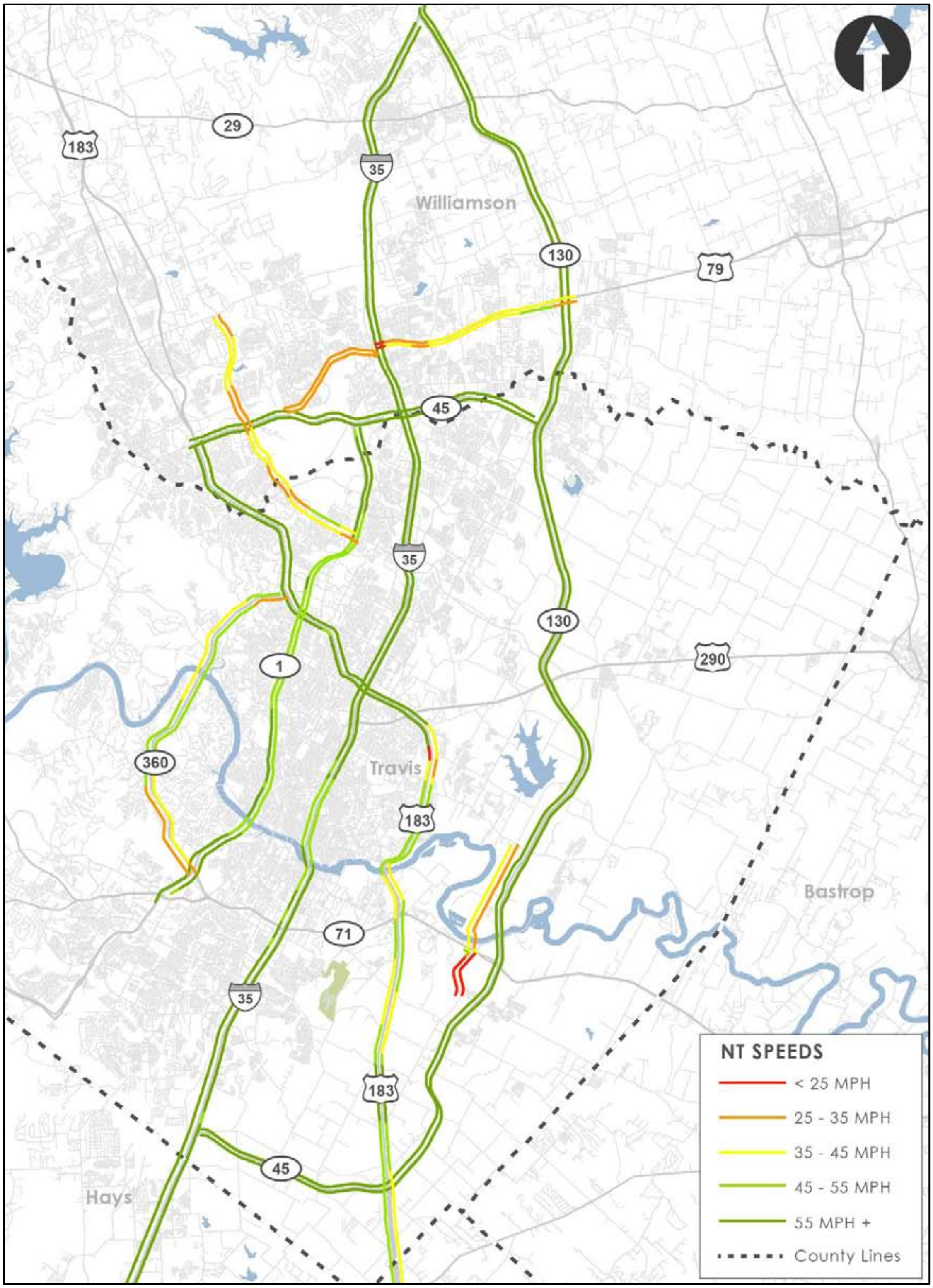


Figure 3.7 Nighttime Existing Speeds



4.0 TOLL COLLECTION

This chapter presents TxDOT's toll collection policy for the CTTS, including methods of toll collection, toll rates, and violation procedures, as well as the policy regarding future rates. Future toll rates and tolling assumptions used to develop the forecasts for this study are also presented in this chapter.

4.1 METHODS OF TOLL COLLECTION

Since January 2013, TxDOT operates the CTTS as a cashless system using only two methods of toll collection: ETC and Pay by Mail (PBM). Drivers using ETC automatically pay the toll with their TxTag or other transponder tags covered under interoperability agreements, while drivers without a recognizable transponder have their license plate photographed at the pay points. TxDOT then mails an invoice to the registered owner of the vehicle to collect payment. Each of these options are discussed briefly below with more detail regarding invoicing and collection procedures for PBM transactions provided later in Section 4.5.

ETC & Interoperability

Drivers with a properly mounted transponder and a sufficiently funded transponder account automatically pay the toll with their TxTag or other interoperable transponders. The ETC transponder payment method requires that drivers attach a small sticker to the windshields of the vehicles containing a thin transponder which sends a signal to the electronic tolling equipment as the vehicle crosses a tolling point. TxDOT's ETC transponder is branded as a TxTag. TxDOT's toll collection system is also interoperable with all tags issued in Texas, including those issued by Harris County Toll Road Authority and North Texas Tollway Authority, under the terms of a 2007 Interlocal Agreement. This agreement was superseded by the Central US Interoperability Agreement (CUSIOP Agreement) in 2017, which includes all Texas toll entities either directly or under an agreement with CTRMA, in addition to the Oklahoma Turnpike Authority and Kansas Turnpike Authority. Most recently, the Commission authorized TxDOT to enter into a separate supplemental interoperability agreement (SSIOP) with other Texas toll entities, the Oklahoma Turnpike Authority, the Kansas Turnpike Authority, and Florida's Turnpike Enterprise related to the interoperability of their respective ETC programs through the use of the Central US Interoperability Hub and the Southeast US Interoperability Hub.

Pay by Mail (PBM)

When a driver crosses a tolling point and a valid ETC transponder is not recognized, an image of the vehicle's license plate is captured, and if there is an existing customer toll account with sufficient funds associated with that license plate, the transaction is posted to such account and processed as an ETC transponder payment. For those customers that use a CTTS facility without a valid and sufficiently funded transponder account, these transactions are referred to as 'Pay by Mail' or PBM. Note that there is a 33 percent surcharge on PBM transactions and the tolls from these transactions are invoiced to the owner of the vehicle on a monthly basis.

4.2 HISTORICAL AND CURRENT TOLL RATES

The historical toll rates for 2-axle vehicles using SH 45 N and Loop 1, SH 130, and SH 45 SE are shown in Table 4.1, Table 4.2, and Table 4.3, respectively. Each facility opened with a phased toll schedule: toll free to half rate to full rate. SH 45 SE was originally constructed as a cashless facility which opened after the other elements of the CTTS were opened; therefore, cash rates are not shown for this roadway.

The toll rates remained the same from each road's opening until the system-wide toll increases were implemented in January 2013 for SH 45 N, Loop 1, and SH 130. Subsequent increases were made in January of 2014, 2015, 2017, and 2018 for all facilities, including SH 45 SE. These increases were part of the annual toll escalation process adopted in 2013, under which tolls will increase annually based on the prior 12-month Consumer Price Index - Urban (CPI-U Index).

Table 4.1 SH 45 N and Loop 1 Historical and Current Toll Rates, 2-axle vehicles

Dates	SH 45 N and Loop 1					
	Mainline Plazas			Ramps		
	ETC	Pay by Mail	Cash	ETC	Pay by Mail	Cash
Nov-06 to Dec-06	Open Toll Free					
Jan-07	-	-	$0.75	-	-	$0.50
Feb-07	$0.34	-	$0.75	$0.23	-	$0.50
Mar-07 to Dec-12	$0.68	$0.90	$0.75	$0.45	$0.60	$0.50
2013	$1.02	$1.36	-	Varies by Location		
2014	$1.04	$1.38	-	Varies by Location		
2015	$1.06	$1.41	-	Varies by Location		
2016	$1.06	$1.41	-	Varies by Location		
2017	$1.07	$1.42	-	Varies by Location		
2018	$1.09	$1.45	-	Varies by Location		

Table 4.2 SH 130 Historical and Current Toll Rates, 2-axle vehicles

Dates	SH 130					
	Mainline Plazas			Ramps		
	ETC	Pay by Mail	Cash	ETC	Pay by Mail	Cash
Nov-06 to Dec-06	Open Toll Free					
Jan-07	-	-	$1.50	-	-	$0.50
Feb-07	$0.68	-	$1.50	$0.23	-	$0.50
Mar-07 to Dec-12	$1.35	$1.80	$1.50	$0.45	$0.60	$0.50
2013	$1.69	$2.24	-	Varies by Location		
2014	$1.72	$2.29	-	Varies by Location		
2015	$1.75	$2.33	-	Varies by Location		
2016	$1.75	$2.33	-	Varies by Location		
2017	$1.77	$2.35	-	Varies by Location		
2018	$1.80	$2.39	-	Varies by Location		

Table 4.3 SH 45 SE Historical and Current Toll Rates, 2-axle vehicles

Dates	SH 45 SE			
	Mainline Plazas		Ramps	
	ETC	Pay by Mail	ETC	Pay by Mail
May-09	Open Toll Free			
Jun-09	$0.50	-	$0.33	-
Jul-09 to Dec-13	$1.00	$1.33	$0.66	$0.88
2014	$1.02	$1.36	$0.67	$0.89
2015	$1.04	$1.38	$0.68	$0.90
2016	$1.04	$1.38	$0.68	$0.90
2017	$1.05	$1.40	$0.69	$0.92
2018	$1.07	$1.42	$0.70	$0.93

As shown in the tables above, there is a 33 percent surcharge on PBM transactions. Vehicles with more than two axles pay a proportionately higher toll using the (n-1) formula whereby the toll is equal to the passenger car toll times the vehicle's number of axles less one. For instance, a 3-axle vehicle pays two times the passenger car rate. The maximum truck toll rate for SH 130 and SH 45 SE is capped at the 4-axle rate, which is three times the auto rate. This limitation was implemented to encourage long-distance truck traffic to utilize the CTTS as an alternative to IH-35 through Austin. Current 2018 toll rates for 4-axle vehicles are shown for each CTTS element in Table 4.4.

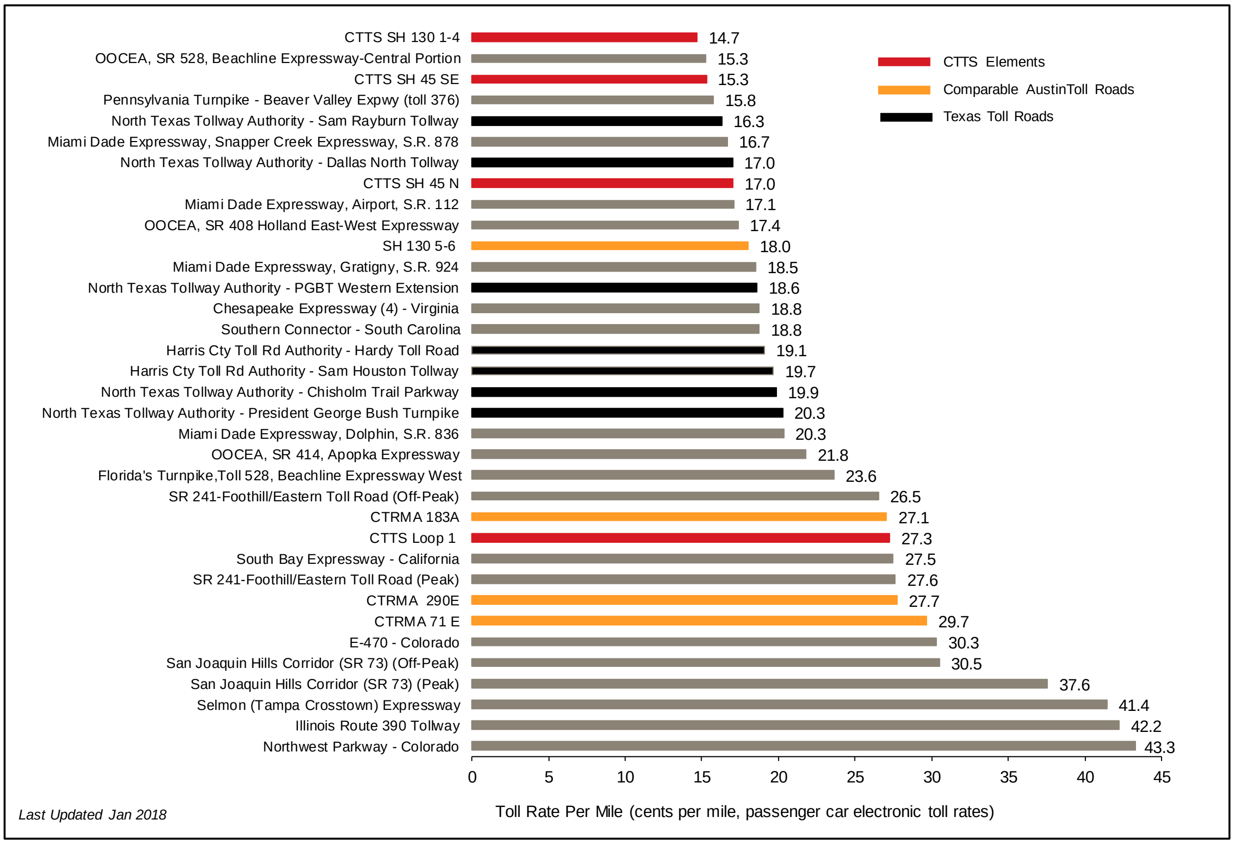
Table 4.4 CTTS 2018 Toll Rates, 4-axle vehicles

CTTS Element	Mainline Plazas	
	ETC	Pay by Mail
SH 45 N	$3.27	$4.35
Loop 1	$3.27	$4.35
SH 130	$5.40	$7.18
SH 45 SE	$3.21	$4.27

Notes: (1) Effective March 2011, truck tolls capped at 4-axle rate on SH 130 and SH 45 SE.

As shown in Figure 4.1, the per-mile ETC toll rates for passenger cars on CTTS facilities are comparable to, or lower than, the rates at various facilities across the United States. Loop 1 has a higher toll rate per mile than the other CTTS elements due to the relatively short length of the facility (4 miles), and uniform mainline tolls established at the initial opening more than ten years ago. The reasonable rate of inflation used for the toll escalation rate will ensure that CTTS toll rates stay within a comparable range assuming similar CPI rate escalation on such other toll facilities.

Figure 4.1 Comparable Passenger Car ETC Toll Rates per Mile



4.3 POLICY REGARDING FUTURE RATES

The future toll rates for the CTTS facilities are based on the current toll rates in 2018, escalated annually at the annual inflation rate. This escalation policy was adopted by the Texas Transportation Commission in 2013 whereby tolls are escalated annually on January 1st based on the Toll Rate Escalation Percentage, as calculated on each Toll Escalation Determination Date. The Toll Rate Escalation Percentage is the Consumer Price Index – Urban (CPI-U) on October 1st, the Toll Escalation Determination Date of each year, based on the twelve-month period ending August 31st of the current year. Table 4.5 shows historical CPI-U annual averages as well as several average annual growth rates depicting long-term trends. For the 27-year period from 1990 to the present, the average annual growth rate is calculated to be 2.4 percent. For the 37-year period from 1980 to the present, the average annual growth rate is greater, at 3.0 percent.

Table 4.5 Annual Consumer Price Index – Historical since 1970

Year	Annual CPI-U [1] (1982-84=100)	Compound Annual Growth Rate
1970	39	
1980	82	7.8%
1990	131	4.7%
2000	172	2.8%
2010	218	2.4%
2017	245	1.7%
Compound Annual Growth Rate		
1970 - 2017		4.0%
1980 - 2017		3.0%
1990 - 2017		2.4%
2000 - 2017		2.1%
2010 - 2017		1.7%

Notes: (1) CPI-U values shown are nominal U.S. city average, all items, seasonally-adjusted annual averages.

Per the adopted escalation policy, the actual level of tolls for any future year will be based on the CPI-U, and the resulting toll revenues will change as a function of both the change in transactions and the change in the toll values. The first inflation-based annual escalation was implemented in January 2014 when tolls were increased 1.5 percent. Table 4.6 shows recent annual CPI-U data as well as the toll increases since 2014. Each toll increase was based on the prior 12-month period from August of each year, which is different than the calendar year changes listed in the top section of the table. The last section of Table 4.6 lists the projected annual escalation rates used for developing future toll rates in this study.

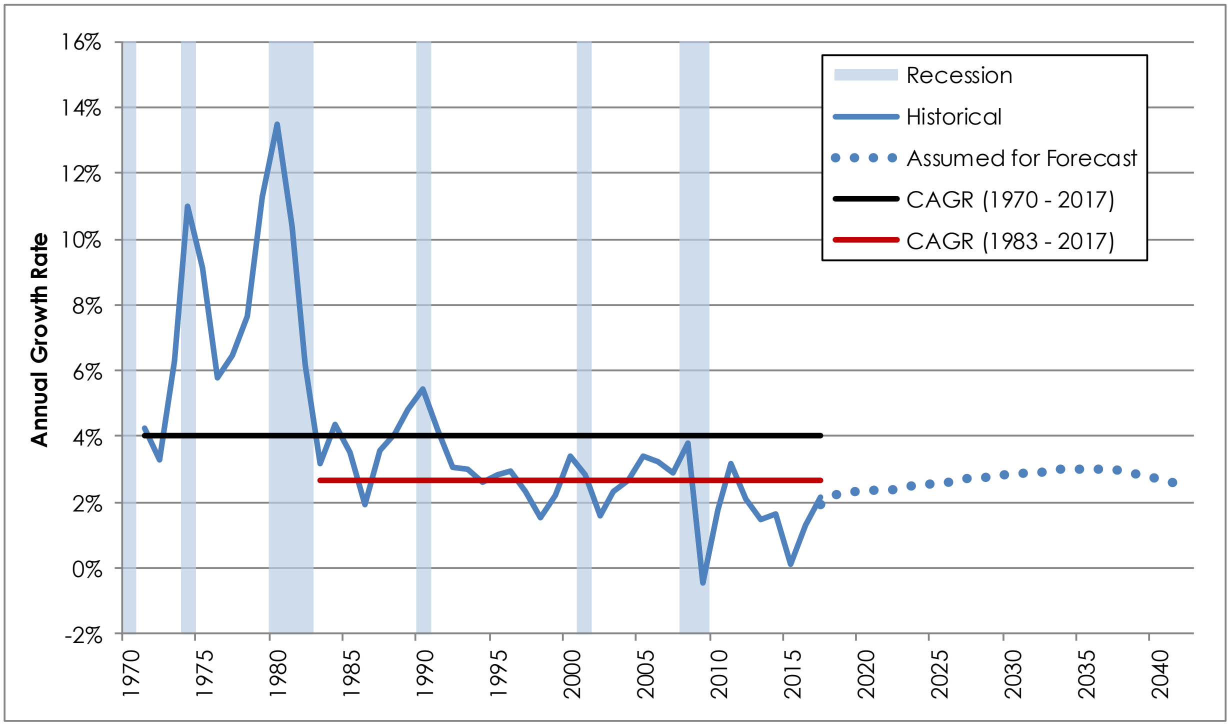
Considering these trends, Stantec found it reasonable to escalate inflation as listed in Table 4.6. The assumed annual escalation rates begin close to the more recent data at 2.2 percent in 2019, then gradually increase to 3.0 percent by 2034 and continue at that level through 2038 and then decrease slightly thereafter. The historical and projected average annual growth rates are also shown in Figure 4.2 below. Toll escalation for the other toll roads in the region are based on the respective policy for each toll facility. The annual base rates for CTRMA's facilities are also based on changes in CPI-U, similar to CTTS. Toll rates for SH 130 Segments 5 & 6 are assumed to escalate based on a historical relationship between CPI and Texas Gross State Product (GSP) per capita, as this facility escalates tolls via changes in the Texas GSP per capita.

Table 4.6 Annual Consumer Price Index – Recent and Projected

Year	Annual CPI-U [1] (1982-84=100)	Annual Rate of Change
2008	215	
2009	214	-0.4%
2010	218	1.8%
2011	225	3.1%
2012	230	2.1%
2013	233	1.5%
2014	237	1.6%
2015	237	0.1%
2016	240	1.3%
2017	245	2.1%
Annual Toll Escalation		
2014 (Aug 2012 - Aug 2013)		1.5%
2015 (Aug 2013 - Aug 2014)		1.7%
2016 (Aug 2014 - Aug 2015)		0.2%
2017 (Aug 2015 - Aug 2016)		1.1%
2018 (Aug 2016 - Aug 2017)		1.9%
2019		2.2%
2020		2.3%
2021		2.3%
2022		2.4%
2023		2.4%
2024		2.5%
2025		2.5%
2026		2.6%
2027		2.6%
2028		2.7%
2029		2.7%
2030		2.8%
2031		2.8%
2032		2.9%
2033		2.9%
2034		3.0%
2035		3.0%
2036		3.0%
2037		3.0%
2038		3.0%
2039		2.9%
2040		2.8%
2041		2.7%
2042		2.6%
2017 - 2042		2.7%

Notes: (1) CPI-U values shown are nominal U.S. city average, all items, seasonally adjusted annual averages.
(2) Projected assumed for forecast.

Figure 4.2 Annual Consumer Price Index – Historical and Projected



4.4 FUTURE TOLL RATES

The assumed toll rates on each CTTS facility for each model year, as well as the existing 2018 toll rates, are shown in Table 4.7, Table 4.8, Table 4.9, and Table 4.10 below. The surcharge of 33 percent for PBM transactions is assumed to continue throughout all model years. Vehicles having more than two axles will continue to pay a proportionately higher toll using the (n-1) formula in the same way these vehicles currently do. Consistent with TxDOT's current policy described previously, truck tolls for SH 130 and SH 45 SE are capped at the rate of a 4-axle vehicle.

A full-length trip using ETC on SH 45 N currently costs $2.18 in 2018, and by 2040, the toll for the same trip increases to $3.92. The per mile rate for the 12.8-mile full-length trip on SH 45 N is $0.17 in 2018, increasing to $0.31 in 2040. On Loop 1, a full-length trip costs $1.09 today for ETC transactions, but will increase to $1.96 in 2040. The per mile toll rate on Loop 1 for a full-length trip of four miles is currently $0.27 and will increase to $0.49 in 2040.

Table 4.7 SH 45 N Toll Schedule (Autos)

Toll Location	Payment Type	2016*	2017	2018*	2020*	2030*	2040*
Lake Creek ML Plaza	Pay by Mail	$1.41	$1.42	$1.45	$1.52	$1.95	$2.60
	ETC	$1.06	$1.07	$1.09	$1.14	$1.47	$1.96
Parmer Ln (FM 734) Ramps	Pay by Mail	$1.21	$1.22	$1.25	$1.31	$1.68	$2.24
	ETC	$0.91	$0.92	$0.94	$0.98	$1.26	$1.69
RM 620 (Howard Ln) Ramps	Pay by Mail	$1.21	$1.22	$1.25	$1.31	$1.68	$2.24
	ETC	$0.91	$0.92	$0.94	$0.98	$1.26	$1.69
O'Connor Dr Ramps	Pay by Mail	$1.24	$1.25	$1.28	$1.33	$1.72	$2.29
	ETC	$0.93	$0.94	$0.96	$1.00	$1.29	$1.72
Greenlawn Ramps	Pay by Mail	$0.93	$0.94	$0.96	$1.00	$1.29	$1.72
	ETC	$0.70	$0.71	$0.72	$0.75	$0.97	$1.29
AW Grimes Ramps	Pay by Mail	$0.93	$0.94	$0.96	$1.00	$1.29	$1.72
	ETC	$0.70	$0.71	$0.72	$0.75	$0.97	$1.29
Schultz Ln (Arterial A) Ramps	Pay by Mail	$1.41	$1.42	$1.45	$1.52	$1.95	$2.60
	ETC	$1.06	$1.07	$1.09	$1.14	$1.47	$1.96
Wilke Ln (Heatherwide) Ramps	Pay by Mail	$1.41	$1.42	$1.45	$1.52	$1.95	$2.60
	ETC	$1.06	$1.07	$1.09	$1.14	$1.47	$1.96
Heatherwide ML Plaza	Pay by Mail	$1.41	$1.42	$1.45	$1.52	$1.95	$2.60
	ETC	$1.06	$1.07	$1.09	$1.14	$1.47	$1.96
Full Length Trip	Distance	12.8	12.8	12.8	12.8	12.8	12.8
	Rate per Mile	$0.17	$0.17	$0.17	$0.18	$0.23	$0.31
	Toll Cost (ETC)	$2.12	$2.14	$2.18	$2.28	$2.94	$3.92

Notes: (1) Rate per mile shown for a full-length trip is equal to the total toll cost divided by the distance.
(2) Toll cost for a full-length trip is equal to the sum of the mainline plaza tolls.
(3) The assumed annual escalation rates are as shown in Table 4.6.
(4) Toll rates shown for 2016 through 2018 are actual; toll rates shown for 2020, 2030 and 2040 are assumed based on the escalation rates shown in Table 4.6.
(5) Years shown with an asterisk (*) are model years.

Table 4.8 Loop 1 Toll Schedule (Autos)

Toll Location	Payment Type	2016*	2017	2018*	2020*	2030*	2040*
Howard Ln / Wells Branch Ramps	Pay by Mail	$0.93	$0.94	$0.96	$1.00	$1.29	$1.72
	ETC	$0.70	$0.71	$0.72	$0.75	$0.97	$1.29
Merrilltown ML Plaza	Pay by Mail	$1.41	$1.42	$1.45	$1.52	$1.95	$2.60
	ETC	$1.06	$1.07	$1.09	$1.14	$1.47	$1.96
Shoreline Dr Ramps	Pay by Mail	$0.93	$0.94	$0.96	$1.00	$1.29	$1.72
	ETC	$0.70	$0.71	$0.72	$0.75	$0.97	$1.29
Full Length Trip	Distance	4.0	4.0	4.0	4.0	4.0	4.0
	Rate per Mile	$0.27	$0.27	$0.27	$0.28	$0.37	$0.49
	Toll Cost (ETC)	$1.06	$1.07	$1.09	$1.14	$1.47	$1.96

Notes: (1) Rate per mile shown for a full-length trip is equal to the total toll cost divided by the distance.
(2) Toll cost for a full-length trip is equal to the sum of the mainline plaza tolls.
(3) The assumed annual escalation rates are as shown in Table 4.6.
(4) Toll rates shown for 2016 through 2018 are actual; toll rates shown for 2020, 2030 and 2040 are assumed based on the escalation rates shown in Table 4.6.
(5) Years shown with an asterisk (*) are model years.

To travel the full length of 49 miles on SH 130 Segments 1-4 today, the toll cost is $7.20 using ETC or $0.15 per mile. By 2040, the same full-length trip on this road increases to $12.92 for a per mile rate of $0.26. On SH 45 SE, the current ETC cost for a full-length trip is $1.07 and increases to $1.92 by 2040. The per-mile rate for a full-length seven-mile trip will increase from $0.15 in 2014 to $0.27 in 2040.

Table 4.9 SH 130 Toll Schedule (Autos)

Toll Location	Payment Type	2016*	2017	2018*	2020*	2030*	2040*
Segment 1 ML Plaza	Pay by Mail	$2.33	$2.35	$2.39	$2.50	$3.22	$4.30
	ETC	$1.75	$1.77	$1.80	$1.88	$2.42	$3.23
Segment 2 ML Plaza	Pay by Mail	$2.33	$2.35	$2.39	$2.50	$3.22	$4.30
	ETC	$1.75	$1.77	$1.80	$1.88	$2.42	$3.23
Segment 3 ML Plaza	Pay by Mail	$2.33	$2.35	$2.39	$2.50	$3.22	$4.30
	ETC	$1.75	$1.77	$1.80	$1.88	$2.42	$3.23
Segment 4 ML Plaza	Pay by Mail	$2.33	$2.35	$2.39	$2.50	$3.22	$4.30
	ETC	$1.75	$1.77	$1.80	$1.88	$2.42	$3.23
Cameron Rd Ramps	Pay by Mail	$2.33	$2.35	$2.39	$2.50	$3.22	$4.30
	ETC	$1.75	$1.77	$1.80	$1.88	$2.42	$3.23
FM 104, Pecan St, Gregg Manor, FM 973, FM 969, Pearce Ln, and FM 812 Ramps	Pay by Mail	$0.77	$0.78	$0.80	$0.83	$1.07	$1.43
	ETC	$0.58	$0.59	$0.60	$0.63	$0.81	$1.08
US 79, CR 138, Chandler Rd and Elroy Rd Ramps	Pay by Mail	$1.00	$1.01	$1.02	$1.07	$1.38	$1.84
	ETC	$0.75	$0.76	$0.77	$0.81	$1.04	$1.38
SH 29, Blue Bluff, Harold Green, and Moore Rd Ramps	Pay by Mail	$0.63	$0.64	$0.65	$0.68	$0.88	$1.17
	ETC	$0.47	$0.48	$0.49	$0.51	$0.66	$0.88
Full Length Trip	Distance	49.0	49.0	49.0	49.0	49.0	49.0
	Rate per Mile	$0.14	$0.14	$0.15	$0.15	$0.20	$0.26
	Toll Cost (ETC)	$7.00	$7.08	$7.20	$7.52	$9.68	$12.92

Notes: (1) Rate per mile shown for a full-length trip is equal to the total toll cost divided by the distance.
(2) Toll cost for a full-length trip is equal to the sum of the mainline plaza tolls.
(3) The assumed annual escalation rates are as shown in Table 4.6.
(4) Toll rates shown for 2016 through 2018 are actual; toll rates shown for 2020, 2030 and 2040 are assumed based on the escalation rates shown in Table 4.6.
(5) Years shown with an asterisk (*) are model years.

Table 4.10 SH 45 SE Toll Schedule (Autos)

Toll Location	Payment Type	2016*	2017	2018*	2020*	2030*	2040*
Mainline Plaza	Pay by Mail	$1.38	$1.40	$1.42	$1.49	$1.91	$2.55
	ETC	$1.04	$1.05	$1.07	$1.12	$1.44	$1.92
Turnersville Rd Ramps	Pay by Mail	$0.90	$0.92	$0.93	$0.97	$1.25	$1.67
	ETC	$0.68	$0.69	$0.70	$0.73	$0.94	$1.26
FM 1625 Ramps	Pay by Mail	$0.90	$0.92	$0.93	$0.97	$1.25	$1.67
	ETC	$0.68	$0.69	$0.70	$0.73	$0.94	$1.26
Full Length Trip	Distance	7.0	7.0	7.0	7.0	7.0	7.0
	Rate per Mile	$0.15	$0.15	$0.15	$0.16	$0.21	$0.27
	Toll Cost (ETC)	$1.04	$1.05	$1.07	$1.12	$1.44	$1.92

Notes: (1) Rate per mile shown for a full-length trip is equal to the total toll cost divided by the distance.
(2) Toll cost for a full-length trip is equal to the sum of the mainline plaza tolls.
(3) The assumed annual escalation rates are as shown in Table 4.6.
(4) Toll rates shown for 2016 through 2018 are actual; toll rates shown for 2020, 2030 and 2040 are assumed based on the escalation rates shown in Table 4.6.
(5) Years shown with an asterisk (*) are model years.

4.5 TOLL PAYMENT AND NON-PAYMENT PROCEDURES

Transponder-Based Payments

Transponders systems use small electronic devices mounted within vehicles (as an example TxTag are stickers) that are read by tolling equipment as the vehicle crosses a tolling point. Each TxTag transponder is tied to a pre-paid customer toll account and funds are withdrawn daily by TxDOT from such account as tolls are incurred. A single toll account can have multiple TxTag transponders associated with such account. ETC transactions are processed on the CTTS using TxTag as well as ETC transponders issued by other interoperable toll entities. During fiscal year 2016, approximately 61.6% of the total toll transactions processed for the CTTS were attributable to ETC transponder accounts, of these transactions 53.9% were TxTag and 7.7% were other interoperable tags.

As discussed earlier in this chapter, the CTTS toll collection system is interoperable with all tags issued in Texas, including those issued by Harris County Toll Road Authority and North Texas Tollway Authority, as well as those from the Oklahoma Turnpike Authority and Kansas Turnpike Authority. The interoperability terms are governed by the 2017 Central US Interoperability Agreement (CUSIOP Agreement), which also revised the interoperability transaction fees paid by the toll road owner to the transponder issuer. TxDOT expects to enter into one or more additional interoperability agreement(s) involving other states in the near future in order to comply with the federal Moving Ahead for Progress in the 21st Century Act (also known as MAP 21) which requires that all toll facilities on federal-aid highways implement technologies or business practices that provide for the interoperability of ETC programs, meaning all facilities can read all transponders to provide a seamless process to all patrons on all facilities nationwide. A recent Commission decision authorized TxDOT to enter into a separate supplemental interoperability agreement (SSIOP) with other Texas toll entities, the Oklahoma Turnpike Authority, the Kansas Turnpike Authority, and Florida's Turnpike Enterprise related to the interoperability of their respective ETC programs through the use of the Central US Interoperability Hub and the Southeast US Interoperability Hub. The Southeast US Interoperability Hub is owned, operated and maintained by Florida's Turnpike Enterprise and provides for interoperability of transponders on multiple facilities in the states of Florida, North Carolina, South Carolina, Georgia, and Alabama. TxDOT anticipates that it will take several months before this new interoperability agreement is fully implemented following its execution by the parties.

Pay by Mail Processing

For drivers who choose not to use ETC methods and pay the lower ETC toll rate, the PBM option as described above is available. Under the PBM process, if a driver crosses a tolling point and a valid ETC transponder is not recognized, an image of the vehicle's license plate is captured and if there is an existing customer toll account with sufficient funds for that license plate, the transaction is posted to such account and processed as an ETC transponder payment. Customers that use a CTTS facility without a valid and sufficiently funded transponder account are considered PBM transactions and are invoiced for the amount of the toll due on a monthly basis. Certain image-based transactions that occur on the CTTS are not able to be invoiced because the license plate could not be read accurately, the vehicle was exempt from payment of tolls, or for other technical reasons.

According to the latest full fiscal year statistics (FY 2016), which provides for adequate aging of all PBM invoices, approximately 51 percent of the image-based transactions were collected. Of these, 82 percent were collected during the PBM resolution or within three months after the invoice was issued. The remainder (18 percent) were paid after the initial three-month period. Under the newly implemented state statute known as Senate Bill 312 (SB 312) requirements and related administrative rules, customers who fail to pay the toll amount due within thirty days of the date of the invoice are charged an administrative fee of $4 per unpaid invoice per month per registered owner, with a maximum of $48 in administrative fees per registered owner in a twelve-month period. The following section provides further background on the specific requirements and changes contained within Senate Bill 312.

Senate Bill 312

Senate Bill 312 was passed by the 85th Texas Legislature with a required implementation date of March 1, 2018. The legislation included a number of provisions related to invoicing and administrative fees for TxDOT toll roads. Since the CTTS already used the PBM process for invoicing transactions, the most significant tolling changes to the CTTS were related to the assessment of administrative fees, the requirement to allow electronic invoicing, and a restriction to only take an individual to court once per year for non-payment of tolls. Prior to the implementation of SB 312, administrative fees were transaction based and the violation, collection and court fee per transaction could escalate from $5 to $25 to $100 per transaction if the individual did not pay and the transaction was filed in court. SB 312 changed the administrative fee structure from a transaction-based fee to an invoice-based fee and included a maximum administrative fee of $48 per twelve-month period per registered owner and also required TxDOT to create administrative rules prior to program implementation. TxDOT rules restrict the administrative invoice fee to $4 per invoice per registered owner with a cap of $48 per registered owner per twelve-month period. They also include a toll dispute process for customers.

The administrative fee of $4 begins on the second invoice, which is for non-payment after 30 days from the first invoice. A person continues to be charged $4 per monthly invoice for non-payment as long as there are unpaid tolls or fees up to the $48 cap. If an individual receives a mailed invoice, they will also be assessed the $1.15 statement fee each month. The statement fee is assessed under a different statutory authority and is not included in the $48 cap.

In the past, administrative fees were roadway specific because they were assessed on a specific transaction. An invoice that includes the new administrative fee for non-payment could include transactions from multiple toll roads in addition to the System, so the new fee is no longer roadway specific. Note that the projected revenue forecasts in Chapter 8 do not include any revenue from these administrative fees.

Habitual Violator Program

In June 2013, additional toll enforcement legislation authorized new toll enforcement tools to pursue habitual violators throughout Texas, which legislation was not impacted by SB 312. Habitual violators are those with more than 100 unpaid tolls in a one-year period and who have been sent at least two notices of non-payment. The 2013 legislation provides more authority to enforce nonpayment, including publishing violator names, certain address information and amounts due on websites, and banning the vehicles from using toll roads operated by TxDOT, including the CTTS. If caught driving on a prohibited toll road after being banned and ticketed, the violator's vehicle may be impounded. The legislation also include authority to report habitual violators to county tax-assessor collectors, who are responsible for vehicle registration. County tax-assessor collectors have discretion, and are therefore not required, to block the renewal of habitual violators vehicle registration based on non-payment of tolls. This program has been used on the System previously to a limited extent, and TxDOT is in the process of formulating a policy and related procedures to expand the past program.

4.6 CUSTOMER ACCOUNT FEES

In addition to statement fees outlined above in the PBM process, the TxTag customer license and use agreement also outlines several other types of customer account fees that may be assessed. In prior CTTS revenue forecasts, estimates of revenue generated from customer service center fees were included as part of the CTTS revenue forecasts in order to highlight that this added revenue was available to offset some of the administrative and operations costs of the CTTS. In the previous 2014 CTTS Report forecasts, the customer service fee revenues were estimated to be approximately 10 percent of the forecasted revenue in 2015 but declined to approximately 4.7 percent by the end of the forecast period. Given the recent changes in administrative fees generated by the SB 312 legislative requirements and the re-examination of the allocation of customer service center fee revenue, a decision was made not to incorporate estimates of customer service center fees or administrative fees in the CTTS forecasted revenue stream. Therefore, while the revenue from such fees will remain available to support CTTS administrative costs, the projected revenue forecasts in Chapter 8 do not include any revenue from these fees.

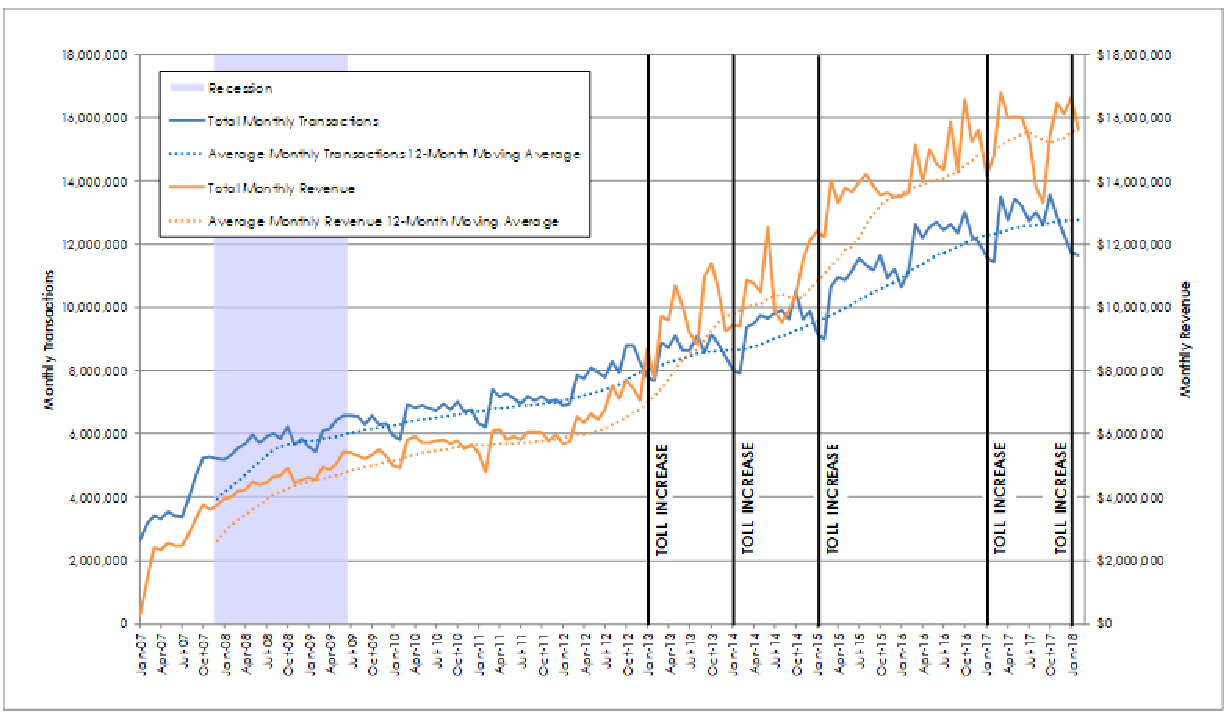
5.0 HISTORICAL CTTS TOLL TRANSACTIONS AND REVENUE

Transactions for CTTS toll facilities have been reviewed since November 2006 when the first phases of SH 45 N, Loop 1, and SH 130 opened to traffic. Historical transaction and revenue data, as presented within this chapter, provide a comprehensive record of the transaction and revenue growth, vehicle distribution, weekday and seasonal patterns, payment methods and transaction payment status. It should also be noted that the recognition of revenue by payment method varies, where ETC and Cash revenue (during the period when available) were recognized at the time of the transaction, whereas PBM revenue was recognized at the time the toll invoices were paid. These historical characteristics are the foundation for the assumptions in this study about future conditions and trends of the facilities.

5.1 MONTHLY AND ANNUAL TRANSACTIONS AND REVENUE

Total transactions and revenue across the CTTS facilities have gradually increased since tolling began in January 2007. Figure 5.1 below shows the historical performance of the CTTS facilities by month and 12-month moving averages for total transactions and revenue.

Figure 5.1 CTTS Historical Transactions and Revenue



As shown in the figure, the facilities opened with strong growth in traffic due to ramp up. An additional factor affecting revenue growth was the toll phasing that occurred during 2007 as part of the introductory marketing period where the facilities opened in a toll-free condition and transitioned to half rates and subsequently to full rates over several months. Growth then flattened out somewhat at the start of the recession at the end of 2007. Transaction and revenue growths have been fairly parallel, progressing at a similar growth rate until January 2013 when revenues increased as a result of a toll increase. In September 2012, SH 45 SE became a part of the CTTS, and the toll road's transactions and revenue were added to the CTTS total. In looking at the annual patterns of transactions and revenue across the historical data, there is a clear reduction in traffic and revenue during the winter months. This is due to multiple factors, most notably the inclement weather conditions that tend to suppress travel and construction activity.

The total annual transactions and revenue by calendar year, as reported in the CTTS annual reports, are shown in Table 5.1 and Table 5.2. Annual transactions and revenue by fiscal year are shown in Table 5.3 and Table 5.4, respectively. CTTS's fiscal year runs from September 1 through August 31 of the succeeding calendar year.

The transaction growth of 63.4 percent for SH 45 N in CY 2008 reflects the opening of SH 45 N West in August 2007 and the Heatherwilde ramps in September 2008. Since then, SH 45 N maintained fairly steady transaction growth until CY 2013 which showed much lower growth due to the CTTS system-wide toll rate increase implemented in January 2013. Despite the flattened growth in transactions of 0.7 percent in CY 2013, revenue increased 49.1 percent, showing the impact of the toll rate increase. The high transaction and revenue growths in CY 2015 reflect the opening of the O'Connor Drive ramps in August 2014. Transaction growth on SH 45 N has gradually returned to moderate levels since 2015 with a 3.5 percent increase for CY 2017. For the first two months of CY 2018, transactions and revenue have increased by 1.9 percent and 5.0 percent respectively when compared the same months in 2017. Revenue growth for CY 2017 has similar trends with a 3.3 percent increase. Annual toll increases occurring in January tend to result in more significant revenue growth than transaction growth on all corridors. Because there was no toll increase in CY 2016 (see Chapter 4), revenue growth for CY 2016 (8.7 percent on SH 45 N) was less significant than transaction growth (10.1 percent on SH 45 N).

Loop 1 has also sustained its transaction and revenue growth from CY 2007 through CY 2013 with fairly parallel growth rates. In CY 2013, the toll rate increase had an impact on performance. Although there was a 2.2 percent loss of transactions, there was an increase in revenue of 39.3 percent. In CY 2016, the recent year without a toll increase, transaction growth outpaced revenue growth at 8.3 percent and 5.9 percent, respectively. During CY 2017 transactions increased by 5.7 percent and revenue increased by 5.2 percent. For the first two months of CY 2018, transactions are 5.2 percent higher and revenue is 10.1 percent higher than the same period in 2017. This strong level of growth is likely due to the completion of the MoPac North managed lanes in late 2017. Construction-related congestion on Loop1 adjacent to the new managed lanes likely restricted traffic flow, thus suppressing some traffic during months of 2017 prior to October.

SH 130 experienced very high transaction growth in the early years due to the phased opening of Segment 3 in November 2007 and Segment 4 in July 2008. In CY 2012, transactions and revenue both increased notably by approximately 19 percent due to the opening of the Cameron Road ramps in January and Segments 5 & 6 in October along with on-going development in this largely rural corridor. Although Segments 5 & 6 are not operated by TxDOT, they interact with the CTTS portion of SH 130 (Segments 1 - 4), as they add continuity as a competing roadway to IH-35 for long-distance traffic. Transactions have generally increased by over 13 percent each year, driven primarily by increased development within the corridor. Revenue has increased by approximately 17 percent. For CY 2017 the rate of growth declined, with transaction and revenue growth of 4.9 percent and 3.6 percent. During the first two months of CY 2018 transactions increased slightly by 0.1 percent and revenue increased by 14.6 percent over the same months in 2017. This lower level of transaction growth is likely related to completion of construction on Loop 1. During the multi-year construction of the MoPac North managed lanes, construction congestion likely diverted some traffic from Loop 1 onto IH-35, thus temporarily increasing congestion for that facility. The subsequent completion of the MoPac North managed lanes In October of 2017 improved traffic flow on Loop 1 and some traffic was diverted back to Loop 1 from IH-35. Since SH 130 competes with IH-35 for certain trip patterns, the improved conditions on IH-35 likely diverted some traffic from SH 130.

Due to the length of SH 130, the growth rates by segment have varied. Although not shown in a table, from 2009 to 2017, Segment 2 has the highest number of transactions and has a compounded annual growth rate of approximately 11 percent. Segment 3, which has the second-highest number of transactions has a compounded annual growth rate of approximately 14 percent over that period. Segments 1 and 4 have about the same number of transactions, which are the lowest of the four segments. However, Segment 4 has a higher compounded annual growth rate of approximately 19 percent, while Segment 1 has grown at an average rate of about 14 percent per year. The variations in the growth rates are a function of the existing level of development adjacent to each segment and the rate of new development being added each year. Segment 2 is primarily serving the more developed Round Rock and Pflugerville areas, while the areas near Segment 4 are largely undeveloped.

As of September 2012, SH 45 SE has been operated by CTTS and therefore contributes to the CTTS total transactions and revenue. Since then, the facility has experienced strong growth similar to SH 130, also driven by increased development nearby. However, for CY 2017, transactions increased at a slower pace of 0.5 percent while revenue increased 2.3 percent. For the first two months of CY 2018, transactions are 1.9 percent lower and revenue is 6.7 percent higher than the same period in 2017. The reduced level of transactions is likely related to diversion of traffic described for SH 130 and may be transitory as on-going growth in the SH 130 corridor impacts SH 45 SE.

Table 5.1 Total Annual Calendar Year Transactions by CTTS Element

Calendar Year	SH 45 N	% Change	Loop 1	% Change	SH 130	% Change	SH 45 SE [1]	% Change	Total	% Change
2007	18,495,000		16,506,800		12,378,900		-	-	**47,380,700**	
2008	30,213,200	63.4%	17,315,600	4.9%	21,562,200	74.2%	-	-	**69,091,000**	**45.8%**
2009	31,632,100	4.7%	17,511,400	1.1%	25,879,300	20.0%	-	-	**75,022,800**	**8.6%**
2010	32,602,600	3.1%	18,372,700	4.9%	29,272,300	13.1%	-	-	**80,247,600**	**7.0%**
2011	33,917,100	4.0%	19,100,800	4.0%	31,101,100	6.2%	-	-	**84,119,000**	**4.8%**
2012	36,867,000	8.7%	20,086,700	5.2%	37,094,700	19.3%	1,410,600	-	**95,459,000**	**13.5%**
2013	37,132,540	0.7%	19,636,600	-2.2%	42,574,500	14.8%	4,395,200	211.6%	**103,738,840**	**8.7%**
2014	39,551,656	6.5%	20,279,971	3.3%	48,865,191	14.8%	4,994,527	13.6%	**113,691,345**	**9.6%**
2015	44,144,793	11.6%	21,967,513	8.3%	57,872,427	18.4%	5,845,084	17.0%	**129,829,817**	**14.2%**
2016	48,581,594	10.1%	23,799,579	8.3%	67,610,309	16.8%	6,720,649	15.0%	**146,712,131**	**13.0%**
2017	50,299,627	3.5%	25,144,317	5.7%	70,902,060	4.9%	6,753,791	0.5%	**153,099,795**	**4.4%**
First 2 Months of Calendar Year (January - February)										
2017	7,827,269		3,940,831		10,299,615		982,490		**23,050,205**	
2018 [2]	7,975,712	1.9%	4,145,142	5.2%	10,311,637	0.1%	963,594	-1.9%	**23,396,085**	**1.5%**

Notes: (1) SH 45 SE opened to traffic in May 2009 but did not become part of the CTTS until September 2012. As a result, the large Increase in 2013 is due to results for 2012 representing only part of year.
(2) Total transaction data was only available up to February 2018 at the time this report. therefore, CY 2018 transactions shown are from only two months of the calendar year.

Table 5.2 Total Annual Calendar Year Toll Revenue by CTTS Element

Calendar Year	SH 45 N	% Change	Loop 1	% Change	SH 130	% Change	SH 45 SE [1]	% Change	Total	% Change
2007 [2]	-	-	-	-	-	-	-	-	**$31,241,900**	
2008 [2]	-	-	-	-	-	-	-	-	**$53,038,800**	**69.8%**
2009 [2]	-	-	-	-	-	-	-	-	**$61,674,400**	**16.3%**
2010	$19,894,000	-	$12,060,000	-	$35,498,600	-	-	-	**$67,452,600**	**9.4%**
2011	$20,667,900	3.9%	$12,513,700	3.8%	$36,839,900	3.8%	-	-	**$70,021,500**	**3.8%**
2012	$22,503,400	8.9%	$13,101,800	4.7%	$43,902,000	19.2%	$1,643,200	-	**$81,150,400**	**15.9%**
2013	$33,543,600	49.1%	$18,247,200	39.3%	$61,005,700	39.0%	$4,015,900	144.4%	**$116,812,400**	**43.9%**
2014	$34,764,361	3.6%	$18,450,347	1.1%	$68,766,956	12.7%	$4,972,801	23.8%	**$126,954,465**	**8.7%**
2015	$40,668,729	17.0%	$21,182,525	14.8%	$93,812,589	36.4%	$6,546,252	31.6%	**$162,210,100**	**27.8%**
2016	$44,192,903	8.7%	$22,423,451	5.9%	$104,051,717	10.9%	$7,201,825	10.0%	**$177,869,899**	**9.7%**
2017	$45,634,969	3.3%	$23,598,251	5.2%	$107,805,934	3.6%	$7,369,530	2.3%	**$184,408,685**	**3.7%**
First 2 Months of Calendar Year (January - February)										
2017	$7,264,875		$3,774,917		$16,812,403		$1,140,554		**$28,992,749**	
2018 [3]	$7,631,306	5.0%	$4,157,722	10.1%	$19,266,025	14.6%	$1,216,756	6.7%	**$32,271,806**	**11.3%**

Notes: (1) SH 45 SE opened to traffic in May 2009 but did not become part of the CTTS until September 2012.
(2) Revenue for PBM patrons was not allocated by each toll facility until September 2009; therefore, only total CTTS revenue is shown for CY 2007 through CY 2009.
(3) Total revenue data was only available up to February 2018 at the time this report. therefore, CY 2018 transactions shown are from only two months of the calendar year.
(4) Total revenues may not equal the sum of values shown due to rounding.

Table 5.3 Total Annual Fiscal Year Transactions by CTTS Element

Fiscal Year	SH 45 N	% Change	Loop 1	% Change	SH 130	% Change	SH 45 SE [1]	% Change	Total	% Change
2008	29,458,300		17,194,700		19,287,000		-	-	**65,940,000**	
2009	31,269,500	6.1%	17,381,000	1.1%	24,457,300	26.8%	-	-	**73,107,800**	**10.9%**
2010	32,166,700	2.9%	18,064,100	3.9%	28,298,300	15.7%	-	-	**78,529,100**	**7.4%**
2011	33,543,300	4.3%	18,883,100	4.5%	30,583,200	8.1%	-	-	**83,009,600**	**5.7%**
2012	35,790,100	6.7%	19,889,700	5.3%	34,352,100	12.3%	-	-	**90,031,900**	**8.5%**
2013	37,126,440	3.7%	19,715,300	-0.9%	41,365,500	20.4%	4,300,000	-	**102,507,240**	**13.9%**
2014	38,255,800	3.0%	19,839,100	0.6%	46,210,700	11.7%	4,743,000	10.3%	**109,048,600**	**6.4%**
2015	42,686,069	11.6%	21,468,026	8.2%	54,785,716	18.6%	5,565,864	17.3%	**124,505,675**	**14.2%**
2016	47,447,472	11.2%	23,191,211	8.0%	64,822,453	18.3%	6,512,755	17.0%	**141,973,891**	**14.0%**
2017	49,790,143	4.9%	24,727,377	6.6%	70,241,133	8.4%	6,742,689	3.5%	**151,501,342**	**6.7%**
First 6 Months of Fiscal Year (September - February)										
2017	24,182,171		12,003,757		33,380,473		3,226,931		**72,793,332**	
2018 [2]	24,840,098	2.7%	12,625,008	5.2%	34,053,422	2.0%	3,219,137	-0.2%	**74,737,665**	**2.7%**

Notes: (1) SH 45 SE opened to traffic in May 2009 but did not become part of the CTTS until September 2012 (FY 2013).
(2) Total transaction data was only available up to February 2018 at the time this report. therefore, FY 2018 transactions shown are from only six months of the fiscal year.

Table 5.4 Total Annual Fiscal Year Toll Revenue by CTTS Element

Fiscal Year	SH 45 N	% Change	Loop 1	% Change	SH 130	% Change	SH 45 SE [1]	% Change	Total	% Change
2008 [2]	-	-	-	-	-	-	-	-	**$48,905,800**	
2009 [2]	-	-	-	-	-	-	-	-	**$58,913,900**	**20.5%**
2010	$19,798,600	-	$11,936,900	-	$34,408,300	-	-	-	**$66,143,800**	**12.3%**
2011	$20,268,200	2.4%	$12,316,600	3.2%	$36,237,000	5.3%	-	-	**$68,821,800**	**4.0%**
2012	$21,944,600	8.3%	$13,015,100	5.7%	$40,735,000	12.4%	-	-	**$75,694,700**	**10.0%**
2013	$29,075,300	32.5%	$16,142,700	24.0%	$54,492,200	33.8%	$4,274,300	-	**$103,984,500**	**37.4%**
2014	$34,830,800	19.8%	$18,559,800	15.0%	$67,092,300	23.1%	$4,679,700	9.5%	**$125,162,600**	**20.4%**
2015	$38,957,075	11.8%	$20,458,635	10.2%	$86,195,287	28.5%	$6,019,081	28.6%	**$151,630,078**	**21.1%**
2016	$42,730,689	9.7%	$21,725,581	6.2%	$99,303,415	15.2%	$6,896,860	14.6%	**$170,656,545**	**12.5%**
2017	$45,496,303	6.5%	$23,348,544	7.5%	$108,614,674	9.4%	$7,358,409	6.7%	**$184,817,929**	**8.3%**
First 6 Months of Fiscal Year (September - February)										
2017	$22,417,405		$11,487,225		$53,206,365		$3,650,591		**$90,761,588**	
2018 [2]	$22,922,502	2.3%	$12,119,737	5.5%	$54,851,248	3.1%	$3,737,913	2.4%	**$93,631,401**	**3.2%**

Notes: (1) SH 45 SE opened to traffic in May 2009 but did not become part of the CTTS until September 2012 (FY 2013).
(2) Revenue for PBM patrons was not allocated by each toll facility until September 2009 (FY 2010); therefore, only total CTTS revenue is shown for FY 2008 and FY 2009.
(3) Total revenue data was only available up to February 2018 at the time this report. therefore, FY 2018 transactions shown are from only six months of the fiscal year. Total revenue may not equal the sum of values shown due to rounding.

Table 5.5 shows the average toll per transaction for the CTTS elements by fiscal year. The tolls per transaction for fiscal years 2010 through 2012 are nearly identical since tolls were held constant during this period. Tolls were also not increased in 2016 hence the small difference between FY 2015 and FY 2016. The minor variations are likely due to variation in the recognition of the PBM revenue between fiscal years. There was a significant increase in the toll value per transaction for FY 2013 and FY 2014, reflecting the large increase in tolls that was implemented in January 2013. Increases in average toll are also observed in FY 2015 and FY 2017 due to the January 2015 and January 2017 CPI-based increase in toll rates.

Table 5.5 Average Toll Per Transaction by CTTS Element

Fiscal Year	SH 45 N	% Change	Loop 1	% Change	SH 130	% Change	SH 45 SE	% Change	Total	% Change
2008	-	-	-	-	-	-	-	-	**$0.74**	
2009	-	-	-	-	-	-	-	-	**$0.81**	**8.7%**
2010	$0.62	-	$0.66	-	$1.22	-	-	-	**$0.84**	**4.5%**
2011	$0.60	-1.8%	$0.65	-1.3%	$1.18	-2.6%	-	-	**$0.83**	**-1.6%**
2012	$0.61	1.5%	$0.65	0.3%	$1.19	0.1%	-	-	**$0.84**	**1.4%**
2013	$0.78	27.7%	$0.82	25.1%	$1.32	11.1%	$0.99	-	**$1.01**	**20.7%**
2014	$0.91	16.3%	$0.94	14.3%	$1.45	10.2%	$0.99	-0.7%	**$1.15**	**13.1%**
2015	$0.91	0.2%	$0.95	1.9%	$1.57	8.4%	$1.08	9.6%	**$1.22**	**6.1%**
2016	$0.90	-1.3%	$0.94	-1.7%	$1.53	-2.6%	$1.06	-2.1%	**$1.20**	**-1.3%**
2017	$0.91	1.5%	$0.94	0.8%	$1.55	0.9%	$1.09	3.1%	**$1.22**	**1.5%**

Table 5.6 and Table 5.7 set forth the unaudited total system transactions and toll revenue by month for FY 2013 through FY 2017, as well as the first six months of FY 2018.

Table 5.6 Historical System Total Transactions

Month	FY 2013		FY 2014		FY 2015		FY 2016		FY 2017		FY 2018[3]	
	Total Transactions (in 000s)	% Change Over Prior Year	Total Transactions (in 000s)	% Change Over Prior Year	Total Transactions (in 000s)	% Change Over Prior Year	Total Transactions (in 000s)	% Change Over Prior Year	Total Transactions (in 000s)	% Change Over Prior Year	Total Transactions (in 000s)	% Change Over Prior Year
September	7,951	8%	8,573	8%	9,647	13%	11,195	16%	12,354	10%	12,627	2%
October	8,797	18%	9,160	4%	10,512	15%	11,650	11%	13,039	12%	13,552	4%
November	8,805	20%	8,854	1%	9,645	9%	10,928	13%	12,264	12%	12,867	5%
December	8,253	12%	8,452	2%	9,877	17%	11,232	14%	12,086	8%	12,296	2%
January	7,798	9%	8,041	3%	9,182	14%	10,658	16%	11,614	9%	11,739	1%
February	7,684	6%	7,928	3%	9,009	14%	11,116	23%	11,436	3%	11,657	2%
March	8,899	8%	9,376	5%	10,695	14%	12,643	18%	13,504	7%		
April	8,759	8%	9,511	9%	10,967	15%	12,202	11%	12,782	5%		
May	9,124	8%	9,754	7%	10,867	11%	12,543	15%	13,453	7%		
June	8,655	4%	9,664	12%	11,189	16%	12,716	14%	13,209	4%		
July	8,648	6%	9,814	13%	11,555	18%	12,443	8%	12,731	2%		
August	9,135	5%	9,922	9%	11,361	15%	12,647	11%	13,030	3%		
Total	**102,507**	**9%**	**109,049**	**6%**	**124,506**	**14%**	**141,974**	**14%**	**151,501**	**7%**	**74,738**	

Notes: (1) System transactions are shown in the month in which they occur. As used herein, System transactions occur when each vehicle crosses a tolling station within the System, including all ETC, PBM, and non-invoiced transactions.

(2) Transactions shown include SH 45 N, Loop 1, SH 130 and SH 45 SE.

(3) Total transaction data was only available up to February 2018 at the time this report. therefore, FY 2018 transactions shown are from only six months of the fiscal year.

Table 5.7 Historical System Toll Revenue

Month	FY 2013		FY 2014		FY 2015		FY 2016		FY 2017		FY 2018[3]	
	Revenue (in $000s)	% Change Over Prior Year	Revenue (in $000s)	% Change Over Prior Year	Revenue (in $000s)	% Change Over Prior Year	Revenue (in $000s)	% Change Over Prior Year	Revenue (in $000s)	% Change Over Prior Year	Revenue (in $000s)	% Change Over Prior Year
September	$7,131	11%	$11,007	54%	$9,922	-10%	$13,840	39%	$14,290	3%	$13,302	-7%
October	$7,734	22%	$11,397	47%	$10,382	-9%	$13,582	31%	$16,570	22%	$15,433	-7%
November	$7,435	22%	$10,543	42%	$11,519	9%	$13,627	18%	$15,264	12%	$16,496	8%
December	$7,056	12%	$9,237	31%	$12,152	32%	$13,506	11%	$15,644	16%	$16,129	3%
January	$8,708	46%	$9,440	8%	$12,416	32%	$13,534	9%	$14,180	5%	$16,638	17%
February	$7,773	28%	$9,399	21%	$12,248	30%	$13,625	11%	$14,813	9%	$15,633	6%
March	$9,722	40%	$10,878	12%	$14,006	29%	$15,162	8%	$16,802	11%		
April	$9,615	44%	$10,776	12%	$13,310	24%	$13,970	5%	$16,017	15%		
May	$10,711	52%	$10,502	-2%	$13,804	31%	$15,004	9%	$16,037	7%		
June	$10,064	48%	$12,559	25%	$13,657	9%	$14,555	7%	$16,005	10%		
July	$9,209	28%	$9,877	7%	$13,982	42%	$14,369	3%	$15,367	7%		
August	$8,826	10%	$9,549	8%	$14,232	49%	$15,882	12%	$13,830	-13%		
Total	**$103,985**	**30%**	**$125,163**	**20%**	**$151,630**	**21%**	**$170,657**	**13%**	**$184,818**	**8%**	**$93,631**	

Notes: (1) Toll revenues from ETC payment method are shown on an accrual basis. Toll revenues from PBM payment method are shown on a cash basis. Total annual revenue differs from results shown in the audited financials of the System due to adjustments to reflect PBM revenues earned but not collected, less allowance for doubtful accounts.

(2) Toll revenues shown include SH 45 N, Loop 1, SH 130 and SH 45 SE.

(3) Total revenue data was only available up to February 2018 at the time this report. therefore, FY 2018 transactions shown are from only six months of the fiscal year.

5.2 VEHICLE CLASS DISTRIBUTION

The distribution of traffic by vehicle class has also been historically monitored for each CTTS facility. These values are derived from the toll transaction data, which do not identify 2-axle, 6-tire trucks as a separate category. Therefore, the auto statistics include all autos as well as 2-axle, 6-tire trucks and the truck statistics include all trucks with 3+ axles. As shown by the tables below, the distribution of trucks and autos among ETC transactions for each facility has remained fairly consistent throughout the years, but the percent of trucks and autos varies between facilities and payment type. Table 5.8 displays the historical vehicle distributions for each CTTS facility.

Table 5.8 Historical Fiscal Year Average Vehicle Distributions by CTTS Facility

Fiscal Year	SH 45 N and Loop 1				SH 130				SH 45 SE			
	ETC		Pay by Mail		ETC		Pay by Mail		ETC		Pay by Mail	
	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks
2007 [2]	98.0%	2.0%	-	-	94.5%	5.5%	-	-	-	-	-	-
2008 [2]	97.9%	2.1%	-	-	93.2%	6.8%	-	-	-	-	-	-
2009 [2]	98.2%	1.8%	-	-	93.2%	6.8%	-	-	91.1%	8.9%	-	-
2010 [2]	98.4%	1.6%	-	-	93.2%	6.8%	-	-	90.9%	9.1%	-	-
2011 [2]	98.3%	1.7%	-	-	93.1%	6.9%	-	-	90.2%	9.8%	-	-
2012 [2]	98.2%	1.8%	-	-	92.7%	7.3%	-	-	88.2%	11.8%	-	-
2013 [2]	97.9%	2.1%	-	-	92.2%	7.8%	-	-	88.8%	11.2%	-	-
2014 [2]	97.7%	2.3%	-	-	91.8%	8.2%	-	-	90.2%	9.8%	-	-
2015	97.8%	2.2%	97.3%	2.7%	92.0%	8.0%	86.9%	13.1%	90.5%	9.5%	86.3%	13.7%
2016	97.7%	2.3%	97.3%	2.7%	91.2%	8.8%	88.1%	11.9%	89.8%	10.2%	87.4%	12.6%
2017	97.6%	2.4%	97.3%	2.7%	90.0%	10.0%	87.5%	12.5%	88.6%	11.4%	86.3%	13.7%

Notes: (1) "Autos" includes 2-axle, 6-tire trucks and "Trucks" incudes all 3+ axle vehicles.
(2) Vehicle type data were only available for ETC transactions until January 2014; therefore, vehicle type distributions for PBM transactions are only shown for FY 2015 through FY 2017.

Table 5.9 displays the most recent fiscal year's vehicle distributions for each CTTS facility by month.

Table 5.9 FY 2017 Vehicle Distribution by CTTS Facility

Month-Year	SH 45 N and Loop 1				SH 130				SH 45 SE			
	ETC		Pay by Mail		ETC		Pay by Mail		ETC		Pay by Mail	
	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks	% Autos [1]	% Trucks
Sep-16	97.5%	2.5%	97.3%	2.7%	90.5%	9.5%	87.6%	12.4%	89.3%	10.7%	86.7%	13.3%
Oct-16	97.5%	2.5%	97.4%	2.6%	90.4%	9.6%	87.7%	12.3%	89.1%	10.9%	86.5%	13.5%
Nov-16	97.7%	2.3%	97.6%	2.4%	91.0%	9.0%	88.2%	11.8%	89.9%	10.1%	87.1%	12.9%
Dec-16	97.9%	2.1%	97.6%	2.4%	91.0%	9.0%	88.2%	11.8%	89.8%	10.2%	86.9%	13.1%
Jan-17	97.9%	2.1%	97.6%	2.4%	90.4%	9.6%	87.6%	12.4%	88.9%	11.1%	86.2%	13.8%
Feb-17	97.6%	2.4%	97.4%	2.6%	90.1%	9.9%	87.3%	12.7%	88.8%	11.2%	86.0%	14.0%
Mar-17	97.5%	2.5%	97.2%	2.8%	89.9%	10.1%	87.5%	12.5%	88.5%	11.5%	86.3%	13.7%
Apr-17	97.6%	2.4%	97.4%	2.6%	90.1%	9.9%	87.8%	12.2%	88.6%	11.4%	86.8%	13.2%
May-17	97.5%	2.5%	97.3%	2.7%	89.8%	10.2%	87.6%	12.4%	88.1%	11.9%	86.3%	13.7%
Jun-17	97.3%	2.7%	97.2%	2.8%	88.9%	11.1%	87.5%	12.5%	87.5%	12.5%	86.3%	13.7%
Jul-17	97.5%	2.5%	97.2%	2.8%	89.6%	10.4%	87.4%	12.6%	88.1%	11.9%	85.7%	14.3%
Aug-17	97.6%	2.4%	97.1%	2.9%	88.8%	11.2%	85.7%	14.3%	86.8%	13.2%	84.0%	16.0%
FY 2017	**97.6%**	**2.4%**	**97.3%**	**2.7%**	**90.0%**	**10.0%**	**87.5%**	**12.5%**	**88.6%**	**11.4%**	**86.3%**	**13.7%**

SH 45 N and Loop 1 are integrated toll roads since they intersect and many vehicles use both roads for the same trip. As such, their vehicle distribution data are summarized together. The percent of trucks is low, hovering around 2 percent since the roads have opened. The truck share on SH 45 N and Loop 1 is similar between ETC and PBM transactions with trucks averaging 2.4 and 2.7 percent of total traffic, respectively, for FY 2017.

SH 130 has a greater proportion of trucks with an average of 10 percent of ETC transactions for FY 2017; PBM transactions have a slightly greater average truck share of 12.5 percent. As shown in Table 5.8, SH 130 opened with approximately 5.5 percent trucks, and has slowly increased to its current level. These statistics have been influenced by a series of temporary truck rate discounts that have been implemented for selected periods during 2012, 2013, 2016, and 2017. These temporary discounts encouraged commercial traffic to try SH 130 and improved traffic flow through Austin thus increasing safety for travelers. These discounts were represented in the modeling process for the purposes of replicating traffic for the 2016 calibration year, but the forecasts developed for the 2018 Study do not use the discounts since they were terminated in August 2017.

SH 45 SE has the highest portion of trucks of the CTTS facilities with an average of 11.4 percent of ETC transactions for FY 2017. Similar to SH 130, the truck share is higher for PBM transactions with a FY 2017 average of 13.7 percent. The historical vehicle distribution ranges between 9 and 12 percent but has been consistently between 10 and 14 percent recently.

5.3 WEEKDAY AND SEASONAL PATTERNS

Seasonal transaction patterns for FY 2017 are summarized in Table 5.10 by showing the monthly and quarterly distributions for each facility. The CTTS fiscal year begins on September 1, making each quarter correlate to typical seasonal months. Across all facilities, the winter months in Quarter 2 have the fewest number of transactions, while the spring (Quarter 3) has the highest number of transactions.

Table 5.10 Monthly and Quarterly Transaction Distribution for FY 2017

Month-Year	SH 45 N and Loop 1	SH 130	SH 45 SE	Total
Sep-16	8.2%	8.1%	8.1%	**8.2%**
Oct-16	8.5%	8.7%	9.0%	**8.6%**
Nov-16	8.0%	8.2%	8.4%	**8.1%**
Dec-16	8.1%	7.8%	7.7%	**8.0%**
Jan-17	8.0%	7.3%	7.2%	**7.7%**
Feb-17	7.7%	7.3%	7.3%	**7.5%**
Mar-17	8.8%	9.0%	9.1%	**8.9%**
Apr-17	8.4%	8.5%	8.5%	**8.4%**
May-17	8.9%	8.9%	8.8%	**8.9%**
Jun-17	8.6%	8.9%	8.8%	**8.7%**
Jul-17	8.2%	8.6%	8.4%	**8.4%**
Aug-17	8.6%	8.6%	8.5%	**8.6%**
Sept - Nov (Q1)	**24.6%**	**25.0%**	**25.5%**	**24.9%**
Dec - Feb (Q2)	**23.9%**	**22.5%**	**22.3%**	**23.2%**
Mar - May (Q3)	**26.1%**	**26.3%**	**26.4%**	**26.2%**
Jun - Aug (Q4)	**25.3%**	**26.1%**	**25.7%**	**25.7%**

The average number of transactions for a weekday, and how it compares to the average number for any day of the year, is summarized for FY 2017 in Table 5.11. For FY 2017, the average weekday traffic was approximately 12 percent greater than the average daily traffic.

Table 5.11 FY 2017 Average Daily and Average Weekday CTTS Traffic Comparison

Month-Year	Average Daily Traffic (ADT)	Average Weekday Daily Traffic (AWDT)	Percent Difference (AWDT/ADT - 1)
Sep-16	411,805	461,991	12%
Oct-16	420,610	468,701	11%
Nov-16	408,803	461,748	13%
Dec-16	389,870	446,548	15%
Jan-17	374,653	426,876	14%
Feb-17	408,428	459,637	13%
Mar-17	435,601	476,424	9%
Apr-17	426,055	479,751	13%
May-17	433,953	480,966	11%
Jun-17	440,298	484,240	10%
Jul-17	410,673	469,779	14%
Aug-17	420,335	475,451	13%
FY 2017	**415,072**	**466,550**	**12%**
		FY 2017 Annualization Factor	***325***

These data were also used to develop annualization factors to be used in the traffic and revenue forecasts by converting weekday traffic volumes into annual volumes for each CTTS facility. The annualization factors vary for each facility depending on the characteristics of the road. For Loop 1 and SH 45 N, the annualization factor is approximately 320, while for SH 130, it is slightly higher at 325, due to higher levels of weekend traffic. SH 45 SE also has an annualization factor of approximately 325, generally consistent with the trends from SH 130.

5.4 PAYMENT METHOD DISTRIBUTION

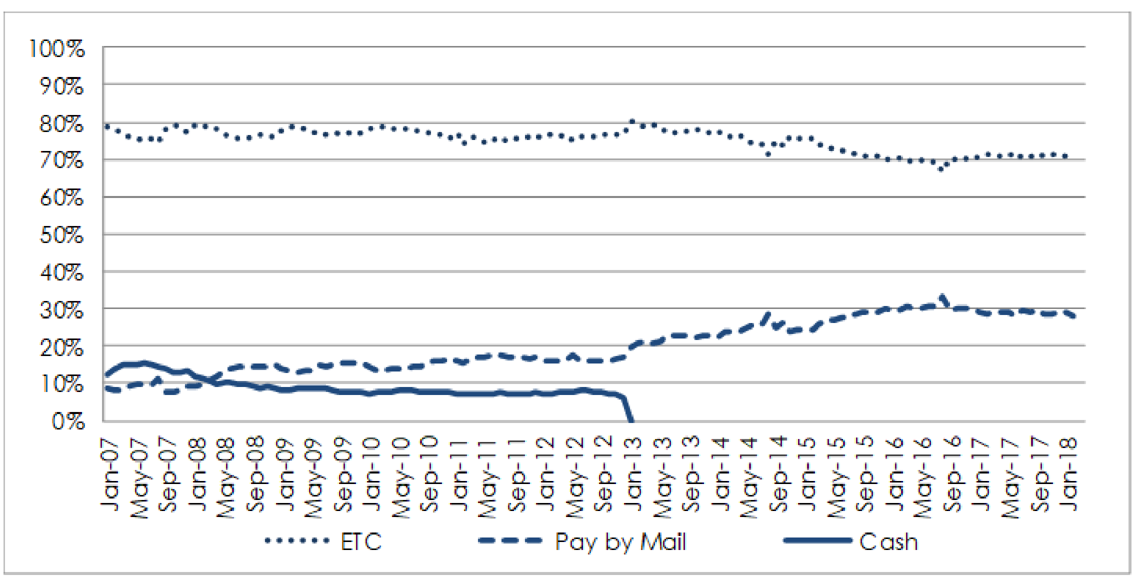
As previously discussed in Chapter 4 of this report, prior to January 2013, CTTS had three methods of toll collection: cash, ETC, and PBM. Since January 2013, all facilities are operated cashless, therefore, the payment method distribution for FY 2017 of the different CTTS facilities shown in Table 5.12 includes only the ETC and PBM methods.

Table 5.12 FY 2017 Payment Method Distribution by CTTS Facility

Month-Year	SH 45 N and Loop 1		SH 130		SH 45 SE		Total	
	% ETC	% Pay by Mail	% ETC	% Pay by Mail	% ETC	% Pay by Mail	% ETC	% Pay by Mail
Sep-16	70.4%	29.6%	62.1%	37.9%	59.9%	40.1%	66.1%	33.9%
Oct-16	69.8%	30.2%	61.6%	38.4%	60.0%	40.0%	65.5%	34.5%
Nov-16	70.2%	29.8%	61.8%	38.2%	60.7%	39.3%	65.8%	34.2%
Dec-16	70.1%	29.9%	61.7%	38.3%	60.6%	39.4%	65.9%	34.1%
Jan-17	71.0%	29.0%	63.1%	36.9%	62.2%	37.8%	67.1%	32.9%
Feb-17	71.3%	28.7%	63.2%	36.8%	62.8%	37.2%	67.3%	32.7%
Mar-17	71.1%	28.9%	62.9%	37.1%	61.7%	38.3%	66.8%	33.2%
Apr-17	71.1%	28.9%	63.5%	36.5%	62.1%	37.9%	67.2%	32.8%
May-17	70.8%	29.2%	62.1%	37.9%	60.4%	39.6%	66.3%	33.7%
Jun-17	72.1%	27.9%	64.0%	36.0%	62.7%	37.3%	67.8%	32.2%
Jul-17	70.2%	29.8%	61.4%	38.6%	60.2%	39.8%	65.6%	34.4%
Aug-17	70.9%	29.1%	57.1%	42.9%	56.3%	43.7%	63.8%	36.2%
FY 2017	**70.7%**	**29.3%**	**62.0%**	**38.0%**	**60.8%**	**39.2%**	**66.3%**	**33.7%**

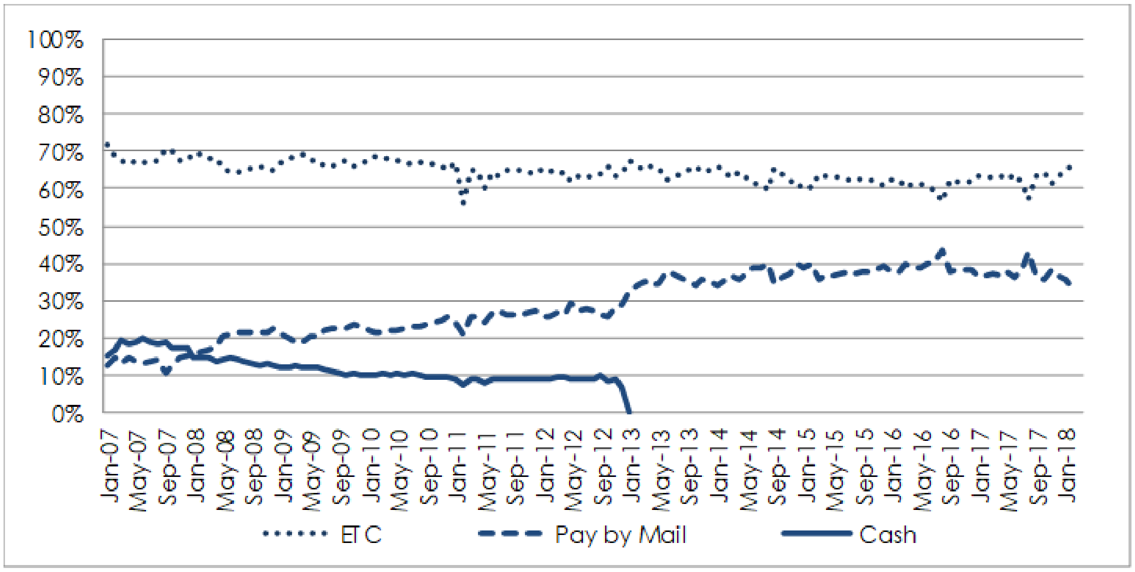
Again, SH 45 N and Loop 1 are summarized together because of their similarities in traffic behavior and relationship to each other. In FY 2017, 70.7 percent of the traffic on these two facilities paid by ETC, the highest rate of ETC usage on the CTTS facilities. The historical distribution is shown in Figure 5.2. As shown in the figure, the share of transactions using PBM is growing gradually, which could be a result of more infrequent travelers using the toll road system.

Figure 5.2 SH 45 N and Loop 1 Historical Payment Method Distribution



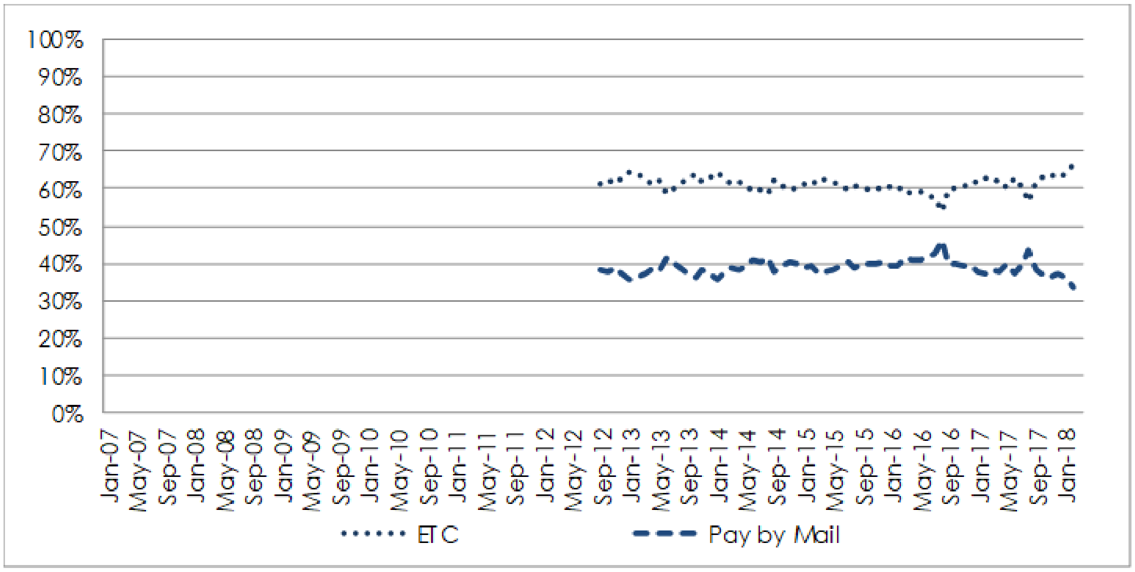
SH 130 currently has ETC and PBM transactions with FY 2017 averages of 62 percent and 38 percent, respectively. Looking at the historical distribution for this toll road in Figure 5.3, the percent of ETC transactions began at approximately 70 percent, and has slowly decreased since. This is due to the formal adoption of the PBM payment method and the removal of the cash payment option. Since the transition to the Conduent system and business rules for delinquent accounts in 2014, the share of transactions identified as PBM has gradually increased. This increase is most likely due to more use by infrequent travelers.

Figure 5.3 SH 130 Historical Payment Method Distribution



SH 45 SE has always operated as cashless since it began operations as a TxDOT toll road in May 2009. When SH 45 SE became part of CTTS in September 2012, approximately 60 percent of transactions were ETC transactions; ETC transactions have remained at that level since. Currently, it has an FY 2017 average payment method distribution of 60.8 percent for ETC and 39.2 percent for PBM. The historical distribution since joining the CTTS is shown in Figure 5.4.

Figure 5.4 SH 45 SE Historical Payment Method Distribution



5.5 TRANSACTION PAYMENT STATUS

With the introduction of cashless toll collection, Stantec has been monitoring the effective collection rates for ETC and PBM transactions. For this report, the collection statistics for FY 2016, the latest full year of data available at the time of this report, were obtained from TxDOT.

The FY 2016 data are summarized in Table 5.13. These data provide the distribution of FY 2016 transactions for the CTTS by payment type and by payment status (paid/unpaid transactions). The data show that of all transactions, approximately 62 percent were ETC-based transactions (including the nearly 8 percent interoperable transactions from transponders from other agencies) and 38 percent were image-based transactions.

Paid transactions include both regular payment of the tolls from patrons as well as payments reimbursed from TxDOT for the free passage allowed for selected veteran categories. These veterans' waivers were 2.5 percent of the total transactions. For the non-paying transaction category, the table summarizes *unbilled* PBM transactions where it was not possible to invoice patrons either due to bad images or lack of acceptable vehicle registration information. The *unpaid* category includes PBM transactions for which payment was not received as well as non-revenue ETC transactions and invalid ETC tags. For the combined ETC category approximately 99.3 percent of all transactions were paid while the PBM category had only 51.1 percent of transactions paid.

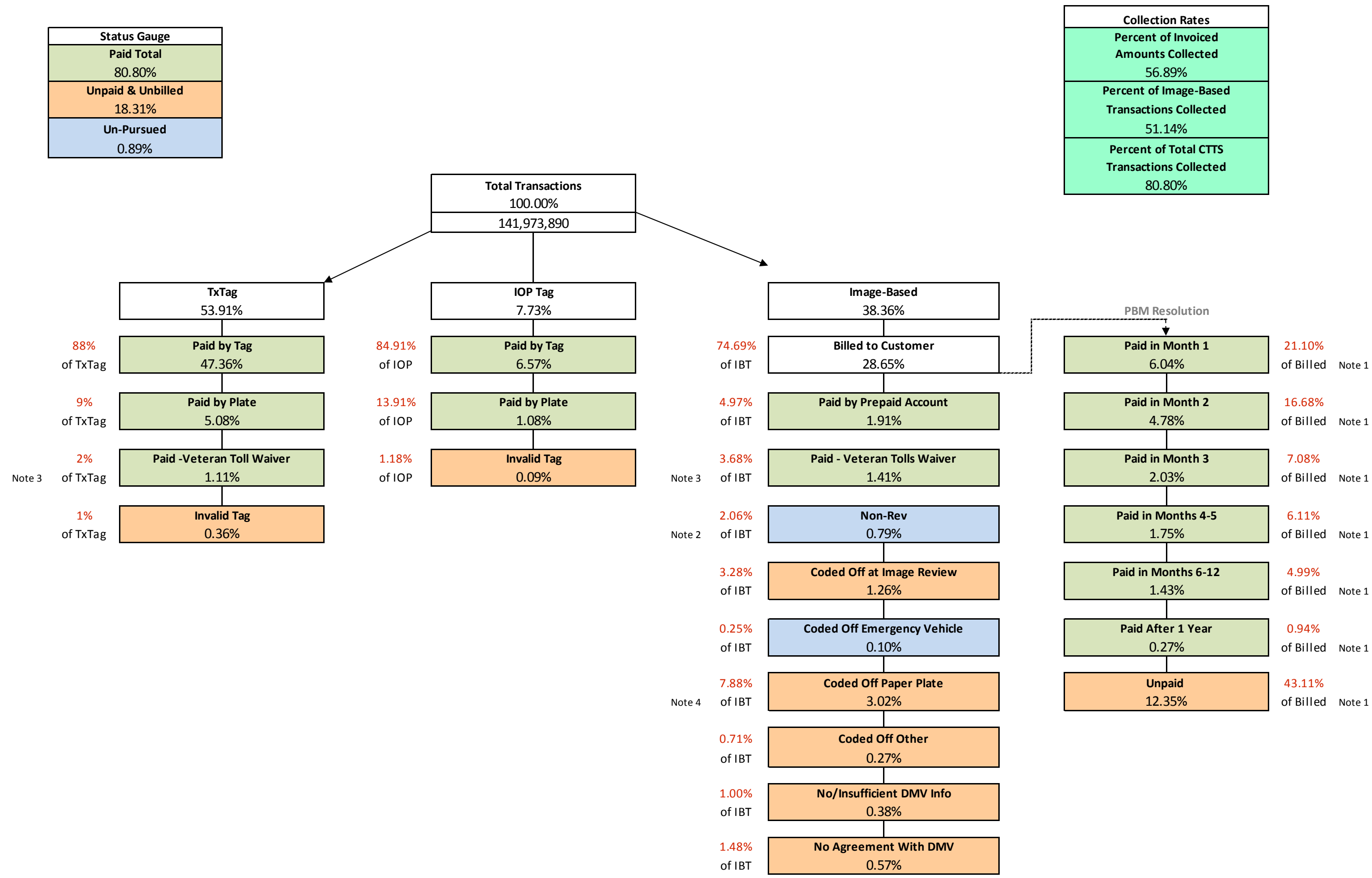
Table 5.13 FY 2016 CTTS Transaction Payment Status

Payment Type	Paid Transactions		Non-Paying Transactions			Total Transactions	Percent Paid
	Regular [1]	Vet. Waiver [2]	Unpaid [3]	Unbilled	Total		
ETC	74,443,726	1,579,314	515,445	-	515,445	76,538,485	99.3%
ETC - InterOP	10,849,749	-	129,051	-	129,051	10,978,800	
Image Based (PBM)	25,844,147	2,002,716	17,534,803	9,074,938	26,609,741	54,456,604	51.1%
Total	111,137,622	3,582,030	18,179,299	9,074,938	27,254,237	141,973,889	80.8%
Percent of Total Transactions							
ETC	52.4%	1.1%	0.4%	-	0.4%	53.9%	
ETC - InterOP	7.6%	-	0.1%	-	0.1%	7.7%	
Image Based (PBM)	18.2%	1.4%	12.4%	6.4%	18.7%	38.4%	
Total	78.3%	2.5%	12.8%	6.4%	19.2%	100.0%	

Notes: (1) Includes ETC transactions that were Paid by Plate (images that were subsequently linked to transponder accounts)
(2) CTTS Revenue Fund reimbursed by TxDOT
(3) Includes ETC & InterOP rejects/invalid tag

Figure 5.5 displays a flow chart with a further break down of transactions by payment type for FY 2016. The collection data reflect the collection status based on conditions that have occurred since the adoption of new laws that allow TxDOT to pursue habitual violators, including vehicle registration hold and a dedicated administrative hearing process. The data also include the changes in collection procedures that were implemented by the new toll system operator (Conduent) and other issues associated with that transition along with any subsequent changes.

Figure 5.5 CTTS Transactions Processing Flow Chart, FY 2016



Note 1: Pay By Mail Resolution is based on the Pay By Mail Resolution Report as of 8/31/2017.
Note 2: Non-Revenue transactions post as zero-dollar transactions and are authorized free passage per CTTS Bond Indenture.
Note 3: Veteran Toll Waiver Program transactions post as zero-dollar, are authorized free passage per TTC Minute Order 113247 and are paid to the CTTS Revenue Fund by TxDOT.
Note 4: In April 2017 TxDOT discontinued coding off paper plate transactions and began pursuing these transactions through standard plate image processes.

6.0 SOCIOECONOMIC DATA

This section of the report discusses socioeconomic indicators that are used to identify growth in the region that encompasses the Austin Area toll roads and are included in the regional transportation model. This discussion presents recent demographic and economic trends and projections of future levels of activity in the area, a comparison of revised county control figures for population and employment with previous forecasts, a description of the methodology used to update information on the Transportation Analysis Zone (TAZ) level and a summary of interviews of local government representatives regarding proposed development in the Austin region.

The socioeconomic review and the employment and population projections used in the traffic model were developed by Michael S. Bomba, PhD. Dr. Bomba has extensive experience in the Austin area and has been retained by Stantec to provide socioeconomic data forecasts for the Austin area toll roads since the late 1990s. For this project, Stantec staff helped conduct field reviews and interviews with local government agencies to assist Dr. Bomba in the preparation of the base year socioeconomic estimates and forecasts.

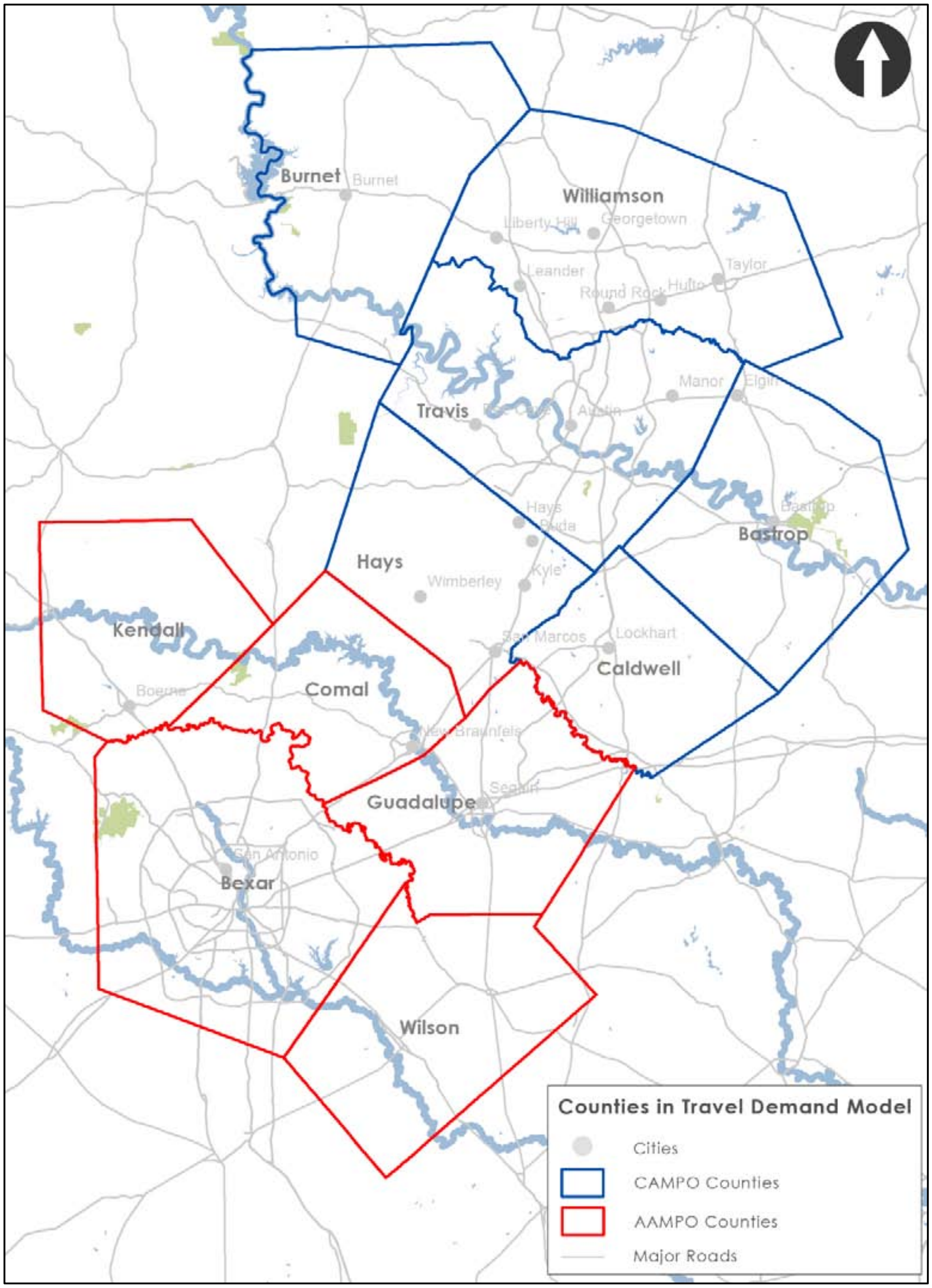
As part of this analysis, Dr. Bomba reviewed the development trends in the individual markets for residential and commercial development. The review effort also considered the existing utility capacity and plans for expansion to confirm the reasonableness of the local development plans. The revised forecasts prepared from this analysis are structured to provide a reasonable estimate of future activity that would be considered conservative for the purposes of estimating future demand for the region's toll facilities. The full report prepared by Dr. Bomba is presented in Appendix A of this report and summarized here.

6.1 REGIONAL TRENDS

Since the 2014 Study, CAMPO has updated the model's TAZ structure and its socioeconomic data to include Burnet County. As such, the full area covered by the regional transportation model used for the CTTS traffic forecast now includes six counties in the CAMPO model area (Travis, Williamson, Hays, Bastrop, Caldwell, and Burnet) and five counties in the AAMPO model area (Bexar, Guadalupe, Comal, Wilson, and Kendall). These counties are shown in Figure 6.1.

.

Figure 6.1 Counties in Transportation Model



Source: (1) CAMPO travel demand model and AAMPO travel demand model.

6.1.1 Regional Population

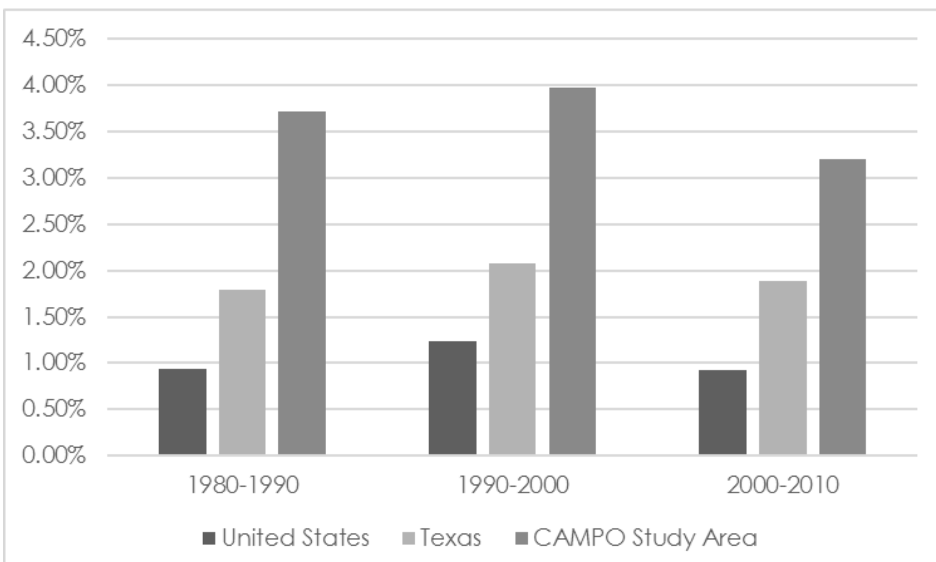
The population of the State of Texas has grown rapidly since 1980, increasing from 14.2 million to more than 25.1 million residents in 2010. Between 2000 and 2010, Texas added 4.3 million residents, making it the fastest growing state in terms of total population. Most of this population increase was in the urban areas of the state. Population growth in the CAMPO study area has nearly tripled since 1980. Table 6.1 and Figure 6.2 compare population growth in the United States, Texas, and the CAMPO study area since 1980.

