This Preliminary Official Statement and the information contained herein are subject to completion or amendment without notice. These securities may not be sold nor may offers to buy be accepted prior to the time the Official Statement is delivered in final form. Under no circumstances shall this Preliminary Official Statement constitute an offer to sell or the solicitation of an offer to buy nor shall there be any sale of these securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction.

PRELIMINARY OFFICIAL STATEMENT DATED MAY 29, 2018

NEW ISSUE - Book-Entry-Only | **Rating: S&P: "BBB-"**
See ("RATING" herein)

In the opinion of Orrick, Herrington & Sutcliffe LLP and The Muller Law Group, PLLC, Co-Bond Counsel, based upon an analysis of existing laws, regulations, rulings and court decisions, and assuming, among other matters, the accuracy of certain representations and compliance with certain covenants, interest on the Bonds is excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986. In the further opinion of Co-Bond Counsel, interest on the Bonds is not a specific preference item for purposes of the federal alternative minimum tax. Co-Bond Counsel express no opinion regarding any other tax consequences related to the ownership or disposition of, or the amount, accrual or receipt of interest on, the Bonds. See "TAX MATTERS" herein.

MONTGOMERY COUNTY TOLL ROAD AUTHORITY
(Montgomery County, Texas)
$89,100,000* SENIOR LIEN TOLL ROAD REVENUE BONDS, SERIES 2018

Dated: June 1, 2018 | **Due: September 15, as shown on page ii**
Interest Accrual Date: Delivery Date (as defined below) | **CUSIP Prefix: _________**

The captioned Senior Lien Toll Road Revenue Bonds, Series 2018 (the "Bonds") will be issued as fully-registered obligations by the Montgomery County Toll Road Authority (the "Authority" or "MCTRA"). The Authority is issuing the Bonds pursuant to the Master Trust Indenture, dated as of June 1, 2018 (the "Master Trust Indenture"), and the First Supplemental Trust Indenture, dated as of June 1, 2018 (the "First Supplemental Indenture"), each by and between the Authority and Regions Bank, as trustee and paying agent (the "Trustee"). The Bonds, together with any Additional Senior Lien Obligations, constitute special, limited obligations of the Authority secured by and payable solely from a first lien on, pledge of, and security interest in the Trust Estate described herein. Capitalized terms used on the front cover page hereof and not otherwise defined shall have the meanings assigned thereto in "APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE — Definitions."

The Bonds are initially issuable only to Cede & Co., the nominee of The Depository Trust Company, New York, New York ("DTC"), pursuant to the Book-Entry-Only System described herein. Beneficial ownership of the Bonds may be acquired in principal denominations of $5,000, or any integral multiple thereof. Debt service payments on the Bonds will be payable by the Trustee to DTC, which will make distribution of the amounts so paid to the beneficial owners thereof. See "THE BONDS — Book-Entry-Only System" herein.

The Bonds are further described in this Official Statement. See page ii hereof for additional information relating to the Bonds, including provisions relating to the maturities, interest rates, redemption provisions, initial yields and CUSIP numbers.

A portion of the proceeds of the Bonds will be used to (i) finance certain Costs of the Project, including the Costs of designing, engineering, developing and the construction of the MCTRA 249 Tollway, which is a proposed approximately 3.6-mile mainlane extension project within the State Highway 249 corridor that extends from the Harris County/Montgomery County line to Woodtrace Boulevard in the Montgomery County, Texas (the "County") (see "THE PROJECT AND AUTHORITY OPERATIONS"), (ii) pay capitalized interest with respect to the Bonds, (iii) make deposits to the Senior Lien Debt Service Reserve Fund and the Operations and Maintenance Reserve Fund, and (iv) pay certain Issuance Costs of the Bonds, all as more fully described herein. See "PLAN OF FINANCE – Estimated Sources and Uses of Bond Proceeds."

This cover page contains information for quick reference only. It is not a complete summary of the Bonds. Potential investors must read the entire Official Statement to obtain information essential to making an informed investment decision. Investment in the Bonds is subject to certain investment considerations. See "RISK FACTORS" herein.

NONE OF THE STATE OF TEXAS, MONTGOMERY COUNTY, TEXAS, OR ANY OTHER AGENCY OR POLITICAL SUBDIVISION OF THE STATE OF TEXAS OTHER THAN THE AUTHORITY IS OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE BONDS ARE PAYABLE SOLELY FROM THE TRUST ESTATE. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE STATE OF TEXAS, MONTGOMERY COUNTY, TEXAS, OR ANY POLITICAL SUBDIVISION THEREOF IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE AUTHORITY HAS NO TAXING POWER. THE INDENTURE DOES NOT CREATE A MORTGAGE ON THE PROJECT.

The Bonds maturing on September 15, 20__,* and thereafter are subject to optional redemption by the Authority in whole, or from time to time in part, on September 15, 20__,* or any date thereafter at par plus accrued interest to the date of redemption. See "THE BONDS—Redemption—Optional Redemption." The Bonds issued as Term Bonds (defined herein) are subject to mandatory sinking fund redemption as described herein. See "THE BONDS— Redemption—Mandatory Sinking Fund Redemption."

MATURITY SCHEDULE SHOWN ON PAGE ii

The Bonds are offered when, as and if issued by the Authority and accepted by the underwriters listed below (the "Underwriters"), subject to the approval of legality by the Attorney General of the State of Texas and Orrick, Herrington & Sutcliffe LLP, Houston, Texas and The Muller Law Group, PLLC, Sugar Land, Texas, Co-Bond Counsel. Certain matters will also be passed upon by Orrick, Herrington & Sutcliffe LLP as Disclosure Counsel for the Authority. Certain legal matters will be passed on for the Underwriters by Bracewell LLP, Houston, Texas, counsel for the Underwriters.

It is expected that the Bonds will be available for delivery through DTC on or about June 21, 2018 (the "Delivery Date").

J.P. Morgan

BofA Merrill Lynch | **Citigroup**
Piper Jaffray & Co. | **Wells Fargo Securities**

* Preliminary, subject to change.

MATURITY SCHEDULE*

MONTGOMERY COUNTY TOLL ROAD AUTHORITY

(Montgomery County, Texas)

$89,100,000*

SENIOR LIEN TOLL ROAD REVENUE BONDS, SERIES 2018

$39,810,000* SERIAL BONDS

Maturity September 15[1]	Principal Amount*	Rate	Initial Reoffering Yield[2]	CUSIP Number[3]
2023	$ 500,000			
2024	1,000,000			
2025	1,500,000			
2026	2,080,000			
2027	2,185,000			
2028	2,290,000			
2029	2,405,000			
2030	2,525,000			
2031	2,650,000			
2032	2,785,000			
2033	2,925,000			
2034	3,070,000			
2035	3,225,000			
2036	3,385,000			
2037	3,555,000			
2038	3,730,000			

(Interest accrues from Delivery Date)

$49,290,000* TERM BONDS

$21,655,000* _____% Term Bonds due September 15, 2043[1][4] Priced to Yield ______%[2] CUSIP[3] ___________

$27,635,000* _____% Term Bonds due September 15, 2048[1][4] Priced to Yield ______%[2] CUSIP[3] ___________

(Interest accrues from Delivery Date)

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(1) The Authority reserves the right, at its option, to redeem the Bonds having stated maturities on or after September 15, 20__* in whole or in part, in principal amounts of $5,000 or any integral multiple thereof, on September 15, 20__*, or any date thereafter, at the par value thereof plus accrued interest to the date fixed for redemption. See "THE BONDS— Redemption—Optional Redemption."

(2) The initial reoffering prices or yields of the Bonds are furnished by the Underwriters (as defined herein) and represent the initial offering prices or yields to the public, which, subject to certain restrictions provided by the Bond Purchase Agreement, may be changed by the Underwriters at any time.

(3) CUSIP is a registered trademark of the American Bankers Association. CUSIP numbers have been assigned to the Bonds by CUSIP Global Services, managed by Standard & Poor's Financial Services LLC on behalf of the American Bankers Association. CUSIP numbers are included solely for the convenience of the purchasers of the Bonds. Neither the Authority nor the Underwriters shall be responsible for the selection or accuracy of the CUSIP numbers set forth herein.

(4) The Term Bonds are subject to mandatory sinking fund redemption as described herein. See "THE BONDS—Redemption—Mandatory Sinking Fund Redemption."

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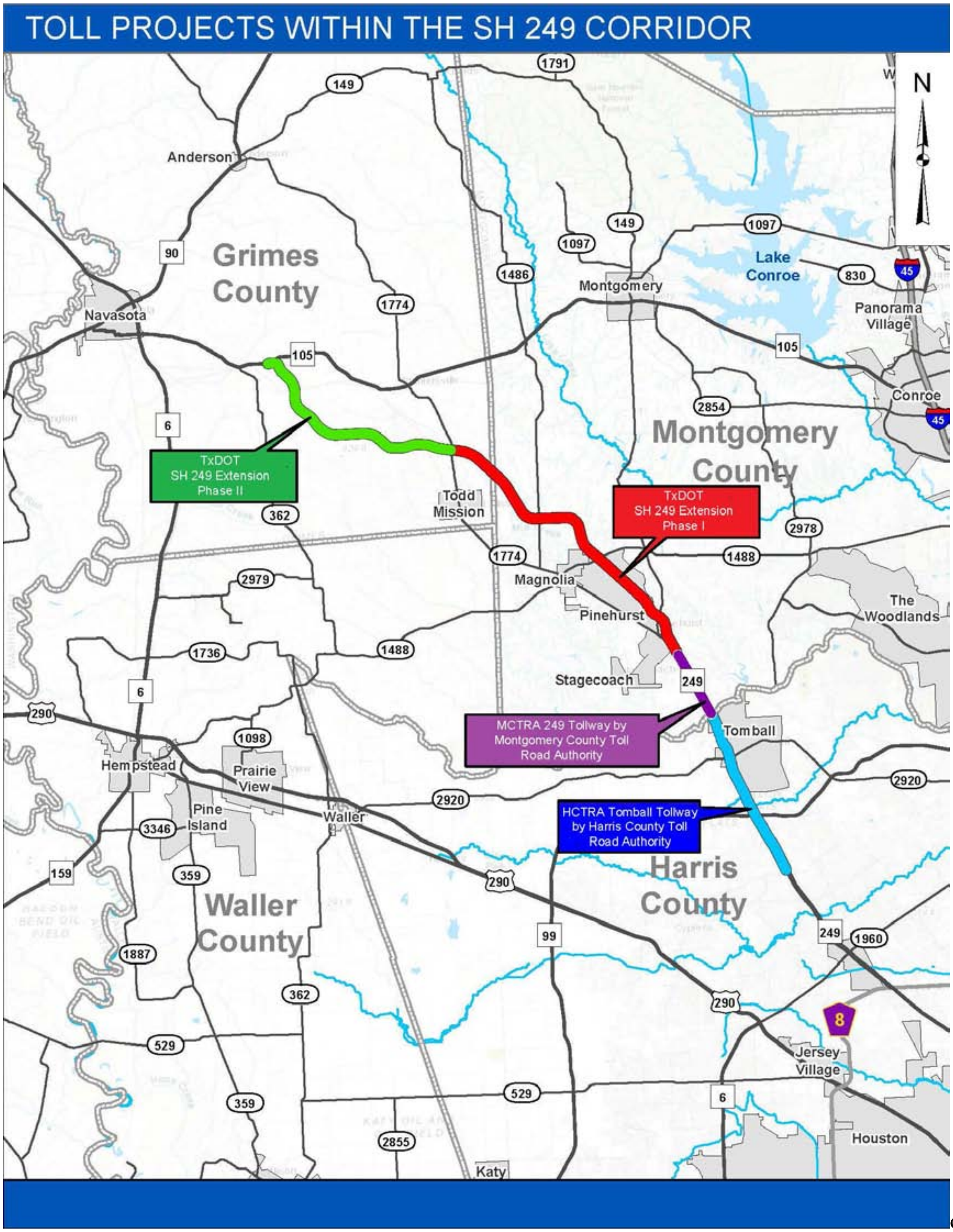
*Preliminary, subject to change.

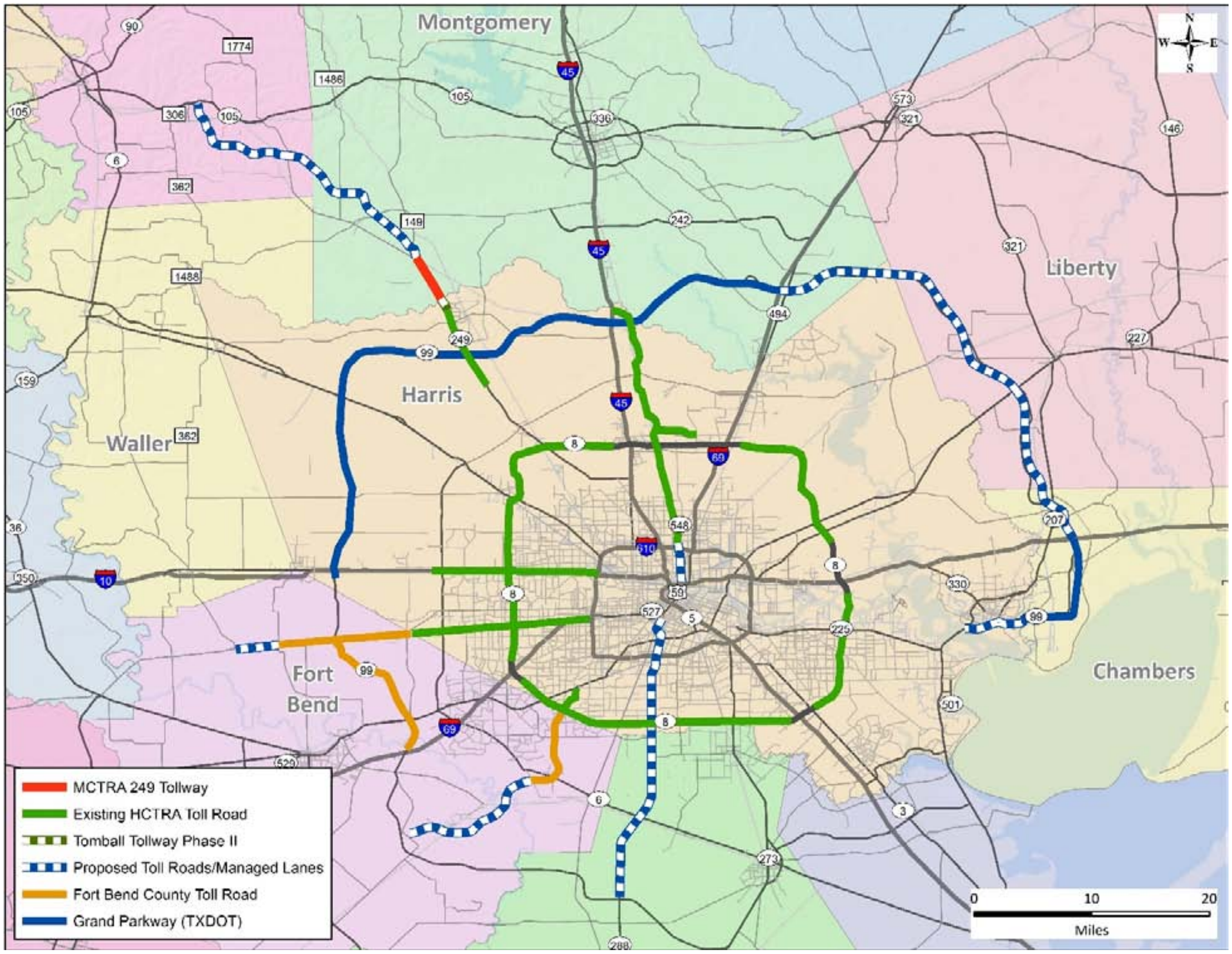
MAP OF MCTRA 249 TOLLWAY



d

Note: For a description of the projects being undertaken in the State Highway 249 corridor, see "INTRODUCTION – The Project – *Background and Overview of the State Highway 249 Corridor*."

MAP OF AREA TOLL FACILITIES



Note: Phase II of the TxDOT SH 249 Extension between FM 1774 and SH 105 will be constructed as a two-lane at-grade toll-free arterial. See "INTRODUCTION – The Project – *Background and Overview of the State Highway 249 Corridor*." See "MAP OF MCTRA 249 TOLLWAY" for a more detailed depiction of the projects being undertaken in the State Highway 249 Corridor.

MONTGOMERY COUNTY TOLL ROAD AUTHORITY

Board of Directors[1]

Name	Title	Term Expires (December 31)
Craig Doyal	Chairman	2018
Charlie Riley	Vice Chairman/Treasurer	2020
Mike Meador	Secretary	2018
James Noack	Director	2020
Jim Clark	Director	2018

County Administration[2]

Name	Title
Stephanne Davenport	County Treasurer
Phyllis L. Martin	County Auditor
J.D. Lambright	County Attorney

Consultants and Advisors

Co-Bond Counsel	Orrick, Herrington & Sutcliffe LLP Houston, Texas The Muller Law Group, PLLC Sugar Land, Texas
Traffic Consultant	CDM Smith Inc. Dallas, Texas
Project Engineer	Halff Associates, Inc. Conroe, Texas
Maintenance Report Engineer	Jones & Carter, Inc. The Woodlands, Texas
Municipal Advisor	Post Oak Municipal Advisors LLC Houston, Texas
Trustee	Regions Bank Houston, Texas

For additional information regarding the Authority, please contact either:

Mr. Craig Doyal
Chairman
Montgomery County Toll Road Authority
501 North Thompson, Suite 401
Conroe, Texas 77301

Mr. Terrell Palmer
President
Post Oak Municipal Advisors LLC
2000 West Loop South, Suite 1800
Houston, Texas 77027
Phone: (713) 328-0991

(1) See "THE AUTHORITY — Board of Directors, Officers, and Consultants."
(2) Administration, staffing and support services for the Authority are provided by the County pursuant to the Authority/County Interlocal Agreement (as defined herein). See "THE PROJECT AND AUTHORITY OPERATIONS — Authority/County Interlocal Agreement." Tolling Services for the Project are provided by Harris County pursuant to the Tolling Services Agreement (as defined herein). "THE PROJECT AND AUTHORITY OPERATIONS — Tolling Services Agreement."

USE OF INFORMATION IN OFFICIAL STATEMENT

For purposes of compliance with Rule 15c2-12 of the United States Securities and Exchange Commission, as amended (the "Rule"), and in effect on the date of this Preliminary Official Statement, this document constitutes an "official statement" of the Authority with respect to the Bonds that has been deemed "final" by the Authority as of its date except for the omission of no more than the information permitted by the Rule.

This Official Statement is not to be used in connection with an offer to sell or the solicitation of an offer to buy in any jurisdiction in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to any person to whom it is unlawful to make such offer or solicitation. This Official Statement is delivered in connection with the sale of securities referred to herein and may not be reproduced or used, in whole or in part, for any other purposes.

No dealer, broker, salesman, or other person has been authorized by the Authority or the underwriters of the Bonds named on the front cover page of this Official Statement (collectively, the "Underwriters") to give any information or to make any representation other than those contained in this Official Statement, including the Schedules and Appendices hereto, and, if given or made, such other information or representation must not be relied upon as having been authorized by the Authority or the Underwriters of the Bonds.

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 under the Master Trust Indenture, as supplemented, shall, under any circumstances, create any implication that there has been no change in the affairs of the Authority since the date hereof. This Official Statement is submitted in connection with the sale of the Bonds and in no instance may this Official Statement be reproduced or used for any other purpose.

THIS OFFICIAL STATEMENT, INCLUDING THE SCHEDULES AND APPENDICES HERETO, 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 WILL 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 AUTHORITY, THE UNDERWRITERS OR THE MUNICIPAL ADVISOR MAKE ANY REPRESENTATION OR WARRANTY WITH RESPECT TO THE INFORMATION CONTAINED IN THIS OFFICIAL STATEMENT REGARDING THE DEPOSITORY TRUST COMPANY ("DTC") OR ITS BOOK-ENTRY-ONLY SYSTEM, AS SUCH INFORMATION WAS FURNISHED BY DTC.

THE UNDERWRITERS OF THE BONDS 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 RESPECTIVE 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.

THE PRICE AND OTHER TERMS RESPECTING THE OFFERING AND SALE OF THE BONDS MAY BE CHANGED FROM TIME TO TIME BY THE UNDERWRITERS AFTER THE BONDS ARE RELEASED FOR SALE AND THE BONDS MAY BE OFFERED AND SOLD AT PRICES OTHER THAN THE INITIAL OFFERING PRICE, 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 THE BONDS AT A LEVEL ABOVE THOSE THAT MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME.

No registration statement relating to the Bonds has been filed with the United States Securities and Exchange Commission 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 the State 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 Authority assumes no responsibility for the 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.

IN MAKING AN INVESTMENT DECISION, INVESTORS MUST RELY ON THEIR OWN EXAMINATION OF THE BONDS AND THE TERMS OF THE OFFERING, INCLUDING THE MERITS AND RISKS INVOLVED. THESE SECURITIES HAVE NOT BEEN RECOMMENDED BY ANY FEDERAL OR STATE SECURITIES AUTHORITY OR REGULATORY AUTHORITY. FURTHERMORE, THE FOREGOING AUTHORITIES HAVE NOT CONFIRMED THE ACCURACY OR DETERMINED THE ADEQUACY OF THIS DOCUMENT. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

Regions Bank, in its capacity as Trustee, assumes no responsibility for the accuracy or completeness of the information concerning the Authority or any other party contained in this document or for any failure by the Authority or any other party to disclose events that may have occurred and may affect the significance or accuracy of such information.

The statements contained in this Official Statement, and in other information provided by the Authority, that are not purely historical, are forward-looking statements, including statements regarding the Authority'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 Authority on the date hereof, and the Authority assumes no obligation to update any such forward-looking statements. See "RISK FACTORS — Forward-Looking Statements."

References to web site 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 web sites and the information or links contained therein are not incorporated into, and are not part of, this official statement for purposes of, and as that term is defined in the Rule, as amended.

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OFFICIAL STATEMENT

MONTGOMERY COUNTY TOLL ROAD AUTHORITY
(Montgomery County, Texas)

$89,100,000*
SENIOR LIEN TOLL ROAD REVENUE BONDS, SERIES 2018

INTRODUCTION

General

This Official Statement (the "Official Statement") contains certain information relating to the offering and sale by the Montgomery County Toll Road Authority (the "Authority") of its Senior Lien Toll Road Revenue Bonds, Series 2018 (the "Bonds").

Investment in the Bonds involves certain risks, some of which are discussed in this Official Statement. The statements contained in this Official Statement, including the Schedule and Appendices hereto, that are not purely historical are forward looking statements, including statements regarding the Authority's expectations, hopes, intentions or strategies regarding the future. See "RISK FACTORS —Forward-Looking Statements." Readers should not place undue reliance on forward looking statements. All forward looking statements included in this Official Statement are based on information available to the Authority as of the date hereof, and, except as provided in the Indenture (defined below), the Authority does not assume any obligation to update any such forward looking statements. See "CONTINUING DISCLOSURE OF INFORMATION" for a description of the undertakings of the Authority, to provide certain information on a continuing basis. See also "RISK FACTORS" for a discussion of several risks that should also be considered in evaluating an investment in the Bonds.

This Official Statement contains, in part, estimates and matters of opinion that are not intended as statements of fact, and no representation or warranty is made as to the correctness of such estimates and matters of opinion, or that they will be realized. This Official Statement speaks only as of its date, and the information contained herein is subject to change. Capitalized terms used in this Official Statement that are not otherwise defined herein have the meanings assigned to them in "APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE."

As used in this Official Statement, the "Indenture" shall mean the Master Trust Indenture, dated as of June 1, 2018 (without regard to amendments or supplements, the "Master Trust Indenture"), by and between the Authority and Regions Bank, as trustee and paying agent (the "Trustee"), as supplemented by the "*First Supplemental Indenture*" (as such term is hereinafter defined), as the same may be amended or supplemented from time to time in accordance with the terms of the Master Trust Indenture.

Sources of Payment and Security

The Bonds are the initial Obligations of the Authority to be issued pursuant to the Indenture. The Bonds are special, limited obligations of the Authority payable solely from and secured solely by a first lien on, pledge of and security interest in the Trust Estate granted in the Indenture on an equal and ratable basis with any Additional Senior Lien Obligations issued in the future in accordance with the provisions of the Indenture; provided, that any Additional Senior Lien Obligations issued in the future shall only have such rights to moneys in the Senior Lien Debt Service Reserve Fund if they are Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund and as may be specifically set forth in the Supplemental Indenture relating thereto. The Bonds will also be secured by a portion of the proceeds thereof held in certain Funds and Accounts under the Indenture and invested by the Authority pursuant to the terms of the Indenture. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS."

NONE OF THE STATE OF TEXAS, MONTGOMERY COUNTY, TEXAS ("COUNTY") OR ANY OTHER AGENCY OR POLITICAL SUBDIVISION OF THE STATE OF TEXAS OTHER THAN THE

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* Preliminary, subject to change.

AUTHORITY IS OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE BONDS ARE PAYABLE SOLELY FROM THE TRUST ESTATE. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE STATE OF TEXAS, THE COUNTY, OR ANY POLITICAL SUBDIVISION THEREOF IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE AUTHORITY HAS NO TAXING POWER. THE INDENTURE DOES NOT CREATE A MORTGAGE ON THE PROJECT (AS DEFINED HEREIN).

The Authority

The Authority is a local government corporation established and operating under Chapters 284 and 431, Texas Transportation Code, as amended. It was created by resolution and order of the Commissioners Court of the County in August of 2006, to aid, assist and act on behalf of the County to perform essential governmental functions in conjunction with other appropriate governmental entities, where necessary, to provide roads, highways, bridges and other transportation projects throughout the County, including the planning, design, acquisition, financing, construction, extending, and improving of causeways, bridges, tunnels, turnpikes, highways, overpasses, underpasses, interchanges, entrance plazas, toll houses, approaches rights of way, fixtures and accessories. The projects the Authority is authorized to undertake include the MCTRA 249 Tollway (as defined herein), and the previously constructed SH 242 flyover project, which connects SH 242 with Interstate 45. **The SH 242 flyover project is not a part of the Project and the revenues of the SH 242 flyover project are not part of the Trust Estate (as defined herein) for the Bonds.** See "THE PROJECT AND AUTHORITY OPERATIONS — Authority/County Interlocal Agreement." For additional information regarding the Authority, see "THE AUTHORITY" and "THE PROJECT AND AUTHORITY OPERATIONS."

The Project

Background and Overview of the State Highway 249 Corridor. State Highway 249 ("SH 249") is one of the main north-south corridors between central Houston, Texas and the County. Located in the southern portion of the County, the Montgomery County Toll Road Authority - SH 249 Tollway (as more fully described below, the "Project" or "MCTRA 249 Tollway") is a proposed approximately 3.6 mile-tolled mainlane extension project within the overall SH 249 corridor. See "MAP OF THE PROJECT AND AREA TOLL FACILITIES," and "APPENDIX B – MCTRA 249 TRAFFIC AND REVENUE STUDY."

The SH 249 corridor travels from north central Houston toward the northwest, and consists of the following existing and proposed segments:

<u>Toll Free SH 249 [Existing]</u>: At its southern end, SH 249 begins at I-45 (approximately 11 miles north of Downtown Houston), and travels approximately 14.2 miles to the northwest as a toll-free facility, which ends at Spring Cypress Road on the northwest.

<u>Harris County Toll Road Authority ("HCTRA") Tomball Tollway (Phase I) [Existing]</u>: Phase 1 of the Tomball Tollway is a recently constructed HCTRA facility. This 7.0-mile segment of SH 249 extends from Spring Cypress Road on the south to Brown Road on the north and provides three toll lanes in each direction, with continuous toll-free frontage roads.

<u>HCTRA Tomball Tollway (Phase II) [Proposed]</u>: The proposed HCTRA Tomball Tollway Phase II is a 2.2-mile segment of SH 249 that is currently under construction by HCTRA. This segment is expected to open in the second half of 2019, and will extend the existing HCTRA Tomball Tollway from Brown Road to the Harris-Montgomery County line. The northern end of this route will meet the southern terminus of the MCTRA 249 Tollway.

<u>MCTRA 249 Tollway [Proposed]</u>: The MCTRA 249 Tollway is a proposed approximately 3.6-mile segment of SH 249 that will connect to the HCTRA Tomball Tollway at the Harris-Montgomery County line at its southern end and meet the proposed TxDOT SH 249 Extension just north of Woodtrace Boulevard. See "— MCTRA 249 Tollway." The MCTRA 249 Tollway is projected to open in the first quarter of 2020.

<u>Texas Department of Transportation ("TxDOT") SH 249 Extension [Proposed]</u>: TxDOT plans to construct two additional segments of SH 249. Phase I of the TxDOT SH 249 Extension will be a tolled facility. The

first portion of Phase I of the TxDOT SH 249 Extension, between Woodtrace Boulevard and FM 1488 in Magnolia will be a four-lane toll facility and the second portion of Phase I between FM 1488 and FM 1774 at Todd Mission will be a two-lane limited-access toll facility with discontinuous frontage roads. Phase I of the TxDOT SH 249 Extension is planned to be open in the second half of 2020. Phase II of the TxDOT SH 249 Extension between FM 1774 and SH 105 will be constructed as a two-lane at-grade toll-free arterial and is planned to be completed in early 2022.

Upon completion, the overall SH 249 corridor is planned to be approximately 50 miles in length and connect central Houston to State Highway 105 in Grimes County.

MCTRA 249 Tollway. The MCTRA 249 Tollway is a proposed approximately 3.6-mile tolled mainlane extension project within the overall SH 249 corridor. It extends the HCTRA Tomball Tollway, beginning on the south end, at the Harris/Montgomery County border, and extending north to Woodtrace Boulevard, where it will eventually connect to the proposed TxDOT SH 249 Extension. The MCTRA 249 Tollway is being developed within existing TxDOT road right of way, and the entire length of the MCTRA 249 Tollway will be flanked by continuous toll-free frontage roads that have already been constructed and are open to traffic. The MCTRA 249 Tollway will contain four pairs of entrance/exit ramps between the frontage roads and the MCTRA 249 Tollway mainlanes. Near the south terminus of the project, there will be south-facing ramps, just south of Vallie Street. Moving north, there will be a pair of north-facing ramps just north of Vallie Street, and another pair of north-facing ramps just north of Decker Prairie Road. There will be a pair of south-facing ramps, immediately south of Woodtrace Blvd. Finally, there are a pair of future north-facing ramps, north of Woodtrace Blvd, which will be constructed in conjunction with the TxDOT section of SH 249. The Project will have one mainlane toll gantry in each direction between Decker Prairie Road and Woodtrace Blvd, which will capture all traffic on the mainlane and from the three northern pairs of entrance/exit ramps. The south-facing ramps, just south of Vallie Street, will have ramp gantries (since those movements will not be captured by the mainlane gantry).

The tolling system for the Project will be an all-electronic transponder system that will be able to process transactions from customers by their EZ-TAG accounts with HCTRA and will be interoperable with accounts associated with other electronic toll tags issued by other tolling entities in the State, including TxTAG issued by TxDOT and TollTAG issued by the North Texas Tollway Authority.

While the MCTRA 249 Tollway, the HCTRA Tomball Tollway and TxDOT SH249 Extension are separate projects, they will be interconnected and development of the projects is being undertaken simultaneously. The combined projects will provide improved access to major employment centers in Harris County. Given the interaction of travel demand between the three projects, the successful development, completion, operation and maintenance of the three projects will have a material impact on the success of the MCTRA 249 Tollway. See "RISK FACTORS—OPERATING RISKS."

Operations and Maintenance Expense Report

Jones & Carter, Inc. (the "Maintenance Report Engineering Consultants" for the Authority) has prepared the MCTRA 249 Tollway Maintenance Report (the "Maintenance Report"), a copy of which is attached hereto as "APPENDIX C," which describes the estimated Operating Expenses and Maintenance Expenses for the Project. See "MAINTENANCE REPORT" and "APPENDIX C — MCTRA 249 TOLLWAY MAINTENANCE REPORT."

General Engineering Consultant

Halff Associates, Inc. (the "Project Engineer") is serving as the General Engineering Consultant for the Project, and is providing design and project development support for the Project as well as project oversight.

Construction Contract

The Project is being constructed through a design-bid-build contracting method. The winning bidder and general contractor for the Project is SpawGlass, Inc. ("SpawGlass"). The construction contract was awarded in the initial amount of $55,968,424.54 (the "Construction Contract"). See "THE PROJECT AND AUTHORITY OPERATIONS – Construction of the Project" and "– Summary of the Construction Contract."

MCTRA 249 Traffic and Revenue Study

CDM Smith Inc. ("CDM Smith") has prepared the MCTRA 249 Tollway Comprehensive Traffic and Revenue Study, dated February 2018 (as amended by letter dated May 21, 2018) (included as APPENDIX B hereto), which sets forth the estimated traffic and toll revenue for the Project, as well as assumptions and qualifications underlying the forecasts in the study. See "MCTRA 249 TRAFFIC AND REVENUE STUDY" and "APPENDIX B — MCTRA 249 TRAFFIC AND REVENUE STUDY."

Risks

Investment in the Bonds involves certain risks, some of which are discussed throughout this Official Statement. The statements contained in this Official Statement, and in other information provided by the Authority, that are not purely historical, are forward-looking statements, including statements regarding the Authority's expectations, hopes, intentions or strategies regarding the future. Readers should not place undue reliance on forward-looking statements. All forward-looking statements included in this Official Statement are based on information available to the Authority on the date hereof, and the Authority assumes no obligation to update any such forward-looking statements. See "RISK FACTORS" for a discussion of several investment considerations that should also be considered in evaluating an investment in the Bonds.

PLAN OF FINANCE

Costs of the Project will be financed with the proceeds of the Bonds, all as more fully described herein. See "—Estimated Sources and Uses of Bond Proceeds."

The Bonds

The proceeds of the Bonds will be used to (i) finance certain Costs of the Project, including the Costs of designing, engineering, developing and the construction of the Project, (ii) pay capitalized interest with respect to the Bonds, (iii) make deposits to the Senior Lien Debt Service Reserve Fund and the Operations and Maintenance Reserve Fund, and (iv) pay certain Issuance Costs of the Bonds, all as more fully described herein. See "—Estimated Sources and Uses of Bond Proceeds," "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Funds and Accounts — Senior Lien Debt Service Reserve Fund" and "THE PROJECT AND AUTHORITY OPERATIONS."

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Estimated Sources and Uses of Bond Proceeds

The proceeds from the sale of the Bonds are estimated to be applied as set forth in the following table:

Sources of Funds:

Principal Amount
Plus: Original Issue Premium
Total Sources of Funds

Uses of Funds:

Deposit to Construction Fund
Deposit to Project Subaccount[1][2]
Deposit to Capitalized Interest Subaccount[1]
Deposit to Senior Lien Debt Service Reserve Fund
Deposit to Operations and Maintenance Reserve Fund
Issuance Costs[3]

Total Uses of Funds

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(1) Amounts represent the deposits to be made in each such Subaccount from proceeds of the Bonds.

(2) Includes approximately $10,000,000 to be paid to the County as reimbursements under the Authority/County Interlocal Agreement and approximately $1,200,000 to be paid to Harris County under the Tri-Party Construction and Maintenance Agreement. See "THE PROJECT AND AUTHORITY OPERATIONS – Authority/County Interlocal Agreement," and "THE PROJECT AND AUTHORITY OPERATIONS – Tri-Party Agreement for the Construction and Maintenance of the Tomball Tollway."

(3) Includes, among other costs, underwriting, legal, municipal advisory and accounting fees, initial fees of the Trustee, publication costs, rating agency fees and printing expenses.

THE AUTHORITY

The Authority was created by resolution and order of the Commissioners Court to aid, assist and act on behalf of the County to perform essential governmental functions in conjunction with other appropriate governmental entities, where necessary, to provide roads, highways, bridges and other transportation projects throughout the County, including the planning, design, acquisition, financing, construction, extending, and improving of causeways, bridges, tunnels, turnpikes, highways, overpasses, underpasses, interchanges, entrance plazas, toll houses, approaches rights of way, fixtures and accessories. The projects the Authority is authorized to undertake include the MCTRA 249 Tollway. The Authority is a local government corporation established and operating under Chapters 284 and 431, Texas Transportation Code, as amended.

Board of Directors, Officers, and Consultants

The Authority is governed by a five-member Board, appointed by the Commissioners Court. Currently, each member of the Board is a member of the Commissioners Court. The Directors of the Authority serve four-year terms, unless their term is earlier terminated by death, resignation or removal by the Commissioners Court. Board members may be removed by the Commissioners Court at any time with or without cause. See "MONTGOMERY COUNTY TOLL ROAD AUTHORITY," on page iv of the Official Statement for a listing of the Board Members and their terms. The Authority may exercise, with regard to the Project, the same power and authority as may be exercised by the Commissioners Court pursuant to Chapter 284, Texas Transportation Code. Such powers include eminent domain. The Authority currently has no staff or employees and does not anticipate hiring any staff or employees in the foreseeable future. The Authority contracts with the County, Harris County and professional consultants for services needed for the operation of the Authority and the Project. See "THE PROJECT AND AUTHORITY OPERATIONS — Authority/County Interlocal Agreement."

Financial Information

The Authority is currently treated as a legally separate component unit of the County. It is reported as an enterprise fund of the County and does not currently issue separate financial statements from those of the County. In the Indenture, the Authority has covenanted to provide separate audited financial statements for the Authority on an annual basis for each fiscal year, beginning with the fiscal year ending September 30, 2018. See "CONTINUING DISCLOSURE OF INFORMATION – Annual and Quarterly Reports."

THE PROJECT AND AUTHORITY OPERATIONS

Overview

As described in "INTRODUCTION – The Project – Background and Overview of the State Highway 249 Corridor," SH 249 is one of the main north-south corridors between central Houston, Texas and the County. Located in the southern portion of the County, the Project is a proposed approximately 3.6 mile tolled mainlane extension project within the overall SH 249 corridor, which will ultimately include the existing non-tolled portion of SH 249, which begins approximately 11 miles north of downtown Houston, the existing Phase I of the HCTRA Tomball Tollway, the proposed Phase II of the HCTRA Tomball Tollway, which is currently under construction, the Project, and the proposed TxDOT SH 249 Extension. The Project is a piece of a larger transportation network being developed by the County, Harris County and TxDOT. Upon completion, the overall SH 249 corridor is planned to be a continuous road of approximately 50 miles in length that connects central Houston to State Highway 105 in Grimes County. In addition the SH 249 corridor will connect with both the Grand Parkway and Beltway 8, which are tolled facilities and major transportation arteries providing access to a significant portion of the greater Houston area. See "MAP OF THE PROJECT AND AREA TOLL FACILITIES."

Description of the Project

The MCTRA 249 Tollway is a proposed 3.6-mile tolled mainlane extension project within the overall SH 249 corridor. The Project will extend the HCTRA Tomball Tollway, beginning on the south end, at the Harris/Montgomery County border, and continuing north to Woodtrace Boulevard, where it will eventually connect to the proposed TxDOT SH 249 Extension. The MCTRA 249 Tollway is being developed within existing TxDOT road right of way, and the entire length of the MCTRA 249 Tollway will be flanked by continuous toll-free frontage roads that have already been constructed and are open to traffic. Near the south terminus of the project, there will be south-facing ramps, just south of Vallie Street. Moving north, there will be a pair of north-facing ramps just north of Vallie Street, and another pair of north-facing ramps just north of Decker Prairie Road. There will be a pair of south-facing ramps, immediately south of Woodtrace Blvd. Finally, there are a pair of future north-facing ramps, north of Woodtrace Blvd, which will be constructed after the TxDOT section of SH 249 is completed. The project will have one mainlane toll gantry in each direction between Decker Prairie Road and Woodtrace Blvd, which will capture all traffic on the mainlanes and from the three northern pairs of entrance/exit ramps. The south-facing ramps, just south of Vallie Street, will have ramp gantries (since those movements will not be captured by the mainlane gantry).

The tolling system for the Project will be an all-electronic transponder system that will process transactions from customers through their EZ-TAG accounts with HCTRA and will be interoperable with accounts associated with electronic toll tags issued by other tolling entities in the State, including TxTAG issued by TxDOT and TollTAG issued by the North Texas Tollway Authority.

While the MCTRA 249 Tollway, the HCTRA Tomball Tollway and the TxDOT SH 249 Extension are separate projects, they will be interconnected and development of the projects is being undertaken concurrently (though the completion dates will be staggered). The combined projects will provide improved access to major employment centers in Harris County. Given the interaction of travel demands between the three projects, the successful development, completion, operation and maintenance of the three projects will have a material impact on the success of the MCTRA 249 Tollway. See "RISK FACTORS — OPERATING RISKS."

Other Authority Facilities Not Part of the Project

The Authority has previously constructed the SH 242 flyover project, which connects SH 242 with Interstate 45 via a tolled exit ramp. Except for the Project, the Authority has no present intention to construct any other projects.

In the Indenture, the Authority has not reserved the ability to pool the Project with other transportation projects or to create a system of transportation projects. However, the Indenture does permit the Authority to issue Completion Obligations and additional Obligations for the purposes of improving (including replacing and adding new toll lanes), maintaining or repairing the Project or to refund Obligations. See “SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Additional Obligations.”

Authority/County Interlocal Agreement

In connection with the development of the Project, the County and the Authority entered into an agreement, dated February 9, 2015, and amended on April 24, 2018 (as amended, the “Authority/County Interlocal Agreement”), under which the County agreed to provide interim financing for the Project in an amount not to exceed $15,000,000, as well as administrative services for the Authority, subject to the Authority’s agreement to reimburse the County as described below. The Authority has utilized funds advanced by the County as interim financing for the costs associated with the Project.

Under the terms of the Authority/County Interlocal Agreement, the County agreed to advance up to $15,000,000 for Project costs that are approved by the Commissioners Court. The Authority/County Interlocal Agreement requires the Authority to fully reimburse the County for funds advanced under the Authority/County Interlocal Agreement, plus interest, from the proceeds of the Bonds. The interest rate on each draw is determined on the day of the draw at the then stated rate of TexPool Prime, plus 0.25%. If the Authority has not sold bonds within fifteen years of the date of the Authority/County Interlocal Agreement, then the Authority is obligated to reimburse the County from revenues lawfully available for that purpose. As of the date of this Official Statement, the County has advanced approximately $10,000,000 to the Authority under the terms of the Authority/County Interlocal Agreement. The amounts advanced under the Authority/County Interlocal Agreement as of the date of this Official Statement are expected to be reimbursed from the proceeds of the Bonds. An additional amount of $5,000,000 available under the Authority/County Interlocal Agreement has been appropriated against in order to permit the Authority to issue Notice to Proceed No. 1 (NTP 1) to SpawGlass under the Construction Contract for preliminary work relating to construction of the Project. See “—Construction of the Project.” If such additional amount is drawn, it is expected to be reimbursed from proceeds of the Bonds.

Pursuant to the terms of the Authority/County Interlocal Agreement, the County has also agreed to provide or cause to be provided administrative and other services to assist the Authority with the operation of the Project as the Authority may reasonably request, including without limitation, the provision of accounting, finance, legal, engineering, purchasing, incident management and maintenance services. See “— Operation and Maintenance of the Project” for additional information regarding the administrative and other services to be provided by the County in connection with the Project.

Tri-Party Agreement for the Construction and Maintenance of the Tomball Tollway

In connection with the development of the Project and the HCTRA Tomball Tollway, Harris County, the County, and the Authority entered into an Agreement for the Construction and Maintenance of Tomball Tollway, dated December 20, 2016 (the “Tri-Party Construction and Maintenance Agreement”), under which Harris County agreed to construct a portion of the Project in Montgomery County that serves as the connection point between Phase II of the HCTRA Tomball Tollway and the Project. The facilities to be constructed by HCTRA include the portion of the Project on the Spring Creek Bridge and related retaining walls and drainage appurtenances, including box culverts, junction boxes, and headwalls, necessary for a drainage detention basin constructed around the North Abutment of the Spring Creek Bridge. In exchange, the County and the Authority agreed to make certain modifications to the Project and to pay Harris County $1,200,000 for the cost of these retaining walls and drainage appurtenances. The Authority will make this $1,200,000 payment from Bond proceeds as part of the costs of constructing the Project.

Under the Tri-Party Construction and Maintenance Agreement, if the Authority fails to award a construction contract for the Project by September 14, 2018, HCTRA has the right to build the portion of the Project up to termination of the exit and entrance ramps north of Spring Creek, charge the Authority the cost of doing so, and collect all toll money from the ramps until HCTRA is reimbursed in full. The Authority has awarded the construction contract for the MCTRA 249 Tollway with NTP 1, with a full notice to proceed expected to follow within seven (7) business days following closing and funding of the Bonds, which is anticipated to occur on or about June 21, 2018.

TxDOT Project Agreement

In connection with development of the Project and the TxDOT 249 Extension, TxDOT and the County, acting by and through the Authority, entered into a Construction, Operation and Maintenance Agreement, dated April 13, 2015 (the "TxDOT Project Agreement"). The TxDOT Project Agreement provided for the coordinated development of the two segments of the SH 249 tollway, authorized the County's use of the existing SH 249 right-of-way for the Project, and allocated responsibility for the development of the SH 249 corridor within the County.

The County agreed to assist TxDOT in obtaining the right-of-way (collectively, the "County Acquired ROW") needed for the TxDOT 249 Extension and transfer the same to TxDOT, and TxDOT authorized the County to use a portion of State right-of-way (the "TxDOT ROW") for construction of the MCTRA 249 Tollway. Pursuant to this agreement, if the value of the TxDOT ROW is less than the estimated value of the County Acquired ROW, the County's obligation to reimburse TxDOT for use by the County of the TxDOT ROW will be waived. The County otherwise agreed to make a payment to TxDOT in the amount of $3,867,206. The Authority's records indicate that the value of the County Acquired ROW is equal to or exceeds $3,867,206. As a result, the Authority does not believe that any payment will be due from the Authority in connection with the use of the TxDOT ROW for the Project.

The TxDOT Project Agreement gives TxDOT the right to take over the MCTRA 249 Tollway if the County does not advance the MCTRA 249 Tollway by the deadline agreed to by TxDOT and the County. The parties have not formally established such a deadline, but the current project schedule anticipates the MCTRA 249 Tollway being completed ahead of the TxDOT 249 Extension.

Additional Obligations

The Bonds are the initial Obligations to be issued by the Authority pursuant to the Indenture. The Authority does not currently anticipate issuing any additional Obligations within the next twelve months; however, the Authority may issue additional Obligations at any time, subject to the terms of the Indenture. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Additional Obligations."

Toll Rates

The Authority will rely on the collection of tolls to construct, operate and maintain the Project. In the Indenture, the Authority has covenanted to establish, levy, maintain and collect tolls in connection with the Project sufficient to meet certain debt service coverage requirements set forth in the Indenture. The Indenture establishes a minimum total rate covenant that requires that rates be set at an amount that will generate an amount at least equal to the greater of (i) one hundred twenty-five percent (125%) of the Annual Debt Service in such Fiscal Year on all Outstanding Senior Lien Obligations or (ii) one hundred percent (100%) of the Annual Debt Service in such Fiscal Year on all Obligations, plus the amounts required to be deposited into the Senior Lien Debt Service Reserve Fund, debt service reserve funds for any other Obligations (if so established), the Renewal and Replacement Fund, the Renewal and Replacement Reserve Fund and any other fund to be funded by Revenues. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Rate Covenant."

In the Bond Resolution, the Authority adopted a Toll Policy consistent with the MCTRA 249 Traffic and Revenue Study. The Toll Policy adopted by the Board requires an annual increase in toll rates at the greater of (i) the net change in the CPI for Urban Wage Earners and Clerical Workers (CPI-W) for the Houston-Galveston-Brazoria Region as published by the Bureau of Labor Statistics, or (ii) two percent (2%), rounded to the nearest penny as described in greater detail below. The Toll Policy may be modified from time to time, at the discretion of the Authority. The following is a description of the Toll Policy adopted by the Board on May 8, 2018.

Toll Policy. The Project is expected to be opened to tolled traffic on or about March 1, 2020. See "APPENDIX B – MCTRA 249 TRAFFIC AND REVENUE STUDY." The toll rates for the Project were adopted as part of the Authority's Toll Policy on May 8, 2018, to become effective upon Substantial Completion of the Project or March 1, 2020. The Authority's toll rates for all vehicle classifications will be based upon the electronic transponder toll rate (the "TAG Rate") for two-axle vehicles. The Toll Policy is subject to adjustment by the Board from time to time, but does not supersede the Rate Covenant in the Indenture.

Opening TAG Rates on the Project for Two-axle Vehicles:

- \$1.25 (in 2017\$) at the main lane toll gantry
- \$0.50 (in 2017\$) at the two ramp toll gantries along the Project
- Toll rates will not vary by time of day
- Opening day toll rate for the main lane toll gantry and ramp gantries will be subject to the periodic adjustments as described below in the description of the Toll Rate Adjustment Methodology.

Toll rates on the Project for Multi-Axel Vehicles:

- Multi-axle vehicles and large trucks will be charged higher rates due to disproportionate impacts on the life of the Project (pavement wear, debris, etc.). For purposes of setting toll rates for different vehicle classifications, the number of axles on a vehicle is used to determine which vehicle class rate applies.
- Project toll rates for vehicles with greater than two axles will be based upon the two-axle TAG Rates using the N-1 rate calculation methodology. The formula and a mathematical example of how the rates are calculated is shown here:

  Multi-axle toll rate formula: [N = number of axles]

  N-axle toll rate = (N-1) × two-axle rate

  Example: [two-axle TAG Rate = \$1.25; five-axle vehicle]

  Five-axle TAG toll rate = (5-1) × \$1.25
  Five-axle TAG toll rate = 4 × \$1.25
  Five-axle TAG toll rate = \$5.00 (2017\$)

Toll Rate Adjustment Methodology:

- *Indexing methodology*
  - The Authority's two-axle TAG Rates will be adjusted annually based upon the ***greater of***:
    - The net change in the CPI for Urban Wage Earners and Clerical Workers (CPI-W) for the Houston-Galveston-Brazoria Region as published by the Bureau of Labor Statistics, or
    - The minimum adjustment of two percent.
  - The CPI-W used will be the annualized average for the most recent calendar year.
- *Frequency of adjustments*
  - TAG Rates will be adjusted annually as described above, effective on the first Saturday after Labor Day
- *Rounding*
  - TAG Rates will be rounded to the nearest penny (\$0.01)

Implementation Date for Annual Toll Rate Adjustments:

The toll rates for the Project will be adjusted annually at 12:01 a.m. on the first Saturday following Labor Day, starting in the year 2020.

Violations:

Violations occur when a vehicle passes a tolling point without a valid transponder or other acceptable pre-paid billing method such as EZ TAG Express and EZ Fleet. If a transaction is determined to be a violation, the transaction will be subject to collection as determined by the Authority's violation enforcement system. Fines and penalties for violations may be subject to reduction in accordance with the fee reduction program (or any similar or successor program) in effect for other counties in the Houston metro region from time to time, subject to the requirements of state law.

Tolling Services Agreement

The tolling system for the Project will be an all-electronic transponder system that will process transactions from customers by their EZ-TAG accounts with HCTRA and will be interoperable with accounts associated with electronic toll tags issued by other tolling entities in the State, including TxTAG issued by TxDOT and TollTAG issued by the North Texas Tollway Authority.

Tolling services for the Project will be provided by Harris County pursuant to an Interlocal Agreement for Tolling Services dated as of March 31, 2015, as amended on April 24, 2018, (the "Tolling Services Agreement") between the Authority and Harris County. See "APPENDIX B – MCTRA 249 TOLLWAY MAINTENANCE REPORT." The Tolling Services Agreement has a two (2) year term, with an automatic renewal for an additional two (2) years from and after the end of the then-expiring term, unless one party provides written notice of termination to the other party at least 180 days before the end of the term. The services to be provided by Harris County pursuant to the Tolling Services Agreement include customer service, customer account maintenance for EZ-TAG customers, EZ-TAG transponder supply, toll collection, bank clearinghouse, back office system processing, issuance of toll violation invoices and interoperability services. Harris County will be a collecting agent acting on behalf of the Authority with respect to all amounts owed or remitted by the applicable users. Harris County will not provide law enforcement services for toll violation enforcement for the Project. The Authority will be responsible for law enforcement services for toll violations and traffic enforcement for the Project, which are anticipated to be provided by the County. See "—Toll Violations and Enforcement" for information on the toll enforcement process.

Under the Tolling Services Agreement, Harris County will provide initial toll equipment installation at an estimated cost of $2,300,000 (including tag readers and network) for the Project. The Authority will subsequently be responsible for the installation of all necessary tolling equipment for the Project and will ensure that such equipment is compatible and interoperable with Harris County's toll collection system. Harris County is not obligated to provide roadway equipment maintenance, road maintenance, road repair or roadway customer assistance services for the Project, but may make emergency facility, equipment and infrastructure repairs or replacements to protect health, welfare or safety or maintain tolling functionality. The cost of such repairs and replacements may be retained by Harris County from tolls collected on the Project. The Tolling Services Agreement provides that the Authority will be responsible for providing maintenance services for the Project.

The Authority is responsible for setting toll rates and toll classifications on the Project, and Harris County has agreed to implement toll rate changes within 60 days of receipt of official notice from the Authority. The Authority is required to adopt administrative fees and hearing fees equal to those charged by Harris County on Harris County's toll facilities.

Pursuant to the Tolling Services Agreement, the Authority has agreed to pay Harris County a fee equal to eight percent (8%) of the toll amount for all transactions originating on the Project, plus image review costs and a portion of administrative fees associated with the costs of collecting unpaid tolls. Harris County will separately account for all tolls and third-party collection fees on the Project and will remit such tolls and fees to the Authority on a monthly basis net of Harris County's compensation. By the 15th day of each month, Harris County will provide to the Authority a report of the transactions for the Project for the prior month. Harris County has agreed to maintain accurate and complete books and records related to its performance under the Tolling Agreement and to make those books and records available to the Authority for audit and inspection.

Toll Violations and Enforcement

Chapter 284, Texas Transportation Code, provides the Authority with a number of enforcement mechanisms to deal with toll violators, including (i) prohibiting the vehicle from using the toll road in the future, (ii) charging administrative fees and penalties, (iii) use of an administrative procedure to enforce the fees and penalties, (iv) use of a device to prohibit movement of a vehicle (aka "booting"), and (v) refusing to allow the registration of the vehicle. Furthermore, the Texas Transportation Code currently makes it a criminal misdemeanor to use a toll road after a violation and notice from the Authority.