Table 6.1 U.S., Texas, and CAMPO Study Area Population, 1980 – 2010

Census Year	United States		Texas		CAMPO Study Area	
	Population	Average Annual Rate of Growth	Population	Average Annual Rate of Growth	Population	Average Annual Rate of Growth
1980	226,546,000		14,229,000		602,854	
1990	248,710,000	0.9%	16,987,000	1.8%	868,904	3.7%
2000	281,422,000	1.2%	20,852,000	2.1%	1,283,911	4.0%
2010	308,748,000	0.9%	25,146,000	1.9%	1,759,039	3.2%

Source: (1) U.S. Census Bureau, 2010.

Figure 6.2 Population Growth in the U.S., Texas, and CAMPO Study Area 1980 – 2010



Source: (1) U.S. Census Bureau, 2010.

More recent estimates show that the population of the CAMPO study area has continued to grow since 2010. The data in Table 6.2 provides population counts from the 2000 and 2010 decennial U.S. Censuses, as well as the U.S. Census Bureau's 2016 population estimates. The largest overall population increase between 2010 and 2016 occurred in Travis County, with more than 175,000 new residents between the 2010 decennial Census and the 2016 estimates. Williamson County also grew strongly during this same period with approximately 106,000 new residents between 2010 and 2016, followed by Hays County with more than 47,000 new residents. However, since the 2010 U.S. Census, the rate of population growth in all of the counties, with the exception of Travis County, has slowed.

Table 6.2 Recent Population Trends in CAMPO Study Area, 2000-2016

County	Total Population			Total Change	Average Annual Change		CAGR	
	2000	2010	2016	2010-16	2000-10	2010-16	2000-10	2010-16
Bastrop	57,733	74,171	82,733	8,562	1,644	1,427	2.54%	1.84%
Burnet	34,147	42,750	46,243	3,493	860	582	2.27%	1.32%
Caldwell	32,194	38,066	41,161	3,095	587	516	1.69%	1.31%
Hays	97,589	157,107	204,470	47,363	5,952	7,894	4.88%	4.49%
Travis	812,281	1,024,266	1,199,323	175,057	21,199	29,176	2.35%	2.66%
Williamson	249,967	422,679	528,718	106,039	17,271	17,673	5.39%	3.80%
TOTAL	1,283,911	1,759,039	2,102,648	343,609	47,513	57,268	3.20%	1.80%

Source: (1) U.S. Census Bureau, 2010 and 2017.

U.S. Census Bureau data show that the populations of the five counties in the AAMPO study area also grew strongly between 2010 and 2016, adding almost 279,000 new residents, as shown in Table 6.3. Most of this population growth occurred in Bexar County, which added almost 214,000 residents since the 2010 decennial Census. Guadalupe and Comal Counties also increased their populations during this period, adding approximately 24,000 and 26,000 new residents, respectively. Kendall County's population grew by over 9,100 residents during this period, while Wilson County grew by over 5,500 residents. However, since 2010, the overall rate of population growth has slowed, except for Comal and Kendall Counties.

Table 6.3 Recent Population Trends in AAMPO Study Area, 2000-2016

County	Total Population			Total Change	Average Annual Change		CAGR	
	2000	2010	2016	2010-16	2000-10	2010-16	2000-10	2010-16
Bexar	1,392,931	1,714,773	1,928,680	213,907	32,184	35,651	2.10%	1.98%
Comal	78,021	108,472	134,788	26,316	3,045	4,386	3.35%	3.69%
Guadalupe	89,023	131,533	155,265	23,732	4,251	3,955	3.98%	2.80%
Kendall	23,743	33,410	42,540	9,130	967	1,522	3.47%	4.11%
Wilson	32,408	42,918	48,480	5,562	1,051	927	2.85%	2.05%
TOTAL	1,616,126	2,031,106	2,309,753	278,647	41,498	46,441	2.31%	2.17%

Source: (1) U.S. Census Bureau, 2010 and 2017.

Total population in the 11-county study area increased at an average annual rate of 2.7 percent between 1980 and 2016, increasing from 1.7 million to 4.4 million. The regional growth rate was relatively steady over the period and continues to be strong, at 2.6 percent between 2010 and 2016. Population for each county for census years 1980 through 2010 and the latest estimate for 2016 from the U.S. Census Bureau is shown in Table 6.4.

Table 6.4 Historical Population in Study Area, 1980-2013

Population						
Region	**County**	**1980**	**1990**	**2000**	**2010**	**2016**
CAMPO	Bastrop	24,726	38,263	57,733	74,171	82,733
	Burnet	17,803	22,677	34,147	42,750	46,243
	Caldwell	23,637	26,392	32,194	38,066	41,161
	Hays	40,594	65,614	97,589	157,107	204,470
	Travis	419,573	576,407	812,281	1,024,266	1,199,323
	Williamson	76,521	139,551	249,967	422,679	528,718
	Total	602,854	868,904	1,283,911	1,759,039	2,102,648
AAMPO	Bexar	988,880	1,185,394	1,392,931	1,714,773	1,928,680
	Comal	36,446	51,832	78,021	108,472	134,788
	Guadalupe	46,708	64,873	89,023	131,533	155,265
	Kendall	10,635	14,589	23,743	33,410	42,540
	Wilson	16,756	22,650	32,408	42,918	48,480
	Total	1,099,425	1,339,338	1,616,126	2,031,106	2,309,753
Study Area Total		**1,702,279**	**2,208,242**	**2,900,037**	**3,790,145**	**4,412,401**
Growth Rates						
Region	**County**	**1980**	**1990**	**2000**	**2010**	**2016**
CAMPO	Bastrop		4.5%	4.2%	2.5%	1.8%
	Burnet		2.4%	4.2%	2.3%	1.3%
	Caldwell		1.1%	2.0%	1.7%	1.3%
	Hays		4.9%	4.0%	4.9%	4.5%
	Travis		3.2%	3.5%	2.3%	2.7%
	Williamson		6.2%	6.0%	5.4%	3.8%
	Total		3.7%	4.0%	3.2%	3.0%
AAMPO	Bexar		1.8%	1.6%	2.1%	2.0%
	Comal		3.6%	4.2%	3.4%	3.7%
	Guadalupe		3.3%	3.2%	4.0%	2.8%
	Kendall		3.2%	5.0%	3.5%	4.1%
	Wilson		3.1%	3.6%	2.8%	2.1%
	Total		2.0%	1.9%	2.3%	2.2%
Study Area Total			**2.6%**	**2.8%**	**2.7%**	**2.6%**

Source: (1) U.S. Census Bureau, 2010 and 2017.

For this study, Dr. Bomba prepared an update of the estimates of population included in the CAMPO and AAMPO models to reflect recent development in the areas served by the toll roads in the Austin region. At the regional level and county level, the AAMPO area population remained unchanged. Population in the CAMPO area, while largely unchanged at the regional level, was slightly redistributed among the CAMPO counties, as shown in Table 6.5.

Table 6.5 Comparison of Census and Adjusted 2016 Population for Study Area

Region	County	2016 Population		Difference	
		Census	Adjusted	Number	Percent
CAMPO	Bastrop	82,733	81,710	-1,000	-1.2%
	Burnet	46,243	45,182	-1,061	-2.3%
	Caldwell	41,161	39,848	-1,313	-3.2%
	Hays	204,470	205,074	604	0.3%
	Travis	1,199,323	1,204,220	4,897	0.4%
	Williamson	528,718	526,718	-2,000	-0.4%
	Total	2,102,648	2,102,752	104	0.0%

Source: (1) U.S. Census Bureau, 2010 and 2017.
(2) Michael Bomba, PhD.

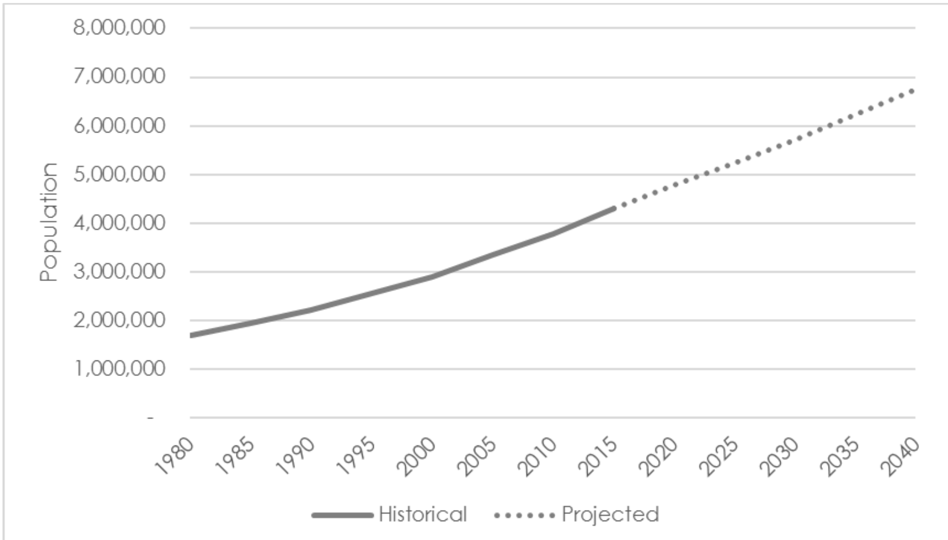
Starting with the adjusted population for 2016 presented above, growth is anticipated to taper down from the annual average rate of 2 percent between 2016 and 2020 to 1.8 percent between 2020 and 2030. After that, it remains fairly constant, slowing slightly to an annual growth rate of 1.7 percent between 2030 and 2040. The forecast of future population for the eleven counties is presented in Table 6.6 and historical and projected population growth are shown in Figure 6.3.

Table 6.6 Population Forecast for the Study Area, 2016 – 2040

Region	County	Population Control Totals			
		2016	2020	2030	2040
CAMPO	Bastrop	81,710	88,109	105,696	125,672
	Burnet	45,182	46,683	51,639	55,412
	Caldwell	39,848	43,480	50,339	57,616
	Hays	205,074	231,129	295,569	399,673
	Travis	1,204,220	1,314,093	1,563,432	1,801,138
	Williamson	526,718	583,417	757,309	984,479
	Total	2,102,752	2,306,911	2,823,984	3,423,990
AAMPO	Bexar	1,928,696	2,045,074	2,351,596	2,678,541
	Comal	134,782	147,364	183,147	225,827
	Guadalupe	155,264	170,618	217,790	271,000
	Kendall	42,542	47,586	60,288	73,221
	Wilson	48,481	51,684	60,348	71,589
	Total	2,309,765	2,462,326	2,873,169	3,320,178
Study Area Total		**4,412,517**	**4,769,237**	**5,697,153**	**6,744,168**
Region	**County**	**Growth Rates**			
		2016	**2020**	**2030**	**2040**
CAMPO	Bastrop		1.9%	1.8%	1.7%
	Burnet		0.8%	1.0%	0.7%
	Caldwell		2.2%	1.5%	1.4%
	Hays		3.0%	2.5%	3.1%
	Travis		2.2%	1.8%	1.4%
	Williamson		2.6%	2.6%	2.7%
	Total		2.3%	2.0%	1.9%
AAMPO	Bexar		1.5%	1.4%	1.3%
	Comal		2.3%	2.2%	2.1%
	Guadalupe		2.4%	2.5%	2.2%
	Kendall		2.8%	2.4%	2.0%
	Wilson		1.6%	1.6%	1.7%
	Total		1.6%	1.6%	1.5%
Study Area Total			**2.0%**	**1.8%**	**1.7%**

Source: (1) Michael Bomba, PhD.

Figure 6.3 Historical and Projected Population in Study Region, 1980 – 2040



Source: (1) U.S. Census Bureau (1980-2010).
(2) Michael Bomba, PhD (2016-2040).

Table 6.7 shows the differences between the 2014 Study's county population forecast control totals and the adjusted county control totals for the 2018 Study. During each forecast year in the 2018 Study, the population control totals are somewhat higher than they were in the 2014 Study, particularly in the later years.

Table 6.7 Comparison of 2014 and 2017 Projections of Population

Year	Estimated Population		Difference	
	2014 Study	2018 Study	Number	Percent
CAMPO Counties[1]				
2016	2,010,394	2,057,570	47,176	2.3%
2020	2,188,195	2,260,228	72,033	3.3%
2030	2,653,953	2,772,345	118,392	4.5%
2040	3,165,572	3,368,578	203,006	6.4%
AAMPO Counties				
2016	2,221,539	2,309,765	88,226	4.0%
2020	2,361,686	2,462,326	100,640	4.3%
2030	2,696,522	2,873,169	176,647	6.6%
2040	3,071,448	3,320,178	248,730	8.1%
Total Region				
2016	4,231,933	4,367,335	135,402	3.2%
2020	4,549,881	4,722,554	172,673	3.8%
2030	5,350,475	5,645,514	295,039	5.5%
2040	6,237,020	6,688,756	451,736	7.2%

Source: (1) Michael Bomba, PhD.
Note: (1) For the comparison to the 2014 Study, Burnet County was not included in the 2018 Study estimates above, since it was not included in the CAMPO model prior to the 2018 Study.

6.1.2 Regional Employment

Employment growth in Texas has outpaced the U.S. for nine of the last ten years. In 2016, employment at the state level grew at an annual rate of 1.3 percent, slightly less than 1.7 percent for the nation, overall. The Austin region's economy is generally recognized as one of the most resilient in the nation, particularly during and following the 2008 - 2009 Recession. As the state capital and home to the University of Texas, Austin adds a degree of stability to the local economy. Employment in the Austin metropolitan area has increased from 243,800 in 1980 to nearly 1 million jobs in 2016, as reported by the U.S. Bureau of Labor Statistics. This increase amounts to a compounded annual growth rate of 4 percent.

According to CAMPO, the largest employers in the greater Austin area are in the government, universities, technology, warehouse and distribution and health care sectors. Major employers (over 6,000 employees) include:

- Apple;
- Austin Independent School District;
- City of Austin;
- Dell Technologies;
- Federal Government (mainly IRS);
- IBM Corp.;
- Samsung Austin Semiconductor;
- Seton Healthcare Family;
- St. David's Healthcare Family;
- State of Texas; and
- University of Texas at Austin.

Table 6.8 and Source: [1] Michael Bomba, PhD.
Note: [1] See Figure 6.4 for locations.

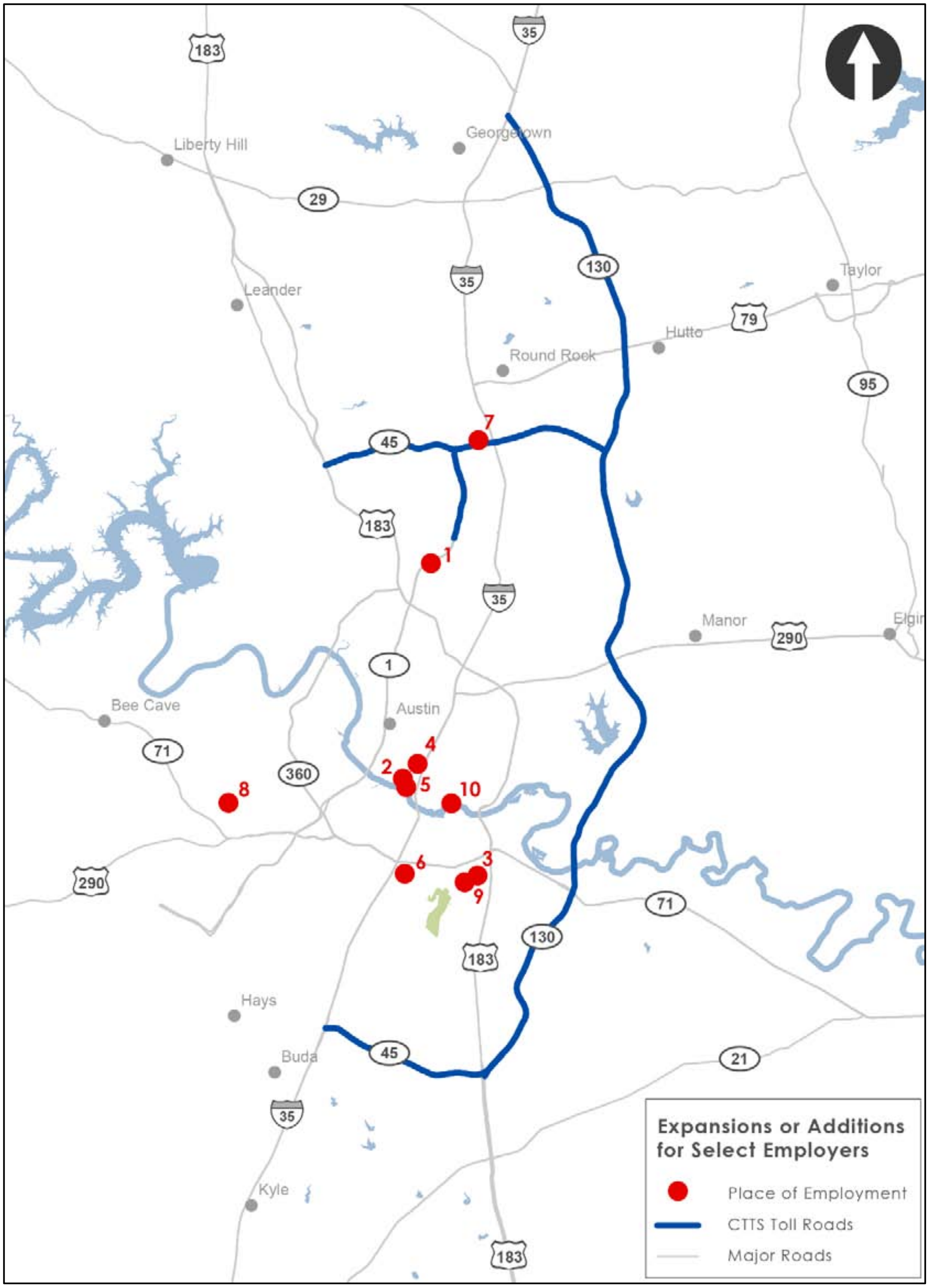
Figure 6.4 show the locations of selected major employers in the Austin region that recently located to the area or have announced expansion plans, and their number of employees. Merck & Company was a notable new employer, which was drawn to the region because of the University of Texas at Austin's new Dell Medical School. It is anticipated that the new medical school, in combination with the region's strengths in computing, will draw many more employers in the biomedical research field. Geographically, several employers are located near one of the CTTS facilities.

Table 6.8 Select Major Employers (New and Recent Expansions)

Map ID	Employer	Type of Operation	Announced Jobs
1	Homeaway	Online vacation home rentals (Hdq.)	2,200
2	Facebook	Online operations center	1,000
3	Seton Healthcare Family	Innovation and call center	650
4	Merck & Company	IT innovation center	600
5	Main Street Hub	Social media solutions (Hdq.)	400
6	Republic National Distribution	Beverage distribution (Hdq.)	300
7	TG	Student financial aid nonprofit (Hdq.)	300
8	Yeti Coolers	Cooler and accessors manufacturer	250
9	Opcity	Online real estate service (Hdq.)	200
10	FloSports	Online broadcasting network (Hdq.)	175

Source: (1) Michael Bomba, PhD.
Note: (1) See Figure 6.4 for locations.

Figure 6.4 Expansions or Additions for Select Employers in the Austin MSA



Source: (1) Michael Bomba, PhD.

Data for the San Antonio – New Braunfels Metropolitan Area are only available since 1990 and show that employment in that area has increased from 547,500 in 1990 to more than 1 million in 2016. In 1990, employment in the CAMPO study area was approximately 75 percent of that in the AAMPO study area. In 2016, the two regions have nearly identical levels of employment. Historical employment in the two metropolitan areas is summarized in Table 6.9.

Table 6.9 Historical Employment in Study Area

Region	MSA	Employment				
		1980	1990	2000	2010	2016
CAMPO	Austin-Round Rock MSA	243,800	396,100	684,000	785,600	999,800
AAMPO	San Antonio-New Braunfels MSA		547,500	753,900	855,000	1,016,500
Study Area Total			**943,600**	**1,437,900**	**1,640,600**	**2,016,300**
CAMPO	Austin-Round Rock MSA		5.0%	5.6%	1.4%	4.1%
AAMPO	San Antonio-New Braunfels MSA			3.3%	1.3%	2.9%
Study Area Total				**4.3%**	**1.3%**	**3.5%**

Source: (1) BLS Current Employment Statistics (CES), 2017.
Note: (1) The Austin-Round Rock MSA does not include Burnet County. The San Antonio-New Braunfels MSA includes Medina, Atacosta, and Bandera Counties, in addition to the AAMPO counties.

Detailed annual data by county is shown in Table 6.10 for the period 2007 through 2016. With the exception of 2009, when the number of jobs decreased due to the recession, employment has been increasing on a steady basis, reaching a growth peak between 2014 - 2015. Since then growth in employment, while still very healthy, has slowed slightly from 4.0 percent to 3.4 percent. According to CAMPO, Austin has had significant increases in health care, professional and management positions, and arts, entertainment and food industries while manufacturing jobs are decreasing. There is a demand for high-tech workers due to the presence of computer and internet firms serving the increasing demand for their products. As previously noted, growth is also expected in the biomedical research field due to the presence of the new medical school and the region's strengths in computing. Growth has been both in suburban areas and in the Austin CBD.

Table 6.10 Employment by County, 2007 – 2016

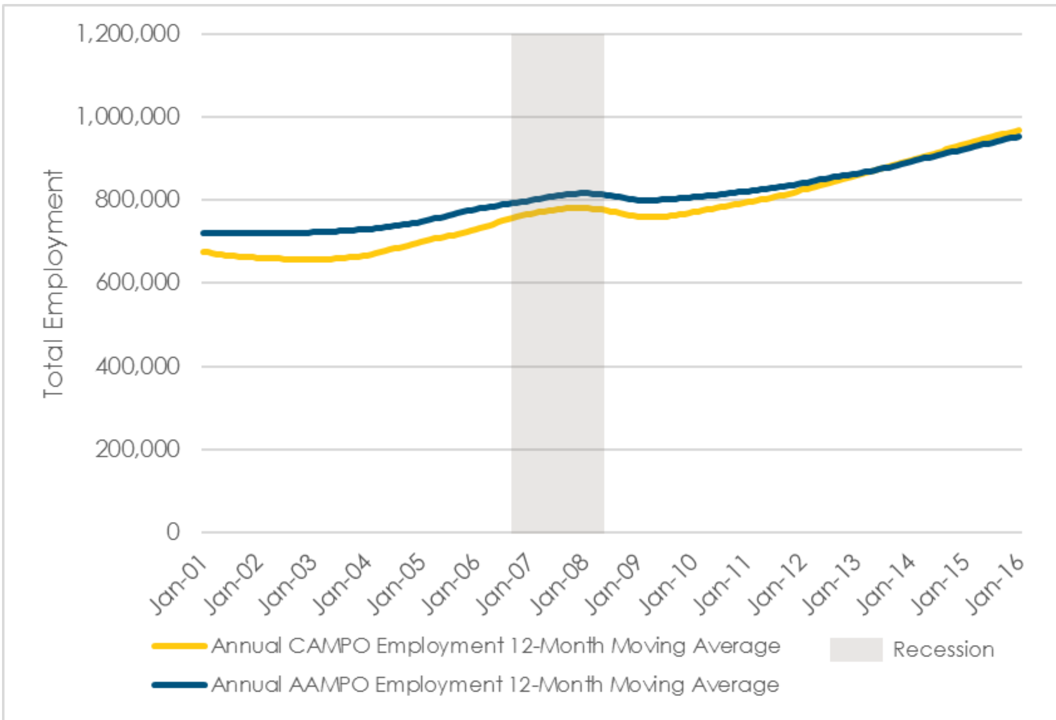
Region	County	Employment									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
CAMPO	Bastrop	13,335	13,883	14,143	14,283	14,032	14,120	15,083	15,516	16,321	18,855
	Burnet	12,514	12,670	12,115	12,204	12,366	12,232	12,595	13,360	13,221	13,184
	Caldwell	6,583	6,871	6,712	6,929	7,441	7,729	8,017	8,116	8,103	8,579
	Hays	47,714	46,748	47,510	48,616	50,577	52,585	55,297	57,849	60,654	63,683
	Travis	569,200	578,961	559,751	567,693	581,510	604,648	628,224	655,305	687,067	704,707
	Williamson	117,842	121,725	119,984	120,860	128,863	133,518	139,166	145,135	150,953	156,834
	Total	767,188	780,858	760,215	770,585	794,789	824,832	858,382	895,281	936,319	965,842
AAMPO	Bexar	716,666	730,302	715,292	722,147	732,527	749,534	770,531	793,727	818,499	841,664
	Comal	36,955	39,034	39,173	39,332	41,073	42,249	42,800	44,952	48,500	53,131
	Guadalupe	28,787	29,887	28,825	28,932	29,983	30,602	31,484	33,021	34,126	38,631
	Kendall	10,176	10,674	10,755	10,654	11,243	11,675	12,081	12,669	14,021	14,873
	Wilson	6,400	6,546	6,419	6,490	6,645	6,683	7,072	7,447	7,664	7,636
	Total	798,984	816,443	800,464	807,555	821,471	840,743	863,968	891,816	922,810	955,935
Study Area Total		**1,566,172**	**1,597,301**	**1,560,679**	**1,578,140**	**1,616,260**	**1,665,575**	**1,722,350**	**1,787,097**	**1,859,129**	**1,921,777**

Region	County	Growth Rates									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
CAMPO	Bastrop		4.1%	1.9%	1.0%	-1.8%	0.6%	6.8%	2.9%	5.2%	15.5%
	Burnet		1.2%	-4.4%	0.7%	1.3%	-1.1%	3.0%	6.1%	-1.0%	-0.3%
	Caldwell		4.4%	-2.3%	3.2%	7.4%	3.9%	3.7%	1.2%	-0.2%	5.9%
	Hays		-2.0%	1.6%	2.3%	4.0%	4.0%	5.2%	4.6%	4.8%	5.0%
	Travis		1.7%	-3.3%	1.4%	2.4%	4.0%	3.9%	4.3%	4.8%	2.6%
	Williamson		3.3%	-1.4%	0.7%	6.6%	3.6%	4.2%	4.3%	4.0%	3.9%
	Total		1.8%	-2.6%	1.4%	3.1%	3.8%	4.1%	4.3%	4.6%	3.2%
AAMPO	Bexar		1.9%	-2.1%	1.0%	1.4%	2.3%	2.8%	3.0%	3.1%	2.8%
	Comal		5.6%	0.4%	0.4%	4.4%	2.9%	1.3%	5.0%	7.9%	9.5%
	Guadalupe		3.8%	-3.6%	0.4%	3.6%	2.1%	2.9%	4.9%	3.3%	13.2%
	Kendall		4.9%	0.8%	-0.9%	5.5%	3.8%	3.5%	4.9%	10.7%	6.1%
	Wilson		2.3%	-1.9%	1.1%	2.4%	0.6%	5.8%	5.3%	2.9%	-0.4%
	Total		2.2%	-2.0%	0.9%	1.7%	2.3%	2.8%	3.2%	3.5%	3.6%
Study Area Total			**2.0%**	**-2.3%**	**1.1%**	**2.4%**	**3.1%**	**3.4%**	**3.8%**	**4.0%**	**3.4%**

Source: (1) Data from 2007 to 2015 is from BLS Quarterly Census of Employment and Wages (QCEW), 2017.
(2) Data for 2016 reflects estimates by Michael Bomba, PhD.

Employment in the CAMPO and AAMPO areas is shown graphically in Figure 6.5 for the period 2001 through 2016. The effects of the recession can be seen in the downturn in 2009 and the rebound since then. Employment levels are now higher than before the recession and total employment levels for both the CAMPO and AAMPO areas exceed 950,000 in 2016. Since 2014, the employment in the CAMPO counties exceeded that of the AAMPO area.

Figure 6.5 Employment in Study Area, 2001 - 2016



The forecast of future employment for the eleven counties is presented in Table 6.11. Growth is anticipated to taper down from the rate of 2.1 percent from 2016 to 2020 and 1.8 percent in 2030 to 1.6 percent between 2030 and 2040.

Table 6.11 Employment Forecast for Study Area, 2016 – 2040

Region	County	Employment Control Totals			
		2016	2020	2030	2040
CAMPO	Bastrop	18,855	20,352	25,446	32,732
	Burnet	13,184	14,880	18,135	22,099
	Caldwell	8,579	9,285	11,517	14,561
	Hays	63,683	73,095	98,021	124,711
	Travis	704,707	762,715	883,257	991,374
	Williamson	156,834	176,480	225,362	281,677
	Total	965,842	1,056,807	1,261,738	1,467,154
AAMPO	Bexar	841,664	905,194	1,060,224	1,231,801
	Comal	53,131	60,328	82,300	107,492
	Guadalupe	38,631	43,281	56,050	69,948
	Kendall	14,873	16,980	22,744	29,053
	Wilson	7,636	8,342	10,154	12,028
	Total	955,935	1,034,125	1,231,472	1,450,322
Study Area Total		**1,921,777**	**2,090,932**	**2,493,210**	**2,917,476**
Region	**County**	**Growth Rates**			
		2016	**2020**	**2030**	**2040**
CAMPO	Bastrop		1.9%	2.3%	2.5%
	Burnet		3.1%	2.0%	2.0%
	Caldwell		2.0%	2.2%	2.4%
	Hays		3.5%	3.0%	2.4%
	Travis		2.0%	1.5%	1.2%
	Williamson		3.0%	2.5%	2.3%
	Total		2.3%	1.8%	1.5%
AAMPO	Bexar		1.8%	1.6%	1.5%
	Comal		3.2%	3.2%	2.7%
	Guadalupe		2.9%	2.6%	2.2%
	Kendall		3.4%	3.0%	2.5%
	Wilson		2.2%	2.0%	1.7%
	Total		2.0%	1.8%	1.6%
Study Area Total			**2.1%**	**1.8%**	**1.6%**

Source: [1] Michael Bomba, PhD.

A comparison of the employment projections prepared for the 2014 Study and the forecasts used in the current study, is shown in Table 6.12. The 2018 Study employment control totals are higher than the 2014 Study, due to more recent data that show stronger employment growth during the past few years. Bexar and Travis Counties are the major source of the additional employment but most of the other counties contributed positively, as well. The notable exception is Caldwell County, which had lower employment for each forecast year and Bastrop County during 2040.

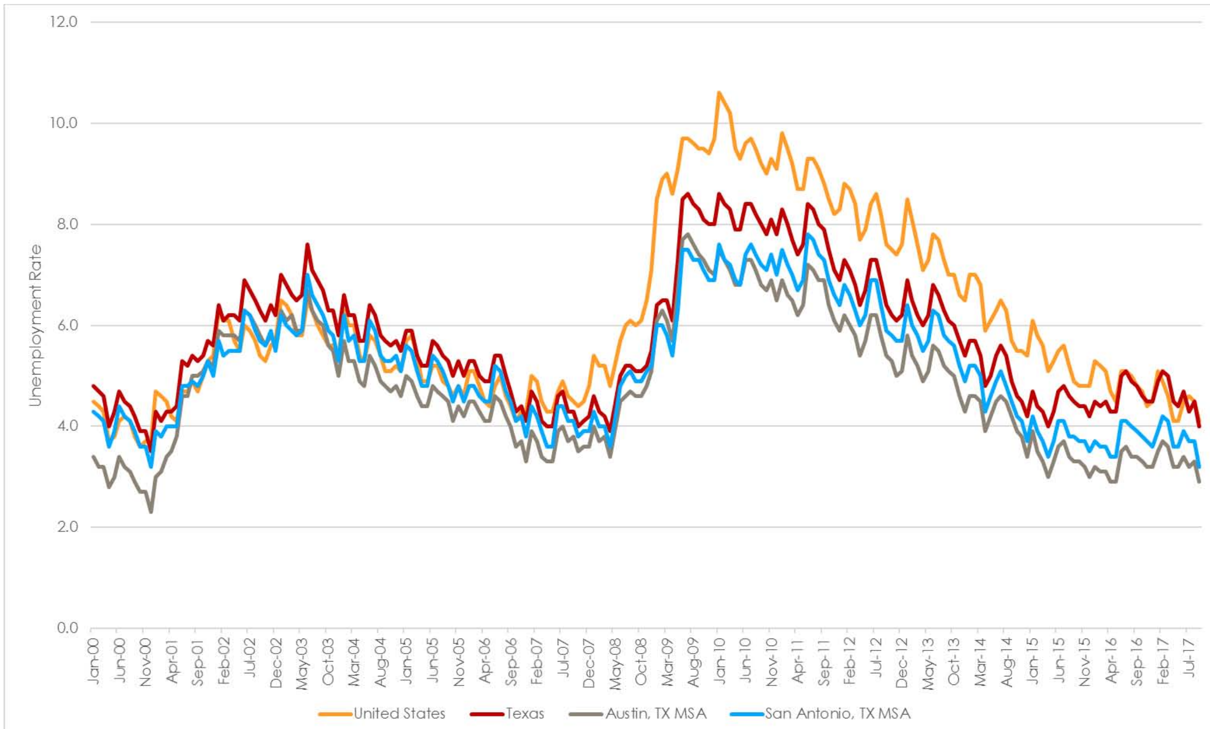
Table 6.12 Comparison of 2014 and 2016 Projections of Employment

Year	Estimated Employment		Difference	
	2014 Study	2018 Study	Number	Percent
CAMPO Counties[1]				
2016	907,255	952,658	45,403	5.0%
2020	980,887	1,041,927	61,040	6.2%
2030	1,173,551	1,243,603	70,052	6.0%
2040	1,375,006	1,445,055	70,049	5.1%
AAMPO Counties				
2016	906,519	955,935	49,416	5.5%
2020	966,259	1,034,125	67,866	7.0%
2030	1,122,948	1,231,472	108,524	9.7%
2040	1,292,984	1,450,322	157,338	12.2%
Total Region				
2016	1,813,774	1,908,593	94,819	5.2%
2020	1,947,146	2,076,052	128,906	6.6%
2030	2,296,499	2,475,075	178,576	7.8%
2040	2,667,990	2,895,377	227,387	8.5%

Source: (1) Michael Bomba, PhD.
Note: (1) For the comparison to the 2014 Study, Burnet County was not included in the 2018 Study estimates, since it was not included in the CAMPO model prior to the 2018 Study.

Figure 6.6 shows the unemployment rates for the United States, Texas, the Austin-Round Rock MSA, and the San Antonio-New Braunfels MSA. These data show the unemployment rate in the region has been below the overall unemployment rate in Texas during most of the period between January 2000 and September 2017. Both the Austin-Round Rock MSA and the San Antonio-New Braunfels MSA experienced their lowest unemployment rates in 2000. During the recession that began in 2001, the regional unemployment rate for both areas peaked at approximately 7 percent. As the regional and national economy recovered, employment expanded during the mid-2000s, and unemployment in both areas fell to less than 4.0 percent. During the 2008-2009 Recession, the regional unemployment rate reached 7.4 percent in the Austin-Round Rock MSA and 7.2 percent in the San Antonio-New Braunfels MSA. Between 2011 and 2017, the regional unemployment rate consistently fell through 2015, and has remained relatively steady going forward at 2.9 percent for the Austin-Round Rock MSA and 3.2 percent for the San Antonio-New Braunfels MSA during September 2017.

Figure 6.6 Comparison of Unemployment Rates, 2000-2017



Source: (1) Bureau of Labor Statistics, 2017.

As part of Stantec's review of Dr. Bomba's forecasts, Stantec compared the population and employment forecasts from all of the previous reports in the rapidly developing 'greenfield' corridor served by SH 130 Segments 1-4. In Table 6.13 and Figure 6.7, the population estimates developed for each of the CTTS forecasts prepared since the initial forecasts in 2002 are provided by horizon year. A comparison of "known" data to previous forecasts shows that Dr. Bomba's estimates are consistently lower than the actual growth within the corridor. For example, Dr. Bomba forecasted the 2008 population to be 190,431 for the 2005 Report. In 2010, when the 2008 data was available for use, Dr. Bomba adjusted his original forecast upwards to 241,651. The "known" data is shown in yellow in the tables below.

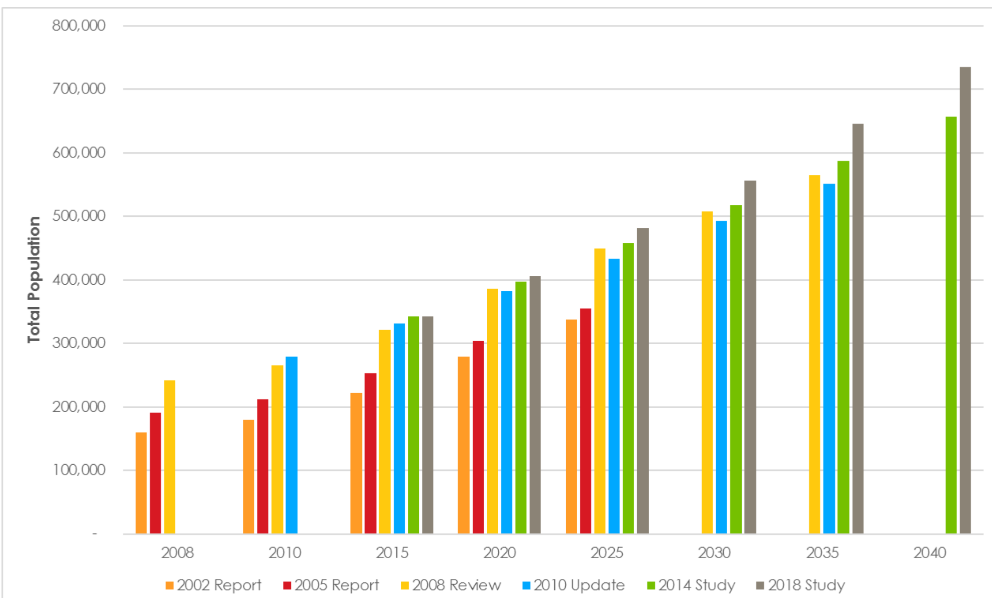
A comparison of the 2015 population estimates is more difficult, since the base year for the 2018 Study is 2016, and as such, 2015 estimates were not developed. However, a comparison to an interpolated value using the 2012 Update estimates of 2010 population and the forecasted 2020 population from the current update show the estimated 2015 population to be almost identical to the forecasted 2015 population for the 2014 Study.

Table 6.13 Comparison of SH 130 Population Forecasts Across CTTS Studies

Traffic T & R Forecast Study	Population Forecast by Year							
	2008	2010	2015	2020	2025	2030	2035	2040
2002 Report	159,233	179,944	221,540	279,286	337,031			
2005 Report	190,431	212,047	252,764	303,911	355,057			
2008 Review	241,651	264,792	321,591	385,541	449,490	507,450	565,410	
2010 Update		278,729	331,458	382,188	432,918	492,174	551,430	
2014 Study			342,412	396,864	457,428	517,991	587,372	656,752
2018 Study			342,199	405,669	480,993	556,316	645,428	734,540

Source: (1) Michael Bomba, PhD.
Note: (1) Where inputs were not developed for the specific forecast year, values were interpolated using available estimates. The 2015 population estimates for the 2018 Study were interpolated using the 2010 estimates from the 2012 Update and the estimates for 2020 developed by Dr. Bomba for the 2018 Study.

Figure 6.7 Comparison of SH 130 Population Forecasts Across CTTS Studies



Source: (1) Michael Bomba, PhD.

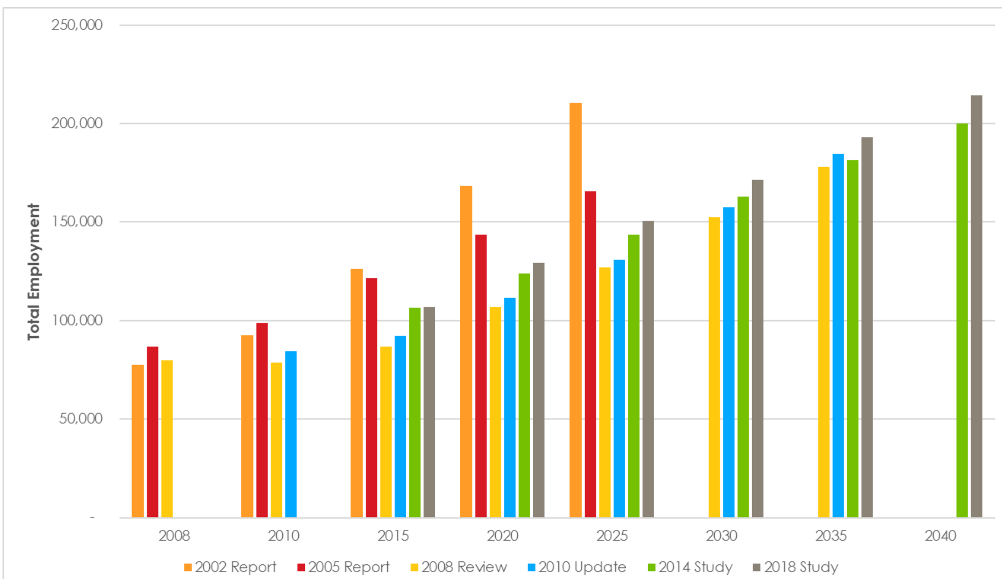
Similarly, the employment forecasts shown in Table 6.14 and Figure 6.8 have been revised upwards for subsequent updates to better reflect known conditions, except for the forecasts produced in 2005 which did not account for the impending recession. Again, the interpolated value using the 2012 CTTS study estimate of 2010 employment and the 2020 forecast for this study is almost identical to the forecasted 2015 employment produced for the 2014 CTTS study. The fact that forecasts are consistently adjusted upwards once data is known underscores the conservative approach taken by Dr. Bomba in developing population and employment forecasts.

Table 6.14 Comparison of SH 130 Employment Forecasts Across CTTS Studies

Traffic T & R Forecast Study	Employment Forecast by Year							
	2008	2010	2015	2020	2025	2030	2035	2040
2002 Report	77,619	92,752	126,152	168,376	210,599			
2005 Report	86,866	98,637	121,764	143,660	165,555			
2008 Review	80,009	78,698	86,598	106,774	126,949	152,436	177,923	
2010 Update		84,295	92,317	111,578	130,839	157,685	184,531	
2014 Study			106,627	123,857	143,488	163,119	181,499	199,879
2018 Study			106,865	129,435	150,458	171,480	192,944	214,408

Source: (1) Michael Bomba, PhD.
Note: (1) Where inputs were not developed for the specific forecast year, values were interpolated using available estimates. The 2015 population estimates for the 2018 Study were interpolated using the 2010 estimates from the 2012 Update and the estimates for 2020 developed by Dr. Bomba for the 2018 Study.

Figure 6.8 Comparison of SH 130 Employment Forecasts Across CTTS Studies



Source: (1) Michael Bomba, PhD.

6.2 UPDATE OF TAZ LEVEL ESTIMATES

The socioeconomic baseline (2016) and future forecasts were prepared by Dr. Bomba and Stantec for use in the disaggregated traffic analysis zone (TAZ) system used in the individual travel demand models. In this process, the historical data presented in Section 6.1 is analyzed and the base year estimates and future year forecast control totals are divided amongst individual TAZs.

6.2.1 Methodology

Base Year Methodology

In order to establish base year socioeconomic data, a visual housing count of new single-family and multifamily dwelling units was undertaken, by comparing 2010 and 2016 digital aerial photography in GIS. New residential development was delineated and the single-family units were counted. An example is shown in Figure 6.9. The rooftop comparison was completed for the entire study area shown in Figure 6.10.

Figure 6.9 Example of Orthographic Review

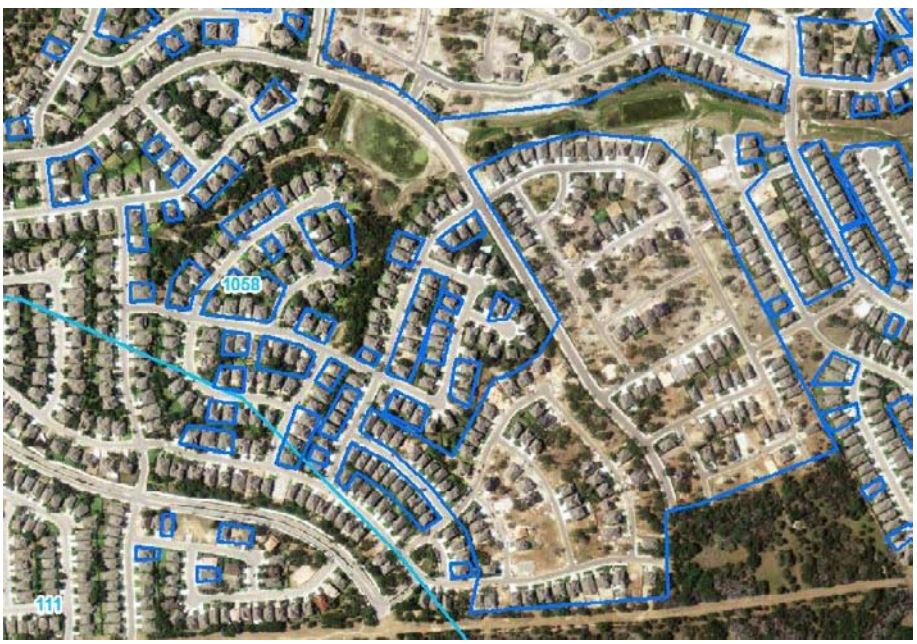
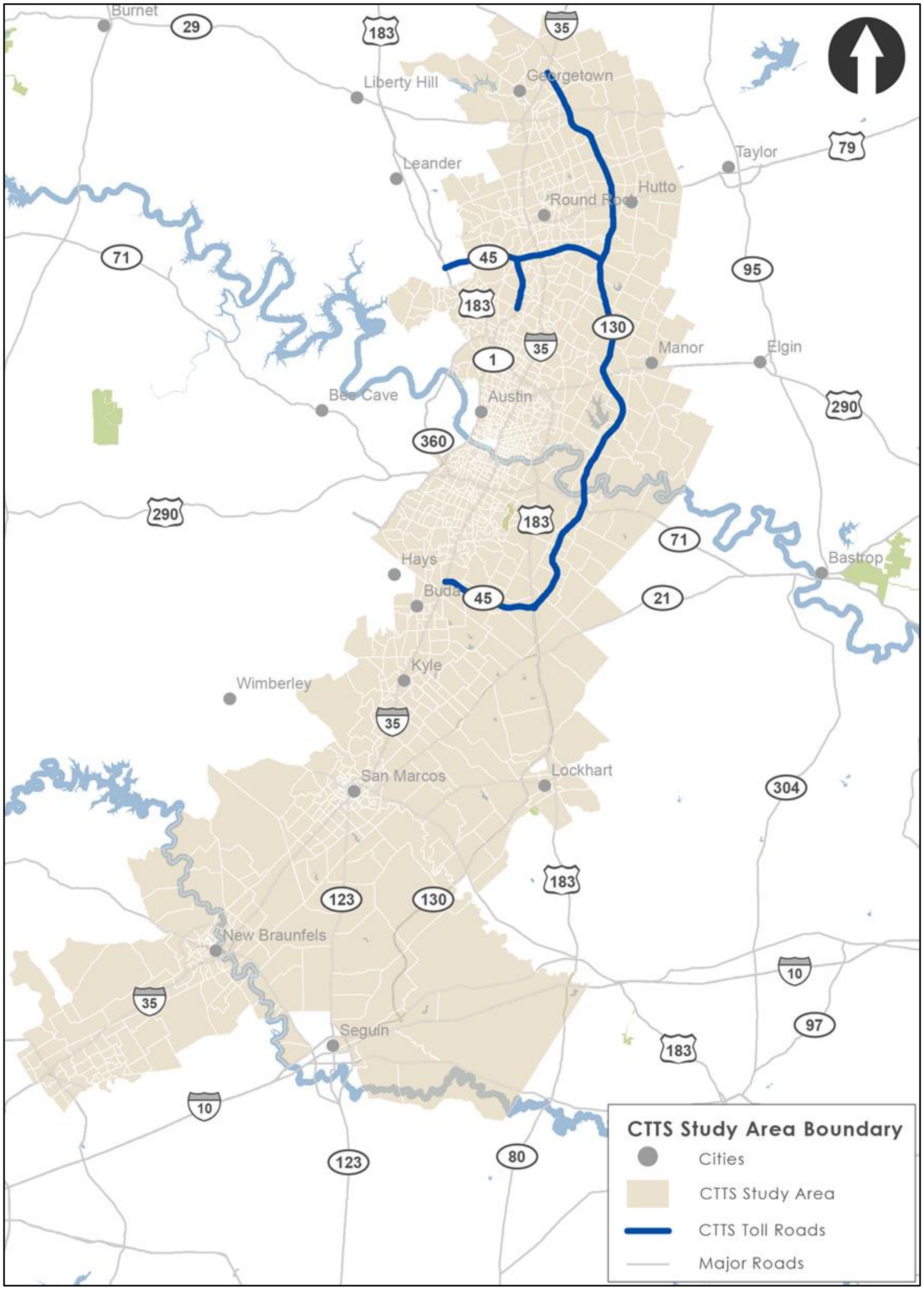


Figure 6.10 CTTS Study Area



Dwelling unit counts for multifamily projects were derived from data provided by local governments, industry market research, company websites, or apartment locator websites. Along with assumptions of vacant housing absorption, the 2010-2016 housing unit count was multiplied by each TAZ's estimated persons per household and added to CAMPO's and AAMPO's 2010 population and households estimates to develop the 2016 base year population and household estimates for the entire project study area. This information was used to generate baseline demographic data for each TAZ in the study area. Outside of the project study area, the populations of the TAZs were interpolated between the MPO's 2010 base year and the 2020 forecast year, then adjusted to subarea population control totals.

The 2016 employment data were adjusted by assuming a portion of employment growth was absorbed into vacant commercial space or was added to firm rosters without requiring additional floor space. Additionally, new commercial developments were also identified using the digital aerial photography. Once these commercial facilities or schools were identified, 2013 firm-level employment data from the Texas Workforce Commission assisted with developing employment estimates or, if the employers were schools, data from the Texas Education Agency (TEA) were used. Using the TWC data and Google Maps, information from local chambers of commerce, periodicals, and other sources as a reference, along with professional judgment, the CAMPO TAZ employment data were assessed and adjusted as necessary. Finally, estimates of median household income in the study area were maintained from CAMPO's and AAMPO's revised 2010 estimates. All data were then reviewed by Stantec staff to ensure internal consistency (e.g., ratio of population to households, check of employment totals against different employment categories, etc.). For additional development information, see discussion of forecast development in Appendix A.

Future Conditions Methodology

Socioeconomic forecasts were developed using a combination of the MPO's forecasts and a series of interviews with individual municipalities. Socioeconomic interviews were conducted with communities and counties in the study area (see Table 6.15) to provide an updated assessment of potential future near-term and long-term growth parcels. Municipality representatives were asked to identify parcels that would experience new residential or commercial development; to quantify the type of development (number of dwelling units for single- or multi-family residential, and square footage or employee counts for commercial development); and to specify a development timeframe if possible. In addition to these quantitative statements about specific development parcels, they were also asked to describe other factors that may influence development in their jurisdiction. These included factors such as the development of new parks, schools, municipal buildings, and other parameters, such as the water and wastewater capacity, the extent of the utility network, and potential environmental constraints. A list of the municipalities that were interviewed is shown in Table 6.15. These comments were recorded directly on a large-scale aerial map during the meeting by municipality representatives and/or Stantec interviewers. The projections were then compared against the MPO baseline forecasts, and an updated socioeconomic forecast for each TAZ in the study area was developed.

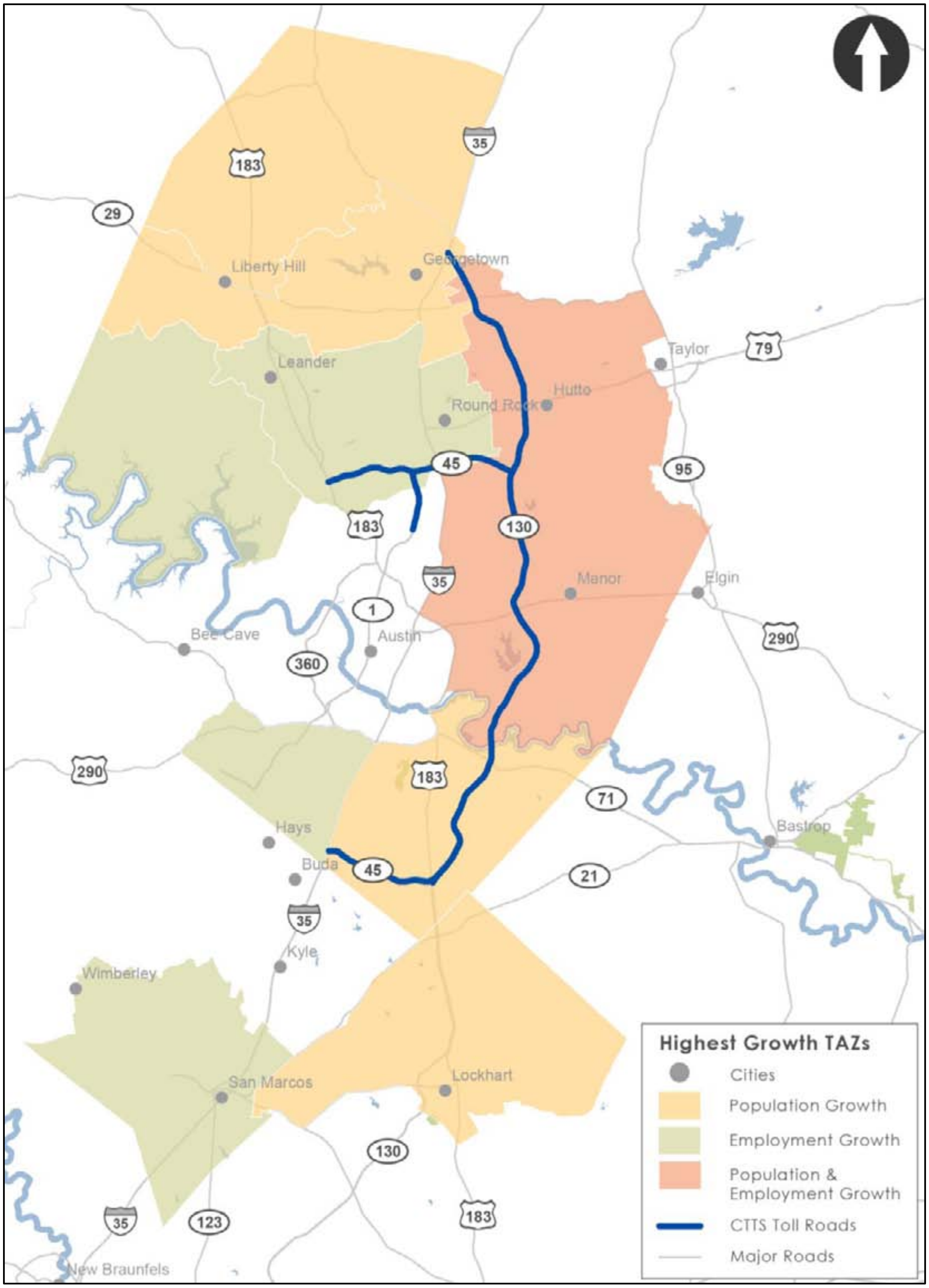
Table 6.15 Socioeconomic Interviews Conducted

Jurisdiction	Date
City of Lockhart	Jul-17
City of Round Rock	Oct-16
City of Georgetown	Nov-16
City of Hutto	Oct-16
City of Manor	Oct-16
City of Kyle	Oct-16
Travis County	Oct-16
City of Pflugerville	Nov-16
City of Buda	Oct-16
Hays County	Jul-17
City of Schertz	Jul-17
City of Cedar Park	Oct-16
City of Leander	Oct-16
City of Seguin	Jul-17
City of Universal City	Jul-17
City of Garden Ridge	Jul-17
City of Selma	Jul-17
City of Cibolo	Jul-17
City New Braunfels	Jul-17
Bexar County	Jul-17

6.2.2 TAZ Population & Employment

The fastest population growth rates are expected outside of the City of Austin, in the areas to the northwest near the cities of Liberty Hill and Georgetown, as well as along the SH 130 corridor in east Austin and the SH 45 SW corridor in southern Travis County. There is also a high rate of population growth in Caldwell County, although the absolute difference is less significant. Figure 6.11 and Table 6.16 through Table 6.17 show the highest growth TAZs in terms of population and employment between 2016 and 2020.

Figure 6.11 Near Term High-Growth TAZ Sectors (2016-2020)



Source: (1) Michael Bomba, PhD.
Note: (1) See Table 6.16 and Table 6.17

Table 6.16 2016-2020 Forecasted Compounded Annual Growth Rates - Population

Sector	2016 Population	2020 Population	Difference	CAGR
8 - Travis	210,812	241,650	30,838	3.47%
9 - Travis	89,776	105,925	16,149	4.22%
7 - Williamson	76,629	88,379	11,750	3.63%
15 - Williamson	50,260	58,094	7,834	3.69%
13 - Williamson	22,225	27,226	5,001	5.20%
20 - Caldwell	24,817	28,557	3,740	3.57%

Source: (1) Michael Bomba, PhD.

Table 6.17 shows the highest growth TAZs in terms of employment between 2016 and 2020. Several of the high growth TAZs in terms of population are also leading the study area in terms of employment growth, particularly along the SH 130 corridor. Additionally, there is high employment growth in northwest Austin in Cedar Park, Leander, and Round Rock, as well as south of SH 71 in southern Travis County near the proposed SH 45 SW corridor and along the IH-35 corridor near San Marcos.

Table 6.17 2016-2020 Forecasted Compounded Annual Growth Rates - Employment

Sector	2016 Employment	2020 Employment	Difference	CAGR
8 - Travis	72,535	81,486	8,951	2.95%
6 - Williamson	114,475	128,686	14,211	2.97%
2 - Travis	52,938	59,087	6,149	2.79%
11 - Hays	36,928	43,611	6,683	4.25%
15 - Williamson	8,206	10,428	2,222	6.17%
5 - Travis	6,265	7,557	1,292	4.80%
0 - Burnet	13,184	14,880	1,696	3.07%

Source: (1) Michael Bomba, PhD.

6.3 REGIONAL DEVELOPMENT TRENDS

As mentioned above, interviews were conducted with community and county representatives to provide an assessment of near-term and long-term growth. While the interview process identified hundreds of developments in all parts of the map, the following section provides a broad overview of the larger-scale developments near the toll roads in the Austin region and along the competitor roads. The Austin and San Antonio regional economies have experienced consistent growth over the past decade, and that economic strength was reflected in the information gathered from the interviews. All the communities have new developments that are either ongoing or planned; many of them have developed or plan to develop catalysts to growth -- among them, their location along a major arterial, a favorable development environment, a well-managed water supply, and/or a strong utility network. Many communities have zoned certain parcels to encourage new development. Each region has a large supply of developable land at the urbanized periphery. Additionally, on the outer edges of development in both regions, there are generally many vacant parcels of developable land and land that could be redeveloped into higher densities, if land prices justify it. Table 6.18 lists key developments in the study area, project details, and development status which correspond to Figure 6.12.

Table 6.18 Key Developments in the Study Area

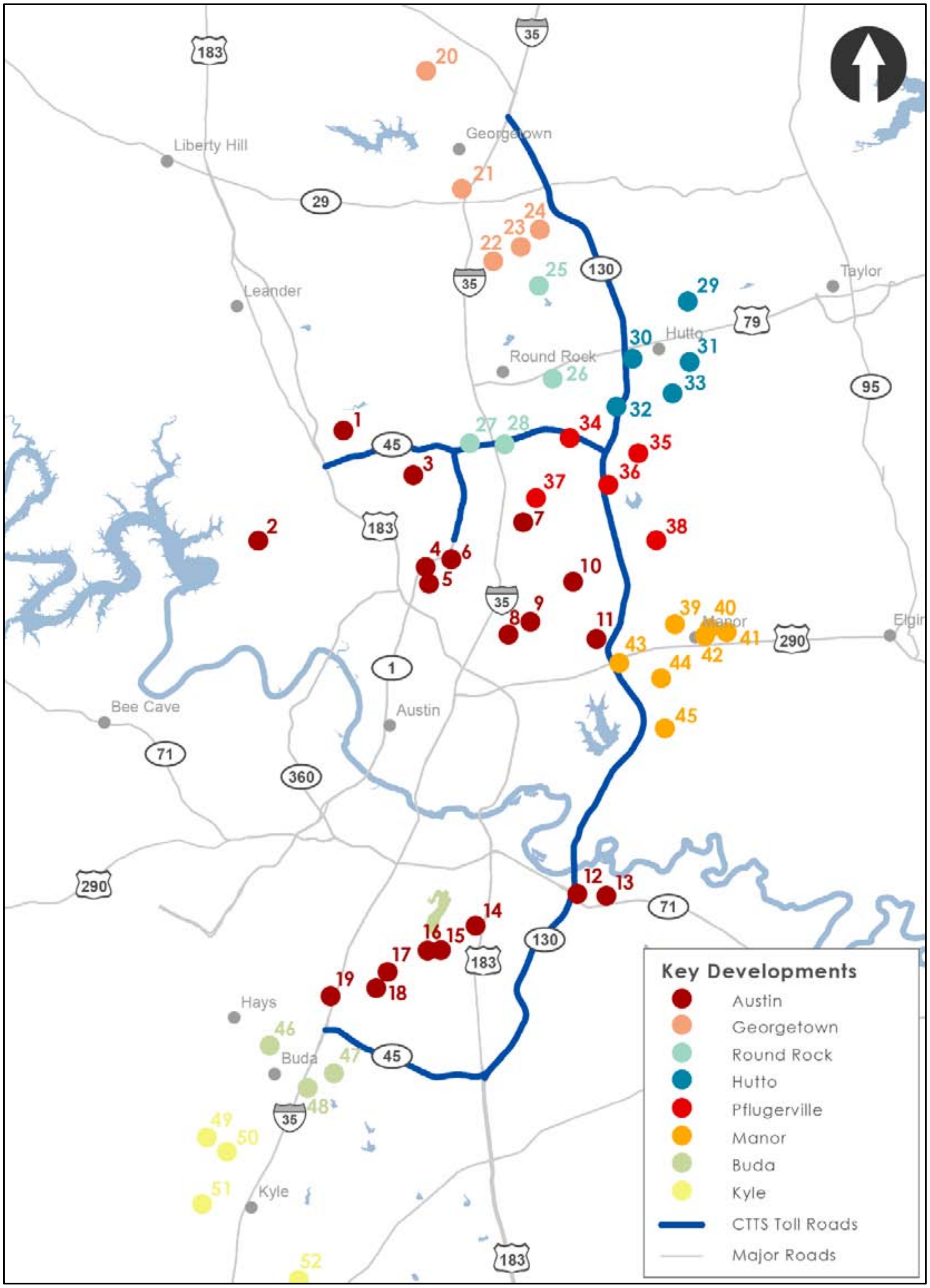
Map ID	Name	Details	Status
1	Northwoods at Avery Ranch	815 single-family lots	Ongoing construction
2	Trails at 620	300,000 sq ft of retail	Under construction
3	Robinson Ranch	6,000-acre ranch available for development	No construction activity
4	Domain 11 & 12 Office Buildings	315,000 sq ft of office space	Completed
5	Domain Tower & Flatiron/Domain	310,000 sq ft of office space and a 372-unit apartment complex	Completed
6	North Austin Medical Center	Planned Unit Development (PUD) with 1.8 million sq ft of medical office space	Ongoing construction
7	Northtown MUD	2,951 single-family homes, 1,626 townhomes, 4,186 apartments	Ongoing construction
8	Pioneer Hill Subdivision	671 lots and apartments	Under construction
9	Pioneer Crossing PUD	2,925 lots	Under construction
10	Cantarra Subdivision	1,126 lots	Under construction
11	Bellingham Meadows Phases 1 & 2	629-lot subdivision	Under construction
12	Riverbend Landing Section 1	600 single-family lots and 11.6 acres of retail space	Approved
13	Watersedge PUD	1,254 single-family homes, 323 apartments, 244 townhomes, and 388,900 sq ft of retail	Approved
14	Addison Subdivision	500 single-family homes, 225 apartments, some retail	Under construction
15	Easton Park Subdivision	6,500 single-family homes, 1,500 apartments	Under construction
16	Vista Point Subdivision	344 single-family homes	Under construction
17	Goodnight Ranch Subdivision	1,192 single-family homes, 2,645 apartments, 696 townhomes	Under construction
18	Bradshaw Crossing	921 lots	Under construction
19	Estancia Hill Country	385 single-family homes, 1.9 million sq ft corporate campus, 1.5 million sq ft office space. May also include hotel, hospital, and multi-family housing	Under construction
20	Sun City	Approximately 7,000 homes already built	Under construction
21	Wolf Ranch Retail and Residential	209 lots and proposed apartments and townhomes	Under construction
22	Teravista Georgetown	1,200 lots	Under construction
23	La Conterra Subdivision	500 lots	Under construction
24	Saddlecreek Subdivision	1,220 lots	Under construction
25	Vizcaya	1,192 single-family lots	Under construction
26	Kalhari Water Resort	1,000 room resort	Proposed

(Cont. on next page)

Map ID	Name	Details	Status
27	La Frontera	102,000 sq ft of retail and 95,000 sq ft office building under construction; recently built 42,000 sq ft and 98,000 sq ft office buildings and 91-room and 140-room hotels	Completed/Under construction
28	The District	1 million sq ft of multifamily, hotels, retail, and office	Proposed
29	Hutto Highlands Subdivision	700 lots	Proposed
30	Hutto Crossing	400 single-family lots and 310 apartments	Under construction
31	Meadows at Cottonwood Creek Subdivision	854 lots	Approved
32	HEB Plus!	121,000 sq ft grocery store and 24,500 sq ft of retail space	Completed
33	Brooklands Subdivision	609 lots	Approved
34	Living Space Furniture Store	530,000 sq ft retail store and warehouse	Under construction
35	Blackhawk Subdivision	3,500 lots	Under construction
36	Scott & White Medical Center	97,474 sq ft hospital	Under construction
37	Commons at Heatherwilde/Pecan	1,250 residential units	Proposed
38	Carmel Subdivision	2,317 lots	Proposed
39	Shadowglen	3,500 lot subdivision	Under construction
40	Sky Village	1,500 lot subdivision	Proposed
41	Presidential Glen	905 lot subdivision	Under construction
42	Presidential Meadows	1,550 lot subdivision	Under construction
43	Capitol Wright Distribution	700-employee, 500,000 sq ft headquarters and distribution center	Completed
44	Lagos Subdivision	2,300 lots	Proposed
45	Whisper Valley PUD	2,047-acre PUD; 4,737 single-family homes, 1,451 apartments, 231,070 sq ft of office space, 429,130 sq ft of retail	Under construction
46	Proposed Subdivision	400 lots	Proposed
47	Sunfield PUD	6,950 single-family homes	Under construction
48	Buda Hospital	Size unknown	Proposed
49	Nance Subdivision	9,000 lots	Conceptual
50	Plum Creek PUD Phase 2	1,400 lots	Proposed
51	Blanco River Ranch	3,500 lots	Proposed
52	Pecan Woods	2,600 lots	Design Phase

Source: (1) Michael Bomba, PhD.
Note: (1) See Figure 6.12.

Figure 6.12 Key Developments in the Study Area



Source: (1) Michael Bomba, PhD.
Note: (1) See Table 6.18.

6.3.1 Austin

Development in the city of Austin has generally been widespread, even reaching areas where growth has not been seen for some time. Historically, the city's eastern side has not attracted significant development, but attitudes have changed and middle-income and upper-middle income households' growing need for affordable housing (as well as gentrification that has attracted young professionals and higher-income households) have encouraged new development projects. Additionally, the linear form of the Austin metropolitan area means that many locations in eastern Travis County currently provide relatively quick commutes to central Austin, which are unavailable from any other direction without paying significantly more for housing. As a result, various residential development projects are planned or underway within the CTTS study area.

West of IH-35 from Travis County Line to US 183

In far North Austin, an important location for future development will be the Robinson Ranch, which is a 6,000-acre parcel. At present, its owners are mining limestone and are not opening sections of land for development. As a result, it is difficult to know when Robinson Ranch will be made available for significant residential and commercial construction. At the southeast corner of SH 45 N and Loop 1, the Preston Park (278 lots) and Travesia (84 lots) subdivisions are under construction. Additionally, the Mansions at Travesia apartments (518 units) were recently completed, as were the Art at Bratton's Edge Apartments (76 units) and the Allegre Point Apartments (184 units) further south. Up to 450 more apartments are proposed on the same tract of land as Allegre Point. Continuing south, a multifamily project called Terraces at Scofield Ridge (350 units) is under review on the southeast corner of Loop 1 and Grand Avenue Parkway. To the east, the Scofield Farm Meadows Condominiums (49 units) and the Walnut Park Apartments (277 units) are under construction. At the Domain Development, 372 units are under construction for a project called Flatiron. Nearby on North Burnet Road, the Broadstone Burnet Apartments (352 units) are under construction and on Braker Lane the North Burnet Gateway Apartments (423 units) are also being built.

Commercial development in this portion of the CTTS study area has been concentrated in The Domain development, which has just added two office buildings with 315,000 square feet of office space. Also at The Domain, a 310,000-square foot office space is under construction and its Rock Rose district has opened, which has added a large number of restaurants, bars, and stores. There has also been greater utilization of flex space and industrial space in the area bounded by Loop 1 and Metric Boulevard and Gracy Farms Lane and US 183. As office rents rise in Austin, a number of companies are utilizing cheaper flex space as office rather than renting traditional office buildings. This area has also become popular for microbreweries, which along with The Domain and Top Golf, are giving some needed cachet to a part of Austin that has regularly been ignored. Another area with planned, ongoing, or recent commercial development is between Loop 1 and IH-35, south of SH 45 N. Most of the new development in this area is warehousing and industrial. Lastly, there has been infilling of vacant land between Lamar Boulevard to its intersection with IH-35, north of Walnut Creek.

East of IH-35 from Pflugerville to US 290

There are three large Municipal Utility Districts (MUD) or Planned Unit Developments (PUDs) in northeast Austin. The Northtown MUD is located due south of the city of Pflugerville. The developer has started construction and it is proposed to have 2,951 single-family units, 1,626 townhomes, 4,186 apartments, along with retail, office, industrial, and schools. Pioneer Crossing is located further south and oriented around Dessau Road. The Pioneer Crossing PUD is under construction and planned for 2,925 single-family homes. The Harris Branch PUD is located along Harris Branch Parkway and was originally proposed to have 3,787 single-family homes and 1,160 apartments. Over the past decade, construction in the Harris Branch PUD has occurred on an intermittent and limited basis. In addition to these large MUDs or PUDs, there are a number of smaller subdivisions that are proposed or under construction. The Fort Dessau subdivision is under construction and will have 86 condominiums, 50 duplex units, and 160 single-family homes. Nearby, the Harris Ridge Condominiums will have 108 units. A small infill subdivision along Yager Lane, called the Enclave of The Springs (46 lots), was under construction during the field survey. Further east, the Entrada and Fossil Creek subdivisions have been approved for 822 lots and 933 lots, respectively, but there was no activity at the time of the field survey. Nearby, the Cantarra subdivision (1,126 lots) continues to build out. The Pioneer Hill subdivision on Dessau Road (671 lots and apartments) is under construction and, east along Parmer Lane near its intersection with SH 130, the Bellingham subdivision (629 lots) is under construction. There are two multifamily complexes being developed. One complex, called IO at Tech Ridge (351 units), was partially built, but stalled during the field survey. Another complex called Austin Waters (unit information unavailable) was proposed and may now be under construction, along with an assisted living facility on Yager Lane that was also under construction.

Commercial development in this portion of the study area is dispersed throughout and occurs primarily on vacant parcels along major arterials or in commercial parks. The highest concentration of recent commercial development has been in the Parmer Business Park within the Tech Ridge development, which is located between Parmer Lane and Howard Lane. Recently, two buildings with approximately 192,000 square foot office buildings were built along McAllen Pass Drive. Four more buildings are under construction, one office building with 116,000 square feet of space and three more flexspace buildings totaling 350,000 square feet. Additionally, 3M will build its own 272,000 square foot office building in the same development (Anderson, 2017). In addition to these projects there are also plans to build additional office, flexspace/industrial, and retail buildings on other tracts within Tech Ridge. Business parks are also concentrated north and east of the intersection of US 183 and US 290. Within these business parks, new construction projects have consisted of both office and industrial/warehousing. Retail development in this part of the study area has primarily occurred as free-standing buildings and as small, strip shopping centers.

West of US 183 from US 290 to SH 71

Some of the major development projects within the urbanized core of Austin that are within or adjacent to the CTTS study area include the Mueller Airport redevelopment, Crestview Station, and the ACC Highland Center. Among these developments, the Mueller Airport redevelopment (which lies just outside the CTTS study area) is unquestionably the largest with approximately 4,900 single-family and multifamily units expected at full build out. Construction at the site has been underway for a number of years and is expected to continue for several more, as market conditions have accelerated the original timeline. The Crestview Station project is a transit-oriented-development built around a Capital Metro commuter rail station that is being constructed in phases. The project is a mixed-use development with retail, office, single-family homes, and multifamily units. Collectively, there will be 1,350 residential units when it is fully built out. The ACC Highland Center is a partial redevelopment of the existing Highland Mall and there are 1,250 multifamily units planned for a future phase of the project. The first phase of its multifamily construction is underway. The Mueller redevelopment, in particular, has been a catalyst for the area bordered by IH-35, US 183, Airport Boulevard, and US 290. In the last few years, home values in these neighborhoods have increased significantly, due to demand for central city proximity and a supply of renovated housing stock. However, to date, this trend has only led to a replacing of lower-income households with higher-income households and infill construction. There has been little densification of the neighborhood up to this point.

As land prices rise, particularly west of IH-35, developers are infilling vacant parcels and subdividing single-family lots in a piecemeal manner. They are also taking low-density commercial properties and building multi-story residential projects, typically with retail and office units on the bottom floor. Burnet Road and Lamar Boulevard are popular corridors for these types of projects, since there is an abundance of these low-density (in some cases dilapidated) retail properties that can be redeveloped into residential and commercial space with much higher rents.

Major commercial projects in central Austin include the Mueller Airport redevelopment, which is planned for 3.0 million square feet of commercial space and 790,000 square feet of retail development. A significant portion of this commercial space has already been built, including the Dell Children's Medical Center, The Thinkery (a children's museum), the Austin Independent School District's Performing Arts Center, various medical office buildings, and a large amount of strip center retail and big box retail. To some degree, the retail development at Mueller has absorbed much of the demand in the area and other commercial areas are not yet revitalizing, despite rapidly increasing household income and property values. The ACC Highland Center is the redevelopment of a portion of the existing Highland Mall into an Austin Community College campus. The low density of Highland Mall and surrounding properties coupled within rising land values suggests that redevelopment projects will be occurring in this area for some time.

East of US 183 from US 290 to SH 71

The pace of residential development in this portion of the CTTS study area is beginning to pick up, but is still slower than areas north of US 290. Between Loyola Lane and FM 969, the Trinity Meadows (957 lots) and the Loma Vista (lot information unavailable) subdivisions have had modest amounts of new construction. Building also continues in the Austin Colony subdivision (73 lots) along FM 969, east of SH 130. Along US 183, near its crossing of the Colorado River, the Knollwood on the Colorado River subdivision is platted for 257 single-family homes and the construction of its homes continues. Many of the subdivision projects in this area are planned and have not yet started. South of US 290 and on the west side of FM 3177, the Parker Creek Ranch (418 lots) and the Loma Vista (no lot information available) subdivisions are being proposed. The Indian Hills (1,522 multifamily units) and the Lariat B Ranch subdivision (981 lots) have been approved, but there has been no activity. The East Parke subdivision (124 lots) has been proposed at the northeast corner of US 183 and Loyola Lane. The right-of-ways for the streets have been cleared, but the project appears to have stalled. Further south, the Hornsby Glen subdivision has been approved for 538 lots. Along SH 71 and east of SH 71, Riverbend Landing (600 lots) and the Watersedge PUD with 1,254 single-family homes, 323 apartments, and 244 townhomes are proposed. On the south side of US 290 and north of Old Manor Road, the Terrace at Walnut Creek Apartments were under construction (329 units).

At the periphery of downtown Austin, redevelopment is occurring along Riverside Drive, east of IH-35. These new projects are mixed use residential/retail (unlike the buildings they are replacing) and they are redeveloping at higher densities and with much higher rents. Several projects grouped near Riverside Drive's intersection with IH-35 will collectively have 3,105 apartments, 7,746 square feet of office space; and 219,406 square feet of retail space. The redevelopment trend along the Riverside Drive corridor is expected to continue over the long-term, since there are many aged properties on large parcels that would become attractive as land prices increase. Further east in the Montopolis neighborhood, a number of smaller infill residential subdivisions are being proposed or constructed. Dwelling units in these subdivisions are typically single-family homes on small lots or townhomes or shared lot dwelling units. Some of the subdivisions include the Townhomes at Park Place (55 units), Riverside Homes (lot information unavailable), and Shire's Court (290 units).

A commercial park located at the southeast corner of SH 130 and US 290, called Parmer Center, is the location of a new beverage distributor, which has approximately 700 workers. It is the first business to locate in this park. Within this part of Far East Austin, there are several other large-scale projects have been proposed, but none have advanced to actual construction. At present, there is a commercial development proposed north of Decker Lake, along Lindell Lane, has been proposed. Nearby, the Wildhorse PUD is proposed to have more than 5,800 homes, almost 6.3 million square feet of commercial development, and an 800-room hotel. Between Loyola Lane and FM 969, a 45-acre warehouse and office development is proposed at the southwest corner of Decker Lane and Loyola Lane, but there has been no construction.

East of IH-35 and between Lady Bird Lake and SH 71, perhaps the highest concentration of new commercial development has been at the redeveloped properties along Lakeshore Drive and Riverside Drive, particularly on the ground floor of new apartment buildings. There has also been some new construction on the northeast corner of East Riverside Drive and East Ben White Boulevard, namely hotels serving the Austin-Bergstrom International Airport (ABIA)

South of SH 71 to Buda

Areas south of SH 71 and within the CTTS study area have generally experienced slower growth over the past decade than locations in northeastern Hays County or north of US 290 in Travis County. However, there is renewed interest from developers, as they seek areas of Austin with affordable land. South of SH 71 and east of US 183, there has been relatively little residential construction, but there are several proposed developments. Along Ross Road and south of Pearce Lane, two subdivisions are being reviewed by the City of Austin, which are the Cactus Rose Mobile Home Park and one for stick-built homes. On the northeast corner of Ross Road and Elroy Road, a multifamily development has also been approved.

The most significant residential project underway (west of US 183) is Easton Park, which is proposed to have up to 10,000 housing units and other retail and commercial development. Easton Park is located between US 183 and Thaxton Road, south of FM 812. The first phase of the project is underway, but incentives for affordable housing were struck down by a court. It is not clear if this ruling will affect the viability of the project (Barragan, 2015 and Findell, 2016). To the north of Easton Park and along US 183, single-family homes in the Addison subdivision (500 lots and 225 apartments) are under construction. Development also continues in the Colorado Crossing subdivision (949 lots). Due west of Easton Park, construction is also underway on the Vista Point (344 lots) and the Springfield subdivisions (337 lots). To the south of Springfield, several tracts have also been approved for multifamily construction. Further west, on either side of Slaughter Lane, the Goodnight Ranch subdivision has started construction, which is proposed to have 1,192 single-family homes, 2,645 apartments, and 696 townhomes. Adjacent to Goodnight Ranch, the McKinney Heights subdivision (925 lots) is nearing its build out. Continuing south along Bradshaw Road, there is construction in the Bradshaw Crossing (921 lots) and Legends Way (289 lots) subdivisions. Several more subdivisions nearby are either approved for construction or under review by the City of Austin. The Vistas of Austin subdivision (669 lots) is approved and lies due east of Bradshaw Crossing. South and east of Legends Way subdivision are the proposed Bella Fortuna (467 lots) and Cascades at Onion Creek (467 lots and 250 multifamily units) subdivisions. On the west side of IH-35, south of Onion Creek is the Estancia Hill Country development which is planned for 385 single-family homes and 1,600 apartments and townhomes. Construction has started on its single-family homes.

South of SH 71 and east of US 183, new commercial development has been limited. The number of enplanements at ABIA continues to grow, which has required more employees to serve these passengers. There were also two hotels recently constructed on the airport property. To the south, the Circuit of the Americas motorsport and entertainment facility, built in 2012, continues to host Formula One races and other sporting events and concerts. However, the facility has not led to any meaningful redevelopment of adjacent rural land. One new and notable employer in this area has been the NLand Surf Park, which is a 14-acre artificial surfing lagoon with a small brewery. West of US 183 and south of SH 71, commercial development has been more active, particularly in the Met Center commercial park and other commercial parks located along Burleson Road and E Stassney Lane, where several large industrial tilt wall buildings were under construction during the field survey. On the west side of IH-35, south of Onion Creek is the Estancia Hill Country development, which is proposed to have 1.9 million square feet of corporate office space, 1.5 million square feet of general office space, a hotel, and a hospital. Commercial construction at this development has not yet begun.

6.3.2 Georgetown

The city of Georgetown's development pattern is currently concentrated in its west and northwest, as well as to the east and southeast towards SH 130. Among Georgetown's largest residential developments, the Sun City "active adult" community continues to expand. There are also a number of other parcels on the northwest side of Georgetown that are expected to be developed during the next five years. Along Williams Drive, the Deer Haven (70 lots), the Gardens at Verde Vista (149 lots), and the Lakeside (300 lots) subdivisions under construction. Further south, adjacent to Wolf Ranch's retail development, townhome and apartment projects are being planned, along with 209 single-family homes that have already started construction. The Water Oak subdivision, which lies adjacent to the CTTS study area on SH 29, has 1,500 acres available for development and will have up to 3,000 single-family units. Closer to SH 130, on the northeast corner of Rockride Lane and Sam Houston Boulevard, a 1,220-lot subdivision called Saddlecreek is being proposed, along with a 200-lot addition to the Pinnacle subdivision. Due east of the Pinnacle subdivision, on the west side of Maple Street, a 300-lot subdivision is also being planned. South of Georgetown, in an unincorporated area that is also due north of the city of Round Rock, another phase of the Teravista development continues to add a large number of single-family homes, as does the La Conterra subdivision. A number of new multifamily developments are being planned, are under construction, or were recently completed in Georgetown, which are shown below in Table 6.19.

Table 6.19 Recent and Future Multifamily Projects in the City of Georgetown

Apartments		
Name	**Total Number of Units**	**Status**
Carroll at Rivery Ranch	272	Under construction
HIllstone at Wolf Ranch	332	Completed
Kaia Pointe	102	Under construction
Live Oak Apartments	108	Under construction
Mansions of Georgetown	438	Completed
Merritt Heritage	244	Under construction
Retreat at Wolf Ranch	303	Completed
Retreat at Wolf Ranch Phase 2	259	Under construction
The Delaney at Georgetown Village	120	Completed
Third and Rock Court	12	Under construction
Villas of Georgetown	264	Proposed
Townhomes		
Name	**Total Number of Units**	**Status**
Holly Street Townhomes	24	Completed
Condominiums		
Name	**Total Number of Units**	**Status**
Gardens at Verde Vista	160	Completed
Gatlin Creek	70	Proposed
Old Mill Crossing	99	Completed

Source: (1) Marczynski, 2017.

The most concentrated commercial construction has been at the Wolf Ranch development, which recently added a full-service Sheraton Hotel. Smaller commercial projects have occurred throughout the city, including new construction along the Williams Drive corridor and some site redevelopment in the downtown area. A new middle school was under construction in Georgetown at the southeast corner of Rockride Lane and SE Inner Loop.

6.3.3 Round Rock

Round Rock continues to be one of the primary recipients of suburban growth in the Austin region, although its rate of growth has slowed over the last decade, as other cities compete and as its supply of developable land diminishes. At present, there are a number of residential subdivision projects planned or underway, these include: the Freeman Tract, Avery North, Warner Ranch, and Kenney Fort. There will also be expansions of the Paloma and Sienna subdivisions, which fall within the jurisdiction of municipal utility districts (MUDs) and outside the City of Round Rock's boundaries. Table 6.20 identifies all the residential projects in the city of Round Rock that are either proposed, in review, approved, or under construction. Collectively, these projects will add thousands of new housing units to this portion of the CTTS study area.

Table 6.20 Residential Construction Projects in the City of Round Rock, 2015-2017

Development	Total Number of Lots
Single-Family Subdivisions	
Freeman	228
Avery North/Vizcaya	1,192
Turtle Creek Phases 5 & 6	101
Warner Ranch	274
Meritage/GLO	194
Kenney Fort	202
Bodeman/HR 79	65
Madsen	285
Glen Ellyn Tract	194
Northfields Phases 1 & 2	194
Arden Park	118
Detached Single-Family Common Lot	
Gardens at Mayfield Ranch	130
Mayfield Ranch	89
Sunrise Condos	100
Wallin Tract	100
Diamond Oaks	130
Cottages at Meadow Lake	33
Duplex	
Turtle Creek Phase 8	N/A
Spring Street Townhomes	12
Townhomes	
Legends Village Condos	109
Cottages at Round Rock Town Center Phase 2	24
Turtle Creek Townhomes	28
University Village Townhomes	58
Wyoming Springs Townhomes/Rockwell Village Condos	58
Donnell Park Townhomes	149
Multifamily	
Arrington Ridge	312
Waters at Sunrise	288
Avery Center South	238
Kenny Crossing	248
Holly Brook Ranch	336
Bartz II	296
Springs at Round Rock	260
University Village Apartments	292
Meadowlake Multifamily	254
Senior Assisted Living	
Cedar Ridge Assisted Living	164
The Enclave at Round Rock	170
Sundara Assisted Living	32
Affinity Round Rock	170
Poets Walk	68

Source: (1) City of Round Rock, 2016.
Note: (1) Table provides the total number of lots or units in each development. The number of residential units constructed between 2015 and 2017 may be less than the total.

Various commercial projects were underway or proposed in Round Rock during the field visit. One of the most significant projects is the Kalahari Resort, which is still in the planning stages. It will include a 1,000-room hotel and waterpark with an African theme. The resort expects to hire 700 employees and will be located along US 79, east of Kenney Fort Road. Recently completed, the Scott & White Cancer Center is located on the northeast corner of University Boulevard and Mays Street in a four-story structure. One of the most active areas in Round Rock for new commercial development has been the La Frontera site at the northwest corner of SH 45 N and IH-35. Over the last two years, several projects have been completed there, including: a 91-room hotel and a 140-room hotel. Additionally, a 42,000 square-foot college campus and 98,000 square foot office building were recently built. A former big box store was demolished and 102,000 square feet of retail strip was being constructed at the time of the field survey. Additional retail on this site (i.e. pad sites) is expected in the future. Developers have also started construction of a 95,000 square-foot office building in July 2016. Further east, a mixed-use project with 1.0 million square feet called "The District" was recently announced. It will have Class-A office space, residential, hospitality, and retail uses and it will be located along SH 45 N and N. Greenlawn Boulevard.

6.3.4 Hutto

Located east of SH 130 in Williamson County, population growth in the city of Hutto has outpaced the surrounding area. Since the 2000 U.S. Census, when its population was 1,451 residents, the City of Hutto has grown approximately 1,542 percent to its estimated 2016 population of 23,832 residents. North of US 79, new development is anticipated in the Hutto Highlands subdivision (700 lots) and the Mager Meadows subdivision (200 lots). South of US 79, active residential developments include: Hutto Crossing (400 lots); the Park at Brush Creek, Glenwood; and the Riverwalk (400 lots) subdivisions. In the southeast quadrant of Hutto and south of County Road 499, 854 single-family homes are expected in the Meadows at Cottonwood Creek subdivision and 500 more single-family homes on an adjacent parcel. The Brooklands subdivision, which is south of FM 1660, is proposed to have 609 lots. Near this subdivision, an 80-unit multifamily senior complex is being proposed.

Although Hutto has grown to a sizeable population in a short period of time, commercial development has historically lagged, due to the lack of population density required to attract the interest of national chains and the city's proximity of extensive retail and services in nearby Round Rock. However, a large HEB grocery store and other strip commercial development was recently built at the northwest corner of SH 130 and Gattis School Road to serve the city and eastern Round Rock. The SH 79 corridor provides opportunities for new development, with easy access to SH 130. However, high-traffic retail development on the south side of SH 79 will probably be limited, due to the active Union Pacific track.

6.3.5 Pflugerville

The City of Pflugerville is viewed by many as an attractive location due its affordable housing and its relative proximity to Austin. This interest has extended to developers, who have been attracted to the SH 130 corridor. During the field survey, there was a strong pace of construction in many of the city's subdivisions. Table 6.21 provides an inventory of Pflugerville's existing subdivisions and remaining lots to be developed or multifamily units or townhomes to be built. Developers have almost 11,000 housing units in active or approved projects for future construction.

Table 6.21 Subdivisions under Construction or Approved in the City of Pflugerville

Development	Total Units Built	Remaining Units
Avalon Subdivision	968	532
Blackhawk Subdivision	1,192	2,309
Blackhawk Far East	0	637
Branson Condominiums	3	130
Carmel Subdivision	0	2,317
Carrington Court Subdivision	83	50
Commerce Place Apartments	628	287
Commons at Heatherwilde/Pecan	0	1,250
Emerson Apartments	170	214
Falcon Pointe Subdivision	1,608	97
Highland Park Subdivision	1,131	141
Highlands Apartments	257	35
Huntington Park Subdivision	0	128
Kuemple Townshomes	0	18
Mansions at Stone Hill Apartments Pha	148	251
Paradise Cove Condominiums	0	17
Penley Park Subdivision	46	115
The Reserve at West Creek Subdivision	589	15
Sorento Subdivision	199	745
Senson Farms Condominiums	26	112
Verona Subdivision	87	237
Village on Legacy Subdivision	62	262
The Villages of Hidden Lake Subdivisior	1,153	132
Vine Creek Subdivision	0	82
Walden Square	0	82
TOTAL	**8,350**	**10,915**

Source: (1) City of Pflugerville, 2017.

Table 6.22 shows three new subdivisions that were under review with the City of Pflugerville's Planning Department. These three subdivisions would add 355 lots to the city's inventory.

Table 6.22 Subdivisions under Planning Review in the City of Pflugerville

Development	Total Number of Proposed Lots
Becker Farms Subdivision	83
Commons at Rowe Lane Subdivision	246
Maynard Subdivision	26
TOTAL	**355**

Source: [1] City of Pflugerville, 2017.

Along with its robust residential market, Pflugerville is also experiencing considerable commercial development. Some of the city's more significant projects, currently under construction, include:

- An Aldi grocery store at the southeast corner of FM 685 and Pfennig Lane
- Heritage Lakes at Pflugerville – 90 independent living units, 52 senior cottages, 16 supported living units, 65 assisted living units, and 50 skilled nursing units
- A 530,000 square foot Living Spaces furniture store, southwest corner of SH 45 N and Heatherwilde Boulevard
- A Marriott Courtyard at the southwest corner of E. Pecan Boulevard and SH 130
- An elementary school on Hodde Lane, north of Cele Road.
- A high school on Weiss Road, south of E. Pflugerville Parkway
- Pflugerville Hospital, a 97,474-square foot Scott & White facility on the northeast corner of SH 130 and East Pflugerville Parkway.

Other projects that are still in the planning stages include: a Costco that is being proposed on the southeast corner of SH 130 and Kelly Lane; a medical and professional building that is proposed at the southwest corner of E. Pflugerville Parkway and FM 685; and an assisted living facility that is proposed at the northwest corner of Wells Branch Parkway and S. 10th Street.

6.3.6 Manor

Manor is a small city that lies due east of the city of Austin. During the mid-2000s, Manor was a growing suburb, but was impacted negatively by the 2008-2009 Recession. Since the recovery, Manor's growth has accelerated. As of June 2017, Manor had more than 8,000 lots in various phases of planning or construction. Ongoing or proposed residential projects include: Presidential Glen (360 lots); Presidential Heights (600 lots); Stonewater (350 lots); Stonewater North (270 lots); Shadow Glen (1,500 lots); Presidential Meadows (875 lots); Lagos (2,300 lots); the Village at Manor Commons (370 lots); and Sky Village (1,500 lots). Into the future, Manor is poised to be surrounded by more than 9,000 lots to the south in the proposed Indian Hills subdivision, Whisper Valley subdivision, and other projects.

Commercial development has been slow to follow residential growth in Manor. Its relative close proximity to retail and services in Austin, coupled with lower population densities, has historically resulted in little commercial development. Current commercial projects include the construction of a new elementary school on the south side of the city along FM 973 and the New Tech Middle School along US 290. The Shadowview Lakeside Shopping Center at Lexington Street and US 290 is now completed and is adding tenants. Restaurants and fast food restaurants are located there, along with a medical clinic and a cell phone store. Nearby, another medical clinic is being built.

6.3.7 Buda

Located due south of Austin, in Hays County, Buda is expected to be the recipient of a significant volume of single-family residential development over the coming decades. Although Buda's historic center is located west of IH-35, recent residential development has been on both sides of the roadway. On the west side of IH-35, development is currently underway in the Garlic Creek, Elm Grove, Whispering Hollow, and Summer Pointe subdivisions. Several new subdivisions are being proposed along RR 967, which include: White Oak Preserve (245 lots); a subdivision north of Haleys Way Drive (400 lots); a subdivision north of Dodgen Trail (239 lots); and a subdivision west of Carpenter Elementary School (150 lots). To the east of IH-35, the largest residential project underway is the Sunfield development, which will be a mix of residential, industrial, and commercial land uses. The proposed 2030 build-out for Sunfield is 6,950 lots and several hundred single-family homes have already been built. Single-family construction also continues in the Stonefield, Stoneridge, and Meadow Park subdivisions. Additionally, a small subdivision with 127 lots is being proposed along Hillside Terrace Drive, between Goforth Road and FM 2001. There are multifamily projects proposed on the west side of IH-35 along Firecracker Road and at the southwest corner of Old Goforth Road and FM 2001 (250 to 300 units).

Outside of continued, piecemeal development within existing areas platted and zoned for commercial purposes, the primary commercial project proposed in the city is a hospital at the southwest corner of White Wing Trail and FM 2001.

6.3.8 Kyle

Kyle continues to be a rapidly growing Hays County suburb, located between Austin and San Marcos. Bisected by IH-35, new residential development is occurring on both sides of the roadway (See Table 6.23). On the west side of IH-35, construction continues in the Plum Creek development, where an additional 1,400 single-family dwelling units are planned for the second phase of the Plum Creek subdivision, as well as 170 new single-family homes within the first phase. Within existing subdivisions, there was single-family construction in the Creekside and Brooks Crossing subdivisions. Construction was starting on Phase 1 of Cypress Forest subdivision and to its north, along N. Old Stagecoach Road, Phases 1&2 of the Blanco River Ranch subdivision and Cypress Forrest Phase 2 (73 lots) are being proposed. Further south, in the Stagecoach Forest subdivision, 270 lots are planned at the southeast corner of S. Old Stagecoach Road and W. Center Street. Multifamily projects include the Fairways Landing (216 units) along Kohler's Crossing and the Oaks on Marketplace (255 units). On the east side of IH-35, there was ongoing construction in the Lakeside Crossing subdivision, Phase 1 of the Crosswinds subdivision is under construction with 233 lots, along with homes in the Bunton Creek Reserve (125 lots), Brookside, and Cool Springs (373 lots) subdivisions.

Table 6.23 Proposed or Active Subdivisions in the City of Kyle

Project	Total Number of Units	Status	Estimated Start
Anthem	2,200	In Design	2017
Ariza Apartments	349	In Review	2017
Blanco River Ranch	3,500	In Design	2017
BRI/McCoy	8,000	Concept	2020
Brooks R-3-3	300	Concept	2018
Brookside Phases 3&4	150	Under Construction	2017
Bunton Creek Reserve	355	In Review	2017
Cool Springs	372	Approved	2017
Creekside Village	280	Under Construction	2016
Crosswinds MUD	1,750	Under Construction	2017
Cypress Forest	337	Under Construction	2016
Hays Junction Apartments	207	Under Construction	2016
Intermandeco/Driskell	600	Concept	2018
Kyle Estates East (Walton)	2,500	Concept	2018
Kyle Estates West (Walton)	2,600	Concept	2018
La Salle MUD	10,000	Concept	2018
Lehman Tract	150	Concept	2020
Nance	9,000	Concept	2022
Oaks on Marketplace	254	Under Construction	2016
Pecan Woods	2,600	In Design	2018
Plum Creek Phase 2	1,404	In Review	2017
Plum Creek Vue Apartments	180	In Review	2017
Stagecoach Forest	270	In Review	2017
Sunset Hills	210	In Review	2017
Twin Creeks	400	Concept	2018
Woodlands Phases 3 & 4	300	Under Construction	2017

Source: [1] City of Kyle, 2017.

Commercial development is scattered throughout the city, as stand-alone buildings or small strip retail centers. The construction of larger retail buildings has occurred primarily in the Village at Kyle and Kyle Marketplace shopping centers.

7.0 MODEL VALIDATION AND REFINEMENT

Stantec updated the existing travel demand model to reflect growth in the Austin region and the expansion of the toll road system. The updated model incorporates additional data on toll road performance including the impacts of toll increases since 2013 and the early stages of the MoPac N Express Lanes. The objective of the model update is to provide a more robust tool for modeling the CTTS toll roads as well as other local toll roads that influence traffic on the CTTS.

The modeled area includes an expanded area south of Austin that encompasses San Antonio and the rest of the region covered by AAMPO's regional transportation model. The larger model area is intended to capture anticipated growth in the IH-35 corridor southward towards San Antonio and ensures zones and facilities that could influence traffic volumes on the various CTTS roadways, primarily SH 130 and SH 45 SE, are incorporated into the modeling process. Additionally, the recently expanded travel demand model for CAMPO now includes Burnet County, in addition to Bastrop, Caldwell, Hays, Travis, and Williamson counties.

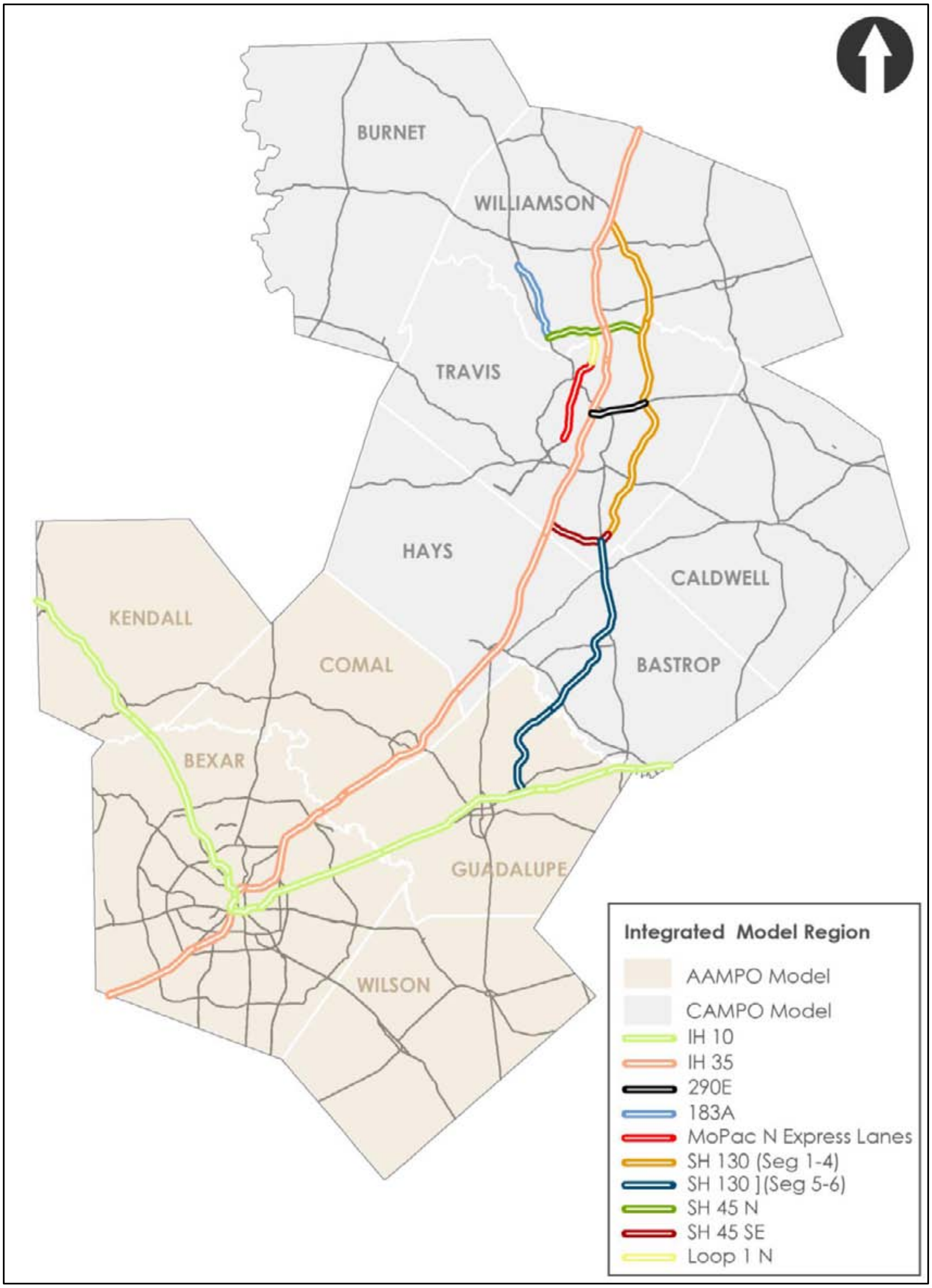
Stantec also updated the toll diversion modeling techniques to provide greater flexibility in representing the variations in toll policy utilized by TxDOT and CTRMA, including several managed lane facilities recently completed or in the planning process. This includes the separate modeling of 2-axle 6-tire trucks in the diversion model, to allow these vehicles (medium trucks) to potential use managed lane facilities that would prohibit larger trucks. The modeling process was further refined to provide variation in the methods of payments by subregion based on assumptions of transponder ownership by household income.

These enhancements improve the modeling process by better forecasting the growing region surrounding Austin, and by allowing the process to be more responsive to a wide range of potential changes in toll policies, as well as specific conditions that will influence traffic diversion for the next generation of toll facilities.

7.1 TRAVEL DEMAND MODEL DEVELOPMENT

The model development effort was designed specifically to take advantage of the latest versions of the CAMPO and AAMPO regional models that encompass the expanded study area and to refine the toll diversion process originally developed for the 2002 Report. The expanded study area encompassing both the CAMPO and AAMPO regional models is shown in Figure 7.1. The recently expanded CAMPO model now includes a sixth county (Burnet), which extends the model area further north and west of Austin. The AAMPO regional transportation model was recently updated and calibrated to the year 2010. The common boundary of these regional models is along the Hays-Comal and Caldwell-Guadalupe County lines.

Figure 7.1 Austin – San-Antonio Integrated Model Region



.

In order to integrate the individual regional models into a single unified modeling process, it was necessary to merge the network and vehicle trip tables. The regional models are utilized to estimate total vehicle trips in the study area. Each of the regional models is executed from trip generation through trip distribution and mode choice using the revised socioeconomic data described in Chapter 6 to create vehicle trips by trip purpose and vehicle type (SOV, HOV, and Truck). The networks from each regional model were compared and a decision was made to adopt the network facility type–area type definitions as well the speeds and capacities from the CAMPO model. Similarly, the resulting vehicle trip tables from the execution of both regional models were integrated using the trip purpose designations from the CAMPO model. The use of the CAMPO model network parameters and trip purposes for the final integrated model reflect the fact that CTTS and CTRMA toll facilities are entirely within the Austin modeled region, and the Austin model represents a more advanced modeling process.

As part of the model development, it was recognized that several specific issues would influence the approach to model calibration. In contrast to the model development for the original 2002 Report, the current model calibration would need to replicate volumes across the entire study area and traffic on the recently completed toll facilities. The latest available socioeconomic data available for both regions (2016) was set as the calibration year. As a result, the study utilized a network updated to 2016 conditions, consistent with the speed and travel time data collected for the prior 2014 Study.

The new model utilizes the existing toll diversion process as the basis for estimating tolled traffic. For the 2016 model calibration year, the temporary discounts for trucks using SH 130 and SH 45 SE were included since the discounts were applicable for eight months of that year.

Toll diversion equations were established for each of six trip purposes, including:

- Home Based Work (HBW);
- Home Based Shopping (HBS);
- Home Based School (HBSch);
- Home Based Other (HBO);
- Work Based Other (WBO); and
- Other Based Other (OBO).

The current toll diversion process utilizes the existing toll diversion equations as the basis for the forecasts. The formula is a basic binary logit equation and is defined as follows:

$$\text{Toll Share} = 1 / (1 + e^{U})$$

where:

Toll Share	= Probability of selecting a toll road
e	= Base of natural logarithm (ln)
U (work)	$= a * (Time_{TR} - Time_{FR}) + b * (Cost)/\ln(Inc) + C_{TR} + C_{ETC}$
U (nonwork)	$= a * (Time_{TR} - Time_{FR}) + b * (Cost) + C_{TR} + C_{ETC}$
$Time_{TR}$	= Toll road travel time in minutes
$Time_{FR}$	= Non-toll road travel time in minutes
Cost	= Toll in dollars
Inc	= Annual income / 1000
C_{TR}	= Constant for toll road bias
C_{ETC}	= Constant for ETC bias
a,b	= Coefficients

Several adjustments to the existing procedures were implemented as part of the development process. As an initial step, the value of time for each purpose was adjusted to reflect the increase in household incomes in the Austin region between 1997, the calibration year of the original 2002 Report, and the current calibration year 2016. The values of time were increased and the resulting weighted average of all trip purposes for autos ($19.16 per hour) is 57.4 percent of Austin's 2016 median household income of $69,465 per year, nearly identical to the percentage for 1997. Table 7.1 lists the coefficients for each trip purpose as well as the bias terms and equivalent minute values for the toll bias term and ETC bias term applicable to all payment methods. The toll bias term discourages toll choice, but the ETC bias term encourages toll choice due to the ease of payment and the open road tolling aspects of transponder usage.

Table 7.1 Toll Diversion Model Coefficients

Trip Purpose	Time (Min) (Alpha)	Cost ($) (Beta)[1]	VOT ($/hr)	Bias Terms: Values – Toll	Bias Terms: Values – ETC	Bias Terms: Equivalent Minutes – Toll	Bias Terms: Equivalent Minutes – ETC
HBW	0.1053	1.1790	$ 22.73	0.0000	-0.4440	0.0	-4.2
HBS	0.0754	0.3307	$ 13.68	0.0936	-0.3635	1.2	-4.8
HBSCH	0.0777	0.3705	$ 12.58	0.0816	-0.3339	1.1	-4.3
HBO	0.0441	0.1366	$ 19.38	0.0858	-0.2475	1.9	-5.6
NHBW	0.1396	1.6264	$ 21.84	0.0000	-0.5100	0.0	-3.7
NHBO	0.0872	0.2655	$ 19.70	0.1334	-0.4470	1.5	-5.1
Medium TRK	0.0724	0.1808	$ 24.03	0.1007	-0.3760	1.4	-5.2
Heavy TRK	0.0575	0.0592	$ 58.27	0.3375	0.0000	5.9	0.0

Notes: (1) HBW and WBO purposes use toll costs divided by LN (Income/1000).
(2) All cost coefficients were scaled from 1997 values in the original 2002 Report to the year 2016.
(3) All time coefficients were retained as in the original 2002 Report, except for trucks.

For the 2016 calibration year, the model assumed two payment methods, ETC and PBM, the two payment options currently available. For the PBM market segment, the relevant surcharge was applied to the base toll at each pay point, and the positive bias term associated with transponder payments was also applied since these trips have the convenience of not needing to stop to pay tolls as they would if paying by cash.

The diversion model was modified to permit toll choice to occur where time savings were minimal or negative based on the observed ETC transaction data that were collected in 2016. Under the revised model, toll choice is permitted for paths where the toll path is up to two minutes longer than the non-toll path. The diversion model transitions the estimated choice shares towards zero as the time savings approaches the minimum permitted value to ensure that the toll traffic and revenue stream has a lower contribution from trips with minimal or negative time savings.

Lastly, since the individual toll facilities have now been in operation for more than five years, a general bias against toll roads by those trips that have the highest frequency or are work related are not incorporated into the choice evaluation. These travelers, due to their frequency of travel, are now assumed to elect to use or avoid the toll road based strictly on the time savings and associated costs.

The toll shares for each auto purpose as a function of time savings for a $2.00 toll are shown in Figure 7.2 through Figure 7.7. Figure 7.8 shows the toll shares for medium trucks as a function of time savings for a $2.00 toll. In each graph, two lines are shown depicting the shares for trips paying with ETC and with PBM. Since the PBM option includes a 33 percent toll surcharge, the share of toll traffic is lower than the ETC payment option. The predicted toll shares shown in these figures are also reduced further if the time difference between the tolled and non-tolled paths approaches the minimum time savings value.

Figure 7.9 shows the toll shares for heavy trucks as a function of time savings for a $6.00 toll, reflecting the higher cost of multi-axle trucks. The truck purpose has similar toll shares by time saving interval as this purpose has a higher value of time which partially offsets the higher toll rates.

Figure 7.2 Toll Diversion for Home Based Work (Auto) Trips - $2.00 Toll

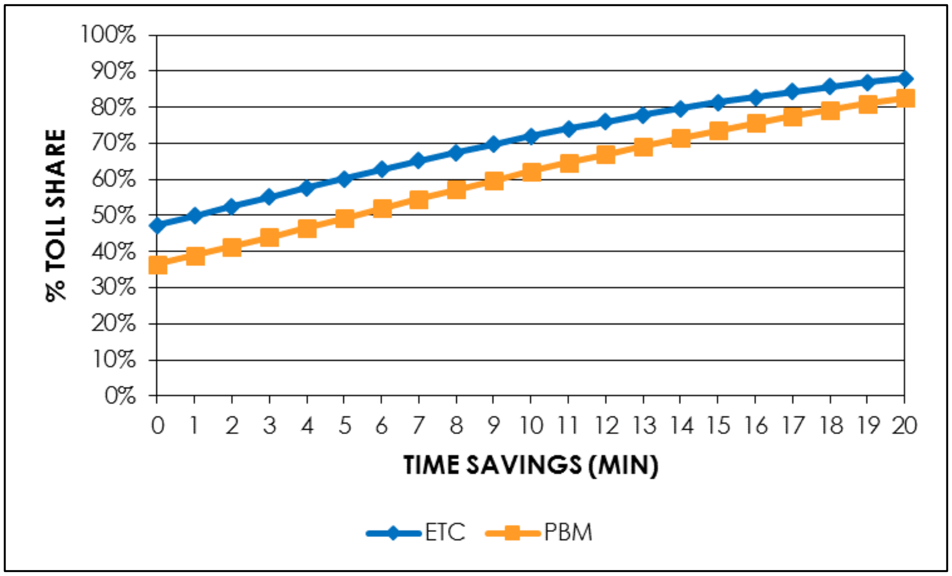


Figure 7.3 Toll Diversion for Home Based Shopping (Auto) Trips - $2.00 Toll

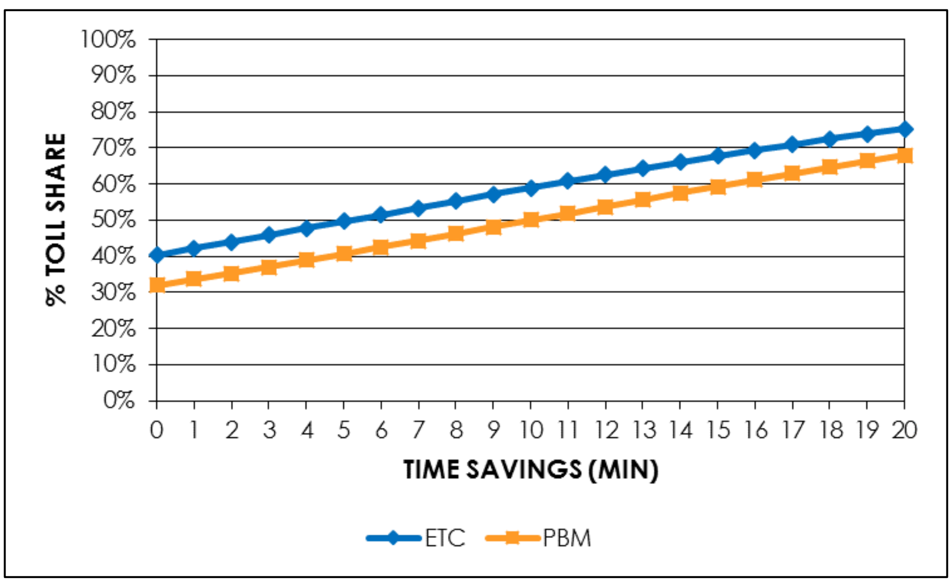


Figure 7.4 Toll Diversion for Home Based School (Auto) Trips - $2.00 Toll

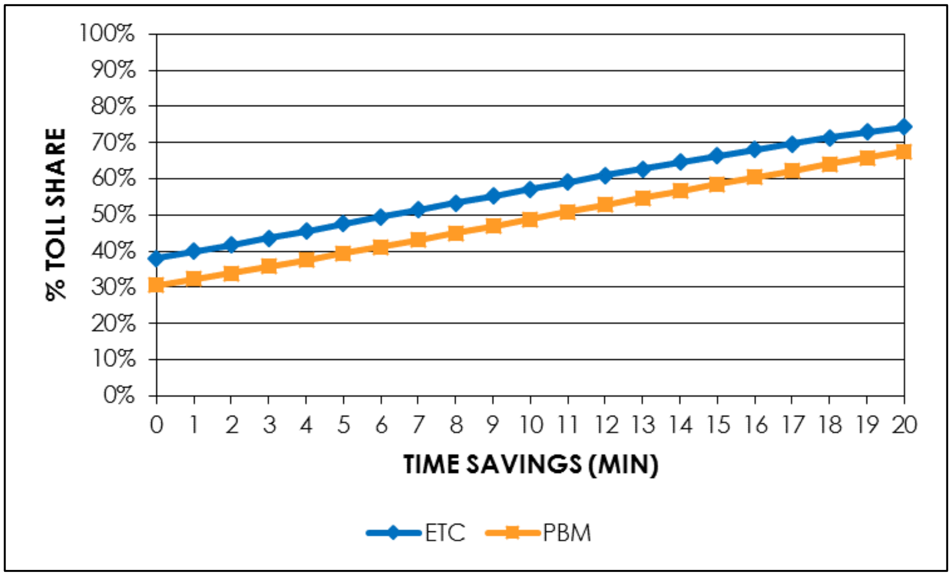


Figure 7.5 Toll Diversion for Home Based Other (Auto) Trips - $2.00 Toll

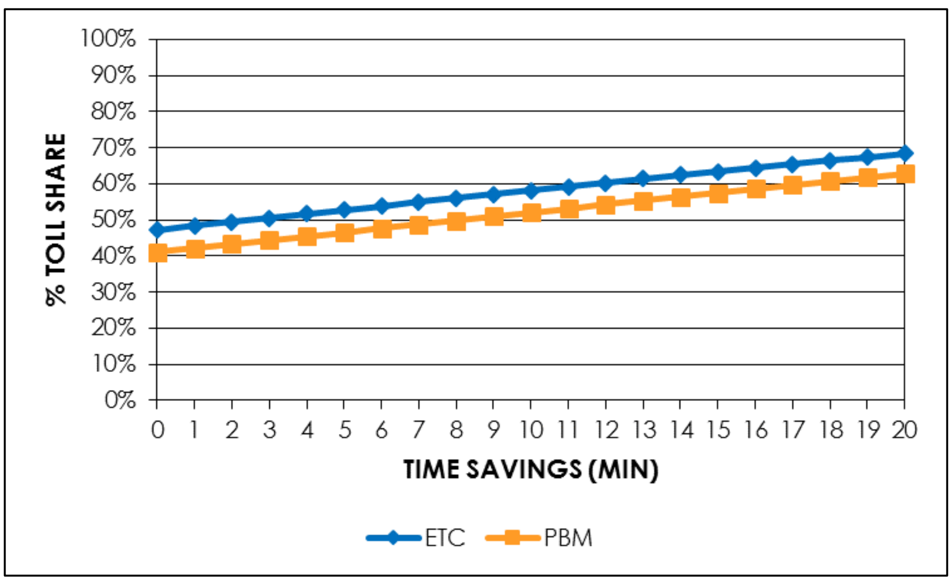


Figure 7.6 Toll Diversion for Work Based Other (Auto) Trips - $2.00 Toll

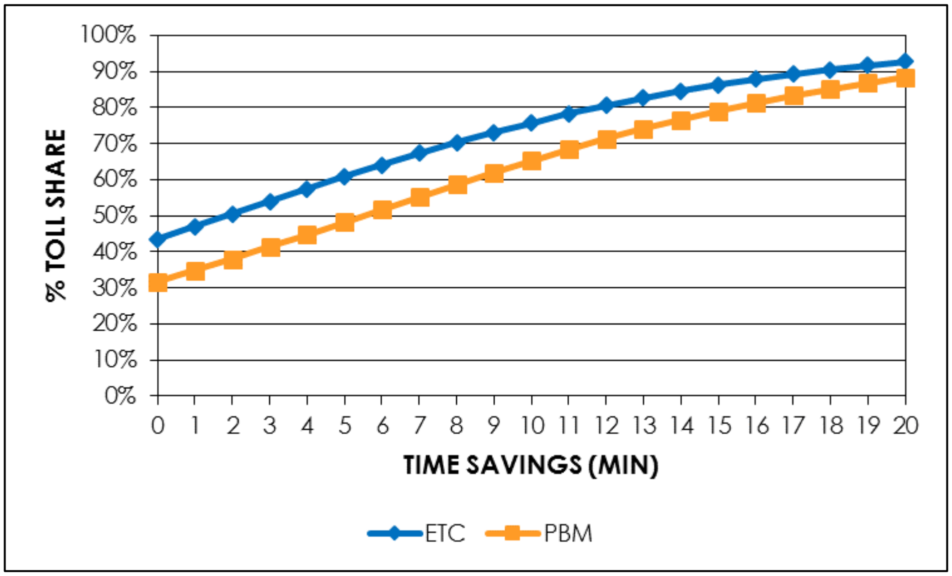


Figure 7.7 Toll Diversion for Other Based Other (Auto) Trips - $2.00 Toll

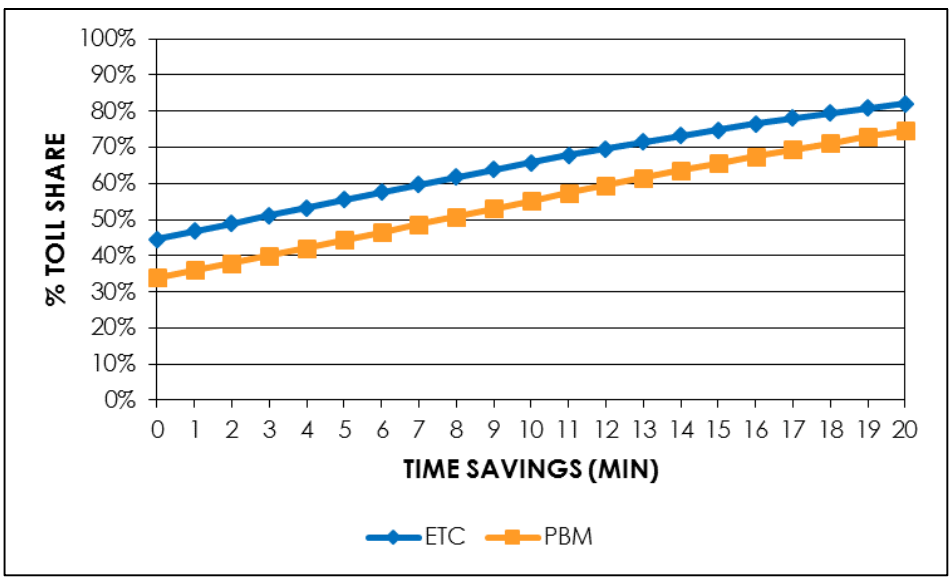


Figure 7.8 Toll Diversion for Medium Trucks - $2.00 Toll

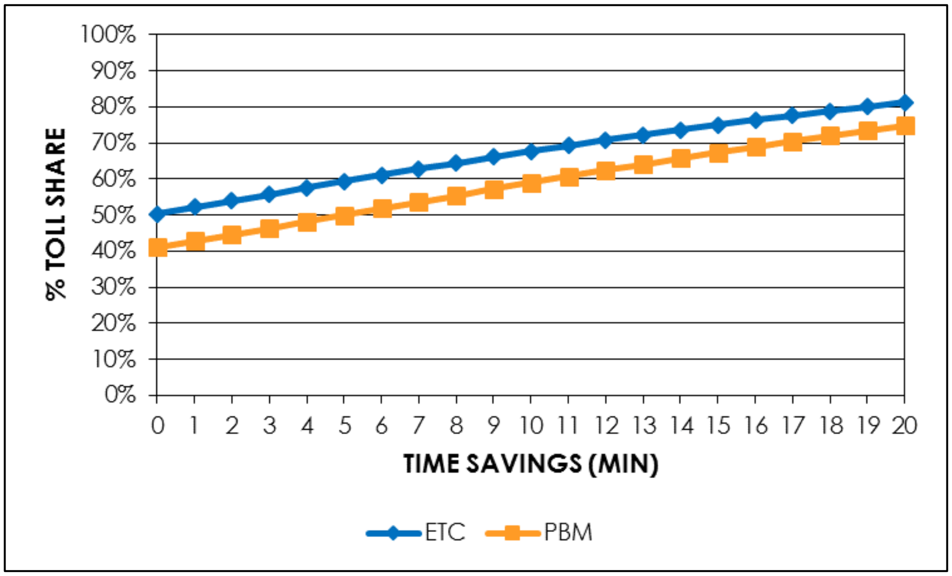
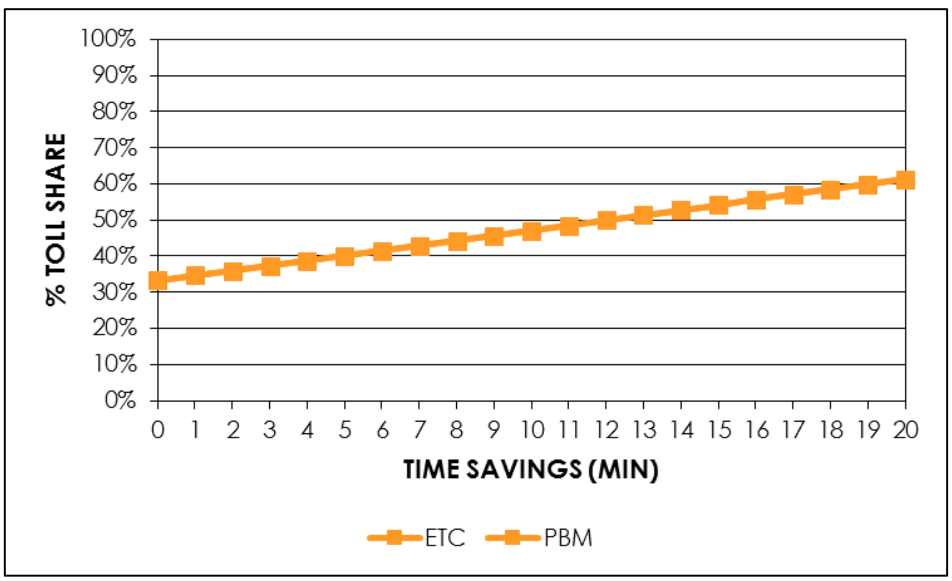


Figure 7.9 Toll Diversion for Heavy Trucks - $6.00 Toll



Notes: (1) The ETC bias for truck is assumed to be 0. Therefore, PBM and ETC toll shares are identical by time savings.

7.1.1 Highway Assignment Process Modifications

In preparation for the modeling of projects with variable tolling policies, the highway assignment process was modified to provide a fourth time-of-day period. This new period was created by partitioning the 'off-peak' period into separate midday and nighttime periods. Consistent with the existing highway assignment process, trips are assigned to the network for four specific time-of-day conditions. The hours within each of these four periods are as follows:

- AM Peak (4-hours)– 6:00 AM to 10:00 AM;
- Midday (5 hours) - 10:00 AM to 3:00 PM;
- PM Peak (4-hours)– 3:00 PM to 7:00 PM; and
- Nighttime (11 hours) – 7:00 PM to 6:00 AM.

The CAMPO model's current volume delay functions (VDFs) were adopted for the assignment process and were augmented with a routine to estimate queuing at roadway intersections and merge points on limited access roadways. The queuing formula estimates the additional time encountered when traffic volumes exceed the physical capacity of a roadway segment. This modification is only enabled on a roadway segment if a traffic control device (signals, stop signs, or yield signs) is present and the roadway segment's volume/capacity ratio exceeds a value of 1.0. As part of the model calibration, the 'free flow' speeds, link capacities, and queuing routines were refined as necessary to ensure that the model adequately replicated both peak and off-peak speeds for the primary roadway facilities in each toll road corridor.

7.2 MODEL CALIBRATION

The objective of the model calibration was to ensure that the modeling process adequately replicates both the observed traffic volumes and the observed speeds by time-of-day for each of the CTTS corridors. The calibration was also structured to replicate the observed traffic and transactions by payment method to the extent feasible for each toll road by pay point. It should be noted that the calibration was performed solely on the integrated model highway assignment process and toll diversion routines and no adjustments were made to the individual regional models.

7.2.1 Speed Calibration

The first step of calibration was to adjust assumed free flow speeds to replicate off-peak speeds, which generally reflect uncongested conditions. Peak speeds were then adjusted in an iterative process, which included refinements to the capacity and the queuing formula to ensure estimated speeds replicate observed values and that the overall traffic assigned to the roadways replicate observed volumes on a daily basis. This approach for calibration of peak speeds was adopted since period-specific traffic counts were available only at a limited number of locations throughout the region. Volumes and vehicle-miles traveled (VMT) were also summarized on a regional basis to evaluate the assignment process on an aggregate level.

As part of the speed calibration effort, Stantec utilized multiple passively observed speed data from both SigAlert and HERE for corridors across the study region. Speed data were collected for both directions during the four time-of-day periods. The observed data obtained as part of the data collection effort for the prior 2014 Study were also utilized as another reference point for this analysis. Table 7.2 shows the results of the speed calibration in terms of observed and estimated travel time and speed by corridor and by time-of-day. These corridors were depicted earlier in Chapter 3. Most of the roadways shown are located primarily in the Austin region within the corridors of the individual roadways. Two roadway segments, as noted in the table, are south of Austin and include facilities that generally parallel the alignment of SH 130 Segments 5 & 6 (which are not part of the CTTS). The results indicate that the estimated speeds are within reasonable tolerance of both HERE and SigAlert data, with a level of consistency that is acceptable for the purposes of model calibration.

Table 7.2 Speed Calibration Summary

Route	Section Limits		Direction	Distance (mi)	AM (6AM-10AM)				Midday (10AM-3PM)				PM (3PM-7PM)				Nighttime (7PM-6AM)			
					Observed			Estimated	Observed			Estimated	Observed			Estimated	Observed			Estimated
					2014 CTTS	HERE	SigAlert		2014 CTTS	HERE	SigAlert		2014 CTTS	HERE	SigAlert		2014 CTTS	HERE	SigAlert	
IH 35	SH 130	MLK Blvd.	NB	29	66	63	73	58	65	62	73	54	53	46	63	44	65	63	73	62
			SB	29	50	46	62	45	60	58	70	56	54	45	69	55	60	58	73	56
	MLK Blvd.	SH 80	NB	29	53	44	61	54	64	53	65	59	59	43	59	60	64	62	71	64
			SB	30	69	64	73	61	65	59	70	59	47	40	60	49	65	59	71	60
	SH 80[1]	Loop 1604[1]	NB	9	70	67	75	64	71	66	75	63	67	65	73	63	71	65	75	65
			SB	9	64	67	75	65	70	66	75	64	64	65	75	63	70	66	75	65
Loop 1	SH 45 N	US 290 W	NB	19	53	50	60	53	66	56	63	59	43	36	52	49	66	54	64	63
			SB	20	52	47	56	53	68	59	64	61	43	37	53	52	68	59	65	61
SH 130	IH 35	US 183	NB	47	73	69	78	71	71	69	78	74	72	68	77	68	71	66	78	75
			SB	47	72	69	77	69	71	69	77	74	72	68	76	70	71	69	77	74
SH 45 N	US 183	SH 130	EB	13	66	70	75	67	71	69	75	68	68	70	75	63	71	66	75	68
			WB	13	68	69	77	63	74	70	78	68	66	71	77	66	74	70	78	68
US 183	SH 45 N	Manor Rd.	NB	14	67	57	64	55	67	60	65	55	47	40	56	45	67	60	65	61
			SB	14	56	48	59	44	66	60	66	57	68	57	64	57	66	60	66	57
	Manor Rd.	SH 130	NB	17	31	36	52	36	45	41	56	43	36	34	50	38	45	46	61	48
			SB	17	42	39	52	40	47	42	55	42	32	31	46	34	47	42	57	42
	SH 130[1]	IH 10[1]	NB	3	53	43	60	48	54	40	60	52	55	40	60	53	54	37	60	52
			SB	3	52	52	60	53	54	52	60	52	52	53	59	48	54	52	60	52
SH 360	US 183	Loop 1	NB	13	36	37	50	39	46	36	50	46	24	26	41	39	46	43	55	50
			SB	13	30	35	48	44	45	39	52	47	34	29	43	38	45	39	56	47
US 79	IH 35	SH 130	EB	7	40	35	51	45	40	36	52	45	37	32	49	42	40	39	53	46
			WB	7	31	34	49	43	35	33	48	45	33	31	45	45	35	33	51	46
FM 973	Pearce Ln.	FM 969	NB	6	36	27	--	34	39	27	--	46	38	28	--	35	39	30	--	51
			SB	6	36	23	--	39	42	27	--	44	39	29	--	31	42	27	--	44
RM 620	US 183	IH 35	EB	6	33	32	51	37	36	32	53	38	30	29	45	35	36	33	55	40
			WB	6	30	34	49	36	39	33	49	38	30	31	47	35	39	33	53	38
Parmer Ln.	FM 1431	Loop 1	NB	10	38	32	--	44	47	34	--	43	37	31	--	33	47	36	--	45
			SB	10	34	33	--	34	38	35	--	43	35	30	--	43	38	35	--	44
Loop 1 Frontage	SH 45 EB Frontage	US 183	NB	5	28	27	--	35	27	29	--	35	25	27	--	33	27	30	--	35
			SB	5	27	27	--	37	30	29	--	40	32	27	--	39	30	29	--	40
SH 45 SE	IH 35	US 183	EB	7	77	70	77	77	76	68	77	77	78	69	77	77	76	66	77	77
			WB	7	78	69	78	77	78	69	78	77	78	70	78	77	78	69	78	77

Notes: (1) Segments noted are south of Austin and include facilities that are generally parallel to the alignment of SH 130 Segments 5 & 6 (which are not part of the CTTS).

7.2.2 Aggregate Calibration by Facility Type and Area Type

After the regional calibration analysis of speeds was completed, the calibration of traffic within each corridor was performed. This process included the replication of traffic by screenline total and individual roadways as well as by vehicle type. This analysis included the use of our in-house trip table adjustment routine to ensure that the aggregate travel across each screenline replicated the observed traffic by vehicle type.

The aggregate calibration by facility type and area type was performed for both traffic volumes as well as VMT. This calibration utilized more than 4,578 link counts that were collected from several different sources. These data include the TxDOT 2016 AADT Traffic Maps and a limited set of classification counts provided by TxDOT, as well as other existing counts obtained from prior studies conducted by Stantec in the Austin region. Classification counts along the screenlines were also obtained by Stantec's subconsultant (AGS) to provide current estimates for all roadways intersected by the screenlines. Stantec also obtained the 2016 transactions by pay point for all toll facilities in the region, including all CTRMA facilities in operation in 2016. In situations where multiple counts were available for an individual roadway segment, the most reliable count data was determined using the following hierarchy: TxDOT transaction data first, then classification counts collected for this project, and then lastly either counts from previous reports or TxDOT counts.

The VMT and volume comparison summaries are listed in Table 7.3 and Table 7.4. Table 7.3 lists the aggregate comparison of volume and VMT by facility type for the entire region. The replication of both volume and VMT is acceptable. For the limited-access facility type which includes toll roads, the estimated volume ratios are almost identical, and VMT ratios are slightly higher than observed at 1.02.

Table 7.3 Volume and VMT Comparison by Facility Type

Facility Type	Number of Counts	Volume			VMT		
		Observed	Estimated	EST/OBS	Observed	Estimated	EST/OBS
Limited-Access Facility	616	34,675,169	34,757,311	1.00	15,145,009	15,521,101	1.02
Expressway	14	444,784	453,980	1.02	146,788	151,593	1.03
Principal Arterial Divided	456	6,972,715	7,446,570	1.07	2,887,379	3,158,313	1.09
Principal Arterial with Central Left Turn	426	5,727,054	4,804,553	0.84	2,172,377	1,835,688	0.85
Principal Arterial Undivided	673	3,706,851	4,060,447	1.10	2,367,727	2,843,948	1.20
Minor Arterial Divided	29	297,716	297,531	1.00	225,535	224,190	0.99
Minor Arterial Central Left Turn	58	388,576	316,980	0.82	213,947	172,261	0.81
Minor Arterial Undivided	926	2,316,857	2,074,133	0.90	2,162,711	2,004,104	0.93
Frontage Road	538	24,396,238	24,133,878	0.99	6,890,389	7,170,065	1.04
Collector/Local	441	668,655	661,896	0.99	1,058,335	1,193,292	1.13
Ramp	401	3,225,873	3,315,747	1.03	833,841	846,721	1.02
TOTAL	**4,578**	**82,820,488**	**82,323,024**	**0.99**	**34,104,038**	**35,121,274**	**1.03**

Table 7.4 provides a similar summary by area type. Except for the outlying rural areas, all of the area type classifications are within 5 percent of the observed values.

Table 7.4 Volume and VMT Comparison by Area Type

Facility Type	Number of Counts	Volume			VMT		
		Observed	Estimated	EST/OBS	Observed	Estimated	EST/OBS
CBD	21	1,408,951	1,448,833	1.03	261,377	270,328	1.03
CBD Fringe	608	29,015,357	27,803,346	0.96	7,899,008	7,608,129	0.96
Urban	898	24,963,151	24,224,846	0.97	7,806,370	7,541,170	0.97
Suburban	1456	20,146,491	20,309,044	1.01	10,323,651	10,234,609	0.99
Rural	1595	7,286,538	8,536,955	1.17	7,813,633	9,467,038	1.21
TOTAL	**4,578**	**82,820,488**	**82,323,024**	**0.99**	**34,104,038**	**35,121,274**	**1.03**

While not listed separately in the tables, volumes and VMT for truck traffic by facility type and area type were performed and the level of variation was similar to the aggregate values listed in these tables. The regional ratio of estimated to observed VMT is 1.03 and the ratio of estimated to observed traffic volume is 0.99.

7.2.3 Screenline Calibration

The final element of the calibration was to adjust the toll diversion model equations to replicate the observed traffic by vehicle type and payment method across each of the toll corridors. This analysis resulted in adjustments to the assumed market segments by payment type in each subarea as well as minor adjustments to the toll and ETC bias constants.

The screenline calibration was performed to ensure that the aggregate demand within each toll road corridor replicates the observed traffic. As part of this calibration, an in-house routine was applied to minimize any variation between estimated and observed demand across each of the screenlines. The adjustment provides a matrix of 'base year' trip changes (either increases or reductions) that is then retained for application in each of the horizon years. Since these trips are stored as a matrix, these additional trips are not tied to specific roadways and can be diverted to different routes in exactly the same manner as the trips estimated directly by the model. As a result of the screenline calibration, for origin-destination zonal pairs where trip changes were provided by the adjustment routine, the net change in trips was an increase of 1.2 percent with an increase of auto trips being offset by reductions in truck trips. Since the magnitude of the additional trips is held constant for all future years, their contribution to the overall assignment results are further minimized in each successive horizon year as the underlying model trip tables continue to increase due to growth in the region's population and employment.

A series of screenlines were developed within each of the toll road corridors to intersect each of the mainline toll plazas and parallel locations on the adjacent non-tolled roads. Four screenlines were created for SH 130, two for SH 45 N, one for Loop 1, and one for SH 45 SE. These eight screenlines are a subset of all the screenlines analyzed in the region-wide calibration and are consistent with the CTTS screenlines displayed earlier in Chapter 3. Two additional screenlines were also created to quantify demand for the 183A toll facility for calibration purposes and several small cut lines were added for the recently completed 290E toll road. Figure 7.10 shows the screenline locations within each toll road corridor. The following tables list the screenline calibration results for total traffic and by mode. Table 7.5 summarizes the screenlines intercepting SH 130, including the two southernmost segments (Segments 5 & 6) which are not part of the CTTS system. Table 7.6 summarizes the remaining CTTS elements. Table 7.7 includes all CTRMA toll roads that were in operation in 2016, including the 183A and 290E toll roads.

Figure 7.10 Calibration Screenline Locations

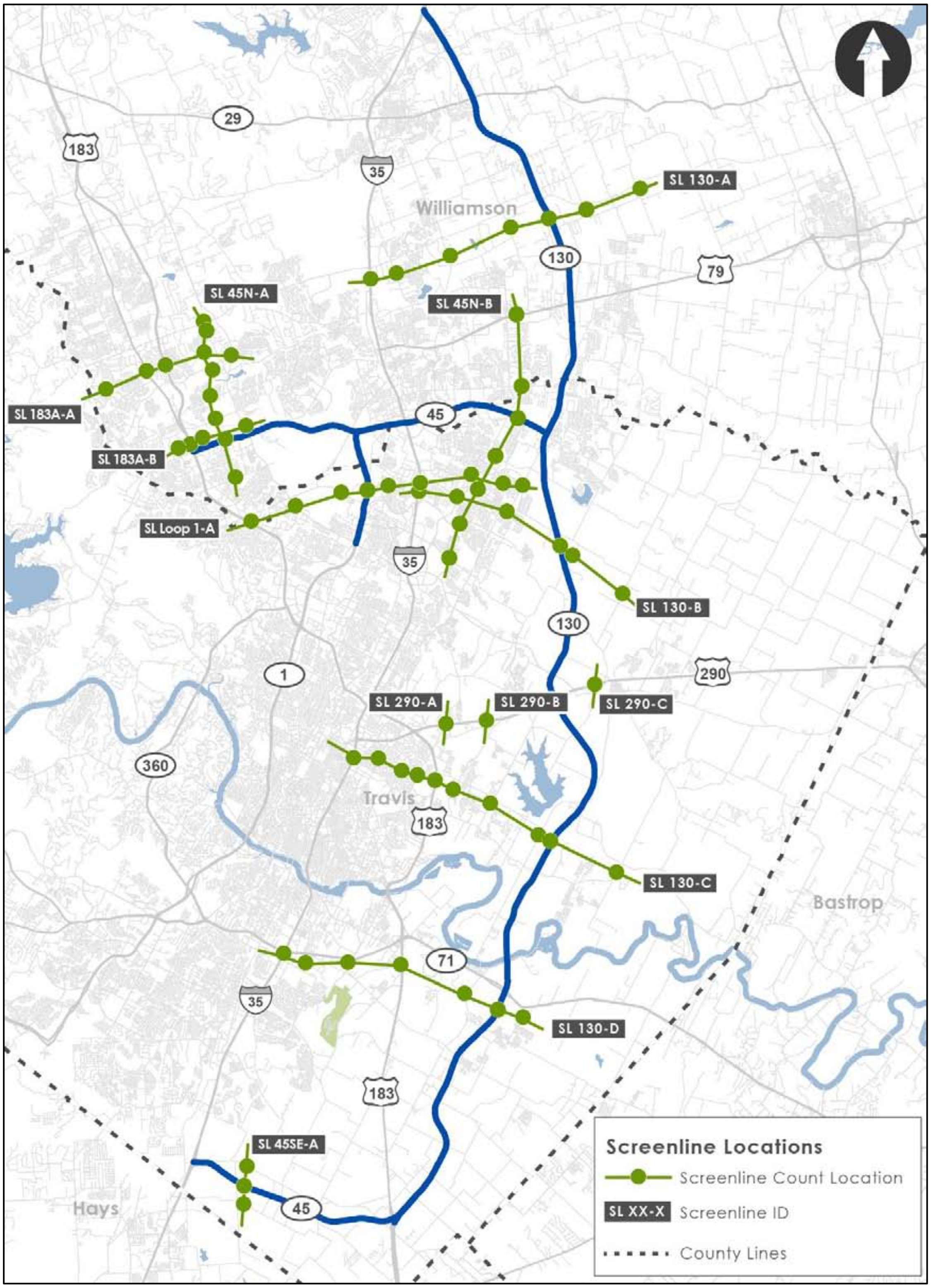


Table 7.5 Screenline Comparison – SH 130

Route		Auto		Truck		% Truck		Total		% of Total	
		Observed	Estimated	Observed	Estimated	Observed	Estimated	Observed	Estimated	Observed	Estimated
					SH 130						
Screenline 130-A	IH 35	138,501	145,226	19,385	19,676	12.3%	11.9%	157,886	164,902	69.2%	69.6%
	CR 115	16,609	16,626	1,077	1,098	6.1%	6.2%	17,686	17,724	7.8%	7.5%
	FM 1460	14,817	14,676	852	975	5.4%	6.2%	15,669	15,651	6.9%	6.6%
	CR 110	4,634	5,397	390	1,114	7.8%	17.1%	5,024	6,511	2.2%	2.7%
	SH 130	**24,422**	**24,523**	**4,411**	**4,431**	**15.3%**	**15.3%**	**28,833**	**28,954**	**12.6%**	**12.2%**
	CR 100	704	897	44	116	5.8%	11.4%	748	1,013	0.3%	0.4%
	FM 1660	1,887	1,877	418	455	18.1%	19.5%	2,306	2,333	1.0%	1.0%
	Total	201,574	209,223	26,578	27,866	11.6%	11.8%	228,152	237,089	100.0%	100.0%
Screenline 130-B	IH 35	157,400	172,378	18,286	20,332	10.4%	10.6%	175,686	192,710	63.3%	60.3%
	Heatherwilde Blvd	11,150	17,518	324	906	2.8%	4.9%	11,475	18,424	4.1%	5.8%
	Dessau / FM 685	22,074	29,798	2,042	4,214	8.5%	12.4%	24,116	34,011	8.7%	10.6%
	Immanuel	6,029	5,933	601	708	9.1%	10.7%	6,630	6,641	2.4%	2.1%
	SH 130	**44,912**	**45,900**	**5,752**	**5,633**	**11.4%**	**10.9%**	**50,664**	**51,533**	**18.3%**	**16.1%**
	Cameron Rd	4,014	4,888	178	4,169	4.2%	46.0%	4,192	9,057	1.5%	2.8%
	Fuchs Grove	3,776	3,603	791	3,852	17.3%	51.7%	4,567	7,455	1.6%	2.3%
	Total	249,356	280,018	27,974	39,814	10.1%	12.4%	277,330	319,831	100.0%	100.0%
Screenline 130-C	IH 35	222,372	227,691	19,413	20,650	8.0%	8.3%	241,785	248,340	54.1%	53.2%
	Cameron Rd.	14,636	16,571	1,407	1,592	8.8%	8.8%	16,044	18,163	3.6%	3.9%
	Berkman Dr.	13,407	12,005	1,168	1,097	8.0%	8.4%	14,576	13,102	3.3%	2.8%
	Manor Rd.	9,471	11,861	710	918	7.0%	7.2%	10,181	12,779	2.3%	2.7%
	Springdale Rd.	9,847	9,349	688	702	6.5%	7.0%	10,535	10,051	2.4%	2.2%
	US 183	67,230	68,888	3,816	3,936	5.4%	5.4%	71,046	72,824	15.9%	15.6%
	Johnny Morris Rd.	5,060	5,222	326	397	6.1%	7.1%	5,386	5,619	1.2%	1.2%
	FM 3177	14,190	15,769	980	2,494	6.5%	13.7%	15,170	18,263	3.4%	3.9%
	FM 973	8,006	10,438	1,010	2,238	11.2%	17.7%	9,016	12,676	2.0%	2.7%
	SH 130	**40,767**	**41,636**	**5,687**	**5,880**	**12.2%**	**12.4%**	**46,454**	**47,516**	**10.4%**	**10.2%**
	FM 969	5,559	6,524	813	924	12.8%	12.4%	6,372	7,448	1.4%	1.6%
	Total	410,546	425,952	36,019	40,828	8.1%	8.7%	446,565	466,780	100.0%	100.0%
Screenline 130-D	IH 35	177,527	179,116	21,342	22,013	10.7%	10.9%	198,869	201,129	61.7%	60.2%
	Todd Ln.	12,524	12,754	1,750	1,749	12.3%	12.1%	14,274	14,503	4.4%	4.3%
	Stassney Ln.	23,102	22,909	2,175	2,831	8.6%	11.0%	25,277	25,740	7.8%	7.7%
	US 183	29,315	31,747	4,236	5,373	12.6%	14.5%	33,551	37,120	10.4%	11.1%
	FM 973	11,715	14,445	1,152	2,279	9.0%	13.6%	12,867	16,723	4.0%	5.0%
	SH 130	**25,890**	**25,067**	**4,864**	**4,981**	**15.8%**	**16.6%**	**30,754**	**30,048**	**9.5%**	**9.0%**
	Ross Rd.	6,177	7,515	569	1,354	8.4%	15.3%	6,747	8,868	2.1%	2.7%
	Total	286,249	293,553	36,089	40,579	11.2%	12.1%	322,338	334,131	100.0%	100.0%
Screenline 130-E	IH 35	125,424	128,921	15,368	14,593	10.9%	10.2%	140,792	143,514	77.5%	76.0%
	Goforth Rd (FM 157)	3,072	3,162	139	208	4.3%	6.2%	3,211	3,370	1.8%	1.8%
	SH 21	8,913	9,008	1,684	1,664	15.9%	15.6%	10,597	10,672	5.8%	5.7%
	FM 2001	1,383	1,389	164	305	10.6%	18.0%	1,547	1,694	0.9%	0.9%
	US 183 - SH130 Frontage	9,341	12,018	1,058	2,404	10.2%	16.7%	10,399	14,422	5.7%	7.6%
	SH 130 Seg 5 ML	**8,859**	**9,734**	**2,356**	**1,574**	**21.0%**	**13.9%**	**11,215**	**11,308**	**6.2%**	**6.0%**
	FM 1854	3,714	3,727	128	132	3.3%	3.4%	3,842	3,859	2.1%	2.0%
	Total	160,705	167,959	20,897	20,880	11.5%	11.1%	181,602	188,839	100.0%	100.0%
Screenline 130-F	IH 35	107,529	100,811	19,881	18,663	15.6%	15.6%	127,410	119,473	83.6%	79.4%
	SH 21	7,938	8,042	1,923	1,984	19.5%	19.8%	9,861	10,026	6.5%	6.7%
	FM 1984	1,419	1,375	64	140	4.3%	9.3%	1,483	1,516	1.0%	1.0%
	SH 1342	5,288	6,705	347	1,872	6.2%	21.8%	5,635	8,577	3.7%	5.7%
	SH 130 Seg 6 ML	**4,778**	**4,850**	**1,907**	**1,989**	**28.5%**	**29.1%**	**6,685**	**6,838**	**4.4%**	**4.5%**
	State Park Rd (FM 20)	1,330	2,862	34	1,157	2.5%	28.8%	1,365	4,018	0.9%	2.7%
	Total	128,282	124,644	24,156	25,804	15.8%	17.2%	152,438	150,448	100.0%	100.0%

Table 7.6 Screenline Comparison – SH 45 N, Loop 1, and SH 45 SE

Screenline	Route	Auto		Truck		% Truck		Total		% of Total	
		Observed	Estimated	Observed	Estimated	Observed	Estimated	Observed	Estimated	Observed	Estimated
SH 45 N											
Screenline 45N-A	FM 1431	34,376	33,847	3,758	3,746	9.9%	10.0%	38,133	37,593	18.1%	15.7%
	Colonial Parkway	6,522	6,414	119	202	1.8%	3.1%	6,641	6,616	3.2%	2.8%
	Brushy Creek Rd.	12,829	20,426	440	1,826	3.3%	8.2%	13,269	22,252	6.3%	9.3%
	Avery Ranch Blvd.	15,127	21,184	1,104	1,853	6.8%	8.0%	16,232	23,036	7.7%	9.6%
	Lakeline Blvd.	9,242	10,911	640	1,554	6.5%	12.5%	9,882	12,465	4.7%	5.2%
	SH 45 NW ML	**49,571**	**54,554**	**1,740**	**1,783**	**3.4%**	**3.2%**	**51,311**	**56,337**	**24.4%**	**23.6%**
	SH 45 NW Frontage	29,025	28,790	1,178	1,290	3.9%	4.3%	30,203	30,080	14.4%	12.6%
	Anderson Mill Rd.	16,422	19,006	626	1,108	3.7%	5.5%	17,048	20,114	8.1%	8.4%
	McNeil Dr.	25,842	28,320	1,776	2,029	6.4%	6.7%	27,618	30,349	13.1%	12.7%
	Total	198,956	223,451	11,382	15,389	5.4%	6.4%	210,338	238,840	100.0%	100.0%
Screenline 45N-B	US 79	29,800	30,523	2,041	2,137	6.4%	6.5%	31,841	32,660	17.1%	17.4%
	CR 168/Gattis School Rd.	17,404	16,684	826	863	4.5%	4.9%	18,231	17,547	9.8%	9.4%
	SH 45 NE ML	**40,891**	**41,152**	**2,003**	**1,739**	**4.7%**	**4.1%**	**42,894**	**42,891**	**23.1%**	**22.9%**
	SH 45 NE Frontage	12,401	12,513	643	864	4.9%	6.5%	13,044	13,376	7.0%	7.1%
	Pflugerville Loop Rd.	16,726	18,981	1,063	1,261	6.0%	6.2%	17,789	20,242	9.6%	10.8%
	FM 1825/Pecan St.	15,926	15,859	1,950	1,941	10.9%	10.9%	17,876	17,800	9.6%	9.5%
	Wells Branch Pkwy	20,383	19,231	852	850	4.0%	4.2%	21,235	20,081	11.4%	10.7%
	Howard Lane	21,396	20,971	1,478	1,811	6.5%	7.9%	22,873	22,781	12.3%	12.2%
	Total	174,927	175,913	10,857	11,466	5.8%	6.1%	185,784	187,379	100.0%	100.0%
Loop 1											
Screenline Loop 1-A	US 183	190,698	189,815	5,592	5,863	2.8%	3.0%	196,290	195,678	30.8%	29.9%
	Parmer Lane	39,452	40,735	3,859	4,101	8.9%	9.1%	43,311	44,836	6.8%	6.8%
	Howard Lane	17,233	21,613	800	724	4.4%	3.2%	18,033	22,336	2.8%	3.4%
	FM 1325/Loop 1 SR	21,220	9,912	1,051	535	4.7%	5.1%	22,272	10,447	3.5%	1.6%
	Loop 1 Mainline Plaza	**66,147**	**68,555**	**1,277**	**1,262**	**1.9%**	**1.8%**	**67,424**	**69,817**	**10.6%**	**10.7%**
	Bratton Lane	9,683	9,333	868	868	8.2%	8.5%	10,551	10,201	1.7%	1.6%
	IH 35	157,400	172,378	18,286	20,332	10.4%	10.6%	175,686	192,710	27.5%	29.4%
	Heatherwilde	16,201	15,252	380	613	2.3%	3.9%	16,581	15,866	2.6%	2.4%
	N Railroad Rd	5,749	5,749	271	523	4.5%	8.3%	6,020	6,272	0.9%	1.0%
	FM 685	29,610	31,418	1,843	3,526	5.9%	10.1%	31,453	34,944	4.9%	5.3%
	SH 130	44,912	45,900	5,752	5,633	11.4%	10.9%	50,664	51,533	7.9%	7.9%
	Total	598,305	610,662	39,980	43,978	6.3%	6.7%	638,285	654,640	100.0%	100.0%
SH 45 SE											
Screenline 45SE-A	FM 1327	12,321	13,312	1,465	2,076	10.6%	13.5%	13,785	15,388	40.5%	44.4%
	SH 45 SE ML	**16,735**	**16,083**	**2,490**	**2,325**	**13.0%**	**12.6%**	**19,225**	**18,408**	**56.5%**	**53.2%**
	Turnersville Rd.	1,014	726	30	106	2.8%	12.7%	1,043	832	3.1%	2.4%
	Total	30,069	30,121	3,984	4,506	11.7%	13.0%	34,054	34,627	100.0%	100.0%

Table 7.7 Screenline Comparison – 183A and 290E

Screenline	Route	Auto Observed	Auto Estimated	Truck Observed	Truck Estimated	% Truck Observed	% Truck Estimated	Total Observed	Total Estimated	% of Total Observed	% of Total Estimated
183A											
Screenline 183A-A	Lakeline Blvd	23,919	27,740	1,157	1,542	4.6%	5.3%	25,076	29,283	15.2%	15.3%
	US 183	36,285	42,282	3,621	4,370	9.1%	9.4%	39,906	46,652	24.1%	24.4%
	183A ML	**57,767**	**62,679**	**2,308**	**2,445**	**3.8%**	**3.8%**	**60,075**	**65,124**	**36.3%**	**34.1%**
	Vista Ridge Blvd	7,040	12,026	204	1,167	2.8%	8.8%	7,245	13,193	4.4%	6.9%
	Parmer Ln	30,905	32,820	2,126	3,791	6.4%	10.4%	33,031	36,611	20.0%	19.2%
	Total	155,917	177,547	9,417	13,315	5.7%	7.0%	165,333	190,862	100.0%	100.0%
Screenline 183A-B	Pecan Park Blvd	7,739	7,876	216	350	2.7%	4.3%	7,955	8,226	4.0%	3.5%
	US 183	38,657	53,666	4,279	4,730	10.0%	8.1%	42,936	58,396	21.3%	24.6%
	183A ML	**46,193**	**48,750**	**1,371**	**1,412**	**2.9%**	**2.8%**	**47,564**	**50,162**	**23.6%**	**21.1%**
	US 183 SB On-Ramp	28,223	39,233	1,754	2,438	5.9%	5.9%	29,977	41,671	14.9%	17.5%
	US 183/SH 45 DC	19,201	19,569	1,397	1,041	6.8%	5.0%	20,598	20,610	10.2%	8.7%
	Lake Creek Pkwy	13,713	14,120	909	1,760	6.2%	11.1%	14,622	15,880	7.3%	6.7%
	Parmer Ln	33,882	38,764	3,645	4,099	9.7%	9.6%	37,527	42,863	18.7%	18.0%
	Total	187,609	221,979	13,571	15,829	6.7%	6.7%	201,180	237,808	100.0%	100.0%

Screenline	Route	Auto Observed	Auto Estimated	Truck Observed	Truck Estimated	% Truck Observed	% Truck Estimated	Total Observed	Total Estimated	% of Total Observed	% of Total Estimated
US - 290E											
SL 290E -A	**290E ML**	**33,119**	**29,703**	**2,847**	**2,536**	**7.9%**	**7.9%**	**35,966**	**32,239**	**52.1%**	**52.3%**
	290E Frontage Rd	30,409	27,044	6,524	5,682	17.7%	17.4%	36,934	32,727	47.9%	47.7%
	Total	63,528	56,747	9,371	8,219	25.6%	25.2%	72,900	64,965	100.0%	100.0%
SL 290E -B	**290E ML**	30,699	30,728	1,521	1,672	4.7%	5.2%	32,220	32,400	57.2%	56.4%
	290E Frontage Rd	22,936	23,728	2,503	4,255	9.8%	15.2%	25,440	27,983	42.8%	43.6%
	Total	53,636	54,456	4,024	5,927	14.6%	20.4%	57,660	60,383	100.0%	100.0%
SL 290E -C	**290E ML**	18,502	18,274	1,126	1,830	5.7%	9.1%	19,628	20,104	50.9%	35.4%
	290E Frontage Rd	17,874	33,296	2,704	4,569	13.1%	12.1%	20,578	37,865	49.1%	64.6%
	Total	36,375	51,570	3,830	6,399	18.9%	21.2%	40,206	57,969	100.0%	100.0%

Total traffic on each of the CTTS element screenlines is well within acceptable tolerances of the total counts. The total estimated traffic for each screenline is slightly higher than the total observed traffic, but the traffic on the toll facilities are generally close to the observed counts. For each corridor, the distribution of traffic among competing roadways along the screenlines is also within acceptable tolerances and traffic volumes at the mainline plazas (shown in bold) on the toll facilities are estimated adequately.

The allocation of the traffic by vehicle type (auto and truck) provides an adequate replication of the observed data. At an aggregate level, the estimated truck percentage of total vehicles across screenlines is generally within 1 to 2 percent of the observed percentage for the CTTS elements. The estimated truck percentages at the toll facilities were also estimated reasonably well. The truck traffic presented in these summaries includes trucks with 3+ axles.

7.2.4 Calibration of Toll Transactions by Mode and by Payment Method

The final element of the calibration was focused on replicating toll transactions by both vehicle type and payment method. For this analysis, Stantec utilized the model-estimated number of transactions by pay point, vehicle type, and payment method and compared these estimates to observed transaction data provided by TxDOT and CTRMA.

Table 7.8 and Table 7.9 provide a comparison of the estimated and observed transactions by vehicle type at all CTTS and CTRMA facilities by pay point. As shown in Table 7.8, the estimated total transactions along SH 130 are approximately 2.8 percent higher when compared to the observed values, and approximately 3.3 percent lower along SH 45 SE. The allocation of auto and truck shares for SH 130 and SH 45 SE are close to the observed values, with trucks accounting for just over 10 percent of the transactions. Table 7.9 shows that estimated total transactions on SH 45 N and Loop 1 are approximately 2.5 percent and 1.7 percent higher than observed values, respectively. For Loop 1, SH 45 N and CTRMA's 183A and 290E toll roads, estimated truck shares are approximately within 1 percent of the observed truck shares. While the total transactions for each toll road vary from the observed totals, the transactions by vehicle type on a percentage basis demonstrate a good replication of the observed data.

Table 7.8 2016 Average Weekday Toll Transactions by Pay Point and Vehicle Type

	Crossroad	Type	Vehicle Type						Total		
			Auto			Truck					
			Observed	Estimated	%Diff	Observed	Estimated	%Diff	Observed	Estimated	%Diff
SH 130	SH 29	Ramp	1,383	1,391	0.6%	197	197	0.1%	1,580	1,589	0.5%
	FM 104	Ramp	161	448	178.3%	19	23	19.5%	180	471	161.6%
	Chandler Rd	Ramp	951	959	0.9%	186	185	-0.3%	1,137	1,145	0.7%
	N. of CR 109	**Mainline**	**24,422**	**24,523**	**0.4%**	**4,411**	**4,431**	**0.5%**	**28,833**	**28,954**	**0.4%**
	US 79	Ramp	14,128	14,935	5.7%	975	1,146	17.5%	15,103	16,081	6.5%
	CR 138	Ramp	9,979	10,054	0.8%	358	419	17.1%	10,337	10,473	1.3%
	Pecan St	Ramp	3,228	3,161	-2.1%	242	234	-3.2%	3,470	3,396	-2.1%
	N. of Cameron Rd	**Mainline**	**44,912**	**45,900**	**2.2%**	**5,752**	**5,633**	**-2.1%**	**50,664**	**51,533**	**1.7%**
	Cameron Rd	Ramp	681	528	-22.4%	93	212	128.3%	774	740	-4.3%
	Howard Ln / Gregg Manor	Ramp	1,127	994	-11.8%	136	137	1.0%	1,263	1,132	-10.4%
	Blue Bluff Rd.	Ramp	193	375	94.4%	19	52	175.6%	212	428	101.7%
	Bloor Rd / FM 973	Ramp	791	793	0.3%	44	44	0.1%	835	838	0.3%
	N. of FM 969	**Mainline**	**40,767**	**41,636**	**2.1%**	**5,687**	**5,880**	**3.4%**	**46,454**	**47,516**	**2.3%**
	FM 969	Ramp	6,563	8,428	28.4%	611	707	15.7%	7,174	9,134	27.3%
	Harold Green Rd	Ramp	1,230	1,323	7.5%	406	432	6.4%	1,636	1,755	7.3%
	Pearce Ln.	Ramp	2,859	3,320	16.1%	148	217	46.4%	3,007	3,536	17.6%
	N. of Elroy Rd	**Mainline**	**25,890**	**25,067**	**-3.2%**	**4,864**	**4,981**	**2.4%**	**30,754**	**30,048**	**-2.3%**
	Elroy Rd	Ramp	622	564	-9.3%	62	70	13.1%	684	634	-7.3%
	FM 812	Ramp	541	577	6.6%	85	103	20.8%	626	679	8.5%
	Moore Rd	Ramp	175	517	195.6%	45	100	122.4%	220	617	180.6%
	TOTAL MAINLINE		**135,991**	**137,125**	**0.8%**	**20,714**	**20,925**	**1.0%**	**156,705**	**158,050**	**0.9%**
	% Share MAINLINE		**86.8%**	**86.8%**		**13.2%**	**13.2%**				
	TOTAL RAMPS		**43,931**	**47,840**	**8.9%**	**3,533**	**4,067**	**15.1%**	**47,464**	**51,907**	**9.4%**
	% Share RAMPS		**92.6%**	**92.2%**		**7.4%**	**7.8%**				
	TOTAL		**180,603**	**185,494**	**2.7%**	**24,340**	**25,204**	**3.5%**	**204,943**	**210,698**	**2.8%**
	% Share TOTAL		**88.1%**	**88.0%**		**11.9%**	**12.0%**				
SH 45 SE	Turnersville Rd	Ramp	211	199	-5.7%	21	21	0.3%	232	220	-5.1%
	ML Plaza	**Mainline**	**16,735**	**16,083**	**-3.9%**	**2,490**	**2,325**	**-6.6%**	**19,225**	**18,408**	**-4.3%**
	FM 1625	Ramp	630	764	21.3%	170	195	14.7%	800	959	19.9%
	TOTAL MAINLINE		**16,735**	**16,083**	**-3.9%**	**2,490**	**2,325**	**-6.6%**	**19,225**	**18,408**	**-4.3%**
	% Share TOTAL		**87.0%**	**87.4%**		**13.0%**	**12.6%**				
	TOTAL RAMPS		**841**	**963**	**14.5%**	**191**	**216**	**13.2%**	**1,032**	**1,179**	**14.3%**
	% Share TOTAL		**81.5%**	**81.7%**		**18.5%**	**18.3%**				
	TOTAL		**17,576**	**17,046**	**-3.0%**	**2,681**	**2,541**	**-5.2%**	**20,257**	**19,587**	**-3.3%**
	% Share TOTAL		**86.8%**	**87.0%**		**13.2%**	**13.0%**				

Notes: (1) % SHARE = % of total by vehicle type

Table 7.9 2016 Average Weekday Toll Transactions by Pay Point and Vehicle Type (continued)

	Crossroad	Type	Vehicle Type						Total		
			Auto			Truck					
			Observed	Estimated	%Diff	Observed	Estimated	%Diff	Observed	Estimated	%Diff
SH 45 N	**W. ML Plaza**	**Mainline**	**49,571**	**54,554**	**10.1%**	**1,740**	**1,783**	**2.5%**	**51,311**	**56,337**	**9.8%**
	Parmer Ln.	Ramp	9,257	9,079	-1.9%	232	228	-1.5%	9,489	9,307	-1.9%
	FM 620	Ramp	2,427	1,966	-19.0%	67	29	-57.2%	2,494	1,995	-20.0%
	O'Conner Dr - SH 45N	Ramp	3,561	3,287	-7.7%	79	73	-7.2%	3,640	3,360	-7.7%
	O'Conner Dr -Loop 1	Ramp	6,426	5,798	-9.8%	36	25	-31.8%	6,462	5,822	-9.9%
	Greenlawn	Ramp	8,210	7,859	-4.3%	190	181	-4.8%	8,400	8,040	-4.3%
	CR 170	Ramp	10,812	11,258	4.1%	174	177	1.4%	10,986	11,434	4.1%
	Arterial A	Ramp	4,726	4,537	-4.0%	66	64	-3.1%	4,792	4,601	-4.0%
	Heatherwilde	Ramp	8,479	8,840	4.3%	149	150	0.3%	8,628	8,990	4.2%
	E. ML Plaza	**Mainline**	**40,891**	**41,152**	**0.6%**	**2,003**	**1,739**	**-13.2%**	**42,894**	**42,891**	**0.0%**
	TOTAL MAINLINE		**90,462**	**95,706**	**5.8%**	**3,743**	**3,522**	**-5.9%**	**94,205**	**99,227**	**5.3%**
	% Share TOTAL		**96.0%**	**96.5%**		**4.0%**	**3.5%**				
	TOTAL RAMPS		**53,898**	**52,624**	**-2.4%**	**993**	**926**	**-6.8%**	**54,891**	**53,550**	**-2.4%**
	% Share TOTAL		**98.2%**	**98.3%**		**1.8%**	**1.7%**				
	TOTAL		**144,360**	**148,330**	**2.8%**	**4,736**	**4,448**	**-6.1%**	**149,096**	**152,778**	**2.5%**
	% Share TOTAL		**96.8%**	**97.1%**		**3.2%**	**2.9%**				
Loop 1	Shoreline Dr	Ramp	944	993	5.2%	22	22	0.1%	966	1,015	5.1%
	ML Plaza	**Mainline**	**66,147**	**68,555**	**3.6%**	**1,277**	**1,262**	**-1.2%**	**67,424**	**69,817**	**3.5%**
	Howard	Ramp	5,468	4,378	-19.9%	130	29	-77.5%	5,598	4,407	-21.3%
	TOTAL MAINLINE		**66,147**	**68,555**	**3.6%**	**1,277**	**1,262**	**-1.2%**	**67,424**	**69,817**	**3.5%**
	% Share TOTAL		**98.1%**	**98.2%**		**1.9%**	**1.8%**				
	TOTAL RAMPS		**6,412**	**5,371**	**-16.2%**	**152**	**51**	**-66.3%**	**6,564**	**5,422**	**-17.4%**
	% Share TOTAL		**97.7%**	**99.1%**		**2.3%**	**0.9%**				
	TOTAL		**72,559**	**73,926**	**1.9%**	**1,429**	**1,313**	**-8.1%**	**73,988**	**75,239**	**1.7%**
	% Share TOTAL		**98.1%**	**98.3%**		**1.9%**	**1.7%**				
183A	Crystal Falls Pkwy	Ramp	640	641	0.2%	36	39	7.0%	676	680	0.6%
	Crystal Falls ML	**Mainline**	**30,074**	**32,197**	**7.1%**	**1,774**	**1,847**	**4.2%**	**31,848**	**34,044**	**6.9%**
	Scottsdale Dr	Ramp	1,134	1,098	-3.2%	16	245	1440.7%	1,150	1,343	16.8%
	Park St. ML	**Mainline**	**57,767**	**62,679**	**8.5%**	**2,308**	**2,445**	**5.9%**	**60,075**	**65,124**	**8.4%**
	Brushy Creek	Ramp	10,007	11,665	16.6%	155	179	14.9%	10,162	11,843	16.5%
	Lakeline ML	**Mainline**	**46,193**	**48,750**	**5.5%**	**1,371**	**1,412**	**3.0%**	**47,564**	**50,162**	**5.5%**
	TOTAL MAINLINE		**134,034**	**143,626**	**7.2%**	**5,453**	**5,704**	**4.6%**	**139,487**	**149,330**	**7.1%**
	% Share TOTAL		**96.1%**	**96.2%**		**3.9%**	**3.8%**				
	TOTAL RAMPS		**11,781**	**13,404**	**13.8%**	**207**	**462**	**123.0%**	**11,988**	**13,867**	**15.7%**
	% Share TOTAL		**98.3%**	**96.7%**		**1.7%**	**3.3%**				
	TOTAL		**145,814**	**157,031**	**7.7%**	**5,661**	**6,166**	**8.9%**	**151,475**	**163,197**	**7.7%**
	% Share TOTAL		**96.3%**	**96.2%**		**3.7%**	**3.8%**				
290E	US 183 DC	Ramp	13,896	12,994	-6.5%	1,177	1,016	-13.7%	15,073	14,010	-7.1%
	Springdale	Ramp	943	899	-4.6%	388	265	-31.8%	1,331	1,164	-12.6%
	Giles	Ramp	3,159	3,037	-3.8%	982	863	-12.2%	4,141	3,900	-5.8%
	Giles ML	**Mainline**	**30,699**	**29,650**	**-3.4%**	**1,521**	**1,490**	**-2.0%**	**32,220**	**31,140**	**-3.4%**
	Harris Branch	Ramp	917	903	-1.5%	355	337	-5.0%	1,272	1,241	-2.5%
	Parmer	**Mainline**	**18,502**	**18,648**	**0.8%**	**1,126**	**1,108**	**-1.7%**	**19,628**	**19,756**	**0.7%**
	TOTAL MAINLINE		**49,201**	**48,298**	**-1.8%**	**2,647**	**2,597**	**-1.9%**	**51,848**	**50,896**	**-1.8%**
	% Share TOTAL		**94.9%**	**94.9%**		**5.1%**	**5.1%**				
	TOTAL RAMPS		**18,914**	**17,834**	**-5.7%**	**2,903**	**2,481**	**-14.5%**	**21,817**	**20,315**	**-6.9%**
	% Share TOTAL		**86.7%**	**87.8%**		**13.3%**	**12.2%**				
	TOTAL		**68,115**	**66,132**	**-2.9%**	**5,550**	**5,078**	**-8.5%**	**73,665**	**71,210**	**-3.3%**
	% Share TOTAL		**92.5%**	**92.9%**		**7.5%**	**7.1%**				

Notes: (1) % SHARE = % of total by vehicle type

A summary of the shares of total transactions by payment method and a separate summary by vehicle type are shown in Table 7.10 through Table 7.12. As shown in the tables, the model generally provides an adequate share of transactions by payment type for the total on each facility, as well as separately for autos and trucks. The largest difference is underestimation of PBM shares on SH 45 SE, primarily with autos. Trucks using the 290E and 183A toll roads are estimated to have higher PBM shares than what is observed, but the total volumes are relatively small.

Table 7.10 2016 Average Weekday Total Transactions by Payment Method

	Crossroad	Type	Payment Methods					
			ETC			Pay by Mail		
			Observed	Estimated	%Diff	Observed	Estimated	%Diff
SH 130	MAINLINE	Total	96,435	98,319	2.0%	60,270	59,731	-0.9%
		% Share	61.5%	62.2%		38.5%	37.8%	
	RAMPS	Total	29,744	34,696	16.6%	18,494	17,951	-2.9%
		% Share	61.7%	65.9%		38.3%	34.1%	
	TOTAL	**Total**	**126,179**	**133,015**	**5.4%**	**78,764**	**77,683**	**-1.4%**
		% Share	**61.6%**	**63.1%**		**38.4%**	**36.9%**	
SH 45 SE	MAINLINE	Total	11,558	12,535	8.5%	7,667	5,873	-23.4%
		% Share	60.1%	68.1%		39.9%	31.9%	
	RAMPS	Total	562	805	43.2%	470	375	-20.3%
		% Share	54.5%	68.2%		45.5%	31.8%	
	TOTAL	**Total**	**12,120**	**13,339**	**10.1%**	**8,137**	**6,247**	**-23.2%**
		% Share	**59.8%**	**68.1%**		**40.2%**	**31.9%**	
SH 45 N	MAINLINE	Total	65,083	70,364	8.1%	29,122	28,864	-0.9%
		% Share	69.1%	70.9%		30.9%	29.1%	
	RAMPS	Total	39,261	39,624	0.9%	15,630	13,926	-10.9%
		% Share	71.5%	74.0%		28.5%	26.0%	
	TOTAL	**Total**	**104,344**	**109,988**	**5.4%**	**44,752**	**42,790**	**-4.4%**
		% Share	**70.0%**	**72.0%**		**30.0%**	**28.0%**	
Loop 1	MAINLINE	Total	47,843	50,413	5.4%	19,581	19,404	-0.9%
		% Share	71.0%	72.2%		29.0%	27.8%	
	RAMPS	Total	4,300	4,534	5.4%	2,264	888	-60.8%
		% Share	65.5%	83.6%		34.5%	16.4%	
	TOTAL	**Total**	**52,143**	**54,947**	**5.4%**	**21,845**	**20,292**	**-7.1%**
		% Share	**70.5%**	**73.0%**		**29.5%**	**27.0%**	
183A	MAINLINE	Total	93,220	102,540	10.0%	46,267	46,790	1.1%
		% Share	66.8%	68.7%		33.2%	31.3%	
	RAMPS	Total	8,566	9,464	10.5%	3,422	4,403	28.7%
		% Share	71.5%	68.2%		28.5%	31.8%	
	TOTAL	**Total**	**101,786**	**112,004**	**10.0%**	**49,689**	**51,193**	**3.0%**
		% Share	**67.2%**	**68.6%**		**32.8%**	**31.4%**	
290E	MAINLINE	Total	31,246	33,142	6.1%	20,602	19,362	-6.0%
		% Share	60.3%	63.1%		39.7%	36.9%	
	RAMPS	Total	13,372	13,678	2.3%	8,445	8,803	4.2%
		% Share	61.3%	60.8%		38.7%	39.2%	
	TOTAL	**Total**	**44,618**	**46,821**	**4.9%**	**29,047**	**28,165**	**-3.0%**
		% Share	**60.6%**	**62.4%**		**39.4%**	**37.6%**	

Table 7.11 2016 Average Weekday Auto Transactions by Payment Method

	Crossroad	Type	Payment Methods					
			ETC			Pay by Mail		
			Observed	Estimated	%Diff	Observed	Estimated	%Diff
SH 130	MAINLINE	Total	84,852	86,026	1.4%	51,139	51,100	-0.1%
		% Share	62.4%	62.7%		37.6%	37.3%	
	RAMPS	Total	27,598	32,185	16.6%	17,014	16,184	-4.9%
		% Share	61.9%	66.5%		38.1%	33.5%	
	TOTAL	**Total**	**112,450**	**118,210**	**5.1%**	**68,153**	**67,284**	**-1.3%**
		% Share	**62.3%**	**63.7%**		**37.7%**	**36.3%**	
SH 45 SE	MAINLINE	Total	10,171	11,387	12.0%	6,564	4,696	-28.5%
		% Share	60.8%	70.8%		39.2%	29.2%	
	RAMPS	Total	456	656	43.9%	385	307	-20.3%
		% Share	54.2%	68.1%		45.8%	31.9%	
	TOTAL	**Total**	**10,627**	**12,043**	**13.3%**	**6,949**	**5,003**	**-28.0%**
		% Share	**60.5%**	**70.7%**		**39.5%**	**29.3%**	
SH 45 N	MAINLINE	Total	62,505	67,899	8.6%	27,957	27,806	-0.5%
		% Share	69.1%	70.9%		30.9%	29.1%	
	RAMPS	Total	38,575	38,891	0.8%	15,323	13,733	-10.4%
		% Share	71.6%	73.9%		28.4%	26.1%	
	TOTAL	**Total**	**101,080**	**106,791**	**5.6%**	**43,280**	**41,540**	**-4.0%**
		% Share	**70.0%**	**72.0%**		**30.0%**	**28.0%**	
Loop 1	MAINLINE	Total	47,022	49,532	5.3%	19,125	19,023	-0.5%
		% Share	71.1%	72.3%		28.9%	27.7%	
	RAMPS	Total	4,203	4,500	7.1%	2,209	871	-60.6%
		% Share	65.5%	83.8%		34.5%	16.2%	
	TOTAL	**Total**	**51,225**	**54,032**	**5.5%**	**21,334**	**19,894**	**-6.8%**
		% Share	**70.6%**	**73.1%**		**29.4%**	**26.9%**	
183A	MAINLINE	Total	89,876	99,355	10.5%	44,158	44,272	0.3%
		% Share	67.1%	69.2%		32.9%	30.8%	
	RAMPS	Total	8,425	9,216	9.4%	3,356	4,189	24.8%
		% Share	71.5%	68.8%		28.5%	31.2%	
	TOTAL	**Total**	**98,301**	**108,570**	**10.4%**	**47,513**	**48,461**	**2.0%**
		% Share	**67.4%**	**69.1%**		**32.6%**	**30.9%**	
290E	MAINLINE	Total	29,647	31,022	4.6%	19,554	17,979	-8.1%
		% Share	60.3%	63.3%		39.7%	36.7%	
	RAMPS	Total	11,444	11,752	2.7%	7,470	7,814	4.6%
		% Share	60.5%	60.1%		39.5%	39.9%	
	TOTAL	**Total**	**41,091**	**42,775**	**4.1%**	**27,024**	**25,794**	**-4.6%**
		% Share	**60.3%**	**62.4%**		**39.7%**	**37.6%**	

Table 7.12 2016 Average Weekday Truck Transactions by Payment Method

	Crossroad	Type	Payment Methods					
			ETC			Pay by Mail		
			Observed	Estimated	%Diff	Observed	Estimated	%Diff
SH 130	MAINLINE	Total	11,583	12,293	6.1%	9,131	8,632	-5.5%
		% Share	55.9%	58.7%		44.1%	41.3%	
	RAMPS	Total	2,146	2,512	17.0%	1,480	1,767	19.4%
		% Share	59.2%	58.7%		40.8%	41.3%	
	TOTAL	**Total**	**13,729**	**14,805**	**7.8%**	**10,611**	**10,399**	**-2.0%**
		% Share	**56.4%**	**58.7%**		**43.6%**	**41.3%**	
SH 45 SE	MAINLINE	Total	1,387	1,148	-17.2%	1,103	1,177	6.7%
		% Share	55.7%	49.4%		44.3%	50.6%	
	RAMPS	Total	106	149	40.1%	85	68	-20.5%
		% Share	55.5%	68.7%		44.5%	31.3%	
	TOTAL	**Total**	**1,493**	**1,297**	**-13.1%**	**1,188**	**1,244**	**4.8%**
		% Share	**55.7%**	**51.0%**		**44.3%**	**49.0%**	
SH 45 N	MAINLINE	Total	2,578	2,464	-4.4%	1,165	1,057	-9.2%
		% Share	68.9%	70.0%		31.1%	30.0%	
	RAMPS	Total	686	733	6.9%	307	193	-37.2%
		% Share	69.1%	79.2%		30.9%	20.8%	
	TOTAL	**Total**	**3,264**	**3,197**	**-2.0%**	**1,472**	**1,250**	**-15.1%**
		% Share	**68.9%**	**71.9%**		**31.1%**	**28.1%**	
Loop 1	MAINLINE	Total	821	881	7.3%	456	381	-16.4%
		% Share	64.3%	69.8%		35.7%	30.2%	
	RAMPS	Total	97	34	-65.1%	55	17	-68.4%
		% Share	63.8%	66.1%		36.2%	33.9%	
	TOTAL	**Total**	**918**	**915**	**-0.3%**	**511**	**398**	**-22.0%**
		% Share	**64.2%**	**69.7%**		**35.8%**	**30.3%**	
183A	MAINLINE	Total	3,344	3,186	-4.7%	2,109	2,518	19.4%
		% Share	61.3%	55.8%		38.7%	44.2%	
	RAMPS	Total	141	248	76.0%	67	214	222.3%
		% Share	67.9%	53.6%		32.1%	46.4%	
	TOTAL	**Total**	**3,485**	**3,433**	**-1.5%**	**2,176**	**2,733**	**25.6%**
		% Share	**61.6%**	**55.7%**		**38.4%**	**44.3%**	
290E	MAINLINE	Total	1,599	2,120	32.6%	1,049	1,382	31.8%
		% Share	60.4%	60.5%	0.0%	39.6%	39.5%	0.0%
	RAMPS	Total	1,928	1,926	-0.1%	975	989	1.4%
		% Share	66.4%	66.1%	0.0%	33.6%	33.9%	0.0%
	TOTAL	**Total**	**3,527**	**4,046**	**14.7%**	**2,023**	**2,371**	**17.2%**
		% Share	**63.5%**	**63.0%**	**0.0%**	**36.5%**	**37.0%**	**0.0%**

While the model estimates show some variation against the observed values by pay point location and payment method for each CTTS elements, the resulting average toll per transaction for each roadway is relatively close to the observed values. The comparison for each CTTS element by vehicle type is shown in Table 7.13. The values for SH 130 and SH 45 SE reflect the temporary truck toll discount program that was in place during eight months of the 2016 calibration year. The values are unadjusted model outputs and do not include any modifications for collection efficiency.

Table 7.13 Comparison of Observed and Estimated Toll Cost Per Transaction

Roadway	Auto		Truck		Total	
	Obs	Est	Obs	Est	Obs	Est
SH 130	$1.67	$1.65	$1.82	$1.78	$1.69	$1.67
SH 45 SE	$1.15	$1.12	$1.16	$1.17	$1.16	$1.12
SH 45 N	$1.07	$1.07	$2.80	$2.77	$1.13	$1.12
Loop 1	$1.13	$1.13	$2.86	$2.88	$1.16	$1.16

7.3 ELASTICITY ANALYSIS

In order to develop toll elasticity curves for the 2018 Study, the transportation model was run using the final adjusted toll coefficients listed in Table 7.1 and a range of toll values above and below the existing toll rates for the 2016 calibration year as well with the future toll rates and networks for the year 2030. As a reasonableness check, tests were conducted on the CTTS elements separately. Due to the length of the SH 130 element, elasticity was estimated for each of the four segments. These elasticity estimates for each year are a function of both the overall travel demand and network conditions, in terms of competing roadways and congestion that exist for both years. For this analysis, a number of alternative toll rates were expressed as multiples of the base tolls. The multiples range from 0.25 to 6.0 and reveal how traffic and revenues change at different toll levels. The results were plotted for the four facilities as shown in Figure 7.11 through Figure 7.14. Within each of these figures, the transactions and revenues for 2016 are shown in solid lines while the dashed lines represent the same values in the 2030 horizon year.

Elasticity, as used herein, is the relationship between traffic volume and toll rates and represents the relative decrease in traffic corresponding to a given increase in toll. Elasticity is expressed as a negative value. The higher the absolute value, the more apt a facility is to lose traffic, which can be due to diversions to competing facilities, switches in travel modes, or consolidation and/or elimination of trips.

For 2016 Stantec performed elasticity analysis using the 2016 toll rates. For the future year 2030, the auto and truck tolls are derived from the assumed rates applied with the annual escalation policy over the period from existing 2018 rates to 2030.

Similar to our analysis in the prior 2014 Study, in 2016 Loop 1 has the lowest elasticity at approximately -0.25, while SH 130 has a much higher elasticity with a value at approximately -0.42. The elasticity factor for SH 45 N is -0.38 and for SH 45 SE, the elasticity factor is -0.42. With respect to estimating the optimum point for future revenue forecasts, it is prudent to define points on the revenue curves that are less than the maximum revenue point in order to provide a degree of flexibility which allows for additional revenue to be generated if circumstances require that consideration. The SH 45 SE elasticity curves suggest that the roadway is approaching its optimal revenue, indicating that an increase in tolls would not produce higher revenue in the near term if tolls were increased substantially. Similarly, for 2016 the model estimates that SH 130 revenue is also approaching its optimum revenue. In contrast, the model predicts that the SH 45 N optimum revenue is approximately 1.5 times the base toll. Loop 1, being the most inelastic among the four facilities, has optimum toll levels at approximately 2.0 times the base toll. The inelasticity of Loop 1 can be attributed primarily to the level of congestion on the competing roads, such as US 183, Parmer Lane, and IH-35.

Figure 7.11 SH 130 Toll Sensitivity

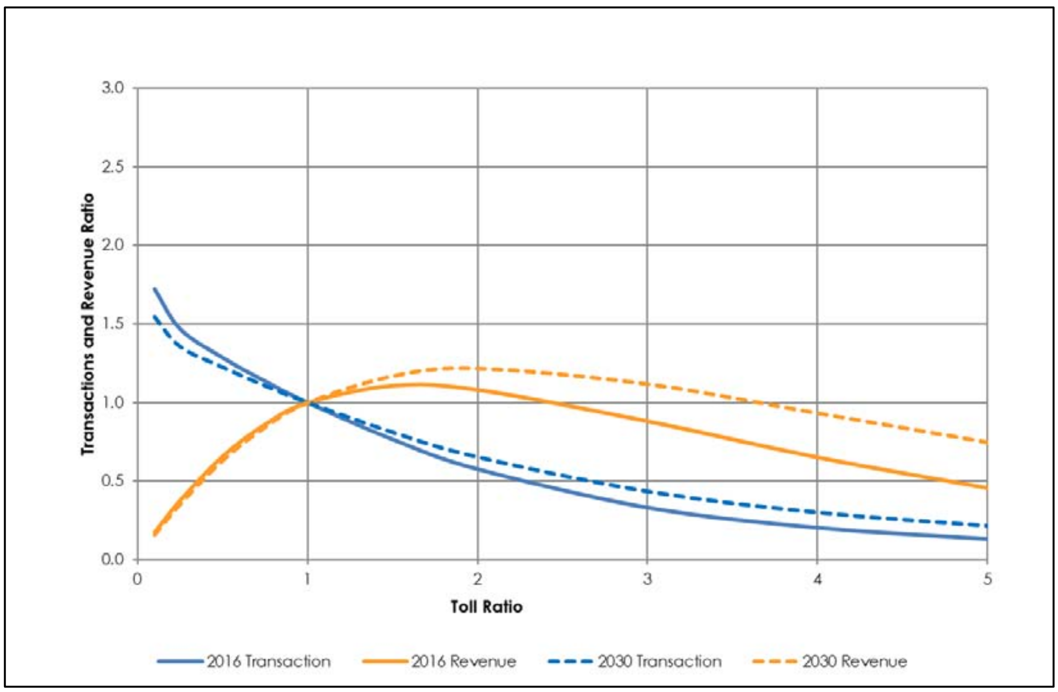


Figure 7.12 SH 45 N Toll Sensitivity

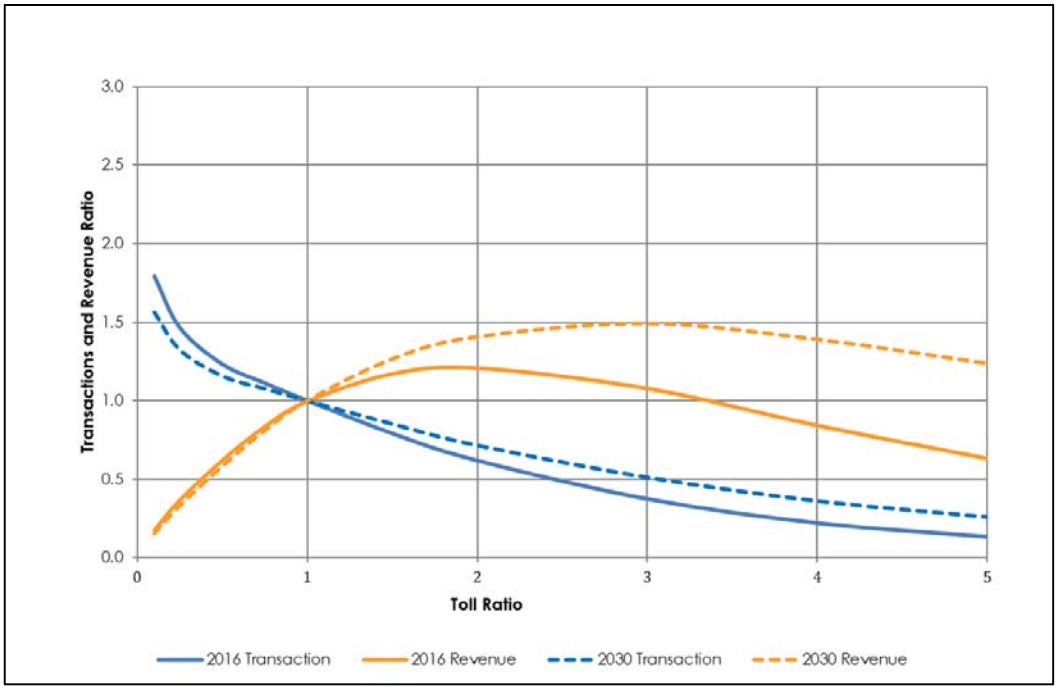


Figure 7.13 Loop 1 Toll Sensitivity

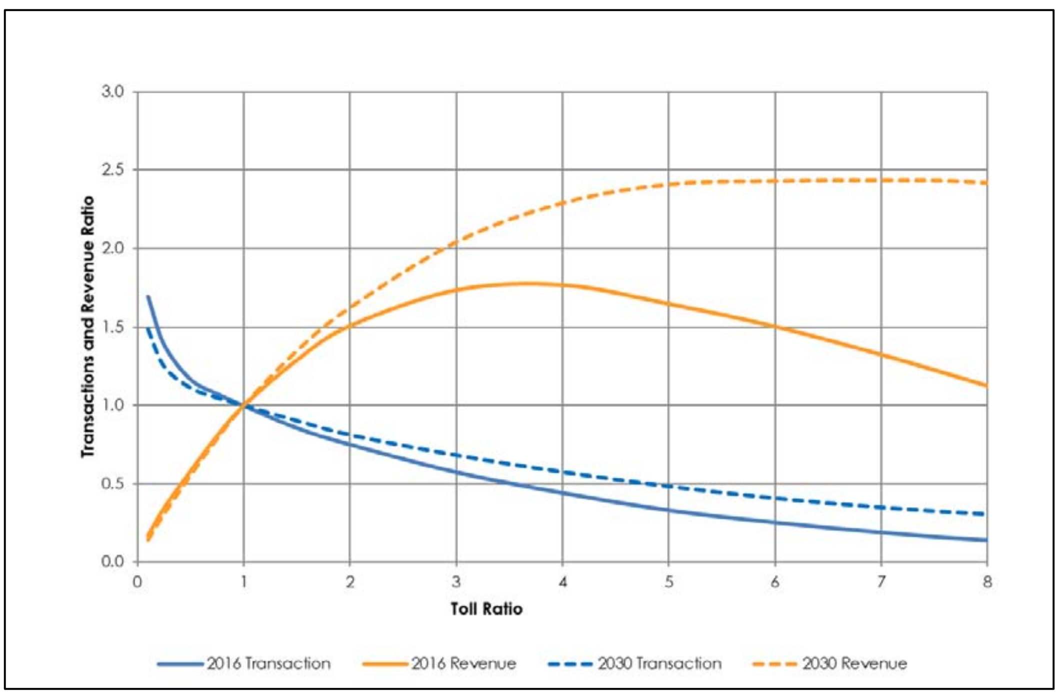
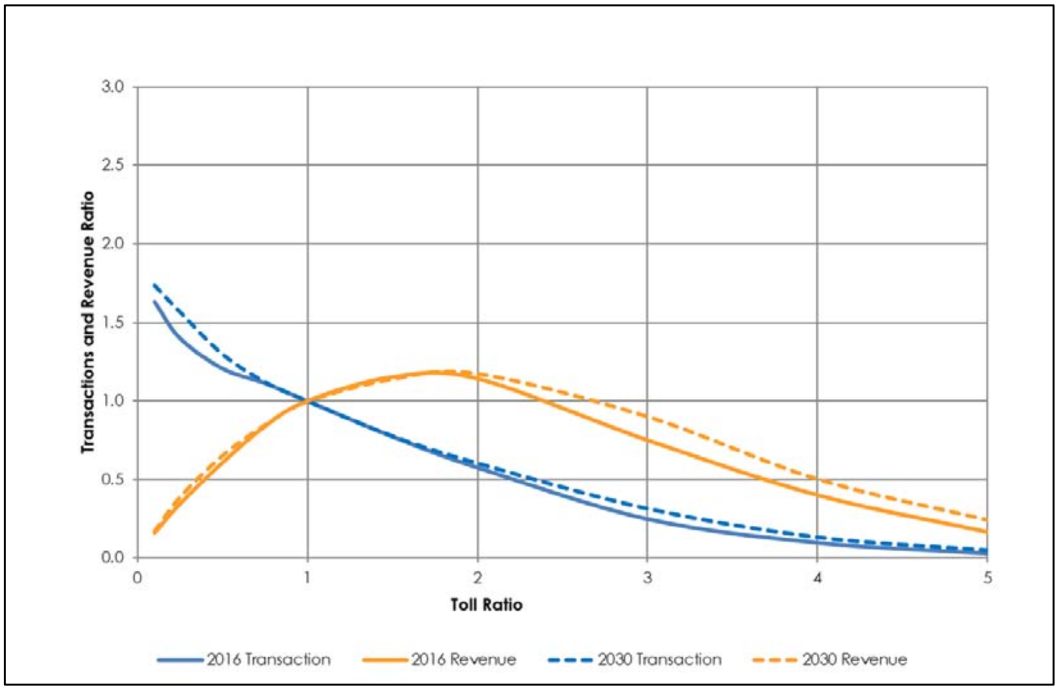


Figure 7.14 SH 45 SE Toll Sensitivity



For the future year 2030 conditions, the elasticity values decline indicating that the roadways become less elastic, due primarily to increasing congestion on the competing roadways from continued development and growth in traffic. The elasticity for SH 130 is reduced significantly to -0.35 as the adjacent arterial roadways become congested with traffic from development in what is currently a largely rural corridor. Elasticity for Loop 1, SH 45 N, and SH 45 SE will also decline to -0.19, -0.28, and -0.40 respectively. These reductions in elasticity indicate that under the future conditions, there will be more flexibility to increase tolls beyond the planned toll escalation assumed in the forecasts, particularly for SH 130. As shown in these figures, the optimum revenue points for each roadway increase most notably for Loop 1.

Due to the length of the SH 130 element and the varying degrees of competition in each of its four segments, separate elasticity calculations were performed to examine the sensitivity to toll rates in each segment for both 2016 and 2030. Figure 7.15 through Figure 7.18 display the transactions and revenue relationships for each segment. Segment 3 of SH 130 has the lowest elasticity, ranging from -0.35 in 2016 to -0.30 in 2030. This is likely due to the orientation of this segment and lack of adjacent arterials that would compete with it in 2016. In contrast, Segment 4 at the southern end of SH 130 is the most elastic with values ranging from -0.52 in 2016 to -0.44 in 2030. The higher level of elasticity is likely due to the competition provided by US 183, which intersects SH 130 at the interchange with SH 45 SE and provides a direct route into southeastern Austin. The elasticity values for Segments 1 and 2 are similar with 2016 values of -0.37 and -0.46 respectively. By 2030 these two segments have elasticity values of -0.30 and -0.37, respectively.