HCTRA will provide certain collection services to the Authority for tolls, fees, fines and costs associated with toll violations. Violations that are not resolved through HCTRA's collection system will be referred to the Authority for additional collection efforts under the authority of the County Attorney's office.

Operation and Maintenance of the Project

The Authority will own, operate and maintain the Project. However, the Authority has no employees and will contract with the County and Harris County for services required in connection with the operation of the Project. Pursuant to the terms of the Authority/County Interlocal Agreement, the County has agreed to provide or cause to be provided administrative and other services to assist the Authority with the operation of the Project as the Authority may reasonably request, including without limitation, the provision of accounting, finance, legal, engineering, purchasing, incident management and maintenance services. The County has also agreed to serve as the Authority's agent for purposes of managing and investing the funds of the Authority, including the Construction Fund and other Funds and Accounts established under the Indenture, and for the purposes of paying bills, issuing checks and complying with the covenants and reporting requirements under the Indenture, including the preparation and filing of continuing disclosure annual reports and event filings relating to the Authority's bonds. The County will provide, or cause to be provided, such services through the use of County staff, consultants or other parties as the County may determine. The incident management and maintenance services required for the Project may be provided through the County's road maintenance program in Precinct 2, where the Project is located. Under the terms of the Authority/County Interlocal Agreement, the Authority will pay the County for the services provided under the Authority/County Interlocal Agreement as an operation and maintenance expense of the Project. Such services will be provided at the cost of such services as reasonably determined by the County from time to time in accordance with generally accepted accounting principles. Any costs incurred by the County in connection with the Project that are not paid or reimbursed as operations and maintenance expenses of the Project are subject to reimbursement from amounts on deposit in the Project Enhancement Fund.

Construction of the Project

On April 24, 2018, the Authority awarded the Construction Contract for the MCTRA 249 Tollway to SpawGlass in the initial amount of $55,968,424.54.

According to information provided to the Authority by SpawGlass, Spawglass was established in 1953 and has offices in Austin, the Golden Triangle region of southeast Texas, Houston, north Texas and San Antonio. It currently employs approximately 500 employees and had 2017 revenues of approximately $456 million. Recent transportation infrastructure projects completed by SpawGlass in the greater Houston area include the Sam Houston Tollway East Toll Plaza and Ramps in Harris County, a taxiway relocation project at the Sugar Land Regional Airport in Sugar Land, Texas, and the Reconstruction of Taxiway NB at George Bush Intercontinental Airport in Houston, Texas.

The Construction Contract provides for the issuance of NTP 1, which was a limited notice to proceed to allow SpawGlass to begin right-of-way preparation and certain other preliminary construction activities in an amount not to exceed $5,000,000. The Construction Contract contemplates that full notice to proceed will be issued only after the Bonds close. If full notice to proceed is not issued prior to June 30, 2018, either party may cancel the Construction Contract without additional payment. The Construction Contract further provides for a contract price adjustment of $435,000 if the full notice to proceed is issued after June 30, 2018. The Construction Contract establishes a completion date of 607 days from the date of the issuance of the full notice to proceed.

Summary of Construction Contract

Set forth below is a summary of certain provisions of the Construction Contract. This summary is qualified in its entirety by reference to the Construction Contract. All capitalized terms used in the following summary and not otherwise defined herein shall have the meaning assigned to them in the Construction Contract.

Initial Contract Price. The Contract price is $55,968,424.54.

Completion Deadline. The Completion deadline for the Contract is currently set at 607 days from the date of issuance of the full notice to proceed.

Liquidated Damages. The Construction Contract imposes liquidated damages in the amount of $2,590 per day the contractor fails to complete the Project within the contract time.

Damages for Delay. The Construction Contract contains a "no damage for delay" clause that provides that the only remedy the Contractor has for delays that impact schedule is an extension of time.

Payment and Performance Bonds and Retainage. The Construction Contract and state law require the contractor to provide payment and performance bonds issued by a surety that is licensed in the State of Texas. The bonds must be in the amount of the Construction Contract.

Insurance. Under the Construction Contract, the Contractor is required to provide insurance as follows: workers compensation in the statutorily required amount; a general liability policy of $1 million per occurrence and $2 million in the aggregate; an auto liability policy of $1 million; and an umbrella policy with $2 million per occurrence and $2 million in the aggregate.

The Contractor's Warranties. The Construction Contract requires that materials and equipment furnished be of good quality and new, unless otherwise required or permitted by the Construction Contract, and that the work will be free from defects and will conform to the requirements of the Contract Documents. There is a one-year warranty period from the date of final acceptance.

Estimated Construction Costs and Opening Date of the Project

The total Costs of the Project are estimated to be approximately $76,400,000. See "PLAN OF FINANCE." This amount includes the Contract Price under the Construction Contract, costs of toll collection systems, costs of construction oversight, and contingencies for construction change orders and certain other costs. See "THE PROJECT AND AUTHORITY OPERATION — Construction of the Project." The Construction Contract establishes a completion date of 607 days from the date of the issuance of the full notice to proceed, which is anticipated to be given by June 30, 2018.

MAINTENANCE REPORT

Jones & Carter, Inc. serves as the Maintenance Report Engineer for the Authority, and prepared the Maintenance Report used by the Authority in preparing the "ESTIMATED PROJECT CASH FLOW AND DEBT SERVICE COVERAGE TABLE." The Maintenance Report contains information with respect to the estimated Operating Expenses and Maintenance Expenses for the Project and estimated capital expenditures for major renewal and replacements. A copy of the Maintenance Report is attached hereto as APPENDIX C. Jones & Carter, Inc. has consented to the inclusion of the Maintenance Report in this Official Statement.

MCTRA 249 TRAFFIC AND REVENUE STUDY

Traffic Consultant and MCTRA 249 Traffic and Revenue Study

CDM Smith currently serves as the Traffic Consultant to the Authority for the Project. CDM Smith is one of the top global design firms as ranked by the Engineering News Record, having a professional staff of over 4,000 employees working in approximately 125 offices worldwide and has been serving public and private clients since 1947. CDM Smith has a group of over 450 transportation professionals of which more than 70 professionals are actively involved with toll facility clients. CDM Smith's toll facility experience is both broad and diverse, having worked with many clients in more than 46 states and internationally. CDM Smith's investment-grade traffic and revenue reports have been the basis for the sale of over $100 billion in revenue bonds.

CDM Smith has prepared the "MCTRA 249 Tollway Comprehensive Traffic and Revenue Study" report dated February 2018, as amended by letter dated May 21, 2018 (collectively, the "MCTRA 249 Traffic and Revenue Study," which is included as APPENDIX B hereto). The MCTRA 249 Traffic and Revenue Study relates to the Project.

The MCTRA 249 Traffic and Revenue Study includes discussions of existing travel patterns; the study methodology; the development, validation and application of the traffic forecasting model; the socioeconomic forecasts; and the highway networks that were used as input to the model. All of this information was used as the foundation for the traffic and revenue forecasts for the Project contained in the MCTRA 249 Traffic and Revenue Study.

MCTRA 249 Tollway is a proposed approximately 3.6 mile long extension of HCTRA's Tomball Tollway in the SH 249 corridor, which will be approximately 50 miles long when fully completed. The Traffic and Revenue ("T&R") estimates for the MCTRA 249 Tollway were developed for a forty-year forecast period from 2020 through 2059. A travel demand model was developed to forecast the annual transactions and estimate the resulting toll revenue expected to be generated on the MCTRA 249 Tollway. The MCTRA 249 Traffic and Revenue Study forecast is based on a 3.0 mile segment which excludes portions of the Project that will be constructed by HCTRA. The 0.6 mile differential does not impact the resulting revenue forecasts because the MCTRA 249 Tollway is not tolled on a per mile basis.

The MCTRA 249 Traffic and Revenue Study utilized a combination of the comprehensive traffic count and travel time data collected as part of TxDOT's SH 249 study in September 2016, and supplemental traffic count collection efforts undertaken in May 2017. The socioeconomic growth potential of the region and the MCTRA 249 corridor were updated in November 2017 by an independent local economist (Community Development Strategies), and inflation adjustments were made to the value of time parameters and other factors affecting toll road utilization sensitivity. CDM Smith also examined project-specific toll sensitivity and estimated the sensitivity of the T&R estimates to changes in several variables and key assumptions, as described in Chapters 4 and 5 of the MCTRA 249 Traffic and Revenue Study.

The MCTRA 249 Traffic and Revenue Study was conducted at an investment grade level and is considered suitable for use in project financing. See "RISK FACTORS – Forward-Looking Statements" and "– Traffic and Revenue Study Assumptions." CDM Smith has consented to the inclusion of the MCTRA 249 Traffic and Revenue Study in this Official Statement. On the Delivery Date, CDM Smith will execute and deliver a certificate to the Authority and the Underwriters certifying to the effect that, among other matters, as of such date (i) the factual information in the MCTRA 249 Traffic and Revenue Study is true and accurate in all material respects, (ii) CDM Smith believes that the conclusions set forth in the MCTRA 249 Traffic and Revenue Study were reasonable as of the date of the MCTRA 249 Traffic and Revenue Study and continue to be reasonable, subject to the disclaimer, assumptions and qualifications set forth in the MCTRA 249 Traffic and Revenue Study, and (iii) CDM Smith is not aware of any significant or material plan, event or circumstance occurring after the date of the MCTRA 249 Traffic and Revenue Study that would cause it to believe that the conclusions set forth in the MCTRA 249 Traffic and Revenue Study are no longer reasonable.

Data Collection

The MCTRA 249 Traffic and Revenue Study utilizes detailed data collected at numerous locations including new traffic counts and travel time studies, travel pattern surveys, market research on the willingness-to-pay tolls and value of time estimation, and an update of the socioeconomic growth potential of the Houston region conducted in November 2017 by Community Development Strategies ("CDS"), an independent local economist firm. Using this detailed information, CDM Smith refined the Houston-Galveston Area Council ("H-GAC") regional travel demand model for use in estimating the T&R potential of the MCTRA 249 Tollway. The H-GAC regional travel demand model is cooperatively developed and maintained by the H-GAC, TxDOT and the Metropolitan Transit Authority of Harris County ("METRO").

Several data collection exercises were conducted along the MCTRA 249 corridor that included the collection of automatic traffic recording counts, speed and delay studies, and origin and destination surveys. Most of the counts were done for a 48-hour duration and a few of the counts were undertaken for a 24-hour period, and one location was counted for seven days (168 hours) to capture the variation over a week. Most counts were conducted in the month of May 2017. Speed and delay information was obtained from INRIX and by conducting "speed runs" using a probe vehicle outfitted with a Global Positioning System ("GPS") tracking device. Origin and destination travel pattern data were collected through INRIX for Harris, Montgomery and all adjacent counties in September 2016 through May 2017.

A stated preference survey was administered in spring 2015 by Resource Systems Group ("RSG") as part of the 2016 TxDOT SH 249 study to estimate the distribution of potential customers' values-of-time ("VOT"). In addition to collecting data on current travel behaviors, the survey presented respondents with information about the proposed highway improvements and with the use of choice-based conjoint (trade-off) questions, which assisted in estimating travelers' values-of-time (an essential input for determination of toll diversion). The VOTs for future years were estimated by inflating to the respective year using a 2.0 percent annual inflation rate. The VOT estimates vary by traffic analysis zone based on the median household income for each zone.

Socioeconomic Forecasts

CDS produced independent socioeconomic (population, households and employment) forecasts for nine counties in the Houston region. CDS summarized its methodology and forecasts in a report completed in November 2017, which is included as Appendix A of the MCTRA 249 Traffic and Revenue Study Report. The H-GAC serves as the Metropolitan Planning Organization (MPO) for the Houston region and produces the official socioeconomic forecasts for the region. Compared to the H-GAC forecasts, the CDS forecasts assume that there will be a continuing decentralization of employment and population away from the Houston area's core county (Harris County) into the surrounding counties, including Montgomery County where the MCTRA 249 Tollway is located. Chapter 3 of the study report contains a review of the historical socioeconomic growth rates as well as the forecasts from both CDS and H-GAC. The Houston region is rapidly growing and is currently the fifth-largest metropolitan area in the US. The population of the nine-county region has increased at a rate of 2.5 percent per year between 1970 and 2016 (increasing from 2.2 to 6.8 million persons), compared to only 1.0 percent per year for the US overall. The CDS forecast shows rapid growth continuing, with the population of the nine-county region expected to increase by 1.6 percent per year (from 6.6 to 9.7 million persons) between 2015 and 2040. Montgomery County's population is expected to grow even faster at 3.1 percent per year over this same period (from 0.5 to 1.1 million).

Methodology

CDM Smith developed a nine-county "stitched" travel demand model to estimate T&R for the MCTRA 249 Tollway. The eight-county H-GAC travel demand model was utilized as the base model. H-GAC ran base and future year four-step travel demand models using the revised CDS socioeconomic forecasts to generate the future year trip tables used in this study (instead of using H-GAC's base forecasts). The model network and trip tables obtained from H-GAC were expanded to include Grimes County. This "stitched" model expansion allowed CDM Smith to estimate the revenue impacts of the planned extension of the SH 249 corridor into Grimes County. The overall base model consists of four time-of-day models: AM peak, midday, PM peak and overnight time periods. The base-year MCTRA 249 Tollway travel demand models were calibrated to 2017 traffic counts. The models were further adjusted to reflect the results of the speed and delay studies and the origin-destination surveys as described in Chapter 2 of the MCTRA 249 Traffic and Revenue Study.

Assumptions for the Toll Revenue Estimates and Forecasts

T&R estimates developed by CDM Smith in the MCTRA 249 Traffic and Revenue Study are based on the following basic assumptions:

1. Opening Date: The MCTRA 249 Tollway from Harris/Montgomery County Line to Woodtrace Boulevard will open to traffic on March 1, 2020.

2. Payment Options: Only an EZ TAG or other interoperable toll tag will be allowed as payment options on the MCTRA 249 Tollway. Cash and Pay-By-Mail payment options will not be offered.

3. Toll Rates: Toll rates on MCTRA 249 Tollway will be $1.25 (2017$) at the main lane toll gantry and $0.50 (2017$) at the two ramp toll gantries along the MCTRA 249 Tollway. Toll rates will be escalated annually by two percent per year. Toll rates will be rounded to the nearest penny. Toll rates will not vary by time of day. On average, commercial vehicle toll rates are assumed to be three times higher than two-axle passenger cars.

4. Revenue leakage: Estimated toll revenues will be 4.5 percent lower than potential toll revenues (if tolls were collected from 100 percent of all vehicles) to account for "leakage" due to a variety of factors such as toll equipment malfunctions, toll evasion, non-revenue transactions and the cost of toll discounts (such as veterans' discounts).

5. Truck traffic shares: The percentage of the MCTRA 249 Tollway traffic composed of trucks (commercial vehicles) was estimated from recent traffic counts along SH 249. The estimated MCTRA 249 Tollway truck traffic shares are: 4.9 percent in 2020, 6.7 percent in 2030 and 7.2 percent in 2040 (and all years thereafter).

6. Revenue Days: For purposes of estimating annual revenue from daily traffic projections, an annualization factor of 320 ("revenue days") is assumed for each year throughout the forecast period. This is the factor used to convert weekday toll revenues into annual revenues.

7. MCTRA 249 Tollway transactions growth beyond 2040: The travel demand models used to estimate T&R on the MCTRA 249 Tollway extend to the year 2040. The T&R estimates beyond the year 2040 rely on linear growth rate extrapolations. The assumed MCTRA 249 Tollway transactions compound annual growth rates are: 2.0 percent (between 2040-2045), 1.5 percent (between 2045-2050), 1.0 percent (between 2050-2055), and 0.5 percent (between 2055-2059).

Annual transactions are expected to be 2.6 million in fiscal year 2020 and are projected to increase to more than 13.4 million in fiscal year 2030 and 22.6 million in fiscal year 2040. After the three year ramp up period, between 2023 and 2030, transactions are expected to grow at an average annual growth rate of 7.7 percent per year and 5.4 percent per year for the period between 2030 and 2040. With the projected annual growth in traffic and the programmed annual toll increases, revenue is expected to grow at an average rate of about 9 percent per year (after the three year ramp up period) between 2023 and 2040, from $10 million in 2023 to $43.3 million in 2040.

It is important to note that T&R growth on this facility is highly dependent on future developments in the corridor. Changes to the rate of development growth from the study assumptions will result in changes to the T&R presented. Chapter 5 of the MCTRA 249 Traffic and Revenue Study presents sensitivity tests related to timing of development implementation and reductions in corridor demand growth by 20 and 50 percent.

ESTIMATED PROJECT CASH FLOW AND DEBT SERVICE COVERAGE

The table on the following page shows the combined estimated Revenues of the Project, for the fiscal years ending September 30, 2020 through September 30, 2048, both inclusive, based on the information contained in the MCTRA 249 Traffic and Revenue Study. See "APPENDIX B—MCTRA 249 TRAFFIC AND REVENUE STUDY — Tables 4-12, MCTRA 249 Tollway Estimated Annual Transactions and Toll Revenue." Based on such projections for estimated Revenues, the table on the following page presents estimated coverage of debt service (for the Bonds) after deducting estimated Operating Expenses and Maintenance Expenses (as each such term is defined in the Master Trust Indenture) for the Project, as estimated by the Maintenance Report Engineering Consultant. Such estimated Operating Expenses and Maintenance Expenses for the Project relate only to the Project. See "APPENDIX C – MCTRA 249 TOLLWAY MAINTENANCE REPORT." Pursuant to the Master Trust Indenture, Revenues are transferred to the Operations and Maintenance Fund for the purpose of paying Operating Expenses and Maintenance Expenses for the Project before being available to pay debt service on the Bonds and any other Obligations. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Funds and Accounts — Operations and Maintenance Fund" and "— Flow of Funds." The Revenues included in the Trust Estate are net of the 8 percent fee and certain repair and replacement costs retained by Harris County for its services under the Tolling Services Agreement. See "THE PROJECT AND AUTHORITY OPERATIONS – Tolling Services Agreement." Pursuant to the Master Trust Indenture, for purposes of calculating debt service coverage levels for the Authority's Rate Covenant and the conditions for issuing additional Obligations, both Operating Expenses and Maintenance Expenses for the Project (actual or projected, as applicable) are deducted from Revenues (actual or Projected Revenues, as applicable). See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Rate Covenant — Maintenance of Rates" and "— Additional Obligations." See "APPENDIX C – MCTRA 249 TOLLWAY MAINTENANCE REPORT" for the Maintenance Report Engineering Consultant's estimated Operating Expenses and Maintenance Expenses for the Project and the estimated renewal and replacement expenses for the Project. For the debt service requirements with respect to the Bonds, see "DEBT SERVICE REQUIREMENTS FOR THE BONDS." The Authority may pay its reimbursement obligations under the Authority/County Interlocal Agreement as of the date of this Official Statement, which are approximately $10,000,000, with a portion of the proceeds of the Bonds. See "THE PROJECT AND AUTHORITY OPERATIONS — Authority/County Interlocal Agreement."

ESTIMATED PROJECT CASH FLOW AND DEBT SERVICE COVERAGE TABLE

Year Ending 9/30	Revenues[1]	Operating Expenses[2]	Adjusted Revenues	Routine Maintenance Expenses[3]	Revenues Available for Debt Service	Net Senior Lien Debt Service[4]	Senior Lien Debt Service Coverage	Revenues Available After Senior Lien Debt Service	Deposit to Renewal and Replacement Reserve Fund	Deposit to Debt Service Fund	Heavy Maintenance Expenses[3]	Deposit to Project Enhancement Fund	Year Ending 9/30
2018												0	2018
2019						0	-	0				0	2019
2020	2,937,040	(235,000)	2,702,040	(311,400)	2,390,640	0	-	2,390,640	(1,000,000)	0	(43,500)	1,347,140	2020
2021	6,138,590	(491,000)	5,647,590	(522,300)	5,125,290	2,598,750	1.97	2,526,540		(500,000)	(78,200)	1,948,340	2021
2022	7,963,610	(637,000)	7,326,610	(547,300)	6,779,310	3,955,000	1.71	2,824,310			(82,100)	2,742,210	2022
2023	10,009,520	(801,000)	9,208,520	(573,700)	8,634,820	4,955,000	1.74	3,679,820			(86,200)	3,593,620	2023
2024	11,600,700	(928,000)	10,672,700	(601,200)	10,071,500	5,430,000	1.85	4,641,500			(90,600)	4,550,900	2024
2025	12,819,550	(1,026,000)	11,793,550	(630,200)	11,163,350	5,880,000	1.90	5,283,350			(2,922,000)	2,361,350	2025
2026	14,182,480	(1,135,000)	13,047,480	(660,500)	12,386,980	6,385,000	1.94	6,001,980			(99,800)	5,902,180	2026
2027	15,629,380	(1,250,000)	14,379,380	(692,300)	13,687,080	6,386,000	2.14	7,301,080			(104,800)	7,196,280	2027
2028	17,128,490	(1,370,000)	15,758,490	(725,700)	15,032,790	6,381,750	2.36	8,651,040			(110,100)	8,540,940	2028
2029	18,681,310	(1,495,000)	17,186,310	(760,800)	16,425,510	6,382,250	2.57	10,043,260			(115,600)	9,927,660	2029
2030	20,289,390	(1,623,000)	18,666,390	(797,500)	17,868,890	6,382,000	2.80	11,486,890			(5,076,200)	6,410,690	2030
2031	21,954,330	(1,756,000)	20,198,330	(836,000)	19,362,330	6,380,750	3.03	12,981,580			(127,400)	12,854,180	2031
2032	23,677,740	(1,894,000)	21,783,740	(876,400)	20,907,340	6,383,250	3.28	14,524,090			(133,800)	14,390,290	2032
2033	25,461,310	(2,037,000)	23,424,310	(918,800)	22,505,510	6,384,000	3.53	16,121,510			(140,500)	15,981,010	2033
2034	27,306,750	(2,185,000)	25,121,750	(963,300)	24,158,450	6,382,750	3.78	17,775,700			(147,500)	17,628,200	2034
2035	29,835,140	(2,387,000)	27,448,140	(1,009,900)	26,438,240	6,384,250	4.14	20,053,990			(4,759,700)	15,294,290	2035
2036	32,414,150	(2,593,000)	29,821,150	(1,058,900)	28,762,250	6,383,000	4.51	22,379,250			(162,600)	22,216,650	2036
2037	34,996,540	(2,800,000)	32,196,540	(1,110,200)	31,086,340	6,383,750	4.87	24,702,590			(170,700)	24,531,890	2037
2038	37,669,250	(3,014,000)	34,655,250	(1,164,100)	33,491,150	6,381,000	5.25	27,110,150			(179,200)	26,930,950	2038
2039	40,434,880	(3,235,000)	37,199,880	(1,220,600)	35,979,280	6,384,500	5.64	29,594,780			(188,200)	29,406,580	2039
2040	43,296,060	(3,464,000)	39,832,060	(1,279,800)	38,552,260	6,383,500	6.04	32,168,760			(8,268,600)	23,900,160	2040
2041	45,359,710	(3,629,000)	41,730,710	(1,342,000)	40,388,710	6,382,750	6.33	34,005,960			(207,500)	33,798,460	2041
2042	47,192,240	(3,775,000)	43,417,240	(1,407,300)	42,009,940	6,381,750	6.58	35,628,190			(217,900)	35,410,290	2042
2043	49,098,810	(3,928,000)	45,170,810	(1,475,700)	43,695,110	6,385,000	6.84	37,310,110			(228,800)	37,081,310	2043
2044	51,082,400	(4,087,000)	46,995,400	(1,547,500)	45,447,900	6,381,750	7.12	39,066,150			(240,200)	38,825,950	2044
2045	53,146,130	(4,252,000)	48,894,130	(1,622,800)	47,271,330	6,381,750	7.41	40,889,580			(7,752,900)	33,136,680	2045
2046	55,089,830	(4,407,000)	50,682,830	(1,701,900)	48,980,930	6,384,250	7.67	42,596,680			(264,800)	42,331,880	2046
2047	57,034,500	(4,563,000)	52,471,500	(1,784,800)	50,686,700	6,383,500	7.94	44,303,200			(278,000)	44,025,200	2047
2048	59,047,820	(4,724,000)	54,323,820	(1,871,800)	52,452,020	6,384,000	8.22	46,068,020			(291,900)	45,776,120	2048
Total	$871,477,650	($69,721,000)	$801,756,650	($30,014,700)	$771,741,950	$169,631,250		$602,110,700	($1,000,000)	($500,000)	($32,569,300)	$568,041,400	

[1] Source: CDM Smith - MCTRA 249 Tollway Comprehensive Traffic & Revenue Study (February 2018, as updated on May 21, 2018). See "APPENDIX B — MCTRA 249 TRAFFIC AND REVENUE STUDY."
[2] Operating Expenses are comprised of the 8% fee retained by HCTRA for its services under the Tolling Services Agreement. See "THE PROJECT AND AUTHORITY OPERATIONS – Tolling Services Agreement."
[3] Source: Jones & Carter - MCTRA 249 Tollway Maintenance Report (dated April 2018, as updated May 22, 2018). See "APPENDIX C — MCTRA 249 TOLLWAY MAINTENANCE REPORT."
[4] Net of capitalized interest on the Bonds. Interest rates are estimated for purposes of illustration.

Note: The Revenues, Operating Expenses and Maintenance Expenses displayed in the table above are projections only. The Authority cannot guarantee that actual Revenues, Operating Expenses and Maintenance Expenses will not vary materially from the projections provided above. The actual Revenues generated by and the Operating Expenses and Maintenance Expenses associated with the Project may be affected by a number of factors, including those identified under the heading "RISK FACTORS," and actual results may differ materially from those set forth in the table above.

DEBT SERVICE REQUIREMENTS FOR THE BONDS

FYE September 30	The Bonds Principal	Interest	Total	% of Principal Retired
2018	$ 0	$ 1,039,500	$ 1,039,500	0.00%
2019	0	4,455,000	4,455,000	0.00%
2020	0	4,455,000	4,455,000	0.00%
2021	0	4,455,000	4,455,000	0.00%
2022	0	4,455,000	4,455,000	0.00%
2023	500,000	4,455,000	4,955,000	0.56%
2024	1,000,000	4,430,000	5,430,000	1.68%
2025	1,500,000	4,380,000	5,880,000	3.37%
2026	2,080,000	4,305,000	6,385,000	5.70%
2027	2,185,000	4,201,000	6,386,000	8.15%
2028	2,290,000	4,091,750	6,381,750	10.72%
2029	2,405,000	3,977,250	6,382,250	13.42%
2030	2,525,000	3,857,000	6,382,000	16.26%
2031	2,650,000	3,730,750	6,380,750	19.23%
2032	2,785,000	3,598,250	6,383,250	22.36%
2033	2,925,000	3,459,000	6,384,000	25.64%
2034	3,070,000	3,312,750	6,382,750	29.09%
2035	3,225,000	3,159,250	6,384,250	32.70%
2036	3,385,000	2,998,000	6,383,000	36.50%
2037	3,555,000	2,828,750	6,383,750	40.49%
2038	3,730,000	2,651,000	6,381,000	44.68%
2039	3,920,000	2,464,500	6,384,500	49.08%
2040	4,115,000	2,268,500	6,383,500	53.70%
2041	4,320,000	2,062,750	6,382,750	58.55%
2042	4,535,000	1,846,750	6,381,750	63.64%
2043	4,765,000	1,620,000	6,385,000	68.98%
2044	5,000,000	1,381,750	6,381,750	74.60%
2045	5,250,000	1,131,750	6,381,750	80.49%
2046	5,515,000	869,250	6,384,250	86.68%
2047	5,790,000	593,500	6,383,500	93.18%
2048	6,080,000	304,000	6,384,000	100.00%
Total	$89,100,000	$92,837,000	$181,937,000	

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THE BONDS

General

The Bonds will be issued by the Authority pursuant to (i) the Constitution and laws of the State, particularly Chapters 284 and 431, Texas Transportation Code, as amended (the "Act"), (ii) a resolution adopted by the Board of Directors of the Authority (the "Board") on May 8, 2018 authorizing the issuance and delivery of the Bonds (the "Bond Resolution"), (iii) the Master Trust Indenture, and (iv) the First Supplemental Trust Indenture, dated as of June 1, 2018 (the "First Supplemental Indenture"), between the Authority and the Trustee, relating to the Bonds. In the Bond Resolution, as permitted by the laws of the State, the Board delegated the authority to the Chairman of the Board of the Authority to establish the terms for the sale of the Bonds, as evidenced by an award certificate to be executed by such authorized officer at the time of sale of the Bonds.

The Bonds will be dated June 1, 2018, will bear interest from the date of initial delivery thereof to the Underwriters, and will be issued as Current Interest Bonds. The Bonds will be issued as fully registered obligations in Authorized Denominations (as defined below). The Bonds mature on the dates and in the principal amounts and will bear interest at the per annum rates shown on page ii hereof. Interest on the Bonds will be calculated on the basis of a 360-day year of twelve 30-day months and will be payable to the Holders thereof on each Interest Payment Date (as defined below) for the Bonds.

"Interest Payment Date" as used in this Official Statement means, with respect to the Bonds, each March 15 and September 15, commencing September 15, 2018 until maturity or prior redemption. "Authorized Denomination" as used in this Official Statement means, with respect to the Bonds, principal denominations of $5,000, or any integral multiple thereof.

Method and Place of Payment

The Trustee will act as initial Paying Agent for the Bonds. The principal amount of the Bonds will be payable upon the presentation and surrender thereof, as the same respectively become due and payable, at the Designated Payment/Transfer Office of the Trustee, initially in Houston, Texas, or such other office designated by the Trustee. Interest on the Bonds will be payable by check dated as of the Interest Payment Date and mailed to the Person in whose name such Bond is registered on the last day of the month immediately preceding the applicable Interest Payment Date, at the address of such Person as shown on the registration books kept by the Trustee.

Notwithstanding the foregoing, for so long as the Bonds are registered in the name of Cede & Co., as nominee for The Depository Trust Company ("DTC"), payment of debt service on the Bonds will be made by the Trustee to DTC in accordance with the operational procedures of DTC.

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Redemption

Mandatory Sinking Fund Redemption. The Bonds maturing on the respective dates specified below are subject to mandatory sinking fund redemption prior to maturity in the aggregate principal amounts and on the dates set forth in the following tables, at a redemption price equal to 100% of the principal amount thereof, plus accrued interest to, but not including, the redemption date, as follows:

$21,655,000* Term Bond Maturing September 15, 2043*

Redemption Date (September 15)	Principal Amount*
2039	$3,920,000
2040	$4,115,000
2041	$4,320,000
2042	$4,535,000
2043(1)	$4,765,000

(1)Final Maturity.

$27,635,000* Term Bond Maturing September 15, 2048*

Redemption Date (September 15)	Principal Amount*
2044	$5,000,000
2045	$5,250,000
2046	$5,515,000
2047	$5,790,000
2048(1)	$6,080,000

(1)Final Maturity.

The principal amount of the Bonds required to be redeemed on any redemption date pursuant to a mandatory sinking fund redemption will be reduced, at the option of the Authority, by the principal amount of any Bonds having the same maturity which (A) at least 45 days prior to the mandatory sinking fund redemption date have been (1) acquired by the Authority and delivered to the Trustee for cancellation, (2) acquired and canceled by the Trustee at the written direction of the Authority, or (3) redeemed other than pursuant to mandatory sinking fund redemption, and (B) have not been previously credited against a mandatory sinking fund redemption.

Optional Redemption. The Bonds maturing on or after September 15, 20__* shall be subject to redemption prior to maturity, in whole or in part, at any time and from time to time, on or after September 15, 20__*, at the option of the Authority, at a redemption price equal to the principal amount of such Bonds or portions thereof to be redeemed, plus accrued interest to, but not including, the redemption date.

Selection of Bonds to be Redeemed. With respect to any Bonds subject to redemption as described herein, if less than all of the Bonds of the same maturity and interest rate are called for prior redemption, the particular Bonds or portions thereof to be redeemed will be selected at random by the Trustee in such manner as the Trustee in its discretion may deem fair and appropriate; provided, however, that any Bonds redeemed in part will be redeemed in an amount such that the unredeemed portion thereof will equal an Authorized Denomination, and provided further that, in selecting Bonds for redemption, the Trustee will treat each Bond in a denomination greater than the minimum

* Preliminary, subject to change.

Authorized Denomination as representing that number of Bonds of the minimum Authorized Denomination which is obtained by dividing the principal amount of such Bond by the minimum Authorized Denomination.

Notwithstanding the foregoing paragraph, so long as the Bonds are registered in the name of Cede & Co., as nominee of DTC, and less than all of the Bonds within a maturity are being redeemed, the Bonds to be redeemed shall be determined by DTC. DTC's current practice is to determine by lot the amount of the interest of each DTC Participant in such maturity to be called for redemption and each DTC Participant is to then select by lot the ownership interest in each maturity to be redeemed. Neither the Authority nor the Trustee will have any responsibility to Direct Participants, Indirect Participants, or the persons for whom Direct Participants act as nominees, with respect to the providing of notice of redemption or the selection of Bonds for redemption. See "— Book-Entry-Only System" herein.

Notice and Conditional Redemption. With respect to any Bonds that are subject to redemption as described herein, the Trustee will give notice, in the name of the Authority, of the redemption of the Bonds to the registered owners thereof, specifying the series, the maturities to be redeemed, the redemption date and the method and place or places of payment of the redemption price of such Bonds and, if less than all of the Bonds of any maturity are to be redeemed, the letters and numbers or other distinguishing marks of such Bonds so to be redeemed, and, in the case of Bonds to be redeemed in part only, such notices must also specify the respective portions of the principal amounts thereof to be redeemed. Except as provided below with respect to conditional notice, such notice will further state that on such date there will become due and payable upon each Bond to be redeemed the redemption price thereof, or the redemption price of the specified portions of the principal amounts thereof, in the case of Bonds to be redeemed in part only, together with interest accrued to the redemption date, and that from and after such date interest thereon will cease to accrue and be payable. Such notice must be given, not more than 60 and not less than 30 days before the redemption date, by first-class mail, postage prepaid, to the Holder of each Bond which is to be redeemed in whole or in part, at the address appearing upon the registration books kept by the Trustee; provided, however, that any such notice required to be sent to a Securities Depository may be sent by any method agreed upon by the Authority, the Trustee and such Securities Depository. The Trustee's obligation to give notice will not be conditioned upon the prior payment to the Trustee of funds sufficient to pay the redemption price of the Bonds to which such notice relates or interest thereon to the redemption date.

In the Indenture, the Authority reserves the right to give notice of its election or direction to redeem Bonds conditioned upon the occurrence of subsequent events. Such notice may state (i) that the redemption is conditioned upon the deposit of moneys or Defeasance Securities, in an amount equal to the amount necessary to effect the redemption, with the Trustee no later than the redemption date or (ii) that the Authority retains the right to rescind such notice at any time prior to the scheduled redemption date if the Authority delivers a certificate of an Authorized Representative of the Authority to the Trustee instructing the Trustee to rescind the redemption notice, and such notice and redemption will be of no effect if such moneys or Defeasance Securities are not so deposited or if the notice is rescinded. The Trustee must give prompt notice of any such rescission of a conditional notice of redemption to the affected Holders. Any Bonds subject to conditional redemption where redemption has been rescinded will remain Outstanding, and the rescission will not constitute an Event of Default. Further, in the case of a conditional redemption, the failure of the Authority to make funds available in part or in whole on or before the redemption date will not constitute an Event of Default.

Purchase of Bonds at Any Time. The Trustee, upon the written request of the Authority, will purchase Bonds as specified by the Authority in the open market at a price not exceeding the price specified by the Authority. Such purchase of Bonds may be made with funds available under the Indenture or with other available funds of the Authority. Upon purchase by the Trustee, such Bonds will be treated as delivered for cancellation. No provision in the Indenture prevents the Authority from purchasing Bonds on the open market without the involvement of the Trustee and delivering such Bonds to the Trustee for cancellation. Bonds purchased as described in this paragraph that are subject to mandatory sinking fund redemption may be credited as directed by an Authorized Representative against future mandatory sinking fund redemption payments on the series to which they relate. The principal amount, as applicable, of Bonds to be redeemed by mandatory redemption under the Indenture may be reduced by the principal amount of Bonds of the same series purchased by the Authority and delivered to the Trustee for cancellation at least 15 days prior to the last date on which the notice of redemption can be mailed.

Trustee

The Authority covenants to maintain and provide a Trustee under the Indenture at all times while the Obligations are Outstanding. Any successor Trustee must be a bank, trust company or national banking association organized and doing business under the laws of the United States of America or any state having a capital stock surplus aggregating at least $100,000,000, which is willing and able to accept the office on reasonable and customary terms and which is authorized by law to perform all the duties of the Trustee under the Indenture. In case at any time the Trustee resigns or is removed, or becomes incapable of acting, or is adjudged a bankrupt or insolvent, or if a receiver, liquidator or conservator of the Trustee, or of its property, is appointed, or if any public officer shall take charge or control of the Trustee, a successor may be appointed by the Holders of a majority in principal amount or Maturity Amount, as applicable, of the Obligations then Outstanding; provided, nevertheless, that unless a successor Trustee has been appointed by the Holders as aforesaid, the Authority will, by written instrument signed by an Authorized Representative of the Authority, appoint a Trustee to act until a successor is appointed by the Holders as described above. If no appointment of a successor Trustee is made as provided above within 45 days after the Trustee has given written notice to the Authority of its resignation or after a vacancy has otherwise occurred in the office of the Trustee, the Trustee, in the case of a resignation, or the Holder of any Obligation, in any case, may apply to any court of competent jurisdiction to appoint a successor Trustee.

Book-Entry-Only System

General. *The information below in "— DTC and its Book-Entry-Only System" describes how ownership of the Bonds is to be transferred and how the principal of and interest on the Bonds are to be paid to and credited by DTC while the Bonds are registered in the name of Cede & Co., its nominee name. The information below concerning DTC and the Book-Entry-Only System has been provided by DTC for use in disclosure documents such as this Official Statement. The Authority and the Underwriters believe the source of such information to be reliable, but take no responsibility for the accuracy or completeness thereof.*

The Authority cannot and does not give any assurance that (1) DTC will distribute payments related to the Bonds, or redemption or other notices, to DTC Participants, (2) DTC Participants or others will distribute 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.

DTC and its Book-Entry-Only System. The Depository Trust Company ("DTC"), New York, New York, will act 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 per maturity will be issued in the aggregate principal amount of such issue, 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 United States and non-United States 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 United States and non-United States 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 United States and non-United States 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 Participants' 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 Participant 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 Participants 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 effect 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 Participants 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 Indenture. 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 Trustee and request that copies of notices be provided directly to them.

Redemption notices will be sent to DTC. If less than all of the Bonds within a maturity are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such maturity to be redeemed.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to the 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 Authority 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).

Principal, interest and redemption 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 Authority or the Trustee, on payable date in accordance with their respective holdings shown on DTC's records. Payments by Direct Participants and Indirect 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 Direct Participant or Indirect Participant and not of DTC nor its nominee, the Trustee, or the Authority, subject to any statutory or regulatory requirements as may be in effect from time to time. Principal, interest and redemption payments to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of the Authority or the Trustee, 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 Participants 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 Authority or the Trustee. Under such circumstances, in the event that a successor depository is not obtained, certificates for the Bonds are required to be printed and delivered.

The Authority may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, certificates for the Bonds will be printed and delivered to DTC.

The Trustee and the Authority, so long as the DTC book-entry-only system is used for any of the Bonds, will send any notice of redemption, notice of proposed amendment to the Indenture, or other notices with respect to such Bonds only to DTC. Any failure by DTC to advise any DTC Participant, or of any Direct Participant or Indirect Participant to notify the Beneficial Owners, of any notices and their contents or effect will not affect the validity of the redemption of the Bonds called for redemption or of any other action premised on any such notice. Redemption of portions of the Bonds by the Authority will reduce the outstanding principal amount of such Bonds held by DTC. In such event, DTC may implement, through its book-entry-only system, a redemption of such Bonds held for the account of DTC Participants in accordance with its own rules or other agreements with DTC Participants and then Direct Participants and Indirect Participants may implement a redemption of such Bonds from the Beneficial Owners. Any such selection of the Bonds to be redeemed will not be governed by the Indenture and will not be conducted by the Authority or the Trustee. Neither the Authority nor the Trustee will have any responsibility or obligation to Direct Participants, Indirect Participants, or the persons for whom DTC Participants act as nominees, with respect to the payments on the Bonds or the providing of notice to Direct Participants, Indirect Participants, or Beneficial Owners of the selection of portions of the Bonds for redemption.

Transfers and Exchanges

Beneficial ownership of the Bonds registered in the name of Cede & Co. will initially be transferred as described under " — Book-Entry-Only System" above. In the event the Bonds are no longer held in book-entry form, the following provisions will apply.

Exchange of Bonds. Upon surrender of any Bonds at the Designated Payment Transfer Office of the Trustee with a written instrument of transfer satisfactory to the Trustee, duly executed by the Holder or the duly authorized attorney of the Holder, such Bonds may be exchanged, at the option of the Holder thereof, and upon payment by such Holder of any charges which the Trustee or the Authority may make as provided below, for a Bond of an equal aggregate principal amount, maturity and interest rate, in any Authorized Denomination.

Transfer of Bonds. Bonds are transferable only upon the registration books of the Authority, which will be kept for that purpose at the Designated Payment Transfer Office of the Trustee, by the Holder thereof in person or by the attorney of the Holder duly authorized in writing, upon surrender thereof together with a written instrument of transfer satisfactory to the Trustee duly executed by the Holder or his duly authorized attorney. Upon the transfer of any such Bond and payment of any required fees the Authority will issue in the name of the transferee a new Bond or Bonds, of the same aggregate principal amount, maturity and interest rate as the surrendered Bond, in any Authorized Denomination.

Regulations with Respect to Exchanges and Transfers. In all cases in which the privilege of exchanging or transferring Bonds is exercised, the Authority will execute and the Trustee will authenticate and deliver Bonds in accordance with the provisions of the Indenture. All Bonds surrendered in any exchanges or transfers will be cancelled by the Trustee. For every such exchange or transfer of Bonds, whether temporary or definitive, the Authority or the Trustee will make a charge sufficient to reimburse it or them for any tax, fee or other governmental charge required to be paid with respect to such exchange or transfer and to reimburse Trustee for administrative expenses, which sum or sums must be paid by the Holder requesting such exchange or transfer as a condition precedent to the exercise of the privilege of making such exchange or transfer. In addition, the cost, if any, of preparing each new Bond upon such exchange or transfer and any other expenses of the Authority or the Trustee incurred in connection therewith must be paid by the Holder requesting such exchange or transfer as a condition precedent to the exercise of the privilege of making such exchange or transfer. Neither the Authority nor the Trustee will be required (i) to transfer or exchange Bonds for a period of 15 days next preceding an Interest Payment Date or next preceding any selection of Bonds to be redeemed or thereafter until after the mailing of any notice of redemption; or (ii) to transfer or exchange any Bonds called for redemption.

SOURCES OF PAYMENT AND SECURITY FOR THE BONDS

Sources of Payment

Limited Obligations. The Bonds constitute Senior Lien Obligations under the Indenture and are special, limited obligations of the Authority payable solely from, and secured on an equal and ratable basis with any Additional Senior Lien Obligations issued in the future solely by a first lien on and pledge of the Trust Estate, consisting of (i) all Revenues (subject to the requirements for transfers of Revenues to the Rebate Fund and Operations and Maintenance Fund set forth in the Indenture and described in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Flow of Funds" herein), and to the extent set forth in a Supplemental Indenture, any Supplemental Security, (ii) all moneys, including investment earnings, deposited into the accounts or funds created by the Master Trust Indenture or in a Supplemental Indenture (see "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS – Funds and Accounts") to be held by or on behalf of the Trustee subject to the provisions of the Indenture relating to each of such funds and accounts (but excluding moneys on deposit in the Operations and Maintenance Fund and the Rebate Fund and amounts held in an account or subaccount of the Construction Fund containing moneys that are restricted to another use, such as right-of-way contributions that may be used for only that purpose), and (iii) any insurance proceeds and other moneys required to be deposited in the pledged funds listed in (ii) above. Any Additional Senior Lien Obligations issued in the future shall only have such rights to moneys in the Senior Lien Debt Service Reserve Fund, or any account therein, as may be specifically set forth in the Supplemental Indenture relating thereto, to the extent that the Authority elects to designate any such Additional Senior Lien Obligations as Reserve Fund Participants therein.

NONE OF THE STATE OF TEXAS, THE COUNTY OR ANY OTHER AGENCY OR POLITICAL SUBDIVISION OF THE STATE OF TEXAS OTHER THAN THE AUTHORITY IS OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE BONDS ARE PAYABLE SOLELY FROM THE TRUST ESTATE. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE STATE OF TEXAS OR ANY POLITICAL SUBDIVISION THEREOF IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE AUTHORITY HAS NO TAXING POWER. THE INDENTURE DOES NOT CREATE A MORTGAGE ON THE PROJECT.

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

Under the Indenture, the Authority has covenanted that it will cause to be filed all necessary documents, security instruments and financing statements, and the Trustee has covenanted that it will cause to be filed all necessary continuation statements, under the Business and Commerce Code of the State, in such manner and in such places as may be required by law in order to perfect and to protect and maintain in force the lien and pledge of, and the security interests created by, the Indenture. The Authority or the Trustee may rely on a Counsel's Opinion with respect to the necessity of any filing.

Investments. The proceeds of the Bonds will be invested in accordance with the terms of the Indenture and the Authority's investment policy adopted by the Board. See "INVESTMENT AUTHORITY AND INVESTMENT PRACTICES OF THE AUTHORITY."

Gross Revenues. "Gross Revenues" consist of all income and revenues derived from the operation of the Project, including (i) all rates, rents, fees, charges, fines and other income derived by the Authority from use of the Project, together with all rights of the Authority to receive the same (collectively, the "Tolls"), received by or on behalf of the Authority, (ii) the proceeds of any insurance covering business interruption loss relating to the Project or a portion thereof, (iii) any liquidated damages for delayed completion under a construction contract relating to the Project or a portion thereof, (iv) any other sources of revenues or funds of the Authority that the Authority chooses to designate as "Gross Revenues" pursuant to a Supplemental Indenture, and (v) the interest and income earned on any fund or account where said interest or income is required to be credited to the Revenue Fund created under the Indenture. "Gross Revenues" expressly does not include Supplemental Security.

Revenues. Gross Revenues, less any Tolls under a Tolling Services Agreement that are collected by a Tolling Service Provider and are retained thereby as payment for Tolling Service Provider Fees and any Tolls used as reimbursement to the Tolling Service Provider for equipment replacement and related Costs of the Project.

Priority of Liens. Except as otherwise provided or permitted in the Indenture, the Trust Estate securing all (i) Senior Lien Obligations, shall be shared on a parity with other Senior Lien Obligations on an equal and ratable basis, and (ii) 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 interest in the Trust Estate for the benefit of the Holders of the Senior Lien Obligations.

Supplemental Security. The Authority may, however, in its discretion, provide Supplemental Security (a) for specified Obligations, but shall have no obligation to provide such additional security or credit enhancement to other Obligations, or (b) for deposit into one or more specified Funds or Accounts created under the Indenture or any Supplemental Indenture, except that no Supplemental Security will be provided unless there has first been delivered to the Trustee a Counsel's Opinion that the exclusion from gross income of interest on any Obligations for federal income tax purposes will not be adversely affected thereby. The Authority has reserved the right in the Indenture to establish one or more Funds or Accounts for the purpose of holding, investing and disbursing Supplemental Security.

Funds and Accounts

The Indenture establishes certain special funds of the Authority. They are designated the "Revenue Fund," the "Construction Fund," the "Operations and Maintenance Fund," the "Senior Lien Debt Service Fund," the "Senior Lien Debt Service Reserve Fund," the "Subordinate Lien Debt Service Fund," the "Subordinate Lien Debt Service Reserve Fund," the "Operations and Maintenance Reserve Fund," the "Renewal and Replacement Fund," the "Renewal and Replacement Reserve Fund," the "Project Enhancement Fund" and the "Rebate Fund," all of which are held by the Trustee in trust for the Owners of the Obligations (except for the Operations and Maintenance Fund and the Rebate Fund, which will be held outside the Indenture).

Revenue Fund. The Indenture provides that all Revenues will be deposited as received into the Revenue Fund.

Construction Fund. In the First Supplemental Indenture, the Authority has established within the Construction Fund the "2018 Project Account" (the "Project Account"). Within such Project Account, the First Supplemental Indenture establishes various subaccounts relating to the Bonds. As described in "PLAN OF FINANCE," a portion of the proceeds of the Bonds will be used to finance Costs of the Project.

The Trustee will disburse moneys on deposit in the Project Account to pay or reimburse payment of the Costs of the Project within two Business Days after receipt by the Trustee of a written requisition of the Authority. Upon receipt of each requisition, the Trustee, at the direction of the Authority, will transfer the amounts to be paid as set forth in such requisition, and the Authority covenants to apply such funds to the payments described in the requisition. If for any reason the Authority should decide prior to release of payment by the Trustee of any item not to pay such item, the Authority will give notice, confirmed in writing, of such decision to the Trustee and the Trustee is then required not to make such payment.

On or before each Interest Payment Date for which interest on the Bonds has been capitalized, the Trustee will transfer, without the need for a requisition from the Authority, from the appropriate subaccount within the Project Account to the appropriate subaccount in the Senior Lien Debt Service Fund, such amounts as are necessary to pay such interest on such Interest Payment Date on the Bonds. See "PLAN OF FINANCE – Estimated Sources and Uses of Bond Proceeds."

If at any time the Authority certifies that (i) Substantial Completion (as defined below) of the Project has occurred, (ii) the Cost of the Project has been finally determined and (iii) the funds remaining in the subaccounts within the Project Account exceed the remaining Costs of the Project, then, to the extent that such remaining amounts represent proceeds of the Bonds, including the investment earnings on such proceeds, the Trustee will transfer such remaining amounts (excluding any amounts constituting capitalized interest) to the Senior Lien Debt Service Fund, to be used to (i) redeem Bonds, or (ii) pay current debt service on the Bonds, if, the Authority has received a Counsel's Opinion to the effect that such application of the funds will not adversely affect the tax-exempt status of the interest on the Outstanding Obligations under the Code; provided, that such excess funds may be transferred to such other Fund or Account as directed in a certificate of an Authorized Representative of the Authority if such certificate is accompanied by Counsel's Opinion to the effect that such transfer and/or application will not adversely affect the tax-exempt status of the interest on the Outstanding Obligations under the Code and that such transfer and/or application is authorized by law.

"*Substantial Completion*," as certified by an Authorized Representative of the Authority, is the point in time at which any Project has been sufficiently completed in accordance with the applicable contract documents so that the Project or any portion thereof is partially opened to traffic to the extent that the portions of such Project open to traffic are being utilized for their intended purpose, including producing Revenues to pay or finance costs of the Project.

For additional information regarding the Construction Fund, see "APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE — Construction Fund."

Operations and Maintenance Fund. The Operations and Maintenance Fund shall be held outside of the Indenture by a Depository selected by the Authority. All funds in the Operations and Maintenance Fund shall be held separate and apart from the Authority's other funds and accounts. Amounts on deposit in the Operations and Maintenance Fund shall be applied by the Authority, from time to time, to pay Operating Expenses and Maintenance Expenses of the Project.

Not later than five Business Days prior to the first Transfer Date of each Fiscal Year, an Authorized Representative of the Authority shall certify to the Trustee as follows: (1) that all funds withdrawn from the Operations and Maintenance Fund during the just concluded Fiscal Year were actually used to pay Operating Expenses and Maintenance Expenses, and (2) the balance on deposit in the Operations and Maintenance Fund on the last day of the just concluded Fiscal Year.

Senior Lien Debt Service Fund. Moneys in the Senior Lien Debt Service Fund will be held by the Trustee in trust for the benefit of the Senior Lien Obligations, including the Bonds and, pending application, will be subject to a lien and charge in favor of the Holders of the Senior Lien Obligations until paid out or transferred as provided in the Indenture. The Trustee will pay out of the Senior Lien Debt Service Fund to the respective Paying Agents for Senior Lien Obligations (a) on or before each Interest Payment Date and each date fixed for the redemption of Senior Lien Obligations, the amount required for the payment of the interest becoming due on such date and (b) on or before each date on which Senior Lien Obligations mature or become subject to mandatory sinking fund redemption or optional redemption, the amount required for payment of the principal amount or Maturity Amount, as applicable, of the Senior Lien Obligations maturing and the redemption price of Senior Lien Obligations becoming subject to redemption on such date, except, in each case, to the extent such interest, principal amount or Maturity Amount, as applicable, or redemption price is payable from a fund or account other than the Senior Lien Debt Service Fund, as provided in any Supplemental Indenture.

The Authority may determine to purchase Senior Lien Obligations from time to time in accordance with the provisions of the Indenture described in "THE BONDS — Redemption — Purchase of Bonds at Any Time" and, in such event, the Trustee will apply amounts in the Senior Lien Debt Service Fund to pay the purchase price of such Senior Lien Obligations if (i) so directed in writing by an Authorized Representative of the Authority and (ii) after the application of amounts in Senior Lien Debt Service Fund for such purpose, the amounts on deposit in the Senior Lien Debt Service Fund, together with amounts required to be deposited therein by the provisions of the Indenture described in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Flow of Funds," will be sufficient to pay the principal, or Maturity Amount, and interest next becoming due on the Senior Lien Obligations.

If at the time the Trustee is required to make a withdrawal from the Senior Lien Debt Service Fund the moneys therein are not sufficient for such purpose, the Trustee will withdraw the amount of such deficiency from the moneys on deposit in the following funds or accounts and transfer the same to the Senior Lien Debt Service Fund in the following order: the Revenue Fund; the Project Enhancement Fund; the Renewal and Replacement Fund; the Renewal and Replacement Reserve Fund; and the Senior Lien Debt Service Reserve Fund.

Senior Lien Debt Service Reserve Fund. Moneys, investments and any Senior Lien DSRF Security, if any, held in the Senior Lien Debt Service Reserve Fund will be held and used for the purpose of paying, on any Interest Payment Date, the interest on, maturing principal amount or Maturity Amount of, as applicable, and mandatory sinking fund redemption price of Senior Lien Obligations that the Authority elects to establish as Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund to the extent that the moneys held for the credit of the Senior Lien Debt Service Fund, after giving effect to all transfers pursuant to the Indenture as described in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Flow of Funds," and after making all required transfers from other Funds, are insufficient for such purpose.