Figure 7.15 SH 130 Segment 1 Toll Sensitivity

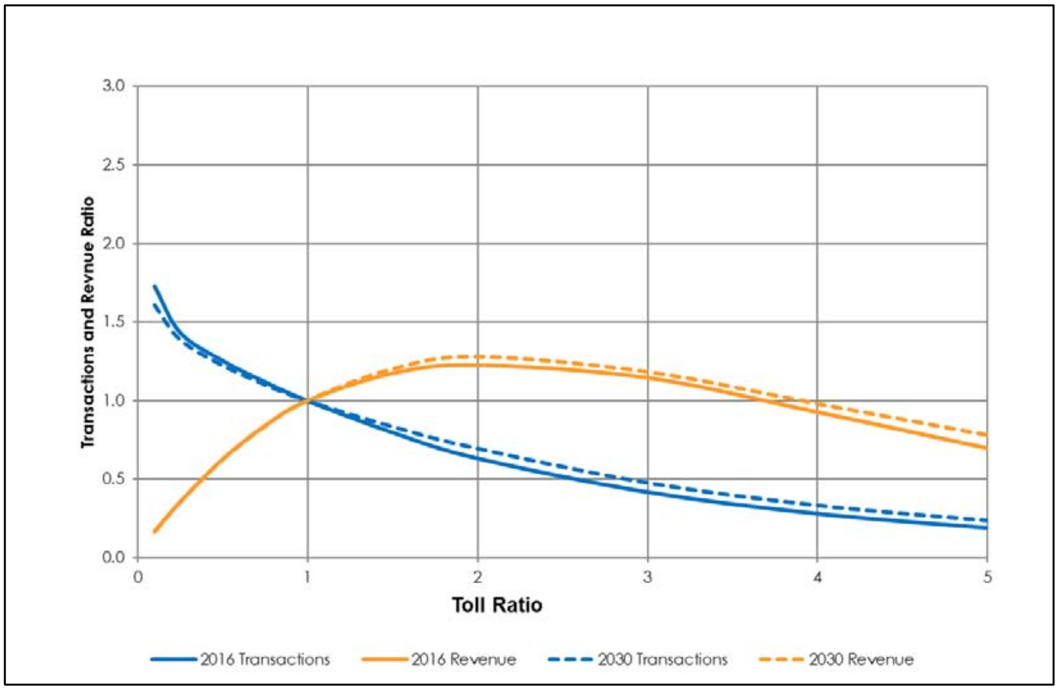


Figure 7.16 SH 130 Segment 2 Toll Sensitivity

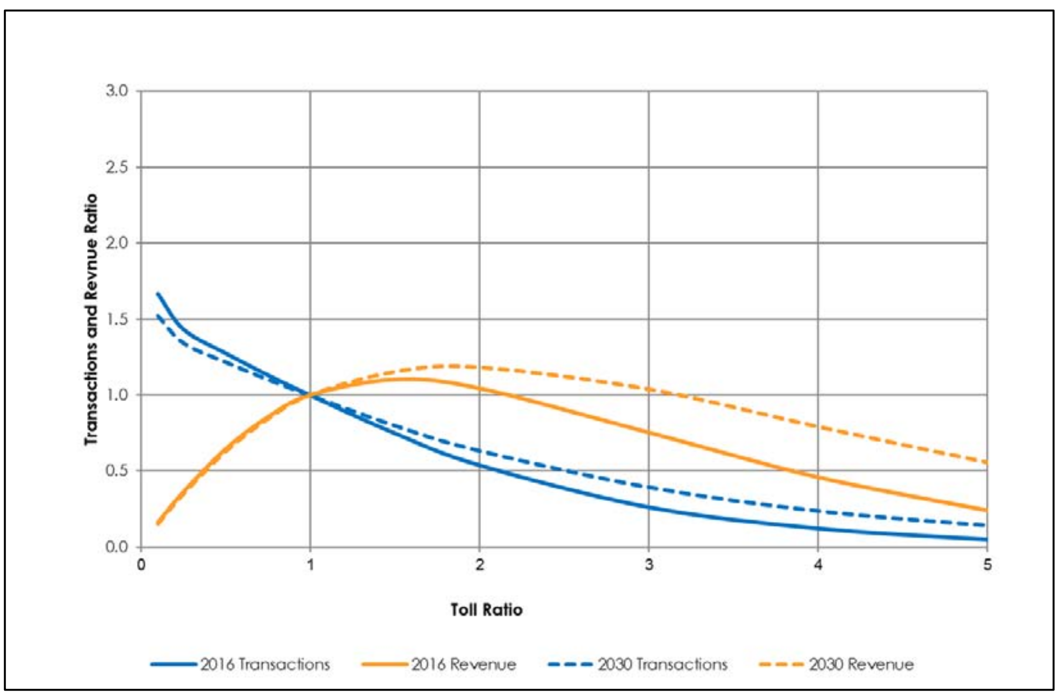


Figure 7.17 SH 130 Segment 3 Toll Sensitivity

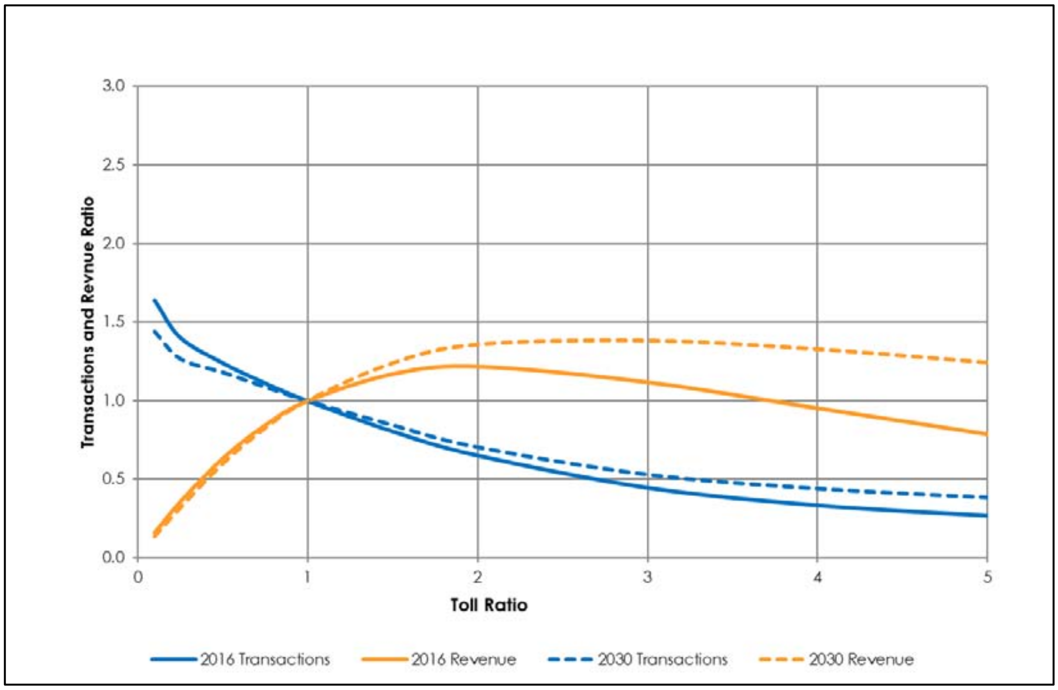
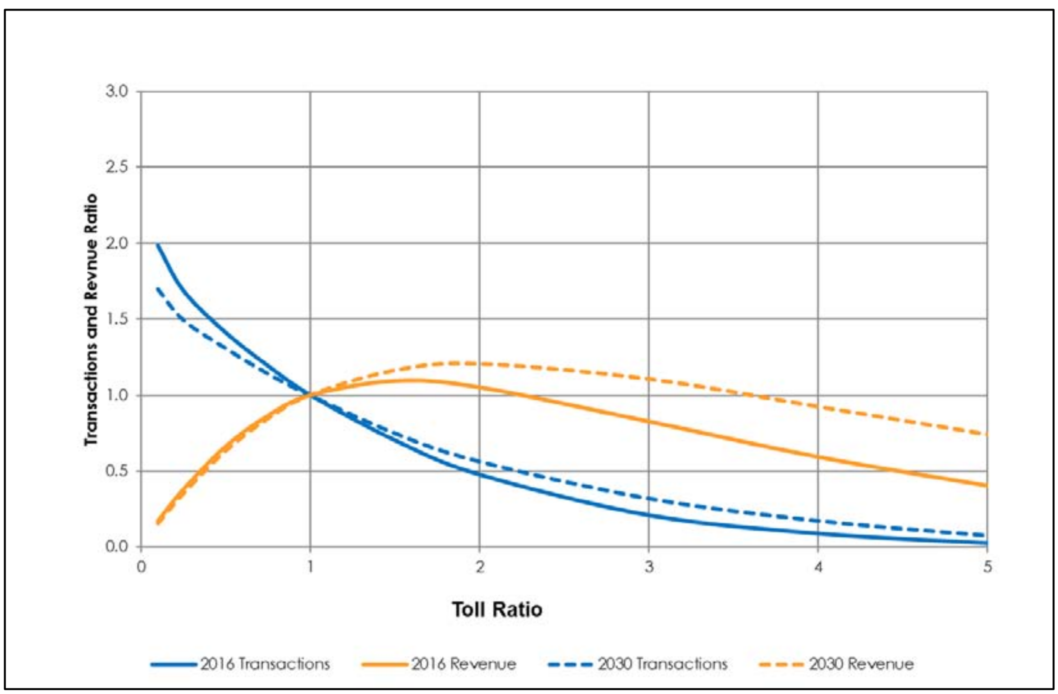


Figure 7.18 SH 130 Segment 4 Toll Sensitivity



8.0 TRAFFIC & REVENUE FORECASTS

Stantec developed traffic and toll revenue forecasts for each of the CTTS elements based on the travel demand model which incorporated the future year network assumptions discussed in Chapter 2 and the revised socioeconomic forecasts discussed in Chapter 6. The travel demand modeling process, including the application of the CAMPO and AAMPO models and the toll diversion model, were applied to selected horizon years (2018 to 2025, 2030, and 2040) to create annual traffic estimates from 2018 to 2042. Model years other than 2020, 2030, and 2040 were used to estimate the impact of key toll facility network improvements such as MoPac N Express Lanes (2017), SH 71 E (2017), 183S toll road (2019 to 2020), 290E Phase III (2021), SH 130 widening (2021), 183N Express Lanes (2024), and MoPac S Express Lanes (2024). Intermediate year estimates were developed via interpolation techniques and the years beyond 2040 were estimated via extrapolation.

Stantec reviewed the model-based forecasts, summarized the estimated traffic for each of the corridor screenlines, and reviewed the detailed schematic diagrams for each horizon year. In order to prepare the final transaction and revenue streams by vehicle type and payment type, the model-based forecasts were reviewed and adjusted as necessary to account for any unacceptable model variation. Transaction and revenue streams were then prepared for each CTTS roadway which include the key metrics related to payment type and vehicle type, along with both average weekday and annual estimates for total transactions and paying transactions using collection statistics provided by TxDOT. Note that the revenue estimates include only the tolls and PBM surcharge for the PBM transactions. Any from revenue from service center fees is not included in the revenue forecasts.

The remaining sections of this chapter provide a separate summary of the model forecasts and transaction and revenue summary for each CTTS element. A combined forecast summing all roadways is provided along with a comparison to the 2014 Study. The estimated monthly transactions and revenue for FY 2018 are also provided for use in the CTTS quarterly and annual reports.

The final sections of this chapter discuss the general forecast assumptions and the disclaimers associated with these forecasts.

8.1 SH 45 N AND LOOP 1

SH 45 N and Loop 1 are integrated toll roads since these roads intersect each other and many vehicles use both roads for the same trip. As such, the model-produced traffic on these roadways was reviewed and analyzed together, rather than as separate elements, in order to develop the transaction and revenue forecasts for SH 45 N and Loop 1.

The toll diversion model produces traffic estimates for several model years including: 2018 to 2025, 2030, and 2040. The initial model forecasts for SH 45 N and Loop 1 have been adjusted by post-processing to account for variations in the base year model calibration estimates and other minor variations in future trends. Specifically, adjustments were made to appropriately reflect the impacts of the recently constructed MoPac N Express Lanes. Gross revenue estimates were then prepared by multiplying the traffic, in terms of transactions, at the toll locations by the effective toll structure by vehicle type and payment type for each year. Adjustments were also included to reflect the effective collection rates for both ETC and PBM transactions. Annual estimates of transactions and revenue for both SH 45 N and Loop 1 were generated using an annualization factor of 320.

8.1.1 SH 45 N and Loop 1 Schematic Traffic Diagrams

The schematic diagrams shown in Figure 8.1 through Figure 8.4 below show average weekday traffic along the individual segments of SH 45 N and Loop 1 for the model (calendar) years 2016, 2020, 2030, and 2040. These diagrams represent the unadjusted model outputs and are intended to provide the reader a sense of the scale of the traffic volumes across the entire facility as well as the entry/exit points. An approximation of the estimated growth for various segments of the roadway can be determined by reviewing these diagrams across the individual horizon years.

Figure 8.1 SH 45 N and Loop 1 Average Weekday Traffic – 2016 Model Calibration Year (Unadjusted Model Output)

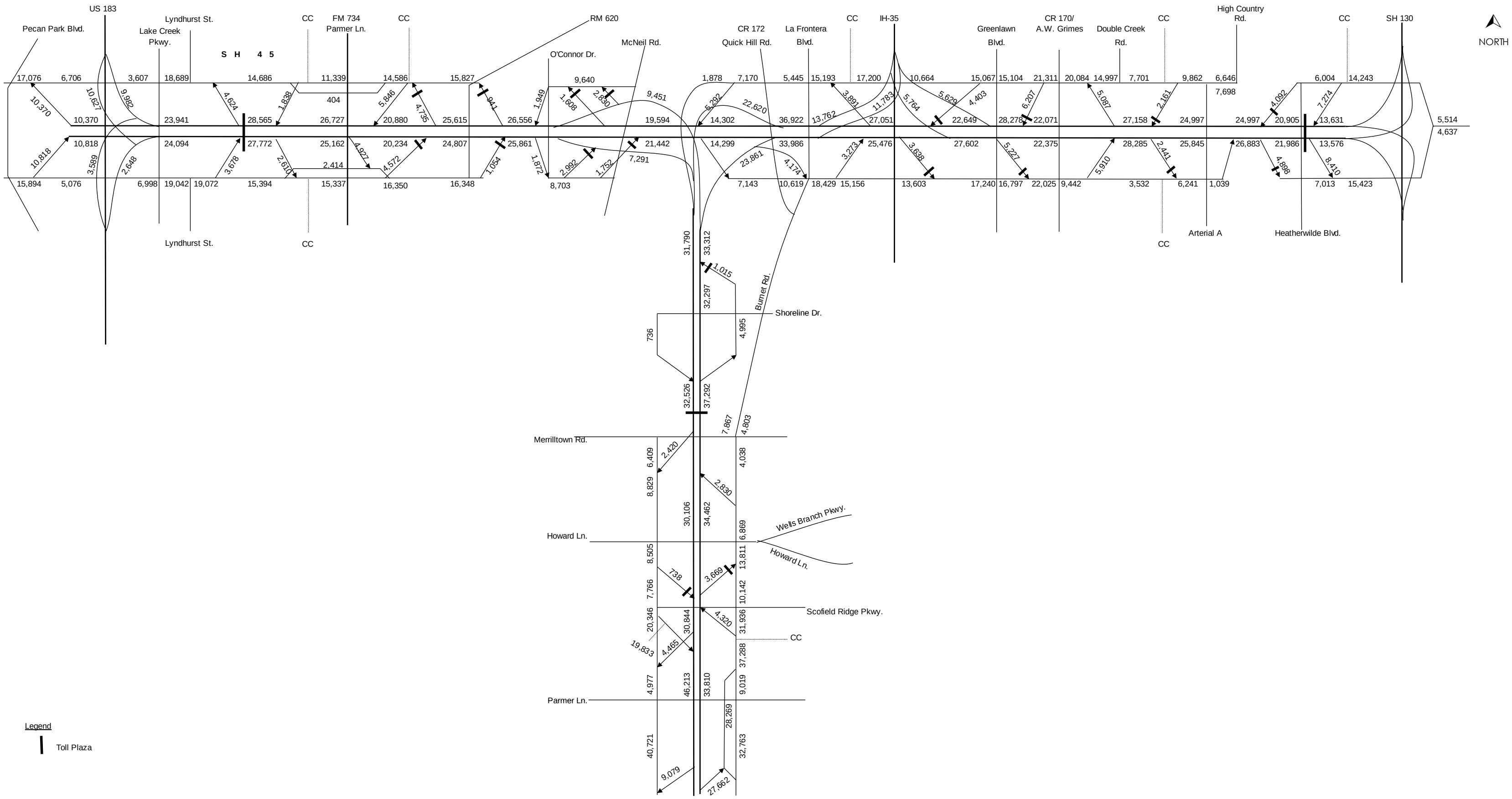


Figure 8.2 SH 45 N and Loop 1 Average Weekday Traffic – 2020 Model Year (Unadjusted Model Output)

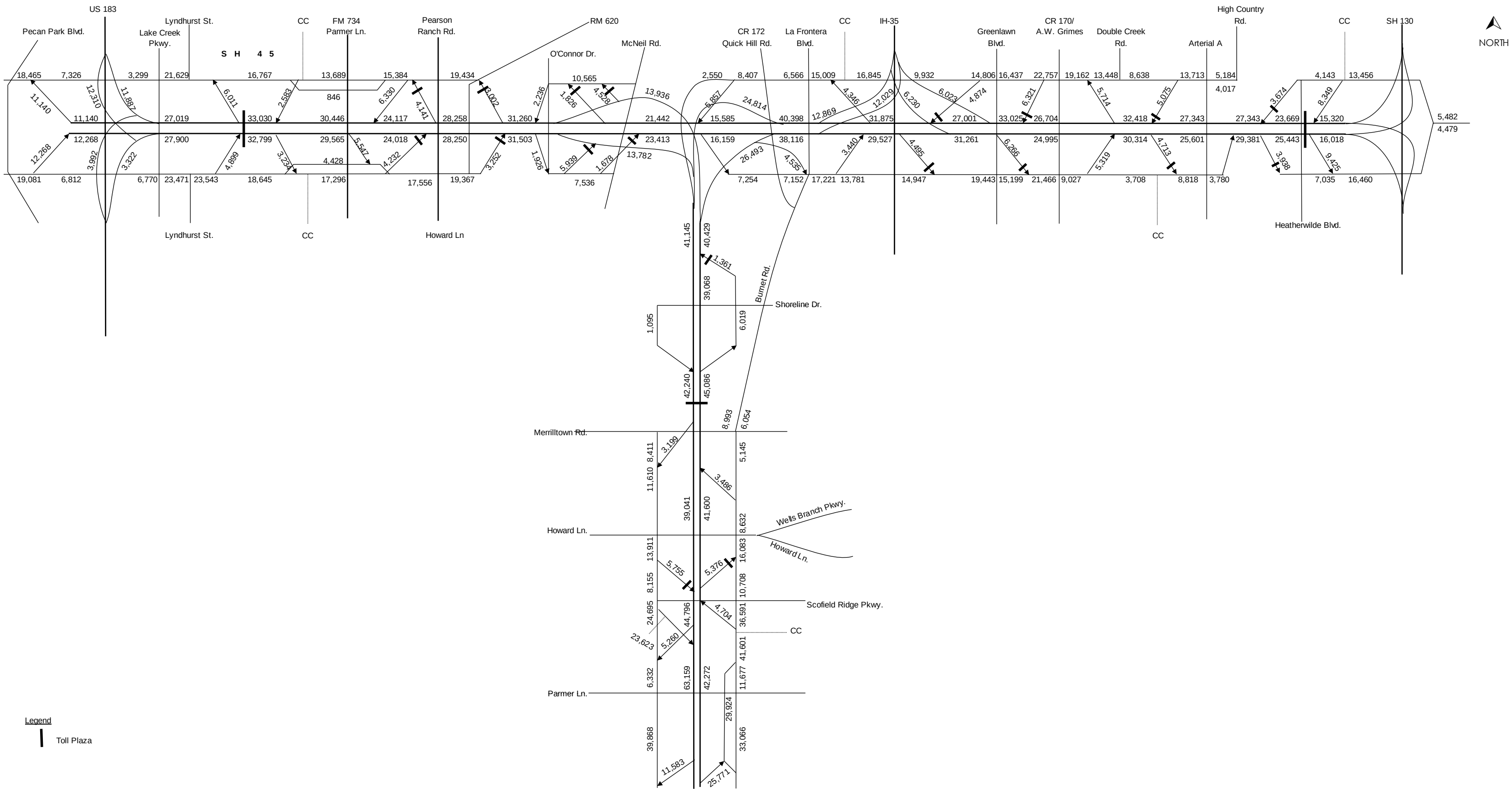
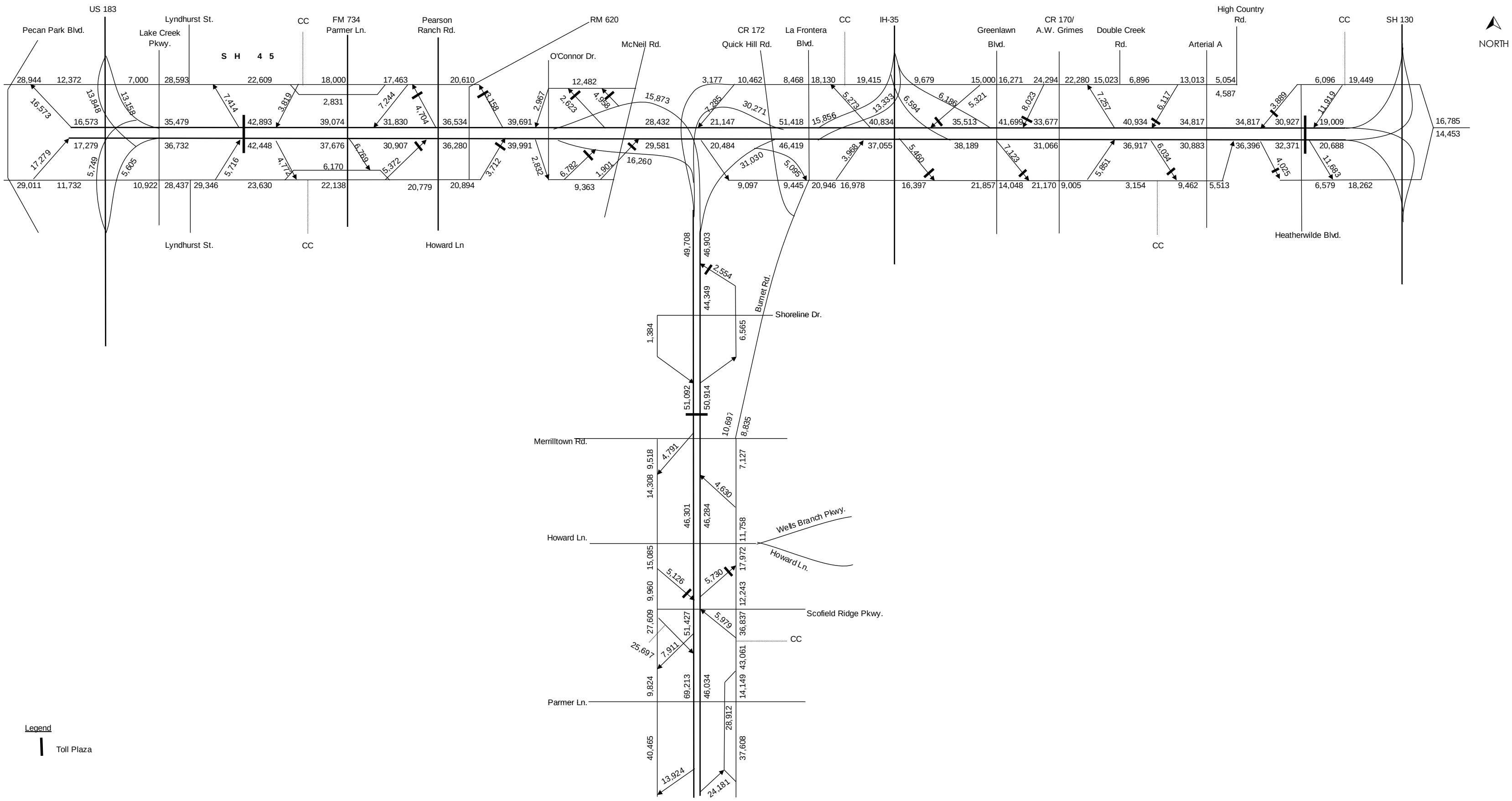
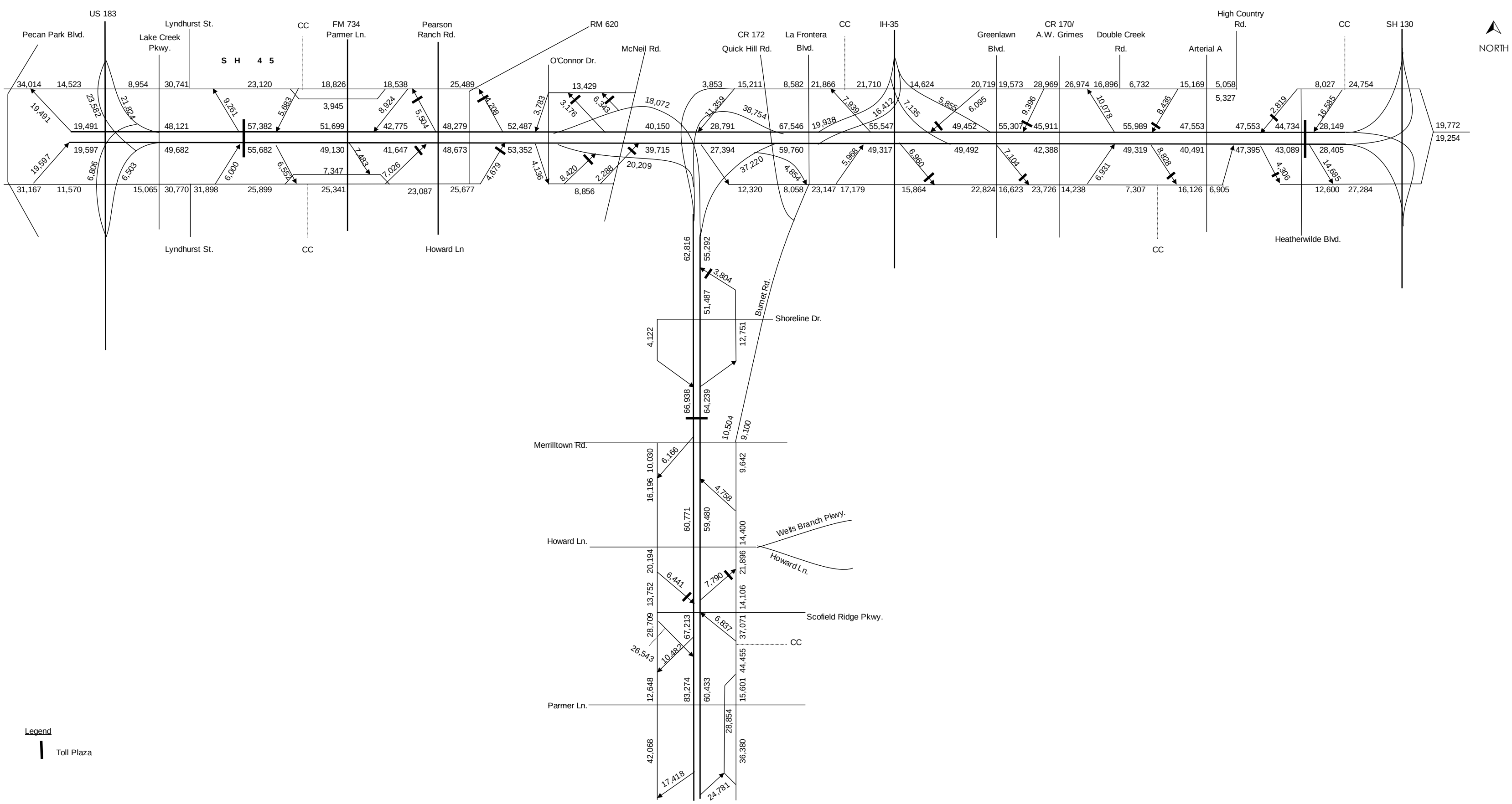


Figure 8.3 SH 45 N and Loop 1 Average Weekday Traffic – 2030 Model Year (Unadjusted Model Output)



Stantec

Figure 8.4 SH 45 N and Loop 1 Average Weekday Traffic – 2040 Model Year (Unadjusted Model Output)



8.1.2 SH 45 N and Loop 1 Screenline Analysis

As discussed previously in Chapter 7, a series of screenlines were developed within each of the toll road corridors to intersect each of the mainline toll plazas and parallel locations on the adjacent non-tolled roads. Four screenlines were created for SH 130, two for SH 45 N, one for Loop 1, and one for SH 45 SE. These eight screenlines were used during the model validation process, but also provide insight to how each CTTS element's share of screenline traffic changes throughout the forecast period. The locations of these screenlines are shown in Figure 8.5.

Unadjusted model traffic is shown along these screenlines for 2016, 2018, 2020, 2030, and 2040. As shown in Table 8.1, Screenline 45N-A crosses SH 45 N at its western toll plaza and has a total screenline volume of approximately 239,000 in 2016 and grows to approximately 459,000 in 2040, or about 2.8 percent annually. SH 45 N maintains a fairly constant share of this screenline with 23.6 percent in 2016 and 24.6 percent in 2040. When New Hope Drive opens by 2020, it draws nearly 7 percent of the total screenline traffic off the other roadways, including about 3 percent from SH 45 N. FM 1431, a primary non-toll road competitor to SH 45 N, sees an increase in screenline share of about 2 percent in 2020 due to a roadway expansion. A new segment of Pearson Ranch Road, a feeder to Avery Ranch Boulevard, opens in 2020 causing the 2.5 percent increase in screenline share to Avery Ranch Boulevard. Additional capacity improvements in 2030 to Parmer Lane and RM 620, feeders to SH 45 N, impact the screenline distribution in that model year. Although Lakeline Boulevard is widened by 2040, which lowers the screenline share on several arterials in this screenline, improvements to SH 45 N feeders such as Howard Lane and McNeil Road increase the traffic share on SH 45 N in 2040.

As shown in Table 8.2, Screenline 45N-B crosses SH 45 N at its eastern toll plaza and carries much less traffic than the western end. In 2016, the total screenline traffic was approximately 187,000 and grows to approximately 309,000 in 2040, or about 2.1 percent compounded annually. SH 45 N's share of this screenline gradually increases throughout the forecast from nearly 23 percent in 2016 to over 28 percent in 2040 due to the opening of new Kenney Fort Boulevard segments in 2020 and 2030 and widening of Red Bud Lane in 2040, which both feed SH 45 N. Capacity improvements on Gattis School Road completed by 2040 draw an additional 2 percent of screenline traffic to the competing roadway over the forecast period.

Figure 8.5 CTTS Facility Screenline Locations

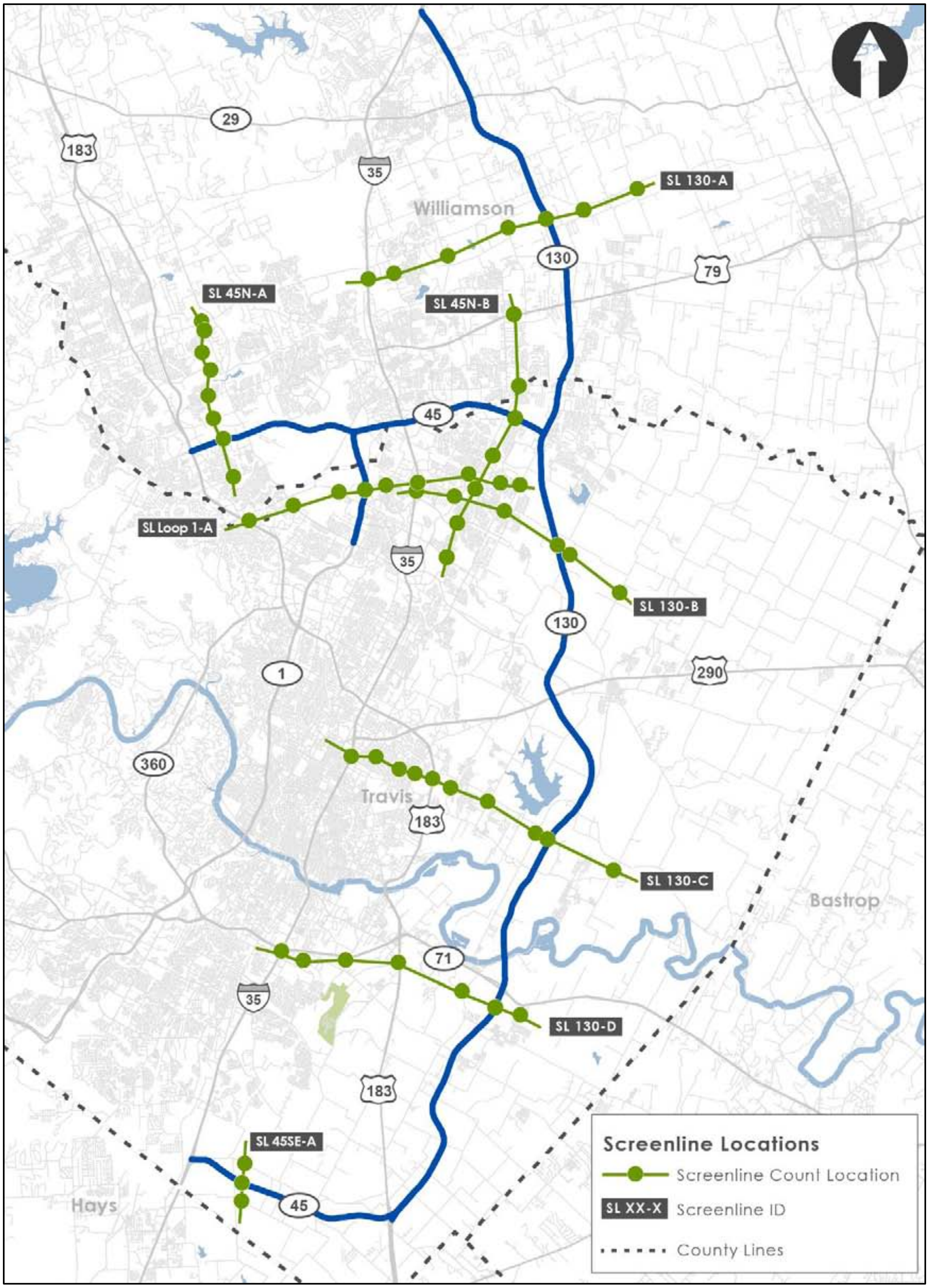


Table 8.1 Screenline 45N-A Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
New Hope Drive	NA		NA		19,636	6.7%	25,988	6.8%	24,493	5.3%
FM 1431	37,593	15.7%	32,808	13.2%	44,000	15.0%	49,410	12.9%	52,337	11.4%
Colonial Parkway	6,616	2.8%	6,077	2.5%	5,929	2.0%	10,828	2.8%	14,807	3.2%
Brushy Creek Rd.	22,252	9.3%	23,207	9.4%	21,386	7.3%	32,574	8.5%	34,271	7.5%
Avery Ranch Blvd.	23,036	9.6%	25,624	10.3%	37,646	12.8%	50,815	13.3%	37,662	8.2%
Lakeline Blvd.	12,465	5.2%	14,499	5.9%	8,067	2.8%	14,966	3.9%	35,180	7.7%
SH 45 NW ML	**56,337**	**23.6%**	**62,612**	**25.3%**	**65,828**	**22.4%**	**85,341**	**22.3%**	**113,064**	**24.6%**
SH 45 NW Frontage	30,080	12.6%	31,280	12.6%	35,411	12.0%	46,239	12.1%	49,019	10.7%
Anderson Mill Rd.	20,114	8.4%	19,822	8.0%	22,411	7.6%	26,161	6.8%	33,854	7.4%
McNeil Dr.	30,349	12.7%	31,792	12.8%	33,771	11.5%	39,985	10.5%	64,446	14.0%
TOTAL	**238,840**	**100.0%**	**247,721**	**100.0%**	**294,085**	**100.0%**	**382,306**	**100.0%**	**459,133**	**100.0%**

Table 8.2 Screenline 45N-B Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
US 79	32,660	17.4%	34,192	17.3%	30,427	15.3%	30,528	12.5%	38,325	12.4%
CR 168/Gattis School Rd.	17,547	9.4%	20,398	10.3%	21,018	10.6%	23,680	9.7%	34,540	11.2%
SH 45 NE ML	**42,891**	**22.9%**	**45,842**	**23.1%**	**49,112**	**24.7%**	**63,298**	**25.9%**	**87,823**	**28.4%**
SH 45 NE Frontage	13,376	7.1%	11,539	5.8%	11,888	6.0%	14,406	5.9%	22,723	7.4%
Pflugerville Loop Rd.	20,242	10.8%	21,672	10.9%	22,305	11.2%	33,016	13.5%	29,783	9.6%
FM 1825/Pecan St.	17,800	9.5%	18,692	9.4%	19,370	9.7%	22,806	9.3%	22,019	7.1%
Wells Branch Pkwy	20,081	10.7%	21,382	10.8%	22,627	11.4%	27,773	11.4%	39,923	12.9%
Howard Lane	22,781	12.2%	24,434	12.3%	22,429	11.3%	28,848	11.8%	33,986	11.0%
TOTAL	**187,379**	**100.0%**	**198,151**	**100.0%**	**199,175**	**100.0%**	**244,356**	**100.0%**	**309,122**	**100.0%**

As shown in Table 8.3, Screenline Loop 1-A crosses Loop 1 at the mainline plaza south of McNeil Drive as well as other major roadways including US 183, IH-35, and SH 130 with total traffic of approximately 655,000 in 2016 and growing at 1.7 percent annually to approximately 976,000 in 2040. IH-35 and US 183 have the highest share of traffic of about 30 percent each in 2016, then decreasing slightly in 2020 with the opening of the MoPac N Express Lanes in 2017, a feeder to Loop 1. The 183N Express Lanes open by 2030 and may attract over 6 percent of the screenline traffic, drawing traffic from all roads except SH 130 which is expected to be widened by 2021. A widening project along McNeil Drive and new segment of Anderson Mill Road occur by 2040 causing Loop 1's screenline share to increase to 13.0 percent.

Table 8.3 Screenline Loop 1-A Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
US 183	195,678	29.9%	200,017	29.2%	206,142	28.8%	222,949	26.1%	243,852	25.0%
183N Express Lanes	NA		NA		NA		56,246	6.6%	69,508	7.1%
Parmer Lane	44,836	6.8%	46,245	6.8%	46,531	6.5%	50,901	6.0%	46,514	4.8%
Howard Lane	22,336	3.4%	22,305	3.3%	24,515	3.4%	26,748	3.1%	31,782	3.3%
FM 1325/Loop 1 Frontage	10,447	1.6%	12,187	1.8%	13,556	1.9%	16,645	2.0%	19,672	2.0%
Loop 1 Mainline Plaza	**69,817**	**10.7%**	**77,579**	**11.3%**	**87,327**	**12.2%**	**102,006**	**12.0%**	**131,176**	**13.4%**
Bratton Lane	10,201	1.6%	10,737	1.6%	11,543	1.6%	12,595	1.5%	13,060	1.3%
IH-35	192,710	29.4%	195,437	28.6%	200,658	28.1%	214,055	25.1%	250,529	25.7%
Heatherwilde Blvd	15,866	2.4%	21,774	3.2%	23,661	3.3%	27,844	3.3%	32,785	3.4%
N Railroad Rd	6,272	1.0%	8,687	1.3%	9,146	1.3%	11,196	1.3%	4,782	0.5%
FM 685	34,944	5.3%	34,146	5.0%	31,956	4.5%	34,240	4.0%	31,428	3.2%
SH 130	51,533	7.9%	54,743	8.0%	59,578	8.3%	77,431	9.1%	100,524	10.3%
TOTAL	**654,640**	**100.0%**	**683,857**	**100.0%**	**714,612**	**100.0%**	**852,856**	**100.0%**	**975,612**	**100.0%**

8.1.3 SH 45 N and Loop 1 Traffic and Revenue Assumptions

Table 8.4 and Table 8.5 provide concise summaries of the underlying assumptions in the transaction and revenue forecasts for SH 45 N and Loop 1, respectively. All truck-related values in the table relate to trucks defined as 3+ axle vehicles, consistent with the transaction reports generated for each toll road by TxDOT. On both roadways, estimated truck transactions are constant throughout the forecast period with 3.0 percent on SH 45 N and 1.7 percent on Loop 1. Auto ETC payment shares are assumed to remain relatively constant at about 72 percent. Truck ETC percentages are assumed to be slightly lower at 67 to 71 percent. The average truck toll multiplier, which reflects the observed distribution of trucks by axle group, varies slightly between payment types but ranges between 2.86 and 2.98 on SH 45 N and between 2.79 and 3.00 on Loop 1. The PBM toll surcharge is assumed to remain at 33 percent of the ETC rate. The collection rates for PBM and ETC transactions reflect the latest available collection data provided by TxDOT and are held constant over the forecast period.

A full-length trip using ETC on SH 45 N costs $2.18 in 2018, and by 2040, the toll for the same trip increases to $3.92. The per mile rate for the 12.8-mile full-length trip is $0.17 in 2018, increasing to $0.31 in 2040. On Loop 1, a full-length trip costs $1.09 in 2018 for ETC transactions but will increase to $1.96 in 2040. The per mile rate on Loop 1 for a full-length trip of four miles is $0.27 in 2018 and will increase to $0.49 in 2040.

Table 8.4 SH 45 N Tolling and Traffic Characteristic Assumptions by Model Year

Model Year	2018	2020	2030	2040
Vehicle Type Distribution				
Autos	97.0%	97.0%	97.0%	97.0%
Trucks	3.0%	3.0%	3.0%	3.0%
Payment Type Distribution - Passenger Cars				
PBM	27.7%	27.7%	27.5%	27.5%
ETC	72.3%	72.3%	72.5%	72.5%
Payment Type Distribution - Trucks				
PBM	27.7%	29.0%	28.9%	28.9%
ETC	72.3%	71.0%	71.1%	71.1%
Toll Ratios				
Truck/Auto Ratio - ETC	2.86	2.86	2.86	2.86
Truck/Auto Ratio - PBM	2.98	2.98	2.98	2.98
PBM/ETC Toll Rate	1.33	1.33	1.33	1.33
Collection Rates				
PBM	51.1%	51.1%	51.1%	51.1%
ETC	99.3%	99.3%	99.3%	99.3%
Full Length Trip				
Distance	12.8	12.8	12.8	12.8
Rate per Mile	$0.17	$0.18	$0.23	$0.31
Toll Cost (ETC)	$2.18	$2.28	$2.94	$3.92
Annualization Factor	320	320	320	320

Table 8.5 Loop 1 Tolling and Traffic Characteristic Assumptions by Model Year

Model Year	2018	2020	2030	2040
Vehicle Type Distribution				
Autos	98.3%	98.3%	98.3%	98.3%
Trucks	1.7%	1.7%	1.7%	1.7%
Payment Type Distribution - Passenger Cars				
PBM	27.8%	28.0%	27.9%	27.9%
ETC	72.2%	72.0%	72.1%	72.1%
Payment Type Distribution - Trucks				
PBM	31.0%	32.4%	31.4%	31.4%
ETC	69.0%	67.6%	68.6%	68.6%
Toll Ratios				
Truck/Auto Ratio - ETC	2.79	2.79	2.79	2.79
Truck/Auto Ratio - PBM	3.00	3.00	3.00	3.00
PBM/ETC Toll Rate	1.33	1.33	1.33	1.33
Collection Rates				
PBM	51.1%	51.1%	51.1%	51.1%
ETC	99.3%	99.3%	99.3%	99.3%
Full Length Trip				
Distance	4.0	4.0	4.0	4.0
Rate per Mile	$0.27	$0.29	$0.37	$0.49
Toll Cost (ETC)	$1.09	$1.14	$1.47	$1.96
Annualization Factor	320	320	320	320

8.1.4 SH 45 N and Loop 1 Transactions and Revenue by Pay Point

The SH 45 N and Loop 1 transaction and revenue statistics by pay point and horizon year are listed in Table 8.6. Both total and paying transactions are provided, where paying transactions reflect the assumptions for collection efficiency for each payment type discussed above. The average toll rates represent a blend of the individual rates by payment type and vehicle type. These blended values include a 33 percent surcharge over the ETC rates for PBM patrons. The values shown are calendar year values, rather than the blended estimates created for each fiscal year shown in the next section.

Total transactions for an average weekday on SH 45 N range from 149,000 in 2016 to 259,000 in 2040, while total paying transactions range from 128,000 in 2016 to 223,000 in 2040, representing an average annual growth rate of 2.3 percent. During the same time period, average weekday revenues range from $141,000 to $459,000, for a growth rate of 5.0 percent, representing transaction growth as well as annual toll rate escalation.

Total transactions for an average weekday on Loop 1 range from 74,000 in 2016 to 126,000 in 2040, while total paying transactions range from 64,000 in 2016 to 108,000 in 2040, representing an average annual growth rate of 2.2 percent. During the same timeframe, average weekday revenue ranges from $71,000 to $223,000 for a growth rate of 4.9 percent.

Table 8.6 SH 45 N and Loop 1 Average Weekday Transactions and Toll Revenue (Adjusted for Calibration)

Toll Location	2016				2018				2020				2030				2040			
	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue
	Total	Paying			Total	Paying			Total	Paying			Total	Paying			Total	Paying		
SH 45 N																				
Lake Creek ML Plaza	**51,312**	**44,048**	**$ 1.18**	**$ 51,851**	**53,908**	**46,337**	**$ 1.21**	**$ 56,261**	**56,677**	**48,714**	**$ 1.27**	**$ 61,850**	**73,200**	**62,967**	**$ 1.64**	**$103,054**	**86,931**	**74,779**	**$ 2.18**	**$163,182**
Parmer Ln (FM 734) Ramps	9,488	8,145	$ 1.01	$ 8,231	9,258	7,958	$ 1.05	$ 8,332	8,550	7,348	$ 1.09	$ 8,021	10,170	8,749	$ 1.40	$ 12,273	12,648	10,880	$ 1.88	$ 20,471
RM 620 (Howard Ln) Ramps	2,494	2,141	$ 1.01	$ 2,164	3,807	3,272	$ 1.05	$ 3,426	7,777	6,684	$ 1.09	$ 7,296	8,541	7,347	$ 1.40	$ 10,307	14,847	12,772	$ 1.88	$ 24,031
O'Connor Dr (SH 45 N) Ramps	3,640	3,125	$ 1.03	$ 3,227	7,466	6,417	$ 1.07	$ 6,863	7,548	6,487	$ 1.11	$ 7,225	9,017	7,756	$ 1.44	$ 11,140	10,095	8,684	$ 1.91	$ 16,630
O'Connor Dr (Loop 1) Ramps	6,459	5,545	$ 1.03	$ 5,727	3,781	3,250	$ 1.07	$ 3,475	5,155	4,431	$ 1.11	$ 4,935	5,782	4,974	$ 1.44	$ 7,143	8,111	6,977	$ 1.91	$ 13,361
Greenlawn Ramps	8,404	7,215	$ 0.78	$ 5,608	8,574	7,370	$ 0.80	$ 5,911	9,263	7,962	$ 0.84	$ 6,650	10,659	9,169	$ 1.08	$ 9,902	11,526	9,915	$ 1.44	$ 14,240
AW Grimes Ramps	10,988	9,433	$ 0.78	$ 7,333	11,468	9,857	$ 0.80	$ 7,906	10,888	9,359	$ 0.84	$ 7,817	13,101	11,270	$ 1.08	$ 12,171	14,273	12,278	$ 1.44	$ 17,634
Schultz Ln (Arterial A) Ramps	4,795	4,116	$ 1.18	$ 4,845	5,436	4,673	$ 1.21	$ 5,673	8,607	7,397	$ 1.27	$ 9,392	10,683	9,190	$ 1.64	$ 15,041	13,556	11,661	$ 2.18	$ 25,447
Wilke Ln (Heatherwilde) Ramps	8,634	7,412	$ 1.18	$ 8,724	9,190	7,899	$ 1.21	$ 9,591	9,434	8,108	$ 1.27	$ 10,295	9,809	8,438	$ 1.64	$ 13,810	8,830	7,596	$ 2.18	$ 16,575
Heatherwilde ML Plaza	**42,893**	**36,821**	**$ 1.18**	**$ 43,344**	**45,991**	**39,532**	**$ 1.21**	**$ 47,999**	**49,271**	**42,349**	**$ 1.27**	**$ 53,769**	**62,805**	**54,026**	**$ 1.64**	**$ 88,421**	**78,682**	**67,683**	**$ 2.18**	**$147,697**
SH 45 N Subtotal	**149,109**	**128,001**		**$141,053**	**158,879**	**136,565**		**$155,438**	**173,170**	**148,840**		**$177,250**	**213,768**	**183,886**		**$283,263**	**259,499**	**223,225**		**$459,268**
Annual Revenue in Millions				**$ 45.1**				**$ 49.7**				**$ 56.7**				**$ 90.6**				**$ 147.0**
Loop 1																				
Shoreline Dr Ramps	964	833	$ 0.76	$ 633	1,030	885	$ 0.78	$ 693	1,169	1,003	$ 0.82	$ 818	2,195	1,884	$ 1.05	$ 1,987	3,214	2,758	$ 1.40	$ 3,870
Merrilltown ML Plaza	**67,422**	**58,272**	**$ 1.15**	**$ 66,992**	**75,550**	**64,893**	**$ 1.19**	**$ 76,903**	**81,895**	**70,232**	**$ 1.24**	**$ 87,093**	**95,661**	**82,093**	**$ 1.60**	**$131,245**	**114,078**	**97,897**	**$ 2.13**	**$208,683**
Howard Ln/Wells Branch Ramps	5,594	4,835	$ 0.76	$ 3,671	6,377	5,477	$ 0.78	$ 4,288	7,101	6,090	$ 0.82	$ 4,968	6,926	5,943	$ 1.05	$ 6,270	8,570	7,355	$ 1.40	$ 10,319
Loop 1 Subtotal	**73,980**	**63,940**		**$ 71,296**	**82,957**	**71,255**		**$ 81,883**	**90,166**	**77,324**		**$ 92,880**	**104,782**	**89,920**		**$139,502**	**125,863**	**108,010**		**$222,871**
Annual Revenue in Millions				**$ 22.8**				**$ 26.2**				**$ 29.7**				**$ 44.6**				**$ 71.3**
TOTAL (SH 45 N and Loop 1)																				
Total	**223,089**	**191,940**		**$212,349**	**241,836**	**207,820**		**$237,321**	**263,337**	**226,164**		**$270,130**	**318,550**	**273,806**		**$422,765**	**385,362**	**331,235**		**$682,139**
Annual Revenue in Millions				**$ 68.0**				**$ 75.9**				**$ 86.4**				**$ 135.3**				**$ 218.3**

Notes: (1) The average toll is calculated by Revenue divided by Paying Transactions.

8.1.5 SH 45 N and Loop 1 Traffic and Revenue Forecasts

Table 8.7 and Table 8.8 provide the forecasted transactions and revenue for the entire 35-year forecast period on a fiscal year basis for SH 45 N and Loop 1, respectively. Average Weekday Traffic (AWT) statistics are provided on the left side of the table, and annual values are provided on the right side along with statistics related to truck traffic. The values for FY 2008 to FY 2017 are the observed transactions and reported revenue for the first ten years of operation. While TxDOT reports transactions in the fiscal year in which they occur, annual revenue is based on the fiscal year in which it is collected. The revenue collected in each fiscal year varies due to the delay in receipt of PBM tolls, the collection efficiency of the PBM transactions, as well as other adjustments implemented by TxDOT. In contrast, the model forecasts assume that transactions and revenue occur simultaneously and therefore do not reflect the lagging pattern of PBM toll revenue receipts.

As shown in Table 8.7, SH 45 N shows an initially steady transaction growth between 2.0 and 4.6 percent until 2024, consistent with the more recently slowing growth in FY 2017 of 5.6 percent. The lower growth in 2024 is likely due to the opening of 183N Express Lanes. For the rest of the forecast period, SH 45 N transaction growth is expected to gradually taper off from 2.3 percent in 2026 to 1.5 percent in 2042. SH 45 N shows similar patterns in revenue growth after FY 2026, ranging from 4.5 to 5.1 percent. The assumed share of paying transactions is relatively constant at approximately 86 percent, as is the combined ETC share (autos and trucks) at approximately 72 percent. Trucks are approximately 3 percent of transactions in FY 2018 and remain constant over the forecast period. Truck revenue shares are also constant at about 8 percent of the total revenue.

As shown in Table 8.8, the recent opening of the MoPac N Express Lanes is expected to cause higher transaction and revenue growth on Loop 1 in FY 2018. In FY 2024, Loop 1 shows a decrease in transactions of 1.3 percent and lower revenue growth of 1.0 percent due to the opening of the 183N Express Lanes which run parallel to Loop 1. For the rest of the forecast period, the road shows steady transaction growth between 1.5 and 2.5 percent. Loop 1 also shows steady revenue growth throughout the forecast between 4.5 and 5.2 percent. The combined ETC share is generally constant at 72 percent. The assumed share of paying transactions is also constant at approximately 86 percent. Trucks are approximately 1.7 percent of transactions throughout the forecast period. The truck revenue share of total revenue is approximately 4.6 percent throughout the forecast.

Table 8.7 SH 45 N Transaction and Revenue Forecasts

Fiscal Year	Average Weekday Transactions (AWT)					Annual Transactions & Revenue					
	Total Transactions (1)	YOY Growth	Total Transactions ETC Share	Paying Transactions (2)	Paying Percentage (2)/(1)	Annual Total Transactions ('000)	Annual Paying Transactions ('000)	Annual Revenue (in $000s)	YOY Growth	Truck Share	
										Paying Transactions	Revenue
2008	91,057			84,058	92%	29,458	27,194	$17,987			
2009	96,071	5.5%	77.0%	88,687	92%	31,270	28,866	$19,882	10.5%		
2010	98,446	2.5%	77.8%	90,879	92%	32,167	29,694	$19,799	-0.4%		
2011	102,344	4.0%	75.5%	94,478	92%	33,543	30,965	$20,268	2.4%		
2012	109,179	6.7%	75.9%	100,302	92%	35,790	32,880	$21,945	8.3%		
2013	113,674	4.1%	77.6%	100,665	89%	37,126	32,878	$29,075	32.5%		
2014	116,802	2.8%	75.6%	101,640	87%	38,256	33,290	$34,831	19.8%		
2015	131,193	12.3%	74.2%	114,954	88%	42,686	37,402	$38,957	11.8%		
2016	145,611	11.0%	69.5%	123,185	85%	47,447	40,140	$42,731	9.7%		
2017	153,791	5.6%	70.5%	129,682	84%	49,790	41,985	$45,496	6.5%		
2018	158,634	3.1%	71.4%	134,855	85%	50,763	43,153	$47,793	5.0%	2.9%	5.7%
2019	163,040	2.8%	72.3%	140,095	86%	52,173	44,830	$51,685	8.1%	3.0%	8.2%
2020	170,487	4.6%	72.3%	146,513	86%	54,556	46,884	$55,366	7.1%	3.0%	8.2%
2021	177,229	4.0%	72.3%	152,303	86%	56,713	48,737	$59,126	6.8%	3.0%	8.2%
2022	180,829	2.0%	72.3%	155,392	86%	57,865	49,725	$61,619	4.2%	3.0%	8.2%
2023	185,281	2.5%	72.3%	159,232	86%	59,290	50,954	$64,593	4.8%	3.0%	8.2%
2024	187,479	1.2%	72.4%	161,198	86%	59,993	51,583	$66,993	3.7%	3.0%	8.2%
2025	190,783	1.8%	72.4%	164,075	86%	61,050	52,504	$69,864	4.3%	3.0%	8.2%
2026	195,200	2.3%	72.4%	167,880	86%	62,464	53,722	$73,406	5.1%	3.0%	8.2%
2027	199,485	2.2%	72.4%	171,574	86%	63,835	54,904	$77,129	5.1%	3.0%	8.2%
2028	203,770	2.1%	72.4%	175,268	86%	65,206	56,086	$81,003	5.0%	3.0%	8.2%
2029	208,055	2.1%	72.4%	178,961	86%	66,578	57,268	$85,034	5.0%	3.0%	8.2%
2030	212,340	2.1%	72.4%	182,655	86%	67,949	58,450	$89,228	4.9%	3.0%	8.2%
2031	216,817	2.1%	72.5%	186,509	86%	69,381	59,683	$93,749	5.1%	3.0%	8.2%
2032	221,390	2.1%	72.5%	190,443	86%	70,845	60,942	$98,537	5.1%	3.0%	8.2%
2033	225,963	2.1%	72.5%	194,376	86%	72,308	62,200	$103,525	5.1%	3.0%	8.2%
2034	230,536	2.0%	72.5%	198,310	86%	73,772	63,459	$108,721	5.0%	3.0%	8.2%
2035	235,110	2.0%	72.5%	202,244	86%	75,235	64,718	$114,133	5.0%	3.0%	8.2%
2036	239,683	1.9%	72.5%	206,178	86%	76,698	65,977	$119,770	4.9%	3.0%	8.2%
2037	244,256	1.9%	72.5%	210,112	86%	78,162	67,236	$125,638	4.9%	3.0%	8.2%
2038	248,829	1.9%	72.5%	214,046	86%	79,625	68,495	$131,748	4.9%	3.0%	8.2%
2039	253,402	1.8%	72.5%	217,980	86%	81,089	69,753	$138,109	4.8%	3.0%	8.2%
2040	257,975	1.8%	72.5%	221,913	86%	82,552	71,012	$144,730	4.8%	3.0%	8.2%
2041	262,094	1.6%	72.5%	225,457	86%	83,870	72,146	$151,419	4.6%	3.0%	8.2%
2042	266,026	1.5%	72.5%	228,839	86%	85,128	73,228	$158,301	4.5%	3.0%	8.2%

Notes: (1) Revenue for PBM patrons was not allocated by each toll facility until September 2009; therefore, annual revenues shown for FY 2008 - FY 2009 are estimated.
(2) ***Actual Average Weekday Transactions and Annual Revenue (FY 2008 – FY 2017)***

Table 8.8 Loop 1 Transaction and Revenue Forecasts

Fiscal Year	Average Weekday Transactions (AWT)					Annual Transactions & Revenue					
	Total Transactions (1)	YOY Growth	Total Transactions ETC Share	Paying Transactions (2)	Paying Percentage (2)/(1)	Annual Total Transactions ('000)	Annual Paying Transactions ('000)	Annual Revenue (in $000s)	YOY Growth	Truck Share	
										Paying Transactions	Revenue
2008	***54,770***			*50,560*	*92%*	***17,195***	*15,873*	*$11,463*			
2009	***55,106***	***0.6%***	***78.0%***	*50,871*	*92%*	***17,381***	*16,045*	*$11,918*	***4.0%***		
2010	***56,900***	***3.3%***	***78.0%***	*52,527*	*92%*	***18,064***	*16,676*	***$11,937***	***0.2%***		
2011	***59,132***	***3.9%***	***76.4%***	*54,587*	*92%*	***18,883***	*17,432*	***$12,317***	***3.2%***		
2012	***62,275***	***5.3%***	***76.2%***	*57,291*	*92%*	***19,890***	*18,298*	***$13,015***	***5.7%***		
2013	***61,885***	***-0.6%***	***78.4%***	*55,032*	*89%*	***19,715***	*17,532*	***$16,143***	***24.0%***		
2014	***61,894***	***0.0%***	***76.4%***	*54,116*	*87%*	***19,839***	*17,346*	***$18,560***	***15.0%***		
2015	***67,189***	***8.6%***	***73.4%***	*58,650*	*87%*	***21,468***	*18,740*	***$20,459***	***10.2%***		
2016	***72,191***	***7.4%***	***70.3%***	*61,360*	*85%*	***23,191***	*19,712*	***$21,726***	***6.2%***		
2017	***77,220***	***7.0%***	***71.3%***	*65,440*	*85%*	***24,727***	*20,955*	***$23,349***	***7.5%***		
2018	82,286	6.6%	71.9%	70,161	85%	26,331	22,452	$25,221	8.0%	1.6%	3.2%
2019	85,316	3.7%	72.1%	73,241	86%	27,301	23,437	$27,281	8.2%	1.7%	4.6%
2020	88,943	4.3%	71.9%	76,294	86%	28,462	24,414	$29,088	6.6%	1.7%	4.6%
2021	91,341	2.7%	71.9%	78,321	86%	29,229	25,063	$30,638	5.3%	1.7%	4.6%
2022	92,785	1.6%	71.9%	79,550	86%	29,691	25,456	$31,759	3.7%	1.7%	4.6%
2023	94,083	1.4%	71.7%	80,590	86%	30,106	25,789	$32,916	3.6%	1.6%	4.6%
2024	92,820	-1.3%	71.7%	79,519	86%	29,702	25,446	$33,256	1.0%	1.6%	4.6%
2025	93,253	0.5%	71.9%	79,948	86%	29,841	25,583	$34,254	3.0%	1.6%	4.6%
2026	95,346	2.2%	71.9%	81,768	86%	30,511	26,166	$35,983	5.0%	1.7%	4.6%
2027	97,523	2.3%	71.9%	83,649	86%	31,207	26,768	$37,851	5.2%	1.7%	4.6%
2028	99,701	2.2%	72.0%	85,531	86%	31,904	27,370	$39,796	5.1%	1.7%	4.6%
2029	101,879	2.2%	72.0%	87,412	86%	32,601	27,972	$41,821	5.1%	1.7%	4.6%
2030	104,056	2.1%	72.0%	89,293	86%	33,298	28,574	$43,929	5.0%	1.7%	4.6%
2031	106,187	2.0%	72.0%	91,126	86%	33,980	29,160	$46,118	5.0%	1.7%	4.6%
2032	108,295	2.0%	72.0%	92,935	86%	34,655	29,739	$48,394	4.9%	1.7%	4.6%
2033	110,404	1.9%	72.0%	94,744	86%	35,329	30,318	$50,763	4.9%	1.7%	4.6%
2034	112,512	1.9%	72.0%	96,553	86%	36,004	30,897	$53,229	4.9%	1.7%	4.6%
2035	114,620	1.9%	72.0%	98,362	86%	36,678	31,476	$55,795	4.8%	1.7%	4.6%
2036	116,728	1.8%	72.0%	100,171	86%	37,353	32,055	$58,465	4.8%	1.7%	4.6%
2037	118,836	1.8%	72.0%	101,980	86%	38,027	32,634	$61,243	4.8%	1.7%	4.6%
2038	120,944	1.8%	72.0%	103,789	86%	38,702	33,213	$64,132	4.7%	1.7%	4.6%
2039	123,052	1.7%	72.0%	105,598	86%	39,377	33,791	$67,138	4.7%	1.7%	4.6%
2040	125,160	1.7%	72.0%	107,407	86%	40,051	34,370	$70,263	4.7%	1.7%	4.6%
2041	127,121	1.6%	72.0%	109,090	86%	40,679	34,909	$73,480	4.6%	1.7%	4.6%
2042	129,028	1.5%	72.0%	110,727	86%	41,289	35,433	$76,819	4.5%	1.7%	4.6%

Notes: (1) Revenue for PBM patrons was not allocated by each toll facility until September 2009; therefore, annual revenues shown for FY 2008 - FY 2009 are estimated.
(2) ***Actual Average Weekday Transactions and Annual Revenue (FY 2008 – FY 2017)***

8.2 SH 130

As noted in the discussion of SH 45 N and Loop 1, the toll diversion model produces traffic estimates for several model years including: 2018 to 2025, 2030, and 2040. The initial model forecasts for SH 130 have been adjusted by post-processing to account for variations in the base year model calibration estimates and other minor variations in future trends. Gross revenue estimates were then prepared by multiplying the traffic, in terms of transactions, at the toll locations by the effective toll structure by vehicle type and payment type for each year. Adjustments were included to reflect the effective collection rates for both ETC and PBM transactions. Annual estimates of transactions and revenue for SH 130 were generated using an annualization factor of 325.

8.2.1 SH 130 Schematic Traffic Diagrams

Figure 8.6 through Figure 8.9 display the traffic along the individual segments of SH 130 for the model (calendar) years 2016, 2020, 2030, and 2040. These diagrams represent the unadjusted model outputs for average weekday transactions and are intended to provide the reader a sense of the scale of the traffic volumes across the entire facility as well as the entry/exit points. An approximation of the estimated growth for various segments of the roadway can be determined by reviewing these diagrams across the individual horizon years.

Figure 8.6 SH 130 Average Weekday Traffic – 2016 Model Calibration Year (Unadjusted Model Output)

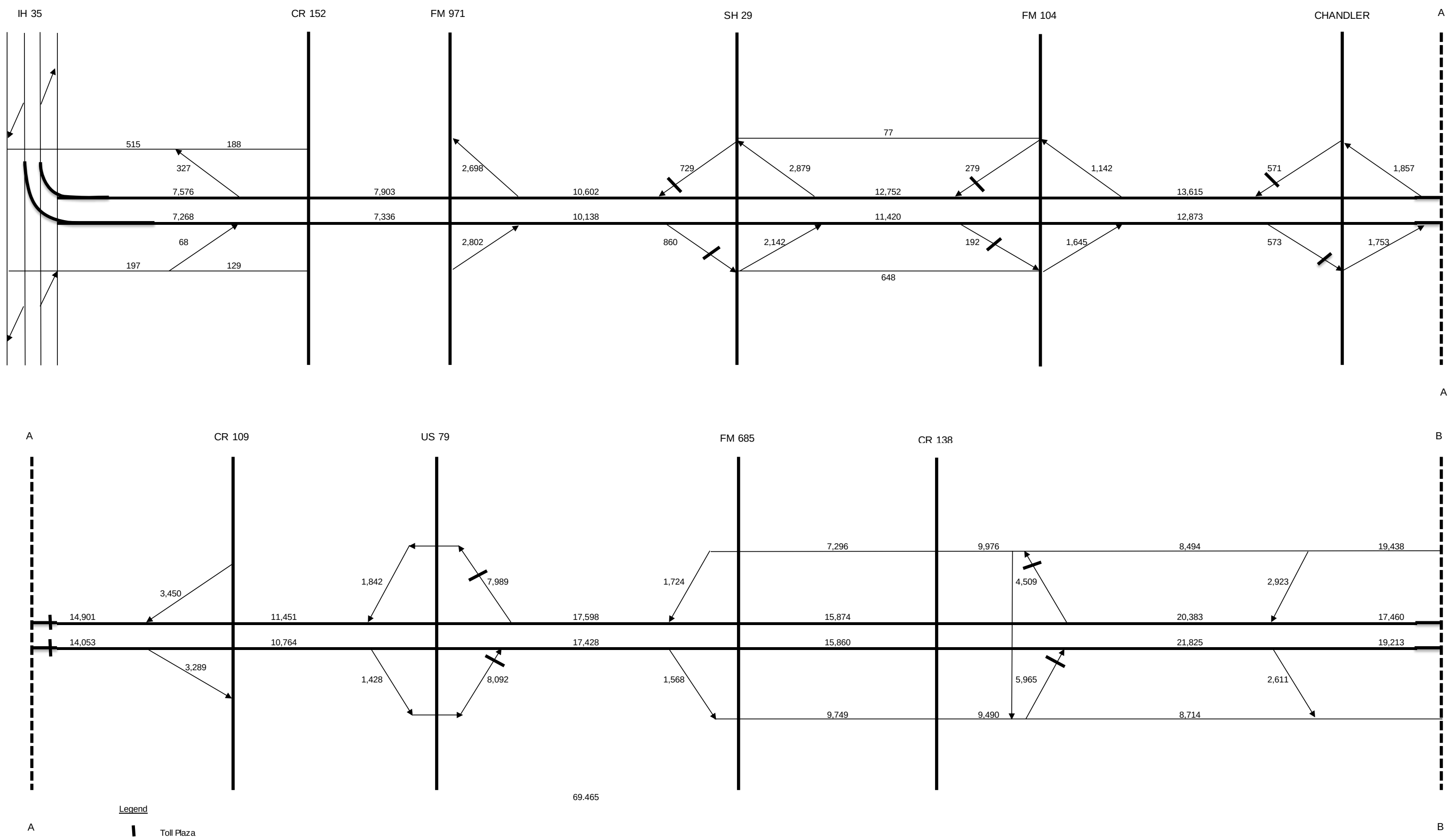
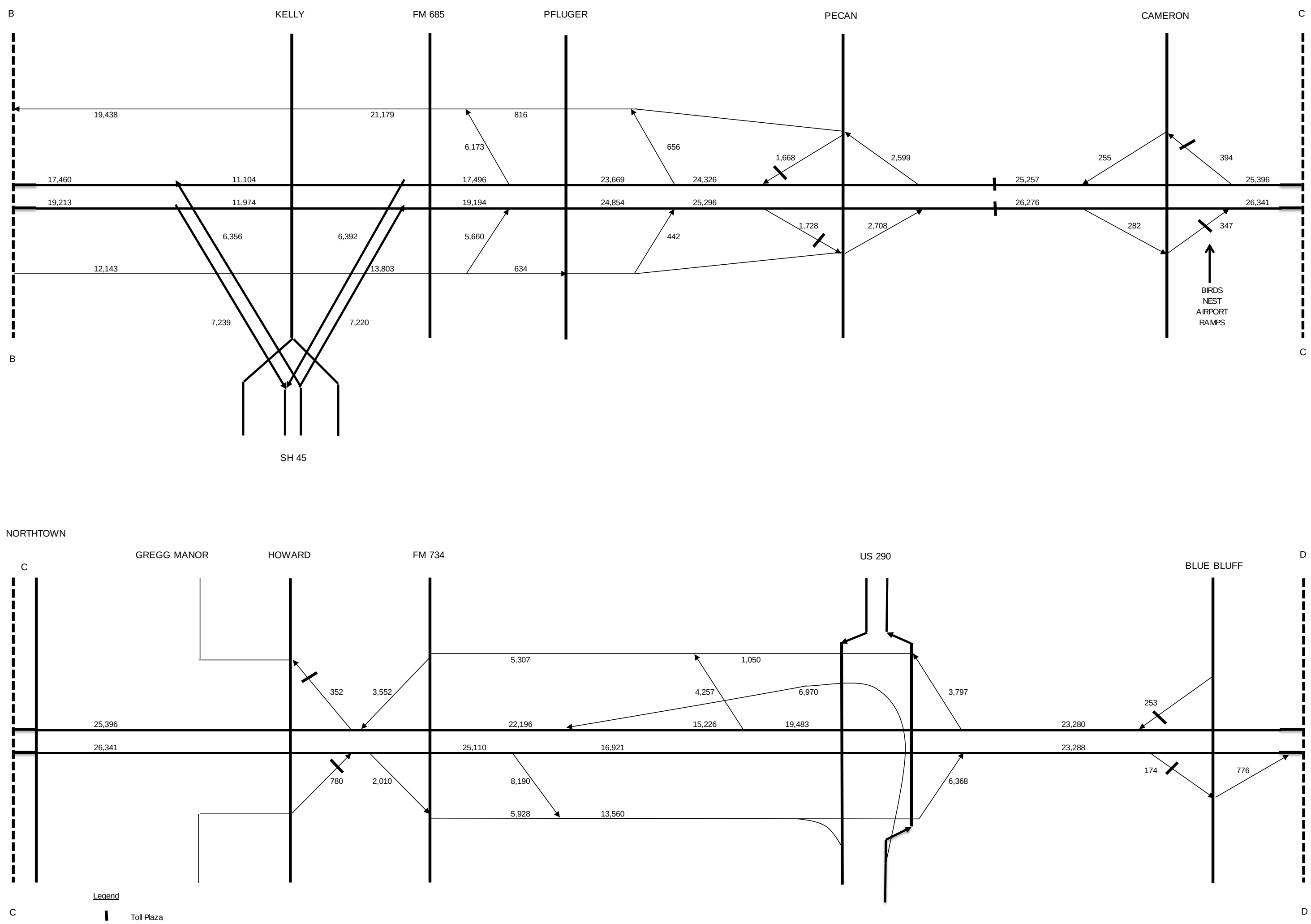


Figure 8.6 SH 130 Average Weekday Traffic – 2016 Model Calibration Year (Unadjusted Model Output) (continued)



Stantec

Figure 8.6 SH 130 Average Weekday Traffic – 2016 Model Calibration Year (Unadjusted Model Output) (continued)

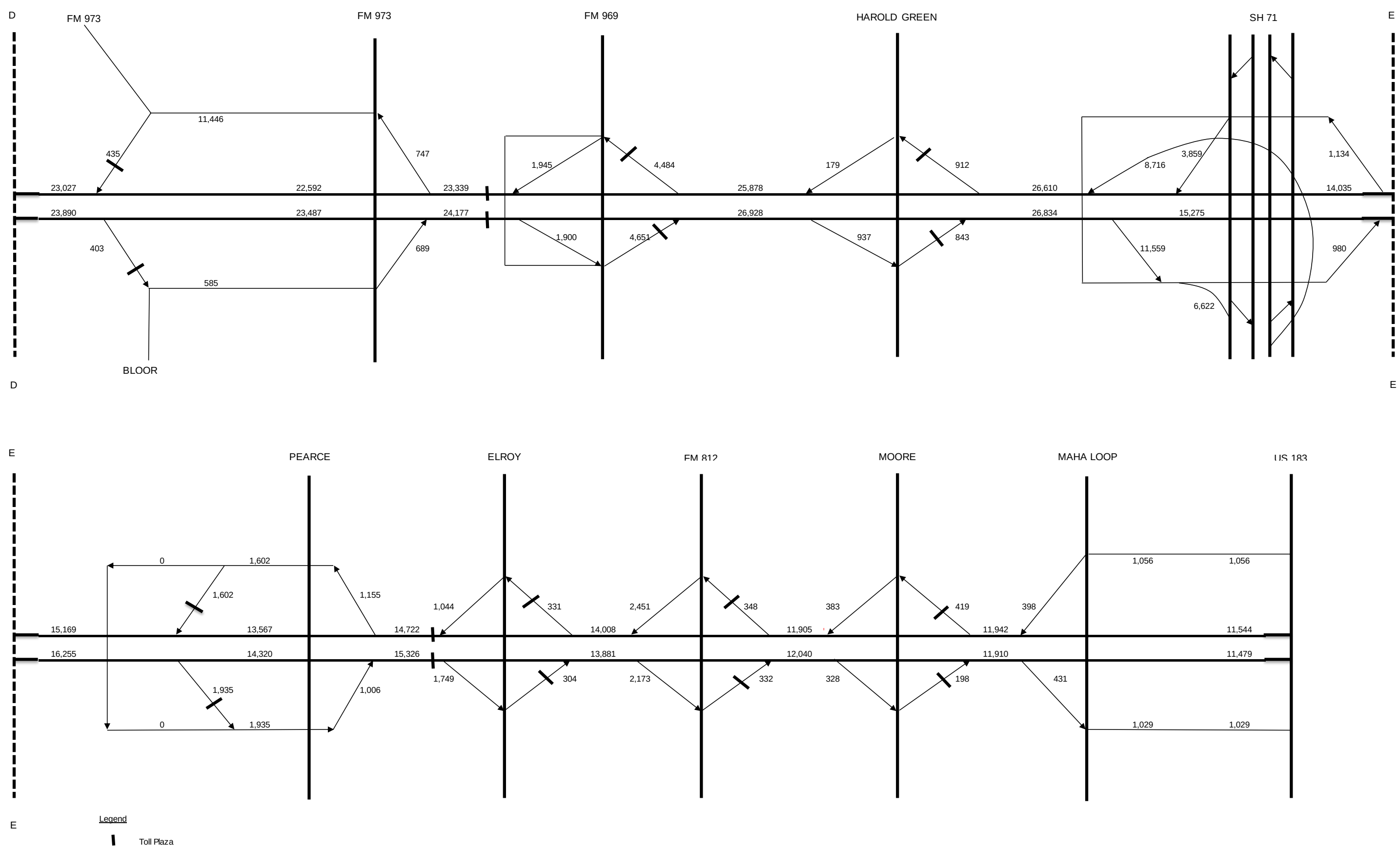


Figure 8.7 SH 130 Average Weekday Traffic – 2020 Model Year (Unadjusted Model Output)

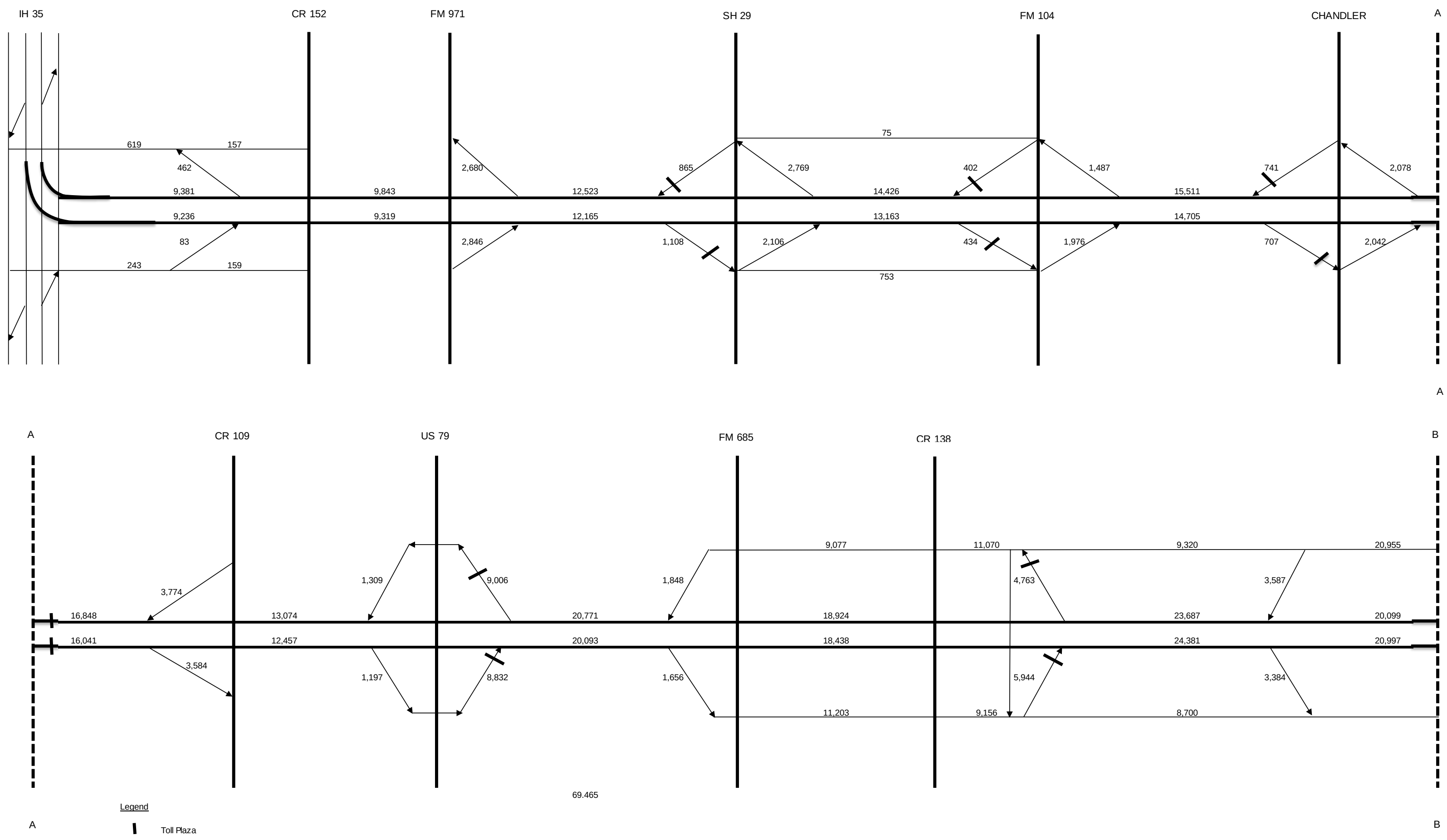
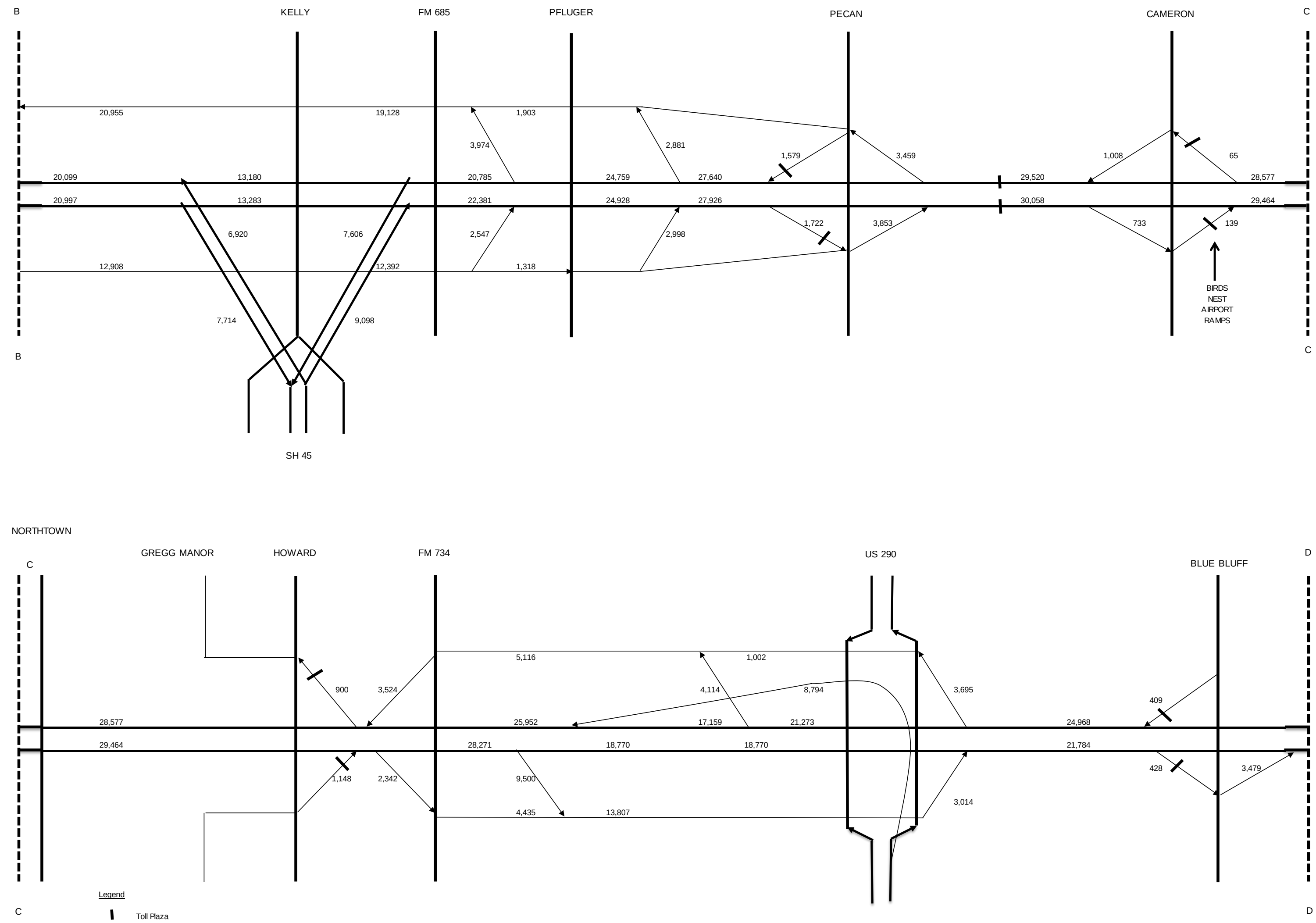


Figure 8.7 SH 130 Average Weekday Traffic – 2020 Model Year (Unadjusted Model Output) (continued)



Stantec

Figure 8.7 SH 130 Average Weekday Traffic – 2020 Model Year (Unadjusted Model Output) (continued)

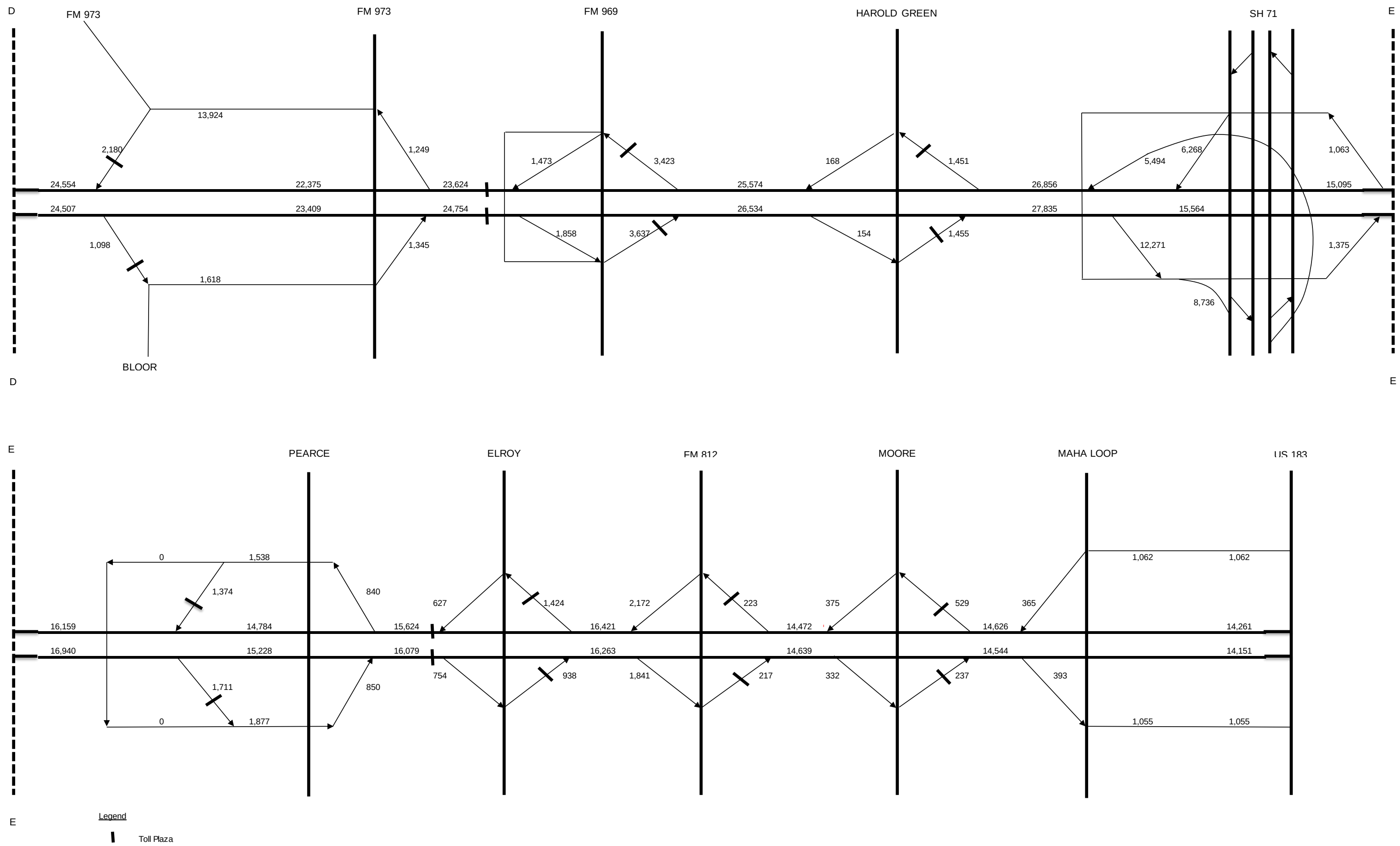


Figure 8.8 SH 130 Average Weekday Traffic – 2030 Model Year (Unadjusted Model Output)

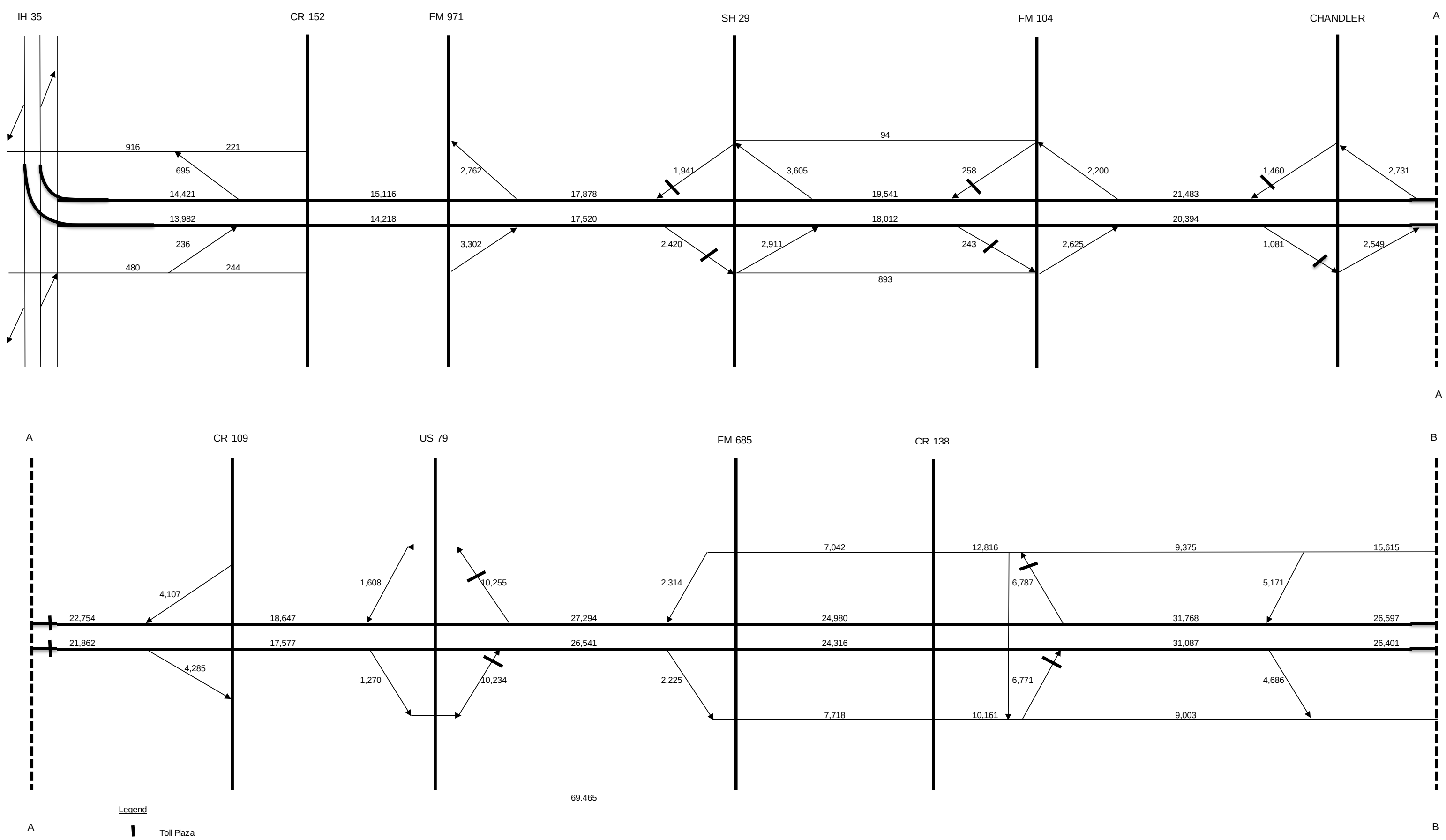
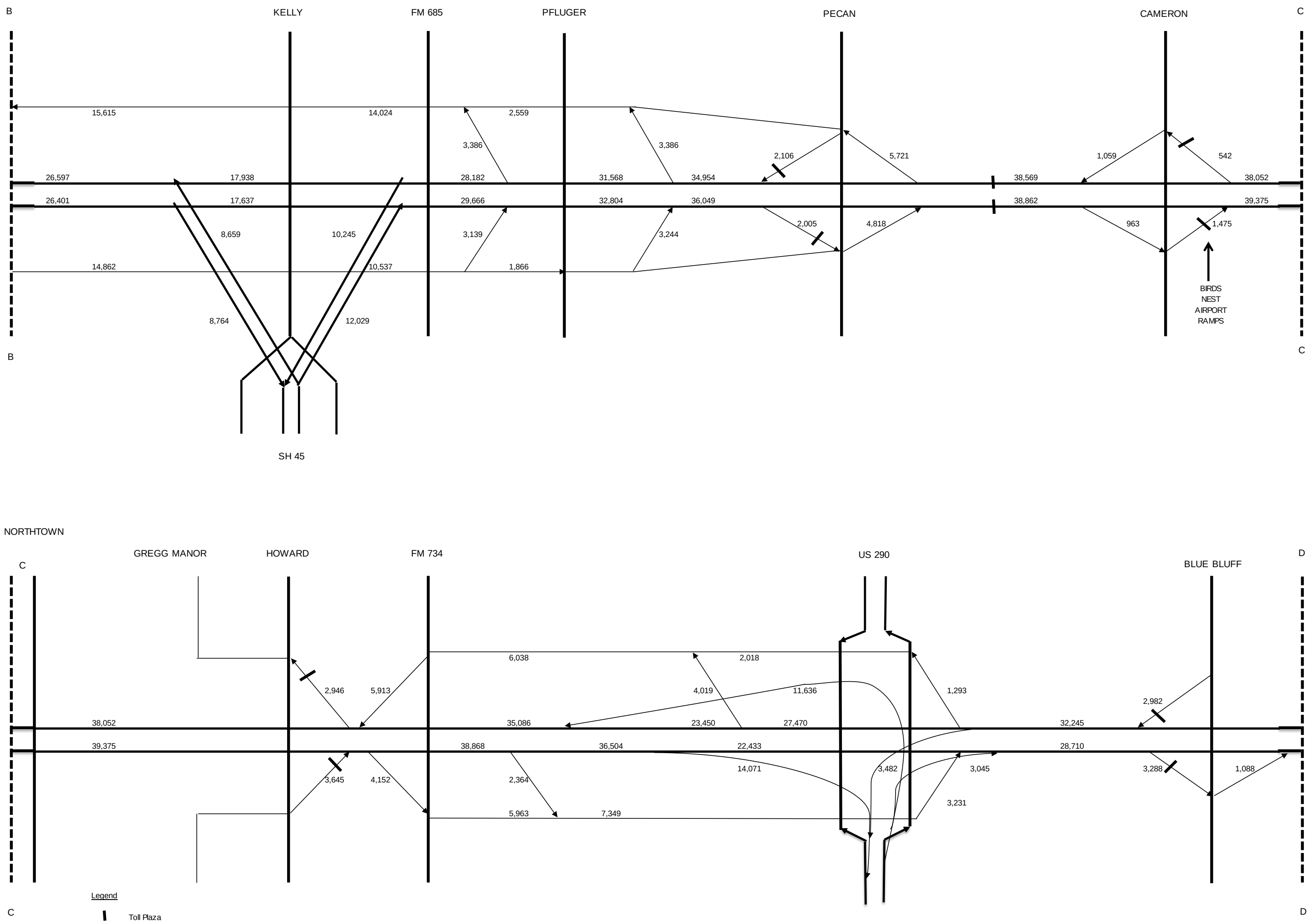


Figure 8.8 SH 130 Average Weekday Traffic – 2030 Model Year (Unadjusted Model Output) (continued)



Stantec

Figure 8.8 SH 130 Average Weekday Traffic – 2030 Model Year (Unadjusted Model Output) (continued)

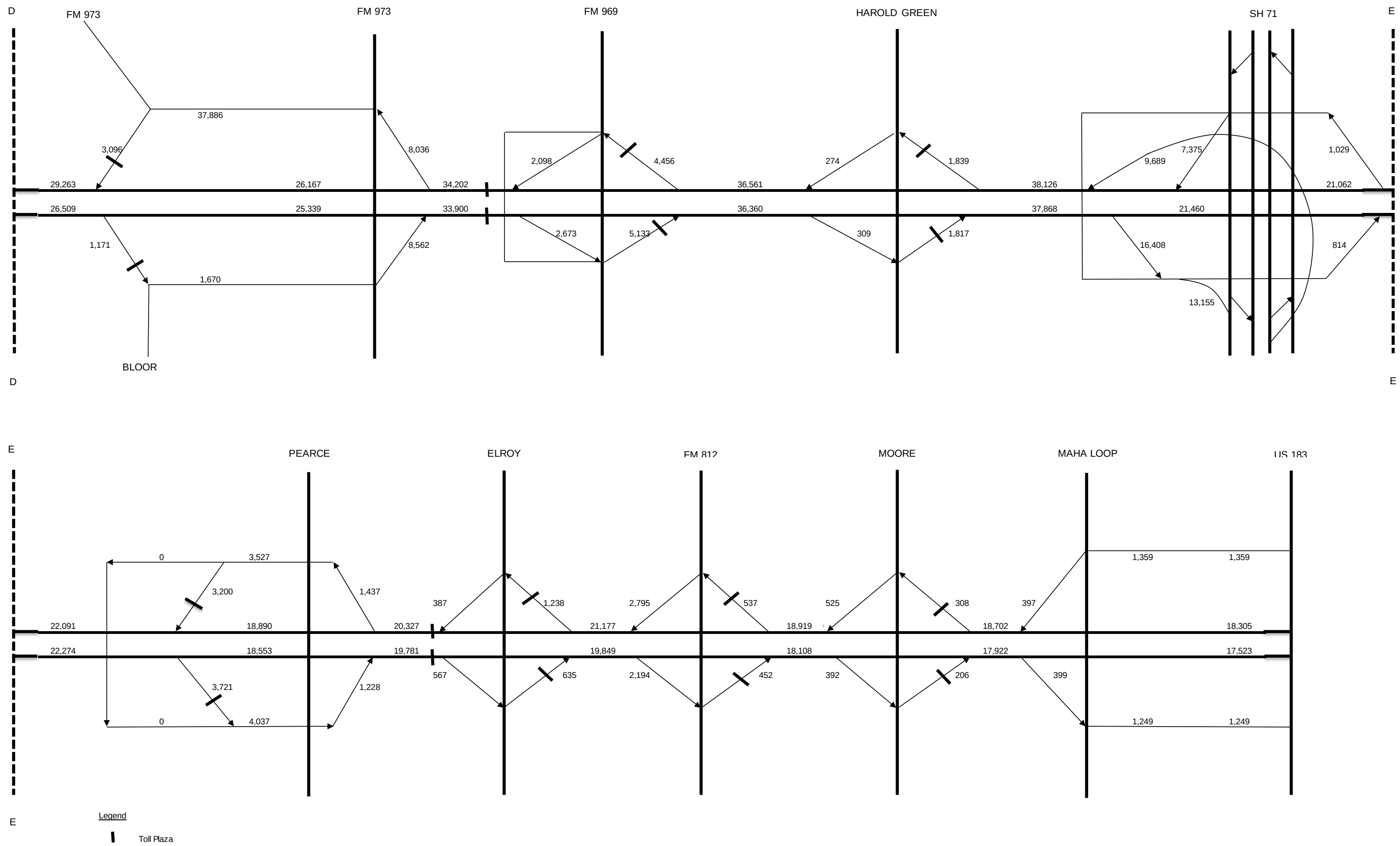


Figure 8.9 SH 130 Average Weekday Traffic – 2040 Model Year (Unadjusted Model Output)

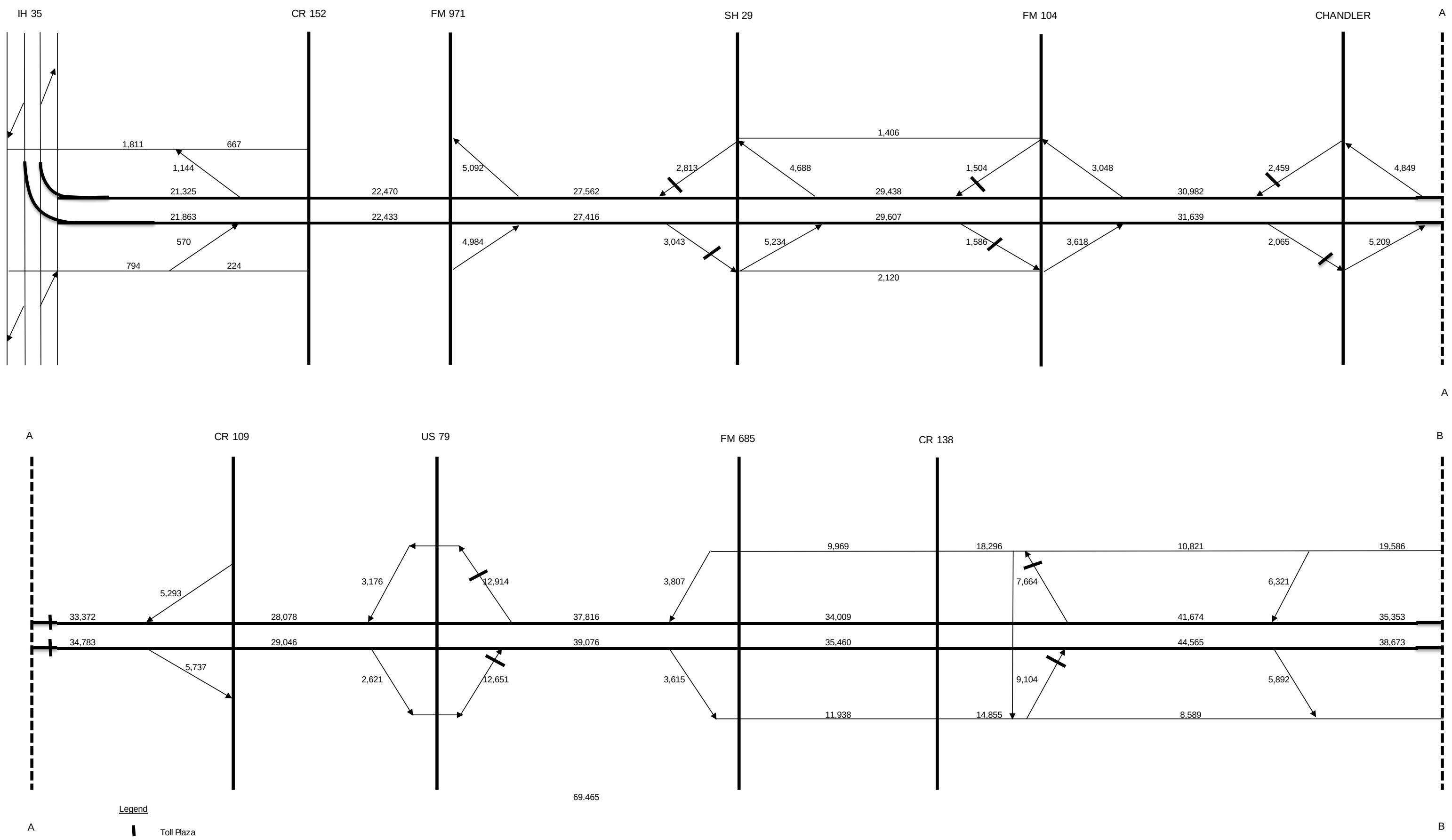


Figure 8.9 SH 130 Average Weekday Traffic – 2040 Model Year (Unadjusted Model Output) (continued)

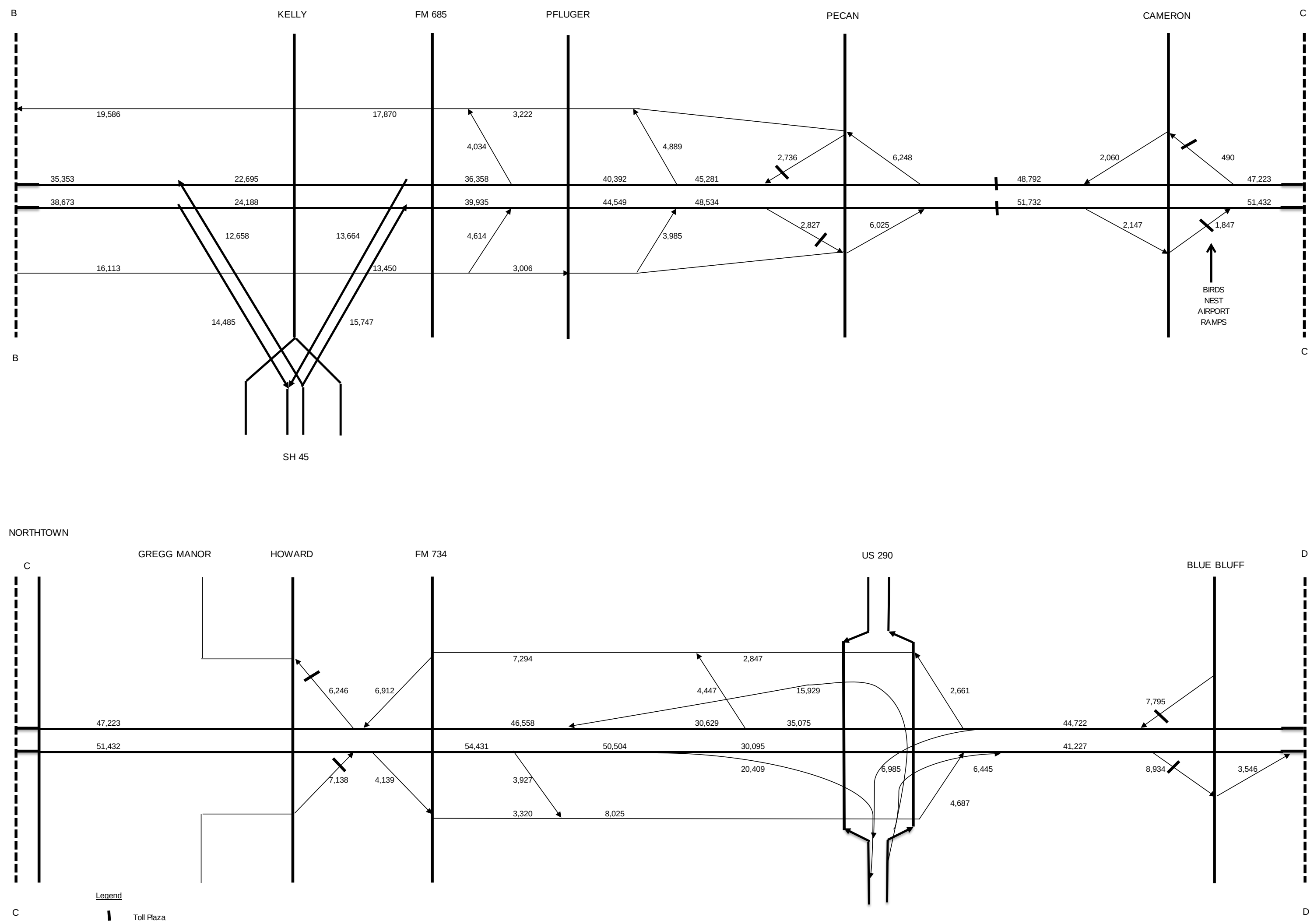
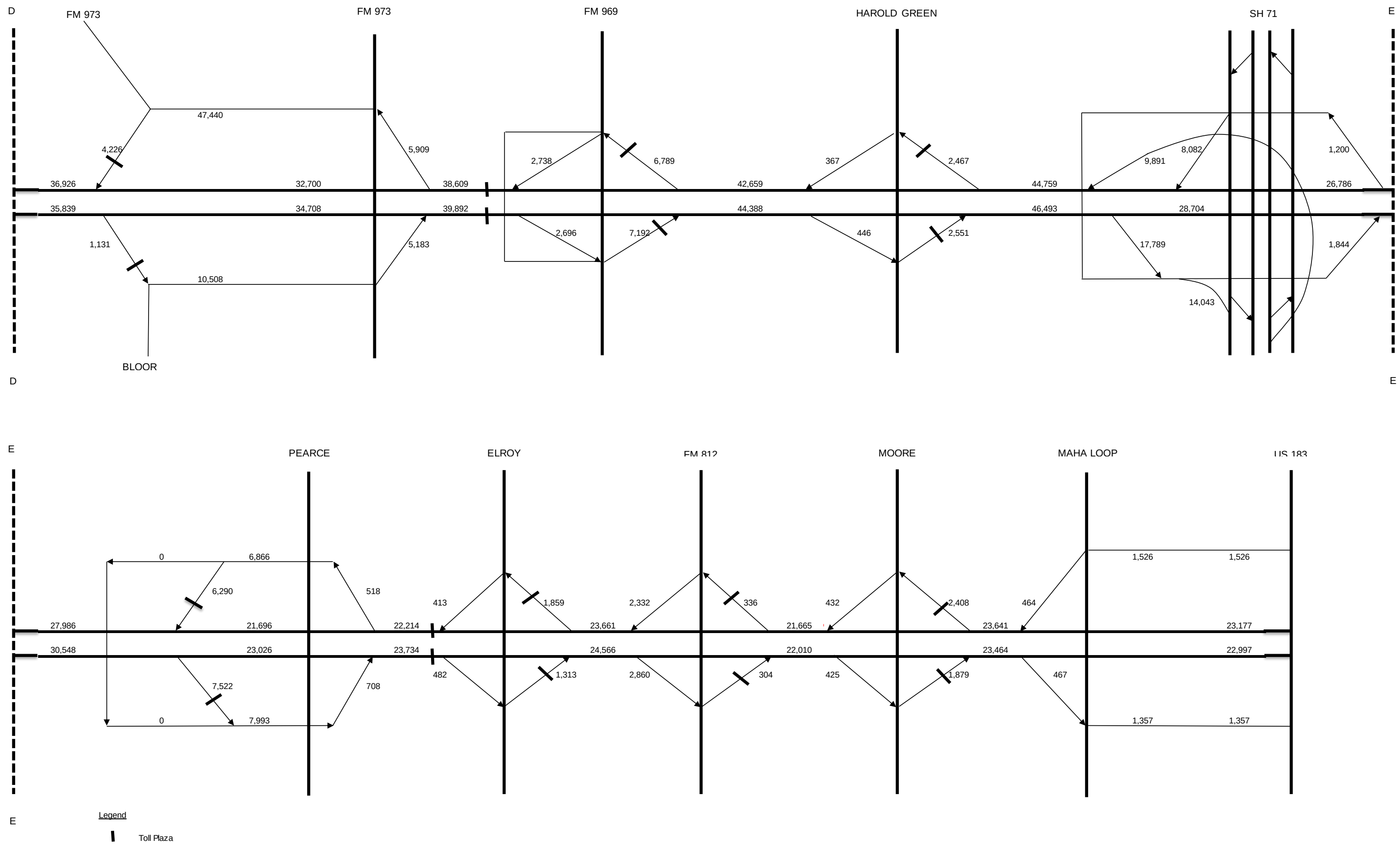


Figure 8.9 SH 130 Average Weekday Traffic – 2040 Model Year (Unadjusted Model Output) (continued)



8.2.2 SH 130 Screenline Analysis

Table 8.9, Table 8.10, Table 8.11, and Table 8.12 show the SH 130 corridor screenlines by horizon year. These screenlines are depicted earlier in this chapter as part of Figure 8.5. These values are unadjusted model estimates for the model's calendar year forecasts and indicate the future demand of traffic in the corridor as estimated by the model as well as the share of traffic using SH 130.