The First Supplemental Indenture establishes the "*Senior Lien Debt Service Reserve Requirement*" as, with respect to the Bonds and any Additional Senior Lien Obligations that the Authority elects to establish as Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund, an amount equal to the least of (i) the maximum Annual Debt Service of all Outstanding Senior Lien Obligations, (ii) 1.25 times the Average Annual Debt Service of all Outstanding Senior Lien Obligations, or (iii) ten percent (10%) of the aggregate amount of the Outstanding Senior Lien Obligations that the Authority elects to establish as a Reserve Fund Participant in the Senior Lien Debt Service Reserve Fund, as determined on the date each Series of such Senior Lien Obligations is issued (such amount, the "Three-Prong Test Amount"); provided, however, that for the period from the Issuance Date of the Bonds to February 15, 2021, the Senior Lien Debt Service Reserve Requirement may be satisfied with Permitted Investments that are certified by a certified public accountant (or a firm thereof), the Authority's financial advisor or the Trustee to provide upon maturity, together with any cash on hand in the Senior Lien Debt Service Reserve Fund, an amount greater than or equal to the Three-Prong Test Amount on February 15, 2021.

If at any time, the moneys, investments and principal amount of any Senior Lien DSRF Security held in the Senior Lien Debt Service Reserve Fund (based on the last valuation made pursuant to the Indenture) are less than the Senior Lien Debt Service Reserve Requirement, the Trustee will make the monthly deposits required in the Indenture as described in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Flow of Funds," in equal monthly installments, in such amount as will restore the balance of the Senior Lien Debt Service Reserve Fund to the Senior Lien Debt Service Reserve Requirement within eighteen months of the occurrence of any such deficiency. If at any time the moneys, investments and the principal amount of any Senior Lien DSRF Security held in the Senior Lien Debt Service Reserve Fund exceeds the Senior Lien Debt Service Reserve Requirement, subject to receipt of Counsel's Opinion to the effect that such transfer and use will not adversely affect the tax treatment of any Outstanding Obligations, the Authority will direct whether such excess moneys will be transferred by the Trustee to the credit of the Senior Lien Debt Service Fund, used to reduce the principal amount or Maturity Amount, as applicable, of any Senior Lien DSRF Security or, to the extent that such excess was derived from Revenues, transferred to the Revenue Fund or the Project Enhancement Fund.

In lieu of the deposit of moneys into the Senior Lien Debt Service Reserve Fund, the Authority may cause to be provided a Senior Lien DSRF Security. Each Senior Lien DSRF Security must be satisfactory to the Rating Agency (as evidenced by a letter from the Rating Agency confirming that the Senior Lien DSRF Security will not result in the rating on any outstanding Senior Lien Obligations that are Reserve Fund Participants being downgraded). The Senior Lien DSRF Security will be payable (upon the giving of required notice) on any Interest Payment Date, principal payment date or redemption date on which moneys will be required to be withdrawn from the Senior Lien Debt Service Reserve Fund and applied to the payment of the principal amount, Maturity Amount or redemption price of or interest on any Senior Lien Obligations that are Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund, unless otherwise provided in a Supplemental Indenture. If a disbursement is made pursuant to a Senior Lien DSRF Security, the Authority will be obligated either (i) to cause the reinstatement to the maximum limits of such Senior Lien DSRF Security or (ii) to deposit into the Senior Lien Debt Service Reserve Fund, funds in the amount of the disbursement made under such Senior Lien DSRF Security, or a combination of such alternatives, as will provide that the amount credited to the Senior Lien Debt Service Reserve Fund equals the Senior Lien Debt Service Reserve Requirement within 18 months.

Subordinate Lien Debt Service Fund and Subordinate Lien Debt Service Reserve Fund. The Indenture establishes the Subordinate Lien Debt Service Fund and the Subordinate Lien Debt Service Reserve Fund; however, there are no Subordinate Lien Obligations either Outstanding or being issued concurrently with the issuance of the Bonds. See "APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE —

Subordinate Lien Debt Service Fund" and "— Subordinate Lien Debt Service Reserve Fund" for a description of such Funds.

Operations and Maintenance Reserve Fund. The Operations and Maintenance Reserve Fund shall be held by the Trustee pursuant to the terms of the Indenture. Amounts on deposit in the Operations and Maintenance Reserve Fund shall only be applied, from time to time, to pay Operating Expenses and Maintenance Expenses of the Project. Funds on hand in the Operations and Maintenance Reserve Fund may not be disbursed unless and until all funds in the Operations and Maintenance Fund have been depleted. Funds on deposit in the Operations and Maintenance Reserve Fund may not be disbursed to pay debt service on the Obligations, redeem Obligations, or purchase Obligations.

The Trustee shall disburse moneys on deposit in the Operations and Maintenance Reserve Fund to pay, or as reimbursement for payment of, Operating Expenses and Maintenance Expenses of the Project within two Business Days after receipt by the Trustee of written requisition requests of the Authority. Upon receipt of each requisition, the Trustee shall transfer from the Operations and Maintenance Reserve Fund as directed by the Authority in a written requisition request funds equal to the total of the amounts to be paid as set forth in such requisition and the Authority covenants to apply such funds to the payments described in the requisition. If for any reason the Authority should decide prior to release of payment by the Trustee of any item not to pay such item, an Authorized Representative of the Authority shall give notice, confirmed in writing, of such decision to the Trustee and the Trustee shall not make such payment.

The Indenture provides for a deposit into the Operations and Maintenance Reserve Fund with a portion of the proceeds of the Bonds in the amount of the Operations and Maintenance Reserve Fund Requirement, which is defined by the Indenture as $500,000, and may be increased by a future Supplemental Indenture. The Indenture provides that the Operations and Maintenance Reserve Fund shall be replenished once drawn upon as further described under "— Operation and Maintenance Reserve Fund."

Renewal and Replacement Fund. Except as hereinafter provided, moneys held for the credit of the Renewal and Replacement Fund will be disbursed only for the purpose of paying the cost of:

(a) unusual or extraordinary maintenance or repairs, maintenance or repairs not recurring annually, and renewals and replacements, including major items of equipment;

(b) repairs or replacements resulting from an emergency caused by some extraordinary occurrence, if the moneys in the Revenue Fund and insurance proceeds, if any, available therefor are insufficient to meet such emergency; and

(c) paying all or any part of the cost of any capital improvement to the Project.

In addition, the Trustee will transfer moneys in the Renewal and Replacement Fund to the Senior Lien Debt Service Fund at such times as may be required by the Indenture or a Supplemental Indenture.

Renewal and Replacement Reserve Fund. Except as hereinafter provided, moneys held for the credit of the Renewal and Replacement Reserve Fund will be disbursed only for the same purposes as identified above under "Renewal and Replacement Fund." The Indenture establishes the "*Renewal and Replacement Reserve Fund Requirement*" as $1,000,000, plus, additional amounts, if any, specified in any Supplemental Indenture authorizing the issuance of Obligations. The First Supplemental Indenture does not provide for any additional amounts for the Renewal and Replacement Reserve Fund Requirement.

In addition, the Trustee will transfer moneys in the Renewal and Replacement Reserve Fund to the Senior Lien Debt Service Fund at such times as may be required by the Indenture or a Supplemental Indenture.

Project Enhancement Fund. Moneys held in the Project Enhancement Fund shall be used by the Trustee as provided in the Indenture to satisfy deficiencies in the Senior Lien Debt Service Fund, as described above or in APPENDIX A, and to restore deficiencies in any other funds or accounts created under the Indenture. After satisfying those requirements, however, such moneys may be expended or transferred from time to time for any of the following purposes, with no one item having priority over any of the others:

(a) to purchase, redeem or repay Obligations;

(b) to pay Maintenance Expenses and Operating Expenses;

(c) to make payments into the Construction Fund;

(d) to fund improvements and repairs to and replacements of the Project;

(e) to make a deposit to the Revenue Fund to be applied in accordance with the flow of funds described in Section 505 of the Master Indenture;

(f) to the extent that the County Reimbursement Obligation has not otherwise been paid or reimbursed to the County, to make payments to the County pursuant to the County/Authority Interlocal Agreement in an aggregate amount not to exceed the County Reimbursement Obligation; and

(g) for any street lamps, traffic signalization, toll gantries, cameras and other equipment, on-ramps, off-ramps, overpasses, feeder roads, connectivity projects and other improvements relating to the Project.

Notwithstanding anything to the contrary above, funds on deposit in the Project Enhancement Fund may not be expended for the purposes identified in items (f) or (g) above unless the Revenues generated in each of the two immediately preceding Fiscal Years were equal to or greater than two times (2x) the Annual Debt Service on the then Outstanding Obligations.

The Indenture authorizes the Trustee to apply moneys on deposit in the Project Enhancement Fund for any of such purposes upon receipt of a Letter of Instructions from the Authority.

In the Indenture, the Authority has reserved the right to pledge amounts on deposit in the Project Enhancement Fund to the payment of any obligations of the Authority authorized under the Act.

Rebate Fund. The Rebate Fund is a trust fund, although the amounts therein do not constitute part of the Trust Estate. Amounts held in the Rebate Fund may be used solely to make payments to the United States of America under section 148 of the Code, and to pay costs related to the calculation of such amounts. Moneys held in the Rebate Fund do not secure the payment of any Bonds.

Flow of Funds

The Indenture establishes the Revenue Fund for the application and deposit of all Revenues. All Revenues will be deposited as received by the Authority into the Revenue Fund.

Except as provided above, the Trustee will transfer amounts on deposit in the Revenue Fund on each Transfer Date (which is defined in the Master Trust Indenture as being the fifteenth (15^{th}) day of each month) to the following Funds and Accounts in the following order of priority:

First, to the Rebate Fund such amounts as may be authorized or required by the Master Trust Indenture or any Supplemental Indenture.

Second, to the Operations and Maintenance Fund, an amount equal to one-twelfth (1/12) of the Operating Expenses and Maintenance Expenses for such Fiscal Year, as set forth in the Annual Operating Budget and Annual Maintenance Budget of the Project; provided that the monthly payment shall be increased or decreased, as necessary, to reflect amendments to the Annual Operating Budget and Annual Maintenance Budget; provided, further, that the transfer made on the first Transfer Date of each Fiscal Year (and each successive Transfer Date thereafter to the extent necessary) shall be reduced to take into consideration amounts on deposit in the Operations and Maintenance Fund on the last day of the just concluded Fiscal Year, as certified to the Trustee by the Authority in accordance with Section 507 of the Master Indenture (for example, if the Operating Expenses and Maintenance Expenses as set forth in the Annual Operating Budget and Annual Maintenance Budget for the new Fiscal Year totaled $120,000 and the amount on deposit in the Operations and Maintenance Fund on the last day of the just concluded Fiscal Year was $30,000, no transfers would be made for the first three months of the new Fiscal Year). See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS —Funds and Accounts – Operations and Maintenance Fund."

Third, to the Senior Lien Debt Service Fund (or to a fund or account created to pay or repay amounts under a Credit Facility entered into in connection with Senior Lien Obligations), an amount equal to the sum of the following:

(i) one-sixth (1/6) of the interest becoming due on the next semiannual Interest Payment Date with respect to Senior Lien Obligations that pay interest semiannually; and

(ii) the amount of interest next becoming due on Senior Lien Obligations that pay interest monthly; and

(iii) the amount of interest accruing in such month on Senior Lien Obligations that bear interest payable on other than a semi-annual or monthly basis (other than Capital Appreciation Bonds), together with the amount of interest that will accrue on such Senior Lien Obligations through any Interest Payment Dates that will occur prior to the next Transfer Date; and

(iv) one-twelfth (1/12) of the principal amount or Maturity Amount, as applicable, of Senior Lien Obligations that will mature and become due and payable on the next annual maturity date; and

(v) one-twelfth (1/12) of the principal amount or Maturity Amount, as applicable, of Senior Lien Obligations subject to mandatory sinking fund redemption on the next annual maturity date; and

(vi) the amount, if any, payable by the Authority under a Senior Lien Loan Agreement or Credit Facility secured on a parity with the Senior Lien Obligations (other than payments for fees and expenses) accruing in such month or that will accrue through a payment date that will occur prior to the next Transfer Date; provided, that such amounts will be included in the calculation of the monthly deposit only to the extent such amounts are required to be paid in addition to the amounts described in clauses (i) through (v) above.

In calculating such monthly deposit to the Senior Lien Debt Service Fund, the Trustee will take into account (a) any accrued interest deposited into the Senior Lien Debt Service Fund from the proceeds of a Series of Senior Lien Obligations, (b) any amounts delivered to the Trustee prior to such Transfer Date for credit to the Senior Lien Debt Service Fund (or, to the extent applicable, the Construction Fund) and dedicated to pay capitalized interest on Senior Lien Obligations and anticipated to be available to pay interest on Senior Lien Obligations on the next Interest Payment Date, (c) any amounts (including without limitation any amounts representing Supplemental Security) deposited to the Senior Lien Debt Service Fund prior to the Transfer Date, and (d) any investment income realized by the Authority from the investment of amounts on deposit in the Senior Lien Debt Service Fund.

Further, such monthly deposits will be adjusted, as appropriate, to reflect the frequency of Interest Payment Dates applicable to each Series of Senior Lien Obligations and the frequency of payments under any Senior Lien Loan Agreements. On or before each Transfer Date, the Authority must make up any deficiencies in deposits on prior Transfer Dates from and to the extent moneys remain on deposit in the Revenue Fund.

Fourth, to the Senior Lien Debt Service Reserve Fund, all amounts, if any, which, together with amounts on deposit therein and amounts available under a Senior Lien DSRF Security, will be sufficient to make the amount on deposit therein equal to the Senior Lien Debt Service Reserve Requirement in accordance with the provisions of the Indenture described in "SOURCES OF PAYMENT AND SECURITY FOR THE

BONDS — Funds and Accounts — Senior Lien Debt Service Reserve Fund" and the provisions of any applicable Supplemental Indenture.

Fifth, to the Funds, if any, created by a Supplemental Indenture related to the issuance of Subordinate Lien Obligations, all deposits, payments or transfers required by such Supplemental Indenture or the resolution, order or other instrument creating or evidencing such Obligations.

Sixth, to the Operations and Maintenance Reserve Fund, all amounts, if any, which, together with amounts on deposit therein, will be sufficient to make the amount on deposit therein equal to the Operations and Maintenance Reserve Fund Requirement.

Seventh, to the Renewal and Replacement Fund, one-twelfth (1/12) of the amount identified in the Annual Capital Budget for deposit into the Renewal and Replacement Fund from the Revenue Fund.

Eighth, to the Renewal and Replacement Reserve Fund, all amounts, if any, necessary to make the amount on deposit therein equal to the Renewal and Replacement Reserve Fund Requirement; provided, however, that after the Renewal and Replacement Reserve Fund's initial satisfaction of the Renewal and Replacement Reserve Fund Requirement should the amount on deposit in th Renewal and Replacement Reserve Fund thereafter fail to satisfy the Renewal and Replacement Reserve Fund Requirement, the amounts on deposit in the Project Enhancement Fund shall be treated as if such amounts were in the Renewal and Replacement Reserve Fund in determining whether the Renewal and Replacement Reserve Fund Requirement has been satisfied.

Ninth, except as otherwise provided in a Supplemental Indenture, to the Project Enhancement Fund all amounts remaining on deposit in the Revenue Fund.

Rate Covenant

Maintenance of Rates. The Authority has covenanted in the Master Trust Indenture that it will at all times establish, levy, maintain and collect such Tolls in connection with the Project and establish such charges for use of the property constituting part of the Project, including without limitation, leasehold payments, concession payments, rents and other charges, as shall be sufficient, collectively, to produce Revenues in each Fiscal Year, after the payment of all Operating Expenses and Maintenance Expenses for such Fiscal Year paid or to be paid from Revenues, in an amount at least equal to the greater of (1) and (2) below:

(1) one hundred twenty-five percent (125%) of the Annual Debt Service (as defined below) in such Fiscal Year on all Outstanding Senior Lien Obligations; or

(2) one hundred percent (100%) of the Annual Debt Service in such Fiscal Year on all Obligations, plus the amounts required to be deposited into the Senior Lien Debt Service Reserve Fund, the debt service reserve fund(s) for any Obligations inferior to the Senior Lien Obligations if so established in a Supplemental Indenture authorizing the issuance of any such Obligations, the Renewal and Replacement Fund, the Renewal and Replacement Reserve Fund and any other fund established by a Supplemental Indenture to be funded by Revenues.

In making the calculations in (1) and (2) above, the Authority may take into consideration as a credit against Annual Debt Service any amounts received, or reasonably expected to be received, in the Fiscal Year from or as a result of any Supplemental Security the Authority has pledged for the benefit of all Obligations; provided, that if the pledge is not for the benefit of all Obligations, the amounts expected to be received may only be taken into account when making the calculation for the affected Obligations.

As defined in the Master Trust Indenture, "Annual Debt Service" means, for any Annual Period, with respect to Outstanding Obligations, to Outstanding Senior Lien Obligations or to Outstanding Subordinate Lien Obligations, as the case may be, (i) the principal amount and interest paid or payable or Maturity Amount paid or payable with respect to such Obligations in the Annual Period, plus (ii) Reimbursement Obligations with respect to such Obligations paid or payable by the Authority in such Annual Period (but only to the extent not duplicative of such principal and interest or Maturity Amount), and minus (iii) all amounts that are deposited to the credit of a debt service fund or the Construction Fund for the payment of the principal of or interest on all Outstanding Obligations, all Outstanding Senior Lien Obligations or all Outstanding Subordinate Lien Obligations, as the case may be, from original proceeds from the sale of such Obligations, from Supplemental Security or from any other lawfully available source (other than the Revenue Fund or any moneys that would constitute Revenues in the subject Annual Period), and that are used or scheduled to be used to pay the principal of or interest on such Obligations during any Annual Period. The following assumptions shall be used to calculate the Annual Debt Service for any Annual Period:

(a) any amounts described in clauses (i) and (ii) above that are due on the first day of a Fiscal Year shall be deemed due in the preceding Fiscal Year;

(b) in determining the principal amount or Maturity 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 Obligations, including amounts paid or payable pursuant to any mandatory redemption schedule for such Obligations;

(c) if any of the Obligations or proposed Obligations constitute Balloon Obligations or Short-Term Obligations, then such amounts thereof as constitute Balloon Obligations or Short-Term Obligations shall be treated as if such Obligations are to be amortized in substantially equal annual installments of principal and interest, or Maturity Amount, over the useful life of the improvements financed with the proceeds of such Balloon Obligations or Short-Term Obligations as calculated by, and set forth in a certificate of, an Authorized Representative of the Authority; provided, anything to the contrary herein notwithstanding, during the Annual Period preceding the final maturity date of such Balloon Obligations and, in the case of Short-Term Obligations in each Annual Period, all of the principal or Maturity Amount thereof shall be considered to be due on the maturity or due date of such Balloon Obligations or Short-Term Obligations unless the Authority provides to the Trustee, prior to the beginning of such Annual Period, a certificate of a Financial Consultant certifying that, in its judgment, the Authority will be able to refund such Balloon Obligations or Short-Term Obligations through the issuance of Long Term Obligations, in which event the Balloon Obligations or Short-Term Obligations shall be amortized over the term of such proposed refunding Obligations and shall be deemed to bear the interest rate specified in the certificate of the Financial Consultant;

(d) 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;

(e) subject to paragraph (f), if any of the Obligations or proposed Obligations constitute Variable Rate Obligations, then interest in future periods shall be based on the Assumed Variable Rate; and

(f) if any of the Obligations or proposed Obligations constitute (i) Tender Obligations or (ii) multimodal Obligations with a periodic fixed rate then in effect as of the date of calculation for any applicable Annual Period, then such amounts thereof that constitute any such Obligations shall be treated as if such Obligations shall bear interest at the fixed rate then in effect for such Tender Obligations or multimodal obligations, as the case may be, until the mandatory tender date, in the case of Tender Obligations, or the mode conversion date, in the case of multimodal Obligations, and thereafter interest in future periods for any such Obligations shall be based on the Assumed Variable Rate provided, however, in the case of Tender Obligations, if the Authority provides to the Trustee, prior to the date of calculation for any applicable Annual Period, a certificate of the Financial Consultant certifying that, in its judgment, the Authority will be able to refinance such Tender Obligations prior to the mandatory tender date, and the Authority intends to do so, then in such event the Tender Obligations shall be amortized over the term of the proposed refinancing and shall be deemed to bear the interest rate or rates specified in the certificate of the Financial Consultant.

No Event of Default. Between October 1 and February 15 of each Fiscal Year, commencing with the Fiscal Year beginning October 1, 2020, the Authority will review its financial condition and estimate and determine whether Revenues for such Fiscal Year are expected to be sufficient to enable the Authority to comply with the Rate Covenant and file with the Trustee a certification of an Authorized Representative of the Authority making such determination. If such determination filed with the Trustee indicates that the Revenues are or are reasonably expected to be insufficient to comply with the Rate Covenant, the Authority will promptly request the Traffic Consultant to make written recommendations as to appropriate revisions to the schedule of Tolls, rates, fees, rentals and other charges and any changes in methods of operation necessary or appropriate to provide sufficient Revenues to enable the Authority to comply with the Rate Covenant. The failure of the Project in any Fiscal Year to produce Revenues in the amounts sufficient to enable the Authority to comply with the Rate Covenant, which failure may continue during the succeeding Fiscal Year, will not, in and of itself, constitute an Event of Default under the Indenture if the Authority (i) promptly requests the written recommendations of a Traffic Consultant as described above and (ii) substantially complies in a timely fashion with the recommendations of such Traffic Consultant.

Uniformity of Tolls Covenant

Classifications. The Authority has covenanted in the Indenture 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 will not be interpreted to restrict the Authority's right, in its discretion in management of the Project, 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, carpooling, 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 will 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 Authority will not make a change in classification or any new classification unless the Authority determines that such change is not expected to result in the receipt of Revenues in amounts less than that necessary to comply with Rate Covenant.

Free Passage. The Authority will not grant free passage through a Toll collection facility on the Project, except that it may grant free or discounted passage to Authorized Veteran's Vehicles, Authorized Emergency Vehicles and such other vehicles as may be required or allowed by applicable law.

Discretion of Authority. The Authority's covenant as to uniformity of Tolls will not be construed as requiring that Tolls for any given class of traffic will be identical in amount throughout the entire Project for trips of approximately identical lengths. The Authority may fix and place in effect a Toll rate schedule for any given class of traffic wherein the Tolls charged for travel on a given section of the Project are different from the Tolls charged on another section of the Project notwithstanding the fact that both of said sections will be of identical or approximately identical length.

Approval by the Traffic Consultant. As used in the Indenture, approval by a Traffic Consultant means that such Traffic Consultant has undertaken an analysis of the impact of the contemplated action of the Authority and has provided a written determination to the Authority that such action would not adversely affect the ability of the Authority to meet the requirements of the Indenture described above in "— Rate Covenant."

Additional Obligations

Additional Senior Lien Obligations. As described in "PLAN OF FINANCE," the Bonds will be issued as Senior Lien Obligations. The Authority is authorized under the Indenture to issue Additional Senior Lien Obligations in accordance with and subject to the provisions of the Indenture to fund the Costs of the Project. Such Additional Senior Lien Obligations may be issued as either Short-Term Obligations or Long-Term Obligations, and may have such other characteristics as may be specified in the applicable Supplemental Indenture.

The Authority has agreed in the Indenture that it will not issue any Additional Senior Lien Obligations constituting Long-Term Obligations unless prior to or contemporaneously with the incurrence thereof, the provisions of the Indenture are met and there is delivered to the Trustee either:

(1) a certificate from an Authorized Representative of the Authority 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 Senior Lien Obligations, after the payment of all Operating Expenses and Maintenance Expenses for such Annual Period paid from Revenues, 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 Authority 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 Senior Lien Obligations, less the projected Operating Expenses and Maintenance Expenses for each such Fiscal Year to be paid from Revenues, are expected to produce a Projected Debt Service Coverage Ratio of at least (i) 1.40 with respect to Senior Lien Obligations, and (ii) 1.00 with respect to all Obligations; or

(2) if the Long-Term Obligations are being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any Outstanding Long-Term Obligations, an Authority certification that the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Obligations is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Obligations.

Any such certificate of an Authorized Representative of the Authority shall be accompanied by a report, certificate or letter by a Traffic Consultant filed with the Trustee stating the opinion of such Traffic Consultant as to Revenues to be derived by the Authority from the ownership and operation of the Project (provided that investment and other income not related to Tolls that constitute Revenues of the Project shall be estimated by an Authorized Representative) and a certificate of the General Engineering Consultant filed with the Trustee stating the opinion of the General Engineering Consultant as to the amount of Operating Expenses and Maintenance Expenses paid or accrued or to be paid or accrued, as the case may be, during any pertinent period.

Subordinate Lien Obligations. In the Indenture, the Authority has reserved the right to issue Subordinate Lien Obligations, which are Obligations secured in whole or in part by liens on all or part of the Trust Estate that are junior and subordinate to the lien on the Trust Estate securing payment of the Senior Lien Obligations. The Authority may only issue Subordinate Lien Obligations for the purposes of repairing, rehabilitating, maintaining, or improving the Project or for the purposes of refunding all or a portion of the Senior Lien Obligations or other Outstanding Subordinate Lien Obligations. The Indenture provides that the Authority may specify, in the Supplemental Indenture(s) authorizing the issuance of Subordinate Lien Obligations, that either all Subordinate Lien Obligations will be of equal rank without preference or provide for certain priorities or distinctions as to lien or otherwise. In addition to the Trust Estate, the Indenture provides that Subordinate Lien Obligations may be further secured by any other source of payment lawfully available for such purposes.

In the Indenture, the Authority has covenanted not to issue any Subordinate Lien Obligations constituting Long-Term Obligations unless the Authority certifies to the Trustee that the Revenues during the preceding Annual Period ending not more than ninety (90) days prior to the date of delivery of the proposed Subordinate Lien Obligations, after the payment of all Operating Expenses and Maintenance Expenses for such Annual Period paid from Revenues, were sufficient to satisfy the requirements of the Rate Covenant and that the Projected Revenues for each Fiscal Year over the term of the proposed Subordinate Lien Obligations, less the projected Operating Expenses and Maintenance Expenses for each such Fiscal Year to be paid from Revenues, are expected to produce a Projected Debt Service Coverage Ratio of at least 1.00 with respect to all Obligations. Notwithstanding the foregoing, the Authority has reserved the right to require, in a Supplemental Indenture, that a more stringent Rate Covenant and/or a more stringent Projected Debt Service Coverage Ratio be met before Subordinate Lien Obligations may be issued.

The Indenture requires that any such certificate of an authorized Representative of the Authority be accompanied by a report, certificate or letter by a Traffic Consultant filed with the Trustee stating the opinion of such Traffic Consultant as to Revenues to be derived by the Authority from the ownership and operation of the Project (provided that investment and other income not related to Tolls that constitute Revenues of the Project shall be estimated by an authorized Representative) and a certificate of the General Engineering Consultant filed with the trustee stating the opinion o the General Engineering Consultant as to the amount of Operating Expenses and Maintenance Expenses paid or accrued or to be paid or accrued, as the case may be, during any pertinent period.

Completion Obligations. To finance the Costs of completion of any improvements, repairs to or replacement of the Project financed with the proceeds of Obligations, the Authority may, without complying with the provisions described above under "— Additional Senior Lien Obligations," issue Additional Senior Lien Obligations in a principal amount not in excess of 10% of the principal amount of the original Obligations issued to finance such facilities, if prior to the issuance thereof there is delivered to the Trustee (1) a certificate from the General Engineering Consultant stating the amount estimated to be needed to complete the facilities and (2) a certificate of the Authority stating: (A) that at the time the original Obligations financing the facilities to be completed were issued, the Authority had reason to believe that the proceeds of such Obligations, together with other moneys then expected to be available, would provide sufficient moneys for the completion of such facilities, and (B) that the proceeds of such Additional Senior Lien Obligations to be applied to the completion of the facilities, together with (1) reasonable estimates provided by the Authority of investment income to be earned on such proceeds and available to pay such Costs, (2) the amount of moneys, if any, committed to such completion from available cash or marketable securities and reasonably estimated earnings thereon, (3) enumerated bank loans (including letters or lines of credit) and (4) any other moneys reasonably expected to be available, will be in an amount not less than the estimated amount needed to complete the facilities, as set forth in the General Engineering Consultant's certificate described above. The principal amount of the Additional Senior Lien Obligations to be used in assessing whether the test set forth in this paragraph has been met will include the amount required to (a) provide completed and equipped facilities of substantially the same type and scope contemplated at the time such prior Obligations were originally issued, (b) provide for capitalized interest during the period of construction, (c) provide the required deposit, if any, to cause the balance in the applicable debt service reserve fund to equal the applicable Debt Service Reserve Requirement, if any, and (d) pay the costs and expenses of issuing such Obligations.

Additional Covenants of the Authority

Payment of Obligations. The Authority has agreed in the Indenture to duly and punctually pay or cause to be paid, but solely from the Trust Estate including the Revenues, the proceeds of the Obligations, other funds pledged therefor by the Indenture, the principal amount or Maturity Amount, as applicable, or redemption price and interest on every Obligation at the dates and places and in the manner mentioned in the Obligations, according to the true intent and meaning thereof.

Annual Budgets. The Authority has agreed in the Indenture that on or before the end of each Fiscal Year (or such other date as is consistent with the Authority's policies then in effect) it will adopt an Annual Operating Budget for the Project for the ensuing Fiscal Year and 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 Authority has not adopted the Annual Operating Budget before the first day of any Fiscal Year, the budget for the preceding Fiscal Year will, until the adoption of the new Annual Operating Budget, be deemed to be in force and be treated as the Annual Operating Budget. The Authority may adopt an amended or supplemental Annual Operating Budget at any time for the remainder of the then current Fiscal Year.

The Authority has also agreed in the Indenture that on or before the end of each Fiscal Year (or such other date as is consistent with the Authority's policies then in effect) it will adopt an Annual Maintenance Budget for the Project for the ensuing Fiscal Year and 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 Fiscal Year. If for any reason the Authority has not adopted the Annual Maintenance Budget before the first day of any Fiscal Year, the budget for the preceding Fiscal Year, will, until the adoption of the new Annual Maintenance Budget, be deemed to be in force and be treated as the Annual Maintenance Budget. The Authority may adopt an amended or supplemental Annual Maintenance Budget at any time for the remainder of the then current Fiscal Year.

The Authority has also agreed in the Indenture that on or before the end of each Fiscal Year (or such other date as is consistent with the Authority's policies then in effect) it will adopt an Annual Capital Budget for the Project for the ensuing Fiscal Year. The Annual Capital Budget will detail the Authority's planned capital expenditures during the ensuing Fiscal Year and the portion of capital expenditures expected to be funded from the Renewal and Replacement Fund and the Renewal and Replacement Reserve Fund. If for any reason the Authority has not adopted the Annual Capital Budget before the first day of any Fiscal Year, the budget for the preceding Fiscal Year will, until the adoption of the new Annual Capital Budget, be deemed to be in force and be treated as the Annual Capital Budget. The Authority may adopt amendments or supplements to the Annual Capital Budget at any time for the remainder of the then current Fiscal Year.

Use and Operation of Project. The Authority has covenanted in the Indenture that it will (i) maintain and operate the Project in an efficient and economical manner, (ii) maintain the Project in good repair and will make all necessary repairs, renewals and replacements, to the extent funds are available therefor hereunder, and (iii) comply with laws and all rules, regulations, orders and directions of any legislative, executive, administrative or judicial body applicable to such Project, subject to the right of the Authority to contest the same in good faith and by appropriate legal proceedings.

Inspection of the Project and Duties of the General Engineering Consultant. The Authority has covenanted in the Indenture to cause a General Engineering Consultant to make an inspection of the Project at least once in each Fiscal Year following the Substantial Completion of the initial Project funded with Obligations issued under the Indenture and in each Fiscal Year thereafter; provided, however, the obligations of a General Engineering Consultant required by the Indenture may be modified or lessened by the Authority to the extent that such inspections have been performed by other parties in accordance with the National Bridge Inspection Program in accordance with applicable Federal law and as permitted by the Indenture. Following each inspection and on or before the 90th day prior to the end of each Fiscal Year, a General Engineering Consultant must submit to the Authority a report setting forth (i) its findings as to whether the Project has been maintained in good repair, working order and condition, (ii) its advice and recommendations as to the proper maintenance, repair and operation of the Project during the ensuing Fiscal Year, and (iii) an estimate of the amount of money necessary for such purposes, including its 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.

Employment of General Engineering Consultant and Traffic Consultant. The Authority has agreed in the Indenture 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 a General Engineering Consultant. The Authority has further covenanted in the Indenture 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 a Traffic Consultant. The General Engineering Consultant and the Traffic Consultant will be independent of one another.

Insurance. The Authority has agreed in the Indenture that it will keep the Project 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 will be carried with a responsible insurance company or companies authorized to do business in the State or will be provided under a self-insurance program; any self-insurance program must be actuarially sound in the written opinion of an accredited actuary, which opinion will be filed with the Trustee at least annually.

Prior to Substantial Completion of the Project and every three years thereafter (except with respect to self-insurance, which must be annually), the Authority will cause a Consultant to certify to the Trustee that (i) it has reviewed the adequacy of the Authority's insurance, listing the types and amounts of insurance, and (ii) 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 Authority should be carried, the Authority will obtain such insurance coverage unless it determines in good faith that it is unreasonable or uneconomical to obtain such coverage and an Authorized Representative of the Authority certifies the same in writing to the Trustee.

The Authority has covenanted 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 Authority receives insurance payments under a business interruption insurance policy, such amounts will be deposited into the Revenue Fund. To the extent that the Authority receives liquidated damages for delayed completion under a construction contract relating to the acquisition or construction of a Project, such amounts will be deposited into the Revenue Fund.

Records; Annual Audit. The Authority has agreed in the Indenture that it will maintain books and accounts reflecting the operations of the Project, as a separate enterprise, in accordance with Accounting Principles. In addition, the Authority has covenanted that as soon as practicable, but in no event more than 180 days after the last day of each Fiscal Year it will prepare or cause to be prepared a financial report of the results of operations of the Project for such Fiscal Year in accordance with Accounting Principles, certified by a Certified Public Accountant approved by the Authority, 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.

Encumbrance of Revenues; Sale, Lease or Other Disposition of Property. The Authority has covenanted that so long as any Obligations are Outstanding under the Indenture that:

(a) Except as otherwise permitted by law and the Indenture, (1) it will not create or suffer to be created any lien or charge upon any Revenues, except the lien and charge of the Senior Lien Obligations and the Subordinate Lien Obligations secured by the Indenture; and (2) from such Revenues or other funds available hereunder, it will pay or cause to be discharged, or will make adequate provision to pay or discharge, within 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 Authority will 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.

(b) It will not sell or otherwise dispose of any real estate or personal property comprising a portion of the Project unless an Authorized Representative of the Authority determines in the case of property with a value of $1 million or less or the Authority, by resolution or other official action, determines in the case of property with a value in excess of $1 million that:

> (1) such property (A) has become obsolete or worn out or is reasonably expected to become so within one year after the date of such disposition, (B) is no longer used or useful in the operation of the Project or in the generation of Revenues, or (C) is to be or has been replaced by other property; or
>
> (2) such action will not materially adversely affect the Revenues.

The Authority has the discretion to deposit the proceeds of such sale or disposition in a fund or account held under the Indenture or an Authority account held outside the Indenture, as it deems appropriate. In the event the Authority did not meet the Rate Covenant during the preceding Fiscal Year, the Authority will notify the Trustee of the sale or disposition of any property that generated Revenues in excess of 1% of the Authority's Revenues during the prior Fiscal Year, and all proceeds from such sale or disposition will be deposited in the Revenue Fund.

(c) it will not lease any real estate or personal property comprising a portion of the Project unless the Authority determines by resolution or other official action that such action will not materially adversely affect the Revenues.

Without intending to limit the foregoing, the Authority also may enter into contracts or other forms of agreement for the use of any real estate comprising a portion of the Project that do not materially adversely affect the operation of the Project and the payments received in connection with the same will, to the extent permitted by law, constitute Revenues. The Authority has also covenanted to ensure that all necessary real property filings will be made in connection with any such lease or other agreement relating to the use of real estate comprising a portion of the Project to protect the interest of the Authority in such property.

Covenant Not to Build Competing Project. The Authority has agreed in the Indenture to the extent permitted by law and except as necessary for safety reasons or to preserve the condition of existing non-tolled facilities, to refrain from exercising its discretionary authority to initiate, support, provide funding for or approve any project 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 to existing traffic lanes on an already constructed facility, that would have the purpose or reasonably foreseeable effect of materially adversely affecting the ability of the Authority to comply with the covenants in the Indenture.

Loan Agreements. In the Indenture the Authority has reserved, to the extent permitted by law, the right to enter into Loan Agreements on a parity with Senior Lien Obligations or Subordinate Lien Obligations, as the case may be, provided it satisfies the requirements for any such Loan Agreement specified in the Master Trust Indenture or any Supplemental Indenture. See “APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE — Provisions for Loan Agreements.”

Default and Remedies

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

(a) (1) failure by the Authority to pay the principal or Maturity Amount, as applicable, of, premium, if any, or interest on any of the Obligations when the same shall become due and payable, either at maturity or by redemption, other than at the election or direction of the Authority or pursuant to the terms of the Obligation, or (2) any failure of the Authority to purchase or cause to be purchased any Variable Rate Obligations, including any applicable Tender Obligations, upon any optional or mandatory tender to the Authority or a tender agent of the Authority, unless otherwise provided in a Supplemental Indenture authorizing Variable Rate Obligations or Tender Obligations; or

(b) the occurrence and continuance of an event of default under a Credit Facility, Senior Lien DSRF Security or other DSRF Security, Loan Agreement or Reimbursement Agreement; or

(c) the occurrence of an Event of Insolvency that has not been cured, vacated, discharged or stayed within 60 days after the occurrence thereof; or

(d) failure of the Authority to duly and punctually perform any other of the covenants, conditions, agreements and provisions contained in any Obligations or in the Indenture on the part of the Authority to be performed, and the continuation of such failure for 60 days after written notice specifying such failure and requiring same to be remedied has been given to the Authority by the Trustee, which may give such notice in its discretion and must give such notice at the written request of the Holders of not less than 10% in principal amount of the Obligations then Outstanding.

Remedies Applicable. The Holders will be entitled to the remedies provided in the Indenture; provided, however, acceleration of the principal or Maturity Amount, as applicable, of or interest on the Obligations or any of the Obligations upon the occurrence of an Event of Default is not a remedy available under the Indenture and in no event will the Trustee, the Holders or other parties have the ability, upon the occurrence of an Event of Default, to declare immediately due and payable the principal or Maturity Amount, as applicable, of or interest on the Obligations or any of the Obligations. To the extent that a Series of Obligations is secured by a Credit Facility, municipal bond insurance policy, a Senior Lien DSRF Security or other DSRF Security, the provider of such Credit Facility, municipal bond insurance policy, or DSRF Security will be considered the Holder of such Obligation for all purposes of exercising any remedy or giving any directions to the Trustee pursuant to the provisions of the Indenture.

Enforcement of Remedies. Upon the occurrence of any Event of Default, then and in every such case the Trustee may proceed, and upon the written request of the Holders of not less than twenty-five percent (25%) in principal amount or Maturity Amount, as applicable, of the Obligations then Outstanding under the Indenture is required to proceed, subject to the provisions of Indenture regarding the Trustee, to protect and enforce its rights and the rights of the Holders under the Act 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 granted in the Indenture or for the enforcement of any proper legal or equitable remedy, as the Trustee, being advised by Counsel, will deem most effectual to protect and enforce such rights.

In the enforcement of any remedy under the Indenture, the Trustee will 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 Authority 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 under the Indenture and under such Obligations, without prejudice, to any other right or remedy of the

Trustee or of the Holders, and to recover and enforce judgment or decree against the Authority, 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 moneys adjudged or decreed to be payable. See "RISK FACTORS — Limitation and Enforceability of Remedies."

Application of Funds. If at any time the moneys in the Senior Lien Debt Service Fund, the Subordinate Lien Debt Service Fund, along with moneys in the respective reserve Funds and other Funds established by the Indenture, are not sufficient to pay the principal or Maturity Amount, as applicable, of or the interest on any Obligations as the same become due and payable, such moneys, together with any moneys then or thereafter available for such purpose, whether through the exercise of the remedies provided for in the Indenture or otherwise, but in any event subject to the provisions of the Indenture described in "APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE — Events of Default and Remedies — Remedies Applicable" and, subject to the requirements for transfers of Revenues to the Rebate Fund and the Operations and Maintenance Fund set forth in the Indenture described in "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Flow of Funds," will be applied (subject to the certain provisions of the Indenture governing rights and compensation of the Trustee) as set forth in (a) through (d) below; provided, however, that amounts on deposit in a Fund or Account (i) dedicated to the payment or security of the Senior Lien Obligations, or (ii) constituting Supplemental Security for the benefit of one or more specific Series of Obligations will not be applied as provided in (a) through (d) below but will be used only for the purpose for which such deposits were made:

(a) Unless the principal or Maturity Amount, as applicable, of all Senior Lien Obligations is due and payable, all such moneys will be applied **first**: to the payment to the persons entitled thereto of all installments of interest then due on the Senior Lien Obligations, in the order of the maturity of the installments of such interest, and, if the amount available is not sufficient to pay in full any particular installment to the persons entitled thereto, then to the payment ratably, according to the amounts due on such installment, without any discrimination or preference except as to any difference in the respective rates of interest specified in the Senior Lien Obligations; and **second**: to the payment of the principal or Maturity Amount, as applicable, of any Senior Lien Obligations that have matured, and, if the amount available is not sufficient to pay all of such matured Senior Lien Obligations, then to the payment thereof ratably, according to the amount due.

(b) If the principal or Maturity Amount, as applicable, of all Senior Lien Obligations is then due and payable, all such moneys will be applied to the payment of the principal or Maturity Amount, as applicable, and interest then due and unpaid upon the Senior Lien Obligations, without preference or priority of principal or Maturity Amount, as applicable, over interest or of interest over principal or Maturity Amount, as applicable, or of any installment of interest over any other installment of interest, or of any Senior Lien Obligations over any other Senior Lien Obligations, ratably, according to the amounts due respectively for principal or Maturity Amount, as applicable, 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 Senior Lien Obligations.

(c) Except as otherwise provided by a Supplemental Indenture, if there is no Event of Default existing in the payment of the principal or Maturity Amount, as applicable, of, premium, if any, or interest on the Senior Lien Obligations but the principal or Maturity Amount, as applicable, 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 moneys 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 or Maturity Amount, as applicable, of any Subordinate Lien Obligations which 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.

(d) Except as otherwise provided by a Supplemental Indenture, if there is no Event of Default existing in the payment of the principal or Maturity Amount, as applicable, of, premium, if any, or interest on the Senior Lien Obligations but the principal or Maturity Amount, as applicable, of all the Subordinate Lien Obligations shall then be due and payable, all such moneys shall be applied to the payment of the principal or Maturity Amount, as applicable, and interest then due and unpaid upon the Subordinate Lien Obligations, without preference or priority of principal or Maturity Amount, as applicable, over interest or of interest over principal or Maturity Amount, as applicable, 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 or Maturity Amount, as applicable, 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.

Majority of Holders May Control Proceedings. Any other provisions of the Indenture notwithstanding, the Holders of not less than a majority in principal amount or Maturity Amount, as applicable, of Senior Lien Obligations then Outstanding (or, if no Senior Lien Obligations are then Outstanding, then the Holders of not less than a majority in principal amount or Maturity Amount, as applicable, of all Subordinate Lien Obligations then Outstanding) will have the right, subject to certain provisions of the 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 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 Holders that are not parties to such direction.

Restrictions Upon Action by Individual Holder. No Holder 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 Indenture or the protection or enforcement of any right under the Indenture or any resolution of the Authority authorizing the issuance of Obligations, or any right under the Act or other laws of the State (except for an action for the recovery of overdue and unpaid principal or Maturity Amount, as applicable, interest or redemption premium) unless (i) such Holder 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 Holders of not less than 20% in principal amount or Maturity Amount, as applicable, 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, have accrued, (B) afforded the Trustee a reasonable opportunity either to (1) proceed to exercise the powers granted under the Indenture or the Act or other laws of the State or (2) to institute such action, suit or proceeding in its or their name, and (C) offered the Trustee 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.

RISK FACTORS

The following is a discussion of certain risk factors 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 risks are presented is not intended to reflect either the likelihood that a particular event will occur or the relative significance of such an event. Moreover, there may well be other risks associated with an investment in the Bonds in addition to those set forth herein. Prospective Investors should read the entire Official Statement, including the appendices.

General

The financial forecasts in this Official Statement are based generally upon certain assumptions relating to the timing of completion and Costs of the Project and upon projections as to estimated Revenues and Operating Expenses and Maintenance Expenses of the Project. See "APPENDIX B — MCTRA 249 TRAFFIC AND REVENUE STUDY," for information regarding projections as to estimated Revenues. See "APPENDIX C – MCTRA 249 TOLLWAY MAINTENANCE REPORT" for information regarding Operation and Maintenance Expense projections. Inevitably, some underlying assumptions and projections used to develop the forecasts will not be realized, and unanticipated events and circumstances may occur. Therefore, the actual results achieved during the forecast periods will vary from the forecasts, and such differences may be material.

Forward-Looking Statements

This Official Statement, including the Schedule and Appendices hereto, contain "forward-looking statements," which generally can be identified with words or phrases such as "anticipates," believes," "could," "estimates," "expects," "foresees," "may," "plan," "predict," "should," "will" or other words or phrases of similar import. All statements included in this Official Statement, including the Schedule and Appendices hereto, that any person expects or anticipates will, should or may occur in the future, including but not limited to, the projections in the MCTRA 249 Traffic and Revenue Study and the Maintenance Report, are forward-looking statements. These statements are based on assumptions and analysis made by the Authority, CDM Smith, and Jones & Carter, Inc., as applicable, in light of their experience and perception of historical trends, current conditions and expected future developments as well as other factors they believe are appropriate in the circumstances. However, whether actual results and developments will conform with expectations and predictions is subject to a number of risks and uncertainties, including, without limitation, the information discussed under this "RISK FACTORS" caption of this Official Statement as well as additional factors beyond the Authority's control. The important risk factors and assumptions described under that caption and elsewhere in this Official Statement could cause actual results to differ materially from those expressed in any forward-looking statement. All of the forward-looking statements made in this Official Statement and any Appendices hereto are qualified by these cautionary statements. There can be no assurance that the actual results or developments anticipated will be realized or, even if substantially realized, that they will have the expected consequences to or effects on the Authority's revenues or operations. All subsequent forward-looking statements attributable to the Authority or persons acting on their behalf are expressly qualified in their entirety by the factors and assumptions described above and in any documents containing those forward-looking statements. All forward-looking statements included in this Official Statement are based on information available to the Authority and the other aforementioned entities on the date hereof, and neither the Authority nor any of such other aforementioned entities assumes any 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 accurate.

Costs of the Project and Construction Delays

As described in "THE PROJECT AND AUTHORITY OPERATIONS" herein, the Project was procured through a design-bid-build delivery method in which the project design was produced separately from the Construction Contract. For the construction of the Project, the Authority has entered into the Construction Contract with SpawGlass.

Generally, in construction projects of the magnitude of the Project, there is a possibility of time delays and cost increases resulting from, among other events, (i) design and construction problems and resulting change orders, (ii) environmental litigation or environmental administrative matters, (iii) archaeological, historic and unidentified subsurface conditions, (iv) hazardous materials, (v) force majeure events, or (vi) litigation. As a result, there can be no assurance that the Costs of the Project will not exceed current estimates, or that the completion of the Project will not be delayed beyond the estimated completion dates.

Specifically, while the Construction Contract shifts to the Contractor a significant amount of the risk and responsibility for time delays and cost increases associated with construction, the Project ultimately allows for increases in price and extensions of time for performance in certain cases, including, but not limited to, Authority directed changes, Authority caused delays, hazardous materials, differing site conditions, and certain events commonly referred to as force majeure events.

All of the interest due on the Bonds has been capitalized through February 15, 2021. No assurances can be given that the amount of capitalized interest will be sufficient, together with Revenues of the Project, to pay debt service on the Bonds if Substantial Completion of the Project is significantly delayed.

Payment and Performance Bonds

A potential purchaser of the Bonds can have no assurance that any contractor or subcontractor, guarantor, surety or property insurer will be willing or capable of meeting its responsibilities in connection with the Project, or that the issuer of any performance or payment bond, any guarantee or any property insurance policy will honor or will be able to honor a claim in a timely manner.

The Contract Price under the Construction Contract is $55,968,424.54, and the Construction Contract requires performance and payment bonds in an amount equal to such Contract Price. See "THE PROJECT AND AUTHORITY OPERATIONS — Construction of the Project" and "— Summary of Construction Contract."

There can be no assurance that the payment and performance bonds provided in connection with the Construction Contract will be sufficient to satisfy the Authority's payment or performance obligations under the Construction Contract. Not all events are covered under such payment and performance bonds. The issuer of payment and performance bonds is not guaranteeing payment or performance under all circumstances, and the issuer of such bonds may assert any defenses it may have for payment or performance. Moreover, in the event that a default occurs under the Construction Contract, there is a possibility of litigation between the Authority and the Contractor, or between the Authority and the providers of the performance bonds and payment bonds, which could further delay the construction and opening of the Project. In addition, there can be no assurance that the Authority could recover any amounts under the performance bonds or payment bonds provided in connection with the Construction Contract.

Liquidated Damages

The amount of liquidated damages that the Contractor will be required to pay pursuant to the Construction Contract for each calendar day that Substantial Completion or Final Acceptance of the Project is not met will be limited by contract and may not be sufficient to cover all of the Authority's losses in the event of a delay or a failure to complete the required work in accordance with the plans and specifications, and other requirements of the contract documents. Liquidated damages, if paid, may not be sufficient to enable the Authority to pay the principal and interest on the Bonds, and the other amounts required to be paid under the Indenture. There are numerous events that could cause an extension of the construction schedule and that could result in increased costs for the Project. See "— Costs of the Project and Construction Delays."

Liquidated damages are payable only under certain circumstances and even if paid, may not be sufficient to cover debt service payments on the Bonds. In addition, collection of liquidated damages may require extensive litigation and no assurance can be provided that such amounts will in fact be collected. The Contractor has not waived its rights to contest a demand for payment of liquidated damages. See "THE PROJECT AND AUTHORITY OPERATIONS — Summary of Construction Contract — Liquidated Damages."

Events of Force Majeure

Construction and operation of the Project, and operation of the other existing projects that comprise the Project, are at risk from events of force majeure, such as earthquakes, tornados, hurricanes or other natural disasters, epidemics, blockades, rebellions, war, riots, acts of sabotage, terrorism or civil commotion, and spills of hazardous materials, among other events. Construction or operations may also be stopped or delayed from non-casualty events such as discovery of additional archaeological artifacts, changes in law, and litigation, among other things.

Limited Insurance Coverage

Although the Contractor is required to provide certain types of insurance coverage during construction of the Project, such required insurance policies do not cover damage and delay from all events that could interrupt construction. Risks that may not be insurable/insured include the following risks that may delay completion of the Project without causing property damage: epidemics, blockades, strikes and riots. Other risks that may not be insured/insurable include war, nuclear events, criminal or intentional acts of the insured, pollution, unforeseeable environmental or geological conditions, discovery of archaeological artifacts, changes in law, bankruptcy and acts of terrorism. Insurance policies may not be maintained or obtainable in amounts that would be sufficient or be paid in sufficient time in all events to pay all of the Authority's expenses under the Indenture, including debt service on the Bonds. For a description of the types and amounts of insurance coverage to be provided during construction of the Project, see "THE PROJECT AND AUTHORITY OPERATIONS — Summary of the Construction Contract." For a description of the covenants of the Authority to maintain insurance for the Project, see “APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE — Particular Covenants — Insurance.”

Operating Risks

The collection of toll revenues will be subject to the risks inherent in the establishment and operation of any toll facility, including, among other things, the volume of traffic that utilizes the Project, the ability of Harris County to accurately process data for the Authority pursuant to the Tolling Services Agreement and the ability of the Authority to manage toll evasion and implement effective toll collection and enforcement practices.

Other operating risks that could impact revenues include (i) the ability of the Authority to control expenses; (ii) the availability of adequately-trained personnel and outside vendors and consultants; (iii) population, employment and income trends within the region; (iv) congestion on alternative freeways, highways, and streets; (v) time savings experienced by motorists utilizing the toll facilities; (vi) the level and escalation of toll rates; (vii) the availability and price of fuel; (viii) the continued provision of services by the County in connection with the operation of the Authority and the Project; and (ix) the construction of new or improved competitive roadways or transit facilities or alternative modes of transportation.

The continued successful operation of the Project will require timely and adequate maintenance and replacement of components of the Project. Any significant deterioration in the Project may result in increased Costs of the Project and in reduced usage, including temporary lane closures.

The Project is part of what will be an approximately 50 mile integrated SH 249 corridor. The Project will connect the proposed HCTRA Tomball Tollway (Phase II) with the proposed TxDOT SH 249 Extension. For further discussion see “THE PROJECT AND AUTHORITY OPERATIONS” and “APPENDIX B — MCTRA 249 TRAFFIC AND REVENUE STUDY.”

While the Project, HCTRA Tomball Tollway (Phase II), and TxDOT SH 249 Extension are all separate projects, they will be interconnected and development of the projects is being undertaken concurrently. Given the interaction of travel demands between the three projects, the successful development, completion, operation and maintenance of the HCTRA Tomball Tollway (Phase II) and TxDOT SH 249 Extension will have a material impact on the success of the Project.

Traffic and Revenue Study Assumptions

The T&R forecasts (the “Revenue Forecasts”) in the MCTRA 249 Traffic and Revenue Study are based upon certain assumptions described in such report and upon certain additional assumptions described in “MCTRA 249 TRAFFIC AND REVENUE STUDY” and “APPENDIX B — MCTRA 249 TRAFFIC AND REVENUE STUDY.” The MCTRA 249 Traffic and Revenue Study notes that the growth in traffic and revenue on the Project is highly dependent on future development in the SH 249 corridor. As provided in the MCTRA 249 Traffic and Revenue Study, such report is not a guarantee of any future events or trends and the forecasts therein are subject to future economic and social conditions and demographic developments that cannot be predicted with certainty. Further, any of the estimates and assumptions in such report are inherently subject to significant economic and competitive uncertainties and contingencies, many of which are beyond the control of the Authority. Failure to achieve or realize any of the assumptions described above may have a materially adverse effect upon the Revenues actually realized. See “— Possibility of Tolls on Complementary Facilities” and “— Motor Fuel Prices and Taxes.”