In reviewing these tables, it is evident that IH-35 has the dominant share of traffic on each of the four screenlines. On Screenlines 130-A and 130-B, the share of traffic on SH 130 gradually increases over the forecast period. The total traffic on Screenline 130-A increases from approximately 237,000 in 2016 to 373,000 in 2040, with a compounded annual growth rate of 1.9 percent over the 24-year period. SH 130 traffic is approximately 12 percent of the screenline in 2016 and eventually increases to approximately 18 percent in 2040, despite the opening of Kenney Fort Boulevard. Screenline 130-B, which intersects roadways in the Round Rock area, increases from 320,000 in 2016 to 491,000 in 2040, compounding annually at approximately 1.8 percent. Traffic on SH 130 is generally between 16 to 17 percent of the screenline total until the widening of SH 130 Segments 2 & 3, which occurs by 2021 and is evident starting in 2030. With this improvement, traffic shares increase to over 20 percent by 2040 in Screenline 130-B. The SH 130 widening and on-going development causes traffic on SH 130 to rapidly increase from approximately 60,000 in 2020 to more than 100,000 by 2040.

Table 8.9 Screenline 130-A Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
IH-35	164,902	69.6%	166,592	68.4%	170,493	66.9%	187,098	61.6%	212,929	57.0%
CR 115	17,724	7.5%	18,059	7.4%	16,887	6.6%	19,713	6.5%	20,995	5.6%
FM 1460	15,651	6.6%	16,628	6.8%	20,434	8.0%	26,476	8.7%	23,242	6.2%
Kenney Fort Blvd	NA		NA		NA		NA		24,776	6.6%
CR 110	6,511	2.7%	6,804	2.8%	10,329	4.1%	16,310	5.4%	11,149	3.0%
SH 130	**28,954**	**12.2%**	**31,510**	**12.9%**	**32,889**	**12.9%**	**44,617**	**14.7%**	**68,154**	**18.3%**
CR 100	1,013	0.4%	1,295	0.5%	919	0.4%	6,180	2.0%	9,200	2.5%
FM 1660	2,333	1.0%	2,574	1.1%	2,769	1.1%	3,195	1.1%	2,982	0.8%
TOTAL	**237,089**	**100.0%**	**243,462**	**100.0%**	**254,720**	**100.0%**	**303,589**	**100.0%**	**373,427**	**100.0%**

Table 8.10 Screenline 130-B Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
IH-35	192,710	60.3%	195,437	58.3%	200,658	56.9%	214,055	52.9%	250,529	51.0%
Heatherwilde Blvd	18,424	5.8%	23,421	7.0%	22,938	6.5%	26,120	6.5%	28,408	5.8%
Dessau / FM 685	34,011	10.6%	35,232	10.5%	33,911	9.6%	41,212	10.2%	46,488	9.5%
Immanuel	6,641	2.1%	7,466	2.2%	7,917	2.2%	11,487	2.8%	13,792	2.8%
SH 130	**51,533**	**16.1%**	**54,743**	**16.3%**	**59,578**	**16.9%**	**77,431**	**19.1%**	**100,524**	**20.5%**
Cameron Rd	9,057	2.8%	10,428	3.1%	19,385	5.5%	26,132	6.5%	21,539	4.4%
Fuchs Grove	7,455	2.3%	8,290	2.5%	8,070	2.3%	8,175	2.0%	30,184	6.1%
TOTAL	**319,831**	**100.0%**	**335,018**	**100.0%**	**352,456**	**100.0%**	**404,613**	**100.0%**	**491,464**	**100.0%**

Traffic along Screenline 130-C that encompasses Segment 3 increases from 467,000 in 2016 to 736,000 in 2040 at a rate of 1.9 percent annually, with SH 130 traffic generally 9 to 11 percent of the screenline total. With the completion of the 183S toll road in 2020, SH 130's traffic share decreases to 8.8 percent. The widening of SH 130 Segments 2 & 3 causes traffic to increase by approximately 20,000 vehicles from 2020 to 2030 and the traffic share returns to over 10 percent from 2030 forward. The southernmost screenline (Screenline 130-D) increases from 334,000 in 2016 to 499,000 in 2040 at a rate of 1.7 percent annually. SH 130 carries approximately 9 percent of this screenline's traffic throughout the forecast period with a slightly lower share in 2020 due to capacity improvements on US 183 (183 South Toll Road). However, SH 130 traffic increases by nearly 9,000 vehicles from 2020 to 2030 as a result of the SH 130 widening in Segments 2 & 3 assumed to be completed by 2021. This increased traffic on SH 130 Segment 4 occurs even though there is a separate widening on US 183 south of SH 71 assumed to be completed by 2027.

Table 8.11 Screenline 130-C Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
IH-35	248,340	53.2%	253,650	52.8%	256,529	46.5%	277,329	43.6%	302,533	41.1%
Cameron Rd.	18,163	3.9%	18,208	3.8%	15,030	2.7%	16,563	2.6%	17,172	2.3%
Berkman Dr.	13,102	2.8%	12,887	2.7%	13,786	2.5%	14,309	2.3%	14,102	1.9%
Manor Rd.	12,779	2.7%	13,555	2.8%	17,083	3.1%	20,520	3.2%	22,551	3.1%
Springdale Rd.	10,051	2.2%	10,551	2.2%	8,458	1.5%	9,893	1.6%	9,349	1.3%
US 183	72,824	15.6%	73,706	15.3%	91,792	16.7%	51,874	8.2%	58,187	7.9%
183 South	NA		NA		46,600	8.5%	106,571	16.8%	128,650	17.5%
Johnny Morris Rd.	5,619	1.2%	6,501	1.4%	12,733	2.3%	13,403	2.1%	6,664	0.9%
FM 3177	18,263	3.9%	19,339	4.0%	23,834	4.3%	27,567	4.3%	40,023	5.4%
FM 973	12,676	2.7%	13,209	2.7%	8,607	1.6%	17,634	2.8%	31,699	4.3%
SH 130	**47,516**	**10.2%**	**51,333**	**10.7%**	**48,802**	**8.9%**	**68,103**	**10.7%**	**78,501**	**10.7%**
FM 969	7,448	1.6%	7,848	1.6%	7,841	1.4%	11,815	1.9%	26,136	3.6%
TOTAL	**466,780**	**100.0%**	**480,788**	**100.0%**	**551,094**	**100.0%**	**635,579**	**100.0%**	**735,568**	**100.0%**

Table 8.12 Screenline 130-D Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
IH-35	201,129	60.2%	213,505	59.5%	227,841	61.5%	259,458	59.7%	280,935	56.3%
Todd Ln.	14,503	4.3%	15,186	4.2%	14,858	4.0%	15,543	3.6%	19,152	3.8%
Stassney Ln.	25,740	7.7%	26,995	7.5%	26,721	7.2%	29,767	6.9%	32,809	6.6%
US 183	37,120	11.1%	38,543	10.7%	41,368	11.2%	52,930	12.2%	56,170	11.3%
FM 973	16,723	5.0%	24,723	6.9%	21,223	5.7%	29,494	6.8%	50,772	10.2%
SH 130	**30,048**	**9.0%**	**31,596**	**8.8%**	**31,569**	**8.5%**	**40,108**	**9.2%**	**45,948**	**9.2%**
Ross Rd.	8,868	2.7%	8,486	2.4%	6,939	1.9%	7,019	1.6%	13,241	2.7%
TOTAL	**334,132**	**100.0%**	**359,034**	**100.0%**	**370,517**	**100.0%**	**434,318**	**100.0%**	**499,026**	**100.0%**

8.2.3 SH 130 Traffic and Revenue Assumptions

Table 8.13 provides a concise summary of the underlying assumptions in the transaction and revenue forecasts for SH 130. All truck-related values in the table refer to 3+ axle vehicles, consistent with the transaction reports generated for each toll road by TxDOT. Estimated truck transactions decrease from approximately 10 percent in 2018 to 8.5 percent by 2030. Auto ETC payment shares are assumed to be between 60.9 and 62.8 percent, and truck ETC shares are be between 58.5 and 60.4 percent.

The average truck toll multiplier is approximately 2.72 times the auto rate for ETC transactions and approximately 2.79 times the auto rate for PBM transactions, which reflects the observed distribution of trucks by axle group, and TxDOT's policy of capping truck tolls at the rate of a 4-axle vehicle for SH 130. There are no truck discounts assumed during the forecast period similar to the temporary discounts provided during periods in 2016. The PBM toll surcharge is assumed to remain at 33 percent of the ETC rate. The collection rates for PBM and ETC transactions reflect the latest available collection data provided by TxDOT and are held constant over the forecast period. Over the forecast period, the cost to traverse the full length of SH 130 Segments 1-4 will increase from $7.20 in 2018 to approximately $12.92 in 2040. This implies a rate of $0.15 per mile in 2018 which increases to $0.26 by 2040.

Table 8.13 SH 130 Tolling and Traffic Characteristic Assumptions by Model Year

Model Year	2018	2020	2030	2040
Vehicle Type Distribution				
Autos	90.0%	90.1%	91.5%	91.5%
Trucks	10.0%	9.9%	8.5%	8.5%
Payment Type Distribution - Passenger Cars				
PBM	37.2%	37.7%	39.1%	38.0%
ETC	62.8%	62.3%	60.9%	62.0%
Payment Type Distribution - Trucks				
PBM	39.6%	39.7%	40.6%	41.5%
ETC	60.4%	60.3%	59.4%	58.5%
Toll Ratios				
Truck/Auto Ratio - ETC	2.72	2.72	2.72	2.72
Truck/Auto Ratio - PBM	2.79	2.79	2.79	2.79
PBM/ETC Toll Rate	1.33	1.33	1.33	1.33
Collection Rates				
PBM	51.1%	51.1%	51.1%	51.1%
ETC	99.3%	99.3%	99.3%	99.3%
Full Length Trip				
Distance	49.0	49.0	49.0	49.0
Rate per Mile	$0.15	$0.15	$0.20	$0.26
Toll Cost (ETC)	$7.20	$7.52	$9.68	$12.92
Annualization Factor	325	325	325	325

8.2.4 SH 130 Transactions and Revenue by Pay Point

The SH 130 transaction and revenue statistics by pay point and horizon year are listed in Table 8.14. Both total and paying transactions are provided, where paying transactions reflect the assumptions for collection efficiency for each payment type. The average toll rate represents a blend of the individual rates by payment type and vehicle type. This blended value includes a 33 percent surcharge over the ETC rates for PBM patrons. The values shown are calendar year values, rather than the blended estimates created for each fiscal year shown in the next section.

Average weekday total transactions on SH 130 range from 211,000 in 2016 to 433,000 in 2040, and average weekday paying transactions range from 172,000 in 2016 to 350,000 in 2040, representing a compounded annual growth rate of 3.0 percent. During the same timeframe, average weekday revenues range from $311,000 to $1,117,000 and exhibit a compounded annual growth rate of 5.5 percent. The increase reflects both a growth in transactions and the annual increases in the toll rates.

Table 8.14 SH 130 Average Weekday Total Transactions and Toll Revenue (Adjusted for Calibration)

Toll Location	2016				2018				2020				2030				2040			
	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue
	Total	Paying			Total	Paying			Total	Paying			Total	Paying			Total	Paying		
SH 29	1,589	1,253	$0.58	$727	1,724	1,360	$0.64	$865	1,973	1,544	$0.66	$1,014	4,361	3,342	$0.83	$2,776	5,856	4,644	$1.12	$5,219
FM 104	471	338	$0.69	$234	664	490	$0.73	$357	835	645	$0.78	$501	501	396	$0.92	$365	3,090	2,281	$1.29	$2,941
Chandler Rd.	1,145	919	$0.95	$873	1,532	1,236	$1.04	$1,281	1,448	1,172	$1.08	$1,262	2,540	2,114	$1.22	$2,569	4,524	3,759	$1.62	$6,093
N of CR 109 (ML Plaza)	**28,954**	**23,660**	**$2.19**	**$51,773**	**31,510**	**25,600**	**$2.37**	**$60,786**	**32,889**	**26,500**	**$2.47**	**$65,523**	**44,617**	**35,564**	**$3.11**	**$110,615**	**68,154**	**55,175**	**$4.09**	**$225,406**
US 79	16,081	14,009	$0.85	$11,838	17,306	15,092	$0.90	$13,556	17,838	15,558	$0.95	$14,774	20,488	17,963	$1.22	$21,933	25,565	22,367	$1.69	$37,731
CR 138	10,473	9,201	$0.82	$7,516	11,117	9,786	$0.85	$8,300	10,707	9,424	$0.89	$8,377	13,558	11,948	$1.15	$13,690	16,769	14,717	$1.53	$22,457
Pecan St.	3,396	2,932	$0.65	$1,917	3,775	3,292	$0.68	$2,249	3,301	2,903	$0.71	$2,074	4,111	3,634	$0.92	$3,341	5,563	4,883	$1.21	$5,926
N. of Cameron Rd. (ML Plaza)	**51,533**	**42,771**	**$2.09**	**$89,279**	**54,743**	**45,269**	**$2.23**	**$100,876**	**59,578**	**49,022**	**$2.32**	**$113,707**	**77,431**	**63,550**	**$2.95**	**$187,447**	**100,524**	**82,928**	**$3.94**	**$326,728**
Birds' Nest Airport	740	616	$2.44	$1,502	651	547	$2.35	$1,289	204	174	$2.50	$436	2,017	1,722	$2.79	$4,802	2,338	2,006	$3.55	$7,126
Howard Ln/Gregg Manor	1,132	911	$0.71	$646	1,535	1,232	$0.76	$934	2,047	1,632	$0.81	$1,327	6,592	5,300	$0.99	$5,230	13,384	10,831	$1.28	$13,823
Blue Bluff Rd.	428	369	$0.56	$206	718	610	$0.60	$363	838	697	$0.63	$439	6,270	5,124	$0.76	$3,876	16,729	13,674	$1.02	$13,912
Bloor Rd/FM 973	838	733	$0.64	$470	1,074	937	$0.67	$628	3,219	2,791	$0.75	$2,093	4,267	3,665	$0.93	$3,415	5,357	4,578	$1.26	$5,754
N. of FM 969 (ML Plaza)	**47,516**	**37,642**	**$2.16**	**$81,361**	**51,333**	**40,545**	**$2.32**	**$94,050**	**48,802**	**38,176**	**$2.44**	**$93,085**	**68,103**	**52,886**	**$3.09**	**$163,461**	**78,501**	**61,290**	**$4.11**	**$251,988**
FM 969	9,134	6,766	$0.71	$4,777	11,392	8,332	$0.76	$6,307	7,057	5,142	$0.78	$4,027	9,590	6,958	$1.00	$6,956	13,981	10,271	$1.33	$13,664
Harold Green Rd.	1,755	1,319	$0.67	$879	2,496	1,849	$0.74	$1,365	2,898	2,124	$0.76	$1,618	3,656	2,681	$0.95	$2,554	5,018	3,666	$1.20	$4,395
Pearce Ln.	3,536	2,580	$0.70	$1,802	3,394	2,510	$0.76	$1,904	3,048	2,221	$0.78	$1,724	6,921	4,996	$1.05	$5,239	13,811	10,003	$1.41	$14,055
N. of Elroy Rd (ML Plaza)	**30,048**	**24,081**	**$2.24**	**$53,907**	**31,596**	**25,271**	**$2.41**	**$60,898**	**31,569**	**25,017**	**$2.52**	**$63,015**	**40,108**	**31,344**	**$3.14**	**$98,564**	**45,948**	**36,113**	**$4.14**	**$149,589**
Elroy Rd.	634	533	$0.89	$476	911	771	$0.94	$722	2,477	2,124	$1.06	$2,242	1,873	1,572	$1.21	$1,899	3,173	2,703	$1.67	$4,505
FM 812	679	614	$0.69	$425	689	622	$0.76	$476	439	399	$0.76	$304	989	881	$1.03	$904	640	581	$1.28	$742
Moore Rd.	617	534	$0.57	$306	810	683	$0.71	$482	773	649	$0.73	$477	515	445	$0.85	$379	4,287	3,728	$1.22	$4,557
TOTAL	**210,698**	**171,780**		**$310,914**	**228,971**	**186,034**		**$357,688**	**231,942**	**187,915**		**$378,017**	**318,507**	**256,085**		**$640,013**	**433,212**	**350,200**		**$1,116,610**
Total Annual Revenue in Millions				**$101.0**				**$116.2**				**$122.9**				**$208.0**				**$362.9**

Notes: [1] The average toll is calculated by Revenue divided by Paying Transactions.

8.2.5 SH 130 Traffic and Revenue Forecasts

Table 8.15 provides the forecasted transactions and revenue for the entire 35-year forecast period on a fiscal year basis. AWT statistics are provided on the left side of the table, and annual values are provided on the right side along with statistics related to truck traffic. The values for FY 2008 to FY 2017 are the observed transactions and reported revenue for the first ten years of operation. While TxDOT reports transactions in the fiscal year in which they occur, annual revenue is based on the fiscal year in which it is collected. The revenue collected in each fiscal year varies due to the delay in receipt of PBM tolls, the collection efficiency of the PBM transactions as well as other adjustments implemented by TxDOT. In contrast, the model forecasts assume that transactions and revenue occur simultaneously and therefore do not reflect the lagging pattern of PBM toll revenue receipts. The forecasted revenue does account for the loss of revenue from uncollected transactions.

As shown in Table 8.15, SH 130 transaction growth is estimated to be just over 3 percent in FY 2018, reflecting the recent slowdown of growth in the corridor. Transaction growth drops to 0 percent in 2020 when the parallel 183S Toll Road opens. Subsequently in 2021 and 2022, transaction growth increases again to over 5 percent with the widening of SH 130 Segments 2 & 3. For the remainder of the forecast, transaction growth is steady, ranging between 1.7 and 3.7 percent. The forecasted revenue on SH 130 trends similarly to transactions with growth rates between 4 and 6 percent in most years. The assumed share of paying transactions is relatively constant at approximately 81 percent, and the combined ETC share (autos and trucks) is also generally consistent between 60 and 62 percent. Trucks are approximately 10 percent of transactions in FY 2018 but gradually decrease to about 8 percent over the forecast period as more auto transactions result from the on-going growth in the corridor. The share of total revenue from trucks also declines from over 24 percent of the total revenue to nearly 21 percent by FY 2042.

Table 8.15 SH 130 Transaction and Revenue Forecasts

Fiscal Year	Average Weekday Transactions (AWT)					Annual Transactions & Revenue					
	Total Transactions	YOY Growth	Total Transactions ETC Share	Paying Transactions	Paying Percentage	Annual Total Transactions (in 000s)	Annual Paying Transactions (in 000s)	Annual Revenue (in $000s)	YOY Growth	3+ Axle Truck Percentage Paying Transactions	3+ Axle Truck Percentage Revenue
2008	***58,306***		***67.0%***	*51,747*	*89%*	***19,287***	*17,117*	*$19,456*			
2009	***73,099***	***25.4%***	***67.0%***	*64,875*	*89%*	***24,457***	*21,706*	*$27,114*	***39.4%***		
2010	***83,997***	***14.9%***	***67.4%***	*74,547*	*89%*	***28,298***	*25,115*	***$34,408***	***26.9%***		
2011	***89,961***	***7.1%***	***64.3%***	*79,840*	*89%*	***30,583***	*27,142*	***$36,237***	***5.3%***		
2012	***101,957***	***13.3%***	***64.0%***	*89,000*	*87%*	***34,352***	*29,986*	***$40,735***	***12.4%***		
2013	***122,476***	***20.1%***	***64.5%***	*100,861*	*82%*	***41,366***	*34,065*	***$54,492***	***33.8%***		
2014	***138,223***	***12.9%***	***63.5%***	*111,557*	*81%*	***46,211***	*37,296*	***$67,092***	***23.1%***		
2015	***165,262***	***19.6%***	***62.8%***	*136,281*	*82%*	***54,786***	*45,178*	***$86,195***	***28.5%***		
2016	***196,330***	***18.8%***	***60.8%***	*157,829*	*80%*	***64,822***	*52,110*	***$99,303***	***15.2%***		
2017	***214,916***	***9.5%***	***62.0%***	*171,694*	*80%*	***70,241***	*56,115*	***$108,615***	***9.4%***		
2018	222,053	3.3%	62.5%	180,511	81%	72,167	58,666	$111,908	3.0%	10.2%	24.1%
2019	234,346	5.5%	62.3%	190,093	81%	76,163	61,780	$120,433	7.6%	9.9%	24.2%
2020	234,391	0.0%	62.1%	189,928	81%	76,177	61,726	$123,127	2.2%	9.8%	24.0%
2021	246,923	5.3%	61.7%	199,652	81%	80,250	64,887	$132,790	7.8%	9.6%	23.5%
2022	260,297	5.4%	61.5%	210,211	81%	84,597	68,319	$142,547	7.3%	9.4%	23.2%
2023	269,852	3.7%	61.5%	217,844	81%	87,702	70,799	$150,430	5.5%	9.3%	22.9%
2024	277,736	2.9%	61.4%	224,123	81%	90,264	72,840	$157,677	4.8%	9.2%	22.8%
2025	282,503	1.7%	61.7%	228,431	81%	91,814	74,240	$163,458	3.7%	9.1%	22.6%
2026	288,378	2.1%	61.8%	233,197	81%	93,723	75,789	$170,512	4.3%	9.0%	22.3%
2027	295,331	2.4%	61.5%	238,479	81%	95,982	77,506	$178,645	4.8%	8.8%	22.0%
2028	302,283	2.4%	61.3%	243,760	81%	98,242	79,222	$187,087	4.7%	8.7%	21.7%
2029	309,236	2.3%	61.1%	249,042	81%	100,502	80,939	$195,847	4.7%	8.6%	21.4%
2030	316,189	2.2%	60.9%	254,324	80%	102,761	82,655	$204,937	4.6%	8.5%	21.2%
2031	326,154	3.2%	60.9%	262,359	80%	106,000	85,267	$216,627	5.7%	8.4%	21.1%
2032	337,624	3.5%	61.0%	271,770	80%	109,728	88,325	$229,906	6.1%	8.4%	21.0%
2033	349,095	3.4%	61.1%	281,182	81%	113,456	91,384	$243,714	6.0%	8.4%	21.0%
2034	360,565	3.3%	61.2%	290,594	81%	117,184	94,443	$258,070	5.9%	8.4%	21.0%
2035	372,036	3.2%	61.3%	300,005	81%	120,912	97,502	$272,992	5.8%	8.4%	20.9%
2036	383,506	3.1%	61.4%	309,417	81%	124,640	100,560	$288,501	5.7%	8.3%	20.9%
2037	394,977	3.0%	61.5%	318,828	81%	128,368	103,619	$304,615	5.6%	8.3%	20.9%
2038	406,448	2.9%	61.5%	328,240	81%	132,095	106,678	$321,356	5.5%	8.3%	20.8%
2039	417,918	2.8%	61.6%	337,651	81%	135,823	109,737	$338,745	5.4%	8.3%	20.8%
2040	429,389	2.7%	61.7%	347,063	81%	139,551	112,795	$356,804	5.3%	8.3%	20.8%
2041	438,844	2.2%	61.7%	354,753	81%	142,624	115,295	$375,015	5.1%	8.3%	20.8%
2042	447,254	1.9%	61.7%	361,551	81%	145,358	117,504	$393,667	5.0%	8.3%	20.8%

Notes: (1) Revenue for PBM patrons was not allocated by each toll facility until September 2009; therefore, annual revenues shown for FY 2008 - FY 2009 are estimated.
(2) ***Actual Average Weekday Transactions and Annual Revenue (FY 2008 – FY 2017)***

8.3 SH 45 SE

Similar to the other roadways, the toll diversion model produces traffic estimates for several model years including: 2018 to 2025, 2030, and 2040. The initial model forecasts for SH 45 SE have been adjusted by post-processing to account for minor variations in future trends. Gross revenue estimates were then prepared by multiplying the traffic, in terms of transactions, at the toll locations by the effective toll structure by vehicle type and payment type for each year. Adjustments were included to reflect the effective collection rates for both ETC and PBM transactions. Similar to SH 130, annual estimates of transactions and revenue were generated using an annualization factor of 325.

8.3.1 SH 45 SE Schematic Traffic Diagrams

Figure 8.10 through Figure 8.13 display the traffic along SH 45 SE for the model (calendar) years 2016, 2020, 2030, and 2040. These diagrams represent the unadjusted model outputs for average weekday transactions and are intended to provide the reader a sense of the scale of the traffic volumes across the facility as well as the interchange areas.

Figure 8.10 SH 45 SE Average Weekday Traffic – 2016 Model Calibration Year (Unadjusted Model Output)

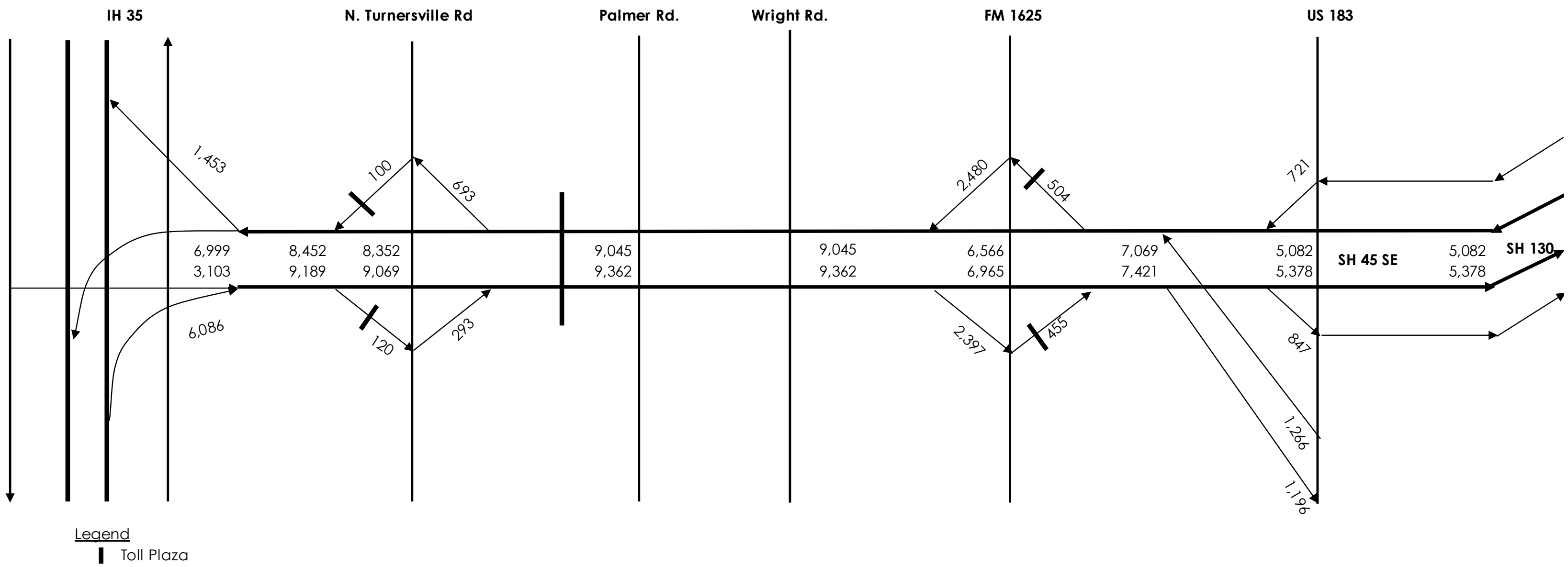


Figure 8.11 SH 45 SE Average Weekday Traffic – 2020 Model Year (Unadjusted Model Output)

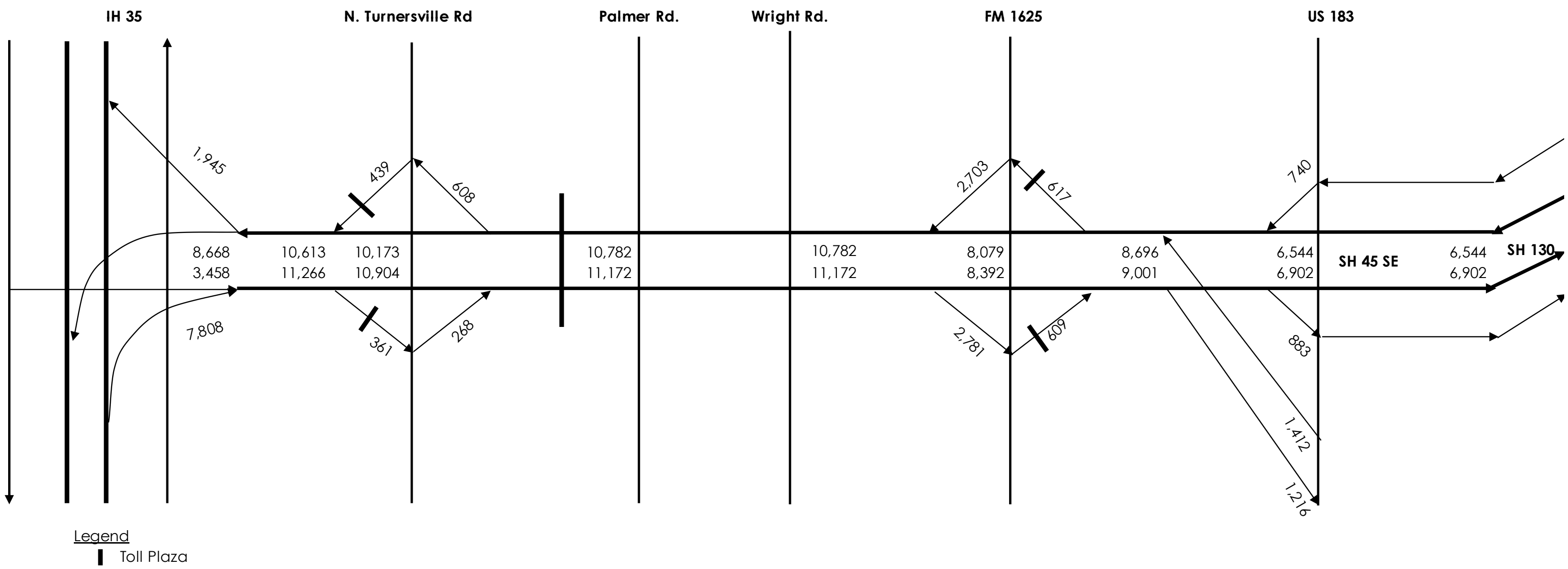


Figure 8.12 SH 45 SE Average Weekday Traffic – 2030 Model Year (Unadjusted Model Output)

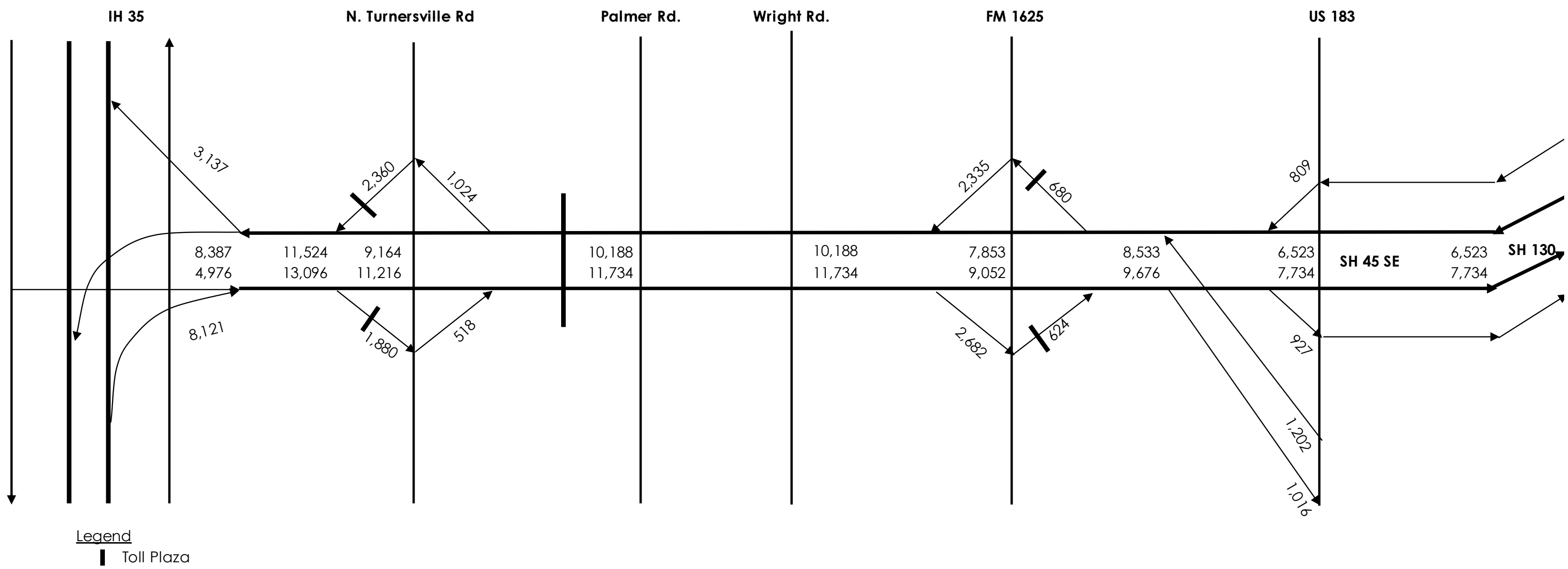
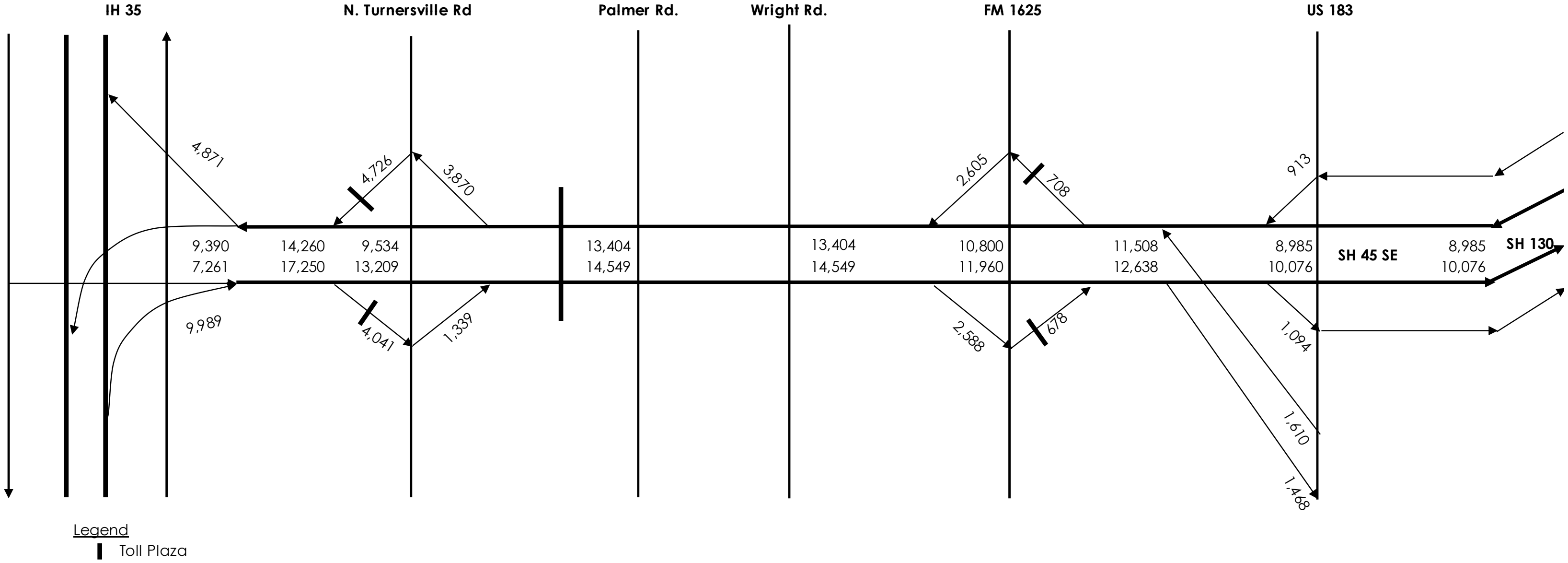


Figure 8.13 SH 45 SE Average Weekday Traffic – 2040 Model Year (Unadjusted Model Output)



8.3.2 SH 45 SE Screenline Analysis

Table 8.16 shows the traffic for the SH 45 SE corridor screenline by horizon year. This screenline is depicted earlier in this chapter as part of

Figure 8.5. These values are unadjusted model estimates for the model's calendar year forecasts and indicate the future demand of traffic in the corridor as estimated by the model, as well as the share of traffic using SH 45 SE. SH 45 SE is the dominant roadway in this largely rural and undeveloped corridor. Total screenline traffic increases from approximately 35,000 in 2016 to 58,000 in 2040, which implies a compounded annual growth rate of 2.2 percent over the 24-year period. SH 45 SE gradually increases its share of traffic from 53 percent in 2016 to nearly 56 percent in 2020. The SH 21 widening projects from SH 80 to SH 71 are assumed to occur by 2030 and effectively improve this southern bypass route around southeast Austin, making it a competitor to SH 45 SE for some long-distance trips. In 2030, the share of traffic on SH 45 SE decreases to about 46 percent, but then resumes an increasing share of 48 percent by 2040.

Table 8.16 Screenline 45SE-A Unadjusted Model Output

Locations	2016	% of Screenline	2018	% of Screenline	2020	% of Screenline	2030	% of Screenline	2040	% of Screenline
FM 1327	15,388	44.4%	15,727	42.4%	16,211	41.1%	19,984	42.1%	16,500	28.3%
SH 45 SE ML	**18,408**	**53.2%**	**20,317**	**54.8%**	**21,954**	**55.6%**	**21,922**	**46.2%**	**27,953**	**48.0%**
Turnersville Rd.	832	2.4%	1,051	2.8%	1,292	3.3%	5,571	11.7%	13,798	23.7%
TOTAL	**34,627**	**100.0%**	**37,096**	**100.0%**	**39,458**	**100.0%**	**47,477**	**100.0%**	**58,251**	**100.0%**

8.3.3 SH 45 SE Traffic and Revenue Assumptions

Table 8.17 provides a brief summary of the underlying assumptions in the transaction and revenue forecasts for SH 45 SE. All truck-related values in the table refer to 3+ axle vehicles, consistent with TxDOT's transaction reports. Total estimated truck transactions decrease from approximately 10.6 percent in 2018 to 8.5 percent by 2040. While the auto ETC payment shares are estimated slightly higher than the observed values, the forecast retains the slight increase in ETC payment shares that gradually increase to approximately 70 percent by 2040. This increase likely reflects a growing share of locally-oriented auto trips. In contrast, truck ETC shares are assumed to decrease gradually from about 52 percent in 2018 to nearly 46 percent in 2040. This change is likely related to the growing congestion on IH-35 that forces a growing proportion of infrequent long-distance truck trips lacking transponders onto SH 45 SE. The average truck toll multipliers are approximately 2.75 and 2.80 times the auto rate for ETC and PBM transactions, respectively, which reflects the observed distribution of trucks by axle group and current limitation for truck tolls capped at the rate of a 4-axle vehicle for SH 45 SE.

The PBM toll surcharge is assumed to remain at 33 percent of the ETC rate. Similar to the other CTTS toll roads, the collection rates for PBM and ETC transactions are held constant over the forecast period. Over the forecast period the cost to traverse the full length of SH 45 SE will increase from $1.07 in 2018 to approximately $1.92 in 2040. This implies a rate of $0.15 per mile in 2018 which increases to $0.27 by 2040. An annualization factor of 325 is assumed, consistent with the value used for SH 130.

Table 8.17 SH 45 SE Tolling and Traffic Characteristic Assumptions by Model Year

Model Year	2018	2020	2030	2040
Vehicle Type Distribution				
Autos	89.4%	89.9%	91.4%	91.5%
Trucks	10.6%	10.1%	8.6%	8.5%
Payment Type Distribution - Passenger Cars				
PBM	31.6%	33.7%	30.7%	28.9%
ETC	68.4%	66.3%	69.3%	71.1%
Payment Type Distribution - Trucks				
PBM	47.6%	49.0%	50.7%	54.3%
ETC	52.4%	51.0%	49.3%	45.7%
Toll Ratios				
Truck/Auto Ratio - ETC	2.75	2.75	2.75	2.75
Truck/Auto Ratio - PBM	2.80	2.80	2.80	2.80
PBM/ETC Toll Rate	1.33	1.33	1.33	1.33
Collection Rates				
PBM	51.1%	51.1%	51.1%	51.1%
ETC	99.3%	99.3%	99.3%	99.3%
Full Length Trip				
Distance	7.0	7.0	7.0	7.0
Rate per Mile	$0.15	$0.16	$0.21	$0.27
Toll Cost (ETC)	$1.07	$1.12	$1.44	$1.92
Annualization Factor	325	325	325	325

8.3.4 SH 45 SE Transactions and Revenue by Pay Point

SH 45 SE transaction and revenue statistics by pay point and horizon year are listed in Table 8.18. Both total and paying transactions are provided, where paying transactions reflect the assumptions for collection efficiency for each payment type. The average toll rate represents a blend of the individual rates by payment type and vehicle type. This blended value includes a 33 percent surcharge over the ETC rates for PBM patrons. These values are calendar year values, rather than the blended estimates created for each fiscal year shown in the next section.

Average weekday total transactions on SH 45 SE range from 20,000 in 2016 to 38,000 in 2040, and total paying transactions range from 16,000 in 2016 to 32,000 in 2040, representing a compounded annual growth rate of 2.8 percent. During the same timeframe, average weekday revenues range from $20,000 to $68,000 and exhibit a compounded annual growth rate of 5.2 percent reflecting both the increase in transactions and the assumed annual increase in toll rates.

Table 8.18 SH 45 SE Average Weekday Total Transactions and Toll Revenue (Adjusted for Calibration)

Toll Location	2016				2018				2020				2030				2040			
	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue	Transactions		Avg. Toll	Revenue
	Total	Paying			Total	Paying			Total	Paying			Total	Paying			Total	Paying		
Turnersville Rd	220	181	$0.80	$145	477	388	$0.83	$321	800	651	$0.88	$570	4,241	3,503	$1.07	$3,759	8,767	7,444	$1.43	$10,675
Mainline Plaza - 45 SE	**18,408**	**15,448**	**$1.25**	**$19,336**	**20,317**	**16,909**	**$1.34**	**$22,665**	**21,954**	**18,050**	**$1.40**	**$25,279**	**21,922**	**18,387**	**$1.76**	**$32,447**	**27,953**	**23,570**	**$2.36**	**$55,557**
FM 1625	959	809	$0.88	$714	1,030	868	$0.97	$844	1,226	1,038	$0.99	$1,032	1,304	1,090	$1.24	$1,353	1,386	1,127	$1.63	$1,842
SH 45 SE Total	**19,587**	**16,438**		**$20,194**	**21,824**	**18,165**		**$23,830**	**23,981**	**19,740**		**$26,880**	**27,467**	**22,980**		**$37,559**	**38,105**	**32,141**		**$68,073**
Annual Revenue in Millions				**$6.6**				**$7.7**				**$8.7**				**$12.2**				**$22.1**

Notes: (1) The average toll is calculated by Revenue divided by Paying Transactions.

8.3.5 SH 45 SE Traffic and Revenue Forecasts

Table 8.19 provides the forecasted transactions and revenue for the entire 35-year forecast period on a fiscal year basis. AWT statistics are provided on the left side of the table and annual values are provided on the right side along with statistics related to truck traffic. The values for the years FY 2009 to FY 2017 are the observed transactions and reported revenue for the first nine years of operation.

As shown in the table, SH 45 SE transaction growth during the first five years of the forecast is generally consistent with the recently observed growth of 5.4 percent in FY 2017. The widening of SH 21 southeast of Austin (as described in Chapter 2) provides an alternate route for some long-distance trips and causes slower growth on SH 45 SE between 2025 and 2030. Transaction growth is expected to increase again after 2030 at compounded annual growth rates between 1.9 and 3.8 percent. The assumed share of paying transactions is relatively consistent ranging from 82 to 84 percent, and the combined ETC share (autos and trucks) increases gradually to 69 percent by FY 2042. Revenue growth generally follows a trend ranging between 2.4 and 7.5 percent based on both transaction growth and the annual toll escalation assumed for each year. Paying truck transactions are approximately 10 percent of total paying transactions in FY 2018 but decrease to 7.4 percent over the forecast period as more auto-related traffic from development utilizes the toll road. Truck revenue also decreases from 23.3 percent of the total revenue to 19.6 percent by FY 2042.

Table 8.19 SH 45 SE Transaction and Revenue Forecasts

Fiscal Year	Average Weekday Transactions (AWT)					Annual Transactions & Revenue					
										3+ Axle Truck Percentage	
	Total Transactions	YOY Growth	Total Transactions ETC Share	Paying Transactions	Paying Percentage	Annual Total Transactions (in 000s)	Annual Paying Transactions (in 000s)	Annual Revenue (in $000s)	YOY Growth	Paying Transactions	Revenue
2008											
2009				*6,609*				***$475***			
2010	***8,553***		***63.6%***	*6,952*	*81%*	***2,864***	*2,328*	***$3,210***			
2011	***9,423***	***10.2%***	***62.7%***	*7,659*	*81%*	***3,178***	*2,583*	***$3,596***	***12.0%***		
2012	***11,302***	***19.9%***	***56.6%***	*9,037*	*80%*	***3,842***	*3,072*	***$4,246***	***18.1%***		
2013	***12,636***	***11.8%***	***61.8%***	*10,061*	*80%*	***4,300***	*3,424*	***$4,274***	***0.7%***		
2014	***14,069***	***11.3%***	***61.4%***	*11,203*	*80%*	***4,743***	*3,777*	***$4,680***	***9.5%***		
2015	***16,601***	***18.0%***	***61.0%***	*13,565*	*82%*	***5,566***	*4,548*	***$6,019***	***28.6%***		
2016	***19,573***	***17.9%***	***58.9%***	*15,556*	*79%*	***6,513***	*5,176*	***$6,897***	***14.6%***		
2017	***20,623***	***5.4%***	***60.8%***	*16,362*	*79%*	***6,743***	*5,350*	***$7,358***	***6.7%***		
2018	21,179	2.7%	65.0%	17,650	83%	6,883	5,736	$7,533	2.4%	10.0%	23.3%
2019	22,686	7.1%	65.9%	18,797	83%	7,373	6,109	$8,101	7.5%	9.5%	23.1%
2020	23,754	4.7%	65.0%	19,582	82%	7,720	6,364	$8,605	6.2%	9.3%	22.7%
2021	24,895	4.8%	63.8%	20,373	82%	8,091	6,621	$9,096	5.7%	9.0%	21.9%
2022	25,959	4.3%	63.2%	21,175	82%	8,437	6,882	$9,636	5.9%	8.7%	21.4%
2023	26,571	2.4%	63.0%	21,648	81%	8,636	7,036	$10,069	4.5%	8.6%	21.2%
2024	26,825	1.0%	62.9%	21,835	81%	8,718	7,096	$10,369	3.0%	8.5%	21.0%
2025	26,918	0.3%	63.4%	21,983	82%	8,748	7,144	$10,646	2.7%	8.4%	20.9%
2026	27,010	0.3%	64.2%	22,164	82%	8,778	7,203	$10,927	2.6%	8.3%	20.8%
2027	27,116	0.4%	65.0%	22,352	82%	8,813	7,265	$11,210	2.6%	8.2%	20.5%
2028	27,221	0.4%	65.8%	22,541	83%	8,847	7,326	$11,501	2.6%	8.0%	20.3%
2029	27,326	0.4%	66.5%	22,729	83%	8,881	7,387	$11,799	2.6%	7.9%	20.1%
2030	27,432	0.4%	67.3%	22,917	84%	8,915	7,448	$12,104	2.6%	7.7%	19.9%
2031	28,176	2.7%	67.7%	23,591	84%	9,157	7,667	$12,752	5.4%	7.7%	19.8%
2032	29,240	3.8%	67.9%	24,507	84%	9,503	7,965	$13,592	6.6%	7.6%	19.8%
2033	30,304	3.6%	68.0%	25,423	84%	9,849	8,262	$14,469	6.5%	7.6%	19.7%
2034	31,368	3.5%	68.2%	26,339	84%	10,195	8,560	$15,383	6.3%	7.6%	19.7%
2035	32,432	3.4%	68.3%	27,255	84%	10,540	8,858	$16,335	6.2%	7.5%	19.7%
2036	33,495	3.3%	68.5%	28,171	84%	10,886	9,156	$17,328	6.1%	7.5%	19.7%
2037	34,559	3.2%	68.6%	29,087	84%	11,232	9,453	$18,362	6.0%	7.5%	19.7%
2038	35,623	3.1%	68.7%	30,004	84%	11,578	9,751	$19,439	5.9%	7.4%	19.6%
2039	36,687	3.0%	68.8%	30,920	84%	11,923	10,049	$20,561	5.8%	7.4%	19.6%
2040	37,751	2.9%	68.9%	31,836	84%	12,269	10,347	$21,729	5.7%	7.4%	19.6%
2041	38,601	2.3%	69.0%	32,559	84%	12,545	10,582	$22,863	5.2%	7.4%	19.6%
2042	39,341	1.9%	69.0%	33,183	84%	12,786	10,784	$24,000	5.0%	7.4%	19.6%

Notes: (1) Revenue for PBM patrons was not allocated by each toll facility until September 2009; therefore, annual revenues shown for FY 2008 - FY 2009 are estimated.
(2) ***Actual Average Weekday Transactions and Annual Revenue (FY 2008 – FY 2017)***

8.4 TOTAL CTTS TRAFFIC & REVENUE FORECASTS

Table 8.20 lists the paying AWT transactions and revenue by CTTS roadway, along with a grand total for the system. The growth rate for each estimate is provided as well. Table 8.21 lists the total transactions and annual revenue for the combined CTTS. This table provides all statistics in the same format shown for the individual elements and provides system-wide statistics for total and paying transactions as well as ETC share and truck usage estimates. As stated previously, these revenue estimates include only the tolls and PBM surcharge for the PBM transactions. Any from revenue from service center fees is not included in the revenue forecasts.

Table 8.22 provides a comparison of the paying AWT transactions and annual revenue between the 2014 Study and the current forecasts. As shown in the table, the system-wide value of paying transactions is approximately 8 percent higher in the early years of the forecast due primarily to the higher level of recent growth in both SH 130 and SH 45 SE. The difference in paying transactions does decrease to about 2 percent by FY 2030 and generally is about 3 to 8 percent higher thereafter to 2042. In contrast, revenue is approximately 9 percent higher in FY 2018 and then gradually declines to equal the values from the 2014 Study by FY 2028. This gradual decline towards the prior forecast values is due to several changes in the forecasting assumptions from the conditions used in the prior forecasts. These changes include:

- Lower toll escalation rates in the early forecast years. In the 2014 Study it was assumed that the annual toll escalation would gradually reach 3.0 percent per year by 2025. The 2018 Study assumes gradual escalation up to 3.0 percent by the year 2034, as discussed previously in Chapter 4.
- Lower share of ETC transactions. The 2014 Study had assumed that the system-wide ETC share of transactions would increase towards approximately 75 percent over the forecast period. Recent trends indicate that ETC shares are stable or declining slightly. As a result, the 2018 Study assumed that ETC shares will remain relatively constant over the forecast period, with the exception of SH 45 SE which will have a small increase over the forecast.
- Lower annualization factors. The 2014 Study assumed an annualization factor of 330 on both SH 130 and SH 45 SE. Recent trends indicate that the annualization factor is lower such that the 2018 Study assumptions on both of these roads was reduced to 325. The annualization factors for SH 45 N and Loop 1 remain the same as in the 2014 Study at 320.
- Reduced share of truck traffic in the current forecasts. The new CAMPO regional model had some minor changes in the process for estimating truck traffic and Stantec also partitioned medium and heavy trucks into separate vehicle types to support options for managed lane estimation. Together these changes have resulted in lower levels of future heavy truck traffic for the 2018 forecasts. In the prior 2014 Study, Stantec noted that the older CAMPO model had a tendency to over-estimate truck traffic and Stantec had attempted to restrain truck traffic growth to lower and more reasonable trends consistent with the overall trip generation of the non-commercial trip purposes. Even with that adjustment in the 2014 forecasts, the newer 2018 CTTS heavy truck estimates are still slightly lower than the constrained 2014 values.

The last line of the Table 8.22 shows the summation of the forecasted revenue in nominal dollars from FY 2018 to FY 2042 for the 2014 and 2018 CTTS Reports. While there is variation in the amount of change in revenue by year between the two forecasts, the 2018 CTTS forecast has approximately $32.0 million more revenue during the forecast period.

Table 8.20 Paying Transactions and Revenue Forecasts by CTTS Roadway

Fiscal Year	Average Weekday Paying Transactions						Annual Revenue (in $000s)					
	SH 45 N	Loop 1	SH 130	45 SE	CTTS Total	YOY Growth	SH 45 N	Loop 1	SH 130	45 SE	CTTS Total	YOY Growth
2008	84,058	50,560	51,747		186,366		$17,987	$11,463	$19,456		$48,906	
2009	88,687	50,871	64,875	6,609	204,433	9.7%	$19,882	$11,918	$27,114	$475	$58,914	20.5%
2010	90,879	52,527	74,547	6,952	217,953	6.6%	$19,799	$11,937	$34,408	$3,210	$66,144	12.3%
2011	94,478	54,587	79,840	7,659	228,905	5.0%	$20,268	$12,317	$36,237	$3,596	$68,822	4.0%
2012	100,302	57,291	89,000	9,037	246,593	7.7%	$21,945	$13,015	$40,735	$4,246	$75,695	10.0%
2013	100,665	55,032	100,861	10,061	266,619	8.1%	$29,075	$16,143	$54,492	$4,274	$103,985	37.4%
2014	101,640	54,116	111,557	11,203	278,516	4.5%	$34,831	$18,560	$67,092	$4,680	$125,163	20.4%
2015	114,954	58,650	136,281	13,565	323,450	16.1%	$38,957	$20,459	$86,195	$6,019	$151,630	21.1%
2016	123,185	61,360	157,829	15,556	357,930	10.7%	$42,731	$21,726	$99,303	$6,897	$170,657	12.5%
2017	129,682	65,440	171,694	16,362	383,178	7.1%	$45,496	$23,349	$108,615	$7,358	$184,818	8.3%
2018	134,855	70,161	180,511	17,650	403,177	5.2%	$47,793	$25,221	$111,908	$7,533	$192,455	4.1%
2019	140,095	73,241	190,093	18,797	422,226	4.7%	$51,685	$27,281	$120,433	$8,101	$207,500	7.8%
2020	146,513	76,294	189,928	19,582	432,317	2.4%	$55,366	$29,088	$123,127	$8,605	$216,186	4.2%
2021	152,303	78,321	199,652	20,373	450,649	4.2%	$59,126	$30,638	$132,790	$9,096	$231,650	7.2%
2022	155,392	79,550	210,211	21,175	466,328	3.5%	$61,619	$31,759	$142,547	$9,636	$245,561	6.0%
2023	159,232	80,590	217,844	21,648	479,314	2.8%	$64,593	$32,916	$150,430	$10,069	$258,008	5.1%
2024	161,198	79,519	224,123	21,835	486,675	1.5%	$66,993	$33,256	$157,677	$10,369	$268,295	4.0%
2025	164,075	79,948	228,431	21,983	494,437	1.6%	$69,864	$34,254	$163,458	$10,646	$278,222	3.7%
2026	167,880	81,768	233,197	22,164	505,009	2.1%	$73,406	$35,983	$170,512	$10,927	$290,828	4.5%
2027	171,574	83,649	238,479	22,352	516,054	2.2%	$77,129	$37,851	$178,645	$11,210	$304,835	4.8%
2028	175,268	85,531	243,760	22,541	527,100	2.1%	$81,003	$39,796	$187,087	$11,501	$319,387	4.8%
2029	178,961	87,412	249,042	22,729	538,144	2.1%	$85,034	$41,821	$195,847	$11,799	$334,501	4.7%
2030	182,655	89,293	254,324	22,917	549,189	2.1%	$89,228	$43,929	$204,937	$12,104	$350,198	4.7%
2031	186,509	91,126	262,359	23,591	563,585	2.6%	$93,749	$46,118	$216,627	$12,752	$369,246	5.4%
2032	190,443	92,935	271,770	24,507	579,655	2.9%	$98,537	$48,394	$229,906	$13,592	$390,429	5.7%
2033	194,376	94,744	281,182	25,423	595,725	2.8%	$103,525	$50,763	$243,714	$14,469	$412,471	5.6%
2034	198,310	96,553	290,594	26,339	611,796	2.7%	$108,721	$53,229	$258,070	$15,383	$435,403	5.6%
2035	202,244	98,362	300,005	27,255	627,866	2.6%	$114,133	$55,795	$272,992	$16,335	$459,255	5.5%
2036	206,178	100,171	309,417	28,171	643,937	2.6%	$119,770	$58,465	$288,501	$17,328	$484,064	5.4%
2037	210,112	101,980	318,828	29,087	660,007	2.5%	$125,638	$61,243	$304,615	$18,362	$509,858	5.3%
2038	214,046	103,789	328,240	30,004	676,079	2.4%	$131,748	$64,132	$321,356	$19,439	$536,675	5.3%
2039	217,980	105,598	337,651	30,920	692,149	2.4%	$138,109	$67,138	$338,745	$20,561	$564,553	5.2%
2040	221,913	107,407	347,063	31,836	708,219	2.3%	$144,730	$70,263	$356,804	$21,729	$593,526	5.1%
2041	225,457	109,090	354,753	32,559	721,859	1.9%	$151,419	$73,480	$375,015	$22,863	$622,777	4.9%
2042	228,839	110,727	361,551	33,183	734,300	1.7%	$158,301	$76,819	$393,667	$24,000	$652,787	4.8%

Notes: (1) SH 45 SE opened in May 2009 but did not become part of the CTTS until September 2012; therefore, it is not included in CTTS totals until FY 2013.
(2) Revenue includes PBM surcharge (33 percent of ETC toll).
(3) ***Actual Annual Revenue (may not equal the sum of values shown for each facility due to rounding)***

Table 8.21 Total CTTS Transaction and Revenue Forecasts

Fiscal Year	Average Weekday Transactions (AWT)					Annual Transactions & Revenue					
	Total Transactions	YOY Growth	Total Transactions ETC Share	Paying Transactions	Paying Percentage	Annual Total Transactions (in 000s)	Annual Paying Transactions (in 000s)	Annual Revenue (in $000s)	YOY Growth	3+ Axle Truck Percentage Paying Transactions	3+ Axle Truck Percentage Revenue
2008	204,133			186,366	91%	65,940	60,185	$48,906			
2009	224,276	9.9%	73.7%	204,433	91%	73,108	66,617	$58,914	20.5%		
2010	239,343	6.7%	74.1%	217,953	91%	78,529	71,485	$66,144	12.3%		
2011	251,437	5.1%	71.6%	228,905	91%	83,010	75,539	$68,822	4.0%		
2012	273,411	8.7%	71.4%	246,593	90%	90,032	81,164	$75,695	10.0%		
2013	310,671	13.6%	71.8%	266,619	86%	102,507	87,898	$103,985	37.4%		
2014	330,988	6.5%	70.0%	278,516	84%	109,049	91,708	$125,163	20.4%		
2015	380,245	14.9%	68.4%	323,450	85%	124,506	105,868	$151,630	21.1%		
2016	433,705	14.1%	65.2%	357,930	83%	141,974	117,138	$170,657	12.5%		
2017	466,550	7.6%	66.3%	383,178	82%	151,501	124,405	$184,818	8.3%		
2018	484,152	3.8%	67.1%	403,177	83%	156,144	130,007	$192,455	4.1%	6.3%	16.7%
2019	505,388	4.4%	67.3%	422,226	84%	163,010	136,156	$207,500	7.8%	6.1%	17.6%
2020	517,575	2.4%	67.3%	432,317	84%	166,915	139,388	$216,186	4.2%	6.0%	17.3%
2021	540,388	4.4%	67.0%	450,649	83%	174,283	145,308	$231,650	7.2%	6.0%	17.0%
2022	559,870	3.6%	66.8%	466,328	83%	180,590	150,382	$245,561	6.0%	5.9%	16.9%
2023	575,787	2.8%	66.7%	479,314	83%	185,734	154,578	$258,008	5.1%	5.9%	16.8%
2024	584,860	1.6%	66.6%	486,675	83%	188,677	156,965	$268,295	4.0%	5.9%	16.8%
2025	593,457	1.5%	66.8%	494,437	83%	191,453	159,471	$278,222	3.7%	5.8%	16.7%
2026	605,934	2.1%	66.9%	505,009	83%	195,476	162,880	$290,828	4.5%	5.8%	16.5%
2027	619,455	2.2%	66.8%	516,054	83%	199,837	166,443	$304,835	4.8%	5.7%	16.3%
2028	632,975	2.2%	66.7%	527,100	83%	204,199	170,004	$319,387	4.8%	5.6%	16.1%
2029	646,496	2.1%	66.7%	538,144	83%	208,562	173,566	$334,501	4.7%	5.6%	15.9%
2030	660,017	2.1%	66.6%	549,189	83%	212,923	177,127	$350,198	4.7%	5.5%	15.7%
2031	677,334	2.6%	66.6%	563,585	83%	218,518	181,777	$369,246	5.4%	5.5%	15.7%
2032	696,549	2.8%	66.6%	579,655	83%	224,731	186,971	$390,429	5.7%	5.5%	15.7%
2033	715,766	2.8%	66.7%	595,725	83%	230,942	192,164	$412,471	5.6%	5.5%	15.7%
2034	734,981	2.7%	66.7%	611,796	83%	237,155	197,359	$435,403	5.6%	5.5%	15.7%
2035	754,198	2.6%	66.7%	627,866	83%	243,365	202,554	$459,255	5.5%	5.5%	15.7%
2036	773,412	2.5%	66.7%	643,937	83%	249,577	207,748	$484,064	5.4%	5.6%	15.7%
2037	792,628	2.5%	66.7%	660,007	83%	255,789	212,942	$509,858	5.3%	5.6%	15.7%
2038	811,844	2.4%	66.8%	676,079	83%	262,000	218,137	$536,675	5.3%	5.6%	15.7%
2039	831,059	2.4%	66.8%	692,149	83%	268,212	223,330	$564,553	5.2%	5.6%	15.7%
2040	850,275	2.3%	66.8%	708,219	83%	274,423	228,524	$593,526	5.1%	5.6%	15.7%
2041	866,660	1.9%	66.8%	721,859	83%	279,718	232,932	$622,777	4.9%	5.6%	15.8%
2042	881,649	1.7%	66.8%	734,300	83%	284,561	236,949	$652,787	4.8%	5.6%	15.8%

Notes: (1) SH 45 SE opened in May 2009 but did not become part of the CTTS until September 2012; therefore, it is not included in CTTS totals until FY 2013.
(2) Revenue includes PBM surcharge (33 percent of ETC toll).
(3) ***Actual Annual Revenue (may not equal the sum of values shown for each facility due to rounding)***

Table 8.22 Comparison of 2014 and 2018 CTTS Transaction and Toll Revenue Forecasts

Fiscal Year	Average Weekday Paying Transactions			Annual Toll Revenue (in $000s)		
	2014 Study	2018 Study	% Difference	2014 Study	2018 Study	% Difference
2008	*186,366*	*186,366*	0%	***$48,906***	***$48,906***	0%
2009	*204,433*	*204,433*	0%	***$58,914***	***$58,914***	0%
2010	*217,953*	*217,953*	0%	***$66,144***	***$66,144***	0%
2011	*228,905*	*228,905*	0%	***$68,822***	***$68,822***	0%
2012	*246,593*	*246,593*	0%	***$75,695***	***$75,695***	0%
2013	*266,619*	*266,619*	0%	***$103,985***	***$103,985***	0%
2014	*278,516*	*278,516*	0%	***$125,163***	***$125,163***	0%
2015	320,983	*323,450*	1%	$140,665	***$151,630***	8%
2016	339,503	*357,930*	5%	$152,900	***$170,657***	12%
2017	356,732	*383,178*	7%	$165,020	***$184,818***	12%
2018	373,638	403,177	8%	$177,330	$192,455	9%
2019	389,942	422,226	8%	$189,621	$207,500	9%
2020	405,435	432,317	7%	$201,669	$216,186	7%
2021	419,040	450,649	8%	$213,939	$231,650	8%
2022	431,900	466,328	8%	$226,707	$245,561	8%
2023	444,839	479,314	8%	$240,119	$258,008	7%
2024	457,859	486,675	6%	$254,159	$268,295	6%
2025	470,965	494,437	5%	$268,800	$278,222	4%
2026	484,160	505,009	4%	$284,637	$290,828	2%
2027	497,445	516,054	4%	$301,477	$304,835	1%
2028	510,823	527,100	3%	$319,104	$319,387	0%
2029	524,295	538,144	3%	$337,549	$334,501	-1%
2030	537,863	549,189	2%	$356,850	$350,198	-2%
2031	549,931	563,585	2%	$376,822	$369,246	-2%
2032	561,271	579,655	3%	$397,611	$390,429	-2%
2033	572,670	595,725	4%	$419,370	$412,471	-2%
2034	584,130	611,796	5%	$442,139	$435,403	-2%
2035	595,651	627,866	5%	$465,962	$459,255	-1%
2036	607,234	643,937	6%	$490,885	$484,064	-1%
2037	618,881	660,007	7%	$516,956	$509,858	-1%
2038	630,592	676,079	7%	$544,224	$536,675	-1%
2039	642,369	692,149	8%	$572,739	$564,553	-1%
2040	654,212	708,219	8%	$602,557	$593,526	-1%
2041	665,668	721,859	8%	$632,448	$622,777	-2%
2042	676,943	734,300	8%	$662,988	$652,787	-2%
FY 18-42 Total	13,307,756	14,085,796	6%	$9,496,662	$9,528,670	0%

Notes: (1) SH 45 SE opened in May 2009 but did not become part of the CTTS until September 2012; therefore, it is not included in CTTS totals until FY 2013.
(2) Revenue includes PBM surcharge (33 percent of ETC toll).
(3) ***Actual Annual Revenue (may not equal the sum of values shown for each facility due to rounding)***

Table 8.23 provides a comparison of the total annual transactions by payment method between the 2014 Study and the current forecasts. As shown in the table, FY 2015 total transactions were 2.2 percent higher, FY 2016 total transactions were 10.4 percent higher, and FY 2017 total transactions were 12.4 percent higher than forecasted in the 2014 Study. FY 2017 ETC transactions are approximately 1.4 percent greater than forecasted in the 2014 Study. The 2018 Study estimates that FY 2018 ETC transactions will be 0.7 percent greater than the value from the 2014 forecast, but then generally up to 5.7 percent lower during the remaining years of the forecast period when compared to the 2014 Study. This reduction in ETC usage is due to lower ETC assumptions in the 2018 Study. PBM transactions are between 35 and 47 percent greater throughout the forecast period.

Table 8.23 Comparison of 2014 Study and 2018 Study
CTTS Total Annual Transactions Forecasts

Fiscal Year	Total Annual Transactions (in 000's)								
	ETC			PBM			Total		
	2014 Study	2018 Study	% Difference	2014 Study	2018 Study	% Difference	2014 Study	2018 Study	% Difference
2013	***76,109***	***76,109***	***0.0%***	***26,398***	***26,398***	***0.0%***	***102,507***	***102,507***	***0.0%***
2014	***76,331***	***76,331***	***0.0%***	***32,717***	***32,717***	***0.0%***	***109,049***	***109,049***	***0.0%***
2015	88,404	***85,191***	***-3.6%***	33,416	***39,315***	***17.7%***	121,820	***124,506***	***2.2%***
2016	93,875	***92,529***	***-1.4%***	34,691	***49,445***	***42.5%***	128,566	***141,974***	***10.4%***
2017	98,995	***100,377***	***1.4%***	35,824	***51,124***	***42.7%***	134,819	***151,501***	***12.4%***
2018	104,060	104,741	0.7%	36,848	51,403	39.5%	140,908	156,144	10.8%
2019	108,991	109,665	0.6%	37,732	53,345	41.4%	146,723	163,010	11.1%
2020	113,757	112,231	-1.3%	38,398	54,684	42.4%	152,156	166,915	9.7%
2021	117,674	116,699	-0.8%	39,534	57,584	45.7%	157,208	174,283	10.9%
2022	121,209	120,540	-0.6%	40,950	60,050	46.6%	162,159	180,590	11.4%
2023	124,766	123,792	-0.8%	42,373	61,942	46.2%	167,139	185,734	11.1%
2024	128,345	125,625	-2.1%	43,804	63,052	43.9%	172,149	188,677	9.6%
2025	131,950	127,882	-3.1%	45,239	63,571	40.5%	177,189	191,453	8.1%
2026	135,580	130,688	-3.6%	46,681	64,788	38.8%	182,261	195,476	7.3%
2027	139,236	133,453	-4.2%	48,128	66,384	37.9%	187,364	199,837	6.7%
2028	142,918	136,218	-4.7%	49,582	67,981	37.1%	192,500	204,199	6.1%
2029	146,628	138,983	-5.2%	51,042	69,579	36.3%	197,670	208,562	5.5%
2030	150,365	141,748	-5.7%	52,509	71,175	35.5%	202,874	212,923	5.0%
2031	153,732	145,464	-5.4%	53,732	73,054	36.0%	207,464	218,518	5.3%
2032	156,921	149,655	-4.6%	54,833	75,076	36.9%	211,754	224,731	6.1%
2033	160,127	153,846	-3.9%	55,938	77,096	37.8%	216,065	230,942	6.9%
2034	163,351	158,037	-3.3%	57,046	79,118	38.7%	220,397	237,155	7.6%
2035	166,593	162,228	-2.6%	58,156	81,137	39.5%	224,750	243,365	8.3%
2036	169,854	166,419	-2.0%	59,270	83,158	40.3%	229,124	249,577	8.9%
2037	173,134	170,610	-1.5%	60,387	85,179	41.1%	233,521	255,789	9.5%
2038	176,432	174,801	-0.9%	61,508	87,199	41.8%	237,940	262,000	10.1%
2039	179,751	178,992	-0.4%	62,632	89,220	42.5%	242,382	268,212	10.7%
2040	183,088	183,183	0.1%	63,759	91,240	43.1%	246,847	274,423	11.2%
2041	186,295	186,712	0.2%	64,891	93,006	43.3%	251,186	279,718	11.4%
2042	189,440	189,915	0.3%	66,026	94,646	43.3%	255,466	284,561	11.4%

Notes: (1) Cash payment option was eliminated in January 2013. ETC transactions shown for FY 2013 include cash transactions.
(2) ***Actual Annual Transactions (Total transactions may not equal the sum of values shown due to rounding)***

8.5 MONTHLY TRANSACTION AND REVENUE FORECASTS

This report presents forecasts of transactions and revenue in several formats. Transactions are provided on an AWT as well as annual basis, while revenue is provided on an annual basis. In order to provide estimates of monthly transactions and revenue consistent with the values in the CTTS quarterly reports issued by TxDOT, Stantec developed a procedure to disaggregate the annual values in this report for select fiscal years utilizing observed data from TxDOT quarterly reports. The process implicitly accounts for seasonal variation in traffic due to holiday travel and weather conditions, as well as variation in revenue collection due to a number of factors.

The monthly allocation process utilizes a three-year rolling average distribution pattern that provides a stable allocation method derived from a broad base of historical data. This approach ensures that any exceptional conditions in the patterns of any one year do not distort the overall trends under typical conditions. Since the distribution pattern is based on a rolling three-year period of data for each CTTS roadway, the pattern can change over time to reflect changes in travel patterns as the individual facilities mature, as well as changes in the efficiency of the PBM collection system. As an example, SH 130 currently has a lower percentage of ETC transactions than either Loop 1 or SH 45 N, suggesting that more travelers in this corridor are infrequent users, but with possibly more usage during holiday travel periods. As development in the SH 130 corridor continues, it is possible that more transactions will be related to local travelers making more frequent trips and using ETC. This transition would likely have an impact on the monthly allocation of both transactions and revenue as the transponder patrons would likely exhibit different monthly usage patterns and have a lower toll rate per transaction. Also, revenue collection would be more efficient for ETC transactions than for PBM transactions. For the 2018 Study, the three-year rolling average period encompassed FY 2015 – FY 2017. During this period, the rolling average calculations were influenced by several notable factors. These factors include:

- The construction of the MoPac N Express Lane facility likely impacted transactions on Loop 1. The project was completed in October 2017, just after the end of FY 2017.
- A pilot program of discounted truck tolls on SH 130 and SH 45 SE were in effect from April 2016 to August 2017. The former toll schedule was reactivated on September 1st, 2017.

Table 8.24 provides an example of the three-year rolling average factor calculations for SH 130. The top part of the table lists the monthly SH 130 AWT for each of the last three fiscal years (FY 2015 – FY 2017) as provided by the CTTS quarterly reports. From these values, an annual AWT for each year is calculated which is weighted by number of weekdays in each month. The number of weekdays for each month will vary by year due to the number of weekend days that occur in each month and the extra day from a leap year, if it occurs within the three-year period. The values for each month across all three years are summed along with all the total values for all three years. The monthly indexes are then calculated by dividing the monthly total for the three-year period by the total AWT for all three years, as shown in the last row of this section of the table.

Table 8.24 Monthly Variance for SH 130

SH 130 Average Weekday Transactions (AWT) by Month														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Annual**
Monthly AWT Transactions by Fiscal Year	FY 2015	150,764	158,420	160,056	151,036	143,469	153,896	165,999	174,079	175,804	179,467	184,596	180,867	165,262
	FY 2016	184,157	187,124	189,932	180,208	173,564	188,670	203,618	205,044	208,188	213,858	213,968	203,274	196,330
	FY 2017	211,864	216,952	213,972	202,972	189,933	207,739	220,594	220,829	221,764	226,848	220,875	220,702	214,916
Monthly AWT Index	'15-'17 avg.	0.95	0.98	0.98	0.93	0.88	0.95	1.02	1.04	1.05	1.08	1.07	1.05	1.00

SH 130 Total Transactions by Month														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Transactions by Fiscal Year (in 000s)	FY 2015	4,121	4,538	4,299	4,248	3,835	3,846	4,796	4,856	4,801	5,046	5,288	5,111	54,786
	FY 2016	5,058	5,284	4,977	4,974	4,594	4,941	5,911	5,621	5,815	5,959	5,867	5,822	64,822
	FY 2017	5,704	6,114	5,765	5,499	5,145	5,155	6,305	5,938	6,256	6,233	6,057	6,072	70,241
Monthly Transaction Percentages	'15-'17 avg.	7.8%	8.4%	7.9%	7.8%	7.1%	7.3%	9.0%	8.6%	8.9%	9.1%	9.1%	9.0%	100.0%

SH 130 Toll Revenues by Month														
Revenue Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Revenue by Fiscal Year (in $000s)	FY 2015	5,319	5,491	6,431	6,787	7,061	7,077	8,091	7,541	7,967	7,925	8,162	8,343	86,195
	FY 2016	8,097	7,869	7,934	7,746	7,684	7,832	8,844	8,116	8,807	8,539	8,507	9,329	99,303
	FY 2017	8,372	9,734	8,997	9,292	8,123	8,689	10,015	9,462	9,474	9,470	9,142	7,846	108,615
Monthly Revenue Percentages	'15-'17 avg.	7.4%	7.9%	7.9%	8.1%	7.8%	8.0%	9.2%	8.5%	8.9%	8.8%	8.8%	8.7%	100.0%

The second section of this table provides the data used to derive the average monthly transaction percentage calculations. The first three rows provide the observed monthly transactions for each of the last three fiscal years (FY 2015 – FY 2017) as provided by the CTTS quarterly reports. The values for each month across all three years are summed along with all three years. The monthly percentages are then calculated by dividing the monthly total for the three-year period by the total transactions for all three years, yielding the percentages shown in the last row of this section of the table.

The final section of this table provides the data used to derive the average monthly revenue percentage calculations. The first three rows contain the observed monthly revenue values for each of the last three fiscal years (FY 2015 – FY 2017) from the CTTS quarterly reports. Similar to the monthly transaction calculations, the values for each month across all three years are summed along with the totals for all three years and the monthly percentages are then calculated. It should be noted that due to variations in the types of transactions (auto versus trucks, ETC versus PBM), the collections processing and the lagging period for recognizing PBM revenue, there will be some variation between the monthly percentage distribution for transactions and revenue.

Table 8.25 lists the AWT by month for each CTTS element. These values include all transactions generated on the toll facilities. In order to develop a monthly pattern demonstrating the expected variation due to seasonal travel, the annual average weekday transactions are initially calculated and an index value is developed by dividing the monthly value by annual average weekday transactions. With an index value of 1.0 representing the annual average value, any months where the index value is greater than 1.0 indicates that the average weekday exceeds the annual average value. An index value less than 1.0 indicates that average weekday transactions are less than the annual average.

Table 8.25 Estimated Monthly Average Weekday Transactions, 2018

SH 45 N														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Value**
Monthly AWT Index	2017 Obs.	1.00	1.00	0.98	0.97	0.94	1.00	1.01	1.03	1.04	1.02	0.98	1.01	1.00
	2017 Est. ('15-'17 avg.)	0.98	0.99	0.98	0.96	0.95	0.99	1.00	1.04	1.04	1.04	1.02	1.03	1.00
Monthly AWT Transactions by Fiscal Year	2017 Obs.	154,109	154,202	150,833	148,449	144,988	154,073	155,692	158,321	159,215	157,033	151,458	155,533	**153,791**
	2017 Est.	150,655	151,795	150,062	147,764	145,765	151,648	153,211	159,202	159,878	159,360	156,213	158,138	**153,791**
	2017 Est. (2014 Study)	**136,267**	**137,332**	**136,579**	**132,987**	**130,774**	**135,448**	**137,933**	**144,758**	**145,926**	**145,488**	**143,995**	**145,419**	**139,558**
	2018 Est.	**155,399**	**156,575**	**154,788**	**152,417**	**150,355**	**156,424**	**158,036**	**164,216**	**164,913**	**164,379**	**161,133**	**163,118**	**158,634**

Loop 1														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Value**
Monthly AWT Index	2017 Obs.	0.98	0.99	0.98	0.98	0.96	1.01	1.02	1.03	1.02	1.02	0.99	1.01	1.00
	2017 Est. ('15-'17 avg.)	0.97	0.98	0.98	0.97	0.96	1.00	1.00	1.03	1.03	1.03	1.02	1.02	1.00
Monthly AWT Transactions by Fiscal Year	2017 Obs.	75,713	76,161	75,855	75,767	73,967	77,893	78,631	79,280	79,033	78,750	76,602	78,363	**77,220**
	2017 Est.	75,270	75,835	75,687	75,153	74,428	76,941	77,187	79,186	79,240	79,512	78,567	78,981	**77,220**
	2017 Est. (2014 Study)	**76,333**	**76,747**	**76,521**	**74,856**	**74,097**	**76,402**	**77,059**	**79,616**	**80,006**	**80,261**	**79,874**	**79,816**	**77,691**
	2018 Est.	**80,208**	**80,810**	**80,653**	**80,083**	**79,311**	**81,989**	**82,251**	**84,381**	**84,439**	**84,729**	**83,721**	**84,163**	**82,286**

SH 130														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Value**
Monthly AWT Index	2017 Obs.	0.99	1.01	1.00	0.94	0.88	0.97	1.03	1.03	1.03	1.06	1.03	1.03	1.00
	2017 Est. ('15-'17 avg.)	0.95	0.98	0.98	0.93	0.88	0.95	1.02	1.04	1.05	1.08	1.07	1.05	1.00
Monthly AWT Transactions by Fiscal Year	2017 Obs.	211,864	216,952	213,972	202,972	189,933	207,739	220,594	220,829	221,764	226,848	220,875	220,702	**214,916**
	2017 Est.	203,836	209,693	210,238	199,150	188,992	205,148	220,025	223,656	225,820	231,194	230,920	225,479	**214,916**
	2017 Est. (2014 Study)	**166,908**	**170,737**	**175,424**	**164,025**	**155,495**	**168,624**	**183,779**	**188,205**	**190,331**	**195,932**	**197,260**	**192,464**	**179,452**
	2018 Est.	**210,604**	**216,656**	**217,220**	**205,763**	**195,267**	**211,960**	**227,331**	**231,083**	**233,318**	**238,871**	**238,589**	**232,967**	**222,053**

SH 45 SE														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Value**
Monthly AWT Index	2017 Obs.	0.98	1.04	1.02	0.94	0.87	0.97	1.04	1.03	1.02	1.05	1.01	1.01	1.00
	2017 Est. ('15-'17 avg.)	0.94	0.99	1.00	0.92	0.87	0.95	1.03	1.03	1.04	1.08	1.08	1.05	1.00
Monthly AWT Transactions by Fiscal Year	2017 Obs.	20,305	21,386	21,088	19,360	17,988	19,932	21,507	21,321	20,954	21,609	20,844	20,853	**20,623**
	2017 Est.	19,423	20,435	20,623	18,926	17,874	19,679	21,214	21,342	21,426	22,308	22,210	21,578	**20,623**
	2017 Est. (2014 Study)	**17,039**	**17,661**	**18,430**	**16,610**	**15,764**	**17,363**	**18,949**	**19,134**	**19,436**	**20,202**	**20,403**	**19,716**	**18,427**
	2018 Est.	**19,946**	**20,985**	**21,179**	**19,436**	**18,356**	**20,209**	**21,785**	**21,917**	**22,003**	**22,909**	**22,808**	**22,160**	**21,179**

The first row for each section of Table 8.25 is the observed monthly index values for FY 2017, and second row is the estimated FY 2017 values based on the data from the three-year rolling average for FY 2015 – FY 2017. While there is some variation between the two indexes for several months, the patterns are largely consistent.

The last four rows of each section contain the AWT values for several conditions. The row labeled '2017 Obs.' lists the 2017 observed monthly AWT for FY 2017. The next row labeled '2017 Est.' is a hypothetical allocation of the 2017 observed data using the FY 2015 – FY 2017 rolling average patterns, which simply demonstrates the degree of replication. The following row labeled '2017 Est. (2014 Study)' is provided as a reference to the 2017 estimated monthly AWT from the 2014 Study. These values are based on the prior model forecasts and use the previous rolling average pattern derived from the FY 2014 – FY 2016 period. The final row lists the FY 2018 estimates using the current model forecasts based on the FY 2015 – FY 2017 pattern.

A similar procedure was used to develop monthly patterns for total transactions and toll revenue; however, the monthly percentage distribution was used instead of the index values. The findings are shown in Table 8.26 for total transactions and in Table 8.27 for toll revenues. The values for FY 2018 provided to TxDOT last year for the FY 2018 quarterly reports were calculated prior to the availability of complete statistics for FY 2017 and the new 2018 Study forecasts. Thus, the values in Table 8.27 are slightly different than those shown in the FY 2018 quarterly reports.