Maintenance Costs

The successful operation of the Project will require timely and complete maintenance and replacement of components of the Project. Although the Authority has covenanted in the Master Trust Indenture to maintain the Project, no assurance can be given that sufficient funds will be available to adequately maintain the Project. Any significant deterioration in the Project may result in increased operating costs and in reduced usage (or even in temporary lane closures) and may adversely affect the amount of funds available to pay debt service on the Bonds. See “MAINTENANCE REPORT” and “APPENDIX C – MCTRA 249 TOLLWAY MAINTENANCE REPORT.”

Alternative Routes

There are a number of non-tolled roadways in and around the County, including the non-tolled frontage roads within which the Project will be constructed, and certain existing and planned toll projects of other entities in the County and surrounding region that can, and do, serve as alternative routes for current and prospective users of the Project. Factors that could affect use of the Project include cost, time of day, day of the week, speed and delay.

Possibility of Tolls on Complementary Facilities

The Revenue Forecasts in the MCTRA 249 Traffic and Revenue Study are based on a number of assumptions, including an assumption that certain future highway network improvements identified in such report will be constructed as currently planned. Such report anticipates that certain of these network improvements will compete with the Project for traffic, and that other network improvements (the "Complementary Improvements") will feed traffic to the Project. The Revenue Forecasts are based on an assumption that the Complementary Improvements will be constructed and maintained as non-tolled facilities. To the extent that any such Complementary Improvements are constructed or later reconfigured as tolled facilities, however, traffic volumes on such facilities may be reduced, and therefore such facilities could feed less traffic to the Project. Such a reduction in traffic volumes could have a negative impact on revenues generated by the Project, and in such event actual Revenues could be less than those set forth in the Revenue Forecasts.

Motor Fuel Prices and Taxes

Among other assumptions, the Revenue Forecasts in the MCTRA 249 Traffic and Revenue Study are based on the assumption that motor fuel and any other source of power for operating the motor vehicles will remain in adequate supply and increases in price will not substantially exceed overall inflation over the long-term. There is no assurance that motor fuel and any other source of power for operating motor vehicles will remain in adequate supply or that increases in price will not exceed overall inflation during the forecast period covered by the MCTRA 249 Traffic and Revenue Study. Prices of motor fuel and any other source of power for operating motor vehicles in excess of such a level could materially adversely affect the Revenue Forecasts contained in the MCTRA 249 Traffic and Revenue Study. See "MCTRA 249 TRAFFIC AND REVENUE STUDY" and "APPENDIX B — MCTRA 249 TRAFFIC AND REVENUE STUDY."

Weather Related Events

The Authority and the Project are located near the Texas Gulf Coast. Land located in this area and on which the Project is located is susceptible to high winds, heavy rain and flooding caused by rain events, hurricanes, tropical storms, and other tropical disturbances. A weather related event that significantly damages all or part of the Project or disrupted businesses in the area could reduce the usage of the Project or increase the expense of maintaining or restoring the Project and result in a decrease in Revenues available to pay debt service. The region also experiences severe flooding, which could make the Project inaccessible for maintenance and disrupt the Authority's operations and Revenues. Additionally, during events that require evacuations, the Authority may suspend tolls, which may have a negative adverse effect on Project Revenues. During Hurricane Harvey, the Spring Creek Bridge serving the frontage roads flanking the Project flooded, which resulted in the temporary closure of the frontage roads. In an effort to mitigate against the effects of future flooding events on the Project, the Project mainlanes are being constructed above the 100-year flood plain, the Spring Creek Bridge is being elevated, and additional drainage and detention facilities are being constructed.

There can be no assurance that a casualty loss to the Project will be covered by insurance or that any insurance company will fulfill its obligation to provide insurance proceeds. Even if insurance proceeds are available and improvements are rebuilt, there could be a lengthy period in which operations of the Project could be adversely affected and, therefore, the Authority's revenues ability to pay its obligations, including the Bonds, could be adversely impacted. The Authority intends to purchase business interruption insurance for the Project, but there is no assurance that revenue loss caused by a weather event will be covered by such a policy.

Cyber-Security

Computer hacking, cyber-attacks or other malicious activities could disrupt the tolling services for the Project. Further, security breaches such as leakage, or loss of confidential or proprietary data and failure or disruption of information technology systems could materially and adversely affect the Authority's reputation, which could lead to significant capital outlays and decreased performance that insurance may not cover.

Toll Rates

The Authority has covenanted to, at all times, fix, charge and collect tolls for use of the Project for each Fiscal Year as will be required to produce Revenues that will equal at least 1.25 times the Annual Debt Service on Outstanding Senior Lien Obligations, accruing in such Fiscal Year.

The Board has adopted the Toll Policy that establishes a process for an annual review and adjustment of toll rates. The Toll Policy provides guidelines for the systematic implementation of future rate increases, but the Board may elect to defer or cancel an annual rate increase. The Toll Policy does not supersede toll rate covenants in existing or future bond documents, and in the event a conflict exists, the bond covenants prevail. See "THE PROJECT AND AUTHORITY OPERATIONS – Toll Rates." The Authority's willingness and ability to raise toll rates or to implement alternative toll pricing strategies in the future may be influenced by a variety of factors, including the toll rates charged by the owners or operators of other toll facilities in the region, local and regional economic conditions and political sensitivities.

In addition, when a toll rate increase is implemented, a portion of travelers may discontinue use of a toll facility in favor of alternative routes. Accordingly, future increases in toll rates could result in reduced usage of the Project, which could result in decreased Revenue.

State Legislation

The Texas Legislature may consider bills that could have a direct impact on the Authority, the County, the Project, their operations or the administrative agencies that oversee the Authority, the County and the Project. The Authority can make no representations or predictions concerning the substance or the effect of any legislation that may be passed in the future or how any such legislation could affect the Project. Changes in the scope and standards for public agencies, such as the Project, may lead to increasingly stringent operating requirements and the imposition of administrative orders issued by State regulators. Future compliance with such requirements and orders may impose substantial additional costs on the Project. In addition, claims against the Authority for failure to comply with applicable laws and regulations applicable to the Project could be significant.

In odd-numbered years, the Texas Legislature meets in a regular session lasting 140 days. During the 2017 Regular Session, the Legislature adopted SB 312, which among other things, imposed caps on administrative fees and fines that may be charged in connection with toll violations on TxDOT toll projects. Some legislators have made comments that they intend to file legislation extending fee caps to toll projects of local entities, such as the Authority. The next regular session of the Texas Legislature is scheduled to begin on January 8, 2019. When the Texas Legislature is not in regular session, the Governor of Texas may call one or more special sessions, at the Governor's discretion, each lasting no longer than 30 days, and for which the Governor sets the agenda. The most recent special session of the Texas Legislature ended on August 15, 2017.

Limited Obligations

The Bonds, together with any Additional Senior Lien Obligations, are special, limited obligations of the Authority payable solely from, and secured solely by a first lien on and pledge of the Trust Estate. **NONE OF THE STATE OF TEXAS, THE COUNTY OR ANY OTHER AGENCY OR POLITICAL SUBDIVISION OF THE STATE OF TEXAS OTHER THAN THE AUTHORITY IS OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE BONDS ARE PAYABLE SOLELY FROM THE TRUST ESTATE. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE STATE OF TEXAS, THE COUNTY, OR ANY POLITICAL SUBDIVISION THEREOF IS PLEDGED TO**

THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE AUTHORITY HAS NO TAXING POWER. THE INDENTURE DOES NOT CREATE A MORTGAGE ON THE PROJECT.

Other than the pledge of the Trust Estate, the Authority has not mortgaged, assigned or pledged any interest in any real or personal property or improvements, including any interest in the Project, as security for payment of the Bonds. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Sources of Payment — Limited Obligations."

Limitation and Enforceability of Remedies

Limitation of Remedies Under the Indenture. 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 Authority and its officers to observe and perform any covenant, condition or obligation prescribed in the Indenture. See "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS — Default and Remedies."

No Right to Accelerate Debt Service. **NO ACCELERATION REMEDY IS AVAILABLE TO OWNERS OF THE BONDS.** Owners of the Bonds will, therefore, be able to collect principal and interest that become due after an Event of Default only from the Revenues (after payment of Operating Expenses and Maintenance Expenses) or other property included in the Trust Estate and only when such principal and interest are scheduled to be paid.

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, (iii) are subject, in part, to the provisions of the United States Bankruptcy Act and other applicable bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or affecting the enforcement of creditors' rights generally, now or hereafter in effect, and (iv) are subject to the exercise by the United States of the powers delegated to it by the federal 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 and by equitable remedies and proceedings generally.

Future and Proposed Tax 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 Bonds under Federal or state law and could affect the market price or marketability of the Bonds. Any such legislation, action or decision could limit the value of certain deductions and exclusions, including the exclusion for tax-exempt interest. The likelihood of any such legislation, action or decision being enacted cannot be predicted. Prospective purchasers of the Bonds should consult their own tax advisors regarding the foregoing matters. See "TAX MATTERS" herein.

Environmental Regulations

The Authority is subject to the environmental regulations of the State and the United States. These laws and regulations are subject to change, and the Authority may be required to expend substantial funds to meet the requirements of such regulatory authorities. Failure to comply with these laws and regulations may result in the imposition of administrative, civil and criminal penalties.

In addition, air quality control measures required by the United States Environmental Protection Agency (the "EPA") and the Texas Commission on Environmental Quality (the "TCEQ") may curtail new industrial, commercial and residential development in the County and adjacent areas. Under the Clean Air Act Amendments of 1990 ("CAA"), the eight county Houston-Galveston-Brazoria Area ("HGB Area"), which includes the County, has been designated by the EPA as a severe non-attainment area under the EPA's ozone standards. Such areas are required to demonstrate progress in reducing ozone concentrations each year until compliance with EPA's standards is achieved. Transportation projects, including those of the Authority, must comply with and conform to the CAA.

Even though existing air emissions controls are quite stringent, studies have indicated that even more stringent air emissions controls will be necessary in order for the HGB Area to achieve compliance with the ozone standards. Due to the magnitude of air emissions reductions required as well as a shortage of economically reasonable control options, the development of a successful air quality compliance plan has been and continues to be extremely challenging and will inevitably impact a wide cross-section of the business and residential community.

If the HGB Area fails to demonstrate progress in reducing ozone concentrations or fails to meet EPA's one-hour and eight-hour ozone standards by the initial deadline for serious non-attainment areas (June 15, 2019), EPA may impose a moratorium on the awarding of federal highway construction grants and other federal grants for certain public works construction projects, as well as severe emissions offset requirements on new major sources of hydrocarbon emissions for which construction has not already commenced. It is also possible that non-attainment, a lapse in conformity under the CAA or other environmental issues may result in litigation involving injunctive or other relief that could affect the operation of the Project or give rise to delays in the construction of proposed transportation projects in the County.

Technological and Societal Changes

Neither the Authority nor CDM Smith can predict the technological and societal changes that may affect the use of the Project during the term of the Bonds. Societal changes may include, for example, the increased use of telecommuting, which could have an adverse impact on usage of the Project. Other technologies or societal changes could have a similar detrimental effect on the Project.

Community Acceptance of Toll Roads

Toll roads have become controversial within and near the County, and there has been opposition to the Project among some residents of the County. As the levels of community opposition to toll roads fluctuate, there may be accompanying fluctuations in Project Revenues if drivers choose to shift to competing non-tolled roadways. See "—Alternative Routes."

INVESTMENT AUTHORITY AND INVESTMENT PRACTICES OF THE AUTHORITY

The Authority invests its investable funds in investments authorized by State law in accordance with investment policies approved by the Authority. Both State law and the Authority's investment policies are subject to change.

Under State law, the Authority is authorized to invest funds held by the Trustee in (1) obligations of the United States or its agencies and instrumentalities, including letters of credit; (2) direct obligations of the State or its agencies and instrumentalities; (3) 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; (4) other obligations, the principal and interest of which is 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 or by the explicit full faith and credit of the United States; (5) 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; (6) bonds issued, assumed or guaranteed by the State of Israel; (7) certificates of deposit or share certificates that are issued by a depository institution that has its main branch office in the State and are guaranteed or insured by the Federal Deposit Insurance Corporation or the National Credit Union Share Insurance Fund, or their successors, or are secured by obligations described in clauses (1) through (6) above or in any other manner and amount provided by law for Authority deposits, (8) fully collateralized repurchase agreements that: (a) have a defined termination date, (b) are secured by a combination of cash and obligations described in clause (1) above, (c) require the securities being purchased by the Authority or cash held by the Authority to be pledged to the Authority, held in the Authority's name, and deposited at the time the investment is made with the Authority or with a third party selected and approved by the Authority, and (d) are placed through a primary government securities dealer or a financial institution doing business in the State, (9) certain bankers' acceptances with a stated maturity of 270 days or less, if the short-term obligations of the accepting bank or its parent are rated at least "A-1" or "P-1" or the equivalent by at least one nationally-recognized credit rating agency, (10) commercial paper with a stated maturity of 270 days or less that is rated at least "A-1" or "P-1" or the equivalent by either (a) two nationally-recognized credit 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 United States or state bank, (11) no-load money market mutual funds registered with and regulated by the United States Securities and Exchange Commission (the "SEC") that have a dollar weighted average stated maturity of 90 days or less and include in their investment objectives the maintenance of a stable net asset value of $1 for each share, and (12) no-load mutual funds registered with the SEC that have an average weighted maturity of less than two years, invest exclusively in obligations described in this paragraph, and are continuously rated as to investment quality by at least one nationally-recognized investment rating firm of not less than "AAA" or its equivalent. In addition to the authority to invest funds in certificates of deposit as described in clause (7) above, an investment in certificates of deposit made in accordance with the following conditions is an authorized investment under State law: (a) the funds are invested by the Authority through a broker that has its main office or a branch office in the State and is selected from a list adopted by the investing entity as required by State law or a depository institution that has its main office or a branch office in the State and that is selected by the Authority, (b) the selected broker or depository institution arranges for the deposit of the funds in certificates of deposit in one or more federally insured depository institutions, wherever located, for the account of the Authority, (c) the full amount of the principal and accrued interest of each of the certificates of deposit is insured by the United States or an instrumentality of the United States, and (d) the Authority appoints the selected depository institution as custodian for the Authority with respect to the certificates of deposit issued for the account of the Authority. In addition, bond proceeds may be invested under State law in guaranteed investment contracts that have a defined termination date and are secured by obligations, including letters of credit, of the United States or its agencies and instrumentalities in an amount at least equal to the amount of bond proceeds invested under such contract, other than the prohibited obligations described in the next succeeding paragraph. Additionally, the State law provides that a securities lending program is an authorized investment for the Authority if (a) the value of the securities loaned under the program is fully collateralized (including accrued income), (b) a loan made under the program provides that it may be terminated at any time, and (c) certain other requirements of State law are satisfied, including, but not limited to, that the loan made under the program is secured by obligations described in clauses (1) through (6) above, certain letters of credit or certain other obligations pursuant to State law.

The Authority may invest in such obligations directly or through government investment pools that invest solely in such obligations (and money market mutual funds, to the extent permitted by and consistent with State law) provided that the pools are rated no lower than "AAA" or "AAAm" or an equivalent by at least one nationally-recognized rating service. Under State law, the Authority may also contract with an investment management firm that is registered under either the Investment Advisers Act of 1940 (15 U.S.C. Sections 80b-1 et seq.) or the State Securities Board to provide for the investment and management of its public funds or other funds under its control for a term up to two years, but the Authority retains ultimate responsibility as fiduciary of its assets. In order to renew or extend such a contract, the Authority must do so by order, ordinance, or resolution. State law specifically prohibits the Authority from investing in: (1) obligations whose payment represents the coupon payments on the outstanding principal balance of the underlying mortgage-backed security collateral and pays no principal; (2) obligations whose payment represents the principal stream of cash flow from the underlying mortgage-backed security collateral and bears no interest; (3) collateralized mortgage obligations that have a stated final maturity of greater than 10 years; and (4) collateralized mortgage obligations the interest rate of which is determined by an index that adjusts opposite to the changes in a market index.

Under State law, the Authority 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; that include a list of authorized investments for Authority funds, the maximum allowable stated maturity of any individual investment and the maximum average dollar-weighted maturity allowed for pooled fund groups; methods to monitor the market price of investments acquired with public funds; a requirement for settlement of all transactions, except investment pool funds and mutual funds, on a delivery versus payment basis; and procedures to monitor rating changes in investments acquired with public funds and the liquidation of such investments consistent with State law. All Authority 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: (1) suitability of investment type, (2) preservation and safety of principal, (3) liquidity, (4) marketability of each investment, (5) diversification of the portfolio, and (6) yield.

Under State law, the Authority'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 Authority's investment officers must submit an investment report to the Board detailing: (1) the investment position of the Authority, (2) that all investment officers jointly prepared and signed the report, (3) the beginning market value, and any additions and changes to market value, the ending value of each pooled fund group and fully accrued interest for the reporting period, (4) the book value and market value of each separately listed asset at the beginning and end of the reporting period, (5) the maturity date of each separately invested asset, (6) the account or fund or pooled fund group for which each individual investment was acquired, and (7) the compliance of the investment portfolio as it relates to: (a) adopted investment strategies and (b) State law. No person may invest Authority funds without express written authorization from the Authority.

Under State law, the Authority is additionally required to: (1) annually review its adopted policies and strategies; (2) require any investment officers with personal business relationships or family relationships with firms seeking to sell securities to the Authority to disclose the relationship and file a statement with the Texas Ethics Commission and the Authority; (3) require the registered principal of firms seeking to sell securities to the Authority to: (a) receive and review the Authority's investment policy, (b) acknowledge that reasonable controls and procedures have been implemented to preclude imprudent investment activities, and (c) deliver a written statement attesting to these requirements; (4) in conjunction with its annual financial audit, perform a compliance audit of the management controls on investments and adherence to the Authority's investment policy; (5) restrict reverse repurchase agreements to not more than 90 days and restrict the investment of reverse repurchase agreement funds to no greater than the term of the reverse repurchase agreement; (6) restrict the investment in no-load mutual funds in the aggregate to no more than 15% of the Authority's monthly average fund balance, excluding bond proceeds and reserves and other funds held for debt service; and (7) provide specific investment training for the investment officer.

In accordance with the Public Funds Investment Act, the Authority specifically authorized investing the proceeds of the Bonds in guaranteed investment contracts in the Bond Resolution.

See the definition of "Permitted Investments" in "APPENDIX A — EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE — Definitions."

LITIGATION

On the date of delivery of the Bonds to the Underwriters, the Authority will execute and deliver to the Underwriters a certificate to the effect that no litigation of any nature has been filed, is pending or, to its knowledge, threatened as of such date seeking to restrain or enjoin the issuance or delivery of the Bonds or that would affect the provisions made for their payment or security, or in any manner questions the validity of the Bonds.

As of the date of this Official Statement, the Authority is not a party to any litigation or other proceeding pending or, to its knowledge, threatened, in any court, agency, or other administrative body (either State or federal) which, if decided adversely to the Authority, could have a material adverse effect on the financial condition of the Project.

On June 24, 2016, County Judge Craig Doyal and County Commissioners Jim Clark and Charlie Riley, all of whom serve as directors of the Authority by virtue of their positions on the Commissioners Court, were indicted by a County Grand Jury on charges of conspiracy to circumvent the Texas Open Meetings Act. The indictments related to certain alleged activities by Judge Doyal, Commissioners Clark and Riley and other individuals in 2015 in connection with the planning of the Montgomery County road bond election held on November 3, 2015 (the "Election") that authorized the issuance of road bonds. On June 28, 2016, Judge Doyal was suspended from office without pay by the State Commission on Judicial Conduct (the "Commission"). The Judge's suspension was ordered as a result of his June 24 indictment. Pursuant to the Procedural Rules for the Removal or Retirement of Judges promulgated by the Texas Supreme Court, Judge Doyal requested a post-suspension hearing regarding his suspension, which was held on July 29, 2016. On August 2, 2016, the Commission released an Amended Order of Suspension (the "Order") in which the Commission affirmed Judge Doyal's suspension, "with pay, from performing any judicial functions or duties associated with the office of Montgomery County Judge that are authorized by the Texas Constitution and/or Chapter 26 of the Texas Government Code." The Order also provides that "Judge Doyal shall not be suspended from performing the non-adjudicative, administrative duties of Montgomery County Judge." As a result, Judge Doyal continues in his role as the ranking official in the County with respect to administrative, non-adjudicative, functions. Any adjudicative functions are the responsibility of County Commissioner Mike Meador, County Judge pro tem. Commissioners Clark and Riley continue to serve as County Commissioners.

Prior to the trial of Judge Doyal and Commissioners Clark and Riley on the charge of conspiracy to circumvent the Texas Open Meetings Act on or about March 27, 2017, visiting Judge Randy Clapp of Wharton County's 329th state District Court dismissed the indictments against Judge Doyal and Commissioner Riley. By agreement with the Special Prosecutor, the indictment against Commissioner Clark was ultimately dismissed in December 2017. As a result of the dismissals, the suspension of Judge Doyal was removed by the State Commission on Judicial Conduct. The dismissal of the indictments against Judge Doyal and Commissioner Riley were overturned by the 9th Court of Appeals in March 2018. Petitions for review are currently pending in the Texas Court of Criminal Appeals. As a result of the action of the 9th Court of Appeals, the State Commission on Judicial Conduct reinstated the modified suspension of Judge Doyal. As in the prior modified suspension, Judge Doyal continues his role as the ranking official in the County with respect to administrative, non-adjudicative functions. The Authority can make no prediction as to the outcome of the appeal and or subsequent trial. It is possible that a final conviction of either or both Judge Doyal and Commissioner Riley could ultimately result in their removal from office, but a final conviction does not necessarily lead to such a result. Montgomery County Commissioner Mike Meador has been appointed by the Commissioners Court to serve as County Judge pro tem.

LEGAL MATTERS

The Authority will furnish a complete transcript of proceedings incident to the authorization and issuance of the Bonds, including the unqualified approving legal opinion of the Attorney General of Texas approving the initial Bond and to the effect that the Bonds are valid and legally binding obligations of the Authority, and based upon examination of such transcript of proceedings, the approving legal opinion of Orrick, Herrington & Sutcliffe LLP, Houston, Texas and The Muller Law Group, PLLC, Sugar Land, Texas (collectively, "Co-Bond Counsel"), to like effect and to the effect that the interest on the Bonds will be excludable from gross income for federal income tax purposes under Section 103(a) of the Code, subject to the matters described under "TAX MATTERS" herein. Included as "APPENDIX D — FORM OF CO-BOND COUNSEL'S OPINION" is the substantial form of opinion that Co-Bond Counsel will render in connection with the issuance of the Bonds. The legal opinion of Co-Bond Counsel will accompany the Bonds deposited with DTC or will be printed on the Bonds in the event of the discontinuance of the Book-Entry-Only System.

Co-Bond Counsel has reviewed the information appearing in this Official Statement under "THE BONDS" (except for "Book-Entry-Only System"), "SOURCES OF PAYMENT AND SECURITY FOR THE BONDS," "TAX MATTERS," "LEGAL MATTERS" (first two paragraphs only), "CONTINUING DISCLOSURE OF INFORMATION" (except "COMPLIANCE WITH PRIOR UNDERTAKINGS"), "LEGAL INVESTMENTS AND ELIGIBILITY TO SECURE PUBLIC FUNDS IN TEXAS," REGISTRATION AND QUALIFICATION OF BONDS FOR SALE," and "APPENDIX A – EXCERPTS OF CERTAIN PROVISIONS FROM THE INDENTURE," solely to determine whether such information fairly summarizes matters of law and the provisions of the documents referred to therein. Certain legal matters will be passed upon (i) for the Authority by The Muller Law Group, PLLC, general counsel to the Authority, (ii) for the Authority by Orrick, Herrington & Sutcliffe LLP, disclosure counsel to the Authority, and (iii) for the Underwriters by their counsel, Bracewell LLP, Houston, Texas. The payment of legal fees, or a portion thereof, to Co-Bond Counsel, general counsel to the Authority, and counsel to the Underwriters 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

In the opinion of Orrick, Herrington & Sutcliffe LLP and The Muller Law Group, PLLC ("Co-Bond Counsel"), based upon an analysis of existing laws, regulations, rulings and court decisions, and assuming, among other matters, the accuracy of certain representations and compliance with certain covenants, interest on the Bonds is excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986 (the "Code"). Co-Bond Counsel is of the further opinion that interest on the Bonds is not a specific preference item for purposes of the federal alternative minimum tax. A complete copy of the proposed form of opinion of Co-Bond Counsel is set forth in APPENDIX D hereto.

To the extent the issue price of any maturity of the Bonds is less than the amount to be paid at maturity of such Bonds (excluding amounts stated to be interest and payable at least annually over the term of such Bonds), the difference constitutes "original issue discount," the accrual of which, to the extent properly allocable to each Beneficial Owner thereof, is treated as interest on the Bonds which is excluded from gross income for federal income tax purposes. For this purpose, the issue price of a particular maturity of the Bonds is the first price at which a substantial amount of such maturity of the Bonds is sold to the public (excluding bond houses, brokers, or similar persons or organizations acting in the capacity of underwriters, placement agents or wholesalers). The original issue discount with respect to any maturity of the Bonds accrues daily over the term to maturity of such Bonds on the basis of a constant interest rate compounded semiannually (with straight-line interpolations between compounding dates). The accruing original issue discount is added to the adjusted basis of such Bonds to determine taxable gain or loss upon disposition (including sale, redemption, or payment on maturity) of such Bonds. Beneficial Owners of the Bonds should consult their own tax advisors with respect to the tax consequences of ownership of Bonds with original issue discount, including the treatment of Beneficial Owners who do not purchase such Bonds in the original offering to the public at the first price at which a substantial amount of such Bonds is sold to the public.

Bonds purchased, whether at original issuance or otherwise, for an amount higher than their principal amount payable at maturity (or, in some cases, at their earlier call date) ("Premium Bonds") will be treated as having amortizable bond premium. No deduction is allowable for the amortizable bond premium in the case of obligations, like the Premium Bonds, the interest on which is excluded from gross income for federal income tax purposes. However, the amount of tax-exempt interest received, and a Beneficial Owner's basis in a Premium Bond, will be reduced by the amount of amortizable bond premium properly allocable to such Beneficial Owner. Beneficial Owners of Premium Bonds should consult their own tax advisors with respect to the proper treatment of amortizable bond premium in their particular circumstances.

The Code imposes various restrictions, conditions and requirements relating to the exclusion from gross income for federal income tax purposes of interest on obligations such as the Bonds. The Authority has made certain representations and covenanted to comply with certain restrictions, conditions and requirements designed to ensure that interest on the Bonds will not be included in federal gross income. Inaccuracy of these representations or failure to comply with these covenants may result in interest on the Bonds being included in gross income for federal income tax purposes, possibly from the date of original issuance of the Bonds. The opinion of Co-Bond Counsel assumes the accuracy of these representations and compliance with these covenants. Co-Bond Counsel has not undertaken to determine (or to inform any person) whether any actions taken (or not taken), or events occurring (or not occurring), or any other matters coming to Co-Bond Counsel's attention after the date of issuance of the Bonds may adversely affect the value of, or the tax status of interest on, the Bonds. Accordingly, the opinion of Co-Bond Counsel is not intended to, and may not, be relied upon in connection with any such actions, events or matters.

Although Co-Bond Counsel is of the opinion that interest on the Bonds is excluded from gross income for federal income tax purposes, the ownership or disposition of, or the accrual or receipt of amounts treated as interest on, the Bonds may otherwise affect a Beneficial Owner's federal, state or local tax liability. The nature and extent of these other tax consequences depends upon the particular tax status of the Beneficial Owner or the Beneficial Owner's other items of income or deduction. Co-Bond Counsel expresses no opinion regarding any such other tax consequences.

Current and future legislative proposals, if enacted into law, clarification of the Code or court decisions may cause interest on the Bonds to be subject, directly or indirectly, in whole or in part, to federal income taxation or otherwise prevent Beneficial Owners from realizing the full current benefit of the tax status of such interest. The introduction or enactment of any such legislature proposals or clarification of the Code or court decisions may also affect, perhaps significantly, the market price for, or marketability of, the Bonds. Prospective purchasers of the Bonds should consult their own tax advisors regarding the potential impact of any pending or proposed federal or state tax legislation, regulations or litigation, as to which Co-Bond Counsel is expected to express no opinion.

The opinion of Co-Bond Counsel is based on current legal authority, covers certain matters not directly addressed by such authorities, and represents Bond Counsel's judgment as to the proper treatment of the Bonds for federal income tax purposes. It is not binding on the Internal Revenue Service ("IRS") or the courts. Furthermore, Co-Bond Counsel cannot give and has not given any opinion or assurance about the future activities of the Authority or about the effect of future changes in the Code, the applicable regulations, the interpretation thereof or the enforcement thereof by the IRS. The Authority has covenanted, however, to comply with the requirements of the Code.

Co-Bond Counsel's engagement with respect to the Bonds ends with the issuance of the Bonds, and, unless separately engaged, Co-Bond Counsel is not obligated to defend the Authority or the Beneficial Owners regarding the tax-exempt status of the Bonds in the event of an audit examination by the IRS. Under current procedures, parties other than the Authority and its appointed counsel, including the Beneficial Owners, would have little, if any, right to participate in the audit examination process. Moreover, because achieving judicial review in connection with an audit examination of tax-exempt bonds is difficult, obtaining an independent review of IRS positions with which the Authority legitimately disagrees, may not be practicable. Any action of the IRS, including but not limited to selection of the Bonds for audit, or the course or result of such audit, or an audit of bonds presenting similar tax issues may affect the market price for, or the marketability of, the Bonds, and may cause the Authority or the Beneficial Owners to incur significant expense.

CONTINUING DISCLOSURE OF INFORMATION

In the First Supplemental Indenture, the Authority has made the following agreement for the benefit of the holders and beneficial owners of the Bonds. The Authority is required to observe such agreement for so long as it remains an "obligated person" with respect to the Bonds within the meaning of Rule 15c2-12 of the U.S. Securities and Exchange Commission (the "Rule"). Under the agreement, the Authority 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 to the public at no charge using the MSRB's Electronic Municipal Market Access ("EMMA") system via the MSRB's internet website, www.emma.msrb.org.

Annual and Quarterly Reports

The Authority will provide certain updated financial information and operating data to the MSRB, in an electronic format as prescribed by the MSRB. The information to be updated includes all quantitative financial information and operating data with respect to the Authority and the Project of the general type included in this Official Statement, under the headings "THE PROJECT AND AUTHORITY OPERATIONS — Toll Rates," "ESTIMATED PROJECT CASH FLOW AND DEBT SERVICE COVERAGE TABLE" (but not including any projections for any future period), and "DEBT SERVICE REQUIREMENTS FOR THE BONDS." Included in the annual filing for each Fiscal Year through the Substantial Completion (as defined in the Master Trust Indenture) of the Project, the Authority will furnish a copy of the construction progress report prepared by the General Engineering Consultant(s) relating thereto for the last quarter of the Fiscal Year. In addition, included in the annual filing, the Authority will furnish a copy of each General Engineering Consultant's annual report relating to its inspection of the Project (which reports may be provided as one report prepared jointly by more than one General Engineering Consultant). The Authority will update and provide this information within six months after the end of each Fiscal Year. In addition to the annual information described above, the Authority will furnish on a quarterly basis, within 90 days after the end of each quarter of the Fiscal Year, (i) through the Substantial Completion of the Project, a copy of the General Engineering Consultant's construction progress report relating to the Project for the previous quarter of the Fiscal Year, and (ii) unaudited information regarding the number of toll transactions for the Project and the Revenues generated by such toll transactions for the previous quarter of the Fiscal Year; provided, however, the information described by (ii) shall no longer be required after such time as the Revenues generated in each of the two immediately preceding Fiscal Years were equal to or greater than two times (2x) the Annual Debt Service on the then Outstanding Obligations (the

"Quarterly Report Coverage Test"); provided, further, that if additional Obligations are issued after such time and the Revenues are insufficient to satisfy the Quarterly Report Coverage Test after taking into account such additional Obligations, the information described by (ii) shall, beginning with the quarter following the quarter in which such Obligations are issued, again be filed on a quarterly basis until such time as Revenues are sufficient to satisfy the Quarterly Report Coverage Test.

The Authority may provide updated information in full text or may incorporate by reference certain other publicly available documents, as permitted by the Rule. Currently, the Authority's finances appear as an Enterprise Fund in the County's audited financial statements. In the First Supplemental Indenture, the Authority has covenanted to obtain separate audited financial statements for the Authority on an annual basis. The updated information will include such separate audited financial statements, if audited financial statements are complete by the required time. If audited financial statements are not available by the required time, the Authority will provide unaudited financial statements by the required time and will provide audited financial statements when and if the audit report becomes available. Any such financial statements will be prepared in accordance with generally accepted accounting principles or such other accounting principles as the Authority may be required to employ from time to time pursuant to state law or regulation.

The Authority's current Fiscal Year end is September 30. Accordingly, it must provide updated information by March 31 in each year, unless the Authority changes its Fiscal Year. If the Authority changes its Fiscal Year, it will notify the MSRB of the change.

Event Notices

As used in this "Event Notices" caption, the term "obligated person" shall mean any person, including the Authority, who is either generally or through an enterprise, fund, or account of such person committed by contract or other arrangement to support payment of all or part of the obligations on the Bonds, respectively (other than providers of municipal bond insurance, letters of credit, or other liquidity facilities). The Authority will notify the MSRB, in an electronic format as prescribed by the MSRB, in a timely manner not in excess of ten (10) business days after the occurrence of the event, of any of the following events with respect to the Bonds:

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 (no credit enhancement is being provided for the Bonds);

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 material events affecting the tax status of the Bonds;

7. modifications to rights of the 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 obligated person;

For the purposes of the event identified in this paragraph 12, the event is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent or similar officer for an obligated person in a proceeding under the U.S. Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the obligated person, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers 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 assets or business of the obligated person.

13. the consummation of a merger, consolidation, or acquisition involving an obligated person or the sale of all or substantially all of the assets of the obligated person, 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; and

14. appointment of a successor or additional Trustee or the change of name of a Trustee, if material.

In addition, the Authority will provide timely notice to the MSRB of any failure by the Authority to provide information, data, or financial statements in accordance with its agreement described above under "CONTINUING DISCLOSURE OF INFORMATION — Annual and Quarterly Reports." All documents provided to the MSRB shall be accompanied by identifying information as prescribed by the MSRB.

Limitations and Amendments

The Authority has agreed to update information and to provide notices of certain events only as described above. The Authority 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 Authority 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 Authority 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 the Bonds may seek a writ of mandamus to compel the Authority to comply with its agreement.

The Authority 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 or status of the Authority, or type of business or operations conducted by the Authority, but only if (i) the continuing disclosure 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, as applicable, consent to the amendment or (b) any person unaffiliated with the Authority (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 Authority 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 Bonds in the primary offering of the Bonds.

Compliance with Prior Undertakings

The Authority has not previously entered into a continuing disclosure agreement in accordance with the Rule.

LEGAL INVESTMENTS AND ELIGIBILITY TO SECURE PUBLIC FUNDS 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. **With respect to investment in the Bonds by municipalities or other political subdivisions or public agencies of the State, the Public Funds Investment Act, Chapter 2256, Texas Government Code, requires that the Bonds be assigned a rating of "A" or its equivalent as to investment quality by a national rating agency.** 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 at 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 Authority has been made of the laws in other states to determine whether the Bonds are legal investments for various institutions in those states.

The Authority 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 Authority 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.

REGISTRATION AND QUALIFICATION OF BONDS FOR SALE

The sale of the Bonds has not been registered under the Federal Securities Act of 1933, as amended, in reliance upon the exemption provided thereunder by Section 3(a)(2); and the Bonds have not been qualified under the Securities Act of Texas in reliance upon various exemptions contained therein; nor have the Bonds been qualified under the securities acts of any jurisdiction. The Authority assumes no responsibility for qualification of the Bonds under the securities laws of any jurisdiction in which the Bonds may be sold, assigned, pledged, hypothecated or otherwise transferred. This disclaimer of responsibility for 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 provisions.

RATING

The Bonds have received a rating of "BBB-" with a stable outlook from Standard & Poor's Global Ratings, a division of Standard & Poor's Financial Services LLC business ("S&P").

An explanation of the significance of such rating may be obtained from S&P. The rating reflects only the views of such company at the time such rating is given, and the Authority makes no representation as to the appropriateness of the rating. The Authority and the Authority's Municipal Advisor furnished S&P with certain information and materials relating to the Bonds that have not been included in this Official Statement. Generally, rating agencies base their ratings on the information and materials so furnished and on investigations, studies, and assumptions by the rating agencies. There is no assurance that a particular rating will be maintained for any given period of time or that it will not be lowered or withdrawn entirely if, in the judgment of the agency originally establishing the rating, circumstances so warrant. Except as described under the caption "CONTINUING DISCLOSURE OF INFORMATION" herein, neither the Authority nor the Underwriters has undertaken any responsibility to bring to the attention of the registered owners of the Bonds any proposed revision or withdrawal of the rating of the Bonds or to oppose any such proposed revision or withdrawal. Any such change in or withdrawal of such rating could have an adverse effect on the market price or marketability of the Bonds.

MUNICIPAL ADVISOR

Post Oak Municipal Advisors, LLC is employed as Municipal Advisor to the Authority. In its capacity as Municipal Advisor, Post Oak Municipal Advisors, LLC has not verified or will 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. The payment of a portion of the fees to the Municipal Advisor in connection with the issuance of the Bonds is contingent on the sale and delivery of the Bonds.

UNDERWRITING

J.P. Morgan Securities LLC, as representative of the Underwriters of the Bonds (the "Representative"), has agreed to purchase the Bonds from the Authority at an underwriting discount of $____________, from the initial public offering prices therefor set forth on page ii of this Official Statement. The Underwriters will be obligated to purchase all of the Bonds if any such obligations are purchased. The obligation of the Underwriters to purchase the Bonds from the Authority is subject to certain customary conditions to delivery. The Bonds may be offered and sold to certain dealers and others at prices lower than such public offering prices, and such public offering prices may be changed, from time to time, by the Underwriters. The Underwriters may, from time to time, perform additional services to the Authority for additional compensation.

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. Under certain circumstances, the Underwriters and their affiliates may have certain creditor and/or other rights against the Authority and its affiliates in connection with such activities. In the various 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 Authority (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the Authority. 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.

Wells Fargo Securities is the trade name for certain securities-related capital markets and investment banking services of Wells Fargo & Company and its subsidiaries, including Wells Fargo Bank, National Association, which conducts its municipal securities sales, trading and underwriting operations through the Wells Fargo Bank, NA Municipal Products Group, a separately identifiable department of Wells Fargo Bank, National Association, registered with the Securities and Exchange Commission as a municipal securities dealer pursuant to Section 15B(a) of the Securities Exchange Act of 1934.

Wells Fargo Bank, National Association, acting through its Municipal Products Group ("WFBNA"), one of the underwriters of the Bonds, has entered into an agreement (the "WFA Distribution Agreement") with its affiliate, Wells Fargo Clearing Services, LLC (which uses the trade name "Wells Fargo Advisors") ("WFA"), for the distribution of certain municipal securities offerings, including the Bonds. Pursuant to the WFA Distribution Agreement, WFBNA will share a portion of its underwriting or remarketing agent compensation, as applicable, with respect to the Bonds with WFA. WFBNA has also entered into an agreement (the "WFSLLC Distribution Agreement") with its affiliate Wells Fargo Securities, LLC ("WFSLLC"), for the distribution of municipal securities offerings, including the Bonds. Pursuant to the WFSLLC Distribution Agreement, WFBNA pays a portion of WFSLLC's expenses based on its municipal securities transactions. WFBNA, WFSLLC, and WFA are each wholly-owned subsidiaries of Wells Fargo & Company.

OTHER MATTERS

The financial data and other information contained herein have been obtained from the Authority'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 of the 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. Copies may be obtained from the Authority.

By: /s/ *Craig Doyal*
Chairman

Attest:

/s/ *Mike Meador*
Secretary

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APPENDIX A

EXCERPTS OF CERTAIN PROVISIONS OF THE INDENTURE

The following are selected provisions of the Master Trust Indenture, to be dated as of June 1, 2018 (the "Master Trust Indenture") and the First Supplemental Indenture, also to be dated as of June 1, 2018 (the "First Supplemental Indenture," and together with the Master Trust Indenture, the "Indenture"). These excerpts should be qualified by reference to other portions of the Indenture referred to elsewhere in this Official Statement, and all amended and restated references and summaries pertaining to the Indenture in this Official Statement are, separately and in whole, qualified by reference to the exact terms of the Indenture, a copy of which may be obtained from the Authority. Any references to sections listed below are to the Indenture. Section and Article references contained in the following excerpts are to Sections and Articles contained in the Indenture. Provisions included herein are in substantially final form, but may change prior to closing and may thereafter be amended in accordance with the terms of the Indenture.

* * * * *

MASTER TRUST INDENTURE

THIS MASTER TRUST INDENTURE, dated as of the 1st day of June, 2018 (together with any amendments and supplements hereto, this "Indenture"), made by and between the MONTGOMERY COUNTY TOLL ROAD AUTHORITY, a local government corporation duly created, organized and existing under the laws of the State of Texas (the "State"), including particularly Subchapter D of Chapter 431, Texas Transportation Code, as amended (together with any successor to its rights, duties and obligations hereunder, the "Authority"), and REGIONS BANK, an Alabama banking corporation duly organized and existing under the laws of the State of Alabama, as trustee (together with any successor trustee hereunder, the "Trustee").

* * * * *

ARTICLE I

DEFINITIONS, STATUTORY AUTHORITY AND INTERPRETATION

SECTION 101. Definitions. The following terms shall, for all purposes of this Indenture, have the following meanings:

"Account" or "Accounts" shall mean any one or more, as the case may be, of the separate accounts within a Fund that may be created and established pursuant to this Indenture or any Supplemental Indenture.

"Accounting Principles" shall mean the "Generally Accepted Accounting Principles" for governmental entities in the United States, which are promulgated by the Governmental Accounting Standards Board, the Financial Accounting Standards Board and, when applicable, such other accounting principles as the Authority may be required to employ from time to time, in order to comply with the terms of this Indenture, or pursuant to State law or regulation or as the Authority, as applicable, may otherwise elect.

"Act" shall mean Chapter 284, Texas Transportation Code, as amended from time to time, and Subchapter D of Chapter 431, Texas Transportation Code, as amended from time to time, together with the Constitution and other laws of the State applicable to the Authority. The Act shall include Chapter 1371, Texas Government Code, as amended from time to time, if and when the Authority becomes, or is otherwise authorized to exercise the powers of, an "issuer" thereunder.

"Additional Senior Lien Obligations" shall mean Senior Lien Obligations authorized to be issued or incurred under Section 706 of this Indenture and secured by a first lien on, pledge of and security interest in the Trust Estate.

"Amortized Value" shall mean, with respect to a Permitted Investment, the value of such Permitted Investment calculated by dividing the total premium or discount at which such Permitted Investment was acquired (exclusive of accrued interest other than accrued interest paid in connection with the acquisition of such Permitted

Investment and not yet recovered) by the number of days remaining to the maturity of such Permitted Investment at the time of its acquisition and multiplying the amount so calculated by the number of days since such acquisition and deducting or adding, as the case may be, the product thus obtained to the par value of such Permitted Investment.

"Annual Capital Budget" shall mean the capital budget adopted by the Authority for the Project, as amended from time to time, pursuant to Section 705(c).

"Annual Debt Service" shall mean for any Annual Period with respect to Outstanding Obligations, to Outstanding Senior Lien Obligations or to Outstanding Subordinate Lien Obligations, as the case may be, (i) the principal amount and interest paid or payable or Maturity Amount paid or payable with respect to such Obligations in the Annual Period, plus (ii) Reimbursement Obligations with respect to such Obligations paid or payable by the Authority in such Annual Period (but only to the extent not duplicative of such principal and interest or Maturity Amount), and minus (iii) all amounts that are deposited to the credit of a debt service fund or the Construction Fund for the payment of the principal of or interest on all Outstanding Obligations, all Outstanding Senior Lien Obligations or all Outstanding Subordinate Lien Obligations, as the case may be, from original proceeds from the sale of such Obligations, from Supplemental Security or from any other lawfully available source (other than the Revenue Fund or any moneys that would constitute Revenues in the subject Annual Period), and that are used or scheduled to be used to pay the principal of or interest on such Obligations during any Annual Period. The following assumptions shall be used to calculate the Annual Debt Service for any Annual Period:

(a) any amounts described in clauses (i) and (ii) above that are due on the first day of a Fiscal Year shall be deemed due in the preceding Fiscal Year;

(b) in determining the principal amount or Maturity 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 Obligations, including amounts paid or payable pursuant to any mandatory redemption schedule for such Obligations;

(c) if any of the Obligations or proposed Obligations constitute Balloon Obligations or Short-Term Obligations, then such amounts thereof as constitute Balloon Obligations or Short-Term Obligations shall be treated as if such Obligations are to be amortized in substantially equal annual installments of principal and interest, or Maturity Amount, over the useful life of the improvements financed with the proceeds of such Balloon Obligations or Short-Term Obligations as calculated by, and set forth in a certificate of, an Authorized Representative of the Authority; provided, anything to the contrary herein notwithstanding, during the Annual Period preceding the final maturity date of such Balloon Obligations and, in the case of Short-Term Obligations in each Annual Period, all of the principal or Maturity Amount thereof shall be considered to be due on the maturity or due date of such Balloon Obligations or Short-Term Obligations unless the Authority provides to the Trustee, prior to the beginning of such Annual Period, a certificate of a Financial Consultant certifying that, in its judgment, the Authority will be able to refund such Balloon Obligations or Short-Term Obligations through the issuance of Long Term Obligations, in which event the Balloon Obligations or Short-Term Obligations shall be amortized over the term of such proposed refunding Obligations and shall be deemed to bear the interest rate specified in the certificate of the Financial Consultant;

(d) 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;

(e) subject to paragraph (f), if any of the Obligations or proposed Obligations constitute Variable Rate Obligations, then interest in future periods shall be based on the Assumed Variable Rate; and

(f) if any of the Obligations or proposed Obligations constitute (i) Tender Obligations or (ii) multimodal Obligations with a periodic fixed rate then in effect as of the date of calculation for any applicable Annual Period, then such amounts thereof that constitute any such Obligations shall be treated as if such Obligations shall bear interest at the fixed rate then in effect for such Tender Obligations or multimodal obligations, as the case may be, until the mandatory tender date, in the case of Tender Obligations, or the mode conversion date, in the case of multimodal Obligations, and thereafter interest in future periods for any such Obligations shall be based on the Assumed Variable Rate provided, however, in the case of Tender Obligations, if the Authority provides to the Trustee, prior to the date of calculation for any applicable Annual Period, a certificate of the Financial Consultant certifying that, in its judgment, the Authority will be able to refinance such Tender Obligations prior to the mandatory tender date, and the Authority intends to do so, then in such event the Tender Obligations shall be amortized over the term of the proposed refinancing and shall be deemed to bear the interest rate or rates specified in the certificate of the Financial Consultant.

"Annual Maintenance Budget" shall mean the annual budget of maintenance expenditures adopted by the Authority for the Project, as amended from time to time, pursuant to Section 705(b).

"Annual Operating Budget" shall mean the annual operating budget adopted by the Authority for the Project, as amended from time to time, pursuant to Section 705(a).

"Annual Period" shall mean any consecutive twelve-month period.

"Assumed Variable Rate" shall mean in the case of:

(a) Outstanding Obligations in the form of Variable Rate Obligations, the greater of:

(1) the average interest rate on such Variable Rate Obligations for the most recently completed sixty (60) month period or the period such Variable Rate Obligations 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 Obligations were being issued on the date of calculation; and

(b) Obligations proposed to be issued in the form of Variable Rate Obligations, unless provided in a Supplemental Indenture authorizing the issuance of a Series of Obligations, either

1. to be issued on the basis that, in a Counsel's Opinion to be delivered at the time of the issuance thereof, interest on such Variable Rate Obligations would be excluded from gross income for federal income tax purposes, the greater of (i) the average of the SIFMA 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 SIFMA 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 Obligations not described in clause (1), the greater of the (i) average of the London Interbank Offered Rate or any successor interest rate index ("LIBOR") for the time period most closely resembling the reset period for the Variable Rate Obligations 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 Obligations for the sixty (60) month period ending seven (7) days preceding the date of calculation plus 100 basis points;

provided, that if the SIFMA Index or LIBOR shall cease to be published, the index to be used in its place shall be that index which the Authority, in consultation with the Financial Consultant, determines most closely replicates such index, as set forth in a certificate of an Authorized Representative of the Authority 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 Authority.

"Authority" shall mean the Montgomery County Toll Road Authority, a local government corporation duly created, organized and existing under the laws of the State, including particularly Subchapter D of Chapter 431, Texas Transportation Code, as amended.

"Authority/County Interlocal Agreement" shall mean the Agreement between the County and the Authority, dated as of February 9, 2015, and amended as of April 24, 2018, relating to the Project.

"Authorized Denomination" shall mean any amount specified as an Authorized Denomination in an applicable Supplemental Indenture.

"Authorized Emergency Vehicle" shall have the meaning given to such term in Section 541.201, Texas Transportation Code, as amended, and such other emergency vehicles as may constitute Authorized Emergency Vehicles under the Act.

"Authorized Veteran's Vehicle" shall mean a vehicle eligible for free or discounted use on an Authority toll project pursuant to Section 372.053, Texas Transportation Code, or any successor statute, and any policy of the Authority adopted by its Board of Directors implementing a toll waiver program for veterans in accordance with such statutory authority, or any successor statute.

"Authorized Representative of the Authority" or "Authorized Representative" shall mean the Chairman of the Board of Directors or any other employee or officer or member of the Board of Directors of the Authority authorized to perform specific acts or duties by resolution duly adopted by the Board of Directors of the Authority, a copy of which shall be filed with the Trustee, or as specified in a Supplemental Indenture.

"Average Annual Debt Service" shall mean, with respect to Senior Lien Obligations, or all Obligations, as the case may be, at any time of determination, the average amount of Annual Debt Service paid or payable in each Annual Period on such Senior Lien Obligations, or on all Obligations, as the case may be, to the stated maturity thereof.

"Balloon Obligations" shall mean Long-Term Obligations of a particular issue or Series of Obligations of which 25% or more of the principal or Maturity Amount matures in the same Annual Period and is not required by the documents pursuant to which such Obligations were issued to be amortized by payment or redemption prior to that Annual Period; provided, however, that any such Obligations will not constitute Balloon Obligations and will be assumed to amortize in accordance with their stated terms if the Trustee is provided a certificate of an Authorized Representative of the Authority certifying that such Obligations are not to be treated as Balloon Obligations.

"Bankruptcy Law" shall mean Title 11 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.

"Board of Directors" or "Board of Directors of the Authority" shall mean the Board of Directors of the Authority, or any successor thereto.

"Business Day" shall mean any day other than a (i) Saturday or Sunday, (ii) day on which banking institutions in New York, New York, the State, or the principal offices of the Trustee or any Paying Agent are authorized or obligated by law or executive order to be closed for business, or (iii) day on which the New York Stock Exchange is closed.

"Capital Appreciation Bonds" shall mean Obligations on which interest accretes from the Issuance Date to the maturity date but is not payable prior to the maturity date.

"Compounded Amount" shall mean, with respect to a Capital Appreciation Bond or a Convertible Bond, as of any particular date of calculation, the original principal amount thereof, plus all interest accreted and compounded to the particular date of calculation, determined as follows:

1. as of any Compounding Date (which shall include the Conversion Date for a Convertible Bond), the amount shown as the Compounded Amount for such Compounding Date in the Compounded Amount Table relating to a particular Capital Appreciation Bond or Convertible Bond; and

2. as of any date that is not a Compounding Date, the amount set forth in the Compounded Amount Table relating to a particular Capital Appreciation Bond or Convertible Bond for the last preceding Compounding Date, plus the portion of the difference between such amount and the amount set forth in the Compounded Amount Table for the next succeeding Compounding Date that the number of days (based on 30-day months) from such last preceding Compounding Date to the date for which determination is being made bears to the total number of days (based on 30-day months) from such last preceding Compounding Date to the next succeeding Compounding Date.

"Compounded Amount Table" shall mean, with respect to a Capital Appreciation Bond or Convertible Bond, the table attached as an exhibit to the Supplemental Indenture relating to the Obligations issued as Capital Appreciation Bonds or Convertible Bonds that shows the rounded original principal amounts plus initial premium, if any, at the Issuance Date and the Compounded Amounts per $5,000 Maturity Amount (or such other Maturity Amount specified in a Supplemental Indenture) on the Compounding Dates for each maturity to its maturity or Conversion Date, as the case may be.

"Compounding Dates" shall mean the dates specified in a Supplemental Indenture on which interest on Capital Appreciation Bonds and Convertible Bonds will be compounded.

"Construction Fund" shall mean the fund so designated and established in Section 519.

"Consultant" shall mean a Person who shall be independent, employed by the Authority 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 the Authority transacts business.

"Conversion Date" shall mean, with respect to Convertible Bonds, the date at which the original principal amount of an Obligation plus all interest accreted and compounded equals the Maturity Amount.

"Convertible Bonds" or "Convertible Capital Appreciation Bonds" shall mean the Obligations on which interest accretes from the Issuance Date to the Conversion Date but is not payable until maturity or prior redemption in the same manner as Capital Appreciation Bonds and on which interest on the Maturity Amount accrues and is payable on a periodic basis from the Conversion Date to maturity, all as set forth in a Supplemental Indenture relating to such Obligations.