Table 8.26 Estimated Monthly Total Transactions, 2018

SH 45 N														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Transaction Percentages	2017 Obs.	8.2%	8.5%	8.0%	8.1%	8.0%	7.7%	8.8%	8.4%	8.9%	8.6%	8.2%	8.6%	100.0%
	2017 Est. ('15-'17 avg.)	8.1%	8.4%	7.8%	8.1%	7.9%	7.7%	8.6%	8.6%	8.8%	8.7%	8.5%	8.8%	100.0%
Monthly Transactions by Fiscal Year (in 000s)	2017 Obs.	4,106	4,248	3,965	4,036	3,971	3,857	4,385	4,193	4,430	4,264	4,073	4,264	**49,790**
	2017 Est.	4,015	4,207	3,873	4,038	3,914	3,848	4,306	4,272	4,382	4,327	4,237	4,372	**49,790**
	2017 Est. (2014 Study)	**3,570**	**3,781**	**3,473**	**3,593**	**3,469**	**3,412**	**3,803**	**3,871**	**3,934**	**3,888**	**3,882**	**3,983**	**44,658**
	2018 Est.	**4,093**	**4,289**	**3,949**	**4,117**	**3,990**	**3,923**	**4,390**	**4,356**	**4,467**	**4,412**	**4,319**	**4,457**	**50,763**

Loop 1														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Transaction Percentages	2017 Obs.	8.1%	8.4%	7.9%	8.2%	8.1%	7.8%	8.9%	8.4%	8.8%	8.6%	8.2%	8.6%	100.0%
	2017 Est. ('15-'17 avg.)	8.0%	8.4%	7.8%	8.2%	8.0%	7.8%	8.7%	8.5%	8.7%	8.6%	8.5%	8.7%	100.0%
Monthly Transactions by Fiscal Year (in 000s)	2017 Obs.	1,996	2,073	1,965	2,029	2,010	1,931	2,199	2,077	2,177	2,118	2,031	2,121	**24,727**
	2017 Est.	1,982	2,079	1,920	2,027	1,982	1,934	2,150	2,105	2,148	2,137	2,102	2,160	**24,727**
	2017 Est. (2014 Study)	**1,995**	**2,117**	**1,934**	**2,019**	**1,972**	**1,929**	**2,125**	**2,134**	**2,156**	**2,142**	**2,148**	**2,190**	**24,861**
	2018 Est.	**2,111**	**2,214**	**2,044**	**2,159**	**2,110**	**2,059**	**2,290**	**2,242**	**2,287**	**2,276**	**2,238**	**2,300**	**26,331**

SH 130														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Transaction Percentages	2017 Obs.	8.1%	8.7%	8.2%	7.8%	7.3%	7.3%	9.0%	8.5%	8.9%	8.9%	8.6%	8.6%	100.0%
	2017 Est. ('15-'17 avg.)	7.8%	8.4%	7.9%	7.8%	7.1%	7.3%	9.0%	8.6%	8.9%	9.1%	9.1%	9.0%	100.0%
Monthly Transactions by Fiscal Year (in 000s)	2017 Obs.	5,704	6,114	5,765	5,499	5,145	5,155	6,305	5,938	6,256	6,233	6,057	6,072	**70,241**
	2017 Est.	5,506	5,896	5,565	5,447	5,022	5,158	6,294	6,073	6,242	6,378	6,368	6,292	**70,241**
	2017 Est. (2014 Study)	**4,532**	**4,846**	**4,666**	**4,544**	**4,157**	**4,292**	**5,274**	**5,197**	**5,276**	**5,456**	**5,533**	**5,445**	**59,219**
	2018 Est.	**5,657**	**6,058**	**5,717**	**5,596**	**5,160**	**5,300**	**6,467**	**6,240**	**6,413**	**6,553**	**6,543**	**6,464**	**72,167**

SH 45 SE														
Transaction Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Transaction Percentages	2017 Obs.	8.1%	9.0%	8.4%	7.7%	7.2%	7.3%	9.1%	8.5%	8.8%	8.8%	8.4%	8.5%	100.0%
	2017 Est. ('15-'17 avg.)	7.8%	8.5%	8.1%	7.6%	7.0%	7.3%	9.0%	8.6%	8.8%	9.1%	9.1%	9.0%	100.0%
Monthly Transactions by Fiscal Year (in 000s)	2017 Obs.	549	604	569	522	488	494	615	574	590	594	570	572	**6,743**
	2017 Est.	526	576	546	515	473	494	607	581	591	616	614	603	**6,743**
	2017 Est. (2014 Study)	**464**	**502**	**491**	**459**	**418**	**442**	**543**	**529**	**538**	**563**	**573**	**560**	**6,081**
	2018 Est.	**537**	**588**	**558**	**525**	**483**	**505**	**620**	**593**	**604**	**628**	**626**	**616**	**6,883**

Table 8.27 Estimated Monthly Toll Revenue, 2018

SH 45 N														
Revenue Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Revenue Percentages	2017 Obs.	7.8%	9.0%	8.2%	8.3%	8.0%	8.0%	8.8%	8.6%	8.6%	8.6%	8.1%	7.9%	100.0%
	2017 Est. ('15-'17 avg.)	7.7%	8.2%	8.0%	8.2%	8.1%	8.0%	8.9%	8.6%	8.7%	8.6%	8.4%	8.7%	100.0%
Monthly Revenue by Fiscal Year (in $000s)	2017 Obs.	3,544	4,108	3,745	3,756	3,622	3,643	4,017	3,913	3,931	3,897	3,708	3,613	**45,496**
	2017 Est.	3,495	3,750	3,640	3,718	3,676	3,632	4,045	3,900	3,980	3,905	3,814	3,941	**45,496**
	2017 Est. (2014 Study)	**3,366**	**3,586**	**3,398**	**3,571**	**3,726**	**3,573**	**4,086**	**3,961**	**4,108**	**4,207**	**3,861**	**3,870**	**45,312**
	2018 Est.	**3,671**	**3,939**	**3,824**	**3,906**	**3,862**	**3,815**	**4,249**	**4,097**	**4,181**	**4,102**	**4,007**	**4,140**	**47,793**

Loop 1														
Revenue Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Revenue Percentages	2017 Obs.	7.7%	8.8%	8.1%	8.4%	8.1%	8.1%	8.9%	8.6%	8.6%	8.6%	8.2%	7.9%	100.0%
	2017 Est. ('15-'17 avg.)	7.6%	8.2%	8.0%	8.3%	8.2%	8.1%	8.9%	8.5%	8.7%	8.5%	8.3%	8.6%	100.0%
Monthly Revenue by Fiscal Year (in $000s)	2017 Obs.	1,801	2,052	1,897	1,962	1,885	1,890	2,083	2,005	2,001	2,005	1,914	1,854	**23,349**
	2017 Est.	1,784	1,906	1,862	1,936	1,923	1,888	2,084	1,988	2,024	1,992	1,949	2,013	**23,349**
	2017 Est. (2014 Study)	**1,947**	**2,079**	**1,963**	**2,001**	**2,182**	**2,074**	**2,344**	**2,265**	**2,324**	**2,390**	**2,194**	**2,184**	**25,948**
	2018 Est.	**1,928**	**2,059**	**2,011**	**2,091**	**2,077**	**2,040**	**2,251**	**2,148**	**2,186**	**2,151**	**2,105**	**2,174**	**25,221**

SH 130														
Revenue Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Revenue Percentages	2017 Obs.	7.7%	9.0%	8.3%	8.6%	7.5%	8.0%	9.2%	8.7%	8.7%	8.7%	8.4%	7.2%	100.0%
	2017 Est. ('15-'17 avg.)	7.4%	7.9%	7.9%	8.1%	7.8%	8.0%	9.2%	8.5%	8.9%	8.8%	8.8%	8.7%	100.0%
Monthly Revenue by Fiscal Year (in $000s)	2017 Obs.	8,372	9,734	8,997	9,292	8,123	8,689	10,015	9,462	9,474	9,470	9,142	7,846	**108,615**
	2017 Est.	8,046	8,529	8,627	8,798	8,445	8,715	9,953	9,276	9,693	9,577	9,532	9,424	**108,615**
	2017 Est. (2014 Study)	**6,394**	**6,638**	**6,885**	**6,265**	**6,841**	**6,624**	**7,986**	**7,762**	**8,175**	**8,540**	**7,752**	**7,570**	**87,431**
	2018 Est.	**8,290**	**8,787**	**8,889**	**9,065**	**8,701**	**8,979**	**10,254**	**9,557**	**9,987**	**9,868**	**9,821**	**9,709**	**111,908**

SH 45 SE														
Revenue Value	**FY Term**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Total**
Monthly Revenue Percentages	2017 Obs.	7.8%	9.2%	8.5%	8.6%	7.5%	8.0%	9.3%	8.7%	8.6%	8.6%	8.2%	7.0%	100.0%
	2017 Est. ('15-'17 avg.)	7.3%	7.9%	8.1%	8.1%	7.8%	8.1%	9.2%	8.4%	8.8%	8.8%	8.7%	8.7%	100.0%
Monthly Revenue by Fiscal Year (in $000s)	2017 Obs.	574	676	625	635	550	591	686	637	631	633	603	517	**7,358**
	2017 Est.	539	584	598	599	576	594	676	616	650	645	643	638	**7,358**
	2017 Est. (2014 Study)	**458**	**497**	**528**	**506**	**511**	**490**	**578**	**613**	**559**	**573**	**514**	**503**	**6,329**
	2018 Est.	**552**	**598**	**612**	**613**	**590**	**608**	**692**	**630**	**665**	**660**	**658**	**654**	**7,533**

The observed revenue by month for FY 2017 and the estimated patterns from the rolling average process include variations in collections processing, as well as any periodic accounting adjustments. As an example, revenue from the PBM collection process is recognized during the month when the revenue is received whereas the transactions are recognized during the month that they occurred. For these reasons, the monthly variations in revenue are not directly correlated to the monthly variations in transactions.

8.6 GENERAL ASSUMPTIONS

The estimates of traffic and toll revenue presented in this report have been prepared by Stantec based on certain assumptions regarding tolling and traffic characteristics and additional assumptions regarding future toll road and local and national conditions.

The assumptions for each CTTS element regarding toll rates and traffic characteristics summarized in Table 8.28 include the truck toll multiplier, PBM surcharge, payment type distribution (PBM, ETC), vehicle type distribution (autos, trucks), toll evasion, and annualization factors. These factors were developed for each CTTS element based on observed traffic conditions as discussed previously in this report. Assumptions for future years are based on discussions with TxDOT and local government agencies, as well as Stantec's professional judgment.

Table 8.28 Summary of Tolling and Traffic Characteristic Assumptions: Base Case - 2018

Assumptions Related to	Element			
	SH 45 N	Loop 1	SH 130	SH 45 SE
Vehicle Type Distribution				
Autos	97.0%	98.3%	90.0%	89.4%
Trucks	3.0%	1.7%	10.0%	10.6%
Payment Type Distribution - Passenger Cars				
PBM	27.7%	27.8%	37.2%	31.6%
ETC	72.3%	72.2%	62.8%	68.4%
Payment Type Distribution - Trucks				
PBM	27.7%	31.0%	39.6%	47.6%
ETC	72.3%	69.0%	60.4%	52.4%
Toll Ratios				
Truck/Auto Ratio - ETC	2.86	2.79	2.72	2.75
Truck/Auto Ratio - PBM	2.98	3.00	2.79	2.80
PBM/ETC Toll Rate	1.33	1.33	1.33	1.33
Collection Rates				
PBM	51.1%	51.1%	51.1%	51.1%
ETC	99.3%	99.3%	99.3%	99.3%
Full Length Trip				
Distance	12.8	4.0	49.0	7.0
Rate per Mile	$0.17	$0.27	$0.15	$0.15
Toll Cost (ETC)	$2.18	$1.09	$7.20	$1.07
Annualization Factor	320	320	325	325

The estimates of CTTS transactions and toll revenue presented in this report have been prepared by Stantec based on the following assumptions and conditions:

1. Toll rates on the CTTS elements will be escalated on an annual basis on January 1st of each year based on the CPI-U. It is estimated that the rate of inflation will increase as presented in Table 4.6.

2. Toll collection on the CTTS elements will be by ETC or PBM.

3. The surcharge for PBM transactions will remain at 33 percent throughout the forecast period as discussed in Chapter 4.

4. ETC market shares for 2018 will be as presented in Table 8.28 and remain relatively constant for future years as presented earlier in this section.

5. The traffic mix using the CTTS elements will result in toll multipliers (used for toll revenue estimation purposes) for trucks with 3+ axles as presented in Table 8.28 for 2018 and as presented earlier in this section for future years.

6. The current Truck Toll Policy uses an axle-based (N-1) formula whereby tolls for trucks are calculated as (Axles-1) times the auto toll rate. The current policy that limits truck tolls to

the 4-axle rate for SH 130 and SH 45 SE will remain in place. There will be no other discounts or changes to the truck toll policy.

7. The socioeconomic growth discussed in Chapter 6 will occur as forecasted.

8. The CTTS highway network improvements, such as the widening of SH 130 Segments 2&3 as well as all the background network improvements will be constructed as planned and in accordance with the schedule discussed in Chapter 2 of this report. As noted in Chapter 2, given the uncertainty related to costs and funding of the IH-35 Managed Lane project in Austin, a decision was made not to include this project in the background network for the forecast of future traffic.

9. The speed limit policy on limited access roadways will be maintained at current levels.

10. The CTTS elements will be efficiently maintained and operated, but even under the most efficient operation, there will be some toll evasion and revenue "leakage." This has been accounted for in the traffic and revenue forecasts by collection rate adjustments. Assumed collection rate adjustments for 2018 are presented in Table 8.28 and are assumed constant throughout the forecast period.

11. Motor fuel will remain in adequate supply during the forecast period, and motor fuel prices (i.e., the average price for regular gasoline) will not be more than $4.50 per gallon, adjusted for inflation, for sustained periods.

12. Increases in Federal and State motor fuel taxes will not be to the extent that, together with fuel price increases, motor fuel prices will exceed $4.50, adjusted for inflation, for sustained periods.

13. No radical change in travel modes that would drastically curtail motor vehicle use will occur during the forecast period.

14. In the long term, generally normal economic conditions will prevail in the State and the United States, and a major depression, national or State emergency, or prolonged fuel shortage will not occur.

15. Consistent with current agreements, TxDOT will reimburse the appropriate CTTS account the cost of tolls not paid by those customers with eligible specialty license plates registered with Texas Department of Motor Vehicles (TxDMV) to disabled veterans, Purple Heart recipients, and Medal of Honor recipients. TxDOT will also reimburse the appropriate CTTS account for the cost of tolls not paid due to any periodic truck toll rate discounts offered.

8.7 DISCLAIMER

It is Stantec's opinion that the revenue projections presented in this report are reasonable and have been prepared in accordance with accepted practice for investment-grade studies. However, given the uncertainties within the current international and economic climate, Stantec considers it is necessary to state that the traffic and revenue projections are based on the following caveats:

- This report presents the results of Stantec's consideration of the information available to us as of the date hereof and the application of Stantec's experience and professional judgment to that information. It is not a guarantee of any future events or trends.
- The traffic and revenue forecasts will be subject to future economic and social conditions and demographic developments that cannot be predicted with certainty.
- The projections contained in this report, while presented with numerical specificity, are based on a number of estimates and assumptions which, though considered reasonable to us, are inherently subject to significant economic and competitive uncertainties and contingencies, many of which will be beyond Stantec's control and that of TxDOT. In many instances, a broad range of alternative assumptions could be considered reasonable. Changes in the assumptions used could result in material differences in projected outcomes.
- If, for any reason, any of these conditions should change due to changes in the economy or competitive environment, or other factors, the consultant team's opinions or estimates may require amendment or further adjustments.
- Stantec's toll revenue projections only represent its best judgment and Stantec does not warrant or represent that actual toll revenues will not vary from its projections, estimates and forecasts.

Many statements contained in this report, which are not historical facts, are forward-looking statements, which are based on Stantec's opinions, as well as assumptions made by, and information currently available to, the management and staff of Stantec. Because the statements are based on expectations about future events and economic performance and are not statements of fact, actual results may differ materially from those projected. The words "anticipate", "assume", "estimate", "expect", "objective", "projection", "plan", "forecast", "goal", "budget", or similar words are intended to identify forward-looking statements. The words or phrases "to date", "now", "currently", and the like are intended to mean as of the date of this report.

Stantec shall have the right to review, and to require any changes it believes appropriate be made to any official statement, prospectus, private placement memorandum or other document used in connection with any such financing that refers to Stantec, its reports, opinions or other documents, or services. TxDOT shall provide copies of any such materials to Stantec for review by Stantec and its legal counsel at a reasonable time prior to its use of any such materials. Stantec shall have the right to retain copies of all such materials.

9.0 SENSITIVITY ANALYSIS

The assumptions upon which the 2018 Study transaction and revenue forecasts were based are presented in Chapter 8 of this report. In many instances, a broad range of alternative assumptions could be considered reasonable, which would result in material differences in the forecasts. This chapter of the report provides estimates of the forecast's sensitivity to changes in selected assumptions.

9.1 OVERVIEW OF ANALYSES

As a result of discussions with TxDOT staff, a decision was made to conduct sensitivity trials to assess the impacts of the following three conditions on the forecasts:

- Reduced CPI Growth;
- Reduced Trip Growth; and
- Reduced Value of Time.

The sensitivity trials were conducted for the 2020, 2030, and 2040 model years. Average weekday toll revenues for each sensitivity trial and the corresponding percent change in toll revenue when compared to the unadjusted base forecast are provided in Table 9.1.

Table 9.1 Average Weekday Revenue Comparison for the Sensitivity Trials

Model Year	Average Weekday Toll Revenue						
	Base Revenue	Sensitivity 1 (Reduced CPI)		Sensitivity 2 (Reduced Growth)		Sensitivity 3 (Reduced VOT)	
		Revenue	% Difference	Revenue	% Difference	Revenue	% Difference
2020	$696,817	$691,770	-0.7%	$675,476	-3.1%	$663,120	-4.8%
2030	$1,144,145	$1,107,979	-3.2%	$1,051,352	-8.1%	$1,098,072	-4.0%
2040	$2,009,355	$1,900,854	-5.4%	$1,803,465	-10.2%	$1,957,864	-2.6%

9.2 REDUCED CPI GROWTH

As part of the base forecast, toll rates are escalated annually based on the change in the CPI-U value. The household income of travelers, which influences the ability to pay tolls, is also anticipated to increase over time. As discussed in Chapter 4, Stantec has obtained CPI data from 1970 to 2017. Over the longer term, the annual change in CPI has been 3 to 4 percent, while the most recent 20-year period indicates that CPI average annual growth rate is approximately 2.1 percent. For the period between 2010 and 2017, the CPI increased at a compounded annual growth rate of 1.7 percent and for the most recent CTTS annual toll escalation for CY 2018, the CPI increase was 1.9 percent. The base forecast in the 2018 Study utilizes the longer-term data along with current CPI trends to create a forecast that assumes the CPI increases at 2.3 percent for 2019, followed by small increases until reaching 2.5 percent by 2023. From 2024 to 2033, CPI growth is assumed to increase gradually to 3.0 percent and remain at that growth rate out to 2037. From

2038 to 2042 the CPI rate is assumed to decrease towards 2.5 percent. For this sensitivity trial, CPI growth is 0.25 percent lower than the assumed escalations in the base forecast. For example, the CPI for 2018 was reduced from 2.2 percent to 1.95 percent. Consistent with the base forecast, household income growth is assumed to equal the CPI growth rate in this sensitivity.

As expected, this sensitivity trial results in revenue estimates ranging from 0.7 percent less than the base case in 2020 to 5.4 percent less in 2040. The losses are due to lower toll rates from the reduced escalation rate. There is less impact in 2020 when compared to the base forecast as the change in toll rates are less than in the later years of the forecast.

9.3 REDUCED TRIP GROWTH

Under this sensitivity trial, the projected growth in trips was reduced by 20 percent. This reduction implies a lower level of population and employment growth, which generates a lower level of trip growth.

The lower level of trip growth from this sensitivity trial results in lower revenue estimates in response to lower traffic levels in the study area. This leads to fewer available trips for each facility and less congestion on competing facilities, making it less advantageous to use the CTTS facilities. The reduced revenue ranges from 3.1 percent in 2020 to 10.2 percent in 2040. The impact is less significant in 2020 since the difference in the number of trips is less in the early years than in the more distant horizon years.

9.4 REDUCED VALUE OF TIME

For this sensitivity trial, the estimated value of time for all trip purposes and trucks was reduced by 10 percent. The value of time would still increase throughout the forecast, but the reduced values would remain at 90 percent of the values used in the base forecast.

The reduction in the value of time translates to a lower willingness to pay tolls in order to save travel time, resulting in less revenue. The loss of revenue is less variable than the other sensitivities among model years with losses of 4.8 percent, 4.0 percent, and 2.6 percent in 2020, 2030, and 2040 respectively. This more uniform response is due to the general reduction of the value of time across horizon years, which tends to have a relatively equal impact on the diversion estimates. The slightly lower levels of response in the more distant horizon years reflect the increasing congestion on the background network, which tends to make the CTTS more attractive compared to the non-tolled routes in the future.

APPENDIX A

Technical Memorandum on Socioeconomic Data from Michael Bomba, PhD

TECHNICAL MEMORANDUM

REVIEW OF THE CAPITAL AREA MPO AND ALAMO AREA MPO SOCIOECONOMIC DATA FOR THE CTTS STUDY AREA

This technical memorandum provides an overview of the assessment and adjustment of population and employment data from the Capital Area Metropolitan Planning Organization's (CAMPO) and the Alamo Area Metropolitan Planning Organization's (AAMPO) travel demand models for the 2017 CTTS Update. The first portion of the memorandum will provide regional background information and context that describe current population and employment trends in the two regions. The second portion of the memo will describe the methodology used during the assessment and adjustment of the county control totals and the socioeconomic data at the individual Traffic Analysis Zone (TAZ).

POPULATION TRENDS

Historic Population Trends

In only three decades (1980-2010), the combined population of the six counties in the CAMPO study area tripled from 602,854 residents to 1,759,039 residents (See Table 1). More than half of the population growth during this period was in Travis County, with Williamson County accounting for an additional 30 percent of the growth. Williamson County also experienced the highest rate of population growth, increasing almost six-fold between 1980 and 2010 to 422,679 residents, while Hays County's population increased four-fold to 157,107 residents. Bastrop County's population grew three-fold to 74,171 residents during this same period and Burnet County's population increased 240 percent to 42,750 residents between 1980 and 2010. Caldwell County had the slowest growth rate, but still increased by 61 percent to 38,066 residents.

Population in the San Antonio/Bexar County MPO study area[1] also grew strongly between 1980 and 2010, although at a more measured pace. Table 2 shows the historic populations of Bexar, Comal, Guadalupe, Kendall, and Wilson Counties. Collectively, the population of these five counties grew from 1.1 million residents in 1980 to more than 2.0 million residents during 2010. Almost 78 percent of that population growth occurred in Bexar County, which had a population of 1,714,773 residents in 2010. Among the five counties, Kendall County's population grew most quickly, increasing three-fold during this period to 33,410 residents. Guadalupe County, the second largest county in the region, increased its population by 182 percent between 1980 and 2010 to 131,533 residents, while Comal County (the third largest county) increased by 198 percent to 108,472 residents during this same period. Kendall County also grew strongly, although at a slightly slower pace and had 42,918 residents in 2010.

[1] In addition to the five counties in the San Antonio/Bexar County MPO study area (Bexar, Guadalupe, Comal, Kendall, and Wilson), the San Antonio-New Braunfels MSA also includes Atascosa, Bandera, and Medina Counties.

Table 1: Historic Population for Counties in the Austin-Round Rock MSA, 1980-2010

				TOTAL POPULATION			
	Bastrop County	**Burnet County**	**Caldwell County**	**Hays County**	**Travis County**	**Williamson County**	**Total**
1980	24,726	17,803	23,637	40,594	419,573	76,521	602,854
1990	38,263	22,677	26,392	65,614	576,407	139,551	868,904
2000	57,733	34,147	32,194	97,589	812,281	249,967	1,283,911
2010	74,171	42,750	38,066	157,107	1,024,266	422,679	1,759,039

				TOTAL CHANGE			
	Bastrop County	**Burnet County**	**Caldwell County**	**Hays County**	**Travis County**	**Williamson County**	**Total**
1980-1990	13,537	4,874	2,755	25,020	156,834	63,030	266,050
1990-2000	19,470	11,470	5,802	31,975	235,874	110,416	415,007
2000-2010	16,438	8,603	5,872	59,518	211,985	172,712	475,128

				COMPOUNDED ANNUAL GROWTH RATE			
	Bastrop County	**Burnet County**	**Caldwell County**	**Hays County**	**Travis County**	**Williamson County**	**Total**
1980-1990	4.46%	2.45%	1.11%	4.92%	3.23%	6.19%	3.72%
1990-2000	4.20%	4.18%	2.01%	4.05%	3.49%	6.00%	3.98%
2000-2010	2.54%	2.27%	1.69%	4.88%	2.35%	5.39%	3.20%

Source: U.S. Census Bureau, 2017.

Table 2: Historic Population for Select Counties in the San Antonio-New Braunfels MSA, 1980-2010

	Bexar County	Comal County	Guadalupe County	Kendall County	Wilson County	Total
			TOTAL POPULATION			
	Bexar County	**Comal County**	**Guadalupe County**	**Kendall County**	**Wilson County**	**Total**
1980	988,880	36,446	46,708	10,635	16,756	1,099,516
1990	1,185,394	51,832	64,873	14,589	22,650	1,339,338
2000	1,392,931	78,021	89,023	23,743	32,408	1,616,126
2010	1,714,773	108,472	131,533	33,410	42,918	2,031,106
			TOTAL CHANGE			
	Bexar County	**Comal County**	**Guadalupe County**	**Kendall County**	**Wilson County**	**Total**
1980-1990	196,514	15,386	18,165	3,954	5,894	239,822
1990-2000	207,537	26,189	24,150	9,154	9,758	276,788
2000-2010	321,842	30,451	42,510	9,667	10,510	414,980
			COMPOUNDED ANNUAL GROWTH RATE			
	Bexar County	**Comal County**	**Guadalupe County**	**Kendall County**	**Wilson County**	**Total**
1980-1990	1.83%	3.58%	3.34%	3.21%	3.06%	1.99%
1990-2000	1.63%	4.17%	3.22%	4.99%	3.65%	1.90%
2000-2010	2.10%	3.35%	3.98%	3.47%	2.85%	2.31%

Source: U.S. Census Bureau, 2017.

Recent Population Trends

More recent estimates show that the population of the CAMPO study area has continued to grow since 2010. The data in Table 3 provides population counts from the 2000 and 2010 decennial U.S. Censuses, as well as the U.S. Census Bureau's 2016 population estimates. The largest overall population increase between 2010 and 2016 occurred in Travis County, with more than 175,000 new residents between the 2010 decennial Census and the 2016 estimates. Williamson County also grew strongly during this same period with approximately 106,000 new residents between 2010 and 2013, followed by Hays County with more than 47,000 new residents. However, since the 2010 U.S. Census, the rate of population growth in all of the counties, with the exception of Travis County, has slowed. During this period, Travis County's population growth accelerated slightly from a CAGR of 2.35 percent between 2000 and 2010 to an estimated CAGR of 2.66 percent between 2010 and 2016. Williamson County's population growth, on the other hand, declined from a 5.39 percent CAGR between 2000 and 2010 to 3.80 percent CAGR from 2010 to 2016. Bastrop County's population growth also slowed considerably from a 2.54 percent CAGR between 2000 and 2010 to a 1.84 percent CAGR between 2010 and 2016. Between 2010 and 2016, Bastrop County added 8,500 residents, while Burnet and Caldwell counties added approximately 3,500 residents and 3,100 residents, respectively.

Table 3: Recent Population Trends for Counties in the Austin-Round Rock MSA, 2000-2016

	TOTAL POPULATION			TOTAL CHANGE	AVERAGE ANNUAL CHANGE		CAGR	
COUNTY	2000	2010	2016	2010-16	2000-10	2010-16	2000-10	2010-16
Bastrop	57,733	74,171	82,733	8,562	1,644	1,427	2.54%	1.84%
Burnet	34,147	42,750	46,243	3,493	860	582	2.27%	1.32%
Caldwell	32,194	38,066	41,161	3,095	587	516	1.69%	1.31%
Hays	97,589	157,107	204,470	47,363	5,952	7,894	4.88%	4.49%
Travis	812,281	1,024,266	1,199,323	175,057	21,199	29,176	2.35%	2.66%
Williamson	249,967	422,679	528,718	106,039	17,271	17,673	5.39%	3.80%
TOTAL	1,283,911	1,759,039	2,102,648	343,609	47,513	57,268	3.20%	1.80%

Source: U.S. Census Bureau, 2017.

U.S. Census Bureau data show that the populations of the five counties in the AAMPO study area also grew strongly between the 2010 and 2016, adding almost 344,000 new residents (See Table 4). Most of this population growth occurred in Bexar County, which added 214,000 residents since the 2010 decennial Census. Guadalupe and Comal Counties also increased their populations during this period, adding almost 24,000 and 26,000 new residents, respectively. Kendall County's population grew by 9,100 residents during this period, while Wilson County grew by 5,500 residents. However, since 2010, the overall rate of population growth has slowed, with the exception of Comal and Kendall counties.

Table 4: Recent Population Trends for Select Counties in the San Antonio-New Braunfels MSA, 2000-2016

	TOTAL POPULATION			TOTAL CHANGE	AVERAGE ANNUAL CHANGE		CAGR	
COUNTY	**2000**	**2010**	**2016**	**2010-16**	**2000-10**	**2010-16**	**2000-10**	**2010-16**
Bexar	1,392,931	1,714,773	1,928,680	213,907	32,184	35,651	2.10%	1.98%
Comal	78,021	108,472	134,788	26,316	3,045	4,386	3.35%	3.69%
Guadalupe	89,023	131,533	155,265	23,732	4,251	3,955	3.98%	2.80%
Kendall	23,743	33,410	42,540	9,130	967	1,522	3.47%	4.11%
Wilson	32,408	42,918	48,480	5,562	1,051	927	2.85%	2.05%
TOTAL	1,616,126	2,031,106	2,309,753	278,647	41,498	46,441	2.31%	2.17%

Source: U.S. Census Bureau, 2017.

Placing the growth that has occurred in Central Texas into a national context, between 2000 and 2016, the Austin-Round Rock MSA had the 11th largest population increase in the nation and the San Antonio-New Braunfels MSAs was ranked 15th (See Table 5). Other Texas MSAs in the list include the Dallas-Fort Worth-Arlington MSA, which had the nation's largest population increase during this period, with more than 2.0 million new residents. The Houston-The Woodlands-Sugar Land, TX MSA ranked second, also with more than 2.0 million additional residents.

Table 5: Fastest Growing Metropolitan Areas in the United States (Absolute Change), 2000-2016

		TOTAL POPULATION			TOTAL CHANGE	AVERAGE ANNUAL CHANGE		CAGR	
RANK	**MSA**	**2000**	**2010**	**2016**	**2000-16**	**2000-10**	**2010-16**	**2000-10**	**2010-16**
1	Dallas-Fort Worth-Arlington, TX Metro Area	5,161,544	6,426,214	7,233,323	2,071,779	126,467	134,518	2.22%	1.99%
2	Houston-The Woodlands-Sugar Land, TX Metro Area	4,715,407	5,920,416	6,772,470	2,057,063	120,501	142,009	2.30%	2.27%
3	New York-Newark-Jersey City, NY-NJ-PA Metro Area	18,323,002	19,567,410	20,153,634	1,830,632	124,441	97,704	0.66%	0.49%
4	Atlanta-Sandy Springs-Roswell, GA Metro Area	4,247,981	5,286,728	5,789,700	1,541,719	103,875	83,829	2.21%	1.53%
5	Phoenix-Mesa-Scottsdale, AZ Metro Area	3,251,876	4,192,887	4,661,537	1,409,661	94,101	78,108	2.57%	1.78%
6	Washington-Arlington-Alexandria, DC-VA-MD-WV Metro Area	4,796,183	5,636,232	6,131,977	1,335,794	84,005	82,624	1.63%	1.41%
7	Riverside-San Bernardino-Ontario, CA Metro Area	3,254,821	4,224,851	4,527,837	1,273,016	97,003	50,498	2.64%	1.16%
8	Charlotte-Concord-Gastonia, NC-SC Metro Area	1,330,448	2,217,012	2,474,314	1,143,866	88,656	42,884	5.24%	1.85%
9	Miami-Fort Lauderdale-West Palm Beach, FL Metro Area	5,007,564	5,564,635	6,066,387	1,058,823	55,707	83,625	1.06%	1.45%
10	Los Angeles-Long Beach-Anaheim, CA Metro Area	12,365,627	12,828,837	13,310,447	944,820	46,321	80,268	0.37%	0.62%
11	**Austin-Round Rock, TX Metro Area**	**1,249,763**	**1,716,289**	**2,056,405**	**806,642**	**46,653**	**56,686**	**3.22%**	**3.06%**
12	Orlando-Kissimmee-Sanford, FL Metro Area	1,644,561	2,134,411	2,441,257	796,696	48,985	51,141	2.64%	2.26%
13	Las Vegas-Henderson-Paradise, NV Metro Area	1,375,765	1,951,269	2,155,664	779,899	57,550	34,066	3.56%	1.67%
14	Seattle-Tacoma-Bellevue, WA Metro Area	3,043,878	3,439,809	3,798,902	755,024	39,593	59,849	1.23%	1.67%
15	**San Antonio-New Braunfels, TX Metro Area**	**1,711,703**	**2,142,508**	**2,429,609**	**717,906**	**43,081**	**47,850**	**2.27%**	**2.12%**

Note: Burnet County is not within the Austin-Round Rock MSA.
Source: U.S. Census Bureau, 2017.

Population Projections

Recent population projection scenarios from the Texas State Data Center (TxSDC) for the Austin-Round Rock MSA suggest strong rates of population growth into the future. The projected population for the Austin-Round Rock MSA is expected to be between 2.1 million and almost 4.0 million residents in 2040 (See Table 6). The most conservative scenario, the 0.0 migration scenario, assumes that there will be no net migration and the population will grow solely based upon the number of births and deaths in the region. Given historic migration trends for the region, this scenario seems unlikely. The 0.5 migration scenario assumes that future net migration will be one-half the rate that occurred between the 2000 and 2010 decennial U.S. Censuses and the 1.0 migration scenario assumes that future net migration will be equal to the net migration rate between 2000 and 2010. The historic population growth rate for the Austin-Round Rock MSA suggests that the region's population will likely grow at a rate between the 0.5 and 1.0 migration scenarios, which would add between 1.1 million and 2.2 million residents between 2010 and 2040.

Table 6: Population Projections for the Austin-Round Rock MSA, 2010-2040

		TOTAL POPULATION	
Year	**0.0 Migration Scenario**	**0.5 Migration Scenario**	**1.0 Migration Scenario**
2010	1,716,289	1,716,289	1,716,289
2015	1,802,822	1,893,931	1,990,437
2020	1,877,175	2,077,981	2,306,857
2025	1,935,453	2,258,677	2,653,615
2030	1,985,268	2,441,548	3,035,547
2035	2,027,335	2,630,857	3,466,270
2040	2,062,870	2,829,932	3,960,317
		ANNUAL AVERAGE GROWTH	
Year	**0.0 Migration Scenario**	**0.5 Migration Scenario**	**1.0 Migration Scenario**
2010-2015	17,307	35,528	54,830
2015-2020	14,871	36,810	63,284
2020-2025	11,656	36,139	69,352
2020-2030	9,963	36,574	76,386
2030-2035	8,413	37,862	86,145
2035-2040	7,107	39,815	98,809
		COMPOUNDED ANNUAL GROWTH RATE	
Year	**0.0 Migration Scenario**	**0.5 Migration Scenario**	**1.0 Migration Scenario**
2010-2015	0.99%	1.99%	3.01%
2015-2020	0.81%	1.87%	2.99%
2020-2025	0.61%	1.68%	2.84%
2020-2030	0.51%	1.57%	2.73%
2030-2035	0.42%	1.50%	2.69%
2035-2040	0.35%	1.47%	2.70%

Source: Texas State Data Center, 2017.

Table 7 breaks down the TxSDC's population projections for each of the six counties in the Austin-Round Rock MSA. The TxSDC's population projections anticipate that suburban counties, particularly Williamson and Hays Counties, will generate the most population growth in the future. Assuming that net future migration rates in Williamson County and Hays County are equal to past migration rates, then Williamson County will grow by almost 1.0 million residents between 2010 and 2040 and Hays County will grow by approximately 400,000 residents. Travis County's growth, despite its larger population, is expected to increase by approximately 700,000 residents under the most optimistic scenario. Under the less optimistic 0.5 migration scenario, Travis County would experience a total population growth of 450,000 new residents, while Williamson County's population would grow by 402,000 residents and Hays County's population would increase by almost 190,000 residents. Bastrop County's population is projected to grow between 8,000 and 121,000 residents by 2040, depending upon the growth scenario. Burnet County's projected growth ranges from 1,650 to almost 29,000 new residents. Caldwell County has a similar, narrower range with the population projected between roughly 5,000 and 40,000 new residents in 2040.

Table 7: Population Projections for Counties in the Austin-Round Rock MSA, 2010-2040

	Bastrop County	Burnet County	Caldwell County	Hays County	Travis County	Williamson County	Total
2010	74,171	42,750	38,066	157,107	1,024,266	422,679	1,759,039
2015	75,875	43,071	39,139	169,708	1,079,590	438,510	1,845,893
2020	77,713	43,529	40,260	183,040	1,125,881	450,281	1,920,704
2025	79,706	44,004	41,282	192,968	1,160,326	461,171	1,979,457
2030	81,327	44,299	42,011	202,195	1,187,826	471,909	2,029,567
2035	82,230	44,354	42,416	210,268	1,211,356	481,065	2,071,689
2040	82,528	44,408	42,586	218,271	1,232,915	486,570	2,107,278
	Bastrop County	**Burnet County**	**Caldwell County**	**Hays County**	**Travis County**	**Williamson County**	**Total**
2010	74,171	42,750	38,066	157,107	1,024,266	422,679	1,759,039
2015	80,780	45,144	41,100	182,893	1,111,829	477,329	1,939,075
2020	88,279	47,748	44,401	211,934	1,198,485	534,882	2,125,729
2025	96,872	50,370	47,921	240,993	1,274,999	597,892	2,309,047
2030	106,301	52,700	51,327	273,247	1,342,829	667,844	2,494,248
2035	115,997	54,674	54,485	308,142	1,407,810	744,423	2,685,531
2040	125,914	56,473	57,444	346,625	1,474,822	825,127	2,886,405
	Bastrop County	**Burnet County**	**Caldwell County**	**Hays County**	**Travis County**	**Williamson County**	**Total**
2010	74,171	42,750	38,066	157,107	1,024,266	422,679	1,759,039
2015	86,175	47,386	43,322	197,298	1,144,887	518,755	2,037,823
2020	100,746	52,456	49,202	246,119	1,277,007	633,783	2,359,313
2025	118,785	57,772	55,862	302,494	1,403,841	772,633	2,711,387
2030	140,463	62,876	63,015	372,120	1,519,407	940,542	3,098,423
2035	165,796	67,447	70,177	455,930	1,631,951	1,142,416	3,533,717
2040	195,452	71,614	77,373	556,982	1,749,761	1,380,749	4,031,931

Source: Texas State Data Center, 2017.

The population of the San Antonio-New Braunfels MSA's is not anticipated to grow as rapidly as will the population of the Austin-Round Rock MSA. In fact, the population of the Austin-Round Rock MSA could potentially eclipse the San Antonio-New Braunfels MSA in size. Table 8 shows that the projected population for the San Antonio-New Braunfels MSA is expected to grow to between 2.5 million and 3.7 million residents by 2040. As with the Austin-Round Rock MSA, the conservative 0.0 migration scenario is unlikely in the San Antonio-New Braunfels MSA, given its historic role as a destination for migrants and its continued attractiveness into the future. The 0.5 migration scenario projects that the region would add almost 1.0 million new residents between 2010 and 2040, while the 1.0 migration scenario would result in almost 1.6 million new residents in the region. Given the region's historic population growth trends and its prospects for future growth, it will likely grow at a rate between the 0.5 and 1.0 migration scenarios.

Table 8: Population Projections for the San Antonio-New Braunfels MSA, 2010-2040

		TOTAL POPULATION	
Year	**0.0 Migration Scenario**	**0.5 Migration Scenario**	**1.0 Migration Scenario**
2010	2,142,508	2,142,508	2,142,508
2015	2,231,119	2,305,006	2,380,005
2020	2,313,475	2,471,484	2,635,183
2025	2,387,867	2,639,052	2,904,769
2030	2,450,959	2,802,711	3,182,644
2035	2,500,341	2,956,514	3,459,143
2040	2,538,919	3,103,481	3,735,981
		ANNUAL AVERAGE GROWTH	
Year	**0.0 Migration Scenario**	**0.5 Migration Scenario**	**1.0 Migration Scenario**
2010-2015	17,722	32,500	47,499
2015-2020	16,471	33,296	51,036
2020-2025	14,878	33,514	53,917
2020-2030	12,618	32,732	55,575
2030-2035	9,876	30,761	55,300
2035-2040	7,716	29,393	55,368
		COMPOUNDED ANNUAL GROWTH RATE	
Year	**0.0 Migration Scenario**	**0.5 Migration Scenario**	**1.0 Migration Scenario**
2010-2015	0.81%	1.47%	2.12%
2015-2020	0.73%	1.40%	2.06%
2020-2025	0.64%	1.32%	1.97%
2020-2030	0.52%	1.21%	1.84%
2030-2035	0.40%	1.07%	1.68%
2035-2040	0.31%	0.97%	1.55%

Source: Texas State Data Center, 2017.

Table 9 shows the SDC's population projections for five counties in the Alamo Area MPO. Unlike the Austin-Round Rock MSA, most of the future population growth is expected in the core (i.e. Bexar County), with less total population growth in the suburban counties. Bexar County is projected to add between 363,000 and 1.1 million new residents, depending upon the growth scenario. The region as a whole is projected to add between 383,000 and 1.5 million resident, which demonstrates the future influence of Bexar County on the region's population growth.

Table 9: Population Projections for Select Counties in the San Antonio-New Braunfels MSA, 2010-2040

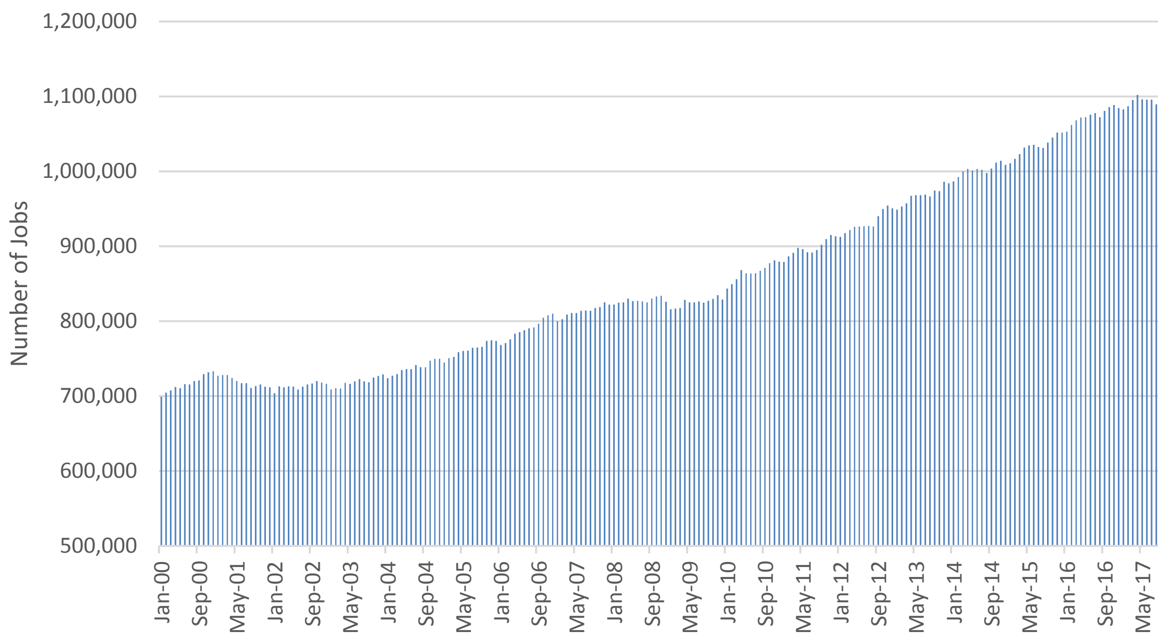
	Bexar County	Comal County	Guadalupe County	Kendall County	Wilson County	Total
			0.0 MIGRATION SCENARIO			
2010	1,714,773	108,472	131,533	33,410	42,918	2,031,106
2015	1,796,183	109,695	134,678	33,418	43,370	2,117,344
2020	1,870,689	110,894	137,706	33,619	44,034	2,196,942
2025	1,936,446	112,228	140,832	34,018	44,848	2,268,372
2030	1,992,798	113,146	143,384	34,317	45,458	2,329,103
2035	2,039,291	113,145	144,734	34,293	45,553	2,377,016
2040	2,078,166	112,556	144,899	33,973	45,125	2,414,719
			0.5 MIGRATION SCENARIO			
	Bexar County	**Comal County**	**Guadalupe County**	**Kendall County**	**Wilson County**	**Total**
2010	1,714,773	108,472	131,533	33,410	42,918	2,031,106
2015	1,839,926	118,571	144,847	36,090	46,488	2,185,922
2020	1,967,590	128,974	158,712	38,847	50,232	2,344,355
2025	2,094,216	139,835	173,662	41,733	54,172	2,503,618
2030	2,216,912	150,591	189,140	44,741	58,085	2,659,469
2035	2,331,743	160,515	204,763	47,658	61,693	2,806,372
2040	2,442,098	169,835	220,138	50,357	64,775	2,947,203
			1.0 MIGRATION SCENARIO			
	Bexar County	**Comal County**	**Guadalupe County**	**Kendall County**	**Wilson County**	**Total**
2010	1,714,773	108,472	131,533	33,410	42,918	2,031,106
2015	1,882,834	128,347	155,621	38,993	49,833	2,255,628
2020	2,062,088	150,366	182,526	44,958	57,292	2,497,230
2025	2,249,392	174,432	212,677	51,307	65,174	2,752,982
2030	2,439,700	199,936	246,038	58,229	73,396	3,017,299
2035	2,625,647	226,007	282,445	65,617	81,650	3,281,366
2040	2,809,942	252,268	321,869	73,221	89,858	3,547,158

Source: Texas State Data Center, 2017.

EMPLOYMENT TRENDS

The Austin-Round Rock MSA's economy is generally recognized as one of the more dynamic in the nation. The data in Figure 1 show the total employment between January 2001 and September 2017, based upon the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) figures. The overall employment trend in the region was strongly positive during this period, with the economy gaining more than 410,000 jobs and growing by roughly 60 percent. During September 2017, the Austin-Round Rock MSA had a total employment of 1,109,796 jobs. Historically, the 2008-2009 Recession had a relatively modest impact on the Austin MSA, compared to other regions in the United States. The 2001 Recession, which had concentrated impacts on the technology industry, appears to have had a more significant affected the local employment and for a longer period (reaching into late-2003, before recovery began).

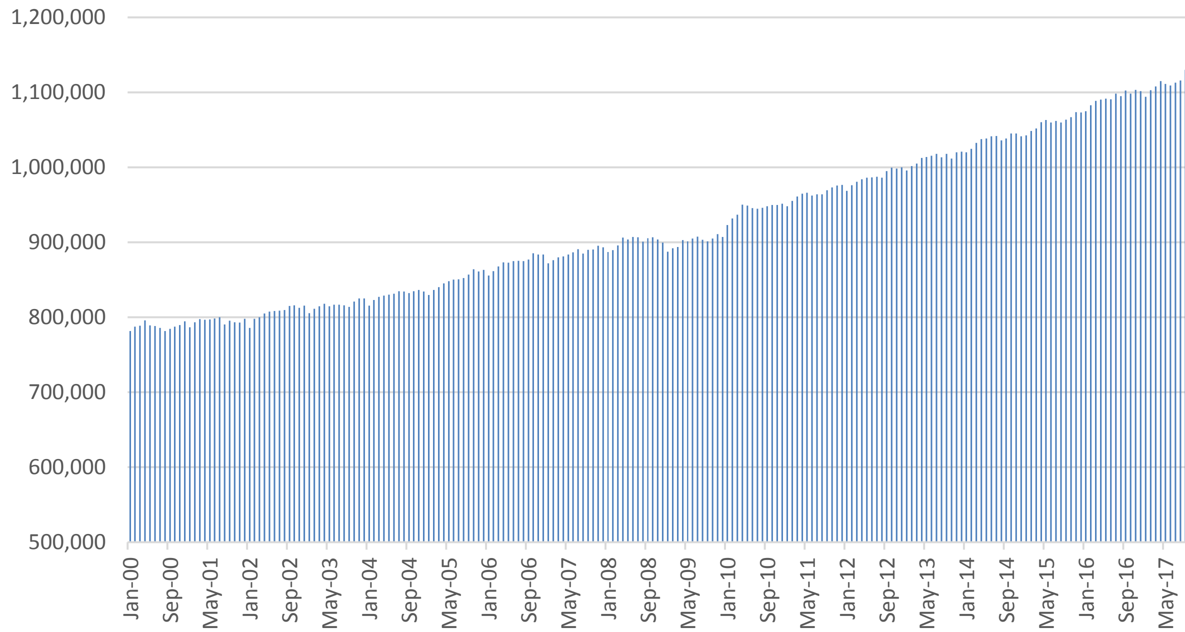
Figure 1: Total Employment in the Austin-Round Rock MSA, January 2000-September 2017



Note: Figure based upon Quarterly Census of Employment and Wages (QCEW) data.
Source: U.S. Bureau of Labor Statistics, 2017.

Employment growth in the San Antonio-New Braunfels MSA also fared comparatively well, although the overall amount trailed the Austin-Round Rock MSA. The San Antonio-New Braunfels MSA had roughly 782,000 jobs during January 2001, which grew to 1,130,000 jobs during September 2017 (See Figure 2). The overall growth rate during this period was 45 percent or a total increase of roughly 350,000 jobs. Like the Austin-Round Rock MSA, the San Antonio-New Braunfels MSA was not severely affected by the 2008-2009 Recession and experienced almost no significant consequence from the 2001 Recession.

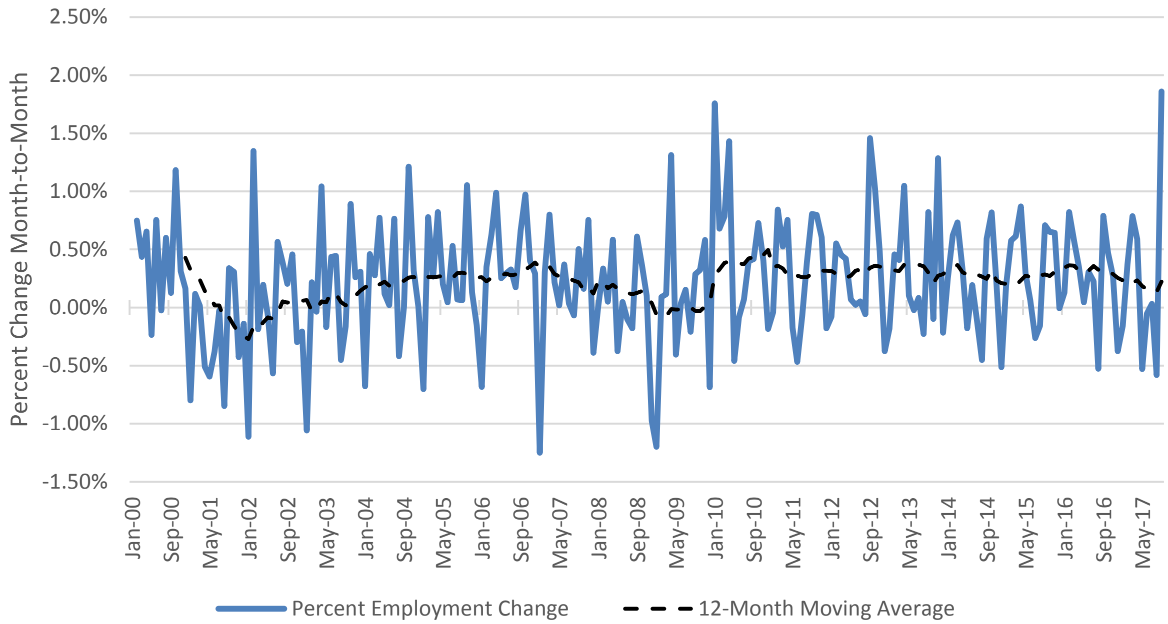
Figure 2: Total Employment in the San Antonio-New Braunfels MSA, January 2000-September 2017



Note: Figure based upon Quarterly Census of Employment and Wages (QCEW) data.
Source: U.S. Bureau of Labor Statistics, 2017.

The data in Figure 3 show the percentage month-on-month employment change between January 2000 and September 2017. The unadjusted employment change shows considerable volatility, due to seasonal and academic employment. However, by adding a trend line showing the 12-month moving average, this volatility can be smoothed and the trends can be discerned. The 12-month moving average trend line shows that the Austin-Round Rock region suffered a prolonged period of job loss between 2001 and 2003, due to the downturn in the computer and telecommunications industries, in addition to the recessionary effects of the September 11, 2001 terrorist attacks. The region's economy recovered by early 2004 and enjoyed a period of sustained employment growth until 2008, when the national recession took hold. The job loss of the 2008-2009 Recession occurred over a briefer period than the previous recession and the recovery came quicker. Since early 2010, the Austin-Round Rock MSA has experienced another sustained period of employment growth similar to the mid-2000s, although more recent trends (2017) suggest this growth may be slowing.

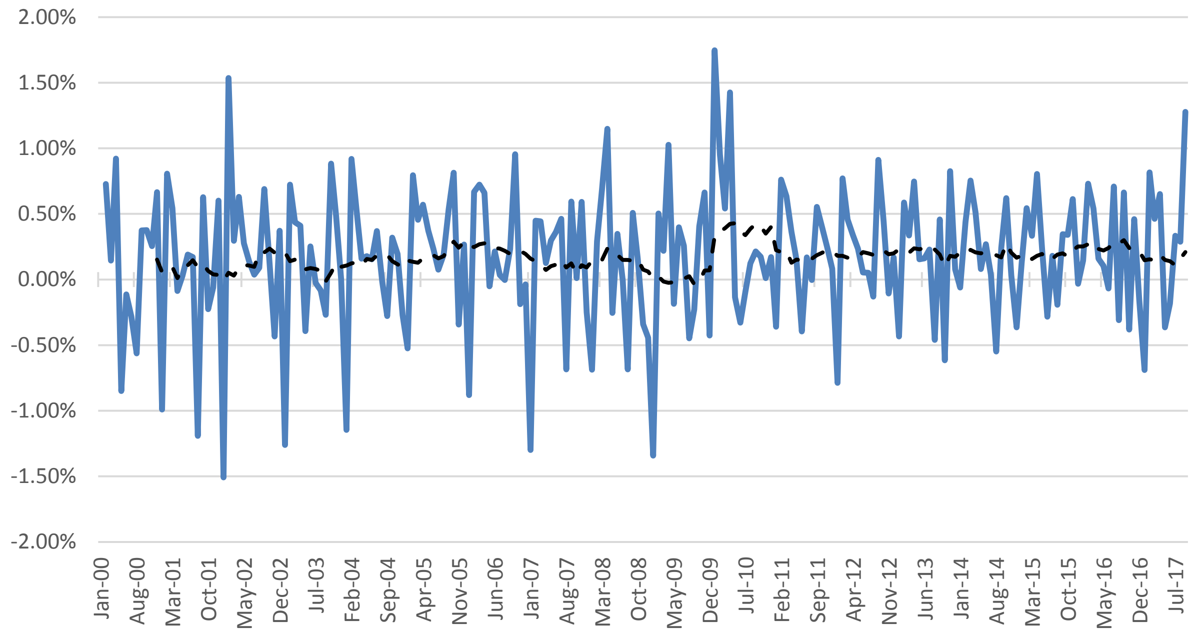
Figure 3: Month-on-Month Employment Change for Austin-Round Rock MSA, January 2000 to December 2013



Note: Figure based upon Quarterly Census of Employment and Wages (QCEW) data.
Source: Bureau of Labor Statistics, 2017.

Figure 4 shows the CES data over the same period for the San Antonio-New Braunfels MSA. The 12-month moving average trend line shows that the San Antonio region suffered a period of job growth stagnation more than job loss between 2001 and 2003, unlike the Austin-Round Rock MSA. The region's economy entered into a modest recovery by early 2004 and enjoyed a period of sustained employment growth between 2006 and 2008, when the national recession took hold. During the recession the San Antonio-New Braunfels MSA again experienced job stagnation growth rather than job loss, which was followed by a strong recovery during 2010 and 2011. Since early 2011, the San Antonio-Braunfels MSA has experienced a sustained of employment growth. Although the region's employment growth has been slightly less robust than the growth in the Austin-Round Rock MSA, it has been more consistent. Nonetheless, the 12-month moving average for the region's employment growth potentially suggests slowing job growth.

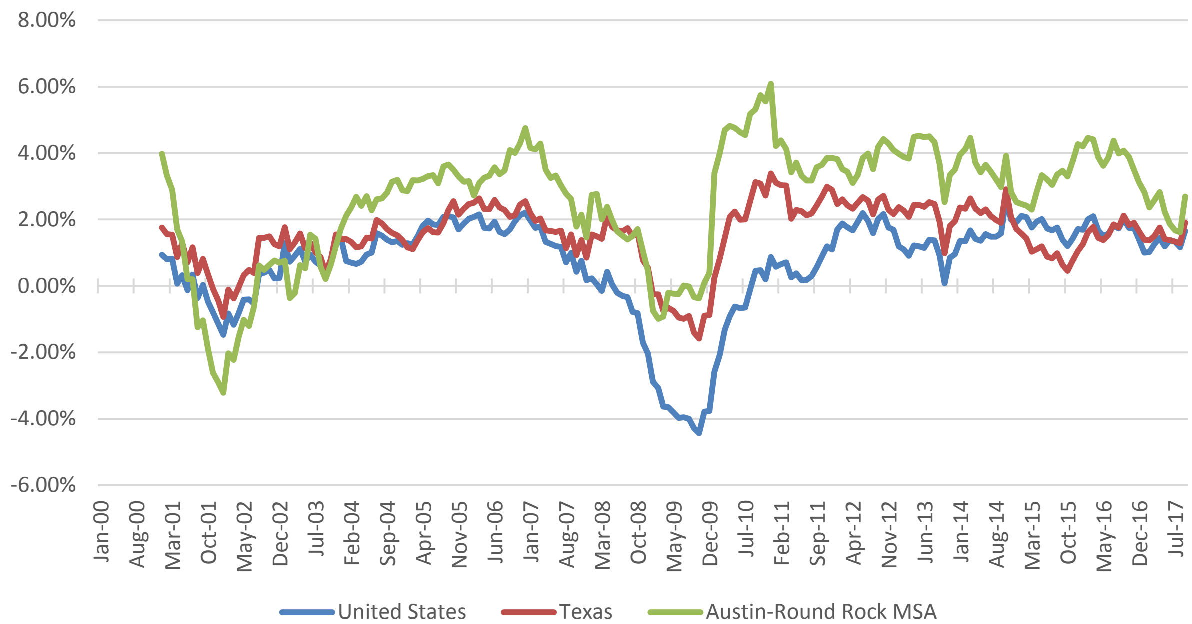
Figure 4: Month-on-Month Employment Change for San Antonio-New Braunfels MSA, January 2000 to September 2017



Note: Figure based upon Quarterly Census of Employment and Wages (QCEW) data.
Source: Bureau of Labor Statistics, 2017.

Figure 5 shows year-on-year employment change for the United States, Texas, and the Austin-Round Rock MSA. These data show that the recession, which began in 2001, had a more significant effect on the Austin-Round Rock region than it did on the United States or Texas economies. After recovering, the region's employment grew more quickly than did the nation or the state overall, for a four-year period between 2004 and 2008. The Austin-Round Rock MSA region even outperformed the U.S. economy during the period of labor force contraction, (as did the state of Texas), experiencing smaller proportional share of job losses and a quicker recovery. Since positive job growth returned in early-2010, the rate of job growth in the Austin-Round Rock MSA has outperformed the state and the nation. However, more recent trends show a convergence between local, state, and national employment growth rates. Whether this change is a long-term trend or a temporary pattern is yet to be determined.

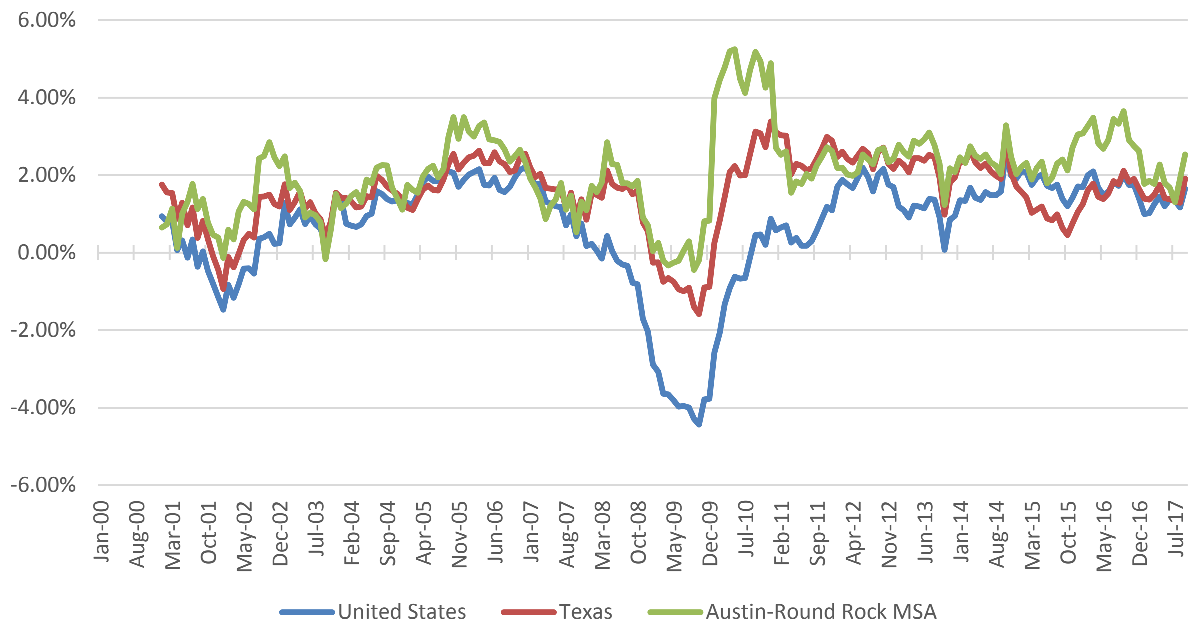
Figure 5: Year-on-Year Employment Change for the United States, Texas, and the Austin-Round Rock MSA, January 2000 to September 2017



Note: Figure based upon Quarterly Census of Employment and Wages (QCEW) data.
Source: Bureau of Labor Statistics, 2017.

Figure 6 shows the year-on-year employment change for the United States, Texas, and the San Antonio-New Braunfels MSA. These data again show that the San Antonio-New Braunfels MSA economy was less severely affected by the 2001 Recession than were the Texas and U.S. economies. Following its recovery, the region's employment grew strongly through the mid-2000s, similar to the overall state rate and more strongly than the nation. Like the Austin-Round Rock MSA's economy, the San Antonio-New Braunfels MSA's economy suffered a lower rate of employment loss and recovered from the 2008-2009 Recession more quickly than did the state and the nation. Since the recovery began, the region performed similarly to the Texas economy until 2015. During 2015 and 2016, the region began to grow at a much higher rate than the state and nation overall, which was likely due to oil and gas activity in the Eagle Ford shale play. Bexar County and surrounding counties were either a source of activity or a staging area for oil field services companies. During 2015, the price of oil dropped significantly, which ultimately led to many oil companies scaling back their activities or going out of business. These effects of these changes are evident on Figure 6. It is also important to note that despite the collapse in the energy industry, the region continues to have strong pace of growth that matches or exceeds the overall rate of employment growth for the state and nation.

Figure 6: Year-on-Year Employment Change for the United States, Texas, and the San Antonio-New Braunfels MSA, January 2000 to September 2017



Note: Figure based upon Quarterly Census of Employment and Wages (QCEW) data.
Source: Bureau of Labor Statistics, 2017.

For comparison purposes, Table 10 shows historic employment data for the four largest MSAs in Texas during the period between 2007 and 2013. The data show that the Austin-Round Rock MSA had a net employment increase of 195,138 jobs between 2010 and 2017, which is actually the third largest net increase among the four largest MSAs. However, the data also reveal that the Austin-Round Rock MSA had the fastest CAGR at 3.89 percent. The San Antonio-New Braunfels MSA ranked fourth, in terms of overall employment growth during this period and third highest rate of employment growth (2.82 percent).

Table 10: Total Employment in Largest Texas MSAs, 2010-2016

		TOTAL EMPLOYMENT		
Year	**Austin MSA**	**Dallas Fort Worth MSA**	**Houston MSA**	**San Antonio MSA**
2010	758,381	2,806,620	2,478,444	827,805
2011	782,423	2,874,730	2,543,721	842,408
2012	812,600	2,955,863	2,642,469	862,961
2013	845,787	3,058,414	2,738,665	888,703
2014	881,921	3,162,654	2,833,968	917,480
2015	923,098	3,277,116	2,888,114	948,103
2016	953,519	3,366,161	2,878,844	978,115
		TOTAL EMPLOYMENT CHANGE		
Year	**Austin MSA**	**Dallas Fort Worth MSA**	**Houston MSA**	**San Antonio MSA**
2010-2011	24,042	68,110	65,277	14,603
2011-2012	30,177	81,133	98,748	20,553
2012-2013	33,187	102,551	96,196	25,742
2013-2014	36,134	104,240	95,303	28,777
2015-2016	41,177	114,462	54,146	30,623
2016-2017	30,421	89,045	-9,270	30,012
2010-2017	**195,138**	**559,541**	**400,400**	**150,310**
		COMPOUNDED ANNUAL GROWTH RATE		
Year	**Austin MSA**	**Dallas Fort Worth MSA**	**Houston MSA**	**San Antonio MSA**
2010-2011	3.17%	2.43%	2.63%	1.76%
2011-2012	3.86%	2.82%	3.88%	2.44%
2012-2013	4.08%	3.47%	3.64%	2.98%
2013-2014	4.27%	3.41%	3.48%	3.24%
2015-2016	4.67%	3.62%	1.91%	3.34%
2016-2017	3.30%	2.72%	-0.32%	3.17%
2010-2017	**3.89%**	**3.08%**	**2.53%**	**2.82%**

Source: Bureau of Labor Statistics, 2017.

Figure 7 and Table 11 show the locations of selected major employers in the Austin region and their number of employees. Merck & Company was a notable new employer, which was drawn to the region because of the University of Texas at Austin's new Dell Medical School. It is anticiated that the new medical school, in combination with the region's strengths in computing, will draw many more employers in the biomedical research field. Geographically, a number of these employers are located near one of the CTTS facilities.

Table 11: Additions or Expansions of Workforce in Austin-Round Rock MSA for Selected Employers, YTD 2017

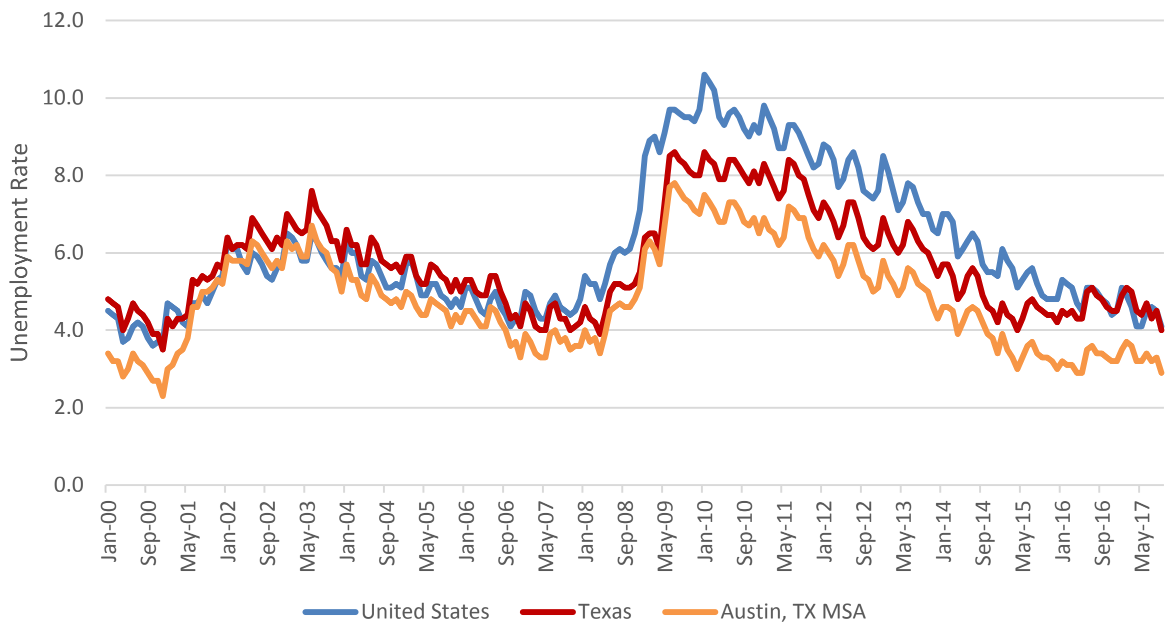
Map #	Employer	Type of Operation	Announced Jobs
1	Homeaway	Online vacation home rentals (Hdq.)	2,200
2	Facebook	Social networking service's online operations center (sales/marketing)	1,000
3	Seton Healthcare Family	Healthcare provider's innovation & call center	650
4	Merck & Company	Pharmaceutical company's IT innovation center	600
5	Main Street Hub	Social media solutions (Hdq.)	400
6	Republic National Distribution	Beverage distribution (Hdq.)	300
7	TG (formerly Texas Student Guaranteed Loan	Student financial aid nonprofit, including loan administration (Hdq.)	300
8	Yeti Coolers	Outdoor recreation cooler & accessors manufacturer	250
9	Opcity	Real estate agent and homebuyer matching service (Hdq.)	200
10	FloSports	Online broadcasting network (Hdq.)	175

Source: Greater Austin Chamber of Commerce, 2017.

Unemployment

Figure 7 shows the unemployment rates for the United States, Texas, and the Austin-Round Rock MSA. These data show the unemployment rate in the region has been below the overall unemployment rate in Texas during most of the period between January 2000 and September 2017. The Austin MSA experienced its lowest unemployment rate during December 2000, when it fell to 2.5 percent. During the recession that began in 2001, the regional unemployment rate peaked at 6.7 percent in June 2003. As the regional and national economy recovered and the employment expanded during the mid-2000s, the regional unemployment rate fell to less than 4.0 percent, before significantly increasing during 2008 and 2009. During the 2008-2009 Recession, the regional unemployment rate reached 7.4 percent in June 2009 but was not sustained for a prolonged period of time. Between 2011 and 2017, the regional unemployment rate consistently fell through 2015 and has remained relatively steady going forward. During September 2017, the region's unemployment rate was 2.9 percent.

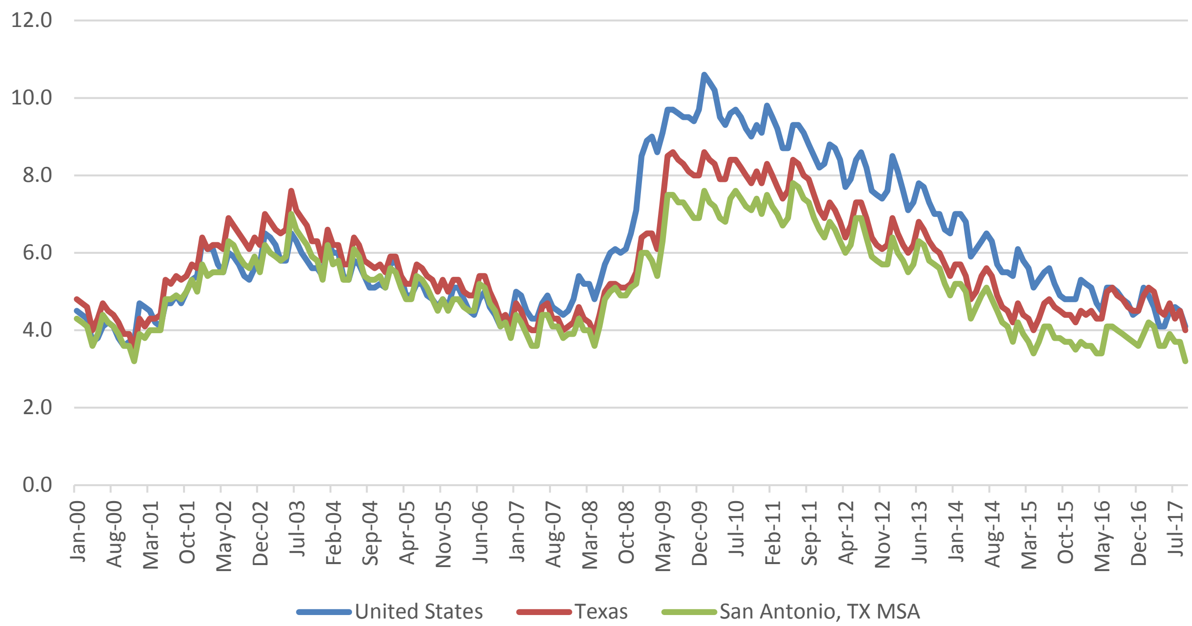
Figure 7: Unemployment Rate of Austin-Round Rock MSA, Texas, and the United States



Note: The unemployment rate data in Figure 7 are based upon seasonally unadjusted unemployment rates. The unadjusted figures were used to maintain consistency between the three geographies of the United States, Texas, and the Austin-Round Rock MSA. While seasonally adjusted data are available from the Texas Workforce Commission for the United States and Texas, they are not available for Texas's MSAs.
Source: Texas Workforce Commission, 2017.

Figure 8 shows the unemployment rates for the United States, Texas, and the San Antonio-New Braunfels MSA. These data show the unemployment rate in the region has been below the overall unemployment rate in Texas during most of the period between January 2000 and September 2017. The San Antonio-New Braunfels MSA experienced its lowest unemployment rate during December 2000, when it fell to 3.2 percent. During the recession that began in 2001, the regional unemployment rate peaked at 7.0 percent in June 2003. As the regional and national economy recovered and as employment expanded during the mid-2000s, the regional unemployment rate fell to 3.6 percent before increasing rapidly during 2008 and 2009. During the 2008-2009 Recession, the regional unemployment rate reached 7.2 percent in June and July 2009. Unemployment rates remained between 7.0 and 8.0 percent through 2011, peaking at 8.1 percent in June and July 2011. Like the Austin-Round Rock MSA, the San Antonio-New Braunfels MSA unemployment fell from mid-2012 through early-2015. Since then the unemployment rate has been relatively steady and was 3.2 percent during September 2017.

Figure 8: Unemployment Rate of San Antonio-New Braunfels MSA, Texas, and the United States



Note: The unemployment rate data in Figure 8 are based upon seasonally unadjusted unemployment rates. The unadjusted figures were used to maintain consistency between the three geographies of the United States, Texas, and the Austin MSA. While seasonally adjusted data are available from the Texas Workforce Commission for the United States and Texas, they are not available for Texas's MSAs.
Source: Texas Workforce Commission, 2017.

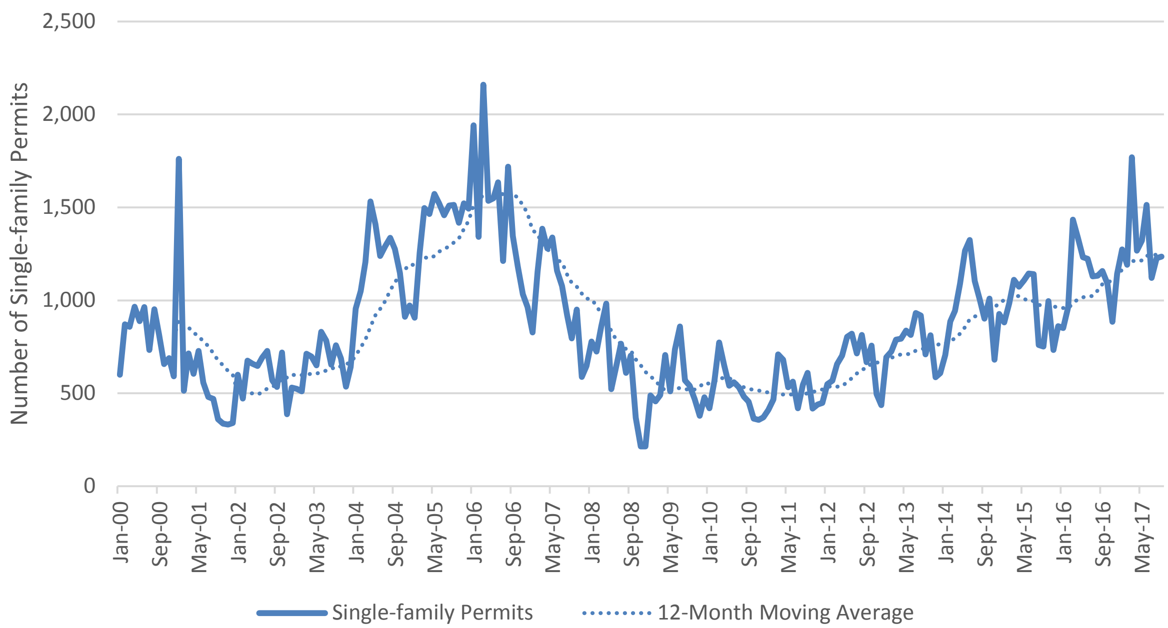
REAL ESTATE TRENDS

Since the 2008-2009 Recession, the housing market in both regions has shown consistent recovery with positive growth. Like almost every metropolitan area in the United States, the 2008-2009 Recession had a profound impact on regional housing markets, as well as commercial real estate. The near collapse of the nation's financial system and the severe curtailment of demand due to the subsequent recession led to a sharp reduction in the number of new single-family homes built after 2006. Multifamily construction was also severely impacted by the recession, although it later benefitted because fewer households were able to secure the financing to purchase new homes. Similarly, all aspects of commercial real estate were affected by the recession, either due to tight credit markets or financially stressed tenants. Fortunately, the nation's commercial real estate market did not experience the same collapse, as the residential market (a real and significant threat at the time), and has also recovered. However, other trends, such as telecommuting and online retail, are affecting demand for new commercial space within certain sectors.

Residential Trends

The U.S. Census Bureau's single-family building permit data from Real Estate Center at Texas A&M University are shown in Figure 10, which compares the number of monthly single-family building permits issued in the Austin-Round Rock MSA. While an issued building permit does not guarantee that a structure was constructed (a certificate of occupancy would provide that proof), it does provide of gauge of builder interest that can be used to compare activity in a region over time. The data generally show what one would expect, which is that the monthly issuance of building permits in the Austin-Round Rock MSA grew during the "Housing Bubble", reaching a peak of more than 2,000 permits in mid-2006. Then the number of permits issued began to decline quickly, even taking into consideration seasonal influences. The local housing market reached its lowest level during early-2009, when only a couple hundred building permits were issued each month. Since then, the local housing markets has recovered with approximately 1,200 building permits issued each month during mid-2017. This figure, in combination with the number of issued permits for multifamily units, appears to roughly align with the region's current population growth.

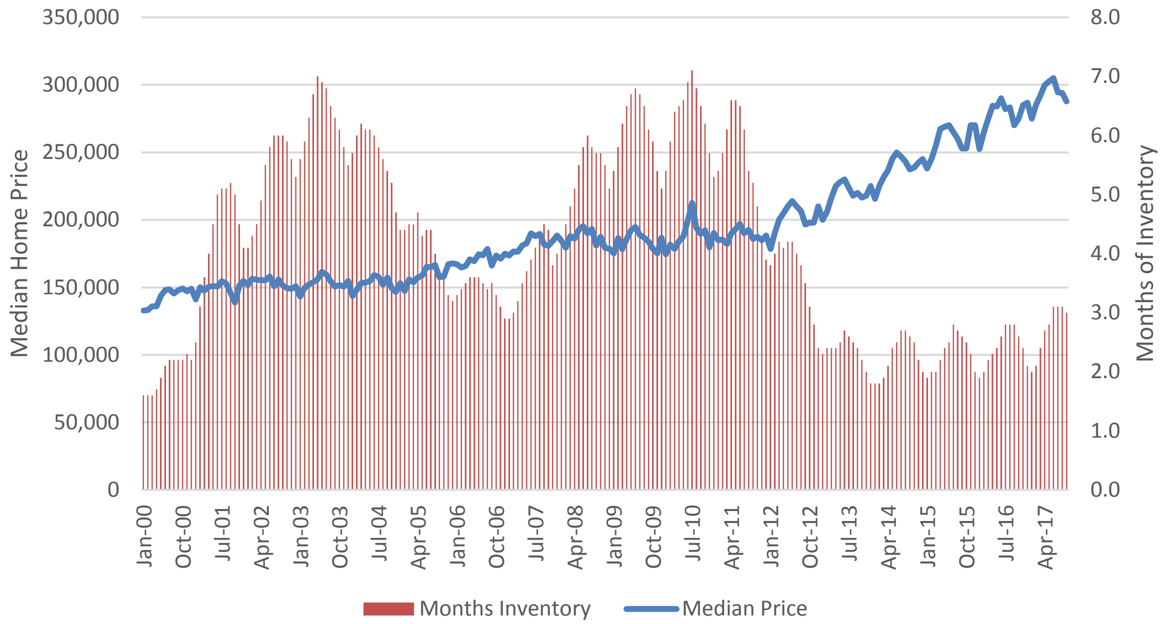
Figure 9: Single-Family Building Permits Issued in Austin-Round Rock MSA, January 2000 to January 2017



Note: MSA data based on 2013 CBSA definitions.
Source: Texas A&M Real Estate Center, 2017.

Figure 11 provides additional data showing the median home price for single-family homes and the months of inventory in the Austin-Round Rock MSA. These data show that median home prices in the region roughly doubled between 2000 and 2017, with most of the increase occurring between 2012 and 2017. The regional inventory of single-family homes was relatively consistent between late-2013 and September 2017, although there has been a modest uptick in the inventory of homes during 2017. Nonetheless, the housing inventory between 2012 and 2017 was well below historic levels.

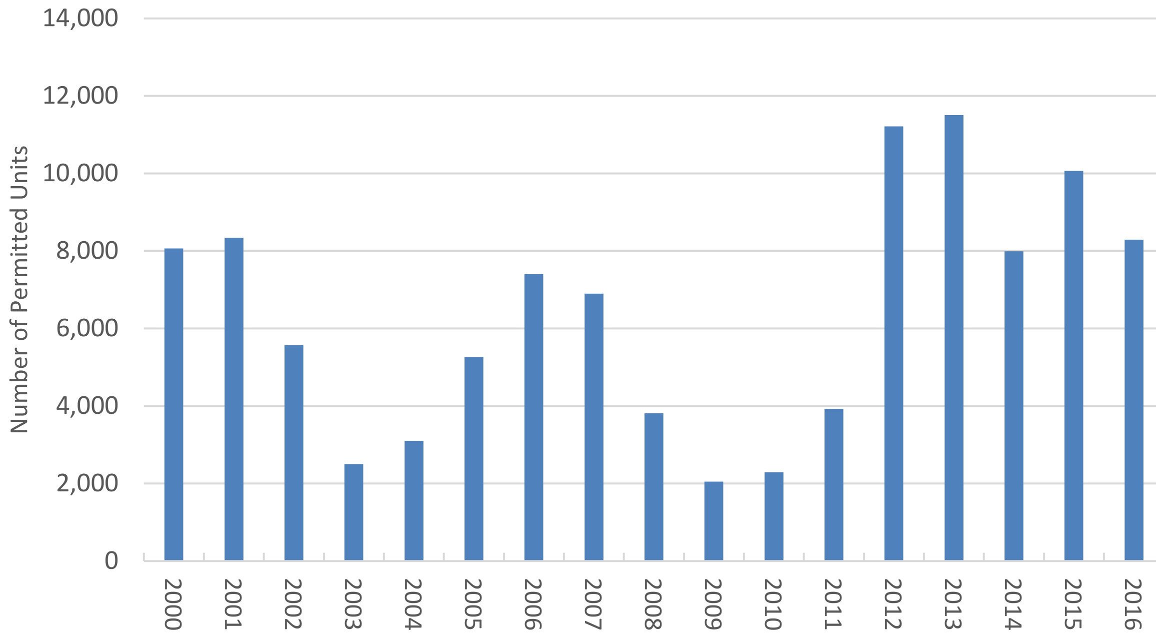
Figure 10: Median Price and Months of Inventory of Single-Family Homes in the Austin-Round Rock MSA, January 2000-September 2017



Source: Texas A&M Real Estate Center, 2017.

The number of permitted multifamily units in the Austin-Round Rock MSA has typically followed trends in the housing market, until the past few years. (See Figure 12) As would be expected, the number of multifamily permits was higher during the early-2000s with the technology-fueled expansion, fell with the 2001 Recession, and then rose again during the mid-2000s as a component of the Housing Bubble (at a slightly lower volume). The highest number of multifamily units were permitted during 2012 and 2013, when more than 11,000 multifamily units were permitted each year. Since then, the number of units permitted has been lower, but is still strong from a historical perspective.

Figure 11: Multifamily Units Permitted in the Austin-Round Rock, TX MSA, 2000-2016



Source: Texas A&M Real Estate Center, 2017.

Finally, Table 12 shows the market conditions for multifamily housing within the various submarkets in the Austin region during the second quarter of 2017. According to the real estate firm Marcus & Millichap, the region had an overall vacancy rate of 5.2 percent during the second quarter of 2017. During 2017, overall rents have increased by 3.5 percent to $1,225. It is anticipated that developers will deliver 11,800 units to the market during 2017. The data in Table 12 also show the lowest vacancy rate for multifamily was in in the North Central Austin submarket at 3.5 percent and the highest effective monthly rents were $2,022 in the downtown/university submarket.

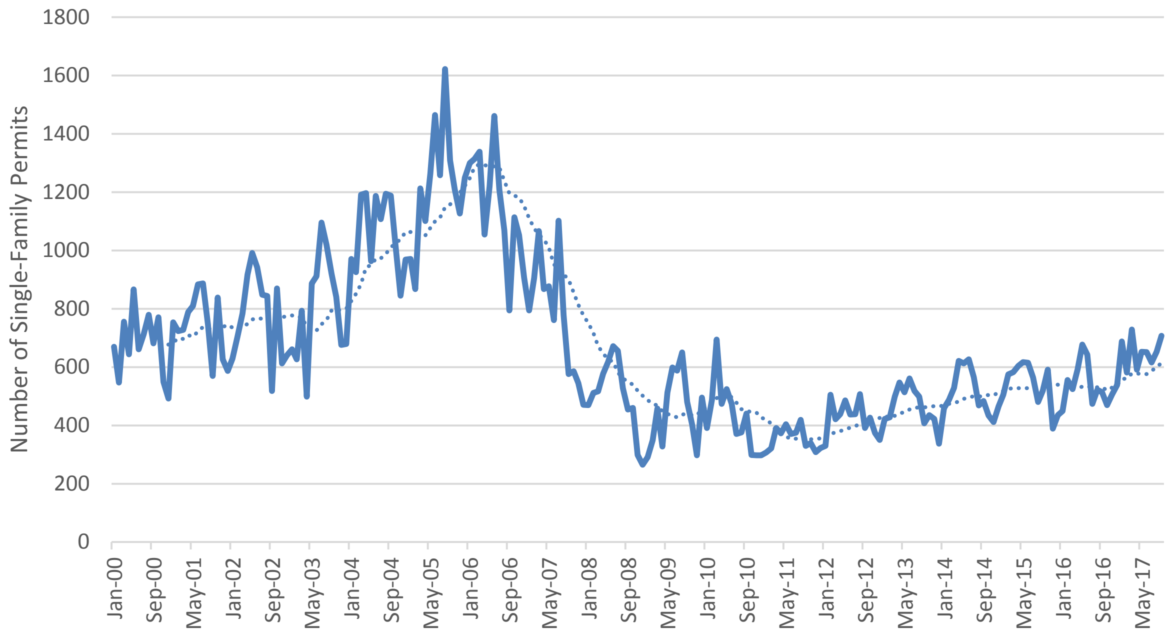
Table 12: Overview of the Austin Apartment Market during the Second Quarter 2017

RANK	SUBMARKET	VACANCY RATE	Y-O-Y BASIS POINT CHANGE	EFFECTIVE RENTS	Y-O-Y PERCENT CHANGE
1	North Central Austin	3.5%	30	$1,031	4.2%
2	Cedar Park	4.1%	-90	$1,154	-0.5%
3	South Austin	4.2%	20	$1,353	0.3%
4	San Marcos	4.5%	30	$1,314	10.6%
5	Downtown/University	4.6%	70	$2,202	4.2%
6	Pflugerville/Wells Branch	4.8%	-30	$1,080	0.2%
7	Far South Austin	5.2%	-20	$1,162	2.9%
8	Round Rock/Georgetown	5.4%	150	$1,096	0.6%
9	East Austin	7.0%	260	$1,266	12.6%
10	Southwest Austin	7.2%	160	$1,322	1.5%
	OVERALL METRO	5.2%	-90	$1,213	3.3%

Source: Marcus & Millichap, 2017.

Figure 13 shows historic, single-family building permit data for the San Antonio-New Braunfels MSA. Surprisingly, despite the significant amount of population growth in the region since 2010, the issuance of single-family building permits has only grown modestly, following the 2008-2009 Recession. At the height of building activity in 2005, more than 1,600 building permits were issued in a single month (August 2005), while during September 2017, less than half (approximately 700 building permits) were issued. Nonetheless, the number of building permits issued monthly has continued to trend upward, as the region's population continues to grow.

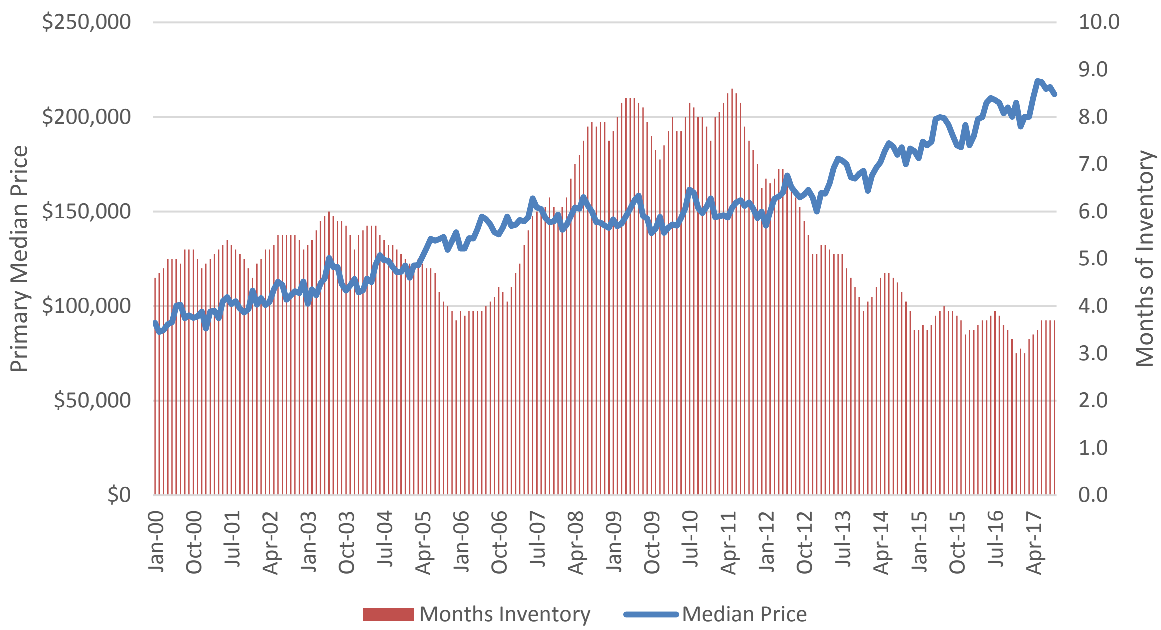
Figure 12: Single-Family Building Permits Issued in San Antonio MSA, January 2000 to September 2017



Source: Texas A&M Real Estate Center, 2017.

As in the Austin-Round Rock MSA, median home prices in the San Antonio-New Braunfels MSA have more than doubled between 2000 and 2017 (See Figure 14). During September 2017, the median home price in the region was $212,000, compared to $287,000 in the Austin-Round Rock MSA. The inventory of single-family homes in the San Antonio-New Braunfels MSA is also larger, but the amount of supply has shrunk significantly since 2011. During September 2017, the region had only a 3.7 month supply of single-family homes.

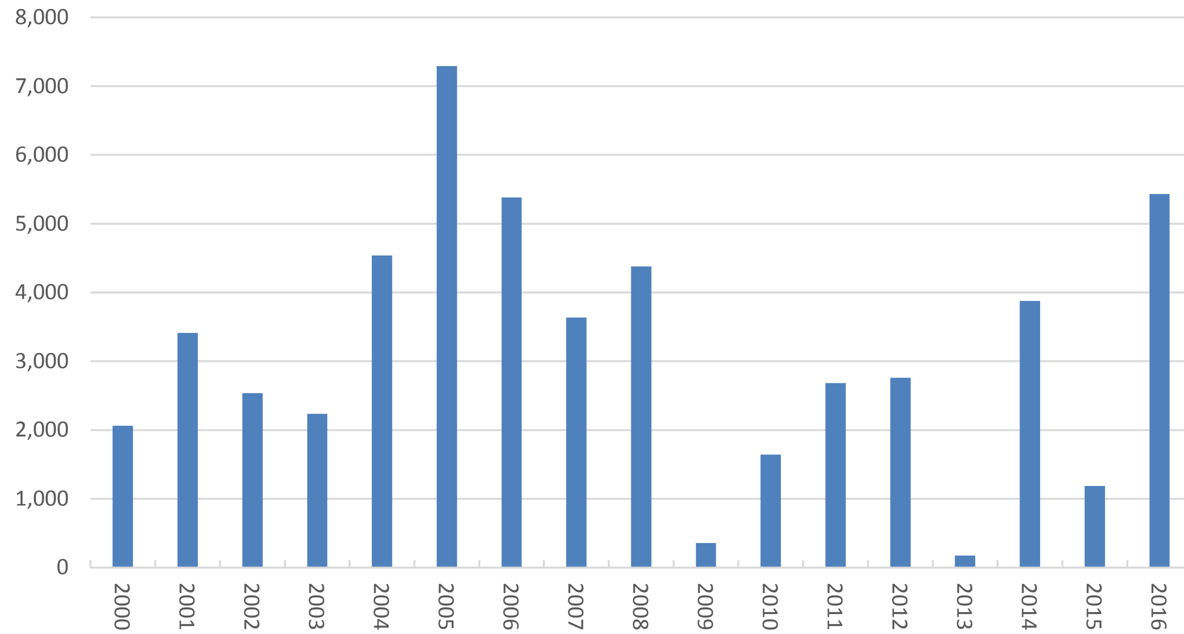
Figure 13: Median Price and Months of Inventory of Single-Family Homes in the San Antonio-New Braunfels MSA, January 2000-September 2017



Source: Texas A&M Real Estate Center, 2017.

Figure 15 shows the number of multifamily units permitted in the San Antonio-New Braunfels MSA between 2000 and 2016. Since the 2008-2009 Recession, the number of permitted multifamily units has grown, but the trend has not been consistent from year-to-year. In 2013, for example, fewer multifamily units were permitted than during 2009. The third worst year during this period was 2015, when only 1,186 units were permitted. However, the number jumped significantly during 2016, when 5,430 multifamily units were permitted.

Figure 14: Multifamily Units Permitted in the San Antonio-New Braunfels, TX MSA, 2000-2016



Source: Texas A&M Real Estate Center, 2017.

Table 13 provides recent market conditions for multifamily housing within the various submarkets in the San Antonio region during the second quarter of 2017. Marcus & Millichap estimated that the region had an overall vacancy rate of 5.8 percent during the second quarter of 2017. It anticipated that developers will deliver 8,200 units to the market during this year. Over the last year, effective rents have increased by 4.5 percent and the average effective rent for the region was $941. The data in Table 13 show the lowest vacancy rate for multifamily was in the West San Antonio submarket at 3.8 percent, while the submarket with the highest effective monthly rents was Far Northwest San Antonio at $1,176.

Table 13: Overview of the San Antonio Apartment Market during the Second Quarter 2017

RANK	SUBMARKET	VACANCY RATE	Y-O-Y BASIS POINT CHANGE	EFFECTIVE RENTS	Y-O-Y PERCENT CHANGE
1	West San Antonio	3.8%	-240	$728	3.3%
2	North Central San Antonio	3.8%	30	$960	3.6%
3	New Braunfels/Schertz/Universal City	4.4%	-100	$956	1.9%
4	Northwest San Antonio	5.2%	-140	$896	2.3%
5	Far West San Antonio	5.3%	50	$931	1.3%
6	Southwest San Antonio	5.6%	-90	$784	2.0%
7	Northeast San Antonio	6.1%	70	$828	2.9%
8	South San Antonio	6.2%	20	$790	4.8%
9	Far Northwest San Antonio	6.2%	-150	$1,176	-5.2%
10	Medical Center	6.4%	10	$881	1.8%
	Overall Metro	5.8%	-50	$941	2.1%

Source: Marcus & Millichap, 2017.

Office Trends

According to the real estate firm Transwestern, the Austin area office market had an overall vacancy rate of 9.7 percent during the second quarter of 2017 (See Table 14). In total, the Austin area market contained 68.3 million square feet of rentable space and at the end of the second quarter of 2017, the yield-to-date net absorption (the difference between the amount of newly leased space in the market and new constructed space or formerly leased space that has returned to the market) in the Austin area market was 1,863,305 square feet. Geographically, the largest concentrations of office space in the Austin market are in the Northwest & Far Northwest submarkets, the Central Business District, and the Southwest market. Austin's Central & West Central submarket had the highest occupancy rate at 95.4 percent and its Northeast & East submarket had the lowest occupancy rate in the region at 82.9 percent.

Table 14: Overview of the Austin Area Office Market during the Second Quarter 2017

SUBMARKET	TOTAL RENTABLE SF	TOTAL OCCUPANCY	YTD 2014 TOTAL NET ABSORPTION	NET RENTAL RATE PSF
Central Business District (CBD)	13,091,529	90.5%	422085	$35.85
Central & West Central	5,459,728	95.4%	57,543	$21.85
North	7,046,571	92.6%	368,020	$22.91
Northeast & East	6,048,882	82.9%	322,696	$20.62
Northwest & Far Northwest	17,045,220	90.6%	113,581	$22.00
Round Rock & Cedar Park	2,970,523	90.6%	113,104	$19.85
South	2,835,600	93.1%	6,630	$24.66
Southeast	2,394,577	87.7%	(37,952)	$16.53
Southwest	11,404,345	89.4%	497,598	$26.15
MARKET TOTAL	**68,296,975**	**90.3%**	**1,863,305**	**$25.14**

Note: Includes office buildings larger than 25,000 SF and excludes government, medical, user campuses, and office condos.
Source: Transwestern, 2017.

The San Antonio region's supply of office space is less than half the total rentable square footage of Austin's market (See Table 15). The region also has a higher overall vacancy rate at 18.8 percent, although (surprisingly) the net rental rate in San Antonio was not significantly lower than Austin at $21.70. The largest supply of the region's office space is located in the Northwest submarket (9,805,156 square feet), followed by the North Central submarket (7,956,136 square feet). San Antonio's Central Business District is the third largest submarket with 5,018,249 square feet of rentable spaced. Total net absorption during the second quarter of 2017 was 248,780 square feet.