"Cost" shall mean, with respect to the Project, all or any part of:

1. the cost of study, design, acquisition, construction, expansion, enlargement, extension, reconstruction, restoration, repair and rehabilitation of the Project 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);

2. the cost of acquisition of all real or personal property, rights, rights-of-way, franchises, easements and interests acquired or used for the Project or portion thereof;

3. the cost of site preparation, including demolishing or removing any structures on land so acquired and the cost of acquiring any land to which the structures may be removed;

4. any cost of borings and other preliminary investigations necessary or incident to determining the feasibility or practicability of constructing the Project 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);

5. the cost of all machinery and equipment, vehicles, materials and rolling stock;

6. Issuance Costs;

7. interest on Obligations and on any Reimbursement Obligation for the period prior to, during and for a period of up to three years (or such longer period as may be allowed by applicable law) after acquisition or completion of construction, as determined by the Authority, and reserves for principal and interest for extensions, enlargements, additions, replacements, renovations and improvements to the Project;

8. the cost of architectural, engineering, environmental feasibility, traffic and revenue, economic and demographic, appraisal, financial, and legal services;

9. 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 Project or portions 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;

10. 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 Authority; provided that, if applicable, the Trustee has received a Counsel's Opinion (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;

11. the repayment or reimbursement of any Obligation, loan or advance for any of the foregoing;

12. such other costs and expenses as are permitted by the Act or other applicable law at the time such Obligations are issued; and

13. payment obligations of the Authority under a contract or agreement authorized by the Act in connection with the acquisition, construction, improvement, extension, expansion, or financing of the Project.

"Counsel's Opinion" shall mean a written opinion signed by an attorney or firm of attorneys of nationally recognized standing in the field of law relating to municipal bonds (who may also be counsel to the Authority) selected by the Authority and reasonably satisfactory to the Trustee.

"County" shall mean Montgomery County, Texas.

"County Reimbursement Obligation" shall mean the amount, if any, that the Authority is required to reimburse or pay the County in accordance with the terms of the Authority/County Interlocal Agreement.

"Credit Enhancer" shall mean any party providing a Credit Facility with respect to Obligations.

"Credit Facility" shall mean any letter of credit, line of credit, standby letter of credit or agreement to purchase a debt obligation or any similar extension of credit, credit enhancement or liquidity support obtained by the Authority from a responsible financial or insurance institution, to provide for or to secure payment of the principal and purchase price of, and/or interest on or Maturity Amount of 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 Authority from providing the credit or liquidity support with respect to Obligations directly rather than through a financial or insurance institution. The term "Credit Facility" does not include Loan Agreements authorized by Section 303(a) of this Indenture. To the extent that a Credit Facility is not authorized by the Act, this Indenture shall not be interpreted as authorizing the execution and delivery of such Credit Facility.

"Current Interest Bonds" shall mean Obligations paying current interest and maturing in each of the years and in the aggregate principal amounts set forth in the Supplemental Indenture relating to such Obligations.

"Debt Service Reserve Fund" shall mean the Senior Lien Debt Service Reserve Fund or other debt service reserve fund established pursuant this Indenture or any Supplemental Indenture.

"Defeasance Securities" shall mean any securities now or hereafter permitted by Chapter 1207, Texas Government Code, as amended (or successor statute) for defeasance of the Obligations, including, without limitation, (i) Government Obligations, (ii) non-callable obligations of an agency or instrumentality of the United States of America, including obligations that are unconditionally guaranteed or insured by the agency or instrumentality and that, on the date Authority 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, and (iii) non-callable 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 Authority 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" shall mean Obligations deemed to be paid, retired and no longer Outstanding pursuant to the provisions of Article XI.

"Depository" shall mean any bank or trust company appointed by the Authority in accordance with Section 914 as a depository of moneys and securities held under this Indenture, which may include, but is not limited to, the Trustee.

"Designated Payment/Transfer Office" shall mean (i) with respect to the Trustee, the office designated as such in the Supplemental Indenture relating to any Series of Obligations, or such other location designated by the Trustee and (ii) with respect to any other Paying Agent for a Series of Obligations, the office of such Paying Agent designated and located as may be agreed upon by the Authority and such Paying Agent.

"DSRF Security" shall mean a Senior Lien DSRF Security or a surety bond, an insurance policy, a letter of credit or similar financial instrument provided in lieu of the deposit of moneys into a Debt Service Reserve Fund other than the Senior Lien Debt Service Reserve Fund.

"Event of Default" shall mean those events specified in Section 801 hereof and such other events specified in any Supplemental Indentures.

"Event of Insolvency" except as otherwise provided in a Supplemental Indenture authorizing the issuance of a Series of Obligations, shall mean the occurrence of one or more of the following events: (i) the Authority shall commence any case, proceeding or other action (A) under any existing or future Bankruptcy Law of any jurisdiction, domestic or foreign, seeking to have an order for relief entered with respect to it, or seeking to adjudicate it as bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, winding up, liquidation, dissolution, composition or other relief with respect to it or its debts or (B) seeking appointment of a receiver, trustee, custodian or other similar official for it or for all or any substantial part of its assets, or the Authority shall make a general assignment for the benefit of its creditors; or (ii) there shall be commenced against the Authority any case, proceeding or other action of a nature referred to in clause (i) above which (x) results in an order for such relief or in the appointment of a receiver or similar official or (y) remains undismissed, undischarged or unbonded for a period of 60 days; or (iii) there shall be commenced against the Authority, any case, proceeding or other action seeking issuance of a warrant of attachment, execution, distraint or similar process against all or any substantial part of its assets, which results in the entry of an order for any such relief which shall not have been vacated, discharged, or stayed or bonded pending appeal within 60 days from the entry thereof; or (iv) the Authority shall take any action in furtherance of, or indicating its consent to, approval of, or acquiescence in, any of the acts set forth in clause (i), (ii) or (iii) above; or (v) the Authority shall admit in writing its inability to pay its debts generally as they become due, or shall become insolvent within the meaning of Section 101(32) of the United States Bankruptcy Code.

"Fair Market Value" shall mean, as of any particular date of valuation: (i) as to Permitted Investments the bid and asked prices of which are published on a regular basis in a financial journal or publication of general circulation in the United States of America, the bid price for such Permitted Investments so published on or most recently prior to the date of valuation by the Trustee or any Depository; or (ii) as to Permitted Investments the bid and asked prices of which are not published on a regular basis in a financial journal or publication of general circulation in the United

States of America, the average bid price on such Permitted Investments at the date of valuation by the Trustee or any Depository, as reported by any two nationally recognized dealers (and provided to the Trustee) in such Permitted Investments. The Trustee may also utilize any pricing service used by the Trustee in its regular course of business in determining valuations with respect to Permitted Investments hereunder.

"Financial Consultant" shall mean 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 hereof and who is retained by the Authority as a Financial Consultant for the purposes hereof.

"Fiscal Year" shall mean the fiscal year of the Authority, currently the period commencing on the first day of October and ending on the last day of September of the following year.

"Fiscal/Securities Agent" or "Fiscal/Securities Agents" shall mean the Trustee, any Paying Agent, any Securities Depository, any Depository, or any or all of them, as may be appropriate.

"Fund" or "Funds" shall mean any one or more, as the case may be, of the separate special trust funds created and established in Section 504 or in a Supplemental Indenture in accordance with Section 504(b).

"General Engineering Consultant" shall mean one or more engineers or firms 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 this Indenture and who is retained by or on behalf of the Authority as a General Engineering Consultant for purposes of this Indenture.

"Government Obligations" shall mean direct obligations of, or obligations the principal of and interest on which are guaranteed by the full faith and credit of, the United States of America.

"Gross Revenues" shall mean all income and revenues derived from the operation of the Project, including (i) all Tolls received by or on behalf of the Authority, (ii) the proceeds of any insurance covering business interruption loss relating to the Project or a portion thereof, (iii) any liquidated damages for delayed completion under a construction contract relating to the Project or a portion thereof, (iv) any other sources of revenues or funds of the Authority that the Authority chooses to designate as "Gross Revenues" pursuant to a Supplemental Indenture, and (v) 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 this Indenture. "Gross Revenues" does not include Supplemental Security.

"Harris County" shall mean Harris County, Texas.

"Holder" or "Holder of Obligations" shall mean (i) with respect to Senior Lien Obligations, (A) each Person who is a registered owner of a Senior Lien Obligation, as shown on the registration books for Senior Lien Obligations kept by the Trustee, (B) each Credit Enhancer providing a Credit Facility secured on a parity with the Senior Lien Obligations, and (C) each bank, financial institution or other lender under a Senior Lien Loan Agreement; and (ii) with respect to Subordinate Lien Obligations, (A) each Person who is a registered owner of such Subordinate Lien Obligations, as shown on the registration books for such Obligations kept by the Trustee, (B) each Credit Enhancer providing a Credit Facility that is not secured on a parity with the Senior Lien Obligations, and (C) each bank, financial institution or other lender under a Loan Agreement that is not secured on a parity with the Senior Lien Obligations.

"Indenture" shall mean this Master Trust Indenture, as the same may be amended or supplemented from time to time in accordance with the terms hereof.

"Interest Payment Date" shall mean the dates that are defined as such in any Supplemental Indenture under which Obligations are issued. 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.

"Issuance Cost" shall mean costs incurred by or on behalf of the Authority in connection with the issuance of Obligations including, without limitation, the following: financial, rating agency, legal, accounting and appraisal fees and expenses; the cost of printing, engraving and reproduction services; fees and expenses incurred in connection with any Credit Facility and any Loan Agreement; the initial or acceptance fee of the Trustee; underwriters' discount or placement agent fees; and all other fees, charges and expenses incurred in connection with the issuance of the Obligations and the preparation of this Indenture and any Supplemental Indentures entered into in connection with the issuance of Obligations.

"Issuance Date" shall mean with respect to any Obligations, the date of delivery of such Obligations to the initial purchaser or purchasers thereof in exchange for payment therefor.

"Letter of Instructions" shall mean a written directive and authorization to the Trustee or any Depository executed by an Authorized Representative of the Authority.

"Letter of Representations" shall mean the letter of representations or similar document executed by the Authority and delivered to a Securities Depository (and any amendments thereto or successor agreements) for one or more Series of Obligations issued in book-entry form.

"Loan Agreement" shall mean a loan or other contract of the Authority with payment obligations that is authorized by the Act. To the extent that a Loan Agreement is not authorized by the Act, this Indenture shall not be interpreted as authorizing the execution and delivery of such Loan Agreement. As used in this Indenture, the term does not include "Credit Facilities," but to the extent applicable, a "Loan Agreement" hereunder may be a "credit agreement" for purposes of Chapter 1371, Texas Government Code, as amended, or any successor statute.

"Long-Term Obligations" shall mean all Obligations that are not Short-Term Obligations.

"Maintenance Expenses" shall mean the Authority's reasonable and necessary expenses of repair and maintenance of the Project, 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 Project and any other expenses required to be paid by the Authority.

"Maturity Amount" shall mean the Compounded Amount of a Capital Appreciation Bond or a Convertible Bond due on its maturity.

"Obligation" or "Obligations" shall mean all indebtedness of the Authority payable from Revenues incurred or assumed by the Authority (including payment obligations of the Authority under Loan Agreements and indebtedness arising under Credit Facilities) and all other financing obligations of the Authority related to the Project that, in accordance with Accounting Principles, are included as a liability on a balance sheet for the Project books and records, including any bonds, notes, or other obligations, as the case may be, authenticated and delivered under and pursuant to and secured under this Indenture. For the purpose of determining the "Obligations" payable from the Revenues, any Defeased Obligation shall be excluded.

"Operating Expenses" shall mean the Authority's reasonable and necessary expenses of operation of the Project, including, without limiting the generality of the foregoing, expenses for toll collection (but excluding Tolling Service Provider Fees), all premiums for insurance and payments into any self-insurance reserve fund, all administrative and engineering expenses relating to operation of the Project, fees and expenses of the Traffic Consultants, the General Engineering Consultants, the Trustee and of the Paying Agents, periodic fees or charges required to maintain a DSRF Security, legal expenses, expenses for Public Safety Officers, if any, and any other expenses required to be paid by the Authority as shown in the Annual Operating Budget for the Project.

"Operations and Maintenance Fund" shall mean the fund so designated and created in Section 504(a).

"Operations and Maintenance Reserve Fund Requirement" shall mean $500,000, plus, additional amounts, if any, specified in any Supplemental Indenture authorizing the issuance of Obligations.

"Operations and Maintenance Reserve Fund" shall mean the fund so designated and created in Section 504(a).

"Outstanding" shall mean, when used with reference to Obligations, as of any date, Obligations theretofore or thereupon being authenticated and delivered under this Indenture except:

(a) Obligations cancelled by the Trustee or delivered to the Trustee for cancellation at or prior to such date;

(b) Obligations in lieu of or in substitution for which other Obligations shall have been authenticated and delivered pursuant to Article III or the redemption provisions of a Supplemental Indenture (or other proceedings of the Authority) or Section 1006; and

(c) Obligations paid or deemed to have been paid as provided in Section 1102.

"Paying Agent" shall mean, with respect to any Series, any bank or trust company appointed by the Authority in accordance with Section 912 to act as paying agent for the Obligations of such Series.

"Permitted Collateral" shall mean any security, obligation, asset or combination thereof that qualifies and is eligible to secure and be pledged as collateral for public funds under the laws of the State (including, without limitation, under the Public Funds Collateral Act, Chapter 2257, Texas Government Code, as amended), and the laws of the United States of America.

"Permitted Investments" shall mean any security or obligation or combination thereof permitted under the Public Funds Investments Act, Chapter 2256, Texas Government Code, as amended. Without limiting the generality of the foregoing, Permitted Investments shall specifically include guaranteed investment contracts permitted under Section 2256.015, Texas Government Code, as amended, or other laws applicable to the Authority.

"Person" shall mean any individual, public or private corporation, district, authority, municipality, political subdivision or other agency or entity of the State or the United States of America, and any incorporated city, town or village, whether operating under general or special law or under its home rule charter, and any partnership, association, firm, trust, estate, or any other entity whatsoever.

"Project" shall mean an approximately 3.6 mile, 4-lane toll road, spanning from approximately Spring Creek to approximately 0.96 miles south of FM 1774 in Pinehurst, Texas and connecting the Texas Department of Transportation's SH 249 toll road project, to the north, and the Harris County Toll Road Authority's SH 249 toll road project, to the south, together with any improvements thereto, which may be financed or refinanced with the proceeds of Obligations under this Indenture. Except with respect to the creation of a system or pooling of other transportation projects, which shall not be permitted hereunder, the Project shall include any item listed in Section 284.001(3), Texas Transportation Code, directly related to or in aid of the Project described above.

"Project Enhancement Fund" shall mean the fund so designated in Section 504(a).

"Projected Annual Debt Service" shall mean, when applied to Senior Lien Obligations, Subordinate Lien Obligations, or all Obligations, as the case may be, for each Annual Period, an amount equal to the sum of (i) the amount of Annual Debt Service on such Senior Lien Obligations, Subordinate Lien Obligations, or all Obligations, as the case may be, then Outstanding plus (ii) the Annual Debt Service on any Obligations at such lien level then proposed to be issued; provided, that in making such calculation, the Authority may take into consideration any amounts received, or reasonably expected to be received, by the Authority from or as a result of Supplemental Security that the Authority has pledged for the benefit of the Obligations for which such calculation is being made.

"Projected Debt Service Coverage Ratio" shall mean, when applied to Senior Lien Obligations, Subordinate Lien Obligations, or all Obligations, as the case may be, 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, less projected Operating Expenses and Maintenance Expenses for such Annual Period to be paid from Revenues, by the Projected Annual Debt Service for each such Annual Period.

"Projected Revenues" shall mean 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 Authority and that will be effective during such Annual Period, (ii) any additional Tolls that the Traffic Consultant estimates will be received by the Authority following the completion of the Project or portion thereof, as applicable, then being constructed or proposed to be constructed, and (iii) any revisions of the Tolls expected to be implemented by the Authority, as evidenced by a certificate of an Authorized Representative of the Authority delivered to the Trustee, and included as assumptions in a Traffic and Revenue Report of the Traffic Consultant.

"Public Safety Officers" shall mean public safety officers in the employment of or under contract to the Authority for the purpose of performing public safety duties in connection with the Project.

"Rate Covenant" shall mean the covenant of the Authority set forth in Section 502.

"Rating Agency" shall mean, as of any particular date, any nationally-recognized credit rating agency whose rating is then in effect with respect to a particular Series of Obligations.

"Rating Category" shall mean 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" shall mean the fund so designated and established in Section 504(a).

"Refunding Obligations" shall mean all Obligations, whether issued in one or more Series, authenticated and delivered on original issuance for the purpose of refunding Outstanding Obligations, and all Obligations thereafter authenticated and delivered in lieu of or in substitution for such Obligations pursuant to Article III or Section 1006 or the redemption provisions of any Supplemental Indenture (or other proceedings of the Authority).

"Reimbursement Agreement" shall mean an agreement between the Authority and one or more Credit Enhancers pursuant to which, among other things, such Credit Enhancer issues a Credit Facility with respect to Obligations of one or more Series and the Authority agrees to reimburse such Credit Enhancer for any drawings made thereunder.

"Reimbursement Obligation" shall mean the obligation of the Authority 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 Senior Lien Obligations or Subordinate Lien Obligations, as appropriate.

"Renewal and Replacement Fund" shall mean the fund so designated and created in Section 504(a).

"Renewal and Replacement Reserve Fund" shall mean the fund so designated and created in Section 504(a).

"Renewal and Replacement Reserve Fund Requirement" shall mean $1,000,000, plus, additional amounts, if any, specified in any Supplemental Indenture authorizing the issuance of Obligations.

"Reserve Fund Participants" shall mean any Series of Obligations for which the Authority elects to fund a shared Debt Service Reserve Fund.

"Revenue Fund" shall mean the fund so designated and created in Section 504(a).

"Revenues" shall mean Gross Revenues, less any Tolls under a Tolling Services Agreement that are collected by a Tolling Service Provider and are retained thereby as payment for Tolling Service Provider Fees and any Tolls used as reimbursement to the Tolling Service Provider for equipment replacement and related Costs of the Project.

"Securities Depository" shall mean any bank or trust company (including the Trustee) appointed by the Authority in accordance with Section 913 to act as securities depository for one or more Series of the Obligations.

"Senior Lien Debt Service Fund" shall mean the fund so designated and created in Section 504(a).

"Senior Lien Debt Service Reserve Fund" shall mean the fund so designated and created in Section 504(a).

"Senior Lien Debt Service Reserve Requirement" shall mean the amount, if any, specified in the Supplemental Indentures authorizing Senior Lien Obligations as the Senior Lien Debt Service Reserve Requirement or, if not so specified, $0.

"Senior Lien DSRF Security" shall have the meaning given to such term in Section 509.

"Senior Lien Loan Agreement" shall mean a Loan Agreement entered into as a Senior Lien Obligation.

"Senior Lien Obligations" shall mean all Obligations of any kind or class, including bonds, notes, bond anticipation notes, commercial paper and other obligations (including payment obligations of the Authority under Loan Agreements and other agreements or contracts authorized by the Act), issued or incurred as Senior Lien Obligations under and in accordance with this Indenture and any Supplemental Indenture, and includes all obligations of the Authority owed to Holders of (i) Senior Lien Obligations, and (ii) Reimbursement Obligations secured by the Trust Estate on a parity with Senior Lien Obligations.

"Series" shall mean all of the Obligations designated as a Series in a Supplemental Indenture and which are authenticated and delivered on original issuance in a simultaneous transaction, and any Obligations thereafter authenticated and delivered in lieu of or in substitution for such Obligations pursuant to Article III or Section 1006 or the redemption provisions of any Supplemental Indenture (or other proceedings of the Authority), regardless of variations in maturity, interest rate or other provisions.

"Short-Term Obligations" shall mean all Obligations that mature in less than 365 days and are issued as Short-Term Obligations pursuant to Section 706. In the event a Credit Enhancer has extended a line of credit or the Authority 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 Obligations and the full amount of such commitment or program shall not be treated as Short-Term Obligations to the extent that such facility remains available but undrawn.

"SIFMA" shall mean the Securities Industry and Financial Markets Association, or any successor thereto.

"SIFMA Index" or "SIFMA Municipal Swap Index" shall mean the "Securities Industry and Financial Markets Association Municipal Swap Index" announced weekly by Municipal Market Data and based upon the weekly interest rate resets of tax-exempt variable rate issues included in a database maintained by Municipal Market Data which meet specified criteria established by the SIFMA. The SIFMA Index shall be based upon current yields of high-quality, weekly adjustable variable rate demand bonds which are subject to tender upon seven days' notice, the interest on which is tax-exempt and not subject to any personal "alternative minimum tax" or similar tax under the Code, unless all tax-exempt securities are subject to such tax.

"State" shall mean the State of Texas.

"State Comptroller" shall mean the Comptroller of Public Accounts of the State or any successor thereto.

"Subordinate Lien Obligations" shall mean the Obligations issued pursuant to Section 707, if any.

"Subordinate Lien Debt Service Fund" shall mean the fund so designated and created in Section 504(a).

"Subordinate Lien Debt Service Reserve Fund" shall mean the fund so designated and created in Section 504(a).

"Substantial Completion" shall mean, as evidenced by a certificate of an Authorized Representative of the Authority pursuant to Section 519(d)(2), the point in time when the Project has been sufficiently completed in accordance with the applicable contract documents so that the Project or any portion thereof is partially opened to traffic to the extent that the portions of such Project open to traffic are being utilized for their intended purposes, including producing Revenues to pay or finance costs of the Project.

"Supplemental Indenture" shall mean any trust indenture supplemental to or amendatory of this Indenture, executed and delivered by the Authority and the Trustee in accordance with Article X.

"Supplemental Security" shall mean any funds or security received by or obligations payable to the Authority, other than Revenues, which the Authority chooses to include as security for specified Senior Lien Obligations or Subordinate Lien Obligations pursuant to a Supplemental Indenture, as provided in Section 518.

"Tender Obligations" shall mean any Obligations the terms of which include (i) an option or an obligation on the part of the Holder to tender all or a portion of such Obligation to the Authority, the Trustee, the Paying Agent or another agent for payment or purchase and (ii) a requirement on the part of the Authority to purchase or cause to be paid or purchased such Obligation or portion thereof if properly tendered.

"Toll" or "Tolls" shall mean all rates, rents, fees, charges, fines or other income derived by the Authority from the use of the Project and the rights of the Authority to receive the same.

"Tolling Services Agreement" shall mean that certain Tolling Services Agreement by and between the Authority and Harris County, dated to be effective as of March 31, 2015, as amended by that certain First Amendment to Interlocal Agreement by and between the Authority and Harris County and as may be further amended or supplemented from time to time. The Tolling Services Agreement shall also include any successor agreement with Harris County or any other third-party Tolling Service Provider for the purpose of providing tolling services to the Authority, as the same may be amended or supplemented from time to time.

"Tolling Service Provider" shall mean Harris County or any other third-party providing tolling services to the Authority pursuant to a Tolling Services Agreement; provided, however, that the Tolling Service Provider shall not include the County or any entity created by or affiliated with the County or the Authority.

"Tolling Service Provider Fees" shall mean all amounts retained by a Tolling Service Provider under a Tolling Services Agreement representing interoperability fees and/or other fees and charges for providing tolling services to the Authority.

"Traffic and Revenue Report" shall mean a report of a Traffic Consultant setting forth the estimated traffic and revenue for the Project.

"Traffic Consultant" shall mean one or more traffic and revenue consultants 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 this Indenture and who is retained by or on behalf of the Authority as a Traffic Consultant for the purposes of this Indenture.

"Transfer Date" shall have the meaning given to such term in Section 505.

"Trust Estate" shall have the meaning given to such term in Section 201.

"Trustee" shall mean Regions Bank, an Alabama banking corporation duly organized and existing under the laws of the State of Alabama, and its successors in trust under this Indenture.

"Variable Rate Obligations" shall mean any Obligations the interest rate on which fluctuates from time to time subsequent to the time of their issuance. Variable Rate Obligations may include, without limitation, (i) "auction rate" Obligations (A) 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

(B) which the Authority 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; (ii) Tender Obligations; (iii) commercial paper Obligations which are intended to be reissued and refinanced periodically; or (iv) other forms of Obligations on which the interest fluctuates or is subject to being set or reset from time to time.

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ARTICLE II

SECURITY FOR THE OBLIGATIONS

SECTION 201. <u>Definitions</u>. The following terms shall, for all purposes of this Indenture, have the following meanings:

<u>Granting Clauses</u>. In order to secure the payment of the Obligations as the same become due and payable, whether at maturity or by prior redemption, and the performance and observance of all of the covenants and conditions herein contained, and in consideration of the premises, the acceptance by the Trustee of the trusts hereby created, the purchase and acceptance of the Obligations by the Holders thereof, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Authority does hereby GRANT, BARGAIN, CONVEY, ASSIGN and PLEDGE to the Trustee and its successors in trust hereunder all right, title and interest of the Authority, whether now owned or hereafter acquired, in and to (i) all Revenues (subject to the requirements for transfers of Revenues to the Rebate Fund and Operations and Maintenance Fund set forth in Section 505) and, to the extent set forth in a Supplemental Indenture, any Supplemental Security; (ii) all moneys, including investment earnings, deposited into accounts or funds created in Sections 504 and 519 or in a Supplemental Indenture to be held by or on behalf of the Trustee subject to the provisions of this Indenture relating to each of such funds and accounts (but excluding moneys on deposit in the Operations and Maintenance Fund and Rebate Fund and amounts held in an account or subaccount of the Construction Fund containing moneys that are restricted to another use, such as right-of-way contributions that may be used for only that purpose); and (iii) any insurance proceeds and other moneys required to be deposited in such accounts and funds by this Indenture or the provisions of a Supplemental Indenture (collectively, the "<u>Trust Estate</u>"):

<u>FIRST</u>: for the equal and proportionate benefit and security of all Senior 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 Senior Lien Obligation over any other Senior Lien Obligation, except as otherwise permitted by or provided for in this Indenture or in a Supplemental Indenture; <u>provided</u>, that any funds held by the Trustee for the payment of specific Senior Lien Obligations which are deemed to have been paid pursuant to the provisions of Article XI 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 Senior Lien Obligations shall be held and used only to pay or provide security for the Senior Lien Obligations for which such deposit was made and shall not be held as security on a parity for any other Senior Lien Obligations; and <u>provided</u> <u>further</u>, that the Trustee shall apply the Trust Estate hereunder to the payment of the principal of, and interest on, or Maturity Amount of, and other payments with respect to the Senior Lien 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, or Maturity Amount of, and other payments with respect to any Subordinate Lien Obligations issued hereunder; and

<u>SECOND</u>: subject to the security interest in the Trust Estate pledged for the security and payment of the Senior Lien 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 of equal rank without preference, priority or distinction as to lien or otherwise of any such Subordinate Lien Obligation over any other Subordinate Lien Obligation, except as otherwise permitted by or provided for in this Indenture or in a Supplemental Indenture; <u>provided</u>, that any funds held by the Trustee for the payment of specific Obligations which are deemed to have been paid pursuant to the provisions of Article XI 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 Obligations shall be held and used only to pay or provide security for the Obligations for which such deposit was made and shall not be held as security on a parity for any other 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, or Maturity Amount of, and other payments with respect to the Obligations and for the purposes and uses and in the order of priority set forth herein subordinate to the payment of the Senior Lien Obligations.

TO HAVE AND TO HOLD all the same, with rights and privileges appurtenant thereto, unto the Trustee and its successors in trust forever, subject, however, to all of the terms and provisions of this Indenture;

IN TRUST, NEVERTHELESS, upon the terms and trusts herein set forth, for the equal and proportionate benefit and security of the Holders from time to time of the Obligations issued and to be issued hereunder, without preference, priority or distinction as to lien or otherwise of any Obligation over any other Obligation except as provided in this Indenture or in a Supplemental Indenture;

PROVIDED, HOWEVER, that if the Authority, its successors or assigns, shall well and truly pay, or cause to be paid, the principal amount or Maturity Amount, as applicable, of the Obligations and the interest due or to become due thereon, at the times and in the manner provided in the Obligations according to the true intent and meaning thereof, and shall cause the payments to be made into the Funds in the amounts required hereby, or shall provide, as permitted hereby, for the payment thereof by depositing with the Trustee an amount sufficient to provide for payment of the entire amount due or to become due thereon as provided in this Indenture, and shall well and truly keep, perform and observe all the covenants and conditions pursuant to the terms of this Indenture to be kept, performed and observed by it, and shall pay or cause to be paid to the Trustee all sums of money due or to become due to it in accordance with the terms and provisions hereof, then, upon such payment and performance, this Indenture and the rights and liens hereby granted shall cease, terminate and be void; otherwise, this Indenture is to be and shall remain in full force and effect.

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SECTION 203. Limited Obligations of Authority. The Obligations shall be limited obligations of the Authority payable solely from the Trust Estate, including the Revenues. The Obligations shall constitute a valid claim of the respective Holders thereof against such Trust Estate, which is pledged to secure the payment of the principal amount or Maturity Amount, as applicable, of and interest on the Obligations, whether at maturity or upon prior redemption, and which shall be utilized for no other purpose, except as expressly authorized in this Indenture. The Obligations shall never constitute general obligations of the Authority and under no circumstances shall the Obligations ever be payable from, nor shall the Holder thereof have any rightful claim to, any income, revenues, funds or assets of the Authority other than those pledged hereunder as security for the payment of the Obligations.

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ARTICLE III

AUTHORIZATION AND ISSUANCE OF BONDS, GENERAL TERMS AND PROVISIONS OF THE BONDS

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SECTION 302. Provisions for Issuance of Obligations. (a) All (but not less than all) of the initial Obligations of each Series, other than Refunding Obligations, shall be executed by the Authority for issuance under this Indenture and delivered to the Trustee and thereupon shall be authenticated by the Trustee and by it delivered to the Authority or upon its order, but only upon the receipt by the Trustee of:

(1) A Counsel's Opinion to the effect that: (i) the Authority has the right and power under the Act, as amended to the date of such Counsel's Opinion, to authorize, execute and deliver this Indenture and this Indenture has been duly and lawfully authorized, executed and delivered by the Authority, is in full force and effect and is valid and binding upon the Authority and no other official action for the authorization,

execution and delivery of this Indenture is required; (ii) this Indenture creates the valid pledge of and lien on the Trust Estate that this Indenture purports to create, subject to the application thereof to the purposes and on the conditions permitted by this Indenture; (iii) the Obligations of such Series have been duly and validly authorized and issued in accordance with the Act, as amended to the date of such Counsel's Opinion, and in accordance with this Indenture; and (iv) the Obligations of such Series are valid and binding limited obligations of the Authority as provided in this Indenture, are enforceable in accordance with their terms and the terms of this Indenture, and are entitled to the benefits of this Indenture, as amended to the date of such Counsel's Opinion; provided, however, that such Counsel's Opinion may take exception for limitations imposed by or resulting from bankruptcy, insolvency, moratorium, reorganization or other laws affecting creditors' rights generally;

(2) A Letter of Instructions as to the authentication and delivery of such Obligations signed by an Authorized Representative of the Authority;

(3) A certified copy of the resolution of the Board of Directors of the Authority authorizing the issuance of such Obligations or the execution and delivery of any such Obligation in the form of a Loan Agreement;

(4) A copy of the applicable Supplemental Indenture, executed by an Authorized Representative of the Authority, which shall specify:

(i) The authorized original principal amount, the designation of the Obligations as Senior Lien Obligations, Subordinate Lien Obligations or otherwise and the designation of the Series of such Obligations;

(ii) The date and the maturity date or dates of the Obligations of such Series and the original principal amount of the Obligations of each such maturity;

(iii) The Interest Payment Dates on the Obligations of such Series, the interest rate or rates of the Obligations of such Series, or the manner of determining such rate or rates, and the basis on which interest shall be calculated;

(iv) The designation of any Paying Agents and Securities Depositories and the methods and places of payment of the principal amount or Maturity Amount, as applicable, of and interest on the Obligations of such Series;

(v) Subject to Article IV, the redemption prices and other terms upon which the Obligations of such Series shall be subject to redemption, including the manner in which such Obligations are required to be selected for redemption;

(vi) The provisions of any Supplemental Security provided for the Obligations of such Series;

(vii) The forms of the Obligations of such Series, the Trustee's certificate of authentication and the registration certificate of the State Comptroller, to the extent required by applicable law; and

(viii) Any other provisions, covenants or agreements deemed advisable by the Authority not in conflict with the provisions of this Indenture.

(5) Such amounts as are required by the applicable Supplemental Indenture to be deposited in the Funds created pursuant to this Indenture or the applicable Supplemental Indenture;

(6) A certificate of an Authorized Representative of the Authority to the effect that the Authority (i) is in compliance with requirements of Article VII that are applicable to the Obligations of such

Series, if any, and (ii) is not, at the time of the issuance of the Obligations of such Series, committing an Event of Default under this Indenture;

(7) A Letter of Instructions to the Trustee as to the disposition and investment of the proceeds of such Obligations and related amounts;

(8) If required by the Act, the approving opinion of the Attorney General of the State to the effect that the Obligations have been issued in accordance with law, or a judgment of a district court of the State validating the issuance of Obligations;

(9) If required by the Act, the certificate of registration of such Obligations from the State Comptroller; and

(10) Such further documents and moneys as are required by the provisions of Article X or any Supplemental Indenture.

(b) All (but not less than all) of the initial Refunding Obligations of each Series shall be executed by the Authority for issuance under this Indenture and delivered to the Trustee and thereupon shall be authenticated by the Trustee and by it delivered to the Authority or upon its order, but only upon the receipt by the Trustee of:

(1) The documents and moneys referred to in paragraphs (1), (2), (3), (4), (5), (7), (8), (9) and (10) of subsection of (a) in this Section;

(2) If the Obligations to be refunded are to be called for redemption, a Letter of Instructions to the Trustee, satisfactory to it, to give due notice of redemption of all the Obligations to be refunded on a redemption date or dates specified in such Letter of Instructions;

(3) A Letter of Instructions to the Trustee, satisfactory to it, to give the notice provided for in Section 1103 to the Holders of the Obligations being refunded;

(4) Either (i) moneys in an amount sufficient to effect payment at the applicable redemption price (or the principal amount or Maturity Amount, as applicable, at maturity) of the Obligations to be refunded, together with accrued interest on such Obligations to the redemption (or maturity) date, which moneys shall be held by the Trustee, any Depository or any one or more of the Paying Agents, in a separate account irrevocably in trust for and assigned to the respective Holders of the Obligations to be refunded, or (ii) Defeasance Securities in such principal amounts, of such maturities, bearing such interest, and otherwise having such terms and qualifications as shall be necessary to comply with the provisions of Section 1102 and any moneys required pursuant to Section 1102, which Defeasance Securities and moneys shall be held in trust and used only as provided in Section 1102 and any applicable Supplemental Indenture; and

(5) Such further documents and moneys as are required by the provisions of Article XI or any Supplemental Indenture.

(c) All the Obligations of each Series of the same maturity shall be identical in all respects, except as to interest rate, denominations, numbers and letters. After the original issuance of Obligations of any Series, no Obligations of such Series shall be issued except in lieu of or in substitution for other Obligations of such Series pursuant to Article III or Section 1006 or the redemption provisions of any Supplemental Indenture (or other proceedings of the Authority).

SECTION 303. Provisions for Loan Agreements. (a) Pursuant to one or more Supplemental Indentures and subject to compliance with the requirements of Section 706(b) with respect to Senior Lien Obligations, the Authority reserves the right, to the extent permitted by law, to enter into one or more loans or other agreements with payment obligations authorized by the Act (a "Loan Agreement"), secured by or payable from Revenues.

(b) In the event the Authority wishes to enter into a Loan Agreement under paragraph (a) of this Section and to have its obligations thereunder be on parity with Obligations under this Indenture, it shall file with the Trustee a Supplemental Indenture granting such parity position (in which event such Loan Agreement shall constitute a Senior Lien Loan Agreement). The terms of any such Supplemental Indenture authorizing a Loan Agreement shall prevail over any inconsistent or conflicting terms in Section 304 through Section 314, inclusive, of this Indenture.

(c) The provisions of this Section 303 applicable to Loan Agreements shall not apply to indebtedness under a Credit Facility.

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ARTICLE IV

REDEMPTION OF OBLIGATIONS

SECTION 401. Redemption of Obligations. Obligations issued under the provisions of this Indenture at any time outstanding shall or may be redeemed prior to their maturity or maturities as provided and set forth in the Supplemental Indenture providing for their issuance or in other proceedings approved by the Authority. It is further provided that redemption of Obligations prior to maturity, other than from the respective redemption account securing such Obligations to be redeemed and the proceeds of refunding bonds, shall be made only from and to the extent of funds on deposit with the Trustee and available for such purpose unless otherwise provided in the Supplemental Indenture or in other proceedings approved by the Authority.

ARTICLE V

TOLLS, REVENUES, FUNDS AND FLOW OF FUNDS

SECTION 501. The Pledge Effected by this Indenture. The Obligations are limited obligations of the Authority as provided in Section 203. The Obligations are payable from and secured by the Trust Estate, including the Revenues. The Holders of Obligations hereunder shall never have the right to demand payment of any such Obligations out of any funds raised or to be raised by taxation, and all Obligations shall bear a statement to such effect in accordance with Section 284.036(3), Texas Transportation Code. The Trust Estate shall immediately be subject to the lien on and the pledge of the Trust Estate pursuant to this Indenture without any physical delivery thereof or further act, and the lien on and the pledge of the Trust Estate pursuant to this Indenture shall be valid and binding as against all persons having claims of any kind in tort, contract or otherwise against the Authority or other party, irrespective of whether such persons have notice thereof.

SECTION 502. Rate Covenant.

(a) The Authority covenants that it shall at all times establish, levy, maintain and collect such Tolls in connection with the Project and establish such charges for use of the property constituting part of the Project, including, without limitation, leasehold payments, concession payments, rents and other charges, as shall be sufficient, collectively, to produce Revenues in each Fiscal Year, after the payment of all Operating Expenses and Maintenance Expenses for such Fiscal Year paid or to be paid from Revenues, in an amount at least equal to the greater of (1) and (2) below:

(1) one hundred twenty-five percent (125%) of the Annual Debt Service in such Fiscal Year on all Outstanding Senior Lien Obligations; or

(2) one hundred percent (100%) of the Annual Debt Service in such Fiscal Year on all Obligations, plus the amounts required to be deposited into the Senior Lien Debt Service Reserve Fund, the debt service reserve fund(s) for any Obligations inferior to the Senior Lien Obligations if so established in a Supplemental Indenture authorizing the issuance of any such Obligations, the Renewal and Replacement Fund, the Renewal and Replacement Reserve Fund, and any other fund established by a Supplemental Indenture to be funded by Revenues.

In making the calculations in (1) and (2) above, the Authority may take into consideration as a credit against Annual Debt Service any amounts received, or reasonably expected to be received, in the Fiscal Year from or as a result of any Supplemental Security the Authority has pledged for the benefit of Obligations;

provided, that if the pledge is not for the benefit of all Obligations, the amounts expected to be received may only be taken into account when making the calculation for the affected Obligations.

(b) Between October 1 and February 15 of each Fiscal Year, commencing with the Fiscal Year beginning October 1, 2020, the Authority will review its financial condition and estimate and determine whether Revenues for such Fiscal Year are expected to be sufficient to enable the Authority to comply with subsection (a) above and file with the Trustee a certification of an Authorized Representative of the Authority making such determination. If such determination filed with the Trustee indicates that Revenues are or are reasonably expected to be insufficient to comply with subsection (a) above, the Authority shall promptly request a Traffic Consultant to make written recommendations as to appropriate revisions to the schedule of Tolls, rates, fees, rentals and other charges and any changes in methods of operation necessary or appropriate to provide sufficient Revenues to enable the Authority to comply with subsection (a) above. The failure of the Project in any Fiscal Year to produce Revenues in the amounts sufficient to enable the Authority to comply with subsection (a) above, which failure may continue during the succeeding Fiscal Year, shall not, in and of itself, constitute an Event of Default under this Indenture if the Authority (i) promptly requests the written recommendations of a Traffic Consultant as described above and (ii) substantially complies in a timely fashion with the recommendations of such Traffic Consultant.

SECTION 503. Uniformity of Tolls.

(a) Classifications. The Authority 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 Authority's right, in its discretion in management of the Project, 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, carpooling, 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 Authority shall not make a change in classification or any new classification unless the Authority determines that such change is not expected to result in the receipt of Revenues in amounts less than that necessary to comply with Section 502.

(b) Free Passage. The Authority shall not grant free passage through a Toll collection facility on the Project, except that it shall grant free or discounted passage to Authorized Veteran's Vehicles, Authorized Emergency Vehicles and such other vehicles as may be required or allowed by applicable law.

(c) Discretion of Authority. The Authority's covenant as to uniformity of Tolls shall not be construed as requiring that Tolls for any given class of traffic be identical in amount throughout the entire Project for trips of approximately identical lengths. The Authority may fix and place in effect a Toll rate schedule for any given class of traffic wherein the Tolls charged for travel on a given section of the Project shall be different from the Tolls charged on another section of the Project notwithstanding the fact that both of said sections shall be of identical or approximately identical length.

(d) Approval by Traffic Consultant. As used in this Section, approval by a Traffic Consultant means that such Traffic Consultant has undertaken an analysis of the impact of the contemplated action of the Authority and has provided a written determination to the Authority that such action would not adversely affect the ability of the Authority to meet the requirements of Section 502. The Authority shall file a copy of each approval by a Traffic Consultant with the Trustee promptly after receipt.

SECTION 504. Establishment of Funds and Accounts.

(a) In addition to the Construction Fund created pursuant to Section 519 and any other Funds and Accounts created by Supplemental Indentures, the following Funds are hereby established and created:

(1) Revenue Fund;

(2) Rebate Fund;
(3) Operations and Maintenance Fund;
(4) Senior Lien Debt Service Fund;
(5) Senior Lien Debt Service Reserve Fund;
(6) Subordinate Lien Debt Service Fund;
(7) Subordinate Lien Debt Service Reserve Fund;
(8) Operations and Maintenance Reserve Fund;
(9) Renewal and Replacement Fund;
(10) Renewal and Replacement Reserve Fund; and
(11) Project Enhancement Fund.

All of such Funds shall be established with, held and maintained by the Trustee or, to the extent permitted by this Indenture or a Supplemental Indenture, a Depository. Amounts held at any time by the Trustee in any of the Funds and accounts established and created pursuant to this Section (other than the Operations and Maintenance Fund, which shall be held outside this Indenture) shall be held in trust for the Owners of the Obligations separate and apart from all other funds of the Trustee and shall be disbursed, allocated and applied solely for the purposes and in the manner provided herein. The segregation of any such accounts as required by this Section is for the purpose of making the calculations, to the extent necessary, required by Sections 143(g) and 148 of the Internal Revenue Code of 1986, as amended, and may be for other purposes as the Authority may reasonably determine, including as provided in (b) and (c) below and to accommodate direct pay subsidy bonds or provide for subaccounts in a reserve fund, but otherwise is not for the purpose of giving a priority or preference to the Obligations of one Series over that of another Series.

(b) The Authority or the Trustee, as applicable, reserves the right to establish, pursuant to a Supplemental Indenture, one or more additional Funds for such purposes as the Authority may determine from time to time.

(c) The Authority or the Trustee, as applicable, further reserves the right to establish, pursuant to a Supplemental Indenture, one or more accounts and subaccounts within each Fund including, without limitation, accounts and subaccounts for the purpose of accounting for Obligation proceeds, Revenues and other amounts relating to one or more Series of Obligations and for such other purposes as the Authority or the Trustee, as applicable, may determine from time to time. Each such account or subaccount within a Fund shall be designated in a manner that indicates the identity of such Fund and that distinguishes such account or subaccount from all other accounts and subaccounts established under this Indenture.

SECTION 505. Flow of Funds.

(a) All Revenues shall be deposited as received by the Authority into the Revenue Fund. Amounts on deposit in the Revenue Fund shall be deposited in, or credited to, as appropriate, the following Funds and Accounts, on the fifteenth (15th) day of each month (each, a "Transfer Date") beginning on the fifteenth (15th) day of the first full calendar month following the first date on which any Obligations are issued and Outstanding hereunder (or on such other date as may be provided in a Supplemental Indenture) in the following amounts in the following order of priority:

First, to the Rebate Fund such amounts as may be authorized or required by this Indenture or any Supplemental Indenture.

Second, to the Operations and Maintenance Fund, an amount equal to one-twelfth (1/12) of the Operating Expenses and Maintenance Expenses for such Fiscal Year, as set forth in the Annual Operating Budget and Annual Maintenance Budget of the Project; provided, that the monthly payment shall be increased or decreased, as necessary, to reflect amendments to the Annual Operating Budget and Annual Maintenance Budget; provided, further, that the transfer made on the first Transfer Date of each Fiscal Year (and each successive Transfer Date thereafter to the extent necessary) shall be reduced to take into consideration amounts on deposit in the Operations and Maintenance Fund on the last day of the just concluded Fiscal Year, as certified to the Trustee by the Authority in accordance with Section 507.

Third, to the Senior Lien Debt Service Fund (or to a fund or account created to pay or repay amounts under a Credit Facility entered into in connection with Senior Lien Obligations), an amount equal to the sum of the following:

(i) one-sixth (1/6) of the interest becoming due on the next semiannual Interest Payment Date with respect to Senior Lien Obligations that pay interest semiannually; and

(ii) the amount of interest next becoming due on Senior Lien Obligations that pay interest monthly; and

(iii) the amount of interest accruing in such month on Senior Lien Obligations that bear interest payable on other than a semi-annual or monthly basis (other than Capital Appreciation Bonds), together with the amount of interest that will accrue on such Senior Lien Obligations through any Interest Payment Dates that will occur prior to the next Transfer Date; and

(iv) one-twelfth (1/12) of the principal amount or Maturity Amount, as applicable, of Senior Lien Obligations that will mature and become due and payable on the next annual maturity date; and

(v) one-twelfth (1/12) of the principal amount or Maturity Amount, as applicable, of Senior Lien Obligations subject to mandatory sinking fund redemption on the next annual maturity date; and

(vi) the amount, if any, payable by the Authority under a Senior Lien Loan Agreement or Credit Facility secured on a parity with the Senior Lien Obligations (other than payments for fees and expenses) accruing in such month or that will accrue through a payment date that will occur prior to the next Transfer Date; provided, that such amounts shall be included in the calculation of the monthly deposit only to the extent such amounts are required to be paid in addition to the amounts described in clauses (i) through (v) above.

In calculating such monthly deposit to the Senior Lien Debt Service Fund, the Trustee shall take into account (a) any accrued interest deposited into the Senior Lien Debt Service Fund from the proceeds of a Series of Senior Lien Obligations, (b) any amounts delivered to the Trustee prior to such Transfer Date for credit to the Senior Lien Debt Service Fund (or, to the extent applicable, the Construction Fund) and dedicated to pay capitalized interest on Senior Lien Obligations and anticipated to be available to pay interest on Senior Lien Obligations on the next Interest Payment Date, (c) any amounts (including without limitation any amounts representing Supplemental Security) deposited to the Senior Lien Debt Service Fund prior to the Transfer Date, and (d) any investment income realized by the Authority from the investment of amounts on deposit in the Senior Lien Debt Service Fund.

Further, such monthly deposits shall be adjusted, as appropriate, to reflect the frequency of Interest Payment Dates applicable to each Series of Senior Lien Obligations and the frequency of payments under any Senior Lien Loan Agreements. On or before each Transfer Date, the Authority shall make up any deficiencies in deposits on prior Transfer Dates from and to the extent monies remain on deposit in the Revenue Fund.

Fourth, to the Senior Lien Debt Service Reserve Fund, all amounts, if any, which, together with amounts on deposit therein and amounts available under a Senior Lien DSRF Security, will be sufficient to make the amount on deposit therein equal to the Senior Lien Debt Service Reserve Fund Requirement in accordance with the provisions of Section 509 hereof and any applicable Supplemental Indenture.

Fifth, to the Funds, if any, created by a Supplemental Indenture related to the issuance of Subordinate Lien Obligations, all deposits, payments or transfers required by such Supplemental Indenture or the resolution, order or other instrument creating or evidencing such Obligations.

Sixth, to the Operations and Maintenance Reserve Fund, all amounts, if any, which, together with amounts on deposit therein, will be sufficient to make the amount on deposit therein equal to the Operations and Maintenance Reserve Fund Requirement.

Seventh, to the Renewal and Replacement Fund, one-twelfth (1/12) of the amount identified in the Annual Capital Budget for deposit into the Renewal and Replacement Fund from the Revenue Fund.

Eighth, to the Renewal and Replacement Reserve Fund, all amounts, if any, necessary to make the amount on deposit therein equal to the Renewal and Replacement Reserve Fund Requirement; provided, however, that after the Renewal and Replacement Reserve Fund's initial satisfaction of the Renewal and Replacement Reserve Fund Requirement, should the amount on deposit in the Renewal and Replacement Reserve Fund thereafter fail to satisfy the Renewal and Replacement Reserve Fund Requirement, the amounts on deposit in the Project Enhancement Fund shall be treated as if such amounts were in the Renewal and Replacement Reserve Fund in determining whether the Renewal and Replacement Reserve Fund Requirement has been satisfied.

Ninth, except as otherwise provided in a Supplemental Indenture, to the Project Enhancement Fund all amounts remaining on deposit in the Revenue Fund.

SECTION 506. Rebate Fund. There is created and established with the Trustee as a special fund of the Authority designated as the Rebate Fund. The Rebate Fund does not constitute part of the Trust Estate. Amounts on deposit in the Rebate Fund may be used solely to make payments to the United States of America under Section 148 of the Code and to pay costs related to the calculation of the amounts due.

The Trustee shall deposit or transfer to the credit of the Rebate Fund each amount delivered to the Trustee by the Authority for deposit thereto and each amount directed by the Authority to be transferred thereto from the Revenue Fund. The Trustee shall withdraw from the Rebate Fund and pay to the United States of America the balance of the Rebate Fund at such times as may be specified in any applicable Supplemental Indenture. All payments to the United States of America pursuant to this Section shall be made by the Trustee for the account and in the name of the Authority and shall be paid by draft posted by overnight carrier or registered United States Mail (return receipt requested), addressed to the Internal Revenue Service Center, Ogden, Utah 84201 (or to such other address that may be specified by the Internal Revenue Service) accompanied by the relevant Internal Revenue Service Form 8038-T (or to such other applicable successor information return specified by the Internal Revenue Service). The Trustee shall preserve all statements, forms, and explanations received from the Authority and all records of transactions in the Rebate Fund until six years after the retirement of all of the Obligations.

The Trustee may conclusively rely on the instructions of the Authority with regard to any actions to be taken by it pursuant to this Section and shall have no liability for any consequences of any failure of the Authority to perform its duties or obligations or to supply accurate or sufficient instructions. Except as provided above, the Trustee shall have no duty or responsibility with respect to the Rebate Fund or the Authority's duties and responsibilities with respect thereto except to follow the Authority's specific written instruction related thereto.

If at any time during the term of this Indenture the Authority or the Trustee desires to take any action that would otherwise be prohibited by the terms of this Section, such Person shall be permitted to take such action if it shall first obtain and provide to the other Persons named herein a Counsel's Opinion to the effect that such action shall not adversely affect the exclusion of interest on the Obligations from gross income of the Holders thereof for federal income tax purposes and shall be in compliance with the laws of the State and the terms of this Indenture.

SECTION 507. Operations and Maintenance Fund. The Operations and Maintenance Fund shall be held outside of this Indenture by a Depository selected by the Authority, provided that the Authority shall give the Trustee prior written notice of such selection that includes the routing number, account number and any other information necessary and requested by the Trustee in order for the Trustee to make deposits into the Operations and Maintenance Fund and any accounts created therein. The Authority may provide a Letter of Instructions requiring the Trustee to hold the Operations and Maintenance Fund, and in such event, the Trustee shall hold the Operations and Maintenance Fund outside of this Indenture in accordance with this Section 507.

All funds in the Operations and Maintenance Fund shall be held separate and apart from the Authority's other funds and accounts until applied as provided herein. Amounts on deposit in the Operations and Maintenance Fund shall be applied by the Authority, from time to time, to pay Operating Expenses and Maintenance Expenses of the Project. The Authority shall not be required to provide a written requisition request to apply funds on deposit in the

Operations and Maintenance Fund. In making payments from the Operations and Maintenance Fund, the Authority shall be deemed to be certifying that obligations in such amounts have been incurred by the Authority and that each item was properly incurred in operating and maintaining the Project and has not been previously paid.

Not later than five Business Days prior to the first Transfer Date of each Fiscal Year, an Authorized Representative of the Authority shall certify to the Trustee as follows: (1) that all funds withdrawn from the Operations and Maintenance Fund during the just concluded Fiscal Year were actually used to pay Operating Expenses and Maintenance Expenses, and (2) the balance on deposit in the Operations and Maintenance Fund on the last day of the just concluded Fiscal Year.

SECTION 508. Senior Lien Debt Service Fund. The Trustee and the Authority may create such additional accounts and subaccounts in the Senior Lien 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 or Maturity Amount, as applicable (including redemption price), of and interest on the Series of Senior Lien Obligations secured by such Credit Facility are to be paid (and upon such payment, amounts on deposit in the Senior Lien Debt Service Fund shall be used to repay the provider of the Credit Facility for such payments), and (ii) an account into which payments from the Authority to a lender under a Senior Lien Loan Agreement are to be paid.

The moneys in the Senior Lien Debt Service Fund shall be held by the Trustee in trust for the benefit of the Senior Lien Obligations, to the extent the foregoing are payable therefrom, and, pending application, shall be subject to a lien and charge in favor of the Holders of the Senior Lien Obligations until paid out or transferred as hereinafter provided. The Trustee shall pay out of the Senior Lien Debt Service Fund to the respective Paying Agents for Senior Lien Obligations (a) on or before each Interest Payment Date and each date fixed for the redemption of Senior Lien Obligations, the amount required for the payment of the interest becoming due on such date and (b) on or before each date on which Senior Lien Obligations mature or become subject to scheduled mandatory sinking fund redemption or optional redemption, the amount required for payment of the principal amount or Maturity Amount, as applicable, of the Senior Lien Obligations maturing and the redemption price of Senior Lien Obligations becoming subject to redemption on such date, except, in each case, to the extent such interest, principal amount or Maturity Amount, as applicable, or redemption price is payable from a fund or account other than the Senior Lien Debt Service Fund, as provided in any Supplemental Indenture.

The Authority may determine to purchase Senior Lien Obligations from time to time in accordance with the redemption provisions of a Supplemental Indenture (or other proceedings of the Authority) and, in such event, the Trustee shall apply amounts in the Senior Lien Debt Service Fund to pay the purchase price of such Senior Lien Obligations if (i) so directed in writing by an Authorized Representative of the Authority and (ii) after the application of amounts in Senior Lien Debt Service Fund for such purpose, the amounts on deposit in the Senior Lien Debt Service Fund, together with amounts required to be deposited therein by Section 505, will be sufficient to pay the principal, or Maturity Amount, and interest next becoming due on the Senior Lien Obligations.