Table 15: Overview of the San Antonio Area Office Market during the Second Quarter 2017

SUBMARKET	TOTAL RENTABLE SF	TOTAL AVAILABLE	2Q 2017 NET ABSORPTION	NET RENTAL RATE PSF
CBD	5,018,249	18.0%	29,024	$20.80
Midtown	921,471	8.6%	(7,316)	$29.85
North Central	7,956,136	17.7%	6,810	$22.91
Far North Central	3,093,355	17.3%	31,150	$28.75
Northwest	9,805,156	21.7%	137,531	$23.79
Northeast	1,953,421	14.6%	37,027	$19.52
Far West	826,086	15.4%	15,226	$27.68
South	557,145	27.8%	(672)	$16.64
New Braunfels	232,760	36.5%	--	$24.86
MARKET TOTAL	**30,363,779**	**18.8%**	**248,780**	**$21.70**

Source: Transwestern, 2017.

Industrial/Warehousing Trends

The Austin region has a sizeable amount of industrial/warehouse space totaling 48.5 million square feet during the first quarter of 2017, although a significant share is "flex space" which can also be converted into offices (See Table 16). The regional industrial/warehousing vacancy rate was 11.2 percent and the average net rent was $9.77 per square foot. During the first quarter of 2014, the region returned more than 450,000 square feet to the market (Transwestern, 2014).

Table 16: Overview of the Austin Industrial Market during the First Quarter 2014

SUBMARKET	INVENTORY SF	YTD NET ABSORPTION SF	TOTAL OCCUPANCY RATE	AVERAGE NET RENT
CBD & Central	655,300	(10,418)	91.7%	$12.14
Cedar Park & Far Northwest	2,637,737	34,162	90.8%	$10.80
East	3,535,517	261,804	83.3%	$9.24
North	11,433,026	(718,653)	88.6%	$10.01
Northeast	9,068,944	(167,262)	90.5%	$9.58
Northwest	1,740,220	11,496	95.1%	$10.31
Round Rock & Far Northeast	5,954,558	134,779	89.9%	$8.60
South	796,141	8,200	99.0%	$10.34
Southeast	11,889,786	(11,334)	86.9%	$9.84
Southwest	745,312	4,050	85.9%	$12.10
AUSTIN MARKET	**48,456,541**	**(453,176)**	**88.8%**	**$9.77**

Source: Transwestern, 2017.

The San Antonio industrial market had more than 45.2 million square feet of inventory during the third quarter of 2017 (See Table 17). The market was had a citywide availability rate of 12.5 percent or less than 2.0 million square feet of available space. During the third quarter 2017, 122,776 square feet of space was absorbed.

Table 17: Overview of the San Antonio Industrial Market during the Third Quarter 2017

MARKET	INVENTORY SF	TOTAL AVAILABILITY	3rd 2017 NET ABSORPTION	AVERAGE NET ASKING RENT
CBD	615,812	0.0%	0	N/A
North Central	6,041,988	6.9%	-1,469	$8.74
Northeast	24,953,128	15.1%	77,425	$5.11
Northwest	6,527,258	11.8%	13,331	$7.43
South	7,118,778	10.1%	33,489	$4.33
SAN ANTONIO MARKET	**45,256,964**	**12.5%**	**122,776**	**$5.57**

Source: CBRE, 2017.

Retail Trends

Transwestern estimated that the market for commercial retail space experienced moderate absorption during the third quarter 2017, with 300,440 square feet of space coming off the market (See Table 18). Overall, the region had almost 74.0 million square feet of retail space and the regional vacancy rate was 3.9 percent. The highest occupancy rates were in the following market subareas: the Austin CBD; south, southeast, southwest Travis County, and Hays County.

Table 18: Overview of the Austin Retail Market during Third Quarter 2017

MARKET	INVENTORY SF	TOTAL OCCUPANCY SF	YTD TOTAL NET ABSORPTION	AVERAGE NET RENT
Central Business District	1,820,166	98.0%	22,862	22.50
Central & West Central	7,314,845	95.1%	(67,180)	21.53
Cedar Park & Far Northwest	10,776,973	93.9%	290,557	20.70
East & Northeast	5,588,484	95.9%	58,499	20.65
Hays County	7,735,073	97.1%	(50,250)	23.58
North	6,599,219	96.5%	(20,786)	18.79
Northwest	4,828,677	96.1%	803	23.58
Round Rock & Far Northeast	9,468,716	94.9%	43,222	21.86
South & Southeast	11,840,302	97.3%	(75,962)	22.04
Southwest	7,989,945	97.8%	98,675	29.23
MARKET TOTAL	**73,962,400**	**96.1%**	**300,440**	**22.43**

Source: Transwestern, 2017.

Less detailed information was available for the San Antonio retail market. Most of retail space in the San Antonio market is located on the north side of the city and outside of the Central Business district. The vacancy rate for retail space during the second quarter of 2017 was 7.5 percent, with most of the retail space located in northern Bexar County (See Table 19).

Table 19: Overview of the San Antonio Retail Market during the Second Quarter 2017

MARKET	INVENTORY SF	DIRECT VACANT SF	YTD TOTAL NET ABSORPTION	AVERAGE NET RENT
Citywide	50,736,624	3,783,457	50,407	$16.46
Non-CBD/North	43,803,212	3,303,358	182,143	$16.20
CBD/South	6,933,412	480,099	(34,736)	$19.19

Note: Includes shopping centers totaling greater than 20,000 square feet.
Source: REOC San Antonio, 2017.

DEVELOPMENT PATTERNS IN THE PROJECT STUDY AREA

The sections below provide a brief overview of development patterns and projects in the CTTS study area. Organized by city, the narrative identifies various residential and commercial projects that are either: in the planning process; approved for construction; under construction; or recently completed. When available, information such as the number of lots in a subdivision, units in a multifamily project, or square feet for commercial buildings is provided. The identification of the projects below reflects a "snapshot" view and should not be considered comprehensive, although the most significant projects in the study area have been identified.

Georgetown

The city of Georgetown's development pattern is currently concentrated in its west and northwest, as well as to the east and southeast towards SH 130. Among Georgetown's largest residential developments, the Sun City "active adult" community continues to expand. There are also a number of other parcels on the northwest side of Georgetown that are expected to be developed during the next 5 years. Along Williams Drive, the Deer Haven (70 lots), the Gardens at Verde Vista (149 lots), and the Lakeside (300 lots) subdivisions under construction. Further south, adjacent to Wolf Ranch's retail development, townhome and apartment projects are being planned, along with 209 single-family homes that have already started construction. The Water Oak subdivision, which lies adjacent to the CTTS study area on SH 29, has 1,500 acres available for development and will have up to 3,000 single-family units. Closer to SH 130, on the northeast corner of Rockride Lane and Sam Houston Boulevard, a 1,220-lot subdivision called Saddlecreek is being proposed, along with a 200-lot addition to the Pinnacle subdivision. Due east of the Pinnacle subdivision, on the west side of Maple Street, a 300-lot subdivision is also being planned. South of Georgetown, in an unincorporated area that is also due north of the city of Round Rock, another phase of the Teravista development continues to add a large number of single-family homes, as does the La Conterra subdivision.

A number of new multifamily developments are being planned, are under construction, or were recently completed in Georgetown, which are shown below in Table 20.

Table 20: Recent and Future Multifamily Projects in the City of Georgetown

APARTMENTS		
Name	**Total Number of Units**	**Status**
Carroll at Rivery Ranch	272	Under construction
HIllstone at Wolf Ranch	332	Completed
Kaia Pointe	102	Under construction
Live Oak Apartments	108	Under construction
Mansions of Georgetown	438	Completed
Merritt Heritage	244	Under construction
Retreat at Wolf Ranch	303	Completed
Retreat at Wolf Ranch Phase 2	259	Under construction
The Delaney at Georgetown Village	120	Completed
Third and Rock Court	12	Under construction
Villas of Georgetown	264	Proposed
TOWNHOMES		
Name	**Total Number of Units**	**Status**
Holly Street Townhomes	24	Completed
CONDOMINIUMS		
Name	**Total Number of Units**	**Status**
Gardens at Verde Vista	160	Completed
Gatlin Creek	70	Proposed
Old Mill Crossing	99	Completed

Source: Marczynski, 2017.

The most concentrated commercial construction has been at the Wolf Ranch development, which recently added a full-service Sheraton Hotel. Smaller commercial projects have occurred throughout the city, including new construction along the Williams Drive corridor and some site redevelopment in the downtown area. A new middle school was under construction in Georgetown at the southeast corner of Rockride Lane and SE Inner Loop.

<u>Round Rock</u>

Round Rock continues to be one of the primary recipients of suburban growth in the Austin region, although its rate of growth has slowed over the last decade, as other cities compete and as its supply of developable land diminishes. At present, there are a number of residential subdivision projects planned or underway, these include: the Freeman Tract, Avery North, Warner Ranch, and Kenney Fort. There will also be expansions of the Paloma and Sienna subdivisions, which fall within the jurisdiction of municipal utility districts (MUDs) and outside the City of Round Rock's boundaries. Table 21 identifies all the residential projects in the city of Round Rock that are either proposed, in review, approved, or under construction. Collectively, these projects will add thousands of new housing units to this portion of the CTTS study area.

Table 21: Ongoing Residential Construction Projects in the City of Round Rock, 2015-2017

SINGLE-FAMILY SUBDIVISIONS	
Development	**Total Number of Lots**
Freeman	228
Avery North/Vizcaya	1,192
Turtle Creek Phases 5 & 6	101
Warner Ranch	274
Meritage/GLO	194
Kenney Fort	202
Bodeman/HR 79	65
Madsen	285
Glen Ellyn Tract	194
Northfields Phases 1 & 2	194
Arden Park	118
DETACHED SINGLE-FAMILY COMMON LOT	
Development	**Total Number of Units**
Gardens at Mayfield Ranch	130
Mayfield Ranch	89
Sunrise Condos	100
Wallin Tract	100
Diamond Oaks	130
Cottages at Meadow Lake	33
DUPLEX	
Development	**Total Number of Units**
Turtle Creek Phase 8	N/A
Spring Street Townhomes	12
TOWNHOMES	
Development	**Total Number of Units**
Legends Village Condos	109
Cottages at Round Rock Town Center Phase 2	24
Turtle Creek Townhomes	28
University Village Townhomes	58
Wyoming Springs Townhomes/Rockwell Village Condos	58
Donnell Park Townhomes	149
MULTIFAMILY	
Development	**Total Number of Units**
Arrington Ridge	312
Waters at Sunrise	288
Avery Center South	238
Kenny Crossing	248
Holly Brook Ranch	336
Bartz II	296
Springs at Round Rock	260
University Village Apartments	292
Meadowlake Multifamily	254
SENIOR ASSISTED LIVING	
Development	**Total Number of Units**
Cedar Ridge Assisted Living	164
The Enclave at Round Rock	170
Sundara Assisted Living	32
Affinity Round Rock	170
Poets Walk	68

Note: Table provides the total number of lots or units in each development. The number of residential units constructed between 2015 and 2017 may be less than the total.

Source: City of Round Rock, 2016.

Various commercial projects were underway or proposed in Round Rock during the field visit. One of the most significant projects is the Kalahari Resort, which is still in the planning stages. It will be a 1,000-room hotel and waterpark with an African theme. The resort expects to hire 700 employees and will be located along US 79, east of Kenney Fort Road. Recently completed, the Scott & White Cancer Center is located on the northeast corner of University Boulevard and Mays Street in a four-story structure. One of the most active areas in Round Rock for new commercial development has been the La Frontera site at the northwest corner of SH 45 N and IH 35. Over the last two years, several projects have been completed there, including: a 91-room hotel and a 140-room hotel. Additionally, a 42,000 square foot college campus and 98,000 square foot office building were recently built. A former big box store was demolished and 102,000 square feet of retail strip was being constructed at the time of the field survey. Additional retail on this site (i.e. pad sites) is expected in the future. Developers have also started construction of a 95,000 square foot office building in July 2016. Further east, a mixed-use project with 1.0 million square feet called "The District" was recently announced. It will have Class-A office space, residential, hospitality, and retail uses and it will be located along SH 45 N and N. Greenlawn Boulevard.

Hutto

Located east of SH 130 in Williamson County, population growth in the city of Hutto has outpaced the surrounding area. Since the 2000 U.S. Census, when its population was 1,451 residents, the City of Hutto has grown approximately 1,542 percent to its estimated 2016 population of 23,832 residents. North of US 79, new development is anticipated in the Hutto Highlands subdivision (700 lots) and the Mager Meadows subdivision (200 lots). South of US 79, active residential developments include: Hutto Crossing (400 lots); the Park at Brush Creek, Glenwood; and the Riverwalk (400 lots) subdivisions. In the southeast quadrant of Hutto and south of County Road 499, 854 single-family homes are expected in the Meadows at Cottonwood Creek subdivision and 500 more single-family homes on an adjacent parcel. The Brooklands subdivision, which is south of FM 1660, is proposed to have 609 lots. Near this subdivision, an 80-unit multifamily senior complex is being proposed.

Although Hutto has grown to a sizeable population in a short period of time, commercial development has historically lagged, due to the lack of population density required to attract the interest of national chains and the city's proximity of extensive retail and services in nearby Round Rock. However, a large HEB grocery store and other strip commercial development was recently built at the northwest corner of SH 130 and Gattis School Road to serve the city and eastern Round Rock. The SH 79 corridor provides opportunities for new development, with easy access to SH 130. However, high-traffic retail development on the south side of SH 79 will probably be limited, due to the active Union Pacific track.

Pflugerville

The City of Pflugerville is viewed by many as an attractive location due its affordable housing and its relative proximity to Austin. This interest has extended to developers, who have been attracted to the SH 130 corridor. During the field survey, there was a strong pace of construction in many of the city's subdivisions. Table 22 provides an inventory of Pflugerville's existing subdivisions and remaining lots to be developed or multifamily units or townhomes to be built. Developers have almost 11,000 housing units in active or approved projects for future construction.

Table 22: Subdivisions under Construction or Approved for Construction in the City of Pflugerville

Development	**Total Units Built**	**Remaining Units**
Avalon Subdivision	968	532
Blackhawk Subdivision	1,192	2,309
Blackhawk Far East	0	637
Branson Condominiums	3	130
Carmel Subdivision	0	2,317
Carrington Court Subdivision	83	50
Commerce Place Apartments	628	287
Commons at Heatherwilde/Pecan	0	1,250
Emerson Apartments	170	214
Falcon Pointe Subdivision	1,608	97
Highland Park Subdivision	1,131	141
Highlands Apartments	257	35
Huntington Park Subdivision	0	128
Kuemple Townshomes	0	18
Mansions at Stone Hill Apartments Phase 2	148	251
Paradise Cove Condominiums	0	17
Penley Park Subdivision	46	115
The Reserve at West Creek Subdivision	589	15
Sorento Subdivision	199	745
Senson Farms Condominiums	26	112
Verona Subdivision	87	237
Village on Legacy Subdivision	62	262
The Villages of Hidden Lake Subdivision	1,153	132
Vine Creek Subdivision	0	82
Walden Square	0	82
TOTAL	**8,350**	**10,915**

Source: City of Pflugerville, 2017.

Table 23 shows three new subdivisions that were under review with the City of Pflugerville's Planning Department. These three subdivisions would add 355 lots to the city's inventory.

Table 23: Subdivisions under Planning Review in the City of Pflugerville

Development	Total Number of Proposed Lots
Becker Farms Subdivision	83
Commons at Rowe Lane Subdivision	246
Maynard Subdivision	26
TOTAL	**355**

Source: City of Pflugerville, 2017.

Along with its robust residential market, Pflugerville is also experiencing considerable commercial development. Some of the city's more significant projects, currently under construction, include:

- An Aldi grocery store at the southeast corner of FM 685 and Pfennig Lane
- Heritage Lakes at Pflugerville – 90 independent living units, 52 senior cottages, 16 supported living units, 65 assisted living units, and 50 skilled nursing units
- A 530,000 square foot Living Spaces furniture store, southwest corner of SH 45 N and Heatherwilde Boulevard
- A Marriott Courtyard at the southwest corner of E. Pecan Boulevard and SH 130
- An elementary school on Hodde Lane, north of Cele Road.
- A high school on Weiss Road, south of E. Pflugerville Parkway
- Pflugerville Hospital, a 97,474 square foot Scott & White facility on the northeast corner of SH 130 and East Pflugerville Parkway.

Other projects that are still in the planning stages include: a Costco that is being proposed on the southeast corner of SH 130 and Kelly Lane; a medical and professional building that is proposed at the southwest corner of E. Pflugerville Parkway and FM 685; and an assisted living facility that is proposed at the northwest corner of Wells Branch Parkway and S. 10th Street.

Manor

Manor is a small city that lies due east of the city of Austin. During the mid-2000s, Manor was a growing suburb, but was impacted negatively by the 2008-2009 Recession. Since the recovery, Manor's growth has accelerated. As of June 2017, Manor had more than 8,000 lots in various phases of planning or construction. Ongoing or proposed residential projects include: Presidential Glen (360 lots); Presidential Heights (600 lots); Stonewater (350 lots); Stonewater North (270 lots); Shadow Glen (1,500 lots); Presidential Meadows (875 lots); Lagos (2,300 lots); the Village at Manor Commons (370 lots); and Sky Village (1,500 lots). Into the future, Manor is poised to be surrounded by more than 9,000 lots to the south in the proposed Indian Hills subdivision, Whisper Valley subdivision, and other projects.

Commercial development has been slow to follow residential growth in Manor. Its relative close proximity to retail and services in Austin, coupled with lower population densities, has historically resulted in little commercial development. Current commercial projects include the construction of a new elementary school on the south side of the city along FM 973 and the New Tech Middle School along US 290 E. The Shadowview Lakeside Shopping Center at Lexington Street and US 290 E is now completed and is adding tenants. Restaurants and fast food restaurants are located there, along with a medical clinic and a cell phone store. Nearby, another medical clinic is being built.

<u>Austin</u>

Development in the city of Austin has generally been widespread, even reaching areas where growth has not been seen for some time. Historically, the city's eastern side has not attracted significant development, but attitudes have changed and middle-income and upper-middle income households' growing need for affordable housing (as well as gentrification that has attracted young professionals and higher-income households) have encouraged new development projects. Additionally, the linear form of the Austin metropolitan area means that many locations in eastern Travis County currently provide relatively quick commutes to central Austin, which are unavailable from any other direction without paying significantly more for housing. As a result, various residential development projects are planned or underway within the CTTS study area.

West of IH 35 from Travis County Line to US 183

In far North Austin, an important location for future development will be the Robinson Ranch, which is a 6,000-acre parcel. At present, its owners are mining limestone and are not opening sections of land for development. As a result, it is difficult to know when Robinson Ranch will be made available for significant residential and commercial construction. At the southeast corner of SH 45 N and Loop 1, the Preston Park and Travesia subdivisions are under construction. Additionally, the Mansions at Travesia apartments were recently completed, as were the Art at Bratton's Edge Apartments (76 units) and the Allegre Point Apartments (184 units) further south. Up to 450 more apartments are proposed on the same tract of land as Allegre Point. Continuing south, a multifamily project called Terraces at Scofield Ridge is under review on the southeast corner of Loop 1 and Grand Avenue Parkway. To the east, the Scofield Farm Meadows Condominiums (49 units) and the Walnut Park Apartments were under construction. At The Domain Development, 372 units were under construction for a project called Flatiron. Nearby on North Burnet Road, the Broadstone Burnet Apartments were under construction and on Braker Lane the North Burnet Gateway Apartments (423 units) were also being built.

Commercial development in this portion of the CTTS study area has been concentrated in The Domain development, which has just added two office buildings with 315,000 square feet of office space. Also at The Domain, a 310,000 square foot office space is under construction and its Rock Rose district has opened, which has added a large number of restaurants, bars, and stores. There has also been greater utilization of flex space and industrial space in the area bounded by Loop 1 and Metric Boulevard and Gracy Farms Lane and US 183. As office rents rise in Austin, a number of companies are utilizing cheaper flex space as office rather than renting traditional office buildings. This area has also become popular for microbreweries, which along with The Domain and Top Golf, are giving some needed cachet to a part of Austin that has regularly been ignored. Another area with planned, ongoing, or recent commercial development are between Loop 1 and IH 35, south of SH 45 N. Most of the new development in this area is warehousing and industrial. Lastly, there has been infilling of vacant land between Lamar Boulevard to its intersection with IH 35, north of Walnut Creek.

East of IH 35 from Pflugerville to US 290

There are three large Municipal Utility Districts (MUD) or Planned Unit Developments (PUDs) in northeast Austin. The Northtown MUD is located due south of the city of Pflugerville. The developer has started construction and it is proposed to have 2,951 single-family units, 1,626 townhomes, 4,186 apartments, along with retail, office, industrial, and schools. Pioneer Crossing is located further south and oriented around Dessau Road. The Pioneer Crossing PUD is under construction and planned for 2,925 single-family homes. The Harris Branch PUD is located along Harris Branch Parkway and was originally proposed to have 3,787 single-family homes and 1,160 apartments. Over the past decade, construction in the Harris Branch PUD has occurred on an intermittent and limited basis. In addition to these large MUDs or PUDs, there are a number of smaller subdivisions that are proposed or under construction. The Fort Dessau subdivision is under construction and will have 86 condominiums, 50 duplex units, and 160 single-family homes. Nearby, the Harris Ridge Condominiums will have 108 units. A small infill subdivision along Yager Lane, called the Enclave of The Springs, was under construction during the field survey. Further east, the Entrada and Fossil Creek subdivisions have been approved for 822 lots and 933 lots, respectively, but there was no activity at the time of the field survey. Nearby, the Cantarra subdivision (1,126 lots) continues to build out. The Pioneer Hill subdivision on Dessau Road (671 lots and apartments) is under construction and, east along Parmer Lane near its intersection with SH 130, the Bellingham subdivision (629 lots) is under construction. There are two multifamily complexes being developed. One complex, called IO at Tech Ridge, was partially built, but stalled during the field survey. Another complex called Austin Waters was proposed and may now be under construction, along with an assisted living facility on Yager Lane that was also under construction.

Commercial development in this portion of the study area is dispersed throughout and occurs primarily on vacant parcels along major arterials or in commercial parks. The highest concentration of recent commercial development has been in the Parmer Business Park within the Tech Ridge development, which is located between Parmer Lane and Howard Lane. Recently, two buildings with approximately 192,000 square foot office buildings were built along McAllen Pass Drive. Four more buildings are under construction, one office building with 116,000 square feet of space and three more flexspace buildings totaling 350,000 square feet. Additionally, 3M will build its own 272,000 square foot office building in the same development (Anderson, 2017). In addition to these projects there are also plans to build additional office, flexspace/industrial, and retail buildings on other tracts within Tech Ridge. Business parks are also concentrated north and east of the intersection of US 183 and US 290 E. Within these business parks, new construction projects have consisted of both office and industrial/warehousing. Retail development in this part of the study area has primarily occurred as free-standing buildings and as small, strip shopping centers.

West of US 183 from US 290 to SH 71

Some of the major development projects within the urbanized core of Austin that are within or adjacent to the CTTS study area include the Mueller Airport redevelopment, Crestview Station, and the ACC Highland Center. Among these developments, the Mueller Airport redevelopment (which lies just outside the CTTS study area) is unquestionably the largest with approximately 4,900 single-family and multifamily units expected at full build out. Construction at the site has been underway for a number of years and is expected to continue for several more, as market conditions have accelerated the original timeline. The Crestview Station project is a transit-oriented-development built around a Capital Metro commuter rail station that is being constructed in phases. The project is a mixed-use development with retail, office, single-family homes, and multifamily units. Collectively, there will be 1,350 residential units when it is fully built out. The ACC Highland Center is a partial redevelopment of the existing Highland Mall and there are 1,250 multifamily units planned for a future phase of the project. The first phase of its multifamily construction is underway. The Mueller redevelopment, in particular, has been a catalyst for the area bordered by IH 35, US 183, Airport Boulevard, and US 290 E. In the last few years, home values in these neighborhoods have increased significantly, due to demand for central city proximity and a supply of renovated housing stock. However, to date, this trend has only led to a replacing of lower-income households with higher-income households and infill construction. There has been little densification of the neighborhood up to this point.

As land prices rise, particularly west of IH 35, developers are infilling vacant parcels and subdividing single-family lots in a piecemeal manner. They are also taking low-density commercial properties and building multi-story residential projects, typically with retail and office units on the bottom floor. Burnet Road and Lamar Boulevard are popular corridors for these types of projects, since there is an abundance of these low-density (in some cases dilapidated) retail properties that can be redeveloped into residential and commercial space with much higher rents.

Major commercial projects in central Austin include the Mueller Airport redevelopment, which is planned for 3.0 million square feet of commercial space and 790,000 square feet of retail development. A significant portion of this commercial space has already been built, including the Dell Children's Medical Center, The Thinkery (a children's museum), the Austin Independent School District's Performing Arts Center, various medical office buildings, and a large amount of strip center retail and big box retail. To some degree, the retail development at Mueller has absorbed much of the demand in the area and other commercial areas are not yet revitalizing, despite rapidly increasing household income and property values. The ACC Highland Center is the redevelopment of a portion of the existing Highland Mall into an Austin Community College campus. The low density of Highland Mall and surrounding properties coupled within rising land values suggests that redevelopment projects will be occurring in this area for some time.

East of US 183 from US 290 to SH 71

The pace of residential development in this portion of the CTTS study area is beginning to pick up, but is still slower than areas north of US 290 E. Between Loyola Lane and FM 969, the Trinity Meadows and the Loma Vista subdivisions have had modest amounts of new construction. Building also continues in the Austin Colony subdivision along FM 969, east of SH 130. Along US 183, near its crossing of the Colorado River, the Knollwood on the Colorado River subdivision is platted for 257 single-family homes and the construction of its homes continues. Many of the subdivision projects in this area are planned and have not yet started. South of US 290 E and on the west side of FM 3177, the Parker Creek Ranch and the Loma Vista subdivisions are being proposed. The Indian Hills (1,522 multifamily units) and the Lariat B Ranch subdivision (981 lots) have been approved, but there has been no activity. The East Parke subdivision (124 lots) has been proposed at the northeast corner of US 183 and Loyola Lane. The right-of-ways for the streets have been cleared, but the project appears to have stalled. Further south, the Hornsby Glen subdivision has been approved for 538 lots. Along SH 71 and east of SH 71, Riverbend Landing (600 lots) and the Watersedge PUD with 1,254 single-family homes, 323 apartments, and 244 townhomes are proposed. On the south side of US 290 and north of Old Manor Road, the Terrace at Walnut Creek Apartments were under construction (329 units).

At the periphery of downtown Austin, redevelopment is occurring along Riverside Drive, east of IH 35. These new projects are mixed use residential/retail (unlike the buildings they are replacing) and they are redeveloping at higher densities and with much higher rents. Several projects grouped near Riverside Drive's intersection with IH 35 will collectively have 3,105 apartments, 7,746 square feet of office space; and 219,406 square feet of retail space. The redevelopment trend along the Riverside Drive corridor is expected to continue over the long-term, since there are many aged properties on large parcels that would become attractive as land prices increase. Further east in the Montopolis neighborhood, a number of smaller infill residential subdivisions are being proposed or constructed. Dwelling units in these subdivisions are typically single-family homes on small lots or townhomes or shared lot dwelling units. Some of the subdivisions include the Townhomes at Park Place, Riverside Homes, and Shire's Court.

A commercial park located at the southeast corner of SH 130 and US 290, called Parmer Center, is the location of a new beverage distributor, which has approximately 700 workers. It is the first business to locate in this park. Within this part of Far East Austin, there are several other large-scale projects have been proposed, but none have advanced to actual construction. At present, there is a commercial development proposed north of Decker Lake, along Lindell Lane, has been proposed. Nearby, the Wildhorse PUD is proposed to have more than 5,800 homes, almost 6.3 million square feet of commercial development, and an 800-room hotel. Between Loyola Lane and FM 969, a 45-acre warehouse and office development is proposed at the southwest corner of Decker Lane and Loyola Lane, but there has been no construction.

East of IH 35 and between Lady Bird Lake and SH 71, perhaps the highest concentration of new commercial development has been at the redeveloped properties along Lakeshore Drive and Riverside Drive, particularly on the ground floor of new apartment buildings. There has also been some new construction on the northeast corner of East Riverside Drive and East Ben White Boulevard, namely hotels serving the Austin-Bergstrom International Airport (ABIA)

South of US 71 to Buda

Areas south of US 71 and within the CTTS study area have generally experienced slower growth over the past decade than locations in northeastern Hays County or north of US 290 E in Travis County. However, there is renewed interest from developers, as they seek areas of Austin with affordable land. South of SH 71 and east of US 183, there has been relatively little residential construction, but there are several proposed developments. Along Ross Road and south of Pearce Lane, two subdivisions are being reviewed by the City of Austin, which are the Cactus Rose Mobile Home Park and one for stick-built homes. On the northeast corner of Ross Road and Elroy Road, a multifamily development has also been approved.

The most significant residential project underway (west of US 183) is Easton Park, which is proposed to have up to 10,000 housing units and other retail and commercial development. Easton Park is located between US 183 and Thaxton Road, south of FM 812. The first phase of the project is underway, but incentives for affordable housing were struck down by a court. It is not clear if this ruling will affect the viability of the project (Barragan, 2015 and Findell, 2016). To the north of Easton Park and along US 183, single-family homes in the Addison subdivision (500 lots and 225 apartments) are under construction. Development also continues in the Colorado Crossing subdivision (949 lots). Due west of Easton Park, construction is also underway on the Vista Point and the Springfield subdivisions (337 lots). To the south of Springfield, several tracts have also been approved for multifamily construction. Further west, on either side of Slaughter Lane, the Goodnight Ranch subdivision has started construction, which is proposed to have 1,192 single-family homes, 2,645 apartments, and 696 townhomes. Adjacent to Goodnight Ranch, the McKinney Heights subdivision (925 lots) is nearing its build out. Continuing south along Bradshaw Road, there is construction in the Bradshaw Crossing (921 lots) and Legends Way (289 lots) subdivisions. Several more subdivisions nearby are either approved for construction or under review by the City of Austin. The Vistas of Austin subdivision (669 lots) is approved and lies due east of Bradshaw Crossing. South and east of Legends Way subdivision are the proposed Bella Fortuna and Cascades at Onion Creek (467 lots and 250 multifamily units) subdivisions. On the west side of IH 35, south of Onion Creek is the Estancia Hill Country development which is planned for 385 single-family homes and 1,600 apartments and townhomes. Construction has started on its single-family homes.

South of SH 71 and east of US 183, new commercial development has been limited. The number of enplanements at ABIA continues to grow, which has required more employees to serve these passengers. There were also two hotels recently constructed on the airport property. To the south, the Circuit of the Americas motorsport and entertainment facility, built in 2012, continues to host Formula One races and other sporting events and concerts. However, the facility has not led to any meaningful redevelopment of adjacent rural land. One new and notable employer in this area has been the NLand Surf Park, which is a 14-acre artificial surfing lagoon with a small brewery. West of US 183 and south of SH 71, commercial development has been more active, particularly in the Met Center commercial park and other commercial parks located along Burleson Road and E Stassney Lane, where several large industrial tilt wall buildings were under construction during the field survey. On the west side of IH 35, south of Onion Creek is the Estancia Hill Country development, which is proposed to have 1.9 million square feet of corporate office space, 1.5 million square feet of general office space, a hotel, and a hospital. Commercial construction at this development has not yet begun.

Buda

Located due south of Austin, in Hays County, Buda is expected to be the recipient of a significant volume of single-family residential development over the coming decades. Although Buda's historic center is located west of IH 35, recent residential development has been on both sides of the roadway. On the west side of IH 35, development is currently underway in the Garlic Creek, Elm Grove, the Whispering Hollow, Summer Pointe subdivisions. Several New subdivisions are being proposed along RR 967, which include: White Oak Preserve (245 lots); a subdivision north of Haleys Way Drive (400 lots); a subdivision north of Dodgen Trail (239 lots); and a subdivision west of Carpenter Elementary School (150 lots). To the east of IH 35, the largest residential project underway is the Sunfield development, which will be a mix of residential, industrial, and commercial land uses. The proposed 2030 build-out for Sunfield is 6,950 lots and several hundred single-family homes have already been built. Single-family construction also continues in the Stonefield, Stoneridge, and Meadow Park subdivisions. Additionally, a small subdivision with 127 lots is being proposed along Hillside Terrace Drive, between Goforth Road and FM 2001. There are multifamily projects proposed on the west side of IH 35 along Firecracker Road and at the southwest corner of Old Goforth Road and FM 2001 (250 to 300 units).

Outside of continued, piecemeal development within existing areas platted and zoned for commercial purposes, the primary commercial project proposed in the city is a hospital at the southwest corner of White Wing Trail and FM 2001.

Kyle

Kyle continues to be a rapidly growing Hays County suburb, located between Austin and San Marcos. Bisected by IH 35, new residential development is occurring on both sides of the roadway (See Table 24). On the west side of IH 35, construction continues in the Plum Creek development, where an additional 1,400 single-family dwelling units are planned for the second phase of the Plum Creek subdivision, as well as 170 new single-family homes within the first phase. Within existing subdivisions, there was single-family construction in the Creekside and Brooks Crossing subdivisions. Construction was starting on Phase 1 of Cypress Forest subdivision and to its north, along N. Old Stagecoach Road, Phases 1&2 of the Blanco River Ranch subdivision and Cypress Forrest Phase 2 (73 lots) are being proposed. Further south, in the Stagecoach Forest subdivision, 270 lots are planned at the southeast corner of S. Old Stagecoach Road and W. Center Street. Multifamily projects include the Fairways Landing (216 units) along Kohler's Crossing and the Oaks on Marketplace (255 units). On the east side of IH 35, there was ongoing construction in the Lakeside Crossing subdivision, Phase 1 of the Crosswinds subdivision is under construction with 233 lots, along with homes in the Bunton Creek Reserve (125 lots), Brookside, and Cool Springs (373 lots) subdivisions.

Table 24: Proposed or Active Subdivisions in the City of Kyle

Project	Total Number of Units	Status	Estimated Start
Anthem	2,200	In Design	2017
Ariza Apartments	349	In Review	2017
Blanco River Ranch	3,500	In Design	2017
BRI/McCoy	8,000	Concept	2020
Brooks R-3-3	300	Concept	2018
Brookside Phases 3&4	150	Under Construction	2017
Bunton Creek Reserve	355	In Review	2017
Cool Springs	372	Approved	2017
Creekside Village	280	Under Construction	2016
Crosswinds MUD	1,750	Under Construction	2017
Cypress Forest	337	Under Construction	2016
Hays Junction Apartments	207	Under Construction	2016
Intermandeco/Driskell	600	Concept	2018
Kyle Estates East (Walton)	2,500	Concept	2018
Kyle Estates West (Walton)	2,600	Concept	2018
La Salle MUD	10,000	Concept	2018
Lehman Tract	150	Concept	2020
Nance	9,000	Concept	2022
Oaks on Marketplace	254	Under Construction	2016
Pecan Woods	2,600	In Design	2018
Plum Creek Phase 2	1,404	In Review	2017
Plum Creek Vue Apartments	180	In Review	2017
Stagecoach Forest	270	In Review	2017
Sunset Hills	210	In Review	2017
Twin Creeks	400	Concept	2018
Woodlands Phases 3 & 4	300	Under Construction	2017

Source: City of Kyle, 2017.

Commercial development is scattered throughout the city, as stand-alone buildings or small strip retail centers. The construction of larger retail buildings has occurred primarily in the Village at Kyle and Kyle Marketplace shopping centers.

ASSESSMENT AND ADJUSTMENT OF THE POPULATION AND EMPLOYMENT CONTROL TOTALS

The first step of the socioeconomic data review was to assess the reasonableness of the population and employment control totals in the CAMPO model. Since traffic counts for the CTTS study were conducted during 2016, this became the travel demand model's base year. New 2016 population and employment control totals were developed for each county, using data from the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and the Texas Workforce Commission. With these data, each county's 2016 population and employment control totals were adjusted to either an agency estimate for that year or guided by them. The end result was that all ten counties had some adjustment to their base year population control total, typically to reflect the 2016 U.S. Census Bureau estimates, with Bexar County having its population adjusted by the largest amount (increased by 74,941 residents) compared to the 2014 CTTS study[2] (See Table 25). Both Travis and Bexar counties had the largest upward adjustment to its 2016 employment control total with roughly 34,000 additional jobs, followed by Bexar County with 24,877 additional jobs. The development of the 2016 control totals were based upon data from the U.S. Bureau of Labor Statistics and the Texas Workforce Commission.

[2] The 2014 CTTS values for 2016 are based upon an interpolation between the study's 2013 base year and its 2020 forecast.

Table 25: Adjustments to 2016 Baseline County Population, Households, and Employment Control Totals

County	2016 POPULATION			2016 HOUSEHOLDS			2016 EMPLOYMENT		
	2014 CTTS	2017 CTTS	Difference	2014 CTTS	2017 CTTS	Difference	2014 CTTS	2017 CTTS	Difference
Travis	1,186,225	1,204,220	17,995	473,604	487,010	13,406	670,499	704,707	34,208
Williamson	508,564	526,718	18,154	186,120	192,132	6,012	151,847	156,834	4,987
Hays	194,981	205,074	10,093	70,964	72,452	1,488	59,867	63,683	3,816
Bastrop	80,007	81,710	1,703	29,568	28,976	-592	16,414	18,855	2,441
Burnet	N/A	45,182	--	N/A	17,868	--	N/A	13,184	--
Caldwell	40,617	39,848	-769	14,566	13,719	-847	8,628	8,579	-49
Bexar	1,853,755	1928696	74,941	670,786	702,521	31,735	807,680	841,664	33,984
Comal	126,516	134782	8,266	49,000	51,538	2,538	44,786	53,131	8,345
Guadalupe	153,196	155264	2,068	54,874	54,571	-303	33,475	38,631	5,156
Kendall	40,619	42542	1,923	15,571	16,328	757	13,171	14,873	1,702
Wilson	47,453	48481	1,028	16,824	17,193	369	7,407	7,636	229

Note: 2016 values from the 2014 CTTS are interpolated between the 2013 base year and the 2020 forecast. Burnet County was not included in the CAMPO travel demand model used for the 2014 CTTS study.

Table 26 shows the differences between the 2014 CTTS Update study's county population and employment forecast control totals and the adjusted county control totals for the 2017 CTTS Update study. During each forecast year in the 2017 CTTS update, the population control totals are higher than they were in the 2014 CTTS Update study, with the exception of the 2030 forecast for Wilson County. Overall, the forecasted control totals for households were higher for most years, excluding Guadalupe County in 2030 and 2040 and Wilson County in 2030. The household control total figures were not imposed from above but were the summed at the TAZ level. Additionally, CAMPO's assumptions about household size changed between the datasets. As a result, the revised number of households does not necessarily change in proportion with the population. The 2014 CTTS Update employment control totals were also higher than the 2012 CTTS Update study, due to more recent data that show stronger employment growth during the past few years. Bexar and Travis counties are the major source of the additional employment but most of the other counties contributed positively, as well. The notable exception is Caldwell County, which had lower employment for each forecast year and Bastrop County during 2040.

Table 26: Adjustments to Forecasted County Population and Employment Control Totals

County	2020 POPULATION 2014 CTTS	2020 POPULATION 2016 CTTS	2020 POPULATION Difference	2020 HOUSEHOLDS 2014 CTTS	2020 HOUSEHOLDS 2016 CTTS	2020 HOUSEHOLDS Difference	2020 EMPLOYMENT 2014 CTTS	2020 EMPLOYMENT 2016 CTTS	2020 EMPLOYMENT Difference
Travis	1,273,336	1,314,093	40,757	507,727	533,615	25,888	717,497	762,715	45,218
Williamson	566,298	583,417	17,119	206,673	214,099	7,426	168,721	176,480	7,759
Hays	220,507	231,129	10,622	79,598	82,195	2,597	66,937	73,095	6,158
Bastrop	85,583	88,109	2,526	31,645	31,865	220	18,221	20,352	2,131
Burnet	N/A	46,683	--	N/A	18,452	--	N/A	14,880	--
Caldwell	42,471	43,480	1,009	15,260	15,304	44	9,511	9,285	-226
Bexar	1,957,968	2,045,074	87,106	707,980	743775	35,795	856,370	905194	48,824
Comal	138,646	147,364	8,718	53,751	56247	2,496	50,662	60328	9,666
Guadalupe	169,057	170,618	1,561	60,483	59875	-608	36,668	43281	6,613
Kendall	45,117	47,586	2,469	17,296	18258	962	14,517	16980	2,463
Wilson	50,898	51,684	786	18,046	18336	290	8,042	8342	300

County	2030 POPULATION 2014 CTTS	2030 POPULATION 2016 CTTS	2030 POPULATION Difference	2030 HOUSEHOLDS 2014 CTTS	2030 HOUSEHOLDS 2016 CTTS	2030 HOUSEHOLDS Difference	2030 EMPLOYMENT 2014 CTTS	2030 EMPLOYMENT 2016 CTTS	2030 EMPLOYMENT Difference
Travis	1,474,365	1,563,432	89,067	586,277	631,851	45,574	839,247	883,257	44,010
Williamson	739,143	757,309	18,166	270,279	279,864	9,585	211,554	225,362	13,808
Hays	288,990	295,569	6,579	103,230	105,692	2,462	86,092	98,021	11,929
Bastrop	103,220	105,696	2,476	38,389	38,516	127	24,358	25,446	1,088
Burnet	N/A	51,639	--	N/A	20,384	--	N/A	18,135	--
Caldwell	48,235	50,339	2,104	17,393	17,609	216	12,300	11,517	-783
Bexar	2,196,665	2,351,596	154,931	793,624	852,345	58,721	982,096	1,060,224	78,128
Comal	168,731	183,147	14,416	65,515	69,425	3,910	67,780	82,300	14,520
Guadalupe	214,674	217,790	3,116	76,406	76,132	-274	45,225	56,050	10,825
Kendall	55,789	60,288	4,499	21,384	23,088	1,704	18,255	22,744	4,489
Wilson	60,663	60,348	-315	21,507	21,420	-87	9,592	10,154	562

Table 26: Adjustments to Forecasted County Population and Employment Control Totals (Continued)

	2040 POPULATION			2040 HOUSEHOLDS			2040 EMPLOYMENT		
County	**2014 CTTS**	**2016 CTTS**	**Difference**	**2014 CTTS**	**2016 CTTS**	**Difference**	**2014 CTTS**	**2016 CTTS**	**Difference**
Travis	1,669,612	1,801,138	131,526	661,446	723,506	62,060	962,917	991,374	28,457
Williamson	952,122	984,479	32,357	347,180	365,210	18,030	254,472	281,677	27,205
Hays	364,369	399,673	35,304	129,632	144,203	14,571	108,533	124,711	16,178
Bastrop	124,358	125,672	1,314	46,475	45,982	-493	33,126	32,732	-394
Burnet	N/A	55,412	--	N/A	21,858	--	N/A	22,099	--
Caldwell	55,111	57,616	2,505	19,938	20,153	215	15,958	14,561	-1,397
Bexar	2,471,362	2,678,541	207,179	892,021	968,310	76,289	1,116,034	1,231,801	115,767
Comal	197,279	225,827	28,548	76,873	85,245	8,372	88,534	107,492	18,958
Guadalupe	265,018	271,000	5,982	94,291	94,532	241	54,802	69,948	15,146
Kendall	66,740	73,221	6,481	25,581	28,019	2,438	22,642	29,053	6,411
Wilson	71,049	71,589	540	25,192	25,421	229	10,972	12,028	1,056

ASSESSMENT AND ADJUSTMENT OF ZONAL POPULATION AND EMPLOYMENT DATA

The project study area for the socioeconomic review consisted of a very large region that covered significant portions of eight counties, two MPO study areas, and more than 1,400 TAZs. The northern extent of the project study area was north of the city of Georgetown and it extended southward to the northeast quadrant of San Antonio, a distance of approximately 100 miles along IH 35. The width of the CTTS study varied, but was as wide as 15 or miles more in some locations. Since the 2014 CTTS study, CAMPO has updated the model's TAZ structure and its socioeconomic data. The result of these changes led the number of TAZs in the CAMPO portion of the CTTS study area to grow from 627 TAZs in the 2014 study to 894 TAZs in the 2017 study, even though the overall area remained the same. The changes to the geography caused some TAZs to be split into two or more new TAZs, while in other instances new TAZs were formed that crossed the boundaries of two or more of the original TAZs.

The base year for the 2017 CTTS study was 2016, so one of the first tasks was to update the base year population and employment data. To update the zonal population estimates, a visual housing count of new single-family and multifamily dwelling units was undertaken, by comparing 2010 and 2016 digital aerial photography in GIS. New residential development was delineated and the single-family units were counted. Dwelling unit counts for multifamily projects were derived from data provided by local governments, industry market research, company websites, or apartment locator websites. Along with assumptions of vacant housing absorption, the 2010-2016 housing unit count was multiplied by each TAZ's estimated persons per household and added to CAMPO's and AAMPO's 2010 population and households estimates to develop the 2016 base year population and household estimates for the entire project study area. Outside of the project study area, the populations of the TAZs were interpolated between the MPO's 2010 base year and the 2020 forecast year, then adjusted to subarea population control totals. In reconciling the zonal population estimates to the county subarea control totals, they also summed to the revised county control totals. The 2016 employment data were adjusted by assuming a portion of employment growth was absorbed into vacant commercial space or was added to firm rosters without requiring additional floor space. Additionally, new commercial developments were also identified using the digital aerial photography. Once these commercial facilities or schools were identified, 2013 firm-level employment data from the Texas Workforce Commission assisted with developing employment estimates or, if the employers were schools, data from the Texas Education Agency (TEA) were used. Using the TWC data and Google Maps, information from local chambers of commerce, periodicals, and other sources as a reference, along with professional judgment, the CAMPO TAZ employment data were assessed and adjusted as necessary. Finally, estimates of median household income in the study area were maintained from CAMPO's and AAMPO's revised 2010 estimates.

The assessment and adjustments to the zonal population and employment forecasts relied upon a variety of data sources, which included: the digital aerial photography, limited field surveys; zoning, future land use, and floodplain maps; and other planning reports and documents. The data collection for reviewing the forecasts also involved a large number of interviews with local planning officials across the study area. Table 27 provides a list of the XX local governments who were interviewed. As with the baseline data, the forecasts for each TAZ were reviewed individually, drawing upon the aforementioned resources. The forecasts for all TAZ forecasts were reconciled to the forecasted population and employment control totals at the subarea and county levels to maintain consistency and reasonableness.

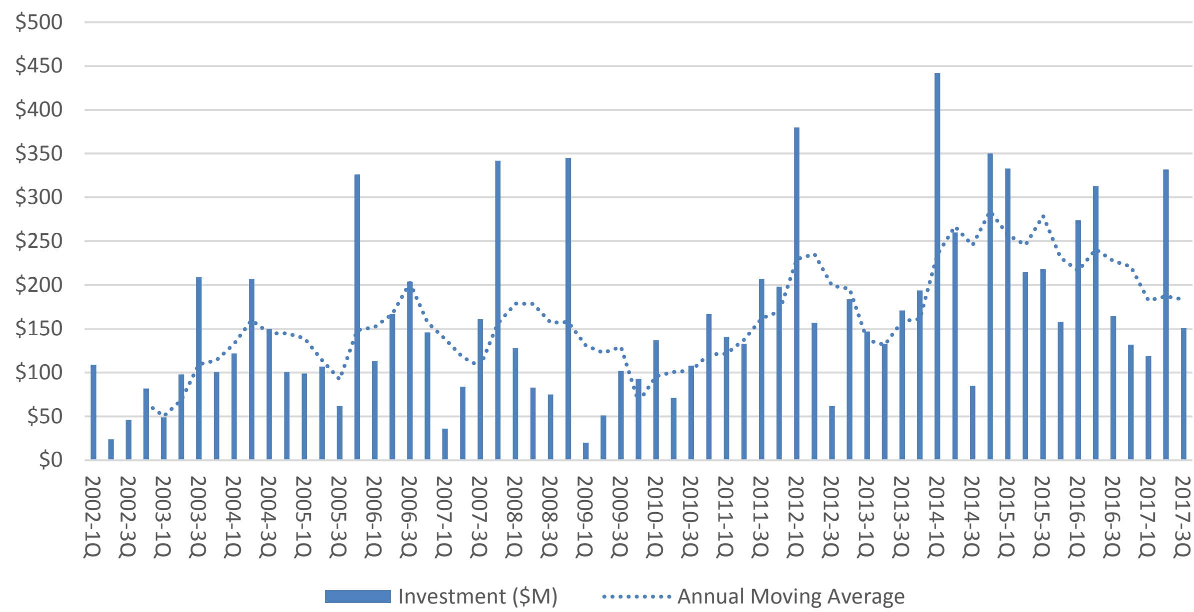
Table 27: Interviews with Local Governments in Southern Gateway Study Area

Jurisdiction	Lead Contact/Position	Date
City of Lockhart	Dan Gibson (City Planner)	
City of Round Rock		
Williamson County		
City of Georgetown		
City of Hutto		
City of Manor		
City of Kyle		
City of San Marcos		
City of Austin		
Travis County		
Caldwell County		
Guadalupe County		
City of Pflugerville		
City of Buda		
Hays County		
City of Live Oak		
City of Schertz		
City of Cedar Park		
City of Liberty Hill		
City of Leander		
City of Seguin		
City of Universal City		
City of Garden Ridge		
City of Selma		
City of Cibolo		
City New Braunfels		
City of San Antonio		

CONCLUSIONS

The overall trends in the CTTS study area continue to be positive, as they have been since the recovery from 2008-2009 Recession. There has been some dampening of employment growth in the AAMPO study area, which is likely due to declining oil and gas prices and the subsequent slowing of activity in the Eagle Ford shale play. However, the economy appears to be resilient and has absorbed the impact relatively well. The CAMPO region's economy (with the exception of Caldwell County) is not closely tied to the oil and gas industry and so the downturn has had relatively little effect. Nonetheless, employment growth in the Austin-Round Rock MSA has also shown some recent signs of hesitation, which could be the result of falling venture capital investment (See Figure 15) in the region and the consolidation of firms within technology industries that have led to layoffs. It is not clear if the changes in recent months are part of a larger trend or if they reflect changes in a key industry that will be overcome in the near future.

Figure 15: Venture Capital Investment in the Austin Region, 1st Quarter 2002-3rd Quarter 2017



Source: PwC and Greater Austin Chamber of Commerce, 2017.

Regardless of any near term changes in the local economy, the rate of population and employment growth in the Austin-Round Rock MSA and the San Antonio-New Braunfels MSA are expected to continue to outperform the state and the nation. The Austin region's ability to attract a young and highly skilled labor force, a steady stream of industry relocations and expansions, and the region's ability to generate new firms appears to be self-sustaining, although the region's rapidly rising cost of living (namely housing) and traffic congestion are growing risks to the local economy. Most of the threats to the region's future growth will likely come as a consequence of issues at the national or global level. Domestic political instability, global insecurity, and the potential abandonment of the North American Free Trade Agreement (NAFTA) – as well as other trade agreements - are significant risks that, if realized, could tangibly, negatively, and meaningfully affect the state's economy and the local economies within the CTTS study area. Rising interest rates, inflation, and the impacts of climate change are all intermediate- to long-term issues that could impose future downstream impacts. The Austin region, like all regions in the nation, cannot avoid the potential impacts of these risks, it is relatively well-positioned to weather many of them, while remaining vulnerable to others.

New population and employment growth have been strong throughout most of the CTTS study area and development in the broader region and in the CTTS study area are expected to be favorable over the foreseeable future. In particular, the areas around Georgetown and Round

Rock, the eastern side of Pflugerville, northeastern Travis County, and northern Hays County have all performed well. There continues to be nascent activity on major projects in eastern Travis County and, if market conditions can persist for another 1 to 3 years, they will begin to influence regional growth patterns. Development in southeastern Travis County is likely to continue to lag over the near- to medium-term.

While population and employment growth have come relatively easy for the region, occasional downturns inform the populace (or at least some within it) that growth cannot be taken for granted. Water will remain an ongoing concern for the city, with the region suffering from a severe drought several years ago. Another limiting factor to development will be the ongoing, contradictory policies and positions among elected officials and senior bureaucrats that simultaneously encourage dense development, while occasionally campaigning against individual projects. These contradictions create uncertainty within the development community and likely discourage projects that would otherwise be viable and beneficial. On the positive side, the region's ability to attract young college graduates is, perhaps, the city's greatest asset. Although the city's existing industries are the primary contributors to the region's success, without their current access to a young, educated labor force, they would likely struggle to maintain their momentum. It is with this labor force that companies can grow and innovation is fostered within the region.

SOURCES

Alamo Area Metropolitan Planning Organization (AAMPO). 2015. *Demographic Database*.

Anderson, Will. Austin real estate investment firm buys large 3M campus. *Austin Business Journal*. 28 June 2017. https://www.bizjournals.com/austin/news/2017/06/28/austin-real-estate-investment-firm-buys-large-3m.html.

Barragan, James. 2015. Master-planned community in Austin will have 1,000 affordable units. *Austin-American Statesman*. http://www.mystatesman.com/news/master-planned-community-austin-will-have-000-affordable-units/aovfYW7QkHXUfPhx3gyLdN/. 24 December 2015.

Capital Area Metropolitan Planning Organization (CAMPO). 2014. *Population and Employment Forecasts Database*.

CBRE. 2017. *Marketview: San Antonio Industrial, Q3 2017*. CBRE: San Antonio, Texas.

City of Austin. 2017. City website. www.austintx.gov. Accessed 15 December 2017.

City of Buda. 2017. City website. www.ci.buda.tx.us. Accessed 15 December 2017.

City of Georgetown. 2017. City website. https://georgetown.org. Accessed 15 December 2017.

City of Hutto. 2017. City website. www.huttotx.gov. Accessed 15 December 2017.

City of Kyle. 2017. City website. https://www.cityofkyle.com. Accessed 15 December 2017.

City of Manor. 2017. City website. www.cityofmanor.org. Accessed 15 December 2017.

City of Pflugerville. 2017. www.pflugervilletx.gov. City website. Accessed 15 December 2017.

City of Round Rock. 2017. City website. https://www.roundrocktexas.gov. Accessed 15 December 2017.

Findell, Elizabeth. Overturned Easton Park agreement an issue in District 2 campaign. *Austin-American Statesman*. http://www.mystatesman.com/news/local-govt--politics/overturned-easton-park-agreement-issue-district-campaign/nsug5CFKXcLlNta2p64fWM/. 22 October 2016.

Greater Austin Chamber of Commerce. *Relocations and Expansions Log*. https://www.austinchamber.com/economic-development/business-climate/relocation-expansions. 22 November 2017.

Marcus & Millichap. 2017. *Multifamily Research Market Report, Austin Metro Area - Third Quarter 2017*. Marcus Millichap: Austin, Texas.

Marcus & Millichap. 2017. *Multifamily Research Market Report, San Antonio Metro Area - Third Quarter 2017*. Marcus Millichap: San Antonio, Texas.

Marczynski, Evan. 2017. New Housing developments will bring thousands more multifamily units to Georgetown. *Community Impact*. https://communityimpact.com/...wn/city-county/2017/07/14/new-housing-developments-will-bring-thousands-multifamily-units-georgetown/. 14 July 2017.

Porterfield, Carlie and Evan Marczynski. 2017. Connected: A Guide to Georgetown in 2017-2018. *Community Impact*. https://communityimpact.com/austin/georgetown/news/2017/08/24/connected-guide-georgetown-2017-18/. Accessed 17 December 2017.

PwC. 2017. PwC MoneyTree. https://www.pwc.com/us/en/industries/technology/moneytree.html. Downloaded data. 17 October 2017.

REOC San Antonio. 2017. *Retail Market Update, San Antonio Metropolitan Area – Second Quarter 2017*. REOC San Antonio: San Antonio, Texas.

Texas A&M Real Estate Center. *Housing Activity*. https://www.recenter.tamu.edu/data/housing-activity

Texas A&M Real Estate Center. *Building Permits*. https://www.recenter.tamu.edu/data/building-permits/

Texas State Data Center. 2014. *2014 Population Projections*. http://txsdc.utsa.edu/Data/TPEPP/Projections/Index. Accessed 21 October 2017.

Texas Workforce Commission. 2017. *Unemployment Rates and Labor Force Statistics*. www.twc.state.tx.us. Accessed 03 November 2017.

Transwestern. 2017. *Austin Industrial Market Watch*. Transwestern: Austin, Texas.

U.S. Bureau of Labor Statistics. 2017. *Quarterly Census of Employment & Wages*. www.twc.state.tx.us. Accessed 03 November 2017.

U.S. Census Bureau. 2017. *Population and Housing Unit Estimates*. https://www.census.gov/programs-surveys/popest.html. Accessed 04 November 2017.

U.S. Census Bureau. 2017. *American Community Survey*. https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed 03 November 2017.

U.S. Census Bureau. 2017. *2010 Decennial Census*. https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed 03 November 2017.

ATTACHMENT 2

SOCIOECONOMIC DATA – CHAPTER 6, CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY 2019 TRAFFIC & REVENUE STUDY

6.0 SOCIOECONOMIC DATA

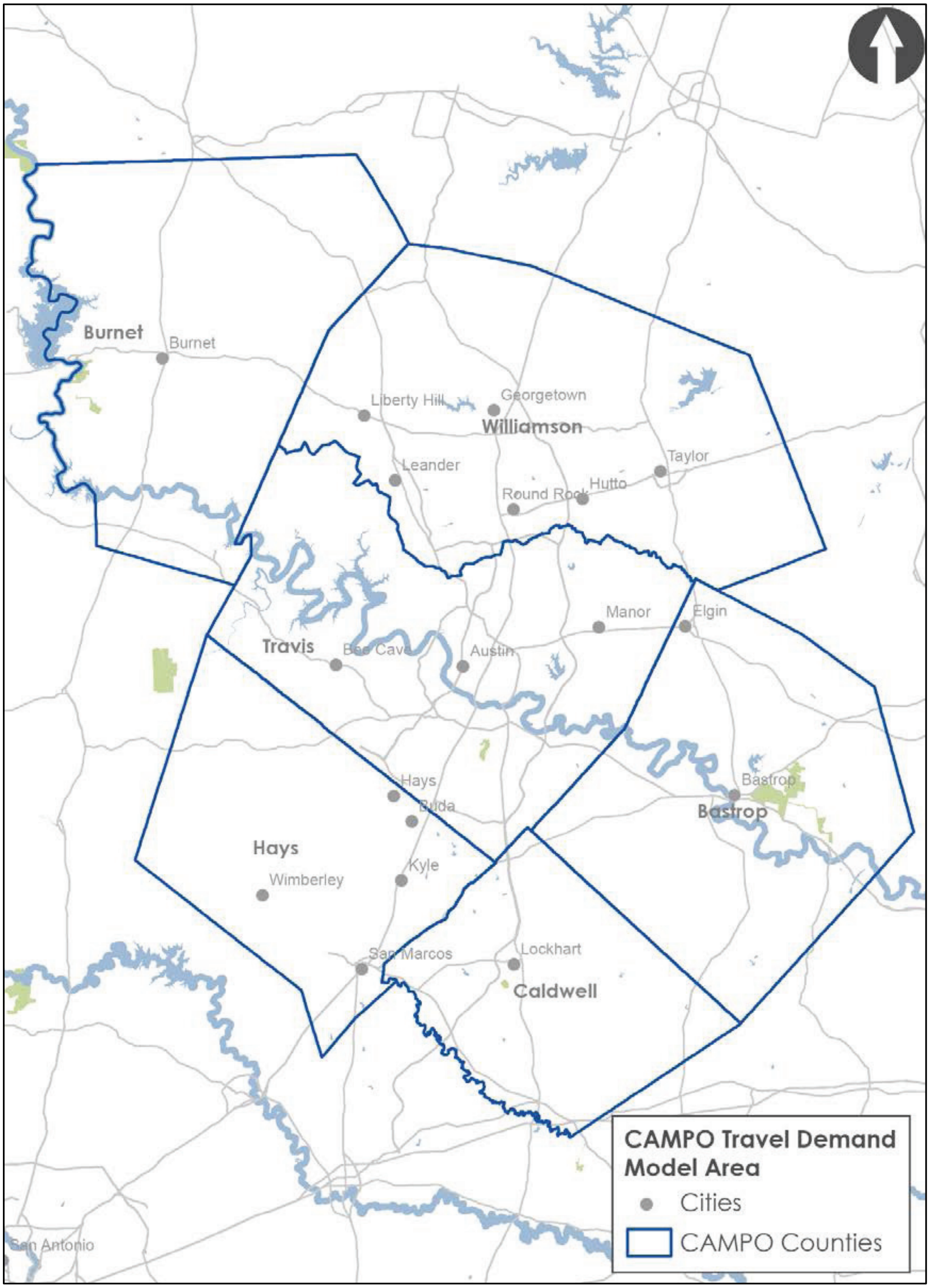
Socioeconomic indicators were used to identify growth in the region that encompasses the Austin area toll roads and are included in the regional transportation model. The socioeconomic baseline (2017) and future forecasts were prepared by Michael Bomba, Ph.D. (Dr. Bomba) for use in the disaggregated traffic analysis zone (TAZ) system used in the individual travel demand models. In this process, the historical data are analyzed, base year data are established, and forecasts are prepared for the entire TAZ system.

This discussion presents recent demographic and economic trends and projections of future levels of activity in the area, a comparison of revised county control figures for population and employment with previous forecasts, a description of the methodology used to update information on the TAZ level and a summary of interviews of local government representatives regarding proposed development in the Austin region.

6.1 REGIONAL TRENDS

The study area included in the regional transportation model used for the Mobility Authority's traffic forecast includes six counties in the CAMPO model area (Travis, Williamson, Hays, Bastrop, Burnet, and Caldwell), as shown in Figure 6.1. Burnet County was added to CAMPO in June 2013. Stantec's integrated model of the Central Texas region also includes the AAMPO study area (which includes Bexar, Guadalupe, Comal, Wilson, and Kendall counties), but the focus of this report will be on the demographic growth in the CAMPO area, which directly influences the Mobility Authority's roadways.

Figure 6.1: CAMPO Study Area



6.1.1 Regional Population

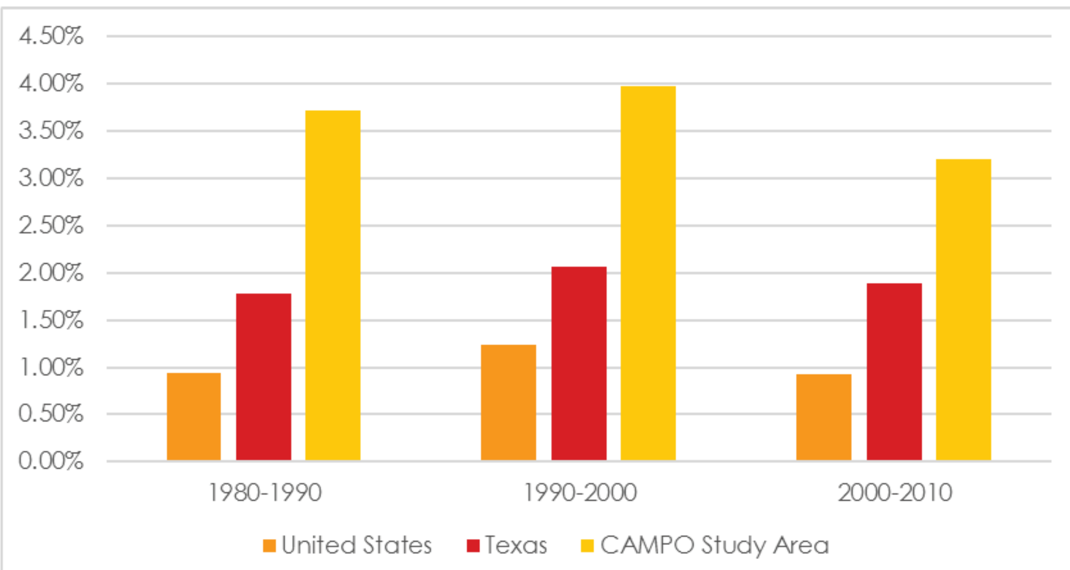
The population of the State of Texas has grown rapidly since 1980, increasing from 14.2 million in 1980 to more than 25.1 million residents in 2010. Between 2000 and 2010, Texas added 4.3 million residents, making it the fastest growing state in terms of total population. Most of this population increase was in the urban areas of the state. Population growth in the CAMPO study area since 1980 is compared to growth in the United States and in Texas in Table 6.1. The historical growth rates are shown in Figure 6.2. The CAMPO study area's population growth has outpaced that of the U.S. and Texas in every decade since 1980.

Table 6.1: U.S., Texas, and the CAMPO Study Area Population, 1980 – 2010

Census Year	United States		Texas		CAMPO Study Area	
	Population	Average Annual Rate of Growth	Population	Average Annual Rate of Growth	Population	Average Annual Rate of Growth
1980	226,546,000		14,229,000		602,854	
1990	248,710,000	0.9%	16,987,000	1.8%	868,904	3.7%
2000	281,422,000	1.2%	20,852,000	2.1%	1,283,911	4.0%
2010	308,748,000	0.9%	25,146,000	1.9%	1,759,039	3.2%

Source: [1] U.S. Census Bureau, 2017.

Figure 6.2: Population Growth in the U.S., Texas and CAMPO Study Area 1980 – 2010



Source: [1] U.S. Census Bureau, 2017.

More recent estimates show that the population of the CAMPO study area has continued to grow since 2010. The data in Table 6.2 provides population counts from the 2000 and 2010 decennial U.S. Censuses, as well as the U.S. Census Bureau's 2017 population estimates. The largest overall population increase between 2010 and 2017 occurred in Travis County, with more than 200,000 new residents between the 2010 decennial Census and the 2017 estimates. Williamson County also grew strongly during this same period with approximately 125,000 new residents between 2010 and 2017, followed by Hays County with more than 57,000 new residents. Since the 2010 U.S. Census, the rate of population growth in all the counties, with the exception of Travis County, has slowed slightly.

Table 6.2: Recent Population Trends in CAMPO Study Area, 2000-2017

County	Total Population			Total Change	Average Annual Change		CAGR	
	2000	2010	2017	2010-17	2000-10	2010-17	2000-10	2010-17
Bastrop	57,733	74,171	84,761	10,590	1,644	1,059	2.54%	1.92%
Burnet	34,147	42,750	46,804	4,054	860.3	405.4	2.27%	1.30%
Caldwell	32,194	38,066	42,338	4,272	587.2	427.2	1.69%	1.53%
Hays	97,589	157,107	214,485	57,378	5,952	5,738	4.88%	4.55%
Travis	812,281	1,024,266	1,226,698	202,432	21,199	20,243	2.35%	2.61%
Williamson	249,967	422,679	547,545	124,866	17,271	12,487	5.39%	3.77%
TOTAL	1,283,911	1,759,039	2,162,631	403,592	47,513	40,359	3.20%	2.99%

Source: [1] U.S. Census Bureau, 2017.

For this study, Dr. Bomba prepared an update of the population estimates included in the CAMPO model to reflect recent development in the areas served by the toll roads in the Austin region. As can be seen in Table 6.3, the adjustments were relatively minor. At the regional level, population in the counties in the CAMPO area is basically unchanged, with a difference of 0.7 percent total when compared to the Census estimate.

Table 6.3: Comparison of Census and Adjusted 2017 Population for Study Area

County	2017 Population		Difference	
	Census	Adjusted	Number	Percent
Bastrop	84,761	82,541	-2,220	-2.6%
Burnet	46,804	45,550	-1,254	-2.7%
Caldwell	42,338	39,922	-2,416	-5.7%
Hays	214,485	210,810	-3,675	-1.7%
Travis	1,226,698	1,227,897	1,199	0.1%
Williamson	547,545	540,010	-7,535	-1.4%
TOTAL	2,162,631	2,146,730	-15,901	-0.7%

Source: [1] U.S. Census Bureau and Dr. Bomba, 2017.

Starting with the adjusted population for 2017 presented above, growth is anticipated to taper down from the annual average rate of 2.9 percent between 2010 and 2017 to 2.4 percent between 2017 and 2020. After that, the growth rate continues to slow, reaching an annual rate of 1.9 percent between 2030 and 2040. The forecast of future population and average annual growth rate for the CAMPO counties are presented in Table 6.4.

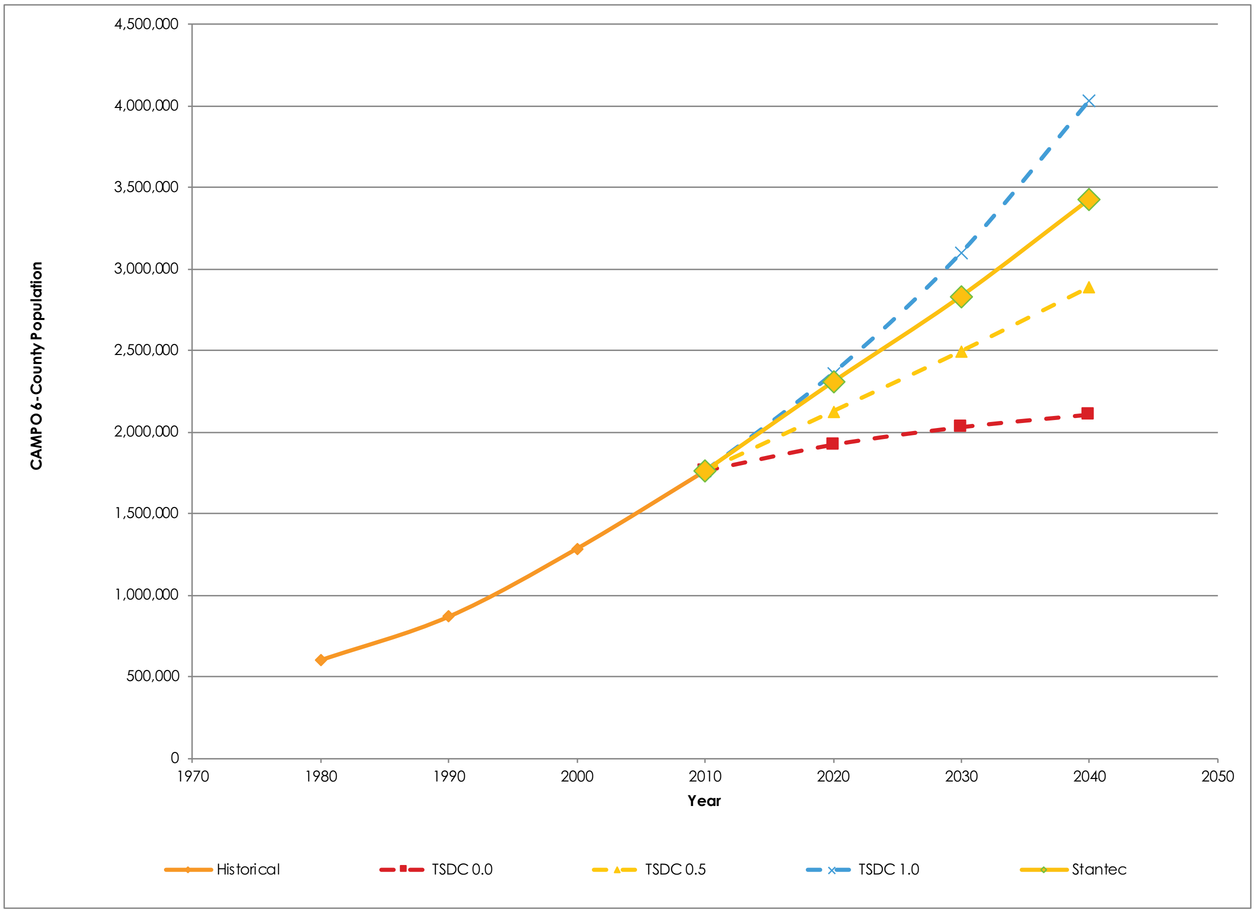
Table 6.4: Population Forecast for the CAMPO Study Area, 2010 – 2040

County	Population Control Totals				
	2010	2017	2020	2030	2040
Bastrop	74,171	82,541	90,229	108,699	127,967
Burnet	42,750	45,550	48,214	53,639	57,621
Caldwell	38,066	39,922	44,629	52,331	59,415
Hays	157,107	210,810	235,956	315,786	412,066
Travis	1,024,266	1,227,897	1,287,284	1,506,623	1,734,755
Williamson	422,679	540,010	598,758	793,397	1,031,343
TOTAL	1,759,039	2,146,730	2,305,070	2,830,475	3,423,167
County	**Avg Annual Growth Rates (from prior year shown)**				
	2010	**2017**	**2020**	**2030**	**2040**
Bastrop		1.5%	3.0%	1.9%	1.6%
Burnet		0.9%	1.9%	1.1%	0.7%
Caldwell		0.7%	3.8%	1.6%	1.3%
Hays		4.3%	3.8%	3.0%	2.7%
Travis		2.6%	1.6%	1.6%	1.4%
Williamson		3.6%	3.5%	2.9%	2.7%
TOTAL		2.9%	2.4%	2.1%	1.9%

Source: (1) U.S. Census Bureau, 2017.

Figure 6.3 shows the Stantec projected population, relative to estimates from the Texas State Data Center (TSDC). TSDC produces forecasts for three migration scenarios (0.0, 0.5, and 1.0). The high migration scenario (1.0) is based on future net migration at the same rate as 2000 to 2010. The mid-level scenario (0.5) reflects one-half of that rate, and the low migration scenario (0.0) is based on no net migration. Figure 6.3 shows the Stantec forecast is approximately the midpoint of the 0.5 and 1.0 projections, and the anticipated growth rate is in line with historical growth in the 6-county region over the past 40 years.

Figure 6.3: Historical and Projected Population in CAMPO 6-County Area, 1980 – 2040



Source: [1] U.S. Census Bureau, Texas State Data Center (2017), and Stantec (Bomba 2019).

6.1.2 Regional Employment

The employment growth rate in Texas has outpaced the U.S. rate for 29 consecutive months and reached an all-time low seasonally adjusted unemployment rate of 3.4 percent for June and July of 2019 after the unemployment rate had mostly trended downward since early 2010. The Austin region's economy is generally recognized as one of the most resilient in the nation, particularly during and following the 2008 - 2009 recession. As the state capitol and home to the University of Texas at Austin, public employers add a degree of stability to the local economy. Employment in the Austin Metropolitan Statistical Area, which includes all of the counties in the CAMPO model except Burnet County, has increased from 243,800 jobs in 1980 to more than 1 million jobs in 2018, as reported by the U.S. Bureau of Labor Statistics.

According to the Greater Austin Chamber of Commerce, the largest employers in the greater Austin area are in the government, higher education, technology, warehousing and distribution, and health care sectors. Major employers (over 6,000 employees) include:

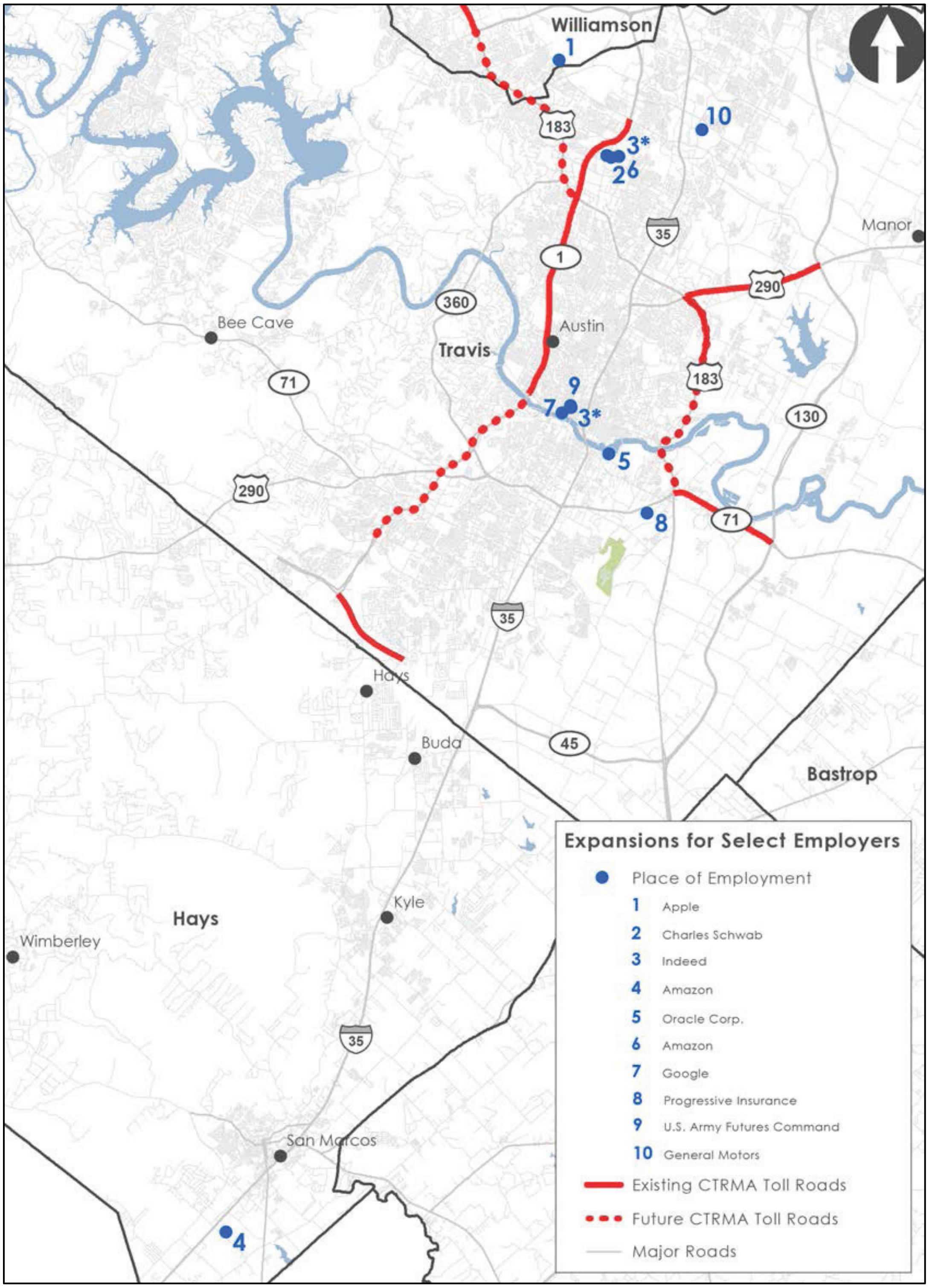
- Apple;
- Ascension Seton;
- Austin Independent School District;
- City of Austin;
- Dell Technologies;
- Federal Government (mainly IRS);
- IBM Corp.;
- Round Rock Independent School District;
- Samsung Austin Semiconductor;
- St. David's Healthcare Partnership
- State of Texas; and
- University of Texas at Austin.

Table 6.5 and Figure 6.4 show major additions or expansions to the Austin-Round Rock MSA workforce in 2018 and the first half of 2019 and their number of employees. Several of the expansions included companies that had headquarters in Austin or designated Austin as a headquarters. The largest expansion was by Apple, which will add 5,000 jobs at its new Americas headquarters, which is located at its campus along W. Parmer Lane. Charles Schwab recently completed another phase of growth at its new North Austin campus, featuring 469,000 square feet of office space which is expected to accommodate an additional 1,500 employees. Amazon opened a new distribution center in San Marcos (Hays County) with 1,200 jobs and added 800 more jobs in Austin that will focus on its digital product development. The online job search firm Indeed added 1,500 jobs, which is another major expansion by the Austin-based firm. The Oracle Corporation opened a major campus in Austin along S. Lakeshore Boulevard with 1,000 new employees. The Oracle campus may ultimately employ up to 10,000 workers. Another notable relocation was the new U.S. Army Futures Command headquarters, which will focus on modernizing the U.S. Army and developing warfighting technology development. The Army Futures Command added 500 jobs in downtown Austin. Geographically, a number of these employers are located near the Mopac North Express Lanes facility and other facilities operated by the Mobility Authority.

Table 6.5: Select Major Employers (Additions/Expansions)

Map ID	Employer	Type of Operation	Announced Jobs
1	Apple	Computer maker's tech, chip engineering & administrative support center (Americas Headquarters)	5,000
2	Charles Schwab	Investment trading technology development	1,500
3	Indeed	Online job search website (Headquarters)	1,500
4	Amazon	Online retailer's distribution center (San Marcos)	1,200
5	Oracle Corp.	Chip, hardware, and software design; data center	1,000
6	Amazon	Online retailer's digital product development (Austin)	800
7	Google	Internet search & related technology development & sales, marketing & staffing	750
8	Progressive Insurance	Insurance (Call center)	725
9	U.S. Army Futures Command	Military modernization/technology development center (Headquarters)	500
10	General Motors	IT innovation center, vehicle applications & business processes	500

Figure 6.4: Location of Select Employers in the Austin MSA (See Table 6.5)



Note: * Indeed has signed two leases — one downtown and one at the Domain.

Historical employment in the Austin-Round Rock-San Marcos region is summarized in Table 6.6. The U.S. Bureau of Labor Statistics provides employment summaries by metropolitan area dating back to 1780. County-level summaries are only provided from 1990 to the present, so metro area data is used to show historical employment data (although very close to the same boundaries, it does not cover the same exact area as the 6-county CAMPO definition).

Table 6.6: Historical Employment in the Austin-Round Rock-San Marcos Region

MSA	Employment				
	1980	1990	2000	2010	2017
Austin-Round Rock MSA	243,800	396,000	684,000	785,500	1,034,700

Source: (1) U.S. Bureau of Labor Statistics.

Detailed annual data by county is shown in Table 6.7 for the period 2007 through 2017. Employment has been increasing at a steady rate over time, except for 2009 when the number of jobs decreased due to the recession. According to the Texas Workforce Commission, Austin has had significant increases in the professional and management positions, hospitality and lodging, and health care industries. There is a demand for a broad range of high-tech workers, due to the presence of computer, software, and internet firms. Growth has been both in suburban areas and in the Austin Central Business District.

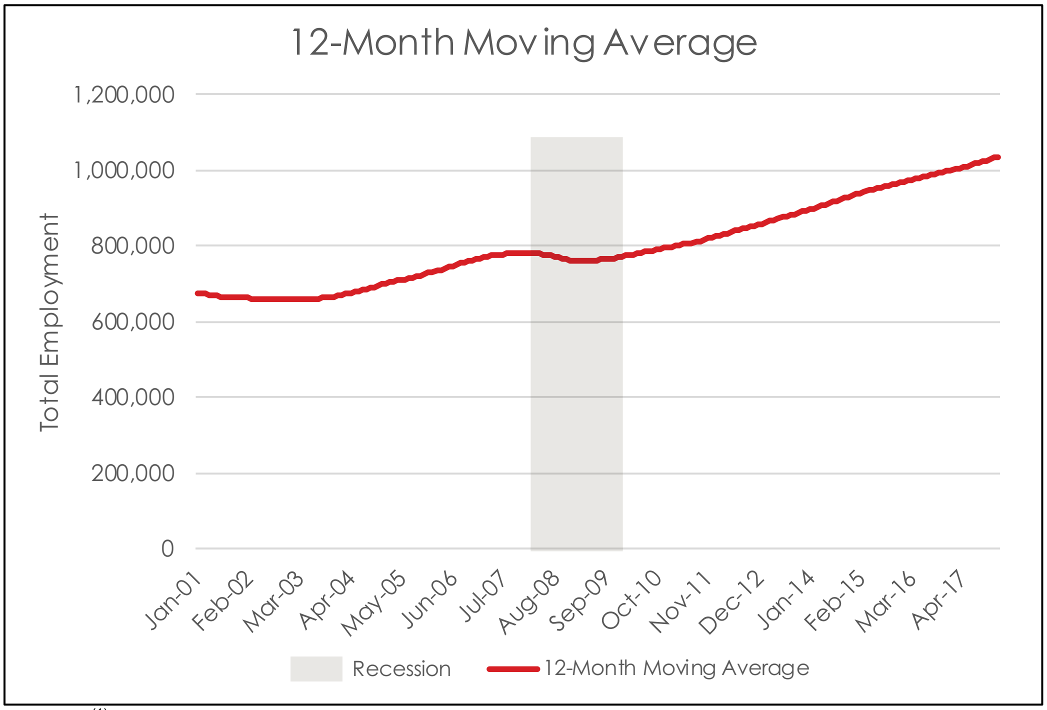
As shown in Table 6.7, employment increased by more than 31,000 jobs between 2016 and 2017. Figure 6.5 shows that the employment growth trend has continued, since the end of the recession. Employment in the region recovered to its pre-recessionary levels by 2011 and has added nearly 230,000 more jobs between 2010 and 2017.

Table 6.7: Employment by County, 2007 – 2017

County	Employment										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bastrop	13,335	13,883	14,143	14,283	14,032	14,120	15,083	15,516	16,321	17,100	17,987
Burnet	12,514	12,670	12,115	12,204	12,366	12,232	12,595	13,360	13,221	13,744	13,874
Caldwell	6,583	6,871	6,712	6,929	7,441	7,729	8,017	8,116	8,103	8,217	8,456
Hays	47,714	46,748	47,510	48,616	50,577	52,585	55,297	57,849	60,654	63,865	67,054
Travis	569,200	578,961	559,751	567,693	581,510	604,648	628,224	655,305	687,067	705,811	725,880
Williamson	117,842	121,725	119,984	120,860	128,863	133,518	139,166	145,135	150,953	158,526	165,256
Total	767,188	780,858	760,215	770,585	794,789	824,832	858,382	895,281	936,319	967,263	998,507
County	**Growth Rates**										
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Bastrop		4.1%	1.9%	1.0%	-1.8%	0.6%	6.8%	2.9%	5.2%	4.8%	5.2%
Burnet		1.2%	-4.4%	0.7%	1.3%	-1.1%	3.0%	6.1%	-1.0%	4.0%	0.9%
Caldwell		4.4%	-2.3%	3.2%	7.4%	3.9%	3.7%	1.2%	-0.2%	1.4%	2.9%
Hays		-2.0%	1.6%	2.3%	4.0%	4.0%	5.2%	4.6%	4.8%	5.3%	5.0%
Travis		1.7%	-3.3%	1.4%	2.4%	4.0%	3.9%	4.3%	4.8%	2.7%	2.8%
Williamson		3.3%	-1.4%	0.7%	6.6%	3.6%	4.2%	4.3%	4.0%	5.0%	4.2%
Total		1.8%	-2.6%	1.4%	3.1%	3.8%	4.1%	4.3%	4.6%	3.3%	3.2%

Source: (1) U.S. Bureau of Labor Statistics, 2019.

Figure 6.5: Employment in CAMPO Study Area, 2001 – 2018



Source: [1] U.S. Bureau of Labor Statistics.

The forecasted future employment for the 6-county CAMPO model region is presented in Table 6.8. Growth is anticipated to taper down from the rate of 3.7 percent between 2010 and 2017 to 2.3 percent between 2017 and 2020. After that, growth is expected to continue to slow, reaching an annual growth rate of 1.6 percent between 2030 and 2040. The 2017 baseline is based on the 2017 CAMPO employment estimate and adjusted by Dr. Bomba to reflect field observations.

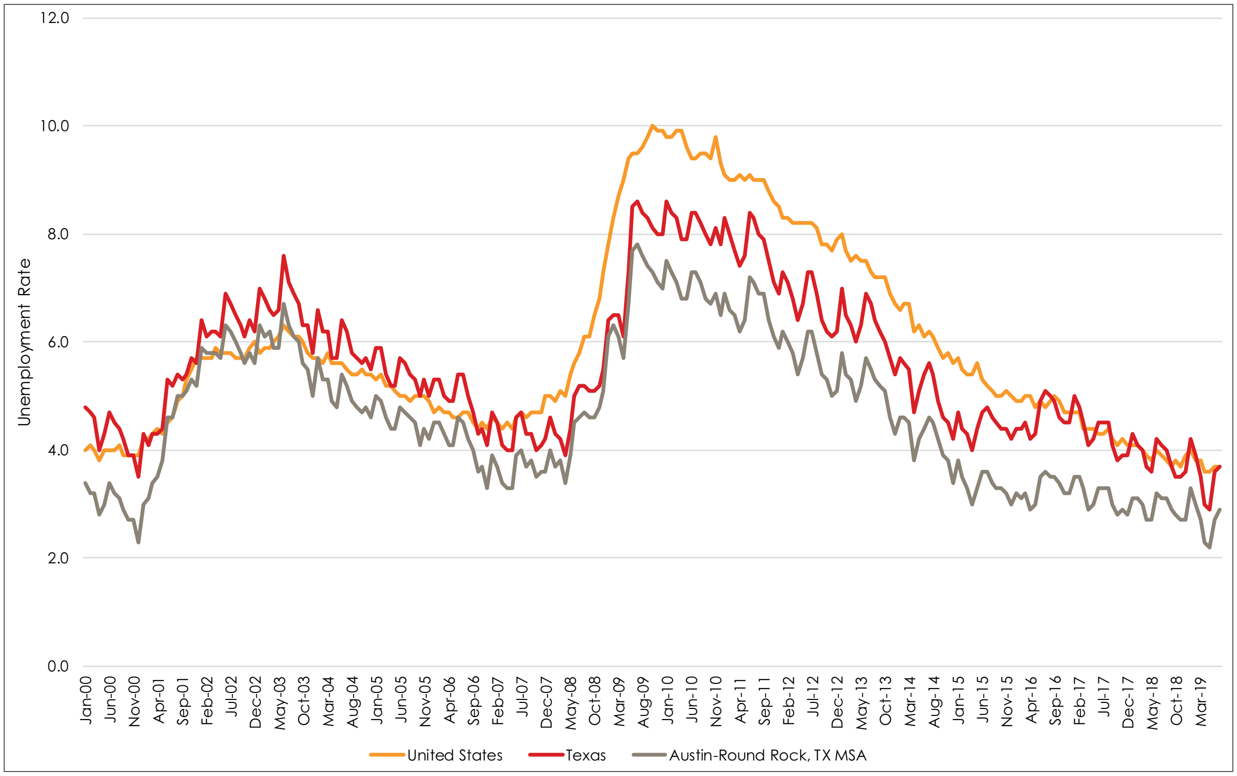
Table 6.8: Employment Forecast for CAMPO Study Area, 2010 – 2040

County	Employment Control Totals				
	2010	2017	2020	2030	2040
Bastrop	14,283	17,916	19,495	25,829	33,086
Burnet	12,204	13,882	14,827	17,602	20,492
Caldwell	6,929	8,380	9,368	11,409	13,998
Hays	48,616	66,079	72,719	94,047	118,530
Travis	567,693	725,832	768,530	900,376	1,020,649
Williamson	120,860	164,627	181,063	237,157	293,562
TOTAL	770,585	996,716	1,066,002	1,286,420	1,500,317
County	**Avg Annual Growth Rates (from prior year shown)**				
	2010	**2017**	**2020**	**2030**	**2040**
Bastrop		3.3%	2.9%	2.9%	2.5%
Burnet		1.9%	2.2%	1.7%	1.5%
Caldwell		2.8%	3.8%	2.0%	2.1%
Hays		4.5%	3.2%	2.6%	2.3%
Travis		3.6%	1.9%	1.6%	1.3%
Williamson		4.5%	3.2%	2.7%	2.2%
TOTAL		3.7%	2.3%	1.9%	1.6%

Source: (1) Texas Workforce Commission and Dr. Bomba, 2017.

Figure 6.6 shows the monthly unemployment rates for the United States, Texas, and the Austin-Round Rock MSA. These data show the unemployment rate in the region has been below the overall unemployment rate in Texas during most of the period between January 2000 and July 2019. The Austin MSA experienced its lowest unemployment rate during May 2019, when it fell to 2.2 percent. During the recession that began in 2001, the regional unemployment rate peaked at 6.7 percent in June 2003. As the regional and national economy recovered and the employment expanded during the mid-2000s, the regional unemployment rate fell to less than 4.0 percent, before significantly increasing during 2008 and 2009. During the 2008-2009 Recession, the regional unemployment rate reached 7.8 percent in July 2009 but was not sustained for a prolonged period of time. Between 2011 and 2017, the regional unemployment rate consistently fell through 2015 and has remained relatively steady going forward. During July 2019, the region’s unemployment rate was 2.9 percent and the rate has consistently been below the rate for Texas as a whole.

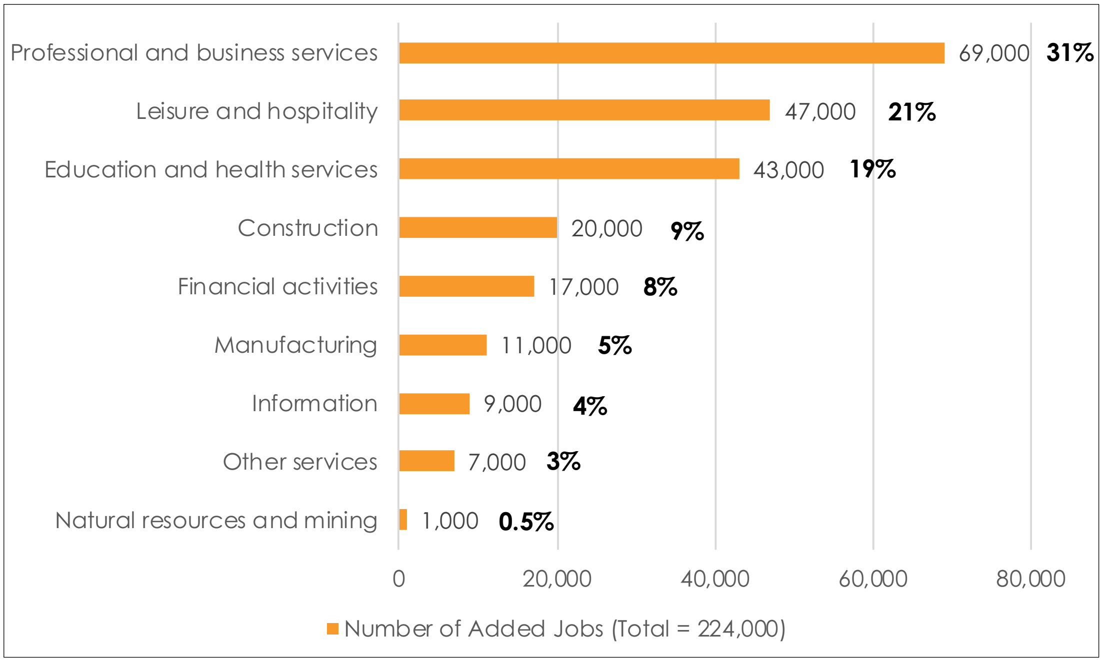
Figure 6.6: Comparison of Unemployment Rates, 2000 – 2019



Source: [1] U.S. Bureau of Labor Statistics.

It is worth noting that Austin's regional economy has diversified its employment, adding jobs across multiple economic sectors. The change in employment by sector in the Austin MSA is shown in Figure 6.7 below. The professional and business services sector, which includes white collar jobs such as computer system design, architecture, engineering, and law, accounts for 31 percent of the employment growth in the Austin MSA from 2009 to 2018. The leisure and hospitality sector represented 21 percent of the employment growth for the same period. This sector's growth is likely due to several Austin events including Formula One races, SXSW music festival, and the Austin City Limits music festival which attract attendees from not only Texas, but nationally and internationally as well.

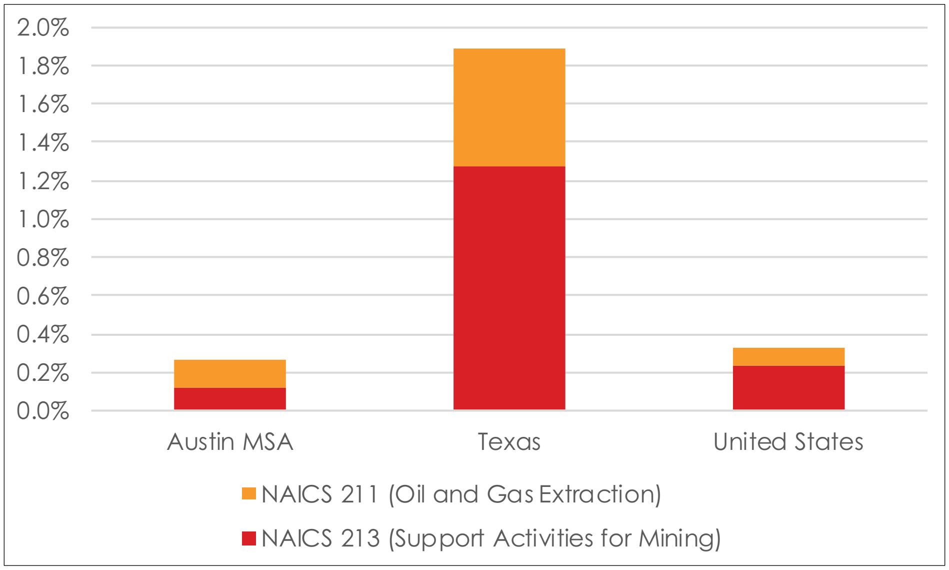
Figure 6.7: Austin MSA Employment Change by Sector (2009 – 2018)



Source: (1) U.S. Bureau of Labor Statistics, 2019.
Note: (1) 2018 data for manufacturing jobs is not disclosable because data do not meet BLS or State agency disclosure standards. The change in number of manufacturing jobs reported above is from 2009-2017.

Although the oil and gas industry are an important part of the Texas economy, employment in the Austin MSA is minimally dependent with only 0.5 percent of the employment growth from 2009 to 2018 due to the natural resources and mining sector. Figure 6.8 below shows that the Austin MSA share of total employment in two oil and gas industry-related sectors is only 0.26 percent, compared to 1.88 percent for Texas and 0.33 percent for the United States.

Figure 6.8: Share of Employment in Oil and Gas Extraction and Related Sector (2018)



Source: [(1)] U.S. Bureau of Labor Statistics and Texas Workforce Commission, 2018.

6.2 UPDATE OF TAZ LEVEL ESTIMATES

Dr. Bomba has extensive experience in the Austin region and has been retained by Stantec to provide socioeconomic data forecast assessments for the Austin area toll roads for nearly 20 years. For this project, Stantec staff conducted field surveys and interviews with local government agencies, which supplemented the data inputs and analysis needed to prepare adjustments to the baseline conditions and zonal forecasts.

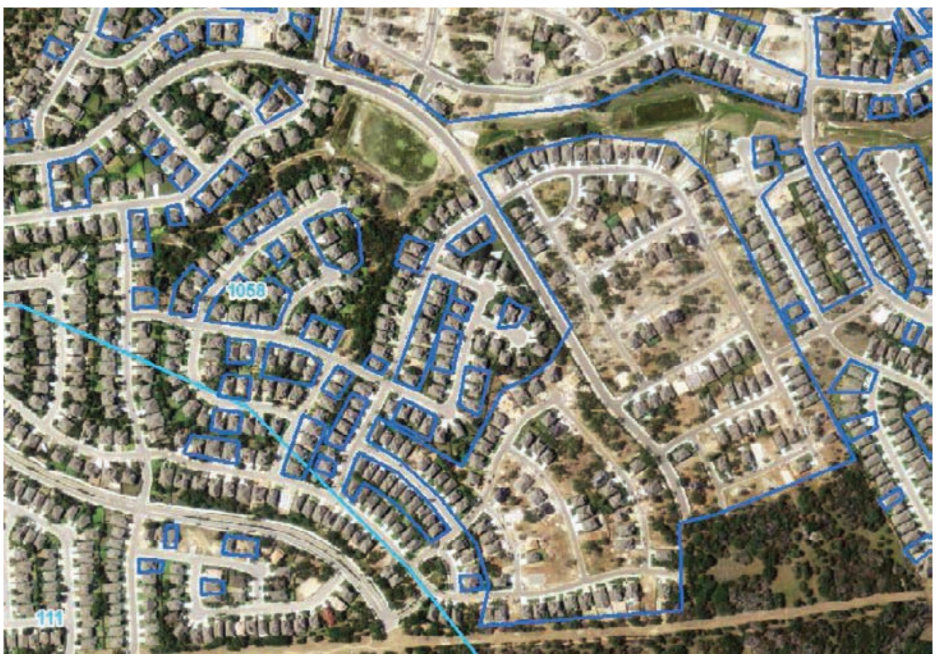
As part of this analysis, Dr. Bomba reviewed the development trends in the individual markets for residential and commercial development. In additional to the field surveys and interviews, the effort also considered existing utility capacity and plans for expansion in order to confirm the reasonableness of local development plans. The revised forecasts are a reasonable estimate of future activity that would be considered conservative for the purposes of estimating future demand for the region's toll facilities.

6.2.1 Methodology

Base Year Methodology

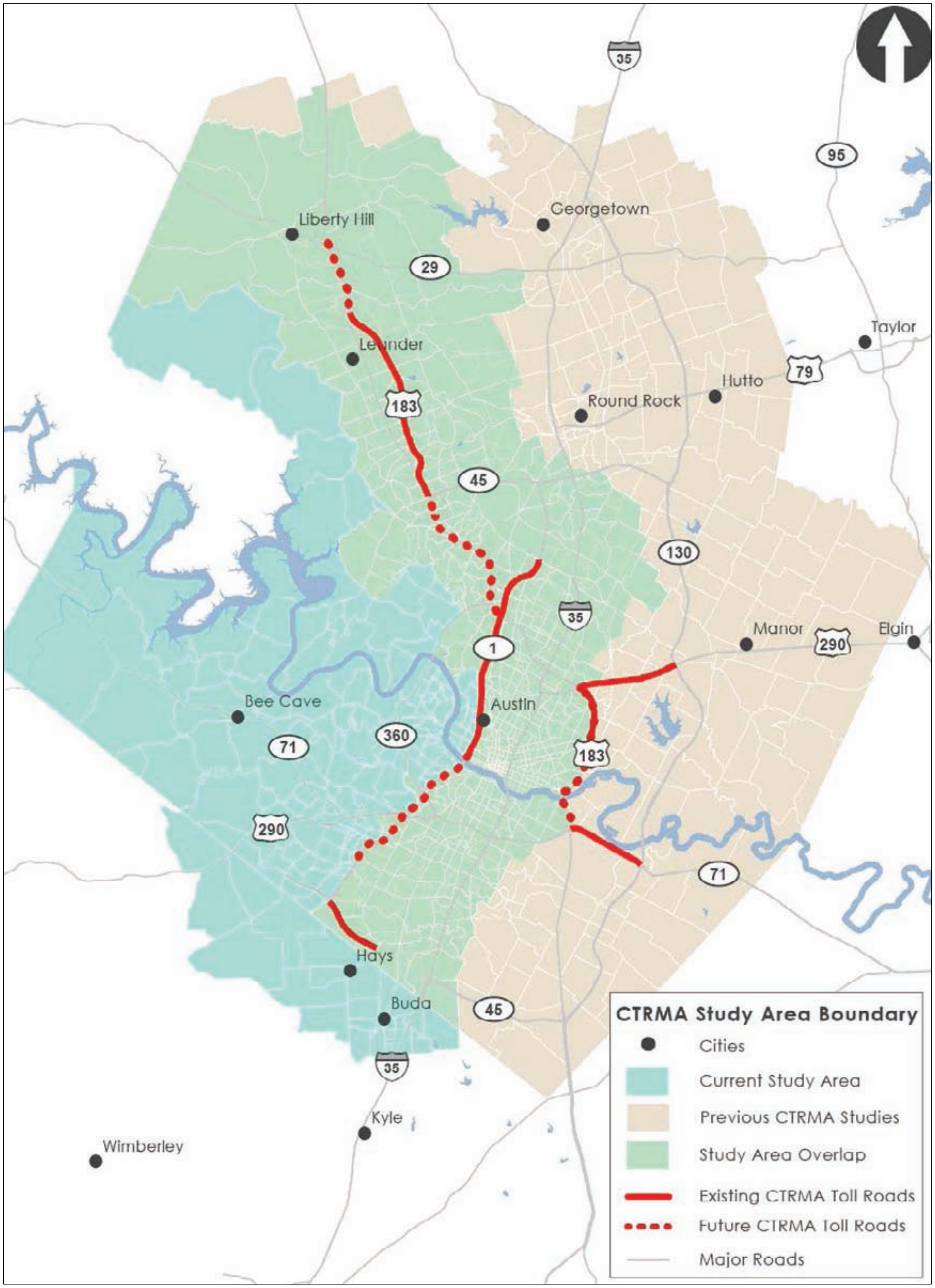
To establish the base year socioeconomic data, a review of recent development was conducted by comparing orthographic photos from the Capital Area Council of Governments (CAPCOG) and the Texas Natural Resources Information System (TNRIS) of the area from 2010 and 2017 using ArcGIS. A baseline had been established in 2010 for previous traffic and revenue forecasts in the Austin area, and this review helped to identify changes to the land use between 2010 and the baseline year for this study (2017). Development that appeared in the 2017 photos was highlighted and determined to be either residential (including multifamly) or commercial based on a visual inspection of rooftops. An example of single-family residential growth is shown in Figure 6.9. Changes in residential units were quantified, and commercial development activity was researched to approximate the number of jobs generated by each development.

Figure 6.9: Example of Orthographic Review



The rooftop comparison was completed for the study area shown in Figure 6.10. This information was used to generate baseline demographic data for each TAZ in the study area. These data were then reviewed by Stantec staff to ensure internal consistency (e.g., ratio of population to households, check of employment totals against different employment categories, etc.). The rooftop comparison for this project builds on previous CTRMA studies, which included aerial reviews of the other areas shown below in Figure 6.10.

Figure 6.10: Study Area for Rooftop Aerial Comparison



Future Conditions Methodology

The socioeconomic forecasts were developed using a combination of the MPO's forecasts and a series of interviews with representatives of communities and counties in the study area to provide an updated assessment of future near-term and long-term growth. Municipality representatives were asked to identify parcels that would experience new residential or commercial development; to quantify the type of development (number of dwelling units for single-family or multifamily residential, and square footage or employee counts for commercial development); and to specify a development timeframe, if possible.

In addition to these quantitative statements about specific development parcels, they were also asked to describe other factors that may influence development and/or traffic patterns in their jurisdiction. These included factors such as the development of new parks, schools, municipal buildings, and other parameters, such as the water and wastewater capacity, the extent of the utility network, and potential environmental constraints. A list of the municipalities that were interviewed is shown in Table 6.9.

Comments were recorded directly onto large-scale aerial maps during the meeting by municipality representatives and/or Stantec interviewers. The projections were then compared against the MPO baseline forecasts, and an updated socioeconomic forecast for each TAZ in the study area was developed. Adjustments were applied to the CAMPO projections at the individual TAZ level. The adjusted demographic demand was summarized at the subarea and county level, to ensure that there is consistency with the original CAMPO totals for the broader geographical areas in the region. Where there were inconsistencies, the TAZ-level adjustments were revised to reconcile the adjusted and original CAMPO subarea and county totals.

Table 6.9: Socioeconomic Interviews Conducted in the Austin Metropolitan Area

Current Study	
Jurisdiction	**Date**
City of Rollingwood	Dec-18
City of West Lake Hills	Dec-18
City of Pflugerville	Dec-18
City of Buda	Dec-18
City of Lakeway	Dec-18
City of Austin	Jan-19
Travis County	Mar-19
City of Lago Vista	Apr-19
Previous CTRMA Studies	
Jurisdiction	**Date**
City of Round Rock	Oct-16
City of Georgetown	Nov-16
City of Hutto	Oct-16
City of Manor	Oct-16
Travis County	Oct-16
City of Pflugerville	Nov-16
City of Cedar Park	Oct-16
City of Leander	Oct-16
City of Liberty Hill	Oct-16

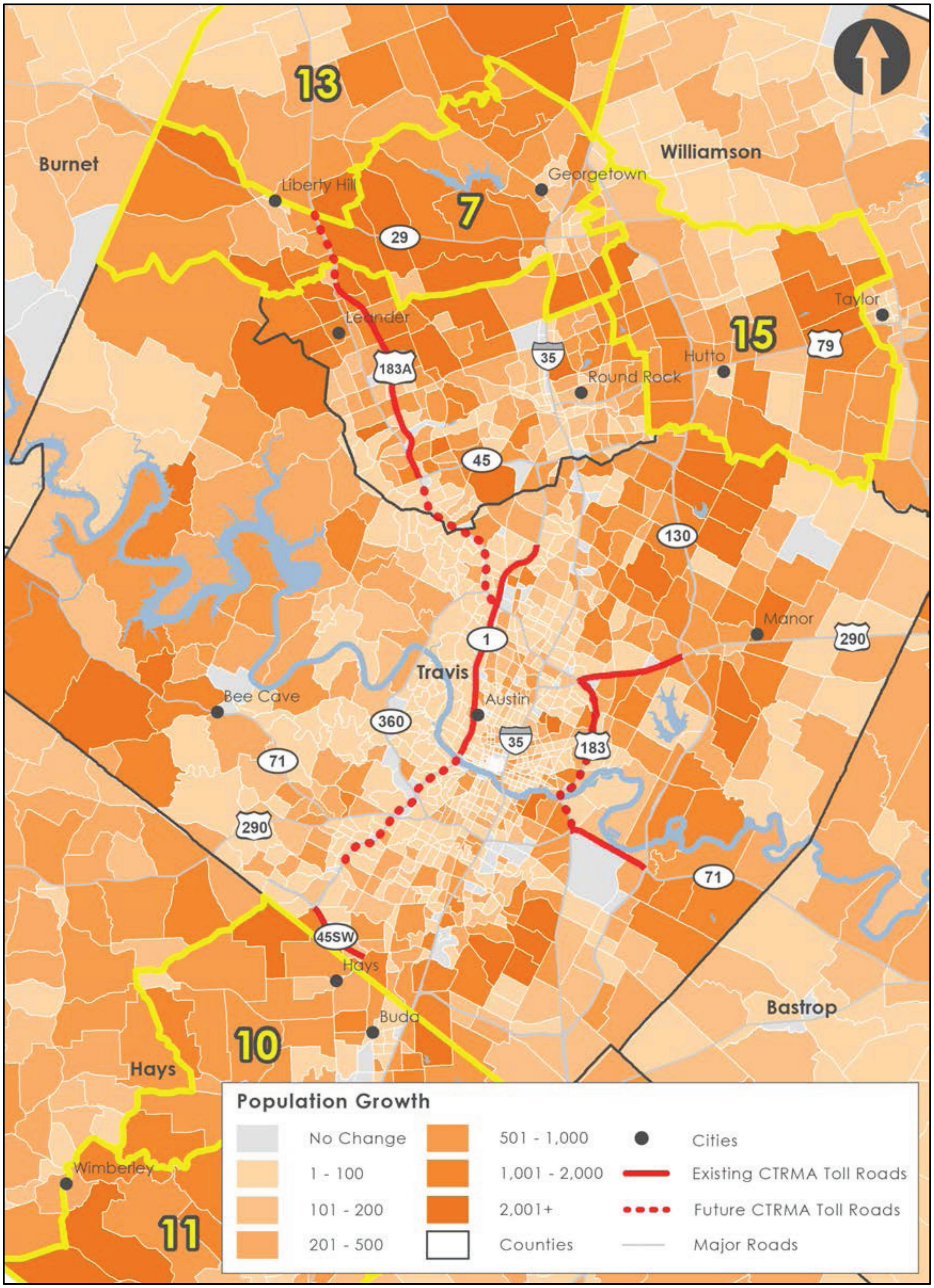
6.2.2 TAZ Population & Employment

High population growth is expected outside of the City of Austin, north in the areas around Liberty Hill, Leander, Georgetown, Round Rock, and Hutto, as well as south in Hays County near SH 45 SW. Figure 6.11 on the following page shows population growth in the CAMPO model area between 2017 and 2030 and highlights subareas with the fastest population growth rates. These growth rates are also listed below in Table 6.10. Several of these subareas act as feeders to CTRMA corridors, including subareas 7 and 13 located just north of 183A, and subareas 10 and 11, located in Hays County near SH 45 SW.

Table 6.10: 2017-2030 Forecasted Compound Annual Growth Rates - Population

Subarea	2017 Population	2030 Population	Difference	CAGR
13 - Williamson	23,380	49,196	25,816	5.9%
15 - Williamson	52,112	96,415	44,303	4.8%
7 - Williamson	79,408	139,942	60,534	4.5%
10 - Hays	92,119	142,819	50,700	3.4%
11 - Hays	71,406	109,929	38,523	3.4%

Figure 6.11: Population Growth, 2017-2030



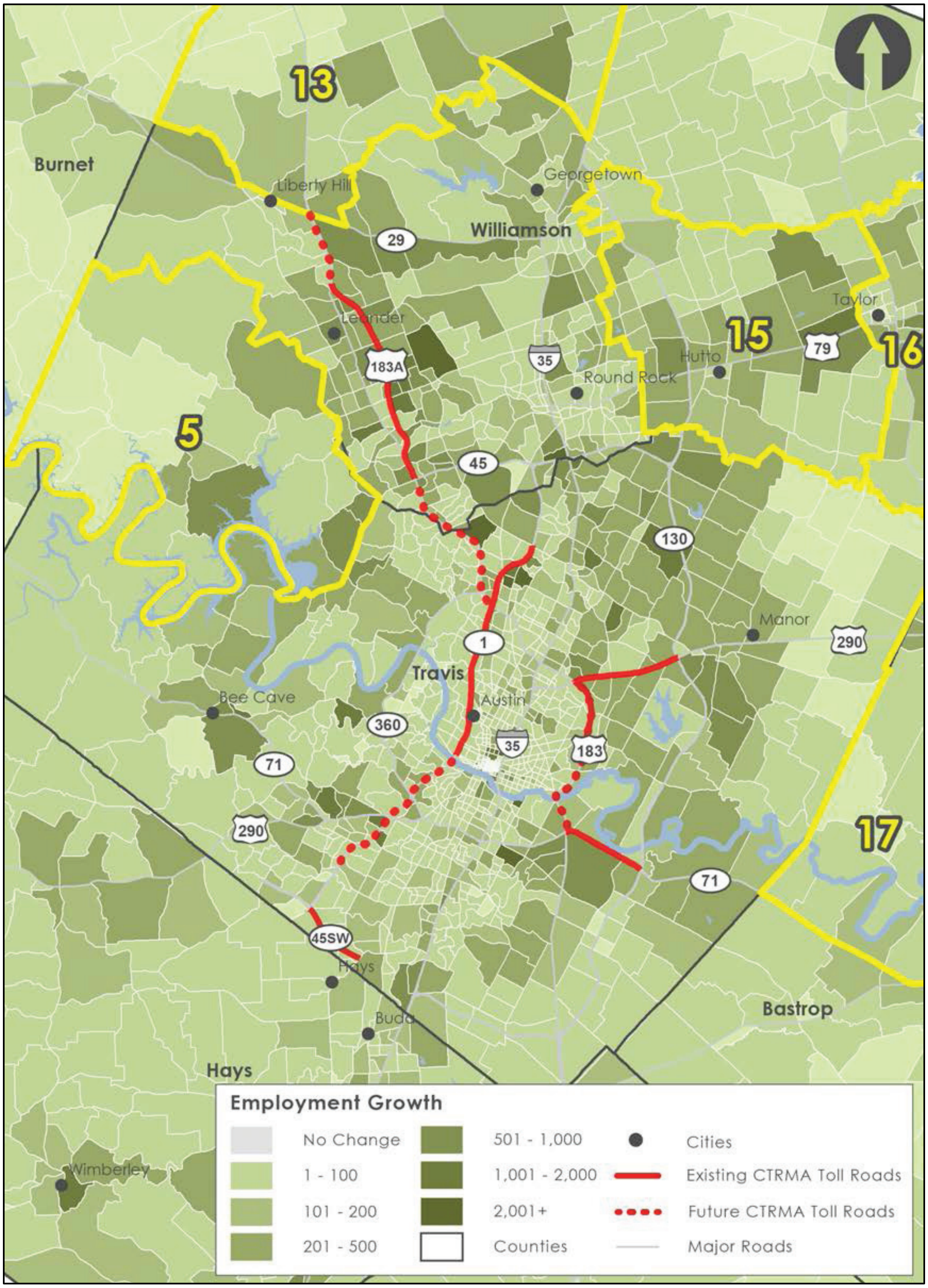
Some of the areas with significant increases in population between 2017 and 2030 are also expected to see large employment growth rates, particularly in Williamson County. The fastest employment growth is expected in subarea 15 in Williamson County. Other areas expected to see high employment growth include subareas 16 and 13, also in Williamson County. Subarea 5 in west Austin near the 183A/183N corridors is projected to grow 3.5 percent annually, and subarea 17 in Bastrop County shows 3.4 percent annual growth between 2017 and 2030. Figure 6.12 and Table 6.11 show employment growth in the CAMPO model area, highlighting those subareas with the fastest growing employment between 2017 and 2030.

Table 6.11: 2017-2030 Forecasted Compound Annual Growth Rates - Employment

Subarea	2017 Employment	2030 Employment	Difference	CAGR
15 - Williamson	8,614	18,273	9,659	6.0%
16 - Williamson	6,757	10,846	4,089	3.7%
13 - Williamson	4,334	6,902	2,568	3.6%
5 - Travis	6,453	10,089	3,636	3.5%
17 - Bastrop	6,977	10,740	3,763	3.4%

Source: (1) Subarea 22 in Caldwell County had the second highest growth rate, but total employment was approximately 500 in 2030.

Figure 6.12: Employment Growth, 2017-2030



6.3 REGIONAL DEVELOPMENT TRENDS

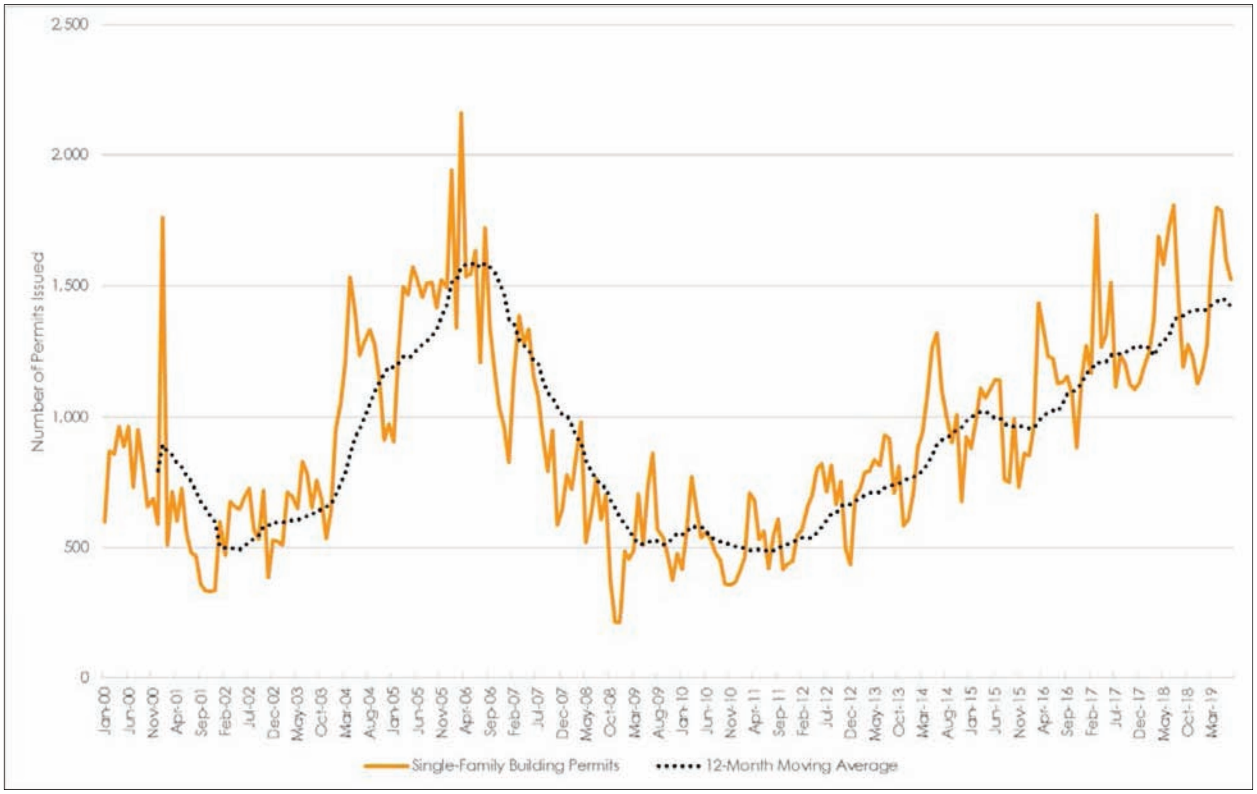
As mentioned above, interviews were conducted with municipal and county representatives to provide an assessment of near-term and long-term growth. While the interview process identified hundreds of developments in all parts of the study area, the following section provides a review of recent permitting trends and a broad overview of the larger-scale developments near the toll roads in the Austin region and along competitor roads. The Austin metropolitan area's economy has experienced consistent growth over the past decade, and that economic strength is reflected in the information gathered from the interviews. Many the communities have either ongoing or planned developments. Some of these projects are undergoing or anticipate significant growth due to certain characteristics that catalyze development, such as location along a major arterial, a favorable development environment, a well-managed water supply, and/or a strong utility network. Additionally, many communities have zoned certain parcels to encourage new development.

6.3.1 Housing Trends

The number of monthly single-family building permits issued in the Austin-Round Rock MSA since 2000 are shown in Figure 6.13. While an issued building permit does not guarantee that a structure is constructed (a certificate of occupancy would provide that proof), it does provide of gauge of builder interest that can be used to compare activity in a region over time.

The data generally show what one would expect, which is that the monthly issuance of building permits in the Austin-Round Rock MSA grew during the "housing bubble", reaching a peak of more than 2,000 permits in mid-2006. Then the number of permits issued began to decline quickly, even taking into consideration seasonal influences. The local housing market reached its lowest level during early-2009, when only a couple hundred building permits were issued each month. Since then, the local housing market has recovered with an average of approximately 1,500 building permits issued each month during mid-2019. This figure, in combination with the number of issued permits for multifamily units, appears to roughly align with the region's current population growth.

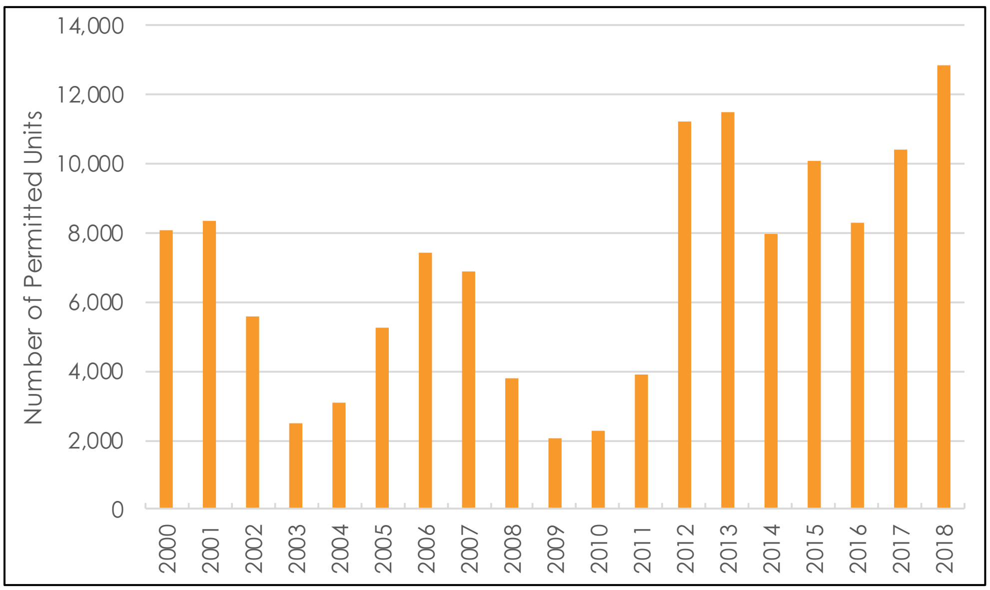
Figure 6.13: Monthly Single-Family Building Permits Issued in Austin-Round Rock MSA, January 2000 to July 2019



Source: (1) Texas A&M Real Estate Center, 2019.

The number of permitted multifamily units in the Austin-Round Rock MSA has typically followed trends in the housing market, until the past few years, as shown in Figure 6.14. As would be expected, the number of multifamily permits was higher during the early-2000s during the technology-fueled expansion, fell with the 2001 Recession, and then rose again during the mid-2000s as a component of the housing bubble (at a slightly lower volume). The highest number of multifamily units were permitted during 2012, 2013, and last year in 2018, when more than 12,000 multifamily units were permitted each year. While the number of units permitted between 2012 and 2017 was lower, it was still strong from a historical perspective.

Figure 6.14: Annual Multifamily Units Permitted in the Austin-Round Rock MSA, 2000-2018



Source: [1] Texas A&M Real Estate Center, 2017.

6.3.2 Key Development Activity in the Mobility Authority's Roadway Corridors

The sections below provide a brief overview of development patterns and projects in the study area shown above in Figure 6.10. Organized by subareas within the study area, the narrative identifies various residential and commercial projects that are either: proposed; under construction; or recently completed. When available, information such as the number of lots in a subdivision, units in a multifamily project, or square feet for commercial buildings is provided. During the review of the CAMPO socioeconomic data, more than 250 individual development projects were identified and incorporated into the revised baseline and forecast figures. The identification of the projects below reflects a "snapshot" view and should not be considered comprehensive, although the most significant projects in the study area have been identified. Given the large number of ongoing and planned project in the study area, the discussion is limited to subdivision projects with 300 or more lots and multifamily projects with 300 or more units. Commercial projects with at least 200,000 square feet of space were also included in the narrative. The discussion is followed by a map (Figure 6.15 and Figure 6.16) showing the TAZ locations of select developments, and a table (Table 6.12) describing the development details, such as the project name, the number of lots in subdivisions, units in multifamily projects, and square footage of commercial developments, where available.

6.3.2.1 Development West of IH 35 and North of US 183

At the northwestern corner of this portion of the study area, the Springs at Lakeline Apartments (328 units) were recently completed. Further south, along Parmer Lane and west of MoPac North, Apple's new Americas headquarters campus has opened. The facility handles engineering, research & development, finance, sales, and customer support functions for Apple. The 133-acre campus intends to expand to 5,000 employees in the near term but has the capacity to eventually reach up to 15,000 workers. Along MoPac North, south from SH 45 North, the Timmermann subdivision (165 lots and 156 multifamily units) has been proposed and further south the Terraces at Scofield Ridge Apartments (350 units) are under construction. The proposed expansion of the North Austin Medical Center, south of Parmer Lane, includes some 1.7 million square feet of medical office space. However, there has been no construction on this parcel to date and its development is more likely to occur over a 10 to 20-year horizon, as the other parcels nearer the main facility are developed.

The highest concentration of commercial development in this portion of the study area has been at The Domain, which recently completed three office buildings with a combined area of 900,000 square feet of office space. Construction is expected to start soon on another 332,000 square foot office building. Between late-2018 through 2025, The Domain's developers expect 12,600 new workers in their office buildings, representing major technology-based companies like Facebook, Amazon, Indeed, and Vrbo. The Domain's Rock Rose district opened almost three years ago has added a large number of workers at its many restaurants, bars, hotel, and stores. Across from The Domain on Burnet Road, there is a proposal to redevelop the existing IBM campus. The Broadmoor project could have up to 2,240 residential units and more than 3,335,000 square feet of commercial space. Next to the current IBM site, Charles Schwab opened a new campus with 469,000 square feet of office space and 1,900 employees, with the current capacity to add 700 workers (Hawkins, 2018). Further south on Burnet Road, north of Braker Lane, the Modera Domain apartments (354 units) were under construction, along with several hotels. South of Braker Lane on Burnet Road, the Broadstone Burnet Apartments (352 units) were recently completed and at the southeast corner of Braker Lane and Burnet Road, a 20,000-seat professional soccer stadium will break ground in 2019 and is expected to be open in the spring of 2021 (Salazar, 2018).

There has also been higher utilization of flex space and industrial space in the area bounded by Loop 1 and Metric Boulevard, and Gracy Farms Lane and US 183. As office rents rise in Austin, a number of companies are utilizing cheaper flex space as offices rather than renting traditional office suites. This area has also become popular for microbreweries, which along with The Domain, Top Golf and the future soccer stadium, are giving some needed cachet to a part of Austin that has regularly been ignored.

An important location for future development in this part of the study area is Robinson Ranch, a 6,000-acre parcel in northern Travis County. At present, its owners are mining limestone and are not opening sections of land for development. As a result, it is difficult to know when Robinson Ranch will be made available for significant residential and commercial construction.

6.3.2.2 East of IH 35 and North of US 183

Within the city of Round Rock and at the southeast corner of IH 35 and SH 45 North, a large mixed-use project is being proposed called “The District”. The developer is proposing Class A office, hospitality, retail, and residential uses that will total at least 1.0 million square feet of built space. Across Greenlawn Boulevard from this location, on the southeast corner of its intersection with W. Pflugerville Parkway, the Hollybrook Ranch Apartments (336 units) were under construction during the field survey. Further south, within Pflugerville, the Commons at Heatherwilde development (1,250 units) was starting construction at the northwest corner of Old Austin Pflugerville Road and S. Heatherwilde Road. Further south on Heatherwilde Road, at the northwest corner of its intersection with Wells Branch Parkway, the Ballantyne Subdivision was under construction. This development will have 159 single-family homes, 264 multifamily residential units, and some retail.

Within northeast Austin, there are two large Municipal Utility Districts (MUDs) or Planned Unit Developments (PUDs) that continue to build out. The Northtown MUD is located due south of the City of Pflugerville. The developer has started construction and it is proposed to have 2,951 single-family units, 1,626 townhomes, 4,186 apartments, along with retail, office, industrial, and schools. The Pioneer Crossing PUD, oriented around Dessau Road is under construction, and is planned for 2,925 single-family homes. In addition to these large MUDs or PUDs, there are a number of smaller subdivisions that are proposed or under construction. Further east, the Entrada and Fossil Creek subdivisions have been approved for 822 lots and 933 lots, respectively, but there was no activity at the time of the field survey. Nearby, the Cantarra subdivision (1,126 lots) continues to build out with smaller adjacent subdivisions also under construction and the Pioneer Hill subdivision on Dessau Road (671 lots and apartments) is also under construction. There are two multifamily complexes being developed in this area. One complex, called IO at Tech Ridge (380 units), was partially built, but was stalled during the field survey. Another complex called Austin Waters (300 units) was recently completed.

The highest concentration of recent commercial development has been in the Parmer Business Park within the Tech Ridge development, which is located between Parmer Lane and Howard Lane. Recently, two 192,000 square foot office buildings were built along McAllen Pass Drive. Four more buildings are also under construction, one office building with 116,000 square feet of space and three more flex space buildings totaling 350,000 square feet. Additionally, 3M will build its own 272,000 square foot office building in the same development (Anderson, 2017). Along with these projects there are also plans to build additional office, flexspace/industrial, and retail buildings on other tracts within Tech Ridge.

6.3.2.3 West of IH 35 from US 183 to Martin Luther King Boulevard (MLK)

Some of the major development projects within this portion of the study area include the Austin Oaks redevelopment, Crestview Station, the Austin Community College (ACC) Highland Center, and the Grove at Shoal Creek. The Austin Oaks project will redevelop an existing 12-building office park, adding up to 850,000 square feet of office space and 375 multifamily units. The plan has been approved, but the property was recently sold and construction has not yet begun (Stantec, 2019 and Dinges, 2018). The Crestview Station project is a transit-oriented-development that is being constructed in phases and built around a Capital Metro commuter rail station. The project is a mixed-use development with retail, office, single-family homes, and multifamily units. Collectively, there will be 1,350 residential units when it is fully built out. The ACC Highland Center is a partial redevelopment of the former Highland Mall. The development has 1,250 multifamily units planned overall, with the first phase of its multifamily construction now completed. Other portions of the property have been refurbished to serve as a new ACC campus and to house administrative functions. Overall, the Highland Mall tract is highly underutilized and, as land prices increase, it is expected that surface parking and low-density buildings will be converted to higher uses. To the west, on Koenig Lane at Woodrow Avenue, an apartment complex is under construction (383 units). Finally, at the southeast corner of Bull Creek Road and 45th Street, a large mixed-use, infill project called the Grove at Shoal Creek is expected to start soon. The project will be built on a large parcel of undeveloped land. After completing an extensive approval process through the City of Austin and responding to neighborhood concerns, the development is expected to contain 1,515 residential units, 650 apartments, 185,000 square feet of office space, and 140,000 square feet of retail space

There is a general long-term trend of densification in the neighborhoods west of IH 35, where developers are infilling vacant parcels and subdividing single-family lots in a piecemeal manner. Developers are also taking low-density commercial properties and building multi-story residential projects, typically with retail and office units on the bottom floor. Burnet Road and Lamar Boulevard are popular corridors for these types of projects, since there is an abundance of these low-density (in some cases dilapidated) commercial properties that can be redeveloped into residential and commercial space that command much higher rents. However, active neighborhood groups who are antagonistic to denser land uses are very vocal in the development process and complicate projects.

From 38th Street to MLK Boulevard, almost all of the current residential activity is focused in the “West Campus” area, which lies due west of the University of Texas at Austin. Many of the residential buildings in this area have units with more than two and often up to five bedrooms. Therefore, the occupancy per unit is much higher than in multifamily buildings in other locations around Austin. Other construction activity in this area includes a 348-room hotel that is being built at the northeast corner of San Antonio Street and MKL Boulevard. On the University of Texas at Austin campus, two academic buildings are under construction: the 430,000 square foot Engineering Education and Research Building and the 184,300 square foot Energy Engineering Building. In 2021, the University will be replacing its basketball arena (the Frank Erwin Center) with a new 10,000-seat facility near the football stadium (Watkins, 2018).

6.3.2.4 MLK Boulevard to Lady Bird Lake between IH 35 and Mopac

East from Congress Avenue and south of MLK Boulevard, two state office buildings are under construction with a combined area of more than 1.0 million square feet. To the east and south, on the southeast corner of Red River and 15th Street, is the University Medical Center Brackenridge. The hospital closed in 2017 and will be redeveloped. Originally, the site was proposed to be mixed use with apartments, retail, and office. The vision has since changed and it appears more likely that the property will be used for offices and other facilities that support the University of Texas at Austin’s medical school (Goldenstein and Haurwitz, 2018). It was announced in August 2019, that a portion of the existing Brackenridge facility would be demolished to construct a 17-story office building to support the medical school (Hamdan, 2019).

Further south and to the west of Lamar Boulevard, the Austin Independent School District sold its headquarters and is scheduled to vacate the premises by September 2019 (AISD, 2019). The office complex encompasses almost an entire block on W. 6th Street that will be redeveloped as a mixed-use project, although specific details about the project have not been released. East of Lamar Boulevard on the northeast corner of 3rd Street and West Avenue, a 58-story residential tower called “The Independent” was recently completed with 370 units. It has been touted as the tallest residential tower in the United States, west of the Mississippi River (Benter 2017 and Widner, 2016). On the southwest corner of Nueces Street and 3rd Street, a 292,000 square foot office building and a 35-story hotel are under construction. Adjacent to them, at the corner of Nueces Street and Cesar Chavez Boulevard, a 35-story office building with 790,000 square feet is under construction. When completed, the entire building will be leased by Google (Novak, 2019).

On a full city block, at the southwest corner of Guadalupe Street and 4th Street, a 900,000 square foot office building has been proposed. Two blocks north, on the southwest corner of 6th Street and Guadalupe Street, there is a proposal to redevelop a former U.S. Post Office into 550 residential condominiums, a 150-room hotel, and 40,000 square feet of retail and restaurant space. One block to the west, a project is being proposed that would have 250 residential units, approximately 153,000 square feet of office space, 14,000 square feet of retail space, along with restaurant space and a drive-in bank. A very large development is also being proposed at 600 Guadalupe Street, which would have 332 multifamily units, approximately 550,000 square feet of office space, and approximately 25,000 square feet of restaurant space. Another proposed project will be at the northeast corner of Lavaca Street and W. 6th Street, and will consist of a 683,000 square foot Class A office tower with ground floor retail. A historic 1914 post office on the site would be repurposed as a 25,000 square foot space for retail and restaurant uses. To date, construction has not started on any of these projects. Moving to the east side of Congress Avenue, at 5th Street and Brazos, a project has been proposed with 329 multifamily units, a 333-room hotel, and approximately 7,100 square feet of restaurant space. To the south, on Cesar Chavez Boulevard and west of Trinity Street, a 27-story, 610-room hotel is under construction.

South of Cesar Chavez Boulevard, in the Rainey Street District, a number of projects are proposed or under construction. On Red River Street, the Waller Park Place development is proposed to have a 150-room hotel, 574 multifamily units, 60,500 square feet of retail space, and 300,000 square feet of office space. Across Red River, another proposed project called 91 Red River would have 328 multifamily units, 80,000 square feet of office space, and two ground-floor retail spaces suitable for restaurants. Along Rainey Street, construction has started on a 9-story mixed use building and a 352 multifamily unit building is being proposed. Lastly, along the frontage of IH 35, a 14-story hotel was recently completed.

6.3.2.5 East of IH 35 to US 183 and Lady Bird Lake

East of Airport Boulevard, the Mueller redevelopment has been a catalyst for a growing supply of renovated housing stock. However, to date, demand in this area has mostly led to a replacing of lower-income households with higher-income households and infill construction. There has been relatively little densification of neighborhoods up to this point, although that pattern is starting to change. The Mueller neighborhood (which is the former Austin airport) is in the process of being redeveloped and will include more than 3 million square feet of commercial space and 790,000 square feet of retail at build out, as well as thousands of single-family and multifamily homes. A significant amount of commercial space has already been built, including the Dell Children's Medical Center, The Thinkery (a children's museum), and the Austin Independent School District's Performing Arts Center. They are in addition to various medical office buildings and a large amount of strip center retail and big box retail. To some extent, the retail development at Mueller has absorbed much of the demand in the surrounding neighborhoods and these other commercial areas are not yet revitalizing, despite rapidly increasing household income from gentrification.

Neighborhoods in East Austin have experienced very rapid gentrification and property value increases as Austin residents seek more affordable (yet still expensive) housing in close proximity to the urban core. At the intersection of IH 35 and 12th Street, The Hutson residential development is under construction, which will have 369 multifamily units and 22 live-work units. Along E. 5th Street, 534 apartments, 120,000 square feet of office space, and 140,000 square feet of retail space are under construction at the Plaza Saltillo site. South of Plaza Saltillo, at Lady Bird Lake and IH 35, the Rebekah Baines Johnson Center is being redeveloped with 500 residential units (including existing units), 45,000 square feet of office space, 3,580 square feet of medical office space, a 12,920 square feet shopping center, and 10,000 square feet of restaurant space. To the east, The Guthrie (310 units) is under construction, at the northeast corner of E. 7th Street and Tillery Street. Further east along E. 7th Street, construction has also started on a residential development with 354 multifamily units. Along Cesar Chavez Boulevard, west of Springdale Road, a residential project has been proposed that would have 350 multifamily units and 10,000 square feet of retail space.

6.3.2.6 East of IH 35 to US 183 and between Lady Bird Lake and SH 71

At the periphery of downtown Austin, redevelopment has been occurring along Riverside Drive, east of IH 35. These new projects are mixed use residential/retail (unlike the buildings they are replacing) and they are redeveloping at higher densities and with much higher rents. The largest development under construction at this time is the Lakeshore PUD. When completed, it is expected to have 1,500 apartments and 100,000 square feet of retail. At this development, Oracle recently moved into 560,000 square feet of office space and the company immediately announced that it would add another 420,000 square feet (Hawkens, 2018). Further south, the 2222 Town Lake multifamily project has been proposed with 600 units. East of Pleasant Valley Road, it is being proposed that existing student apartment housing be redeveloped at higher densities. Town Lake Apartments currently has 498 units and would be redeveloped to 2,599 units, while the Quad South apartments would be densified from 522 units to 1,280 units. South of Oltorf Street, construction continues in the Shire's Court subdivision (300 lots). In the Montopolis neighborhood, a number of smaller infill residential subdivisions are being proposed or constructed. Dwelling units in these subdivisions are typically single-family homes on small lots or shared lot dwelling units. However, there are some larger projects, which are under construction including the Lenox Oaks apartments (342 units) and the Aura Riverside apartments (354 multifamily units). To the south of E. Riverside Drive is the proposed 2514 Thrasher project with 300 multifamily units. The redevelopment trend along the Riverside Drive corridor is expected to continue over the long-term, since there are many outdated properties on large parcels that could be attractive for redevelopment, as land prices increase.

6.3.2.7 West of IH 35 from Lady Bird Lake to Travis County Line

Along Lady Bird Lake, east of the Congress Bridge, the 18.9 acre Austin-American Statesman Tract has been sold and is being planned for redevelopment. The owners are proposing 3.5 million square feet of residential, office, and retail space with 12.5 acres set aside for public use (Hawkins and Novak, 2019). The proposed amount exceeds the City of Austin's planned density for the south waterfront of Lady Bird Lake. A final decision on the ultimate density is probably not forthcoming until late-2019 or beyond. Nearby, the proposed RiverSouth project (a triangular property bordered by Barton Springs Road, S. 1st Street, and W. Riverside Drive) is a 15-story office building with 350,611 square feet. Further south and to the west on Lamar Boulevard, the Austin South Lamar Apartments would replace a self-storage facility with 328 residential units. Further south, along Woodward Drive, St. Edwards University recently completed a residence hall that can house 450 students. Continuing south across Ben White, the Saint Elmo Public Market is a repurposing and redevelopment of an industrial facility. It is proposed to have 380 multifamily residential units, 103,830 square feet office space, a 156-room hotel, and 25,765 square feet of retail space. Due south, a 300-unit apartment building called 411 Soco is being proposed. Further south along IH 35, a 380-unit multifamily project and the SOCO South Apartments (308 units) were under construction. Continuing south along IH 35, the Estancia Hill Country development is proposed to have 1,550 apartments, 750,000 square feet of industrial space, 905,000 square feet of office space, a 405,000 square feet shopping center, and 737 detached single-family homes. The residential component has started construction, but the commercial construction has yet to start. Nearby, to the west, a subdivision with 317 single-family homes has been proposed.

Moving west, at the northeast corner of South MoPac and William Cannon Drive, the Rancho Garza development is under construction. When completed, it will have 400,000 square feet of office space, 370 multifamily residential units, and 140-room Aloft hotel. Further south, along Brodie Lane, the Harris Ranch subdivision is under construction and will have 350 single-family homes at buildout. At the intersection of MoPac and SH 45 SW, the Greyrock Ridge Commons subdivision (387 lots) is under construction and, nearby, the Avana subdivision is also under construction. Avana will have 800 single-family homes, a 250-room resort hotel with 140 condominiums, and 24 single family villas.

6.3.2.8 East of IH 35 to MoPac between SH 71 and the Travis County Line

Over the past decade, areas south of SH 71 and between IH 35 and US 183 have generally experienced slower rates of growth than other locations in the region. However, more recently, developers have shown a renewed interest in this part of Austin, as they seek areas with affordable land and as more households seek affordable housing in reasonable proximity to central Austin. There are only a few larger projects that lie within the study area. The Bennett Tract along IH 35 and south of E. William Cannon is proposed to have 364 multifamily units and 45,000 square feet of retail. Along Bluff Springs Road, Marbella Section 3 project would have 1,116 residential units. Further south, on the southeast corner of SH 45 SE and IH 35, the Sunfield PUD is proposed. Portions of Sunfield are currently under construction in Hays County, but it is expected to develop over the county line and into Travis County, possibly within the next 10 years. There are two notable commercial projects, near the corner of IH 35 and SH 71. The Southpark Industrial park is under construction with 95,100 square feet of office space and 255,100 square feet of warehouse space. Also in this portion of the study area, along E. Stassney Road, the Texas Department of Transportation (TxDOT) is planning its new headquarters, which will consolidate most of its Austin employees into a single campus.

6.3.2.9 West of MoPac, South of US 183 North to the Travis County Line

Along US 290 W a 50-bed Baylor Scott & White hospital has started construction. Further south along US 290 W, near the Hays County line, the Belterra Village retail center is partially built and under construction. The plan calls for 200,000 square feet of commercial space, 76 single-family homes, 215 multifamily units, and a Hampton Inn & Suites. Across US 290 W from Belterra Village, Cypress Creek at Ledge Stone has constructed 234 single family homes and is awaiting the construction of the 244 multifamily apartments. Along SH 71, the Covered Bridge PUD will have 250 apartments, 8,000 square feet of retail space; 8,000 square feet of restaurant space; 16,000 square feet of office space; an assisted living center with 150 beds and two single family residential units. To date, the apartments have been built, but other components are awaiting construction. Construction is also partially complete at the Lantana commercial development along Southwestern Parkway. At buildout, the project will have 312,000 square feet of space that will include retail-restaurant buildings, a movie theatre, a hotel, and two office buildings. Further north on Bee Caves Road, the Seven Oaks Office Park is planned for two 120,000 square foot office buildings. Along RM 620, the Lohman’s Tract in Lakeway is one of the municipalities last remaining vacant tracts and is being planned for an assisted living facility and single-family homes. Further north along RM 620, the Lynd at Lake Travis (312 units) apartments were recently completed. Along Hamilton Pool Road, the Rocky Creek subdivision (400 lots) was under construction and the Provence subdivision (562 lots) is being proposed. West on SH 71 past RM 620, a 300-lot subdivision called Serene Hills is under construction. Further west on the south side of SH 71, the Sweetwater subdivision continues to be built out. When complete, it will have 1,479 single-family units and 1,600 multifamily units. North of the Sweetwater subdivision on Highlands Boulevard, the Highlands subdivision (719 lots) just started construction and various phases of the Rough Hollow (1,159) subdivision are under construction. The westernmost, large subdivision in the study area is called West Cypress Hills (601 lots), which had homes under construction at the time of the field survey.

6.3.2.10 Hays County

East of IH 35, the largest development within the project study area is the Sunfield PUD, which is expected to have 5,311 single-family homes and 1,660 multifamily units at buildout. The PUD also has 600,000 square feet of commercial and light industrial development planned, some of which is completed, and other buildings were under construction during the field survey. An additional 200,000 square feet of office and warehousing is also being proposed. Nearby, on White Wing Trail, Baylor Scott & White recently completed construction of small hospital.

Select projects are described in Table 6.12 below and are shown in Figure 6.15 and Figure 6.16.

Table 6.12: Key Development Projects (See Figure 6.15 and Figure 6.16)

TAZ	Project Name	Details
12	Lynd at Lake Travis	312 multifamily residential units; recently completed
16	West Cypress Hills	601 single-family residential units.
18	Rough Hollow	1,159 single-family residential units; construction ongoing
	Serene Hills	300 Single-family homes
19	Highlands Subdivision	719 single-family residential units; construction started
43	Rocky Creek	400 single-family homes. Ongoing construction
61	Lantana	312,000 sq. ft. on this 35.6-acre site includes retail-restaurant buildings, a movie house, a hotel and two office buildings.
67	Covered Bridge PUD	250 apartments; 8,000 sq. ft. of retail; 8,000 sq. ft. of restaurant space; 16,000 sq. ft. of office space; an assisted living center with 150 beds and 2 single family residential units.
79	Scott & White Hospital	Starting construction
99	Harris Ranch	350 single family residences
154	Springs at Lakeline Apartments	Recently completed. 328 units.
155	Robinson Ranch	6,000-acre ranch available for development, when owners decide to bring it to market
159	Hollybrook Ranch	Under construction. 336 multifamily units.
174	Northtown MUD	Ongoing construction - Original plan 2,951 single-family homes, 1,626 townhomes, 4,186 and apartments
184	Apple, Inc.	Recently completed. Americas headquarters. Will grow by 5,000 workers in the near term and up to 15,000 workers.
201	The Domain	Under construction. Plans call for up to 4,000 apartments; more than 3,500,000 sq. ft. of office space and more than 1,100,000 sq. ft. of retail space
202	Modera Domain Apartments	Under construction. 354 units.
	Broadmoor	Propose. Plan calls for up to 2,240 residential units and more than 3,350,000 sq. ft. of commercial space.
	Charles Schwab	Recently opened. 469,000 square feet of office space with 1,900 workers. Existing capacity is 2,600 workers.
208	Fossil Creek	Proposed. 933 single-family homes
	Entrada	77 acres set aside for retail and will include 822 residential units
	Cantarra	1,126 single family homes
322	Mueller Airport Redevelopment	4,900 single family and multi-family units, more than three million sq. ft. of commercial space, and 790,000 sq. ft. of retail.; construction ongoing
362	Engineering Education and Research Building	430,000-square-foot academic building
	Energy Engineering Building	184,300 gross square feet academic building
381	5th and Brazos Hotel	329 apartment units, a 333-room hotel with about 7,100 sq. ft. of restaurant space
384	University Medical Center Brackenridge	Future, long-term redevelopment project. First phase starting in 2019
408	44 East	352 multifamily residential apartments.
	Town Lake Lofts	498 residential units on the 41-acre site will be replaced with 2,599 residential units.
409	RBJ Center Redevelopment	1,000 residential units (including the existing units); 45,000 sq. ft. of office space; 3,580 sq. ft. of medical office space; a 12,920 shopping center; and 10,000 sq. ft. of restaurant space; Construction underway
410	Plaza Saltillo	534 multifamily residential units; 120,000 sq. ft. of office space; and around 140,000 sq. ft. of retail space, including a supermarket.
413	The Huston	369 multifamily residential units and 22 live-work units; Starting construction
440	Austin-American Statesman Tract	Future redevelopment. TBD.
	Statesman Tract	Owners proposing 3.5 million square feet of residential, office, and retail space. Awaiting approval from the City of Austin
442	Quad South	Proposed replacing existing 522 residential units with new 1,280 residential units

*Project repeated because it falls in multiple TAZs.

(Continued on following page)

TAZ	Project Name	Details
444	Lenox Oaks	342 multifamily residential units and commercial uses; under construction
	6400 Riverside	Proposed 300 multifamily residential units, as well as 30,000 sq. ft. of retail space; 60,000 sq. ft. of office space; as well as restaurants and a movie theater.
451	Austin South Lamar Apartments	328 residential units.
453	RiverSouth	Proposed 15-story 350,611 sq. ft. office building
458	Aura Riverside	354 multifamily residential units; under construction
459	2514 Thrasher	Proposed 300 multifamily residential units.
479	St. Edwards Residence Hall	5-story residence hall that will house 450 students; Under construction
492	Saint Elmo Public Market	380 multifamily residential units; 103,830 sq. ft. office space; 156-room hotel; 25,765 sq. ft. retail
528	South IH 35 Mixed-Use Apartment Community	380 multifamily apartments.
529	Bennett Tract	45,000 sq. ft. shopping center and 364 apartments
538	SOCO South	308 multifamily apartment units.
539	Marbella, Section 3	1,116 multifamily residential units.
546	Estancia Hill Country	1,550 apartments; 750,000 sq. ft. of industrial space; 905,000 sq. ft. of office space; a 405,000 sq. ft. shopping center; and 737 detached single family housing units
554	Sunfield	5,311 single-family homes; 1,660 multifamily; commercial and light industrial
566	Greyrock Ridge Commons	387 single family homes
	Avana	800 homes, a 250-room resort hotel with 140 condominiums, 24 single family villas
578	Single-family subdivision	Proposed. 317 Single-family residential units
580	Sunfield*	5,311 single-family homes; 1,660 multifamily; commercial and light industrial
	Warehouses	600,000 sq. ft. warehouse space
601	3232 & 3306 E. Cesar Chavez	Proposed 350 multifamily residential units and 10,000 sq. ft. of retail space
692	Avana*	800 homes, a 250-room resort hotel with 140 condominiums, 24 single family villas
696	Cypress Creek at Ledge Stone	234 single family homes and 244 multifamily apartments; awaiting multifamily construction
809	Sunfield*	5,311 single-family homes; 1,660 multifamily; commercial and light industrial
	Office and Warehousing	200,000 sq. ft. of office and warehousing
848	Belterra Village	200,000 square feet of commercial space, 76 single-family homes, 215 multifamily units and a Hampton Inn & Suites
849	Former Post Office	Proposed with 550 residential condominium units, a 150-room hotel, as well as 40,000 sq. ft. of retail and restaurant space.
	Block 51	250 residential units; around 153,000 sq. ft. of office space; 14,000 sq. ft. of retail space as well as restaurant space and a drive-in bank
1088	Single-family subdivision*	Proposed. 317 Single-family residential units
1317	Timmermann subdivision	Proposed. 165 single-family homes and 156 multifamily units
1319	Timmermann subdivision*	Proposed. 165 single-family homes and 156 multifamily units
1351	Howard Lane Subdivision	400 multifamily units
1352	Multiple Office Buildings Name	Two 192,000 sq. ft. office buildings. One complete, another under construction. Four more buildings are under construction, one office building with 116,000 square feet of space and three more flexspace buildings totaling 350,000 square feet. Additionally, 3M will build its own 272,000 square foot office building in the same development
1362	Mueller Airport Redevelopment*	4,900 single family and multi-family units, more than three million sq. ft. of commercial space, and 790,000 sq. ft. of retail.; construction ongoing
1363	Mueller Airport Redevelopment*	4,900 single family and multi-family units, more than three million sq. ft. of commercial space, and 790,000 sq. ft. of retail.; construction ongoing
1413	State of Texas Office Buildings	Two buildings 603,000 square feet and 416,000 square feet office buildings; under construction
1435	Plaza Saltillo*	534 multifamily residential units; 120,000 sq. ft. of office space; and around 140,000 sq. ft. of retail space, including a supermarket.
1449	Broadstone Burnet Apartments	Recently completed. 352 units.
	Austin FC Soccer Stadium	Proposed. 20,000-seat stadium. Expected completion in 2021.

*Project repeated because it falls in multiple TAZs.

(Continued on following page)

TAZ	Project Name	Details
1452	North Austin Medical Center	Proposed. Up to 1,775,988 sq. ft. of medical office space.
1500	Rancho Garza	400,000 sq. ft. office; 370 multifamily residential units; 140-room Aloft hotel; under construction
1508	New TxDOT Headquarters	Planning stages
1510	SouthPark Industrial	95,100 sq. ft. of office space, and 255,100 sq. ft. of warehouse space.
1537	Lohman's Tract	Proposed. Assisted living and single-family residential
1546	720 Airport	354 multifamily residential units; starting construction
1563	Oracle (Lakeshore PUD)	1,500 apartments and 100,000 sq. ft. of retail. It will also include the new 560,000 sq. ft. corporate campus for Oracle on 27 acres.
1589	Northtown MUD*	Ongoing construction - Original plan 2,951 single-family homes, 1,626 townhomes, 4,186 and apartments
1590	Northtown MUD*	Ongoing construction - Original plan 2,951 single-family homes, 1,626 townhomes, 4,186 and apartments
1591	Northtown MUD*	Ongoing construction - Original plan 2,951 single-family homes, 1,626 townhomes, 4,186 and apartments
	Commons at Heatherwilde (Pacana)	1,250 residential units
	Ballantyne	159 single-family units and 264 multifamily units208
1595	Terraces at Scofield Ridge Apartments	Under construction 350 units.
1641	Block 188 Hotel	35-story hotel
	208 Nueces	30-story building with 292,641 sq. ft. of office space and 7,250 sq. ft. of retail space.
	Google Building	35-story building; 793,883 total rentable square feet of office space
1654	4411 SOCO	300 multifamily residential units.
1667	Sweetwater Subdivision	1,479 single-family residential units; 1,600 multifamily residential units
	Provence	562 single-family residential units. Under construction.
1678	Seven Oaks Office Park	Two 120,000 sq. ft. office buildings.
1687	Shire's Court	300 single family homes; construction ongoing.
1713	78-84 Rainey Street	9-story mixed use building
	Waller Park Place	Proposed 150-room hotel; 574 multifamily residential units; 60,500 sq. ft. of retail space; and 300,000 sq. ft. of office space.
	91 Red River	328 residential units, three floors of offices totaling nearly 80,000 square feet of space, and two ground-floor retail spaces suitable for restaurants.
	Homewood Suites	Recently completed 14-story hotel.
1742	Baylor Scott & White Hospital	70,000+ sq. ft.
1757	Mueller Airport Redevelopment*	4,900 single family and multi-family units, more than three million sq. ft. of commercial space, and 790,000 sq. ft. of retail.; construction ongoing
1791	Estancia Hill Country*	1,550 apartments; 750,000 sq. ft. of industrial space; 905,000 sq. ft. of office space; a 405,000 sq. ft. shopping center; and 737 detached single family housing units
1796	The District	Proposed. Class A office, hospitality, retail, residential and parking space. At least 1.0 million sq. ft.
1802	Mueller Airport Redevelopment*	4,900 single family and multi-family units, more than three million sq. ft. of commercial space, and 790,000 sq. ft. of retail.; construction ongoing
1884	Former AISD Headquarters	Proposed. Redevelopment of former AISD Headquarters. No details available.
1939	Block 71/Indeed Tower	a 683,000-square-foot Class AA office tower with ground floor retail, a historic 1914 post office re-positioned into a 25,000-square-foot retail/restaurant destination
1951	600 Guadalupe St.	332 apartment units; around 550,000 sq. ft. of office space; and around 25,000 sq. ft. of restaurant space.
1958	The Independent	400 residential units; 13,500 sq. ft. of retail space, as well as 185,500 sq. ft. of office space.
1982	The Republic	Proposed 901,300 sq. ft. office building
1551	The Guthrie	310 apartment units
1713	The Travis	Proposed 414 multifamily residential units. Possible second tower.
1878	2222 Town Lake	Proposed 600 multifamily residential units.
1926	Marriott Hotel	27-story hotel with 610 rooms
1961	AC-Autograph Hotel	348-room hotel.

*Project repeated because it falls in multiple TAZs.

Figure 6.15: Key Development Projects (See Table 6.12)

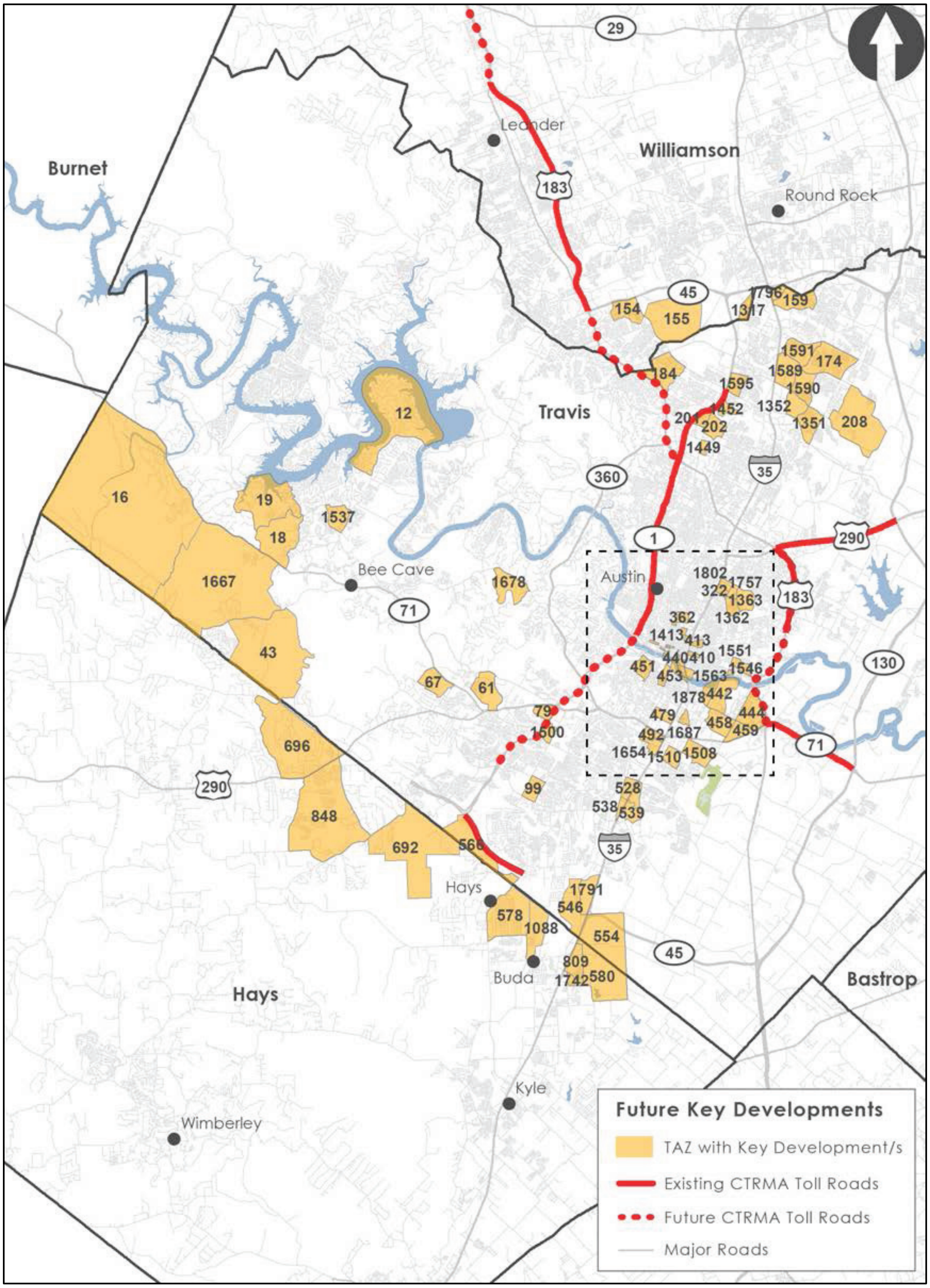
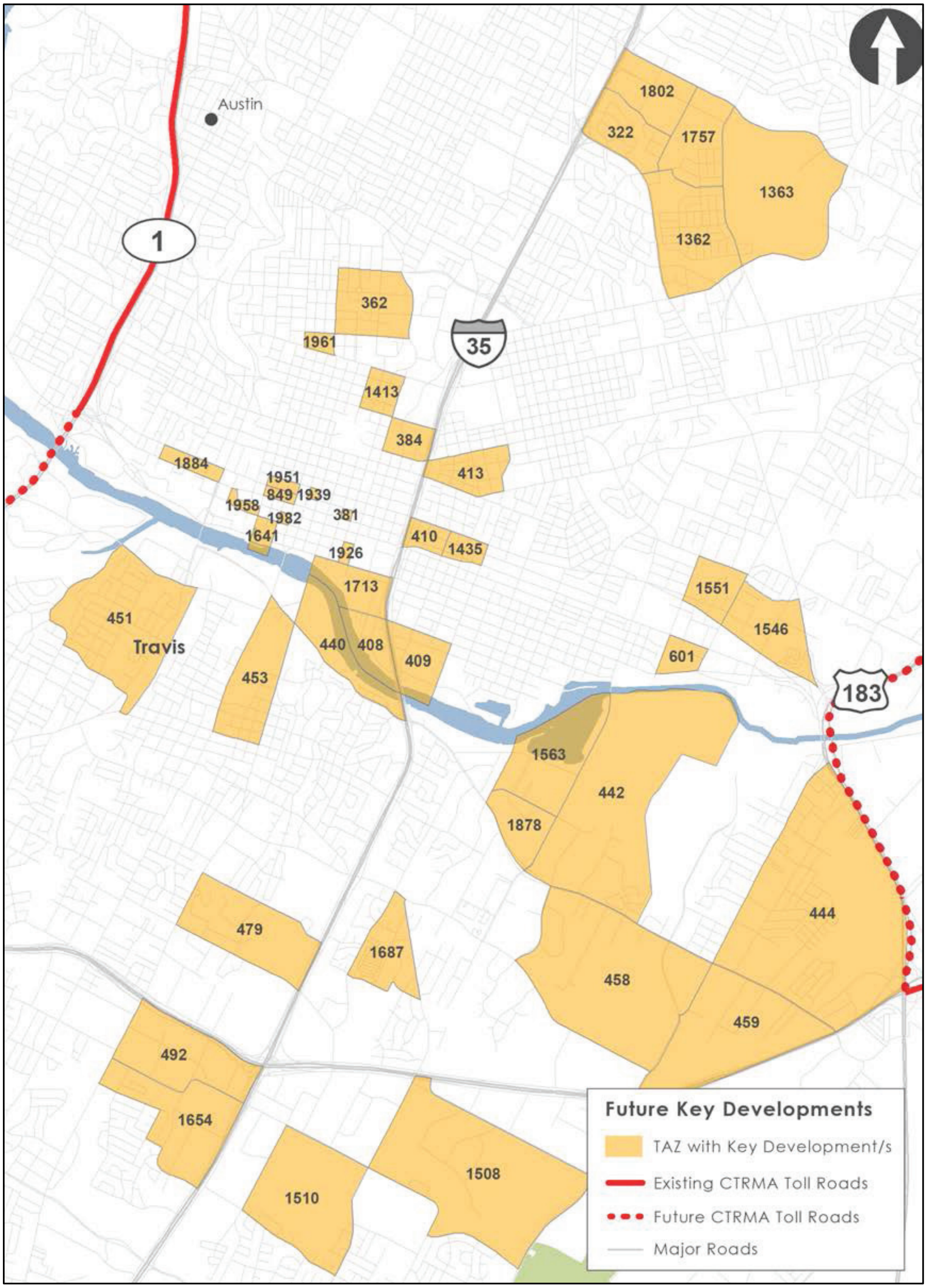


Figure 6.16: Key Downtown Development Projects (See Table 6.12)



[THIS PAGE INTENTIONALLY LEFT BLANK]

APPENDIX F

INVESTMENT AUTHORITY AND INVESTMENT PRACTICES OF THE COMMISSION

The Commission invests its investable funds (e.g. funds held by the Trustee related to the System) in investments authorized by State law in accordance with investment policies approved by the Commission. Both State law and the Commission's investment policies are subject to change.

Based on the current Investment Policy and current law, funds held by the Trustee related to the System may be invested in the following: (i) obligations, including letters of credit, of the United States or its agencies and instrumentalities, including obligations of the Federal Home Loan Banks; (ii) direct obligations of the State or its agencies and instrumentalities rated as to investment quality by a nationally-recognized investment firm of not less than "A"; (iii) collateralized mortgage obligations directly issued by a federal agency or instrumentality of the United States, the underlying security for which is guaranteed by an agency or instrumentality of the United States (such transactions not to exceed ten percent of the total of each investment portfolio under the Investment Policy); (iv) other obligations, the principal and interest of which are unconditionally guaranteed or insured by, or backed by the full faith and credit of, the State or the United States or their respective agencies and instrumentalities, including obligations that are fully guaranteed or insured by the Federal Deposit Insurance Corporation (the "FDIC") or by the explicit full faith and credit of the United States; (v) obligations of states, agencies, counties, cities, and other political subdivisions of any state rated as to investment quality by a nationally-recognized investment rating firm not less than "A" or its equivalent (such transactions not to exceed ten percent of the total of each investment portfolio under the Investment Policy); (vi) bonds issued, assumed, or guaranteed by the State of Israel; (vii) financial institution deposits or certificates of deposit and share certificates issued by a depository institution with its main office or a branch office in the State that is (a) guaranteed or insured by the FDIC or the National Credit Union Share Insurance Fund or their successors or (b) secured in any other manner and amount provided by law for deposits of the Commission (investment in certificates of deposit may not exceed 80 percent of the total of each investment portfolio under the Investment Policy); (viii) a fully collateralized repurchase or reverse repurchase agreement that has a defined termination date, is secured by cash and/or obligations described in (i) above or (x) below; requires the securities purchased by the Commission or cash held by the Commission to be pledged to the Commission, held in the Commission's name, and deposited at the time the investment is made with the Commission or with a third party selected and approved by the Commission; is placed through a primary government securities dealer, as defined by the Federal Reserve, or financial institutions doing business in the State; and collateralized in any other manner and amount provided by law (however, the Commission may not enter into repurchases agreements that are not settled on a delivery versus payment process, have terms that exceed 90 days from the date the reverse security repurchase agreement is delivered, or have terms longer than six months when the financial institution or broker/dealer initially has a long-term rating category of less than "A" and does not have at least one long-term rating of least "AA" by a nationally recognized investment rating firm); (ix) certain bankers acceptances with a stated maturity of 270 days or fewer from the date of issuance, if liquidated in full at maturity, eligible for collateral for borrowing from a Federal Reserve Bank, and accepted by a bank organized and existing under the laws of the United States or any state, if the short-term obligations of the bank are rated not less than "A-1" or "P-1" or an equivalent rating by at least one nationally-recognized credit rating agency (such transactions not to exceed five percent of the total Commission investment portfolio under the Investment Policy); (x) commercial paper with a stated maturity of 365 days or less that is rated at least "A-1" or "P-1," or the equivalent, by at least (a) two nationally-recognized rating agencies or (b) one nationally-recognized credit rating agency if the paper is fully secured by an irrevocable letter of credit issued by a bank organized and existing under the laws of the United States or any state (such transactions not to exceed 15 percent of the total of each investment portfolio under the Investment Policy with no more than five percent in any one name); (xi) with certain restrictions, (a) a no-load money market mutual fund that is registered with and regulated by the SEC, provides the Commission with a prospectus and other information required by the Securities Exchange Act of 1934 or the Investment Company Act of 1940, and complies with SEC rule 2a-7 (17 C.F.R. Section 270.2a-7); or (b) a no-load mutual fund that is registered with the SEC, has an average weighted maturity of less than two years, and has a duration of one year or more and is invested exclusively in obligations permitted for investment under the Investment Policy; (xii) an eligible investment pool that is specifically authorized by the Commission and invests solely in such obligations authorized under State law provided that the pool is rated no lower than "AAA" or "AAAm" or an equivalent by at least one nationally-recognized rating service, operates like a money market mutual fund, and meets other requirements under the Investment Policy; (xiii) an eligible investment pool that is specifically authorized by the Commission and invests solely in such obligations authorized under State law provided that the pool is rated no lower than "AAA" or "AAAm" or an equivalent by at least one nationally-recognized rating service, operates like a money market mutual fund, and meets other requirements; (xiv) certain guaranteed investment contracts in connection with investing bond proceeds if such investment contract has a defined termination date, is secured by obligations in (i) in an amount at least equal to the amount of bond proceeds invested under the contract, and is pledged to the Commission and deposited with the

Commission or with a third party selected and approved by the Commission (such transactions that utilize bond proceeds, other than bond proceeds representing reserves and funds maintained for debt service purposes, may not be invested in a guaranteed investment contract for a term longer than 5 years or in investment agreements that are not settled on a delivery versus payment process, have terms that exceed 90 days from the date the reverse security repurchase agreement is delivered, or have terms longer than six months when the financial institution or broker/dealer initially has a long-term rating category of less than "A" and does not have at least one long-term rating of least "AA" by a nationally recognized investment rating firm.); and (xv) certain forward purchase agreements in connection with investing bond proceeds if the agreement is specifically authorized in the bond documents, has a defined termination date, the obligations delivered under the agreement meet the restrictions set forth in the investment policy and certain bidding and other procedures are met.

The Commission may invest in a securities lending program if (i) the securities loaned under the program are 100% collateralized (including accrued income), a loan made under the program allows for termination at any time, and a loan made under the program is secured by either (a) obligations that are described in clauses (i) through (vi), (b) pledged irrevocable letters of credit issued by a state or national bank that is continuously rated by a nationally-recognized investment rating firm not less than "A" or its equivalent, or (c) cash invested in obligations that are described in clauses (i) through (vi), (x), (xi) and (xiv) of the second paragraph under this caption; (ii) securities held as collateral under a loan are pledged to the Commission, held in the name of the Commission, and deposited at the time the investment is made with a third party designated by the Commission; (iii) a loan made under the program is placed through either a primary government securities dealer or a financial institution doing business in the State; and (iv) the agreement to lend securities has a term of one year or less.

Bond proceeds may be invested in accordance with the provisions of the applicable bond documents. To the extent of any inconsistency between the provisions of the Investment Policy and such bond documents, the investment terms contained in the bond documents shall control. However, no such investment of bond proceeds shall be made in the non-authorized investments described in the paragraph below.

The Commission is specifically prohibited from investing in: (i) obligations whose payment represents the coupon payments on the outstanding principal balance of the underlying mortgage-backed security collateral and pays no principal (interest only bond); (ii) obligations whose payment represents the principal stream of cash flow from the underlying mortgage-backed security collateral and bears no interest (principal only bond); (iii) collateralized mortgage obligations that have a stated final maturity date of greater than ten years; (iv) collateralized mortgage obligations the interest rate of which is determined by an index that adjusts opposite to the changes in a market index (inverse floaters); or (v) investments of any type that are denominated in a foreign currency. In addition, the Commission is not authorized to invest in the aggregate more than 15% of the monthly average fund balance, excluding bond proceeds and reserves and other funds held for debt service, in mutual funds described in clause (xi)(b) of the second paragraph under this caption, any portion of bond proceeds, reserves and other funds held for debt service, in mutual funds described in clause (xi)(b) of the second paragraph under this caption, or invest its funds or funds under its control, including bond proceeds and reserves and other funds held for debt service, in any one mutual fund described in (xi) of the second paragraph under this caption in an amount that exceeds ten percent of the total assets of the mutual fund. Further, reverse repurchase agreements must not have a term of more than 90 days, and the investment of reverse repurchase agreement funds must be in obligations with a term no greater than the term of the reverse purchase agreement.

Under State law, the Commission is required to invest its funds under written investment policies that primarily emphasize safety of principal and liquidity; that address investment diversification, yield, maturity, and the quality and capability of investment management; and that include a list of authorized investments for Commission funds, the maximum allowable stated maturity of any individual investment, and the maximum average dollar-weighted maturity allowed for pooled fund groups. All Commission funds must be invested consistent with a formally adopted "Investment Strategy" that specifically addresses each fund's investment. Each Investment Strategy will describe its objectives concerning: (i) suitability of the investment to the financial requirements of the Commission, (ii) preservation and safety of principal, (iii) liquidity, (iv) marketability of each investment if the need arises to liquidate prior to maturity, (v) diversification of the portfolio, and (vi) yield.

Under State law, the Commission's investments must be made "with judgment and care, under prevailing circumstances, that a person of prudence, discretion, and intelligence would exercise in the management of the person's own affairs, not for speculation, but for investment considering the probable safety of capital and the probable income to be derived." At least quarterly, the Commission's investment officers must submit an investment report to the Commission including: (i) the book value and market value for each investment at the beginning and end of the reporting period; (ii) if the funds are pooled and invested, a summary statement, prepared in accordance with generally accepted accounting principles, presenting the beginning market value of the pool portfolio, changes in market value during the reporting periods, the ending market value of the portfolio, and fully accrued interest for the reporting period; (iii) the maturity date of each investment, if applicable; (iv) a statement of intent if some or all securities are intended to be held to maturity; (v) any variations from the investment strategy of the Commission; (vi) recommended amendments to current specific investment strategies; and (vii) an analysis of current market conditions.

Under State law, the Commission is additionally required to: (i) annually review its adopted policies and strategies, (ii) adopt a rule, order, ordinance or resolution stating that it has reviewed its investment policy and investment strategies and record any changes made to either its investment policy or investment strategy in the respective rule, order, ordinance or resolution, (iii) require any investment officers with personal business relationships or relatives with firms seeking to sell securities to the Commission to disclose the relationship and file a statement with the Texas Ethics Commission and the Commission; (iv) require the qualified representative of firms offering to engage in an investment transaction with the Commission to: (a) receive and review the Commission's investment policy, (b) acknowledge that reasonable controls and procedures have been implemented to preclude investment transactions conducted between the Commission and the business organization that are not authorized by the Commission's investment policy (except to the extent that this authorization is dependent on an analysis of the makeup of the Commission's entire portfolio or requires an interpretation of subjective investment standards), and (c) deliver a written statement in a form acceptable to the Commission and the business organization attesting to these requirements; (v) perform a biennial audit of the management controls on investments and adherence to the Commission's investment policy; (vi) provide specific investment training for the Commissioners, Chief Financial Officer, and investment officers; (vii) require local government investment pools to conform to the disclosure, rating, net asset value, yield calculation, and advisory board requirements, and (viii) at least annually review, revise, and adopt a list of qualified brokers that are authorized to engage in investment transactions with the Commission.

The Commission has entered into the Master Repurchase Agreement for the investment of approximately $115 million in the First Tier Debt Service Reserve Fund to establish a fixed rate of return for such amount. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts – *First Tier Debt Service Reserve Fund*."

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

APPENDIX G

FORMS OF OPINIONS OF BOND COUNSEL

[*An opinion in substantially the following form will be delivered by McCall, Parkhurst & Horton L.L.P., Bond Counsel, upon the delivery of the Bonds, assuming no material changes in facts or law*.]

$179,475,000
TEXAS TRANSPORTATION COMMISSION
CENTRAL TEXAS TURNPIKE SYSTEM
FIRST TIER REVENUE REFUNDING BONDS,
SERIES 2020-A

AS BOND COUNSEL for the Texas Transportation Commission (the "Commission") the governing body of the Texas Department of Transportation (the "Department"), we have examined into the legality and validity of the issue of bonds described above (the "Bonds"), which bear interest from the dates and mature on the dates specified on the face of the Bonds, all in accordance with the minute order of the Commission authorizing the issuance of such Bonds adopted on July 25, 2019 (the "Authorizing Minute Order"), the Indenture of Trust dated as of July 15, 2002 (as amended and supplemented, the "Master Indenture") between the Commission and The Bank of New York Mellon Trust Company, National Association, as Trustee (successor in interest to JPMorgan Trust Company as successor in interest to Bank One, National Association), the Eighth Supplemental Indenture of Trust dated as of March 1, 2020 between the Commission and The Bank of New York Mellon Trust Company, National Association as Trustee (the "Eighth Supplemental Indenture") and the Award Certificate establishing the pricing terms of the Bonds. The Master Indenture, the Eighth Supplemental Indenture and the Award Certificate are collectively referenced as the "Indenture." Terms used herein and not otherwise defined shall have the meaning given in the Indenture.

WE HAVE EXAMINED the applicable and pertinent provisions of the Constitution and laws of the State of Texas, a transcript of certified proceedings of the Commission, the executed Indenture and other pertinent instruments relating to the authorization, issuance, and delivery of the Bonds; and we have examined various certificates and documents executed by officers and officials of the Commission and the Department upon which certificates and documents we rely as to certain matters stated below. We have also examined one of the executed Bonds which we found to be in proper form and duly executed.

BASED ON SAID EXAMINATION, IT IS OUR OPINION that the Commission, as the governing body of the Department, is an agency of the State of Texas, created and operating under the Constitution and laws of the State of Texas and is authorized to issue the Bonds under Chapter 228, Texas Transportation Code, as amended, and Chapters 1207 and 1371, Texas Government Code, as amended. It is further our opinion that (i) the Bonds have been duly authorized; (ii) all conditions precedent to the delivery of the Bonds have been fulfilled; and (iii) the Bonds are First Tier Obligations that have been duly issued and delivered, all in accordance with law. Except as the enforceability may be limited by sovereign immunity, bankruptcy, insolvency, reorganization, moratorium, liquidation and other similar laws now or hereafter enacted relating to creditors' rights generally or by sovereign immunity or principles of equity which permit the exercise of judicial discretion the (i) covenants and agreements in the Indenture constitute valid and binding obligations of the Commission, and the Bonds constitute valid and legally binding obligations of the Commission which, together with the outstanding Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Bonds, Series 2002-A Bonds (the "Series 2002-A Bonds"), the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2012-A (the "Series 2012-A Bonds"), the Texas Transportation Commission

600 Congress Ave.
Suite 1800
Austin, Texas 78701
T 512.478.3805
F 512.472.0871

717 North Harwood
Suite 900
Dallas, Texas 75201
T 214.754.9200
F 214.754.9250

Two Allen Center
1200 Smith Street, Suite 1550
Houston, Texas 77002
T 713.980.0500
F 713.980.0510

700 N. St. Mary's Street
Suite 1525
San Antonio, Texas 78205
T 210.225.2800
F 210.225.2984

www.mphlegal.com

Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2015-B (the "Series 2015-B Bonds"), Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Put Bonds, Taxable Series 2020-B (the "Series 2020-B Bonds") and the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Taxable Series 2020-C (the "Taxable Series 2020-C Bonds") are secured equally and ratably, on a parity, by a first lien on, pledge of and security interest in the Trust Estate established by the Indenture and are payable as to principal and interest solely from the sources provided therein, including the Revenues of the Central Texas Turnpike System (the "System"); and (ii) the Indenture is authorized by law, has been duly executed and delivered, and is valid and legally binding upon and enforceable by the parties thereto in accordance with its terms and provisions.

THE COMMISSION has reserved the right, subject to the restrictions stated in the Indenture, to issue Additional First Tier Obligations which also may be secured by the Indenture on a parity with the Bonds, the outstanding Series 2002-A Bonds, the Series 2012-A Bonds, the Series 2015-B Bonds, the Taxable Series 2020-B Bonds and the Taxable Series 2020-C Bonds. The Commission also has reserved the right to amend the Indenture in the manner provided therein and under some (but not all) circumstances amendments thereto must be approved by the Secured Owners of a majority of all Outstanding Obligations secured by the Indenture.

THE REGISTERED OWNERS of the Bonds shall never have the right to demand payment of the principal thereof or interest thereon out of any funds raised or to be raised by taxation or from any source whatsoever other than as described in the Indenture.

IT IS FURTHER OUR OPINION, that except as discussed below, under the statutes, regulations, published rulings, and court decisions existing on the date of this opinion, for federal income tax purposes, the interest on the Bonds (i) is excludable from the gross income of the owners thereof and (ii) the Bonds will not be treated as "specified private activity bonds" the interest on which would be included as an alternative minimum tax preferred item under section 57(a)(5) of the Internal Revenue Code of 1986 (the "Code"). In expressing the aforementioned opinions, we have relied on the verification report of Amtec Corp. and certain representations, the accuracy of which we have not independently verified, and assume compliance by the Commission with certain representations and covenants regarding the use and investment of the proceeds of the Bonds and the use of the property financed therewith. We call your attention to the fact that if such representations are determined to be inaccurate or upon a failure by the Commission to comply with such covenants, interest on the Bonds may become includable in gross income retroactively to the date of issuance of the Bonds.

EXCEPT AS STATED ABOVE, we express no opinion as to any other federal, state, or local tax consequences of acquiring, carrying, owning, or disposing of the Bonds. In particular, but not by way of limitation, we express no opinion with respect to the federal, state or local tax consequences arising from the enactment of any pending or future legislation.

OUR OPINIONS ARE BASED ON EXISTING LAW, which is subject to change. Such opinions are further based on our knowledge of facts as of the date hereof. We assume no duty to update or supplement our opinions to reflect any facts or circumstances that may thereafter come to our attention or to reflect any changes in any law that may thereafter occur or become effective. Moreover, our opinions are not a guarantee of result and are not binding on the Internal Revenue Service (the "Service"); rather, such opinions represent our legal judgment based upon our review of existing law and in reliance upon the representations and covenants referenced above that we deem relevant to such opinions. The Service has an ongoing audit program to determine compliance with rules that relate to whether interest on state or local obligations is includable in gross income for federal income tax purposes. No assurance can be given whether or not the Service will commence an audit of the Bonds. If an audit is commenced, in accordance with its current published procedures the Service is likely to treat the Commission as the taxpayer. We observe that the Commission has covenanted not to take any action, or omit to take any action within its control, that if taken or omitted, respectively, may result in the treatment of interest on the Bonds as includable in gross income for federal income tax purposes.

WE HAVE ACTED AS BOND COUNSEL for the Commission for the purpose of rendering an opinion with respect to the legality and validity of the Bonds under the Constitution and laws of the State of Texas and with respect to the exclusion from gross income of the interest on the Bonds for federal income tax purposes. We have not been requested to investigate or verify, and have not investigated or verified, any records, data, or other material relating to the financial condition or capabilities of the Commission and have not assumed any responsibility with respect thereto. We express no opinion and make no comment with respect to the marketability of the Bonds.

THE FOREGOING OPINIONS represent our legal judgment based upon a review of existing legal authorities that we deem relevant to render such opinions and are not a guarantee of a result.

Respectfully,

[*An opinion in substantially the following form will be delivered by McCall, Parkhurst & Horton L.L.P., Bond Counsel, upon the delivery of the Bonds, assuming no material changes in facts or law*.]

$225,000,000
TEXAS TRANSPORTATION COMMISSION
CENTRAL TEXAS TURNPIKE SYSTEM
FIRST TIER REVENUE REFUNDING PUT BONDS,
TAXABLE SERIES 2020-B

AS BOND COUNSEL for the Texas Transportation Commission (the "Commission") the governing body of the Texas Department of Transportation (the "Department"), we have examined into the legality and validity of the issue of bonds described above (the "Bonds"), which bear interest from the dates and mature on the dates specified on the face of the Bonds, all in accordance with the minute order of the Commission authorizing the issuance of such Bonds adopted on July 25, 2019 (the "Authorizing Minute Order"), the Indenture of Trust dated as of July 15, 2002 (as amended and supplemented, the "Master Indenture") between the Commission and The Bank of New York Mellon Trust Company, National Association, as Trustee (successor in interest to JPMorgan Trust Company as successor in interest to Bank One, National Association), the Eighth Supplemental Indenture of Trust dated as of March 1, 2020 between the Commission and The Bank of New York Mellon Trust Company, National Association as Trustee (the "Eighth Supplemental Indenture") and the Award Certificate establishing the pricing terms of the Bonds. The Master Indenture, the Eighth Supplemental Indenture and the Award Certificate are collectively referenced as the "Indenture." Terms used herein and not otherwise defined shall have the meaning given in the Indenture.

WE HAVE EXAMINED the applicable and pertinent provisions of the Constitution and laws of the State of Texas, a transcript of certified proceedings of the Commission, the executed Indenture and other pertinent instruments relating to the authorization, issuance, and delivery of the Bonds; and we have examined various certificates and documents executed by officers and officials of the Commission and the Department upon which certificates and documents we rely as to certain matters stated below. We have also examined one of the executed Bonds which we found to be in proper form and duly executed.

BASED ON SAID EXAMINATION, IT IS OUR OPINION that the Commission, as the governing body of the Department, is an agency of the State of Texas, created and operating under the Constitution and laws of the State of Texas and is authorized to issue the Bonds under Chapter 228, Texas Transportation Code, as amended, and Chapters 1207 and 1371, Texas Government Code, as amended. It is further our opinion that (i) the Bonds have been duly authorized; (ii) all conditions precedent to the delivery of the Bonds have been fulfilled; and (iii) the Bonds are First Tier Obligations that have been duly issued and delivered, all in accordance with law. Except as the enforceability may be limited by sovereign immunity, bankruptcy, insolvency, reorganization, moratorium, liquidation and other similar laws now or hereafter enacted relating to creditors' rights generally or by sovereign immunity or principles of equity which permit the exercise of judicial discretion the (i) covenants and agreements in the Indenture constitute valid and binding obligations of the Commission, and the Bonds constitute valid and legally binding obligations of the Commission which, together with the outstanding Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Bonds, Series 2002-A Bonds (the "Series 2002-A Bonds"), the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2012-A (the "Series 2012-A Bonds"), the Texas Transportation Commission

600 Congress Ave.
Suite 1800
Austin, Texas 78701
T 512.478.3805
F 512.472.0871

717 North Harwood
Suite 900
Dallas, Texas 75201
T 214.754.9200
F 214.754.9250

Two Allen Center
1200 Smith Street, Suite 1550
Houston, Texas 77002
T 713.980.0500
F 713.980.0510

700 N. St. Mary's Street
Suite 1525
San Antonio, Texas 78205
T 210.225.2800
F 210.225.2984

www.mphlegal.com

Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2015-B (the "Series 2015-B Bonds"), Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2020-A (the "Series 2020-A Bonds") and the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2020-C (the "Taxable Series 2020-C Bonds") are secured equally and ratably, on a parity, by a first lien on, pledge of and security interest in the Trust Estate established by the Indenture and are payable as to principal and interest solely from the sources provided therein, including the Revenues of the Central Texas Turnpike System (the "System"); and (ii) the Indenture is authorized by law, has been duly executed and delivered, and is valid and legally binding upon and enforceable by the parties thereto in accordance with its terms and provisions.

THE COMMISSION has reserved the right, subject to the restrictions stated in the Indenture, to issue Additional First Tier Obligations which also may be secured by the Indenture on a parity with the Bonds, the outstanding Series 2002-A Bonds, the Series 2012-A Bonds, the Series 2015-B Bonds, the Series 2020-A Bonds and the Taxable Series 2020-C Bonds. The Commission also has reserved the right to amend the Indenture in the manner provided therein and under some (but not all) circumstances amendments thereto must be approved by the Secured Owners of a majority of all Outstanding Obligations secured by the Indenture.

T**HE BONDS** are not obligations described in Section 103(a) of the Internal Revenue Code of 1986.

THE REGISTERED OWNERS of the Bonds shall never have the right to demand payment of the principal thereof or interest thereon out of any funds raised or to be raised by taxation or from any source whatsoever other than as described in the Indenture.

WE EXPRESS NO OPINION as to any federal, state or local tax consequences of acquiring, carrying, owning or disposing of the Bonds. In particular, but not by way of limitation, we express no opinion with respect to the federal, state or local tax consequences arising from the enactment of any pending or future legislation.

THE FOREGOING OPINIONS represent our legal judgment based upon a review of existing legal authorities that we deem relevant to render such opinions and are not a guarantee of a result.

Respectfully,

MCCALL
PARKHURST & HORTON
Focused on Public Finance since 1919.

[*An opinion in substantially the following form will be delivered by McCall, Parkhurst & Horton L.L.P., Bond Counsel, upon the delivery of the Bonds, assuming no material changes in facts or law*.]

$279,305,000
TEXAS TRANSPORTATION COMMISSION
CENTRAL TEXAS TURNPIKE SYSTEM
FIRST TIER REVENUE REFUNDING BONDS,
TAXABLE SERIES 2020-C

AS BOND COUNSEL for the Texas Transportation Commission (the "Commission") the governing body of the Texas Department of Transportation (the "Department"), we have examined into the legality and validity of the issue of bonds described above (the "Bonds"), which bear interest from the dates and mature on the dates specified on the face of the Bonds, all in accordance with the minute order of the Commission authorizing the issuance of such Bonds adopted on July 25, 2019 (the "Authorizing Minute Order"), the Indenture of Trust dated as of July 15, 2002 (as amended and supplemented, the "Master Indenture") between the Commission and The Bank of New York Mellon Trust Company, National Association, as Trustee (successor in interest to JPMorgan Trust Company as successor in interest to Bank One, National Association), the Eighth Supplemental Indenture of Trust dated as of March 1, 2020 between the Commission and The Bank of New York Mellon Trust Company, National Association as Trustee (the "Eighth Supplemental Indenture") and the Award Certificate establishing the pricing terms of the Bonds. The Master Indenture, the Eighth Supplemental Indenture and the Award Certificate are collectively referenced as the "Indenture." Terms used herein and not otherwise defined shall have the meaning given in the Indenture.

WE HAVE EXAMINED the applicable and pertinent provisions of the Constitution and laws of the State of Texas, a transcript of certified proceedings of the Commission, the executed Indenture and other pertinent instruments relating to the authorization, issuance, and delivery of the Bonds; and we have examined various certificates and documents executed by officers and officials of the Commission and the Department upon which certificates and documents we rely as to certain matters stated below. We have also examined one of the executed Bonds which we found to be in proper form and duly executed.

BASED ON SAID EXAMINATION, IT IS OUR OPINION that the Commission, as the governing body of the Department, is an agency of the State of Texas, created and operating under the Constitution and laws of the State of Texas and is authorized to issue the Bonds under Chapter 228, Texas Transportation Code, as amended, and Chapters 1207 and 1371, Texas Government Code, as amended. It is further our opinion that (i) the Bonds have been duly authorized; (ii) all conditions precedent to the delivery of the Bonds have been fulfilled; and (iii) the Bonds are First Tier Obligations that have been duly issued and delivered, all in accordance with law. Except as the enforceability may be limited by sovereign immunity, bankruptcy, insolvency, reorganization, moratorium, liquidation and other similar laws now or hereafter enacted relating to creditors' rights generally or by sovereign immunity or principles of equity which permit the exercise of judicial discretion the (i) covenants and agreements in the Indenture constitute valid and binding obligations of the Commission, and the Bonds constitute valid and legally binding obligations of the Commission which, together with the outstanding Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Bonds, Series 2002-A Bonds (the "Series 2002-A Bonds"), the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2012-A (the "Series 2012-A Bonds"), the Texas Transportation Commission

600 Congress Ave.
Suite 1800
Austin, Texas 78701
T 512.478.3805
F 512.472.0871

717 North Harwood
Suite 900
Dallas, Texas 75201
T 214.754.9200
F 214.754.9250

Two Allen Center
1200 Smith Street, Suite 1550
Houston, Texas 77002
T 713.980.0500
F 713.980.0510

700 N. St. Mary's Street
Suite 1525
San Antonio, Texas 78205
T 210.225.2800
F 210.225.2984

www.mphlegal.com

Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2015-B (the "Series 2015-B Bonds"), Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Bonds, Series 2020-A (the "Series 2020-A Bonds") and the Texas Transportation Commission Central Texas Turnpike System First Tier Revenue Refunding Put Bonds, Taxable Series 2020-B (the "Taxable Series 2020-B Bonds") are secured equally and ratably, on a parity, by a first lien on, pledge of and security interest in the Trust Estate established by the Indenture and are payable as to principal and interest solely from the sources provided therein, including the Revenues of the Central Texas Turnpike System (the "System"); and (ii) the Indenture is authorized by law, has been duly executed and delivered, and is valid and legally binding upon and enforceable by the parties thereto in accordance with its terms and provisions.

THE COMMISSION has reserved the right, subject to the restrictions stated in the Indenture, to issue Additional First Tier Obligations which also may be secured by the Indenture on a parity with the Bonds, the outstanding Series 2002-A Bonds, the Series 2012-A Bonds, the Series 2015-B Bonds and the Series 2020-A Bonds and the Taxable Series 2020-B Bonds. The Commission also has reserved the right to amend the Indenture in the manner provided therein and under some (but not all) circumstances amendments thereto must be approved by the Secured Owners of a majority of all Outstanding Obligations secured by the Indenture.

THE BONDS are not obligations described in Section 103(a) of the Internal Revenue Code of 1986.

THE REGISTERED OWNERS of the Bonds shall never have the right to demand payment of the principal thereof or interest thereon out of any funds raised or to be raised by taxation or from any source whatsoever other than as described in the Indenture.

WE EXPRESS NO OPINION as to any federal, state or local tax consequences of acquiring, carrying, owning or disposing of the Bonds. In particular, but not by way of limitation, we express no opinion with respect to the federal, state or local tax consequences arising from the enactment of any pending or future legislation.

THE FOREGOING OPINIONS represent our legal judgment based upon a review of existing legal authorities that we deem relevant to render such opinions and are not a guarantee of a result.

Respectfully,

TEXAS TRANSPORTATION COMMISSION • CENTRAL TEXAS TURNPIKE SYSTEM FIRST TIER REVENUE REFUNDING BONDS, SERIES 2020-A, FIRST TIER REVENUE REFUNDING PUT BONDS, TAXABLE SERIES 2020-B AND FIRST TIER REVENUE REFUNDING BONDS, TAXABLE SERIES 2020-C

Texas Department of Transportation®

Mixed Sources
Product group from well managed forests, controlled sources and recycled wood or fiber.

Printed by: ImageMaster, LLC
www.imagemaster.com