If at the time the Trustee is required to make a withdrawal from the Senior Lien Debt Service Fund the moneys therein shall not be sufficient for such purpose, unless otherwise provided in a Supplemental Indenture, 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 Senior Lien Debt Service Fund in the following order: the Revenue Fund; the Project Enhancement Fund; the Renewal and Replacement Reserve Fund; the Renewal and Replacement Fund; and the Senior Lien Debt Service Reserve Fund.

SECTION 509. Senior Lien Debt Service Reserve Fund. Notwithstanding anything to the contrary herein, the Authority reserves the right to establish, pursuant to a Supplemental Indenture authorizing the issuance of a Series of Senior Lien Obligations, whether such Series of Senior Lien Obligations will be a Reserve Fund Participant in the Senior Lien Debt Service Reserve Fund. Moneys, investments and any Senior Lien DSRF Security held in the Senior Lien Debt Service Reserve Fund shall, except as otherwise provided in a Supplemental Indenture, be held and used for the benefit of all Senior Lien Obligations that the Authority elects to establish as Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund. If on any Interest Payment Date on the Senior Lien Obligations that are Reserve Fund Participants, after giving effect to all transfers pursuant to Section 505 and after making all required transfers from other Funds, the amount in the Senior Lien Debt Service Fund shall be less than the amount required to pay the interest on Senior Lien Obligations that are Reserve Fund Participants due and payable on such date, the amount required to pay the principal amount or Maturity Amount, as applicable, of the Senior Lien Obligations that are Reserve Fund Participants maturing on such date or the redemption price of Senior Lien Obligations becoming subject to scheduled mandatory redemption on such date, then the Trustee shall apply amounts from the Senior Lien Debt Service Reserve Fund to the extent necessary to eliminate such deficiency.

If at any time, the moneys, investments and principal amount of any Senior Lien DSRF Security held in the Senior Lien Debt Service Reserve Fund (based on the last valuation made pursuant to Section 602) are less than the Senior Lien Debt Service Reserve Fund Requirement, the Trustee shall make the monthly deposits required in Section 505, in equal monthly installments, in such amount as will restore the balance of the Senior Lien Debt Service Reserve Fund to the Senior Lien Debt Service Reserve Fund Requirement within eighteen (18) months of the occurrence of any such deficiency. If at any time the moneys, investments and the principal amount of any Senior Lien DSRF Security held in the Senior Lien Debt Service Reserve Fund shall exceed the Senior Lien Debt Service Reserve Requirement, subject to the receipt of a Counsel's Opinion to the effect that such transfer and use will not adversely affect the treatment of any Outstanding Obligations for federal tax purposes, the Authority shall direct whether such excess moneys shall be transferred by the Trustee to the credit of the Senior Lien Debt Service Fund, used to reduce the principal amount of any Senior Lien DSRF Security or, to the extent that such excess was derived from Revenues, transferred to the Revenue Fund or the Project Enhancement Fund.

In lieu of the deposit of moneys into the Senior Lien Debt Service Reserve Fund, the Authority 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 Senior Lien DSRF Security will not result in the rating on any Outstanding Senior Lien Obligations that are Reserve Fund Participants being downgraded) (each, a "Senior Lien DSRF Security") payable to the Trustee for the benefit of the Holders of the Senior Lien Obligations that are Reserve Fund Participants in an amount equal to the difference between the Senior Lien Debt Service Reserve Requirement and the amounts then on deposit in the Senior Lien Debt Service Reserve Fund. The Senior Lien DSRF Security shall be payable (upon the giving of any notice as may be required thereunder) on any Interest Payment Date, principal payment date or redemption date on which moneys will be required to be withdrawn from the Senior Lien Debt Service Reserve Fund and applied to the payment of the principal amount, Maturity Amount or redemption price of or interest on any Senior Lien Obligations that are Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund, unless otherwise provided in a Supplemental Indenture.

If a disbursement is made pursuant to a Senior Lien DSRF Security, the Authority shall be obligated either (i) to cause the reinstatement to the maximum limits of such Senior Lien DSRF Security or (ii) to deposit into the Senior Lien Debt Service Reserve Fund, funds in the amount of the disbursement made under such Senior Lien DSRF Security, or a combination of such alternatives, and shall provide that the amount credited to the Senior Lien Debt Service Reserve Fund equals the Senior Lien Debt Service Reserve Requirement within eighteen (18) months.

SECTION 510. Subordinate Lien Obligations; Creation of Funds and Accounts. Subject to the requirements of Section 707, the Authority reserves the right to issue Obligations pursuant to a Supplemental Indenture on a lien junior and subordinate to the lien on the Trust Estate securing the payment of Senior Lien Obligations (as further described in Section 707, the "Subordinate Lien Obligations") and to establish funds and accounts on such a junior and subordinate lien basis as may be provided in any such Supplemental Indenture, including without limitation a debt service reserve fund or account for any such Subordinate Lien Obligations.

SECTION 511. Operations and Maintenance Reserve Fund. The Operations and Maintenance Reserve Fund shall be held by the Trustee pursuant to the terms of this Indenture. Amounts on deposit in the Operations and Maintenance Reserve Fund shall only be applied, from time to time, to pay Operating Expenses and Maintenance Expenses of the Project. Funds on hand in the Operations and Maintenance Reserve Fund may not be disbursed unless and until all funds in the Operations and Maintenance Fund have been depleted. Funds on deposit in the Operations and Maintenance Reserve Fund may not be disbursed to pay debt service on the Obligations, redeem Obligations, or purchase Obligations.

The Trustee shall disburse moneys on deposit in the Operations and Maintenance Reserve Fund to pay, or as reimbursement for payment of, Operating Expenses and Maintenance Expenses of the Project within two Business Days after receipt by the Trustee of written requisition requests of the Authority. Upon receipt of each requisition, the Trustee shall transfer from the Operations and Maintenance Reserve Fund as directed by the Authority in a written requisition request funds equal to the total of the amounts to be paid as set forth in such requisition and the Authority covenants to apply such funds to the payments described in the requisition. If for any reason the Authority should decide prior to release of payment by the Trustee of any item not to pay such item, an Authorized Representative of the Authority shall give notice, confirmed in writing, of such decision to the Trustee and the Trustee shall not make such payment.

SECTION 512. Renewal and Replacement Fund. Except as hereinafter provided in this Section, moneys held for the credit of the Renewal and Replacement Fund shall be disbursed only for the purpose of paying the cost of:

(a) unusual or extraordinary maintenance or repairs, maintenance or repairs not recurring annually, and renewals and replacements, including major items of equipment,

(b) repairs or replacements resulting from an emergency caused by some extraordinary occurrence, so characterized by a certificate signed by an Authorized Representative, approved by a Consulting Engineer and filed with the Trustee stating that the moneys in the Revenue Fund and insurance proceeds, if any, available therefor are insufficient to meet such emergency, and

(c) paying all or any part of the cost of any capital improvement to the Project.

Disbursements by the Trustee from the Renewal and Replacement Fund shall be made within two Business Days after receipt by the Trustee of a written request signed by an Authorized Representative specifying the amount of the requested disbursement and the purpose for which such funds will be used.

The Trustee shall transfer moneys in the Renewal and Replacement Fund to the Senior Lien Debt Service Fund at such times as may be required by Section 508, and as may be otherwise required by a Supplemental Indenture.

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SECTION 515. Renewal and Replacement Reserve Fund. Moneys held for the credit of the Renewal and Replacement Reserve Fund shall be disbursed only for the purposes identified in Section 514.

Disbursements by the Trustee from the Renewal and Replacement Reserve Fund shall be made within two Business Days after receipt by the Trustee of a written request signed by an Authorized Representative specifying the amount of the requested disbursement and the purpose for which such funds will be used.

The Trustee shall transfer moneys in the Renewal and Replacement Reserve Fund to the Senior Lien Debt Service Fund at such times as may be required by Section 508, and as may be otherwise required by a Supplemental Indenture.

SECTION 516. Project Enhancement Fund. Moneys in the Project Enhancement Fund shall first be used by the Trustee as provided in Section 508 and to restore deficiencies in any funds or accounts created under this Indenture or any Supplemental Indenture. After satisfying those requirements, however, such moneys may be expended or transferred from time to time for any of the following purposes, with no one item having priority over any of the others:

(a) to purchase, redeem or repay Obligations;

(b) to pay Maintenance Expenses and Operating Expenses;

(c) to make payments into the Construction Fund;

(d) to fund improvements and repairs to and replacements of the Project;

(e) to make a deposit to the Revenue Fund to be applied in accordance with the flow of funds described in Section 505;

(f) to the extent that the County Reimbursement Obligation has not otherwise been paid or reimbursed to the County, to make payments to the County pursuant to the Authority/County Interlocal Agreement in an aggregate amount not to exceed the County Reimbursement Obligation; and

(g) for any street lamps, traffic signalization, toll gantries, cameras and other equipment, on-ramps, off-ramps, overpasses, feeder roads, connectivity projects and other improvements relating to the Project.

Notwithstanding anything to the contrary above, funds on deposit in the Project Enhancement Fund may not be expended for the purposes identified in items (f) or (g) above unless the Revenues generated in each of the two immediately preceding Fiscal Years were equal to or greater than two times (2x) the Annual Debt Service on the then Outstanding Obligations.

The Trustee is authorized to apply moneys on deposit in the Project Enhancement Fund for any of such purposes upon receipt of a Letter of Instructions from the Authority.

The Authority reserves the right to pledge amounts on deposit in the Project Enhancement Fund to the payment of any obligation of the Authority authorized under the Act.

SECTION 517. Moneys Set Aside for Principal and Interest Held in Trust. All moneys that the Trustee shall have set aside (or deposited with any Paying Agent) for the purpose of paying any of the Obligations hereby secured, either at the maturity thereof or upon call for redemption, shall be held in trust for the respective Holders of such Obligations. However, any moneys which shall be so held or deposited by the Trustee, and which shall remain unclaimed by the Holders of such Obligations for the period of three years after the date on which such Obligations shall have become payable, shall, subject to the provisions of Title 6, Texas Property Code, be paid to the Authority upon its written request or to such officer, board or body as may then be entitled by law to receive the same; thereafter, the Holders of such Obligations shall look only to the Authority or to such officer, board or body, as the case may be, for payment and then only to the extent of the amounts so received without any interest thereon, and the Trustee shall have no responsibility with respect to such moneys.

SECTION 518. Supplemental Security. Except as otherwise provided or permitted herein or in a Supplemental Indenture, the Trust Estate securing all (i) Senior Lien Obligations, shall be shared on a parity with other Senior Lien Obligations on an equal and ratable basis, and (ii) 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 interest in the Trust Estate for the benefit of the Holders of the Senior Lien Obligations. The Authority may, however, in its discretion, provide Supplemental Security (a) for specified Obligations, but shall have no obligation to provide such additional security or credit enhancement to other Obligations, or (b) for deposit into one or more specified Funds or Accounts created under this Indenture or any Supplemental Indenture, except that, to the extent applicable, no Supplemental Security shall be provided unless there shall have been first delivered to the Trustee a Counsel's Opinion that the tax treatment of interest on any Obligations for federal income tax purposes will not be adversely affected thereby. The Authority reserves the right to establish, pursuant to a Supplemental Indenture, one or more Funds or Accounts for the purpose of holding, investing and disbursing Supplemental Security.

SECTION 519. Construction Fund.

(a) Creation. There is hereby created a special fund known as the "Construction Fund," which shall be held in trust by the Trustee. There shall be deposited to the Construction Fund such amounts as shall be specified in any Supplemental Indenture.

At the written direction of the Authority in a Letter of Instructions to the Trustee, a special account shall be created and identified in the Construction Fund for each portion of the Project identified in such Letter of Instructions to the Trustee. Funds on deposit in each account of the Construction Fund shall be used to pay the Cost of the related portion of the Project; provided, that at the written direction of the Authority in a Letter of Instructions to the Trustee, funds may be transferred from one such account in the Construction Fund to another account in such Fund.

(b) Payments from Construction Fund. The Trustee shall disburse moneys on deposit in the Construction Fund to pay or as reimbursement for payment of Costs of the Project within two Business Days after receipt by the Trustee of written requisition requests of the Authority in the form specified in the related Supplemental Indenture. The requisition requests shall include W9s for each payee, together with such other information as the Trustee may request.

Upon receipt of each requisition, the Trustee shall transfer from the Construction Fund as directed by the Authority funds equal to the total of the amounts to be paid as set forth in such requisition and the Authority covenants to apply such funds to the payments described in the requisition. If for any reason the Authority should decide prior to release of payment by the Trustee of any item not to pay such item, an Authorized Representative of the Authority shall give notice, confirmed in writing, of such decision to the Trustee and the Trustee shall not make such payment.

(c) Trustee Reliance and Retention of Requisitions. All requisitions and accompanying certificates and statements received by the Trustee pursuant to subsection (b) above may be relied upon by and shall be retained in the possession of the Trustee for a period of five years, subject at all times to the inspection of the Authority, its agents and representatives, and any other Person authorized by a certificate of an Authorized Representative of the Authority. The Trustee shall not be required to make any independent investigation in connection with any such requisitions and accompanying certificates and statements.

(d) Progress Reports and Substantial Completion. The following requirements apply to the initial construction of the Project and any major reconstruction of all or substantially all of the Project.

(1) The Authority covenants that at least quarterly during any such construction of the Project, and continuing until final acceptance thereof by the Authority, it will cause a General Engineering Consultant to prepare a progress report, to be delivered to an Authorized Representative of the Authority, in connection with such construction including current projections with respect to:

(i) the date on which the Project will be opened for traffic (or if new or replacement lanes are being constructed, the date on which such new or replacement toll lanes will be opened for traffic);

(ii) the date on which the construction of the Project or such new or replacement toll lanes will be completed;

(iii) the Cost of the Project or such new or replacement toll lanes; and

(iv) the amount of funds required each six months during the remaining estimated period of construction to pay the Costs of the Project or such new or replacement toll lanes, as applicable, exclusive of funds provided for construction contingencies, and accompanied by a progress schedule for such construction, and further including, as to construction, comparisons between the actual times elapsed and the actual costs, and the original estimates of such times and costs.

(2) An Authorized Representative of the Authority shall deliver to the Trustee a report certifying when Substantial Completion of the Project or such new or replacement toll lanes, as applicable, has occurred. In certifying Substantial Completion of the Project or such new or replacement toll lanes, as applicable, an Authorized Representative of the Authority shall base such certification upon his or her review of the quarterly progress reports for the Project or such new or replacement toll lanes, as applicable, prepared by a General Engineering Consultant and upon consultation with a Traffic Consultant preparing the Traffic and Revenue Report for the Project or such new or replacement toll lanes, as applicable.

(e) Transfer of Excess Moneys in Construction Fund. If at any time an Authorized Representative of the Authority shall file with the Trustee a certificate stating that the Substantial Completion of the Project or such new or replacement toll lanes, as applicable, has occurred, that the Cost of the Project or such new or replacement toll lanes, as applicable, has been finally determined and that the funds remaining in the account established for the Project or such new or replacement toll lanes, as applicable, exceed the remaining Costs of the Project or such new or replacement toll lanes, as applicable, then, to the extent that such remaining amounts represent the proceeds of Obligations, including investment earnings on such proceeds, the Trustee shall transfer such amount, on a pro rata basis based upon the respective Outstanding principal amounts of the Senior Lien Obligations or Subordinate Lien Obligations, as the case may be, issued to finance the Project or such new or replacement toll lanes, as applicable, to the Senior Lien Debt Service Fund or debt service fund for such Subordinate Lien Obligations, as the case may be, to be used to (i) redeem such respective Obligations, or (ii) to pay current debt service on such respective Obligations if the Authority has received a Counsel's Opinion to the effect that such application of the funds will not adversely affect the treatment of any Outstanding Obligations for federal tax purposes; provided, that such excess funds may be transferred to such other Fund or Account as directed in a certificate of an Authorized Representative of the Authority if such certificate is accompanied by Counsel's Opinion to the effect that such transfer and/or application will not adversely affect the treatment of any Outstanding Obligations for federal tax purposes and that it is authorized by law.

(f) Enforcement of Contracts and Surety Bonds. In the event of a material default of any contractor or subcontractor under any construction contract or any other contract made in connection with the Project or such new or replacement toll lanes, as applicable, or in the event of a material breach of warranty with respect to any materials, workmanship or performance, the Authority will, unless the Authority determines that it would not be beneficial to the Project, promptly proceed, either separately or in conjunction with others, to pursue diligently the remedies of the Authority against the contractor or subcontractor in default and against any surety on a bond securing the performance of such contract. Any amounts recovered by way of damages, refunds, adjustments or otherwise in connection with the foregoing, after deduction of expenses incurred in such recovery and after reimbursement to the Authority of any amounts theretofore paid by the Authority and not previously reimbursed to the Authority for correcting or remedying the default which gave rise to the proceedings against the contractor, subcontractor or surety, shall be paid into the appropriate account of the Construction Fund if received before the date of completion of the Project or such new or replacement toll lanes, as applicable, and otherwise shall be deposited in the Revenue Fund and applied in accordance with the provisions of Section 505 of this Indenture.

(g) Reconstruction, Application of Insurance Proceeds. If any material portion of the Project shall be damaged or destroyed, the Authority shall, unless the Authority determines that it would not be beneficial to the Project, as expeditiously as possible, cause the reconstruction or replacement thereof to be prosecuted continuously and diligently in accordance with plans and specifications approved by a General Engineering Consultant and the Authority if such plans and specifications are deemed necessary by such General Engineering Consultant and the Authority. The proceeds of any insurance paid on account of such damage or destruction, other than business interruption insurance, shall be deposited in the appropriate account of the Construction Fund and be available for, and to the extent necessary be applied to, the payment of or reimbursement for payment of the cost of such reconstruction or replacement in accordance with subsection (b) above. Proceeds of any insurance not applied within eighteen (18) months after receipt thereof by the Authority 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 Authority within such eighteen (18) months, or which the Authority shall at any time determine are not to be so applied, shall be deposited in the Revenue Fund and applied in accordance with the provisions of Section 505 of this Indenture.

The proceeds of any business interruption insurance shall be deposited in the Revenue Fund and applied in accordance with the provisions of Section 505 of this Indenture.

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ARTICLE VII

PARTICULAR COVENANTS OF THE AUTHORITY

The Authority covenants and agrees with the Trustee and the Holders of Obligations as follows:

SECTION 701. Payment of Obligations. The Authority shall duly and punctually pay or cause to be paid, but solely from the Trust Estate including the Revenues, the proceeds of the Obligations, other funds pledged therefor by this Indenture, the principal amount or Maturity Amount, as applicable, or redemption price of and interest on every Obligation at the dates and places and in the manner mentioned in the Obligations, according to the true intent and meaning thereof.

SECTION 702. Extension of Payment of Obligations. The Authority shall not directly or indirectly extend or assent to the extension of the time for payment of the principal amount or Maturity Amount, as applicable, of or interest on any Obligation and will not directly or indirectly be a party to any arrangement therefor without the consent of each Holder affected thereby. Nothing herein shall be deemed to limit the right of the Authority to issue Refunding Obligations and such issuance shall not be deemed to constitute an extension of the maturity of Obligations, even in the event that the Refunding Obligations mature later than the Obligations refunded thereby.

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SECTION 705. Annual Operating Budget; Annual Maintenance Budget; Annual Capital Budget.

(a) Annual Operating Budget. The Authority covenants that on or before the end of each Fiscal Year (or such other date as is consistent with the Authority's policies then in effect) it will adopt an Annual Operating Budget for the Project for the ensuing Fiscal Year. Copies of each Annual Operating Budget shall be provided to the Trustee. The Authority 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 Authority 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 under the provisions of this Article.

The Authority may adopt an amended or supplemental Annual Operating Budget at any time for the remainder of the then current Fiscal Year. Copies of any such amended or supplemental Annual Operating Budget shall be provided to the Trustee.

(b) Annual Maintenance Budget. The Authority covenants that on or before the end of each Fiscal Year (or such other date as is consistent with the Authority's policies then in effect) it will adopt an Annual Maintenance Budget for the Project for the ensuing Fiscal Year. Copies of each Annual Maintenance Budget shall be provided to the Trustee. The Authority 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 Fiscal Year.

If for any reason the Authority 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 under the provisions of this Article.

The Authority may adopt an amended or supplemental Annual Maintenance Budget at any time for the remainder of the then current Fiscal Year. Copies of any such amended or supplemental Annual Maintenance Budget shall be provided to the Trustee.

(c) Annual Capital Budget. The Authority further covenants that on or before the end of each Fiscal Year (or such other date as is consistent with the Authority's policies then in effect) it will adopt an Annual Capital Budget for the Project for the ensuing Fiscal Year. The Annual Capital Budget will detail the Authority's planned capital expenditures during the ensuing Fiscal Year and the portion of capital expenditures expected to be funded from the Renewal and Replacement Fund and the Renewal and Replacement Reserve Fund. The Annual Capital Budget for each Fiscal Year shall include the expected beginning balance in the Renewal and Replacement Fund and the Renewal and Replacement Reserve Fund, the amounts to be transferred by the Trustee to the Renewal and Replacement Fund and the Renewal and Replacement Reserve Fund from the Revenue Fund, the amount of proceeds of Obligations expected to become available during the Fiscal Year, and the desired year-end balance in the Renewal and Replacement Fund. If for any reason the Authority shall not have adopted the Annual Capital Budget before the first day of any Fiscal Year, the Budget for the preceding Fiscal Year, shall, until the adoption of the new Annual Capital Budget, be deemed to be in force and shall be treated as the Annual Capital Budget under the provisions of this Article. The Authority may adopt amendments or supplements to the Annual Capital Budget at any time. Copies of the Annual Capital Budget shall be provided to the Trustee.

(d) Consolidation of Budgets. The Authority, at its discretion, may consolidate the Operating Budget, the Maintenance Budget and the Capital Budget into a single document that conforms to subsections (a), (b) and (c) above.

SECTION 706. Limitations on Issuance of Additional Senior Lien Obligations and Execution of Senior Lien Loan Agreements. The Authority reserves the right to issue Additional Senior Lien Obligations in accordance with and subject to the provisions of this Section and any applicable Supplemental Indenture to finance the Costs of improvements or repairs to or replacements of the Project. Such Additional Senior Lien Obligations may be issued as either Short-Term Obligations or Long-Term Obligations, and may have such other characteristics as may be specified in the applicable Supplemental Indenture.

(a) Long-Term Obligations. The Authority agrees that it will not issue any Additional Senior Lien Obligations constituting Long-Term Obligations unless prior to or contemporaneously with the incurrence thereof, the provisions of Section 302 are met and there is delivered to the Trustee either:

(1) a certificate from an Authorized Representative of the Authority 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 Senior Lien Obligations, after the payment of all Operating Expenses and Maintenance Expenses for such Annual Period paid from Revenues, 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 Authority 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 Senior Lien Obligations, less the projected Operating Expenses and Maintenance Expenses for each such Fiscal Year to be paid from Revenues, are expected to produce a Projected Debt Service Coverage Ratio of at least (i) 1.40 with respect to Senior Lien Obligations, and (ii) 1.00 with respect to all Obligations; or

(2) if the Long-Term Obligations are being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any Outstanding Long-Term Obligations, a certificate of an Authorized Representative of the Authority certifying the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Obligations is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Obligations.

Any such certificate of an Authorized Representative of the Authority shall be accompanied by a report, certificate or letter by a Traffic Consultant filed with the Trustee and stating the opinion of such Traffic Consultant as to Revenues to be derived by the Authority from the ownership and operation of the Project (provided that investment and other income not related to Tolls that constitute Revenues of the Project shall be estimated by an Authorized Representative) and a certificate of the General Engineering Consultant filed with the Trustee stating the opinion of the General Engineering Consultant as to the amount of Operating Expenses and Maintenance Expenses paid or accrued or to be paid or accrued, as the case may be, during any pertinent period.

(b) Senior Lien Loan Agreements. The Authority agrees that it will not enter into any Senior Lien Loan Agreement as a Senior Lien Obligation unless prior to or contemporaneously with the incurrence thereof, the provisions of Section 303 are met and there is delivered to the Trustee the certificates or reports required in subsection (a)(1) or (a)(2) above, which certificates or reports take into account, in calculating Annual Debt Service, the expected payments to be made by the Authority under such Senior Lien Loan Agreement, including to the extent applicable any term out payments thereunder.

SECTION 707. Subordinate Lien Obligations.

(a) Subordinate Lien Obligations. The Authority reserves the right to issue Obligations secured in whole or in part by liens on all or part of the Trust Estate that are junior and subordinate to the lien on the Trust Estate securing payment of the Senior Lien Obligations (the "Subordinate Lien Obligations"); provided, however, that the Authority may only issue such Subordinate Lien Obligations for the purposes of repairing, rehabilitating, maintaining, or improving the Project or for the purposes of refunding all or a portion of the Senior Lien Obligations or other Outstanding Subordinate Lien Obligations. Notwithstanding anything to the contrary herein, the Authority may provide, in a Supplemental Indenture providing for the issuance of Subordinate Lien Obligations, for either all Subordinate Lien Obligations to be of equal rank without preference or provide for certain priorities or distinctions as to lien or otherwise. Such Subordinate Lien Obligations may be further secured by any other source of payment lawfully available for such purposes.

(b) Additional Requirements. The Authority will not issue any Subordinate Lien Obligations constituting Long-Term Obligations unless prior to or contemporaneously with the incurrence thereof, the provisions of Section 302 are met and there is delivered to the Trustee either:

(1) a certificate from an Authorized Representative of the Authority 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 Subordinate Lien Obligations, after the payment of all Operating Expenses and Maintenance Expenses for such Annual Period paid from Revenues, 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 Authority subsequent to the beginning of such Annual Period had been in effect for the entire Annual Period); provided, however, that the Authority may, in a Supplemental Indenture, provide for a more stringent Rate Covenant requirement than provided in Section 502 applicable to the issuance of all or a portion of the Subordinate Lien Obligations, and

(B) the Projected Revenues for each Fiscal Year over the term of the proposed Subordinate Lien Obligations, less the projected Operating Expenses and Maintenance Expenses for each such Fiscal Year to be paid from Revenues, are expected to produce a Projected Debt Service Coverage Ratio of at least 1.00 with respect to all Obligations; provided, however that the Authority may, in a Supplemental Indenture, provide for a more stringent Projected Debt Service Coverage Ratio requirement applicable to the issuance of all or a portion of the Subordinate Lien Obligations; or

(2) if the Long-Term Obligations are being incurred solely for the purposes of refunding, repurchasing or refinancing (whether in advance or otherwise) any Outstanding Long-Term Obligations, a certificate of an Authorized Representative of the Authority certifying the Average Annual Debt Service on all Obligations prior to the issuance of the proposed Long-Term Obligations is greater than the Average Annual Debt Service on all Obligations after the issuance of such proposed Long-Term Obligations.

Any such certificate of an Authorized Representative of the Authority shall be accompanied by a report, certificate or letter by a Traffic Consultant filed with the Trustee stating the opinion of such Traffic Consultant as to

Revenues to be derived by the Authority from the ownership and operation of the Project (provided that investment and other income not related to Tolls that constitute Revenues of the Project shall be estimated by an Authorized Representative) and a certificate of the General Engineering Consultant filed with the Trustee stating the opinion of the General Engineering Consultant as to the amount of Operating Expenses and Maintenance Expenses paid or accrued or to be paid or accrued, as the case may be, during any pertinent period.

* * * * *

SECTION 710. Completion Obligations. To finance the Costs of completion of any improvements or repairs to or replacement of the Project financed with the proceeds of Obligations, the Authority may, without complying with any other provisions of Section 706(a), issue Additional Senior Lien Obligations in a principal amount not in excess of 10% of the principal amount of the original Obligations issued to finance such facilities, if prior to the issuance thereof there is delivered to the Trustee (1) a certificate from the General Engineering Consultant stating the amount estimated to be needed to complete the facilities and (2) a certificate of an Authorized Representative of the Authority stating: (A) that at the time the original Obligations financing the facilities to be completed were issued, the Authority had reason to believe that the proceeds of such Obligations together with other moneys then expected to be available would provide sufficient moneys for the completion of such facilities; and (B) that the proceeds of such Additional Senior Lien Obligations to be applied to the completion of the facilities, together with reasonable estimates provided by the Authority of investment income to be earned on such proceeds and available to pay such Costs, the amount of moneys, 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 moneys reasonably expected to be available, will be in an amount not less than the estimated amount needed to complete the facilities, as set forth in the General Engineering Consultant's certificate described in clause (1) above. The principal amount of the Additional Senior Lien Obligations to be used in assessing whether the test set forth in this Section 710 has been met shall include the amount required to (1) provide completed and equipped facilities of substantially the same type and scope contemplated at the time such prior Obligations were originally issued, (2) provide for capitalized interest during the period of construction, (3) provide the required deposit, if any, to cause the balance in the applicable debt service reserve fund to equal the applicable Debt Service Reserve Requirement, if any, and (4) pay the costs and expenses of issuing such Obligations.

SECTION 711. Use and Operation of Project. The Authority covenants that (i) it will maintain and operate the Project in an efficient and economical manner, (ii) it will maintain the Project in good repair and will make all necessary repairs, renewals and replacements, to the extent funds are available therefor hereunder; and (iii) it will comply with laws and all rules, regulations, orders and directions of any legislative, executive, administrative or judicial body applicable to such Project, subject to the right of the Authority to contest the same in good faith and by appropriate legal proceedings.

SECTION 712. Inspection of the Project and Duties of General Engineering Consultant. The Authority shall cause a General Engineering Consultant to make an inspection of the Project at least once in the Fiscal Year following the Substantial Completion of the Project funded with Obligations issued under this Indenture and in each Fiscal Year thereafter; provided, however, the obligations of a General Engineering Consultant required by this Section may be modified or lessened by the Authority to the extent that the obligations of a General Engineering Consultant have been performed by other parties otherwise retained by the Authority to carry out inspections in accordance with the National Bridge Inspection Program (NBI) in accordance with applicable Federal law. Following each inspection and on or before the 90th day prior to the end of each Fiscal Year, a General Engineering Consultant shall submit to the Authority a report setting forth (i) its findings as to whether the Project has been maintained in good repair, working order and condition and (ii) its advice and recommendations as to the proper maintenance, repair and operation of the Project during the ensuing Fiscal Year and (iii) an estimate of the amount of money necessary for such purposes, including its 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.

SECTION 713. Construction of Projects. The Authority covenants that:

(a) it will proceed with diligence to (i) construct and complete the Project in conformity with law, all requirements of all governmental authorities having jurisdiction and the policies, rules and regulations of the Authority and (ii) to enforce any contracts relating to the construction of the Project.

(b) the Authority shall involve a General Engineering Consultant or another Consultant to assist in quality assurance matters in connection with design, construction or both of the Project or portion thereof to the extent the Authority determines necessary or appropriate.

SECTION 714. Employment of General Engineering Consultant and Traffic Consultant. The Authority 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 a General Engineering Consultant. The Authority further 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 a Traffic Consultant hereunder. The General Engineering Consultant and the Traffic Consultant shall be independent of one another.

SECTION 715. Insurance. The Authority covenants that it will keep the Project 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 Authority may elect to terminate self-insurance of a given type. Upon making such election, the Authority shall, to the extent then deemed necessary by a Consultant, obtain and maintain comparable commercial insurance.

Prior to Substantial Completion of the Project, and every three years thereafter (except with respect to self-insurance, which shall be annually), the Authority shall cause the Consultant referenced in the preceding paragraph to certify to the Trustee that (i) it has reviewed the adequacy of the Authority's insurance, listing the types and amounts of insurance, and (ii) 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 Authority should be carried, the Authority shall obtain such insurance coverage unless it determines in good faith that it is unreasonable or uneconomical to obtain such coverage and an Authorized Representative of the Authority certifies the same in writing to the Trustee.

All insurance policies maintained by the Authority shall be available at reasonable times for inspection by the Trustee, its agents and representatives.

The Authority 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 Authority receives insurance payments under a business interruption insurance policy, such amounts shall be deposited into the Revenue Fund. To the extent that the Authority receives liquidated damages for delayed completion under a construction contract relating to the acquisition or construction of the Project, such amounts shall be deposited into the Revenue Fund.

SECTION 716. Damage or Destruction. Immediately after any damage to or destruction of any part of the Project that materially adversely affects the Revenues, the Authority will promptly take action to repair, reconstruct or replace the damaged or destroyed property or to otherwise ameliorate the adverse impact on Revenues.

SECTION 717. Records; Annual Audit. The Authority covenants that it will maintain books and accounts reflecting the operations of the Project, as a separate enterprise, in accordance with Accounting Principles. The books and records of the Project may form a part of the books and records of the Authority but shall be maintained as a separate enterprise account.

In addition, the Authority covenants that as soon as practicable, but in no event more than one hundred eighty (180) days after the last day of each Fiscal Year, beginning with the Fiscal Year ending September 30, 2018, it will prepare or cause to be prepared a financial report of the results of operations of the Project for such Fiscal Year in accordance with Accounting Principles, certified by a Certified Public Accountant approved by the Authority, 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 Authority for such purpose.

SECTION 718. Encumbrance of Revenues; Sale, Lease or Other Disposition of Property. The Authority covenants as follows so long as any Obligations are Outstanding under this Indenture:

(a) Except as otherwise permitted by law and this Indenture (including, without limitation Sections 706, 707 and 710), (1) the Authority will not create or suffer to be created any lien or charge upon Revenues, except the lien and charge of the Senior Lien Obligations and Subordinate Lien Obligations secured hereby; and (2) from such Revenues or other funds available hereunder, 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 Authority 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.

(b) The Authority will not sell or otherwise dispose of any real estate or personal property comprising a portion of the Project unless an Authorized Representative of the Authority determines in the case of property with a value of $1 million or less or the Authority, by resolution or other official action, determines in the case of property with a value in excess of $1 million that:

(1) such property (A) has become obsolete or worn out or is reasonably expected to become so within one year after the date of such disposition, (B) is no longer used or useful in the operation of the Project or in the generation of Revenues or (C) is to be or has been replaced by other property; or

(2) such action will not materially adversely affect the Revenues.

The Authority shall have the discretion to deposit the proceeds of such sale or disposition in a fund or account held under this Indenture or an Authority account held outside this Indenture, as it deems appropriate. In the event the Authority did not meet the Rate Covenant during the preceding Fiscal Year, however, the Authority shall notify the Trustee of the sale or disposition of any property that generated Revenues in excess of one percent of the Authority's Revenues during the prior Fiscal Year, and all proceeds from such sale or disposition shall be deposited in the Revenue Fund.

(c) The Authority will not lease any real estate or personal property comprising a portion of the Project unless the Authority determines by resolution or other official action that such action will not materially adversely affect the Revenues.

Without intending to limit the foregoing, the Authority also may enter into contracts or other forms of agreement for the use of any real estate comprising a portion of the Project 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 Project and the payments received in connection with the same shall, to the extent permitted by law, constitute Revenues. The Authority also covenants to ensure that all necessary real property filings will be made in connection with any such lease or other agreement relating to the use of real estate comprising a portion of the Project to protect the interest of the Authority in such property.

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SECTION 720. Covenant Not to Build Competing Project. To the extent permitted by law and except as necessary for safety reasons or to preserve the condition of existing non-tolled facilities, the Authority agrees to refrain from exercising its discretionary authority to initiate, support, provide funding for, or approve any project 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, that would have the purpose or reasonably foreseeable effect of materially adversely affecting the ability of the Authority to comply with the covenants in this Indenture, particularly those covenants set forth in Sections 502 and 701.

ARTICLE VIII

PARTICULAR COVENANTS OF THE AUTHORITY

SECTION 801. Events of Default. The occurrence and continuation of the following events shall constitute an Event of Default under this Indenture:

(a) (1) failure by the Authority to pay the principal or Maturity Amount, as applicable, of and premium, if any, or interest on any of the Obligations when the same shall become due and payable, either at maturity or by redemption, other than at the election or direction of the Authority or pursuant to the terms of the Obligation, or (2) any failure of the Authority to purchase or cause to be purchased any Variable Rate Obligations, including Tender Obligations, upon any optional or mandatory tender to the Authority or a tender agent of the Authority, unless otherwise provided in a Supplemental Indenture authorizing Variable Rate Obligations or Tender Obligations; or

(b) the occurrence and continuance of an event of default under a Credit Facility, Senior Lien DSRF Security or other DSRF Security, Loan Agreement or Reimbursement Agreement; or

(c) the occurrence of an Event of Insolvency that shall not have been cured, vacated, discharged or stayed within sixty (60) days after the occurrence thereof; or

(d) failure of the Authority to duly and punctually perform any other of the covenants, conditions, agreements and provisions contained in any Obligations or in this Indenture or in any Supplemental Indenture on the part of the Authority to be performed, and 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 Authority by the Trustee, which may give such notice in its discretion and shall give such notice at the written request of the Holders of not less than ten per centum (10%) in principal amount of the Obligations then Outstanding.

SECTION 802. Remedies Applicable. The Holders shall be entitled to the remedies provided in this Article VIII; provided, however, acceleration of the principal or Maturity Amount, as applicable, of or interest on the Obligations or any of the Obligations upon the occurrence of an Event of Default is not a remedy available under this Indenture and in no event shall the Trustee, the Holders or other parties have the ability, upon the occurrence of an Event of Default, to declare immediately due and payable the principal or Maturity Amount, as applicable, of or interest on the Obligations or any of the Obligations. To the extent that a Series of Obligations is secured by a Credit Facility, municipal bond insurance policy, a Senior Lien DSRF Security or other DSRF Security, the provider of such Credit Facility, municipal bond insurance policy, or DSRF Security shall be considered the Holder of such Obligation for all purposes of exercising any remedy or giving any directions to the Trustee pursuant to the provisions of this Article.

SECTION 803. Enforcement of Remedies. Upon the occurrence of any Event of Default specified in Section 801, then and in every such case the Trustee may proceed, and upon the written request of the Holders of not less than twenty percent (25%) in principal amount or Maturity Amount, as applicable, of the Obligations then Outstanding hereunder shall proceed, subject to the provisions of Sections 902 and 903, to protect and enforce its rights and the rights of the Holders under the Act and under this 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 herein 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.

In the enforcement of any remedy under this 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 Authority for principal, interest or otherwise under any of the provisions of this 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 Holders, and to recover and enforce judgment or decree against the Authority, but solely as provided herein 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 moneys adjudged or decreed to be payable.

SECTION 804. Application of Funds. If at any time the moneys in the Senior Lien Debt Service Fund and the respective reserve Funds and other Funds established by this Indenture shall not be sufficient to pay the principal or Maturity Amount, as applicable, of or the interest on any Obligations as the same become due and payable, such moneys, together with any moneys then available or thereafter becoming available for such purpose, whether through the exercise of the remedies provided for in this Article or otherwise, but in any event subject to the provisions of Section 802 and subject to the requirements for transfers of Revenues to the Rebate Fund and the Operations and Maintenance Fund set forth in Section 505, shall be applied (subject to the provisions of Sections 902, 903 and 904 of this Indenture) as set forth in (a) through (h) below; provided, however, amounts on deposit in a Fund or Account (i) dedicated to the payment or security of the Senior Lien Obligations, or (ii) constituting Supplemental Security for the benefit of one or more specific Series of Obligations shall not be applied as provided in (a) through (h) below but shall be used only for the purpose for which such deposits were made:

(a) Unless the principal or Maturity Amount, as applicable, of all the Senior Lien Obligations shall then be due and payable, all such moneys shall be applied first: to the payment to the persons entitled thereto of all installments of interest then due on the Senior 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 Senior Lien Obligations; and second: to the payment of the principal or Maturity Amount, as applicable, of any Senior Lien Obligations which have matured, and, if the amount available shall not be sufficient to pay all of such matured Senior Lien Obligations, then to the payment thereof ratably, according to the amount due.

(b) If the principal or Maturity Amount, as applicable, of all the Senior Lien Obligations shall then be due and payable, all such moneys shall be applied to the payment of the principal or Maturity Amount, as applicable, and interest then due and unpaid upon the Senior Lien Obligations, without preference or priority of principal over interest or of interest over principal or Maturity Amount, as applicable, or of any installment of interest over any other installment of interest, or of any Senior Lien Obligations over any other Senior Lien Obligations, ratably, according to the amounts due respectively for principal or Maturity Amount, as applicable, 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 Senior Lien Obligations.

(c) Except as otherwise provided by a Supplemental Indenture, if there is no Event of Default existing in the payment of the principal or Maturity Amount, as applicable, of, premium, if any, or interest on the Senior Lien Obligations but the principal or Maturity Amount, as applicable, 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 moneys 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 <u>second</u>: to the payment of the principal or Maturity Amount, as applicable, of any Subordinate Lien Obligations which 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.

(d) Except as otherwise provided by a Supplemental Indenture, if there is no Event of Default existing in the payment of the principal or Maturity Amount, as applicable, of, premium, if any, or interest on the Senior Lien Obligations but the principal or Maturity Amount, as applicable, of all the Subordinate Lien Obligations shall then be due and payable, all such moneys shall be applied to the payment of the principal or Maturity Amount, as applicable, and interest then due and unpaid upon the Subordinate Lien Obligations, without preference or priority of principal or Maturity Amount, as applicable, over interest or of interest over principal or Maturity Amount, as applicable, 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 or Maturity Amount, as applicable, 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 moneys are to be applied by the Trustee pursuant to the provisions of this Section 804, such moneys shall be applied by the Trustee at such times, and from time to time, as the Trustee in its sole discretion shall determine, after the payment of any fees and expenses due to the Trustee, and having due regard to the amount of such moneys available for application and the likelihood of additional moneys becoming available for such application in the future; the deposit of such moneys with the Trustee, or otherwise setting aside such moneys, in trust for the proper purpose shall constitute proper application by the Trustee; and the Trustee shall incur no liability whatsoever to the Authority, to any Holder or to any other person for any delay in applying any such moneys, 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 this Indenture as may be applicable at the time of application by the Trustee. Whenever the Trustee shall exercise such discretion in applying such moneys, 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 or Maturity Amount, as applicable, 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 Holder 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.

To the extent any Holder receives funds pursuant to this Section 804 in a manner that is inconsistent with the application of funds required by this Section 804, the Holder that has received such funds shall pay over or deliver such funds to the Trustee for proper application under this Section 804.

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SECTION 806. <u>Majority of Holders May Control Proceedings</u>. Anything in this Indenture to the contrary notwithstanding, the Holders of not less than a majority in principal amount, or Maturity Amount, as applicable, of the Senior Lien Obligations then Outstanding (or, if no Senior Lien Obligations are then Outstanding, then the Holders of not less than a majority in principal amount, or Maturity Amount, as applicable, of all Subordinate Lien Obligations then Outstanding) shall have the right, subject to the provisions of Sections 902 and 903 of this 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 hereunder, <u>provided</u> that such direction shall not be otherwise than in accordance with law or the provisions of this 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 Holders not parties to such direction.

SECTION 807. <u>Restrictions Upon Action by Individual Holder</u>. No Holder 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 hereunder or the protection or enforcement of any right under this Indenture or any resolution of the Authority authorizing the issuance of Obligations, or any right under the Act or other laws of the State, excepting only an action for the recovery of overdue and unpaid principal or Maturity Amount, as applicable, interest or redemption premium, unless such Holder 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 Holders of not less than twenty percent (20%) in principal amount or Maturity Amount, as applicable, 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 herein granted or granted by the Act 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 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 this Indenture or for any other remedy hereunder or under the Act or by the other laws of the State. It is understood and intended that no one or more Holders shall have any right in any manner whatever by his or their action to affect, disturb or prejudice the security of this Indenture, or to enforce any right hereunder or under the Act or by the other laws of the State with respect to the Obligations or this Indenture, except in the manner herein provided, and that all proceedings at law or in equity shall be instituted, had and maintained in the manner herein provided and for the benefit of all Holders of the Outstanding Obligations, except as otherwise permitted herein with reference to over-due and unpaid principal or Maturity Amount, as applicable, interest or redemption premium.

ARTICLE IX

CONCERNING THE FISCAL/SECURITIES AGENTS

*   *   *   *   *

SECTION 907. <u>Removal of Trustee</u>. The Trustee may be removed, with or without cause, at any time by an instrument or concurrent instruments in writing, filed with the Trustee, and signed by the Holders of at least a majority in aggregate principal amount, or Maturity Amount, as applicable, of the Obligations then Outstanding or their attorneys-in-fact duly authorized. In addition, the Trustee may be removed, with or without cause, at any time (unless an Event of Default has occurred and is continuing) by a written instrument filed with the Trustee and signed by an Authorized Representative of the Authority, stating that the Board of Directors of the Authority has adopted a resolution providing for the removal of the Trustee and the appointment of a successor Trustee; provided, however, that such written instrument shall not be effective unless the Authority shall have given written notice of such proposed action, by registered or certified mail, postage prepaid, to each Holder, and the Authority shall not have received, within the 60-day period following the giving of such notice, written objections to such proposed action from the Holders of at least a majority in aggregate principal amount, or Maturity Amount, as applicable, of the Obligations then outstanding, all of which shall be recited in such written instrument. No such removal of the Trustee shall become effective until a successor has been appointed and accepted the duties of Trustee.

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ARTICLE X

SUPPLEMENTAL INDENTURES

SECTION 1001. <u>General Provisions Concerning Supplemental Indentures</u>.

(a) This Indenture shall not be modified or amended in any respect except as provided in and in accordance with and subject to provisions of this Article X.

(b) Each Supplemental Indenture, when filed by the Authority with the Trustee, shall be accompanied by a Counsel's Opinion stating that such Supplemental Indenture has been duly and lawfully adopted by the Authority in accordance with the provisions of this Indenture, is authorized or permitted by this Indenture, and is valid and binding upon the Authority.

(c) The Trustee is hereby authorized to accept the delivery of any Supplemental Indenture referred to and permitted or authorized by Section 1002 or 1003 and to make all further agreements and stipulations which may be therein contained, and the Trustee, in taking such action, shall be fully protected in relying on an opinion of counsel (which may be a Counsel's Opinion) that such Supplemental Indenture is authorized or permitted by the provisions of this Indenture.

(d) No Supplemental Indenture shall change or modify any of the rights or obligations of any Fiscal/Securities Agent without its written consent thereto.

(e) Each Supplemental Indenture executed and delivered in accordance with this Article X shall thereafter form a part of this Indenture, and all of the terms and conditions in any such Supplemental Indenture thereafter shall be a part of the terms and conditions of this Indenture.

(f) For purposes of this Article X, the rights of the Holder of an Obligation or of the Holders of the Obligations of a Series shall be deemed to be affected by a modification or amendment of this Indenture if the same materially and adversely affects or diminishes the rights of such Holder or Holders. In each case, the Trustee shall determine whether or not any such modification or amendment affects the rights of such Holder or Holders, and such determination shall be binding and conclusive upon the Authority and all Holders.

SECTION 1002. Supplemental Indentures Not Requiring Holder Consent. The Authority and the Trustee, at any time and from time to time, without the consent of the Holders of any Obligations, may execute and deliver a Supplemental Indenture for any one or more of the following purposes:

(a) To authorize Obligations of a Series and, in connection therewith, to specify and determine the matters and things referred to in Article III and Article VII hereof (including specifically, but without limitation, any provision relating to lien status of a Series of Obligations) and also any other matters and things relative to such Obligations which are not contrary to or inconsistent with this Indenture as theretofore in effect, or to amend, modify or rescind any such authorization, specification or determination at any time prior to the original issuance of such Obligations;

(b) To cure any ambiguity, supply any omission, or cure or correct any defect or inconsistent provision in this Indenture;

(c) To insert such provisions clarifying matters or questions arising under this Indenture as are necessary or desirable and are not contrary to or inconsistent with this Indenture as theretofore in effect;

(d) To grant to or to confer upon the Trustee for the benefit of the Holders any additional rights, remedies, powers, authority or security that may be lawfully granted to or conferred upon the Trustee;

(e) To close this Indenture or any Supplemental Indenture against, or provide limitations and restrictions in addition to the limitations and restrictions contained in this Indenture or any Supplemental Indenture on, the issuance and delivery of Obligations;

(f) To add to the covenants and agreements of the Authority in this Indenture or any Supplemental Indenture, other covenants and agreements to be observed by the Authority which are not contrary to or inconsistent with this Indenture or the applicable Supplemental Indentures as theretofore in effect;

(g) To add to the limitations and restrictions in this Indenture or any Supplemental Indenture other limitations and restrictions to be observed by the Authority which are not contrary to or inconsistent with this Indenture or the applicable Supplemental Indenture as theretofore in effect;

(h) To surrender any right, power or privilege reserved to or conferred upon the Authority by the terms of this Indenture, provided that the surrender of such right, power or privilege is not contrary to or inconsistent with the covenants and agreements of the Authority contained in this Indenture;

(i) To confirm, as further assurance, any pledge under, and the subjection to any lien or pledge created or to be created by, this Indenture or any Supplemental Indenture, of the Trust Estate or of any other moneys, securities or funds;

(j) To modify any of the provisions of this Indenture or any Supplemental Indenture in any respect whatever, provided that (i) such modification shall be, and be expressed to be, effective only after all Obligations of any Series Outstanding at the date of the adoption of such Indenture or Supplemental Indenture shall cease to be Outstanding; and (ii) such Supplemental Indenture shall be specifically referred to in the text of all Obligations of any Series delivered after the date of the adoption of such Supplemental Indenture and of Obligations issued in exchange therefor or in place thereof;

(k) To modify, amend or supplement this Indenture or any Supplemental Indenture in such manner as to permit, if presented, the qualification hereof and thereof under the Trust Indenture Act of 1939 or any similar Federal statute hereafter in effect or under any state Blue Sky Law; or

(l) To make any other change in this Indenture which does not, in the opinion of the Trustee, materially and adversely affect the rights of the Holders of the Obligations, including, without limitation, 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 Obligations.

SECTION 1003. Supplemental Indentures Requiring Holder Consent. The Authority 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 Indenture, but only with the written consent given as provided in Section 1004, of the Holders 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 several Series of Obligations then Outstanding are affected by the modification or amendment, of the Holders of at least a majority in aggregate principal amount or Maturity Amount, as applicable, of the Obligations of each Series 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 of any particular Series and maturity remain Outstanding, the consent of the Holders 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 1003. Notwithstanding the foregoing, no modification or amendment contained in any such Supplemental Indenture shall permit any of the following, without the consent of each Holder whose rights are affected thereby: (i) a change in the terms of maturity or redemption of any Obligation or of any installment of interest thereon; (ii) a reduction in the principal amount or Maturity Amount, as applicable, or redemption price of any Obligation or in the rate of interest thereon; (iii) 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 Holders 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); (iv) the granting of a preference or priority of any Senior Lien Obligations or Subordinate Lien Obligations, as the case may be, over any other Senior Lien Obligations or Subordinate Lien Obligations, as the case may be, except to the extent permitted herein or in a Supplemental Indenture; or (v) a reduction in the aggregate principal amount or classes of Obligations of which the consent of the Holders is required to effect any such modification or amendment. Nothing in this Section 1003, however, shall be construed as requiring the consent of any Holder in connection with the execution and delivery of any Supplemental Indenture for any purpose described in Section 1002.

ARTICLE XI

DISCHARGE AND DEFEASANCE

SECTION 1101. Discharge. If:

(a) the principal amount or Maturity Amount, as applicable, of any Obligations and the interest due or to become due thereon, together with any redemption premium required by redemption of any such Obligations prior to maturity, shall be paid, or is caused to be paid, or is provided for under Section 1102, at the times and in the manner to which reference is made in the Obligations, as the case may be, according to the true intent and meaning thereof, or the outstanding Obligations shall have been paid and discharged in accordance with this Indenture, and

(b) all of the covenants, agreements, obligations, terms and conditions of the Authority under this Indenture shall have been kept, performed and observed and there shall have been paid to the Trustee and the Paying Agents all sums of money due or to become due to them in accordance with the terms and provisions hereof,

then the right, title and interest of the Trustee in the Trust Estate shall thereupon cease and the Trustee, on request of the Authority and at the expense of the Authority, shall release this Indenture and the Trust Estate and shall execute such documents to evidence such release as may be reasonably required by the Authority and shall turn over to the Authority, or to such other Person as may be entitled to receive the same, all balances remaining in any Funds hereunder except for amounts required to pay such Obligations or held pursuant to Section 506.

SECTION 1102. Defeasance.

(a) Defeased Obligations. 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 this Indenture, except to the extent provided in subsection (c) of this Section, 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 requirements of Section 908) as escrow agent (the "Escrow Agent") in accordance with an escrow agreement or other instrument (the "Defeasance 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 Authority 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 or Loan Agreement shall not be deemed to have been paid and no longer Outstanding until all amounts due thereunder have been paid and the Credit Facility or Loan Agreement has been terminated in accordance with its terms. The Trustee shall be entitled to receive and may conclusively rely upon a verification report of independent certified public accountants to the effect that the deposit of money and/or Defeasance Securities will provide sufficient moneys to provide for the payment of such Obligations. At such time as an Obligation shall be deemed to be a Defeased Obligation hereunder, 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 herein pledged as provided in this Indenture, and such principal, or Maturity Amount, as applicable, of and interest shall be payable solely from such money or Defeasance Securities. Notwithstanding any other provision of this Indenture to the contrary, it is hereby provided that any determination not to redeem Defeased Obligations that is made in conjunction with the payment arrangements specified in clauses (i) or (ii) above shall not be irrevocable, provided that, in the proceedings providing for such payment arrangements, the Authority (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.

(b) Investment in Defeasance Securities. Any moneys so deposited with the Escrow Agent may at the written direction of the Authority be invested in Defeasance Securities, maturing in the amounts and times as hereinbefore set forth, 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 Authority, or deposited as directed in writing by the Authority. Any Defeasance 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 moneys in Defeasance Securities or the substitution of other Defeasance Securities upon the satisfaction of the requirements specified in clauses (i) or (ii) or subsection (a) of this Section 1102. All income from such Defeasance Securities received by the Escrow Agent 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 Authority or deposited as directed in writing by the Authority.

(c) Paying Agent/Registrar Services. 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 Authority shall make proper arrangements to provide and pay for such services as required by this Indenture.

(d) Selection of Obligations for Defeasance. In the event that the Authority elects to defease less than all of the principal amount or Maturity Amount of a Series of Obligations of a maturity, the Trustee, or the Securities Depository if such Obligations are in book-entry form, shall select, or cause to be selected, such amount of such obligations by such random method as it deems fair and appropriate.

SECTION 1103. Notice of Defeasance.

(a) In case any of the Obligations for the payment of which moneys or Defeasance Securities have been deposited with the Escrow Agent pursuant to Section 1102, are to be redeemed on any date prior to their maturity, the Authority shall give to the Trustee in form satisfactory to it irrevocable instructions to give notice of redemption of such Obligations as required by the provisions of this Indenture or the Supplemental Indenture authorizing the issuance of such Obligations.

(b) In addition to the foregoing notice, in the event such Obligations to be redeemed are not by their terms subject to redemption within the next succeeding 60 days, the Trustee shall give further notice to the Holders that the deposit required by Section 1102 has been made with the Escrow Agent and that said Obligations are deemed to have been paid in accordance with this Article XI and stating the maturity or redemption date or dates upon which moneys are to be available for the payment of the principal or Maturity Amount, as applicable, of and redemption premium, if any, on said Obligations; such further notice shall be given promptly following the making of the deposit required by Section 1102; and such further notice also shall be given in the manner set forth in the redemption provisions of a Supplemental Indenture (or other proceedings of the Authority); but no defect in said further notice nor any failure to give all or any portion of such further notice shall in any manner defeat the effectiveness of the deposit.

(c) If the Authority has retained any rights pursuant to Section 1102, notice thereof shall be sent to Holders of such Obligations as soon as practicable and not later than any notice required by subsections (a) or (b) of this Section.

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FIRST SUPPLEMENTAL TRUST INDENTURE

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ARTICLE I.

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.2   Definitions.

Unless the context shall require otherwise, all defined terms contained in the Master Indenture shall have the same meanings in this Supplemental Indenture as such defined terms are given in Section 101 of the Master Indenture.

As used in this Supplemental Indenture, the following terms shall have the following respective meanings:

"2018 COI Fund" shall mean the costs of issuance fund established pursuant to Section 3.5 hereof.

"2018 Debt Service Account" shall mean the "2018 Debt Service Account" established in Section 3.4 hereof as part of the Senior Lien Debt Service Fund and any subaccounts established therein pursuant to this Supplemental Indenture or a Letter of Instructions signed by an Authorized Representative.

"2018 Operations and Maintenance Reserve Account" shall mean the account by that name established pursuant to Section 3.8 hereof as part of the Operations and Maintenance Reserve Fund.

"2018 Project Account" shall mean the account by that name established pursuant to Section 3.1 hereof as part of the Construction Fund.

"2018 Rebate Account" shall mean the account by that name established pursuant to Section 5.3 hereof and such subaccounts as may be established therein pursuant to a Letter of Instructions signed by an Authorized Representative.

"Arbitrage Analyst" shall mean any nationally recognized firm of certified public accountants or any other nationally recognized firm or Person approved by the Authority and expert in the area of verification of arbitrage calculations related to tax-exempt bonds.

"Authorized Denomination" shall mean, with respect to Bonds, $5,000 of principal amount or any integral multiple thereof.

"Authorized Representative" shall mean the Chairman of the Board of Directors of the Authority, as provided in the Bond Resolution.

"Award Certificate" means the Award Certificate executed and delivered by an Authorized Representative pursuant to Section 2.1 hereof in connection with initial issuance and delivery of the Bonds authorized to be issued hereunder.

"Bond Form" shall mean the substantially final form of the Bond Form attached to the Award Certificate, with such changes and modifications as shall be appropriate to conform to the terms of the Award Certificate.

"Bond Proceeds Clearance Fund" shall mean the "Bond Proceeds Clearance Fund" established pursuant to Section 3.5(a) hereof, and any Accounts established therein pursuant to a Letter of Instructions signed by an Authorized Representative.

"Bond Proceeds Funded Account" shall mean the Account by that name established pursuant to Section 3.7(b) as part of the Senior Lien Debt Service Reserve Fund.

“Bond Resolution” shall mean the Resolution adopted by the Board of Directors of the Authority on May 8, 2018, authorizing the issuance of the Bonds.

“Bonds” shall mean the Authority’s Senior Lien Toll Road Revenue Bonds, Series 2018 or as otherwise provided in the Award Certificate as authorized by this Supplemental Indenture.

“Capitalized Interest Period” shall mean, for each portion of the Project with a separate placed-in-service date, the period commencing on the Issuance Date and ending on the date that is the later of (i) three years from the Issuance Date and (ii) one year after the applicable portion of the Project (A) has reached a degree of completion which would permit its operation at substantially its design level and (B) is, in fact, in operation at such level.

“Capitalized Interest Subaccount Debt Service Account” shall mean the account established in Section 3.4 hereof as part of the 2018 Debt Service Account.

“Capitalized Interest Subaccount - Project” means the account established in Section 3.3 hereof as part of the Project Subaccount.

“Code” shall mean the Internal Revenue Code of 1986, as amended.

“Depository Participant” shall mean a broker, dealer, bank, other financial institution or any other Person for whom from time to time a Securities Depository effects book-entry transfers and pledges of securities deposited with such Securities Depository.

“Designated Payment/Transfer Office” shall mean, initially, the office of the Trustee located in Houston, Texas, or such other office designated by the Trustee from time to time as the place of payment and transfer of registration of ownership of the Bonds.

“DTC” shall mean The Depository Trust Company, its successors and assigns.

“Initial Bonds” shall mean, collectively, the Initial Bonds, if any, as described in Section 2.4(b) hereof.

“Interest Payment Date” shall mean, with respect to the Bonds, each March 15 and September 15, commencing on the date specified in the Award Certificate.

“Issuance Date” shall mean the date of initial issuance and delivery of the Bonds to the Underwriters, or the representative thereof, against payment therefor.

“Letter of Representations” shall mean that certain Blanket Issuer Letter of Representations between the Authority and DTC, as the Securities Depository.

“Master Indenture” shall mean the Master Trust Indenture, dated as of June 1, 2018, between the Authority and the Trustee, without regard to supplements and amendments thereto.

“Official Statement” shall mean the Authority’s final official statement prepared in connection with the public offering and sale of the Bonds, together with any addenda, supplements and amendments thereto.

“Project” shall have the meaning given in the Master Indenture and the recitals hereof.

“Project Subaccount” shall mean the “Project Subaccount” established pursuant to Section 3.2 hereof.

“Purchase Agreement” shall mean the Bond Purchase Agreement between the Authority and the Underwriters providing for the purchase of the Bonds by the Underwriters, as the same may be amended from time to time.

"Record Date" shall mean with respect to the Bonds, the close of business on the last Business Day of the month next preceding each Interest Payment Date.

"Regulations" shall mean the applicable temporary or final Treasury Regulations promulgated under the Code and applicable to the Bonds or, to the extent applicable to the Bonds, under the Internal Revenue Code of 1954.

"Revenue Funded Account" shall mean the Account by that name established pursuant to Section 3.7(b)(ii) as part of the Senior Lien Debt Service Reserve Fund.

"Securities Depository" shall mean The Depository Trust Company, a limited purpose trust company organized under the laws of the State of New York, and any successor Securities Depository appointed pursuant to Section 913 of the Master Indenture and Section 2.7 of this Supplemental Indenture.

"Senior Lien Debt Service Reserve Requirement" shall mean the Three-Prong Test Amount; provided, however, that for the period from the Issuance Date to February 15, 2021, the Senior Lien Debt Service Reserve Requirement may be satisfied with Permitted Investments that are certified by a certified public accountant (or a firm thereof), the Authority's financial advisor or the Trustee to provide, together with any cash on hand in the Senior Lien Debt Service Reserve Fund, an amount equal to or greater than the Three-Prong Test Amount on February 15, 2021.

"Special Payment Date" shall mean the date that is fifteen (15) days after the Special Record Date.

"Special Record Date" shall mean the new record date for interest payment established in the event of a nonpayment of interest on a scheduled payment date that continues for thirty (30) days thereafter.

"Stated Maturity" shall mean the date on which a Bond is scheduled to mature, as set forth in the Award Certificate.

"Three-Prong Test Amount" shall mean an amount equal to the least of (i) the maximum Annual Debt Service on all Outstanding Senior Lien Obligations, (ii) 1.25 times the Average Annual Debt Service on all Outstanding Senior Lien Obligations, or (iii) ten percent (10%) of the aggregate amount of the Outstanding Senior Lien Obligations that the Authority elects to establish as a Reserve Fund Participant in the Senior Lien Debt Service Reserve Fund, as determined on the date each Series of such Senior Lien Obligations is issued.

"Treasury" shall mean the United States Department of the Treasury, or any successor department or agency to the obligations thereof.

"Underwriters" shall mean the underwriters named in the Purchase Agreement.

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ARTICLE II.

AUTHORIZATION AND TERMS OF BONDS

Section 2.2 Purposes. The Bonds are issued in accordance with Section 302(a) of the Master Indenture for the purpose of providing funds to: (i) pay costs of financing the Project; (ii) pay capitalized interest on the Bonds; (iii) make a deposit to the Senior Lien Debt Service Reserve Fund; (iv) make a deposit to the Operations and Maintenance Reserve Fund; and (v) pay certain costs of issuance for the Bonds, all under and in accordance with the Constitution and the laws of the State.

Section 2.3 Pledge; Limited Obligations.

(a) The Bonds are designated as Senior Lien Obligations under the Master Indenture.

(b) The Bonds shall be limited obligations of the Authority constituting Senior Lien Obligations payable from and secured solely by a first lien on, pledge of and security interest in the Trust Estate; provided, that the interest of the Bonds in the Construction Fund shall be limited to amounts on deposit in the Project Subaccount. The Bonds, as Senior Lien Obligations, shall constitute a valid claim of the Holder thereof against the Trust Estate, which is pledged to secure the payment of the principal of, redemption premium, if any, and interest on the Bonds. The Bonds shall not constitute a general obligation of the Authority and under no circumstances shall the Bonds be payable from, nor shall the Holder thereof have any rightful claim to, any income, revenues, funds or assets of the Authority other than those pledged hereunder and under the Master Indenture as security for the payment of the Senior Lien Obligations.

NONE OF THE STATE OF TEXAS OR ANY OTHER AGENCY OR POLITICAL SUBDIVISION OF THE STATE OF TEXAS OTHER THAN THE AUTHORITY IS OBLIGATED TO PAY THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE BONDS ARE PAYABLE 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 POLITICAL SUBDIVISION THEREOF IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE BONDS. THE AUTHORITY HAS NO TAXING POWER.

NO RECOURSE UNDER THE BONDS SHALL BE HAD AGAINST ANY PAST, PRESENT OR FUTURE OFFICER OF THE AUTHORITY. THE BONDS SHALL NEVER BE PAID IN WHOLE OR IN PART OUT OF ANY FUNDS RAISED OR TO BE RAISED BY TAXATION OR OUT OF ANY OTHER REVENUES OF THE AUTHORITY, EXCEPT THOSE REVENUES ASSIGNED BY THE INDENTURE.

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ARTICLE III.

AUTHORIZATION AND TERMS OF BONDS

Section 3.1 <u>Establishment of 2018 Project Account</u>.

(a) Pursuant to the provisions of Section 504(c) of the Master Indenture, there is hereby established within the Construction Fund the "2018 Project Account."

(b) All amounts on deposit in the 2018 Project Account shall be applied to the payment of the Costs of the Project in accordance with and subject to the provisions of Section 519 of the Master Indenture.

Section 3.2 <u>Project Subaccount</u>.

(a) There is hereby established within the 2018 Project Account a subaccount designated "Project Subaccount".

(b) On the Issuance Date, a portion of the proceeds of the Bonds shall be deposited to Project Subaccount, as directed in a Letter of Instructions of the Authority.

(c) Amounts on deposit in the Project Subaccount (other than amounts on deposit in the Capitalized Interest Subaccount - Project) shall be used for the purpose of paying costs of the Project in accordance with and subject to the provisions of Section 519 of the Master Indenture. Of the amounts so deposited, $1,200,000 shall be used to pay the Authority's contribution to the costs of constructing retaining walls and drainage appurtenances and other costs related to the bridge crossing over Spring Creek in accordance with that certain Agreement by and among the Authority, the County and Harris County, Texas for the Construction and Maintenance of Tomball Tollway.

(d) Authority shall submit written requisition requests in the Form of Exhibit A hereto to request disbursements from the Project Subaccount in accordance with Section 519 of the Master Indenture.

Section 3.3 Capitalized Interest Subaccount - Project.

(a) There is hereby established within the Project Subaccount the "Capitalized Interest Subaccount - Project." On the Issuance Date, a portion of the proceeds of the Bonds shall be deposited to the Capitalized Interest Subaccount - Project, as directed in a Letter of Instructions of the Authority.

(b) Amounts on deposit in the Capitalized Interest Subaccount - Project shall be used to pay interest accrued during each Capitalized Interest Period on the Bonds. On or prior to each Interest Payment Date for the Bonds, the Trustee shall transfer from the Capitalized Interest Subaccount - Project to the Capitalized Interest Subaccount Debt Service Account, after giving effect to the amount in the Capitalized Interest Subaccount Debt Service Account, if any, on deposit therein, the amount required to pay accrued but unpaid interest accrued during each Capitalized Interest Period on the Bonds on such Interest Payment Date.

(c) Any amount remaining in the Capitalized Interest Subaccount - Project after the Interest Payment Date occurring immediately after the end of the final Capitalized Interest Period shall be transferred to the Project Subaccount.

Section 3.4 2018 Debt Service Account.

(a) There is hereby established within the Senior Lien Debt Service Fund an account designated "2018 Debt Service Account." Moneys on deposit in the 2018 Debt Service Account shall be used to pay debt service on the Bonds when due.

(b) There is hereby established within the 2018 Debt Service Account a subaccount designated "Capitalized Interest Subaccount Debt Service Account." Amounts on deposit in the Capitalized Interest Subaccount Debt Service Account shall be used to pay interest on the Bonds during the applicable Capitalized Interest Period.

(c) On or prior to each Interest Payment Date with respect to the Bonds, the Trustee shall deposit to the 2018 Debt Service Account from Revenues, after giving effect to the any amounts on deposit in the Capitalized Interest Subaccount Debt Service Account, an amount sufficient to pay debt service then due on the Bonds.

Section 3.5 Bond Proceeds Clearance Fund; Costs of Issuance Fund; Initial Deposits.

(a) The Trustee is hereby authorized and directed to establish a special temporary Fund designated "Bond Proceeds Clearance Fund" (the "Bond Proceeds Clearance Fund"). On the Issuance Date, the proceeds from the sale of the Bonds shall be deposited to the Bond Proceeds Clearance Fund and shall be applied and disbursed as set forth in a Letter of Instructions signed by an Authorized Representative. The Trustee shall create within the Bond Proceeds Clearance Fund such accounts as shall be authorized in a Letter of Instructions signed by an Authorized Representative and deposit the proceeds of the Bonds as shall be directed in such Letter of Instructions. The Bond Proceeds Clearance Fund shall be closed upon disbursement of all amounts deposited thereto.

(b) There is hereby established with the Trustee the "2018 COI Fund" relating to the Bonds. There shall be deposited to the 2018 COI Fund from the proceeds of the Bonds deposited to the Bond Proceeds Clearance Fund, together with other lawfully available funds of the Authority, if any, the amounts set forth in a Letter of Instructions from the Authority. Such amounts shall be disbursed as set forth in a Letter of Instructions from the Authority. Amounts remaining in the 2018 COI Fund on the date which is 90 days after the Issuance Date of the Bonds shall be transferred to the 2018 Debt Service Account. Following such transfer, the 2018 COI Fund shall be closed.

Section 3.6 Reserve Fund Participants; Senior Lien Debt Service Reserve Requirement. The Bonds shall be Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund. The Senior Lien Debt Service Reserve Requirement shall have the meaning given to such term in Article I hereof and is hereby established as if set forth in this Section.

Section 3.7 Establishment and Operation of Accounts in the Senior Lien Debt Service Reserve Fund.

(a) Establishment of Accounts. Pursuant to the provisions of Section 504(c) of the Master Indenture, there is hereby established within the Senior Lien Debt Service Reserve Fund the "Bond Proceeds Funded Account" and the "Revenue Funded Account." The Authority further reserves the right to establish additional Accounts and subaccounts in the Senior Lien Debt Service Reserve Fund or in the Accounts established herein as may be necessary or desirable for the maintenance and operation thereof, and in connection with any future issue of Additional Senior Lien Obligations that the Authority elect establish as Reserve Fund Participants therein.

(b) Operation of Accounts.

(i) *Bond Proceeds Funded Account* – The Bond Proceeds Funded Account shall be held separate and apart from all other funds in the Senior Lien Debt Service Reserve Fund. Upon the execution and delivery of this Supplemental Indenture, all amounts then on deposit in the Senior Lien Debt Service Reserve Fund, including any amounts required to be deposited therein pursuant to a Letter of Instructions relating to the Bonds, shall be transferred and deposited into the Bond Proceeds Funded Account. Upon the issuance of any Additional Senior Lien Obligations that the Authority elects to establish as a Reserve Fund Participants, in the Senior Lien Debt Service Fund, the Authority may cause additional amounts from the proceeds of such Additional Senior Lien Obligations to be deposited into the Bond Proceeds Funded Account in accordance with the Supplemental Indenture relating to such Additional Senior Lien Obligations. Amounts on deposit in the Bond Proceeds Funded Account shall be held for the benefit of all Senior Lien Obligations that are Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund, excluding Additional Senior Lien Obligations that are not Reserve Fund Participants. Following the initial deposit of bond proceeds into the Bond Proceeds Funded Account with respect to any Series of Senior Lien Obligations that are Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund, no other amounts (other than investment earnings thereon) shall be deposited into the Bond Proceeds Funded Account for such Series of Senior Lien Obligations. Amounts on deposit in the Bond Proceeds Funded Account shall be applied by the Trustee for the purposes provided in Section 509 of the Master Indenture and in the amounts and in the order of priority set forth in Subsection (b)(iii) below.

(ii) *Revenue Funded Account* – The Revenue Funded Account shall be held separate and apart from all other funds in the Senior Lien Debt Service Reserve Fund. As provided in Section 509 of the Master Indenture, if at any time, the moneys, investments and principal amount of any Senior Lien DSRF Security held in the Senior Lien Debt Service Reserve Fund (based on the last valuation made pursuant to Section 602 of the Master Indenture) are less than the Senior Lien Debt Service Reserve Requirement, the Trustee shall make the monthly deposits required in Section 505 of the Master Indenture into the Revenue Funded Account, in equal monthly installments, in such amount as will restore the balance of the Senior Lien Debt Service Reserve Fund to the Senior Lien Debt Service Reserve Requirement within eighteen (18) months of the occurrence of any such deficiency. Amounts on deposit in the Revenue Funded Account shall be held for the benefit of all Senior Lien Obligations that are Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund and shall be applied by the Trustee for the purposes provided in Section 509 of the Master Indenture and in the amounts and in the order of priority set forth in Subsection (b)(iii) below.

(iii) *Application of Funds* – If on any Interest Payment Date on the Senior Lien Obligations are Reserve Fund Participants in the Senior Lien Debt Service Reserve Fund after giving effect to all transfers pursuant to Section 505 of the Master Indenture and after making all required transfers from other Funds, the amount in the Senior Lien Debt Service Fund shall be less than the amount required to pay the interest on such Senior Lien Obligations due and payable on such date, the amount required to pay the principal amount of such Senior Lien Obligations maturing on such date or the redemption price of such Senior Lien Obligations becoming subject to scheduled mandatory redemption on such date, then the Trustee shall apply amounts from the Senior Lien Debt Service Reserve Fund to the extent necessary to eliminate such deficiency from the following Accounts and in the following order of priority: with respect to such Senior Lien Obligations, first from the Bond Proceeds Funded Account and second, to the extent funds in the Bond Proceeds Funded Account are insufficient, the Revenue Funded Account.

(c) General. The Authority reserves the right in connection with the issuance of any Additional Senior Lien Obligations (i) to establish one or more separate Accounts in the Senior Lien Debt Service Reserve Fund or one or more subaccounts within any Account in the Senior Lien Debt Service Reserve Fund relating to such Additional Senior Lien Obligations or (ii) to provide that the Senior Lien Debt Service Reserve Requirement relating to such Additional Senior Lien Bonds will be funded from Revenues in accordance with the provisions of Section 505 of the Master Indenture and the provisions of the Supplemental Indenture relating thereto, in which case, the Authority may provide that any deficiency relating thereto may be funded solely from amounts on deposit in the Revenue Funded Account.

Section 3.8 Deposit to Operations and Maintenance Reserve Fund.

(a) There is hereby established within the Operations and Maintenance Reserve Fund an account designated "2018 Operations and Maintenance Reserve Account." Moneys on deposit in the 2018 Operations and Maintenance Reserve Account shall be used in accordance with Section 511 of the Master Indenture.

(b) On the Issuance Date, a portion of the proceeds of the Bonds shall be deposited to the 2018 Operations and Maintenance Reserve Account, as directed in a Letter of Instructions of the Authority.

Section 3.9 Reservation of Right to Use Remaining Bond Proceeds. After (i) Substantial Completion of the Project has occurred and (ii) the remaining costs of the Project have been finally determined in accordance with the Master Indenture, the Authority reserves the right to use any remaining proceeds in the Project Subaccount of the 2018 Project Account to pay other Costs of the Project, if any, redeem Senior Lien Obligations or pay current debt service on Senior Lien Obligations, provided any such application will not adversely affect the tax treatment of any Outstanding Senior Lien Obligations for federal tax purposes.

* * * * *

ARTICLE VI.

AUTHORIZATION AND TERMS OF BONDS

Section 6.1 Definitions. As used in this Article, the following terms have the meanings assigned to such terms below:

"*MSRB*" means the Municipal Securities Rulemaking Board.

"*Rule*" means SEC Rule 15c2-12, as amended from time to time.

"*SEC*" means the United States Securities and Exchange Commission.

Section 6.2 Annual and Quarterly Reports.

(a) The Authority shall provide annually to the MSRB, in an electronic format as prescribed by the MSRB, within six (6) months after the end of each fiscal year, financial information and operating data with respect to the Authority and the Project of the general type included in the final Official Statement, being the information described in Exhibit B hereto. Any financial statements so to be provided shall be (i) prepared in accordance with the accounting principles described in Exhibit B hereto, and (ii) audited, if the Authority 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 such period, then the Authority shall provide notice that audited financial statements are not available and shall provide unaudited financial statements for the applicable fiscal year to the MSRB. Thereafter, when and if audited financial statements become available, the Authority shall provide such audited financial statements as required to the MSRB. In addition to the annual information described above, the Authority will provide certain information on a quarterly basis, as described in and by the time required by Exhibit B attached hereto.

(b) If the Authority 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 Authority otherwise would be required to provide financial information and operating data pursuant to this Section.

(c) The financial information and operating data to be provided pursuant to this Section may be set forth in full in one or more documents or may be included by specific reference to any document (including an official statement or other offering document, if it is available from the MSRB) that theretofore has been provided to the MSRB or filed with the SEC.

Section 6.3 Event Notices.

(a) As used in this Section, the term "obligated person" shall mean any person, including the Authority, who is either generally or through an enterprise, fund, or account of such person committed by contract or other arrangement to support payment of all or part of the obligations on the Bonds (other than providers of municipal bond insurance, letters of credit, or other liquidity facilities). The Authority shall provide notice of any of the following events with respect to the Bonds to the MSRB, in an electronic format as prescribed by the MSRB, in a timely manner and not more than 10 business days after the occurrence of the event:

(i) principal and interest payment delinquencies;

(ii) nonpayment related defaults, if material;

(iii) unscheduled draws on debt service reserves reflecting financial difficulties;

(iv) unscheduled draws on credit enhancements reflecting financial difficulties;

(v) substitution of credit or liquidity providers, or their failure to perform;

(vi) 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 material events affecting the tax status of the Bonds;

(vii) modifications to rights of Owners, if material;

(viii) bond calls, if material and tender offers;

(ix) defeasances;

(x) release, substitution, or sale of property securing repayment of the Bonds, if material;

(xi) rating changes;

(xii) bankruptcy, insolvency, receivership, or similar event of any obligated person, which shall occur as described below;

(xiii) the consummation of a merger, consolidation, or acquisition involving an obligated person or the sale of all or substantially all of the assets of the obligated person, other than in the ordinary course of business, the entry into of 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; and

(xiv) appointment of a successor or additional Trustee or the change of name of a Trustee, if material.

For these purposes, any event described in the immediately preceding clause (xii) is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent, or similar officer for an obligated person in a proceeding under the United States Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the obligated person, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers 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 assets or business of the obligated person.

The Authority shall notify the MSRB, in a timely manner, of any failure by the Authority to provide financial information or operating data in accordance with Section 6.2 of this Supplemental Indenture by the time required by such Section.

All documents provided to the MSRB shall be accompanied by identifying information as prescribed by the MSRB.

Section 6.4 Limitations, Disclaimers and Amendments. The Authority shall be obligated to observe and perform the covenants specified in this Article for so long as, but only for so long as, the Authority remains an "obligated person" with respect to the Bonds within the meaning of the Rule, except that the Authority in any event will give notice of any deposit of funds that causes Bonds no longer to be Outstanding.

(a) The provisions of this Article are for the sole benefit of the Holders and beneficial owners of the Bonds, and nothing in this Article, express or implied, shall give any benefit or any legal or equitable right, remedy, or claim hereunder to any other person. The Authority undertakes to provide only the financial information, operating data, financial statements, and notices which it has expressly agreed to provide pursuant to this Article and does not hereby undertake to provide any other information that may be relevant or material to a complete presentation of the Authority's financial results, condition, or prospects or hereby undertake to update any information provided in accordance with this Article or otherwise, except as expressly provided herein. The Authority does not make any representation or warranty concerning such information or its usefulness to a decision to invest in or sell Bonds at any future date.

UNDER NO CIRCUMSTANCES SHALL THE AUTHORITY BE LIABLE TO THE HOLDER OR BENEFICIAL OWNER OF ANY BONDS OR ANY OTHER PERSON, IN CONTRACT OR TORT, FOR DAMAGES RESULTING IN WHOLE OR IN PART FROM ANY BREACH BY THE AUTHORITY, WHETHER NEGLIGENT OR WITHOUT FAULT ON ITS PART, OF ANY COVENANT SPECIFIED IN THIS ARTICLE, BUT EVERY RIGHT AND REMEDY OF ANY SUCH PERSON, IN CONTRACT OR TORT, FOR OR ON ACCOUNT OF ANY SUCH BREACH SHALL BE LIMITED TO AN ACTION FOR MANDAMUS OR SPECIFIC PERFORMANCE.

(b) No default by the Authority in observing or performing its obligations under this Article shall comprise a breach of or default under the Indenture for purposes of any other provisions of this Supplemental Indenture.

(c) Nothing in this Article is intended or shall act to disclaim, waive, or otherwise limit the duties of the Authority under federal and state securities laws.

(d) The provisions of this Article may be amended by the Authority from time to time to adapt to changed circumstances that arise from a change in legal requirements, a change in law, or a change in the identity, nature or status of the Authority, or type of business or operations conducted by the Authority, but only if (1) the provisions of this Article, as so amended, would have permitted an underwriter to purchase or sell Bonds in the primary offering of the Bonds 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 (2) either (a) the Holders of a majority in aggregate principal amount (or any greater amount required by any other provisions of this Supplemental Indenture that authorizes such an amendment) of the Outstanding Bonds consent to such amendment or (b) a person that is unaffiliated with the Authority (such as nationally recognized bond counsel) determines that such amendment will not materially impair the interests of the Holders and beneficial owners of the Bonds. If the Authority so amends the provisions of this Article, it shall include with any amended financial information or operating data next provided in accordance with Section 6.2 an explanation, in narrative form, of the reasons for the amendment and of the impact of any change in the type of financial information or operating data so provided.

* * * * *

EXHIBIT B

CONTINUING DISCLOSURE

DESCRIPTION OF ANNUAL DISCLOSURE OF FINANCIAL INFORMATION

The following information is referred to in Article VI of this Supplemental Indenture.

Annual Financial Information and Operating Data

The financial information and operating data with respect to the Authority and the Project to be provided in accordance with such Article are as specified below:

1. All quantitative financial information and operating data with respect to the Authority and the Project of the general type included in the Official Statement under the headings "THE PROJECT AND AUTHORITY OPERATIONS — Toll Rates," "ESTIMATED PROJECT CASH FLOW AND DEBT SERVICE COVERAGE TABLE" (but not including any projections for any future period), and "DEBT SERVICE REQUIREMENTS FOR THE BONDS." The Authority will also prepare and provide audited financial statements of the Authority. Notwithstanding anything to the contrary above, the Authority shall have no obligation to file continuing disclosure of any information related to transactions, traffic count or traffic revenues (including the information contained in "THE PROJECT AND AUTHORITY OPERATIONS — Toll Rates" and "ESTIMATED PROJECT CASH FLOW AND DEBT SERVICE COVERAGE TABLE" until the Fiscal Year ending September 30, 2020.

2. In the annual filing for each Fiscal Year through the Substantial Completion (as defined in the Master Indenture) of the Project, the Authority will furnish a copy of the General Engineering Consultant's construction progress report relating to the Project for the last quarter of the Fiscal Year.

3. In the annual filing, the Authority will also furnish a copy of each General Engineering Consultant's annual report relating to its inspection of the Project, which reports may be provided as one report prepared jointly by more than one General Engineering Consultant.

The Authority will update and provide the foregoing information within six (6) months after the end of each Fiscal Year. If audited financial statements are not available within six (6) months after any such Fiscal Year end, then the Authority shall file unaudited financial statements within such 6-month period and audited financial statements for the applicable fiscal year, when and if the audit report on such financial statements becomes available. In addition to the annual information described above, the Authority will furnish on a quarterly basis, within 90 days after the end of each quarter of the Fiscal Year, (i) through the Substantial Completion (as defined in the Master Indenture) of the Project, a copy of the General Engineering Consultant's construction progress report relating to the Project for the previous quarter of the Fiscal Year, and (ii) unaudited information regarding the number of toll transactions for the Project and the Revenues generated by such toll transactions for the previous quarter of the Fiscal Year; provided, however, the information described by (ii) shall no longer be required after such time as the Revenues generated in each of the two immediately preceding Fiscal Years were equal to or greater than two times (2x) the Annual Debt Service on the then Outstanding Obligations (the "Quarterly Report Coverage Test"); provided, further, that if additional Obligations are issued after such time and the Revenues are insufficient to satisfy the Quarterly Report Coverage Test after taking into account such additional Obligations, the information described by (ii) shall, beginning with the quarter following the quarter in which such Obligations are issued, again be filed on a quarterly basis until such time as Revenues are sufficient to satisfy the Quarterly Report Coverage Test.
Accounting Principles

The accounting principles referred to in such Article are the accounting principles described in the notes to the financial statements referred to in Paragraph 1 above.

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APPENDIX B

MCTRA 249 TRAFFIC AND REVENUE STUDY

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12400 Coit Road,
Suite 400,
Dallas, TX 75251
tel: 214 346-2800

May 21, 2018

Mr. Craig Doyal
Board Chairman
Montgomery County Toll Road Authority
501 North Thompson Street, Fourth Floor
Conroe, TX 77301

Subject: Montgomery County Toll Road Authority 249 Tollway – Traffic and Revenue Bring Down Letter

Mr. Doyal:

Pursuant to your recent request, CDM Smith is pleased to provide you with the Montgomery County Toll Road Authority 249 Tollway (MCTRA 249 Tollway) – Traffic and Revenue Bring Down Letter (the "2018 T&R Letter") in support of this project's financing.

This 2018 T&R Letter summarizes the updates made to the MCTRA 249 Tollway traffic and toll revenue (T&R) estimates based on changes to a few of the assumptions included in the MCTRA 249 Tollway Comprehensive Traffic and Revenue study dated February 2018. The key changes in assumptions include:

- T&R estimates are being reported on a fiscal year basis versus a calendar year basis that was included in the comprehensive study report. MCTRA's fiscal year is October 1 to September 30
- Changes to the opening dates for the MCTRA 249 Tollway and the Texas Department of Transportation (TxDOT) SH 249 Extension

Background

The MCTRA 249 Tollway Comprehensive Traffic and Revenue Study was completed in February 2018. The study was conducted for the proposed MCTRA 249 Tollway, stretching from the Harris/Montgomery county line to Woodtrace Boulevard in Montgomery County. MCTRA 249 Tollway is a proposed three-mile extension of Harris County Toll Road Authority's (HCTRA) Tomball Tollway in the SH 249 corridor, which will be approximately 50 miles long when fully completed.

In the 2018 Comprehensive Traffic and Revenue study, annual T&R estimates for MCTRA 249 Tollway were developed for the forecast period 2020 to 2060 on a calendar year basis. T&R estimates in the Comprehensive Traffic and Revenue study assumed that the MCTRA 249 Tollway, from Harris/Montgomery county line to Woodtrace Boulevard, will open to traffic on January 1, 2020. The T&R estimates assumed the following configuration and opening dates for the TxDOT SH 249 Extension:

- Woodtrace Boulevard to FM 1488 at Magnolia with four tolled lanes opening June 1, 2020
- FM 1488 at Magnolia to FM 1774 at Todd Mission with two tolled lanes with intermittent passing lane (Super-2 Configuration) opening June 1, 2020
- FM 1774 to SH 105, two-lane toll-free arterial opening January 1, 2022

The Base Case for the MCTRA 249 Tollway assumes all-electronic toll collection (transponder only) as the only allowable mode of payment, meaning cash and Pay-By-Mail options will not be available along the MCTRA 249 Tollway.

In addition to showing the T&R estimates from 2020 to 2060 on a fiscal year basis, CDM Smith updated the T&R estimates in this 2018 T&R Letter based on the following changes in the assumptions:

- MCTRA 249 Tollway from Harris/Montgomery county line to Woodtrace Boulevard will open on March 1, 2020
- TxDOT SH 249 Extension:
    - From Woodtrace Boulevard to FM 1488 at Magnolia with four tolled lanes opening on August 1, 2020
    - From FM 1488 at Magnolia to FM 1774 at Todd Mission with two tolled lanes with intermittent passing lane (Super-2 Configuration) opening on August 1, 2020
    - From FM 1774 to SH 105, two-lane toll-free arterial opening on March 19, 2022
- The T&R estimates are now shown on MCTRA's fiscal year basis (October 1 to September 30)

MCTRA 249 Tollway T&R Estimates

CDM Smith updated the 2018 Comprehensive Traffic and Revenue Study's Base Case T&R to reflect the latest assumptions, as discussed earlier in this document. **Table 1** shows the annual transactions, and annual toll revenue (in nominal dollars) for the MCTRA 249 Tollway spanning from Harris/Montgomery county line to Woodtrace Boulevard for fiscal years 2020 to 2060.

It should be noted that any delay in the opening of the TxDOT SH 249 Extension will affect the T&R estimates for the MCTRA 249 Tollway. A sensitivity test for the impact of the TxDOT SH 249 Extension to the MCTRA 249 Tollway is included in Chapter 5, Section 5.7 of the 2018 Comprehensive Traffic and Revenue Study. It is noted that recent information from TxDOT indicated that the segment between FM 1488 to FM 1774 may be constructed as a four lane tolled section and as a result could provide some positive impacts to MCTRA's 249 Tollway T&R. TxDOT is still completing feasibility studies and final determination has not been made.

Table 1: MCTRA 249 Tollway Estimated Fiscal Year Annual Transactions and Toll Revenue

Year	Avg. Weekday Transactions	Annual Transactions (in '000s)	Annual Toll Revenue ($'000s) (1)
2020 (2)(3)	14,010	2,616	$2,937
2021	16,300	5,216	$6,139
2022	20,450	6,545	$7,964
2023	24,960	7,990	$10,010
2024	28,180	9,017	$11,601
2025	30,350	9,711	$12,820
2026	32,620	10,441	$14,182
2027	34,950	11,183	$15,629
2028	37,260	11,925	$17,128
2029	39,590	12,668	$18,681
2030	41,910	13,410	$20,289
2031	44,220	14,153	$21,954
2032	46,550	14,895	$23,678
2033	48,860	15,637	$25,461
2034	51,190	16,380	$27,307
2035	55,070	17,624	$29,835
2036	58,470	18,713	$32,414
2037	61,530	19,691	$34,997
2038	64,590	20,669	$37,669
2039	67,640	21,646	$40,435
2040	70,700	22,624	$43,296
2041	72,540	23,214	$45,360
2042	73,990	23,678	$47,192
2043	75,470	24,151	$49,099
2044	76,980	24,634	$51,082
2045	78,520	25,127	$53,146
2046	79,790	25,535	$55,090
2047	81,000	25,918	$57,035
2048	82,210	26,307	$59,048
2049	83,440	26,702	$61,132
2050	84,690	27,102	$63,290
2051	85,640	27,407	$65,282
2052	86,500	27,681	$67,254
2053	87,370	27,958	$69,285
2054	88,240	28,238	$71,377
2055	89,120	28,520	$73,533
2056	89,680	28,699	$75,473
2057	90,130	28,842	$77,367
2058	90,590	28,986	$79,309
2059	91,040	29,131	$81,300

(1) Leakage of 4.5 percent is applied to the annual toll revenue. Revenue from fees and fines are not included.
(2) Opening date of MCTRA 249 Tollway is March 1, 2020.
(3) Opening date of TxDOT SH 249 Extension from Woodtrace Boulevard to FM 1774 is August 1, 2020.

We hope this summary meets your needs. Please do not hesitate to contact us if you have any questions or if any additional information is required.

Sincerely,

Kamran A. Khan
Sr. Vice President
CDM Smith Inc.

DISCLAIMER

CDM Smith used currently accepted professional practices and procedures in the development of these traffic and revenue estimates. However, as with any forecast, it should be understood that differences between forecasted and actual results may occur, as caused by events and circumstances beyond the control of the forecasters. In formulating the estimates, CDM Smith reasonably relied upon the accuracy and completeness of information provided (both written and oral) by the Montgomery County Toll Road Authority (MCTRA). CDM Smith also relied upon the reasonable assurances of independent parties and is not aware of any material facts that would make such information misleading.

CDM Smith made qualitative judgments related to several key variables in the development and analysis of the traffic and revenue estimates that must be considered as a whole; therefore, selecting portions of any individual result without consideration of the intent of the whole may create a misleading or incomplete view of the results and the underlying methodologies used to obtain the results. CDM Smith gives no opinion as to the value or merit of partial information extracted from this report.

All estimates and projections reported herein are based on CDM Smith's experience and judgment and on a review of information obtained from multiple agencies, including MCTRA. These estimates and projections may not be indicative of actual or future values and are therefore subject to substantial uncertainty. Future developments and economic conditions cannot be predicted with certainty and may affect the estimates or projections expressed in this report, such that CDM Smith does not specifically guarantee or warrant any estimate or projection contained within this report.

While CDM Smith believes that the projections or other forward-looking statements contained within the report are based on reasonable assumptions as of the date of the report, such forward-looking statements involve risks and uncertainties that may cause actual results to differ materially from the estimates. Therefore, following the date of this report, CDM Smith will take no responsibility or assume any obligation to advise of changes that may affect its assumptions contained within the report, as they pertain to socioeconomic and demographic forecasts, proposed residential or commercial land use development projects and/or potential improvements to the regional transportation network.

CDM Smith is not, and has not been, a municipal advisor as defined in federal law (the Dodd Frank Bill) to MCTRA and does not owe a fiduciary duty pursuant to Section 15B of the Exchange Act to MCTRA with respect to the information and material contained in this report. CDM Smith is not recommending and has not recommended any action to MCTRA. MCTRA should discuss the information and material contained in this report with any and all internal and external advisors that it deems appropriate before acting on this information.

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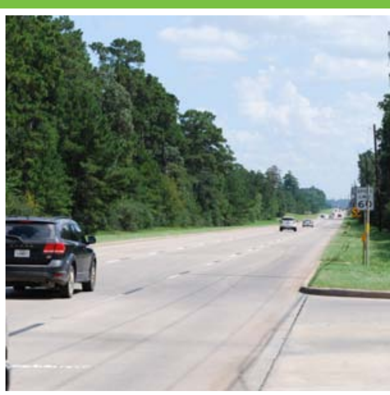
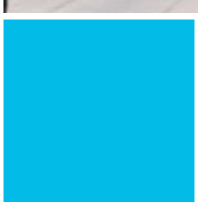
February 2018

MCTRA 249 TOLLWAY COMPREHENSIVE TRAFFIC & REVENUE STUDY





MCTRA 249 TOLLWAY

Submitted by:

CDM Smith

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12400 Coit Road,
Suite 400
Dallas, Texas 75251
Tel: (214) 346-2800
Fax: (972) 239-5340

February 16, 2018

The Honorable Craig Doyal
Montgomery County Judge
Montgomery County Toll Road Authority
501 North Thompson, Fourth Floor
Conroe, TX 77301

Re: **Montgomery County Toll Road Authority 249 Tollway Comprehensive Traffic and Toll Revenue Final Report**

Dear Judge Doyal:

CDM Smith is pleased to submit this report of our Comprehensive Traffic and Toll Revenue (T&R) Study for the proposed Montgomery County Toll Road Authority (MCTRA) 249 Tollway from the Harris/Montgomery County Line to Woodtrace Boulevard in Montgomery County. The purpose of this study was to conduct a comprehensive T&R evaluation of the MCTRA 249 Tollway. The following report summarizes the results of the study, which includes T&R estimates for a forty-year period. The report also describes the methodologies implemented to collect new data within the corridor and the traffic forecasting model enhancements undertaken to produce the MCTRA 249 Tollway T&R forecast included herein.

Our CDM Smith project team, including Michael Copeland, Yagnesh Jarmarwala, Mustafa Kamal, Bikash Gautam, Abril Matysek, Parth Patel, Ruoyu Liu, Ajay Jadhav, Laszlo Medgyesy, Steve Spillette (Community Development Strategies), and others, gratefully acknowledge the assistance and cooperation received from MCTRA as well as others contacted during the study. CDM Smith sincerely appreciates the opportunity to have participated in this important project.

Respectfully submitted,

Kamran A. Khan
Senior Vice President
CDM Smith Inc.

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Disclaimer

CDM Smith used currently-accepted professional practices and procedures in the development of the traffic and revenue estimates in this report. However, as with any forecast, it should be understood that differences between forecasted and actual results may occur, as caused by events and circumstances beyond the control of the forecasters. In formulating the estimates, CDM Smith reasonably relied upon the accuracy and completeness of information provided (both written and oral) by the Montgomery County Toll Road Authority (MCTRA). CDM Smith also relied upon the reasonable assurances of independent parties and is not aware of any material facts that would make such information misleading.

CDM Smith made qualitative judgments related to several key variables in the development and analysis of the traffic and revenue estimates that must be considered as a whole; therefore, selecting portions of any individual result without consideration of the intent of the whole may create a misleading or incomplete view of the results and the underlying methodologies used to obtain the results. CDM Smith gives no opinion as to the value or merit of partial information extracted from this report.

All estimates and projections reported herein are based on CDM Smith's experience and judgment and on a review of information obtained from multiple agencies, including MCTRA. These estimates and projections may not be indicative of actual or future values, and are therefore subject to substantial uncertainty. Future developments, economic conditions cannot be predicted with certainty, and may affect the estimates or projections expressed in this report, such that CDM Smith does not specifically guarantee or warrant any estimate or projection contained within this report.

While CDM Smith believes that the projections and other forward-looking statements contained within the report are based on reasonable assumptions as of the date of the report, such forward-looking statements involve risks and uncertainties that may cause actual results to differ materially from the results predicted. Therefore, following the date of this report, CDM Smith will take no responsibility or assume any obligation to advise of changes that may affect its assumptions contained within the report, as they pertain to socioeconomic and demographic forecasts, proposed residential or commercial land use development projects and/or potential improvements to the regional transportation network.

The report and its contents are intended solely for use by the MCTRA and designated parties approved by MCTRA and CDM Smith. Any use by third-parties, other than as noted above, is expressly prohibited. In addition, any publication of the report without the express written consent of CDM Smith is prohibited.

CDM Smith is not, and has not been, a municipal advisor as defined in Federal law (the Dodd Frank Bill) to MCTRA and does not owe a fiduciary duty pursuant to Section 15B of the Exchange Act to MCTRA with respect to the information and material contained in this report. CDM Smith is not recommending and has not recommended any action to MCTRA. MCTRA should discuss the information and material contained in this report with any and all internal and external advisors that it deems appropriate before acting on this information.

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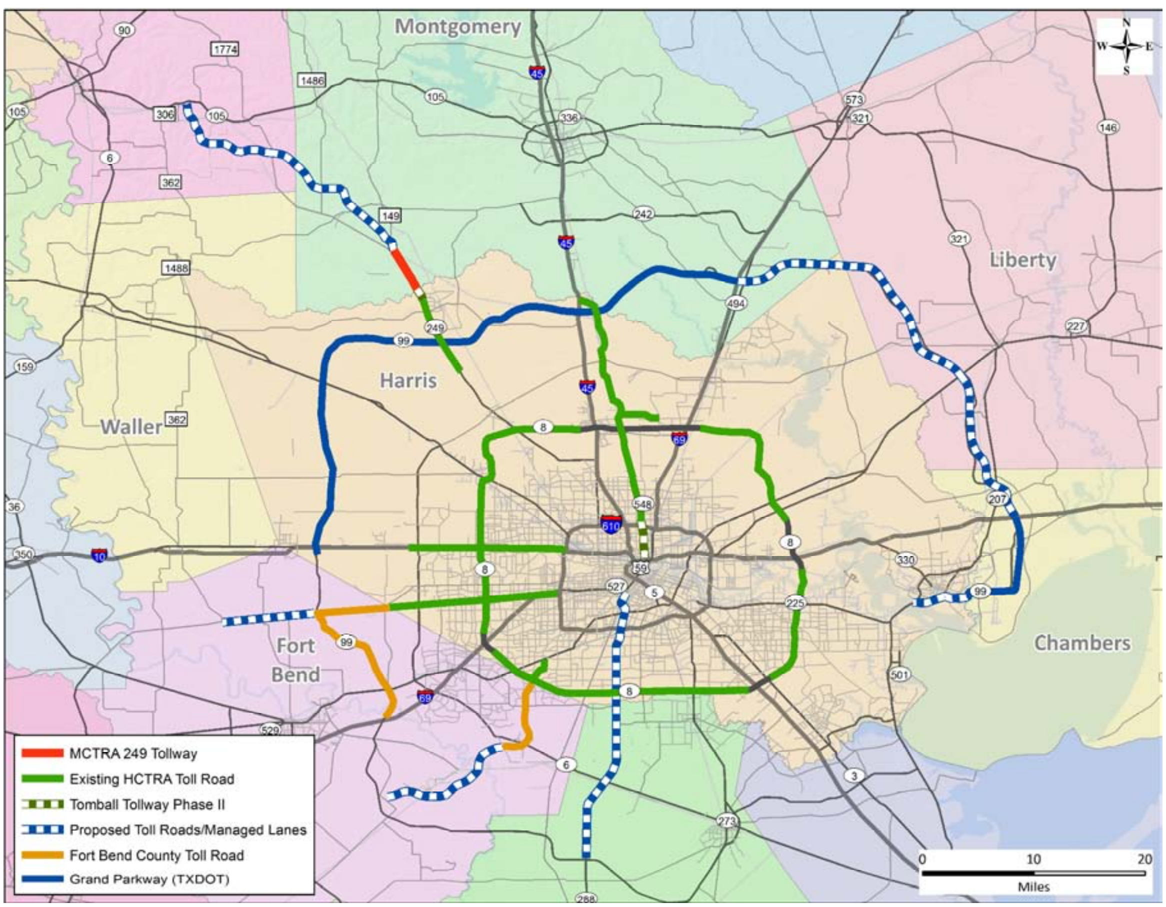
Appendices

Executive Summary

This comprehensive traffic and revenue study summarizes CDM Smith's efforts to develop the traffic and revenue forecasts for the proposed Montgomery County Toll Road Authority MCTRA 249 Tollway (MCTRA 249 Tollway) project. **Figure ES-1** shows the project location in the context of the greater Houston area, along with other existing and planned toll routes. MCTRA 249 Tollway is a proposed three-mile long extension of HCTRA's Tomball Tollway in the State Highway 249 (SH 249) corridor, which will be approximately 50 miles long when fully completed. T&R estimates for MCTRA 249 Tollway were developed for a forty-year forecast period from 2020 through 2059. A travel demand model was developed to forecast the annual transactions and estimate the resulting toll revenue expected to be generated on MCTRA 249 Tollway. The first section of this executive summary will highlight some of the input data used to develop the travel demand model. The second and third sections contain summaries of the traffic and socioeconomic trends, respectively. The final sections of this executive summary contain summaries of the daily and annual T&R estimates, including key assumptions and sensitivity tests.

Figure ES-1 – MCTRA 249 Tollway Project Location Map



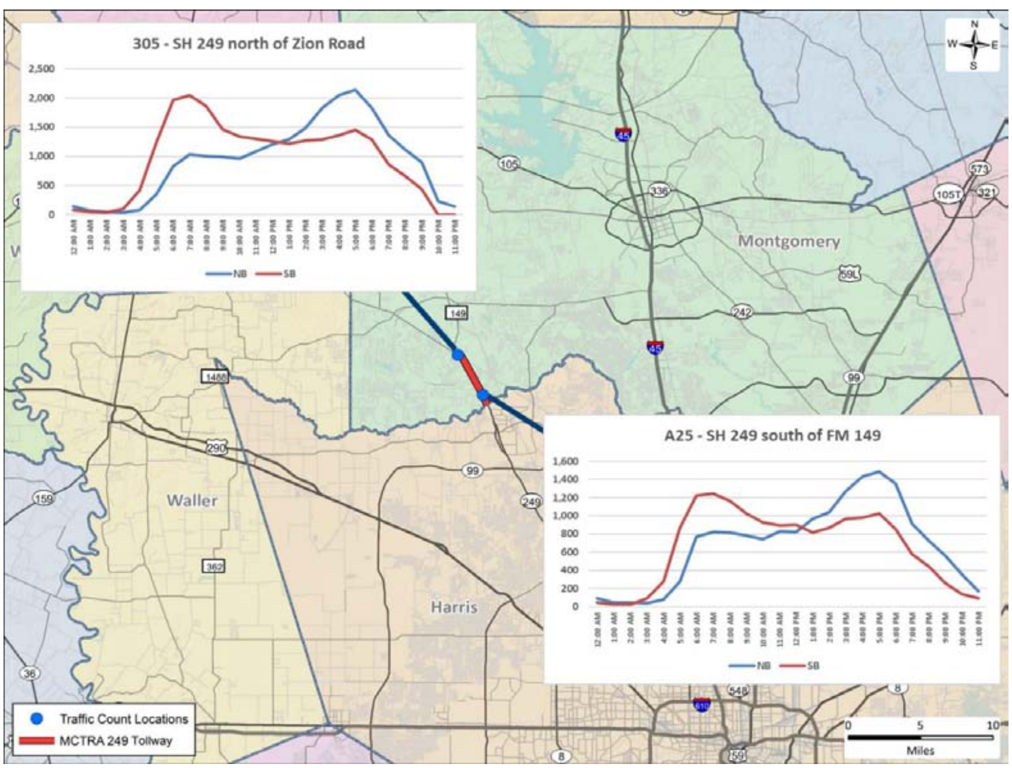
Traffic Trends

Extensive traffic count data was collected for this study to calibrate the base-year travel demand model. The data was also collected to understand recent traffic growth trends and to ensure that forecasted traffic volume growth rates were reasonable. CDM Smith obtained historical traffic count data from TxDOT at various locations throughout the Houston region. For example, average daily traffic (ADT) counts on SH 249 immediately north and south of the project indicate that, between 2010 and 2016, traffic volumes increased at compound annual growth rates (CAGR) of:

- 1.8 percent immediately south of the MCTRA 249 Tollway
  (ADT increased from 40,000 to 44,500)
- 3.8 percent immediately north of the MCTRA 249 Tollway
  (ADT increased from 24,000 to 30,100)

In May 2017, CDM Smith also collected hourly traffic counts at forty locations in the MCTRA 249 Tollway study area. These counts were collected to understand hourly traffic trends, determine vehicle classification, and compare the volume levels on weekdays versus weekend days. **Figure ES-2** shows the hourly traffic volumes on the existing sections of SH 249 immediately north and south of the MCTRA 249 Tollway. The profiles of the hourly traffic volume graphs are typical of similar radial roadway facilities found in Houston and other urbanized areas. They show a clear morning peak in the southbound (or "inbound") direction, and an evening peak in the northbound (or "outbound") direction.

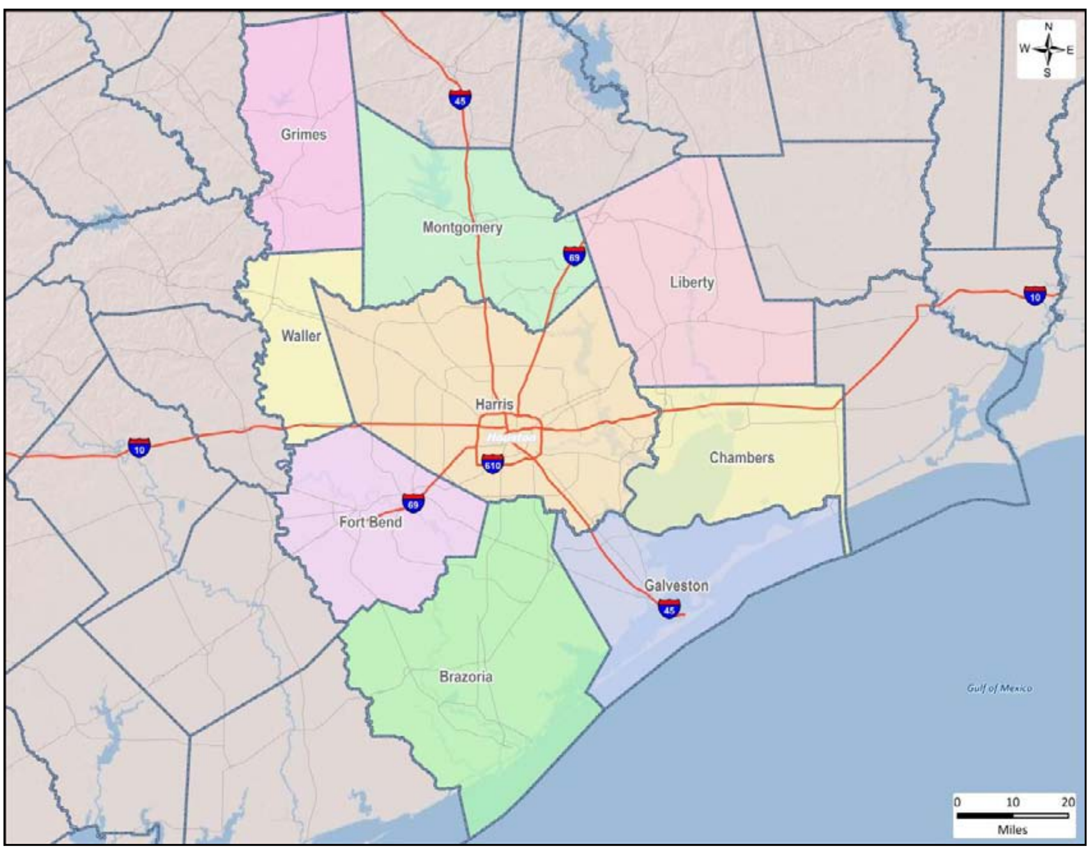
Figure ES-2 – SH 249 May 2017 Hourly Traffic Volumes



Socioeconomic Forecasts

Community Development Strategies (CDS) produced independent socioeconomic (population, households and employment) forecasts for nine counties in the Houston region. This nine-county area is illustrated in **Figure ES-3**. CDS summarized its methodology and forecasts in a report completed in November 2017, which is included as **Appendix A** of this report. The Houston-Galveston Area Council (H-GAC) serves as the Metropolitan Planning Organization (MPO) for the Houston region and produces the official socioeconomic forecasts for the region. Compared to the H-GAC forecasts, the CDS forecasts assume that there will be a continuing decentralization of employment and population away from the Houston area's core county (Harris County) into the surrounding counties, including Montgomery County where the MCTRA 249 Tollway is located. Chapter 3 contains a review of the historical socioeconomic growth rates as well as the forecasts from both CDS and H-GAC. The Houston region is rapidly growing and is currently the fifth-largest metropolitan area in the US. The population of the nine-county region has increased at a rate of 2.5 percent per year between 1970 and 2016 (increasing from 2.2 to 6.8 million persons), compared to only 1.0 percent per year for the US overall. The CDS forecast shows rapid growth continuing, with the population of the nine-county region expected to increase by 1.6 percent per year (from 6.6 to 9.7 million persons) between 2015 and 2040. Montgomery County's population is expected to grow even faster at 3.1 percent per year over this same period (from 0.5 to 1.1 million).

Figure ES-3 County Map of MCTRA 249 Tollway Study Area



Model Development

CDM Smith developed a nine-county "stitched" travel demand model to estimate T&R for MCTRA 249 Tollway. The eight-county H-GAC travel demand model was utilized as the base model. H-GAC ran base and future year four-step travel demand models using the revised CDS socioeconomic forecasts to generate the future year trip tables used in this study (instead of using H-GAC's base forecasts). The model network and trip tables obtained from H-GAC were expanded to include Grimes County. This "stitched" model expansion allowed CDM Smith to estimate the revenue impacts of the planned extension of the 249 corridor into Grimes County. The overall base model consists of four time-of-day models: AM peak, midday, PM peak and overnight time periods. The base-year MCTRA 249 Tollway travel demand models were calibrated to 2017 traffic counts. The models were further adjusted to reflect the results of the speed and delay studies and the origin-destination surveys as described in Chapter 2.

Traffic and Revenue Estimates

Key Assumptions

Underlying the MCTRA 249 Tollway T&R estimates are many assumptions. Some key assumptions are as follows:

1. **Opening Date:** The MCTRA 249 Tollway from Harris/Montgomery County Line to Woodtrace Boulevard will open to traffic on January 1, 2020.

2. **Payment Options:** Only an EZ TAG or other interoperable toll tag will be allowed as payment options on MCTRA 249 Tollway. Cash and Pay-By-Mail payment options will not be offered.

3. **Toll Rates:** Toll rates on MCTRA 249 Tollway will be $1.25 (2017$) at the main lane toll gantry and $0.50 (2017$) at the two ramp toll gantries along the MCTRA 249 Tollway. Toll rates will be escalated annually by two percent per year. Toll rates will be rounded to the nearest penny. Toll rates will not vary by time of day. Commercial vehicle toll rates will be three times higher than passenger cars.

4. **Revenue leakage:** Estimated toll revenues will be 4.5 percent lower than potential toll revenues (if tolls were collected from 100 percent of all vehicles) to account for "leakage" due to a variety of factors such as toll equipment malfunctions, toll evasion, non-revenue transactions and the cost of toll discounts (such as veterans' discounts).

5. **Truck traffic shares:** The percentage of MCTRA 249 Tollway traffic composed of trucks (commercial vehicles) was estimated from recent traffic counts along SH 249. The estimated MCTRA 249 truck traffic shares are: 4.9 percent in 2020, 6.7 percent in 2030 and 7.2 percent in 2040 (and all years thereafter).

6. **Revenue Days:** For purposes of estimating annual revenue from daily traffic projections, an annualization factor of 320 ("revenue days") is assumed for each year throughout the forecast period. This is the factor used to convert weekday toll revenues into annual revenues.

7. **MCTRA 249 Tollway transactions growth beyond 2040:** The travel demand models used to estimate T&R on MCTRA 249 extend to the year 2040. The T&R estimates beyond the year 2040 rely on linear growth rate extrapolations. The assumed MCTRA 249 Tollway transactions CAGRs are: 2.0 percent (between 2040-2045), 1.5 percent (between 2045-2050), 1.0 percent (between 2050-2055), and 0.5 percent (between 2055-2059).

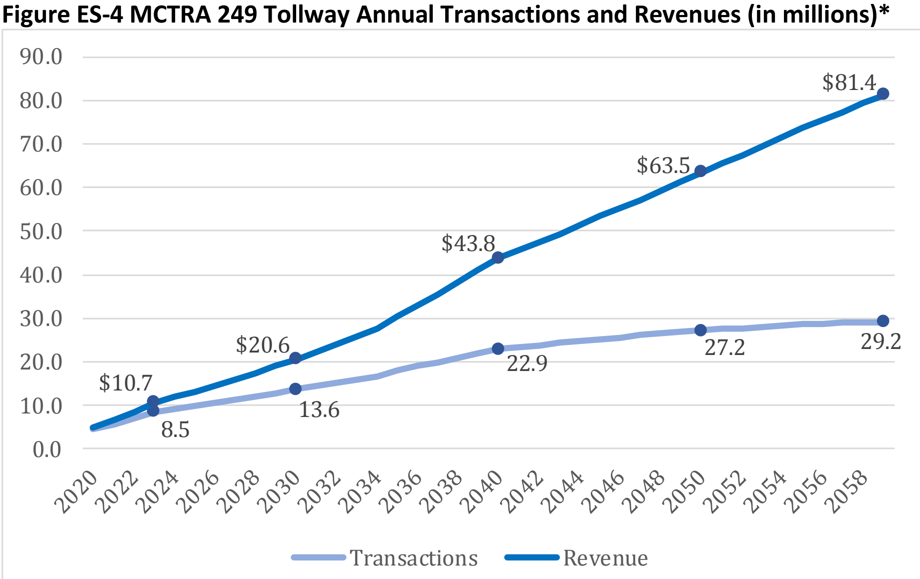
Base Annual Transactions and Revenue Estimates

Figure ES-4 shows the estimated Base Case annual transactions and toll revenue for the MCTRA 249 Tollway. For clarity purposes, several data points for the following years are labeled in the graph: 2023 (which is the first year after ramp-up), the intervening decennial years (2030, 2040 and 2050), and the final forecast year (2059).

Annual transactions are expected to be 4.4 million in 2020 and are projected to increase to more than 13.6 million in 2030 and 22.9 million in 2040. This represents a growth of 11.8 percent per year in transactions for the ten years following 2020 and 5.3 percent per year for the period between 2030 and 2040. With the projected annual growth in traffic and the programmed annual toll increases, revenue is expected to grow at an average rate of about 11.4 percent per year between 2020 and 2040, from $5.0 million in 2020 to $43.8 million in 2040.

It is important to note that growth in traffic and revenue on this facility is highly dependent on future developments in the corridor. Changes to the rate of development growth from the study assumptions will result in changes to the traffic and revenue presented. Chapter 5 presents sensitivity tests related to timing of development implementation and reductions in corridor demand growth by 20 and 50 percent.

Figure ES-4 MCTRA 249 Tollway Annual Transactions and Revenues (in millions)*



** Revenue Leakage of 4.5% has been deducted from the annual revenue. Revenue from fees and fines are not included.*

Sensitivity Tests

CDM Smith conducted eight sensitivity tests to test the impacts on T&R of changes to some of the key input variables. These are all summarized in Chapter 5 of the report. Of the eight tests conducted, the following four resulted in negative revenue impacts of greater than 20 percent in the year 2040 estimates:

- Five-year lag in socioeconomic growth
- MCTRA 249 Tollway traffic demand growth rate reduced by 20 percent
- MCTRA 249 Tollway traffic demand growth rate reduced by 50 percent
- TxDOT section of SH 249 not constructed

Chapter 1

Introduction

CDM Smith was retained by the Montgomery County Toll Road Authority to conduct a comprehensive traffic and toll revenue analysis for the Montgomery County Toll Road Authority 249 Tollway (MCTRA 249 Tollway) located in southern Montgomery County, Texas. It is a proposed 3.0-mile extension of the Harris County Toll Road Authority's (HCTRA's) Tomball Tollway within the 249 corridor. This report documents the study assumptions and various data collection and model development activities conducted to produce the T&R forecasts and includes annual T&R estimates for the proposed MCTRA 249 Tollway project for the 40-year planning horizon.

CDM Smith previously examined the MCTRA 249 Tollway section as part of a Tomball Tollway T&R study completed in March 2014 for Montgomery County and HCTRA. This 2018 MCTRA 249 Tollway Comprehensive T&R Study builds upon the 2014 study by updating the underlying socioeconomic and transportation network assumptions. CDM Smith is also currently working on an updated T&R study for TxDOT, scheduled to be completed by March 2018, for further extensions of SH 249 from the northern terminus of the MCTRA 249 Tollway at Woodtrace Boulevard in Montgomery County to SH 105 in Grimes County.

1.1 MCTRA 249 Tollway Project Description

Figure 1-1 shows the location of the proposed MCTRA 249 Tollway project in the context of the Houston metropolitan area. MCTRA 249 Tollway is located in the northwest portion of the greater Houston region. The map also shows the location of the existing and proposed toll and non-toll highways in the region. Central Houston is encircled by a series of concentric ring roads or circumferential roadways. The inner-most ring road is the Interstate 610 Loop, the next ring is the Sam Houston Tollway (Beltway 8), followed finally by the not-yet-fully-completed Grand Parkway (State Highway 99). The Houston region also has a number of "spoke" routes or radial facilities emanating from Houston's central core. These include interstates I-10, I-45, and I-69 as well as US 90, US 290, SH 225, SH 249, SH 288, and the Hardy Toll Road.

State Highway 249 corridor is among these "spoke" routes, originating from north-central Houston and continuing towards the northwest. The overall 249 corridor is planned to be about 50 miles in length. At its southern end, it begins at I-45 (approximately 11 miles north of Downtown Houston), and traverses in a northwesterly direction with its current terminus in Pinehurst near the intersection of FM 149 and FM 1774. MCTRA 249 Tollway is a 3.0-mile extension of the main lanes within the overall 249 corridor being constructed between the existing frontage roads. The 249 corridor includes three other existing or planned segments:

- **Toll-Free 249 (Existing):** The 14.2-mile southeast portion of 249 operates as toll-free roadway from I-45 in the southeast to Spring Cypress Road in the northwest. The east-west portion of the route is named W. Mt. Houston Road, while the northwest diagonal portion is named the Tomball Parkway.

- **Tomball Tollway Phase I (Existing):** This is a recently constructed HCTRA facility. This 5.8-mile segment of 249 extends from south of Northpointe Boulevard to south of Brown Road. This portion of the route provides three toll lanes in each direction, with continuous toll-free frontage roads.

- **Tomball Tollway Phase II (Under Construction):** The Tomball Tollway Phase II is a 1.5-mile extension of Tomball Tollway currently being constructed by HCTRA. This segment is expected to open by late 2019, and will extend the existing Tomball Tollway from south of Brown Road to the Harris-Montgomery county line. The northern terminus of this route will meet the southern terminus of the MCTRA 249 Tollway.

- **TxDOT 249 Extension (Proposed):** TxDOT plans to construct two additional segments of the 249 corridor. These two segments of 249 will start at the northern terminus of the MCTRA 249 Tollway north of Woodtrace Boulevard and will extend northwest to SH 105 west of Plantersville in Grimes County. The first segment, between Woodtrace Boulevard and FM 1488 in Magnolia will be a four-lane section and between FM 1488 and FM 1774 at Todd Mission will be a two-lane limited-access toll facility with discontinuous frontage roads and is planned to be open in mid-2020. The second segment between FM 1774 and SH 105 will be constructed as a two-lane at-grade toll-free arterial and is planned to be completed in early 2022. The full completion of the 249 facility will contribute to enhanced traffic and revenue on the MCTRA 249 Tollway portion of the route.

Figure 1-2 contains a detailed line diagram of MCTRA 249 Tollway. It shows that in the south, the project begins at the Harris-Montgomery county line and extends northward to Woodtrace Boulevard. The entire length of the project will be flanked by continuous frontage roads. The project will contain four pairs of entrance/exit ramps between the frontage roads and main lane MCTRA 249 Tollway. Near the southern terminus of the project, there will be south-facing ramps, just south of Vallie Street. Moving north, there will be a pair of north-facing ramps just north of Vallie Street and another pair of north-facing ramps just north of Decker Prairie Road. There will be a pair of south-facing ramps immediately south of Woodtrace Blvd. Finally, there will be a pair of future north-facing ramps north of Woodtrace Blvd which will be constructed after the TxDOT section of 249 is completed. The project will have one main lane toll gantry in each direction between Decker Prairie Road and Woodtrace Blvd, which will capture all traffic on the main lane and from the three northern pairs of entrance/exit ramps. The south-facing ramps, just south of Vallie Street, will have ramp gantries since those movements will not be captured by the main lane gantry.

Figure 1-1 MCTRA 249 Tollway Project Location Map

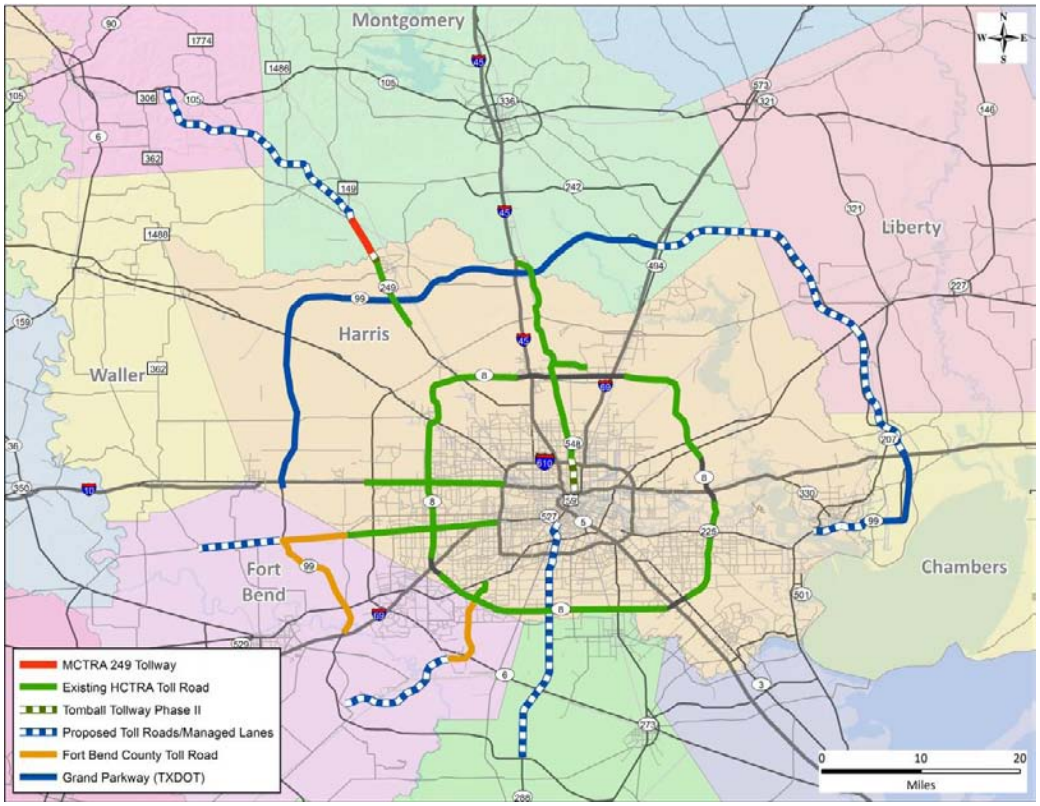
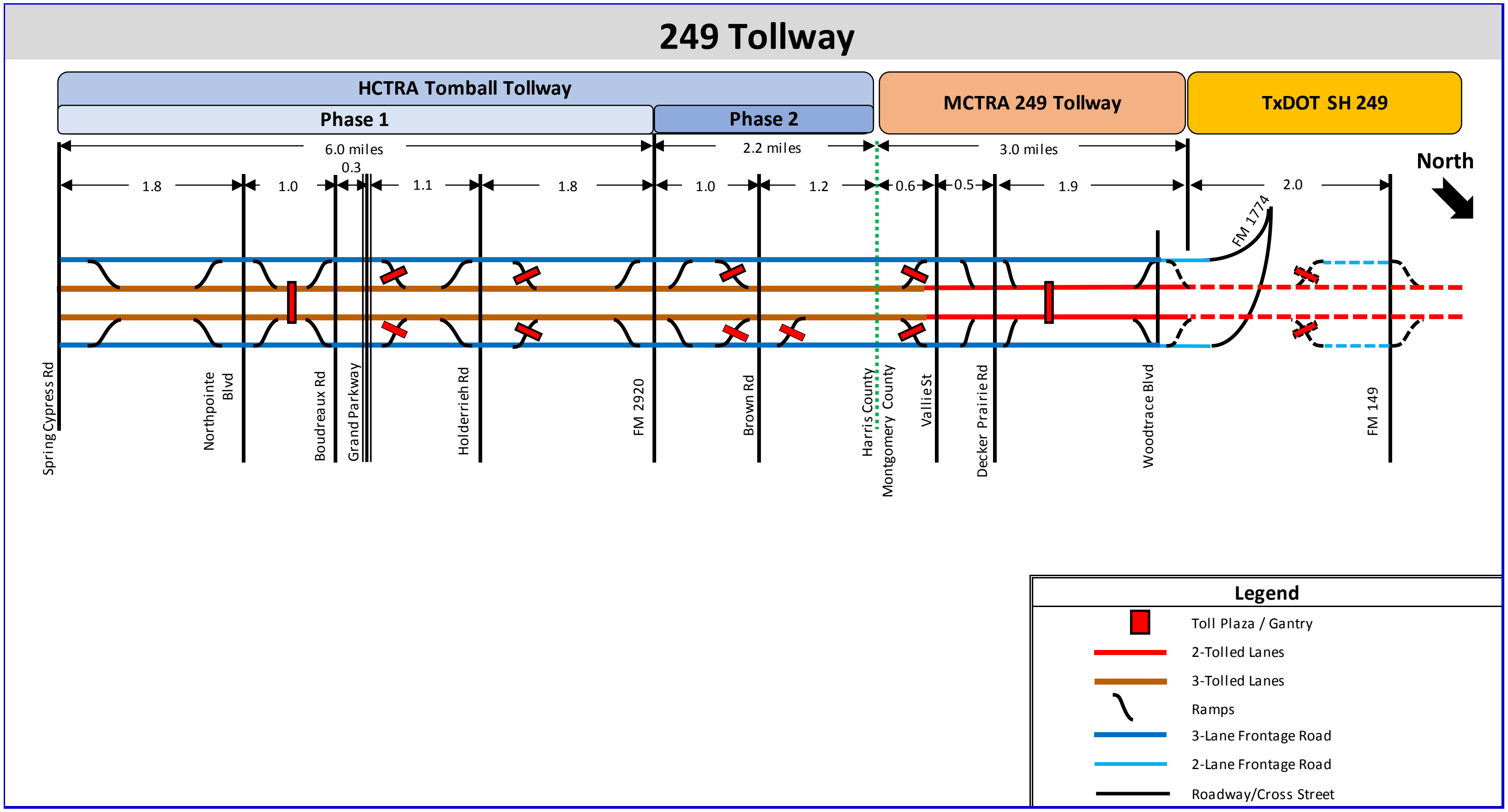


Figure 1-2 MCTRA 249 Tollway Route and Interchange Line Diagram



1.2 Planned Regional Toll Road Projects

Figure 1-1 also shows a number of planned expansions of the toll road system in the Houston region. Some improvements are near implementation while others are in the preliminary planning stages.

- **Ship Channel Bridge Replacement:** The Ship Channel Bridge replacement project (expanding the Sam Houston Tollway between SH 225 and I-10) will include the construction of a new bridge span across the Houston Ship Channel providing four toll lanes and full shoulders in each direction.

- **Proposed Hardy Toll Road Downtown Connector:** This connector is expected to be completed in 2022 and will extend the Hardy Toll Road south, from its current southern terminus at I-610 to the northern periphery of downtown Houston (with direct connections to US 59 and Elysian Street). Currently, traffic traveling between downtown Houston and the Hardy Toll Road must use frequently congested portions of I-45 or I-69.

- **Additional Segments of Grand Parkway:** The northern and northwestern segments of Grand Parkway (Segments D through G) were opened between 2013 and 2016. Segments H and I-1 (northeastern segments) are expected to be open to traffic in 2022.

- **Fort Bend County Extensions:** The Fort Bend County Toll Road Authority (FBCTRA) is planning two extensions of existing routes:

  - **Westpark Tollway:** This toll route will be extended from SH 99 (Grand Parkway) to the town of Fulshear. This extension is expected to be opened in 2018.

  - **Fort Bend Parkway:** This extension will connect to the southwest portion of Grand Parkway (Segment C) when that project is completed in the future.

- **SH 288 Express Lanes:** Express toll lanes are being developed along the SH 288 corridor south of downtown Houston. They will extend from just north of SH 6 in Brazoria County to a junction with I-69 (US 59) near downtown Houston, a distance of approximately 18 miles.

1.3 Report Outline

The remaining chapters of this report are organized as follows:

Chapter 2 – Existing Traffic Trends and Characteristics, provides a summary of existing traffic on roadways that will compete with or connect to MCTRA 249 Tollway, including the existing MCTRA 249 Tollway frontage roads (Tomball Parkway).

Chapter 3 – Economic Growth Assessment, presents an overview of regional economic trends and forecasts with a focus on Montgomery County and adjacent counties (Harris, Grimes and Walker).

Chapter 4 – Traffic and Revenue Estimates, contains a summary of how the travel demand model (used to forecast MCTRA 249 Tollway T&R) was developed from the existing H-GAC models and presents the results of the Base Case traffic and toll revenue analyses for MCTRA 249 Tollway.

Chapter 5 – Sensitivity Tests, contains the results of the sensitivity tests and project alternatives that were tested for this study.

The **Appendix A** contains a report by Community Development Strategies, Inc. (CDS), which summarizes their independent socioeconomic forecasts for the project area.

Chapter 2

Traffic Trends and Characteristics

This chapter provides a summary of the historical and existing traffic trends and infrastructure characteristics along the major roadways competing with and feeding the proposed MCTRA 249 Tollway located in Montgomery County, Texas. CDM Smith obtained traffic count data from the Texas Department of Transportation (TxDOT) to analyze the typical travel characteristics and historical traffic volume trends within the study area. To complement the TxDOT historical count data, CDM Smith undertook a comprehensive traffic data collection program using automatic traffic recorder (ATR) counts at several strategic locations and across screenlines within the MCTRA 249 Tollway study area. The traffic counts were collected in May 2017. In addition to the traffic volume counts, the data collection program also included speed and delay measurements and an origin-destination study. The traffic volume and operational data collected within the study area (and summarized in this chapter) were used as inputs to calibrate the travel demand models. The models were then used to develop traffic and toll revenue forecasts for the proposed MCTRA 249 Tollway.

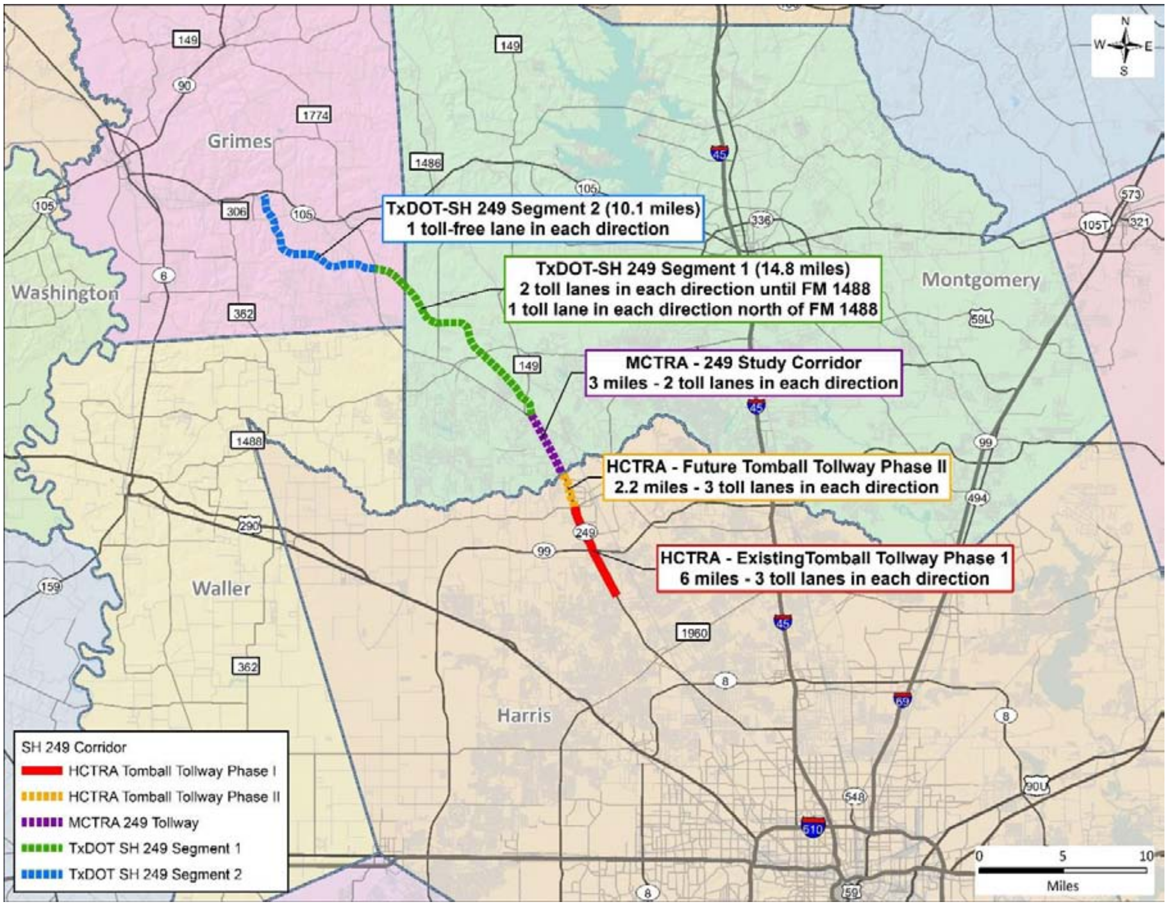
2.1 Description of Existing Facilities in the Study Area

2.1.1 SH 249

The existing SH 249 is a multi-lane highway that runs between I-45 in Houston and the intersection of FM 1774 in Pinehurst in Montgomery County as shown in **Figure 2-1**.

The proposed MCTRA 249 Tollway, as shown in **Figure 2-1,** connects to the future Tomball Tollway Phase II at the Harris-Montgomery county Line and terminates at Woodtrace Boulevard in Montgomery County.

Figure 2-1 MCTRA 249 Tollway – Proposed Corridor Alignment



2.1.2 Competing and Complementing Routes

There are several highways and controlled access facilities that feed and compete with the proposed MCTRA 249 Tollway. Each of these facilities serves diverse markets of local and intercity travelers as briefly described below:

- **SH 6** is a major state highway that serves travelers between Bryan/College Station, Navasota and the greater Houston region and connects to US 290 in Waller County. South of Waller County, SH 6 runs southeasterly along with US 290 (dual designation) towards Houston until the interchange with FM 1960. At this interchange, SH 6 splits off from US 290 and continues south. The posted speed limit on SH 6 is 65 mph.

- **US 290** is a major highway connecting Houston to Austin. East of its intersection with SH 6 it becomes a major radial expressway with a posted speed limit of 65 mph. It also serves as one of the connecting routes between Houston and its northwest suburbs.

- **SH 105** is a mostly rural highway that connects Navasota in Grimes County to I-45 in Conroe in Montgomery County. The posted speed limit on SH 105 varies between 35 mph and 70 mph.

- **FM 1774** is a mostly rural roadway that connects to SH 105 in Plantersville and passes through Todd Mission and Magnolia before finally terminating at the northern limit of the existing SH 249 in Pinehurst in Montgomery County. The posted speed limit on FM 1774 varies between 35 mph and 70 mph.
- **FM 1488** is an east-west rural roadway with a posted speed limit of 50 mph that connects US 290 in Waller County to I-45 in Montgomery County.
- **I-45** is an interstate highway connecting Houston to Dallas and serves as a major radial feeder to Houston from the northern suburbs such as Conroe and The Woodlands in Montgomery County. The posted speed limit on I-45 is 65 mph.

2.2 Historical Traffic Growth Trends

The following section summarizes observed historical traffic trends (utilizing the available TxDOT traffic count data) of routes that will compete with or feed into MCTRA 249 Tollway.

This section contains a review of the annual average daily traffic (AADT) volumes on key routes between 1990 and 2016. The historical traffic count locations are shown in **Figure 2-2.** **Table 2-1** lists the AADT volumes (for select years between 1990 and 2016) at each location, along with compound average growth rates (CAGR) between select years. These historical traffic trends are summarized as follows:

- Between 1990 and 2010, all the routes shown on the table experienced moderate growth rates, as the population growth in Montgomery County grew at approximately five percent per year during this time.
- Between 2010 and 2016, absolute traffic volumes declined on several of the routes in the study area. These negative growth rates were due partly to the lingering effects of the national recession at the start of this period and partly to the capacity constraints on several of the roadways. The one exception to this trend was the traffic on FM 1488 west of I-45 which continued to show strong growth at an annual rate of 10.9 percent during this period.

Figure 2-2 Historical Traffic Count Locations

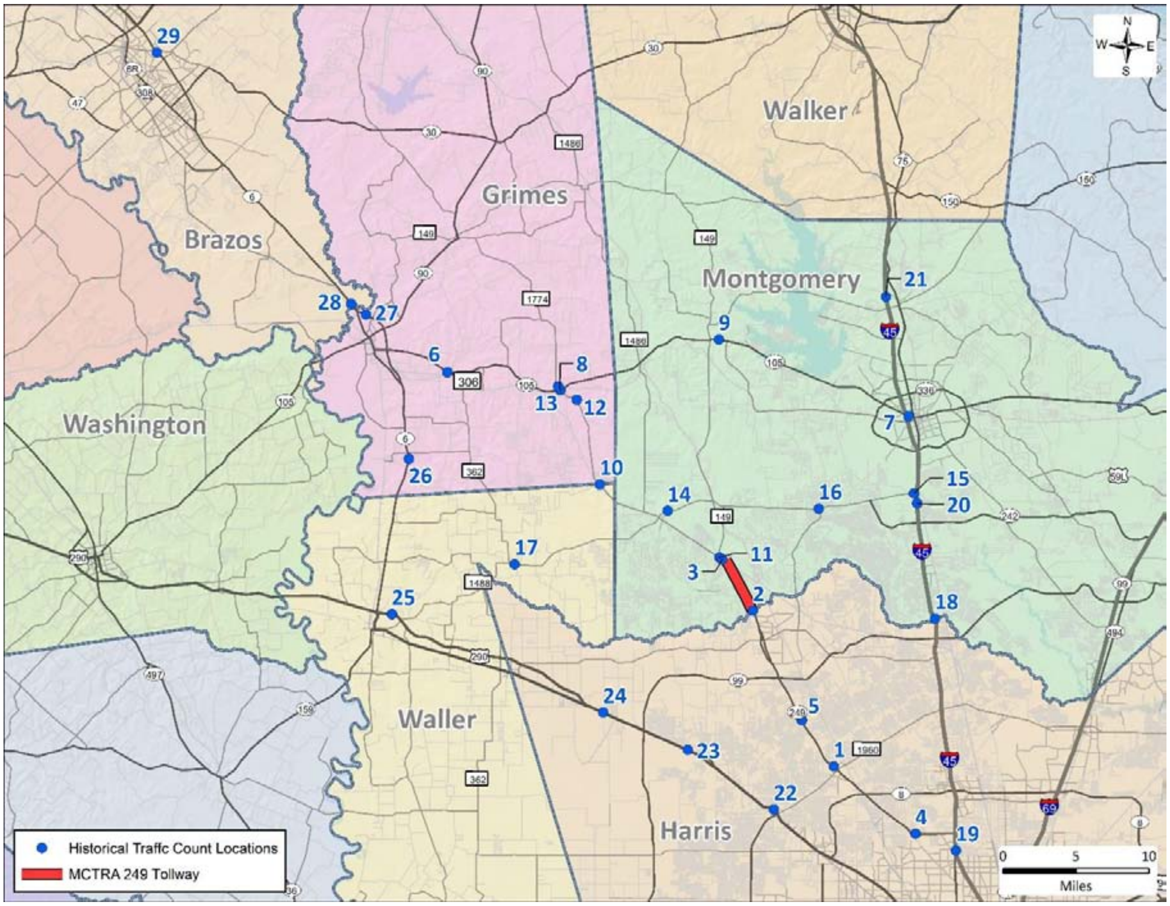


Table 2-1 Historical Trends in Annual Average Daily Traffic

ID	Facility	Location	Annual Average Daily Traffic				Average Annual Growth Rate	
			1990	2000	2010	2016	1990-2010	2010-2016
SH 249								
1	SH 249	North of FM 1960	41,000	99,000	139,000	162,000	6.3%	2.6%
2	SH 249	South of Montgomery County	17,900	31,000	40,000	44,500	4.1%	1.8%
3	SH 249	South of FM 1774	11,200	19,300	24,000	30,100	3.9%	3.8%
4	SH 249	West of TC Jester Blvd.	37,000	46,000	47,000	47,100	1.2%	0.0%
5	SH 249	South of Spring Cypress Rd	30,000	79,000	108,000	127,600	6.6%	2.8%
SH 105								
6	SH 105	West of FM 362	5,000	7,100	8,600	10,500	2.7%	3.4%
7	SH 105	East of I-45	20,000	21,000	22,000	25,700	0.5%	2.6%
8	SH 105	West of FM 1774	4,600	6,600	7,900	11,400	2.7%	6.3%
9	SH 105	West of Buffalo Springs Dr.	7,900	14,800	17,300	20,000	4.0%	2.4%
FM 1774								
10	FM 1774	South of Grimes County	2,300	4,200	5,700	6,700	4.6%	2.7%
11	FM 1774	North of FM 149	9,300	14,800	18,000	23,100	3.4%	4.2%
12	FM 1774	South of FM 203	1,900	3,300	4,300	5,000	4.2%	2.5%
13	FM 1774	North of SH 105	1,050	1,250	1,850	2,000	2.9%	1.3%
FM 1488								
14	FM 1488	East of FM 1774	3,800	8,100	10,300	13,200	5.1%	4.2%
15	FM 1488	West of I-45	9,600	11,600	26,000	48,500	5.1%	11.0%
16	FM 1488	West of FM 2978	3,600	10,800	21,000	29,700	9.2%	5.9%
17	FM 1488	East of FM 362	2,200	3,500	4,300	5,600	3.4%	4.5%
I-45								
18	I-45	North of Harris County	88,000	142,000	224,000	245,700	4.8%	1.6%
19	I-45	North of SH 261	185,000	254,000	318,000	278,000	2.7%	-2.2%
20	I-45	North of SH 242	62,000	102,000	147,000	180,400	4.4%	3.5%
21	I-45	North of FM 1097	27,000	45,000	57,000	64,100	3.8%	2.0%
US 290								
22	US 290	North of FM 1960	50,000	102,000	149,000	158,000	5.6%	1.0%
23	US 290	West of Mueschke Rd.	19,000	58,000	84,000	90,200	7.7%	1.2%
24	US 290	West of Roberts Rd.	0	45,000	51,000	47,300	N/A	-1.2%
25	US 290	East of SH 6	0	35,000	36,000	38,400	N/A	1.1%
SH 6								
26	SH 6	South of FM 2	7,300	17,500	18,500	21,100	4.8%	2.2%
27	SH 6	North of FM 3090	8,800	18,800	24,000	27,500	5.1%	2.3%
28	SH 6	South of FM 2154	0	22,000	27,000	37,100	N/A	5.4%
29	SH 6	South of FM 158	23,000	45,000	59,000	66,300	4.8%	2.0%

2.3 Traffic Count Data Collection

A comprehensive traffic data collection program was conducted in May 2017 to collect a series of traffic counts within the MCTRA 249 Tollway study area for several screenlines encompassing the study corridor and at several spot count locations. The traffic data collection program for this study is described and summarized herein.

2.3.1 Description of Traffic Counts and Locations

Figures 2-3 illustrates the 2017 count locations. A total of 43 counts were selected in the study area as part of the May 2017 data collection effort. The May 2017 traffic counts supplement a more comprehensive traffic count collection effort previously undertaken in September 2016 as part of the 2016 TxDOT SH 249 Study. **Table 2-2** describes the counts collected at each location in 2016 and 2017. *CJ Hensch & Associates, Inc.,* a traffic data collection firm, was retained to collect the count data. They collected a mixture of axle-only counts and vehicle classification counts depending on the location. Most of the counts were collected for a continuous 48-hour period, with the exception of two locations where the data was collected for a continuous seven-day period to obtain information regarding daily variation in traffic and the weekend travel patterns within the study area. The traffic counts were aggregated into 15-minute time periods. Three locations (the eastbound US 290 frontage road west of SH 99, FM 2920 west of SH 99 and FM 1774 north of SH 249) could not be counted due to construction or other obstructions in the area.

The data was also used to extract samples of other relevant traffic statistics, such as truck percentages, axle distributions, and temporal distributions (including the morning peak, evening peak and off-peak period traffic volumes). To evaluate for consistency with historical trends, historical seasonal variations, and overall reasonableness, the traffic counts previously collected in 2016 were also used as part of this study. The 2016 counts were collected along the screenlines presented in **Figure 2-4.** The 2016 and 2017 traffic volumes were used to calibrate the base year travel demand model developed for the MCTRA 249 Tollway corridor.

Figure 2-3 May 2017 Traffic Count Locations

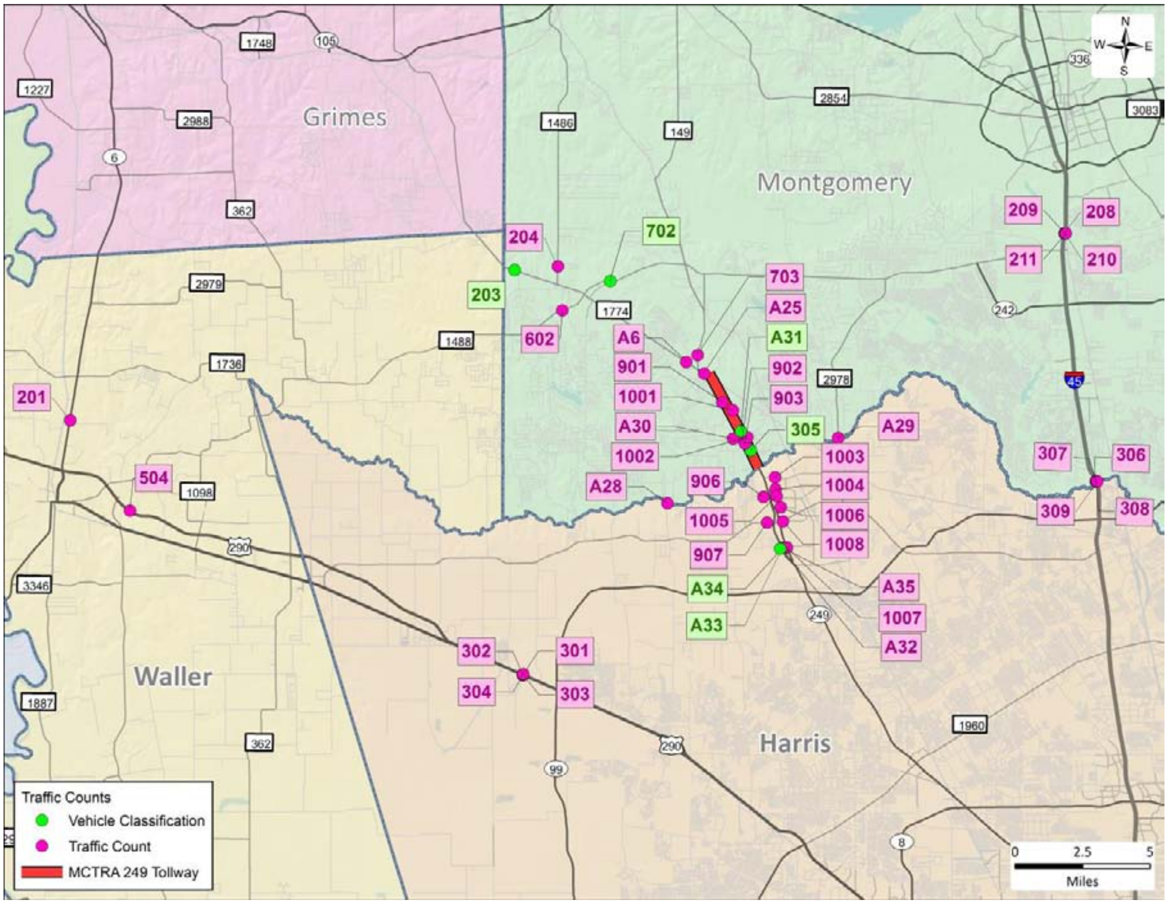


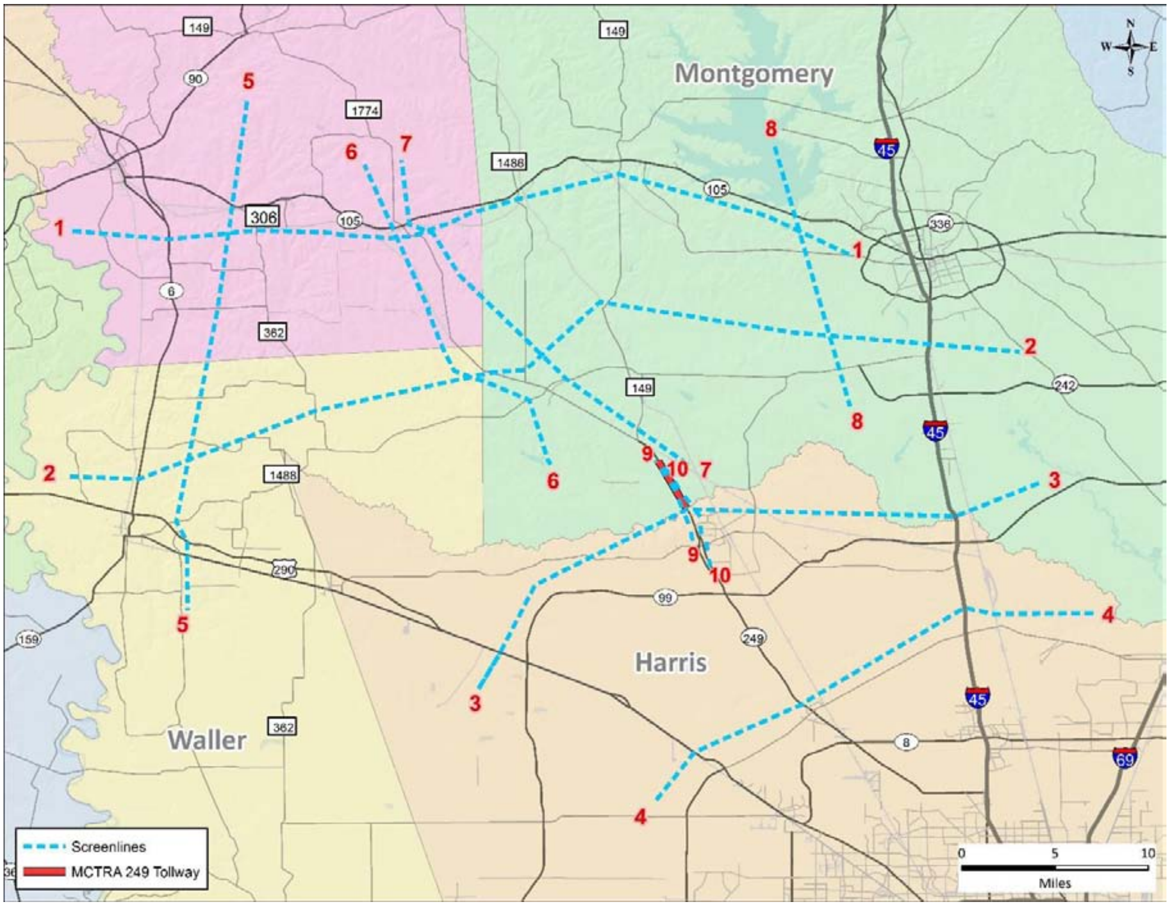
Table 2-2 2016 and 2017 Count Locations and AWDT

Location ID	Location Type	Direction	Location Description	2016 AWDT	2017 AWDT
101	Arterial (2-Way)	NB/SB	SH 6 - south of Falkenbury Loop	21,700	-
103	Arterial (2-Way)	NB/SB	FM 1774 - south of SH 105	5,400	-
201	Arterial (2-Way)	NB/SB	SH 6 - north of SH 290	21,800	26,500
202	Arterial (2-Way)	NB/SB	FM 362 - north of FM 1488	1,800	-
203	Arterial (2-Way)	EB/WB	FM 1774 - west of FM 1486	9,000	9,400
204	Arterial (2-Way)	NB/SB	FM 1486 - north of FM 1774	5,200	7,700
205	Arterial (2-Way)	NB/SB	Jackson Rd - north of SH 149	2,900	-
206	Arterial (2-Way)	NB/SB	SH 149 - east of Jackson Rd	7,000	-
207	Arterial (2-Way)	NB/SB	Sendera Ranch Dr - north of FM 1488	17,000	-
208	Frontage Road	SB	IH 45 SB Frontage Rd - north of FM 1488	3,200	3,000
209	Mainlane	SB	IH 45 SB - north of FM 1488	82,400	78,700
210	Mainlane	NB	IH 45 NB - north of FM 1488	71,600	91,700
211	Frontage Road	NB	IH 45 NB Frontage Rd - north of FM 1488	14,300	15,100
301	Frontage Road	EB	US 290 EB Frontage Rd - west of SH 99	9,800	-
302	Mainlane	EB	US 290 EB - west of SH 99	33,600	40,800
303	Mainlane	WB	US 290 WB - west of SH 99	33,100	31,800
304	Frontage Road	WB	US 290 WB Frontage Rd - west of SH 99	1,300	8,000
305	Arterial (2-Way)	NB/SB	SH 249 - north of Zion Road	50,500	-
305	Arterial (2-Way)	NB/SB	SH 249 - north of Vallie St	-	46,000
306	Frontage Road	SB	IH 45 SB Frontage Rd - north of Hardy Toll Road	15,000	14,800
307	Mainlane	SB	IH 45 SB - north of Hardy Toll Road	116,100	128,200
308	Mainlane	NB	IH 45 NB - north of Hardy Toll Road	113,100	128,100
309	Frontage Road	NB	IH 45 NB Frontage Rd - north of Hardy Toll Road	16,300	15,700
401	Frontage Road	EB	US 290 EB Frontage Rd - west of Huffmeister Rd	16,800	-
402	Mainlane	EB	US 290 EB - west of Huffmeister Rd	59,200	-
403	Mainlane	WB	US 290 WB - west of Huffmeister Rd	69,300	-
404	Frontage Road	WB	US 290 WB Frontage Rd - west of Huffmeister Rd	3,600	-
405	Frontage Road	EB	SH 249 EB Frontage Rd - west of Cypress Creek Pkwy	18,000	-
406	Mainlane	EB	SH 249 EB - west of Cypress Creek Pkwy	71,800	-
407	Mainlane	WB	SH 249 WB - west of Cypress Creek Pkwy	77,400	-
408	Frontage Road	WB	SH 249 WB Frontage Rd - west of Cypress Creek Pkwy	20,700	-
409	Frontage Road	SB	IH 45 SB Frontage Rd - south of Cypresswood Dr	10,000	-
410	Mainlane	SB	IH 45 SB - south of Cypresswood Dr	116,700	-
412	Mainlane	NB	IH 45 NB - south of Cypresswood Dr	109,800	-
413	Frontage Road	NB	IH 45 NB Frontage Rd - south of Cypresswood Dr	13,700	-
501	Arterial (2-Way)	EB/WB	SH 105 - west of FM 362	10,100	-
504	Arterial (2-Way)	EB/WB	US 290 - east of SH 359	39,400	48,700
601	Arterial (2-Way)	EB/WB	SH 105 - west of FM 1774	10,600	-
602	Arterial (2-Way)	NB/SB	FM 1488 - west of FM 1774	11,500	13,100
701	Arterial (2-Way)	EB/WB	SH 105 - east of FM 1774	8,600	-
702	Arterial (2-Way)	EB/WB	FM 1488 - east of FM 1774	16,100	15,900
703	Arterial (2-Way)	NB/SB	FM 149 - north of FM 1774	12,800	15,300

Table 2-2 2016 and 2017 Count Locations and AWDT (Continued)

Location ID	Location Type	Direction	Location Description	2016 AWDT	2017 AWDT
801	Arterial (2-Way)	EB/WB	SH 105 - west of IH 45	37,200	-
802	Arterial (2-Way)	EB/WB	FM 1488 - west of FM 242	43,400	-
901	Arterial (2-Way)	EB/WB	Woodtrace Blvd - west of SH 249	-	2,800
902	Arterial (2-Way)	EB/WB	Decker Prairie Rd - west of SH 249	-	11,200
903	Arterial (2-Way)	EB/WB	Decker Prairie Rosehill Rd - west of SH 249	-	7,700
906	Arterial (2-Way)	EB/WB	Brown Rd - west of SH 249	-	7,600
1001	Arterial (2-Way)	EB/WB	Patridge Circle - east of SH 249	-	500
1002	Arterial (2-Way)	EB/WB	Hardin Store Rd - east of SH 249	-	13,800
1003	Arterial (2-Way)	EB/WB	Zion Rd - east of Polaris Blvd	-	5,700
1004	Arterial (2-Way)	EB/WB	Baker Dr - east of SH 249	-	4,800
1005	Arterial (2-Way)	EB/WB	Brown Rd - east of SH 249	-	7,700
1006	Arterial (2-Way)	NB	SH 249 BUS - north of Hicks St	-	6,600
1007	Arterial (2-Way)	EB	EB Connector from SH 249 FR to SH 249 BUS	-	1,100
1008	Arterial (2-Way)	EB/WB	FM 2920 - east of SH 249 Business	-	28,100
A4	Arterial (2-Way)	NB/SB	FM 1774 - north of Todd Mission	5,200	-
A6	Arterial (2-Way)	NB/SB	FM 1774 - north of SH 149	23,400	-
A8	Arterial (2-Way)	EB/WB	US 290 - west of Hwy 6	24,300	-
A12	Arterial (2-Way)	EB/WB	SH 30 - west of Hoke Rd	5,200	-
A13	Arterial (2-Way)	NB/SB	Hwy 6 - north of N Lasalle St	36,400	-
A14	Arterial (2-Way)	EB/WB	SH 30 - east of William D. Fitch Pkwy	9,200	-
A16	Arterial (2-Way)	NB/SB	SH 105 - east of FM 159	5,900	-
A25	Arterial (2-Way)	NB/SB	SH 249 - south of FM 149	32,200	32,200
A26	Arterial (2-Way)	NB/SB	CR 304 - South of CR 344	600	-
A27	Arterial (2-Way)	EB/WB	CR 306 - East of FM 1748	100	-
A28	Arterial (2-Way)	NB/SB	Decker Prairie Rosehill Rd - north of Harris/Montgomery County Line	-	7,300
A29	Arterial (2-Way)	NB/SB	FM 2978 - north of Harris/Montgomery County Line	-	22,300
A30	Arterial (2-Way)	NB/SB	Wright Rd - north of Decker Prairie Rd	-	900
A31	Arterial (2-Way)	NB/SB	SH 249 - north of Decker Prairie Rd	-	34,200
A32	Frontage Road	SB	SH 249 SB Frontage Rd - south of Alice Rd	-	17,300
A33	Mainlane	SB	SH 249 SB - south of Alice Rd	-	10,900
A34	Mainlane	NB	SH 249 NB - south of Alice Rd	-	10,100
A35	Frontage Road	NB	SH 249 NB Frontage Rd - south of Alice Rd	-	17,500

Figure 2-4 2016 and 2017 Data Collection Program Screenlines



2.3.2 Time-of-Day Traffic Volumes

In addition to evaluating the average weekday traffic volumes at all locations, the temporal distributions based on the time periods of traffic at two locations (north of Zion Road and south of FM 149) were analyzed. **Figure 2-5** summarizes the traffic peaking characteristics for an average weekday based on 2017 count data. The data shown is by direction of travel for the four time periods defined below:

- AM Peak Period – 6:00 AM to 9:00 AM
- Midday Period – 9:00 AM to 3:00 PM
- PM Peak Period – 3:00 PM to 7:00 PM
- Night Period – 7:00 PM to 6:00 AM

The time periods are split to fit a typical profile for a radial facility with well-defined commuting peaks in-bound during the AM period and out-bound during the PM period.

CDM Smith

The proportion of traffic for each time period by direction for locations 305 and A25 is shown in **Figures 2-6** and **2-7** and **Table 2-3**. Along 249, the morning traffic split ranged from 23 to 25 percent in the peak direction and 13 to 15 percent in the off-peak direction. Midday traffic share ranged between 31 and 34 percent. In the afternoon, peak direction traffic was 34 to 35 percent at the two locations while traffic in the off-peak direction was in the range of 23 to 24 percent. Nighttime traffic ranged between 18 to 22 percent.

Figure 2-5 Temporal Distribution of Traffic

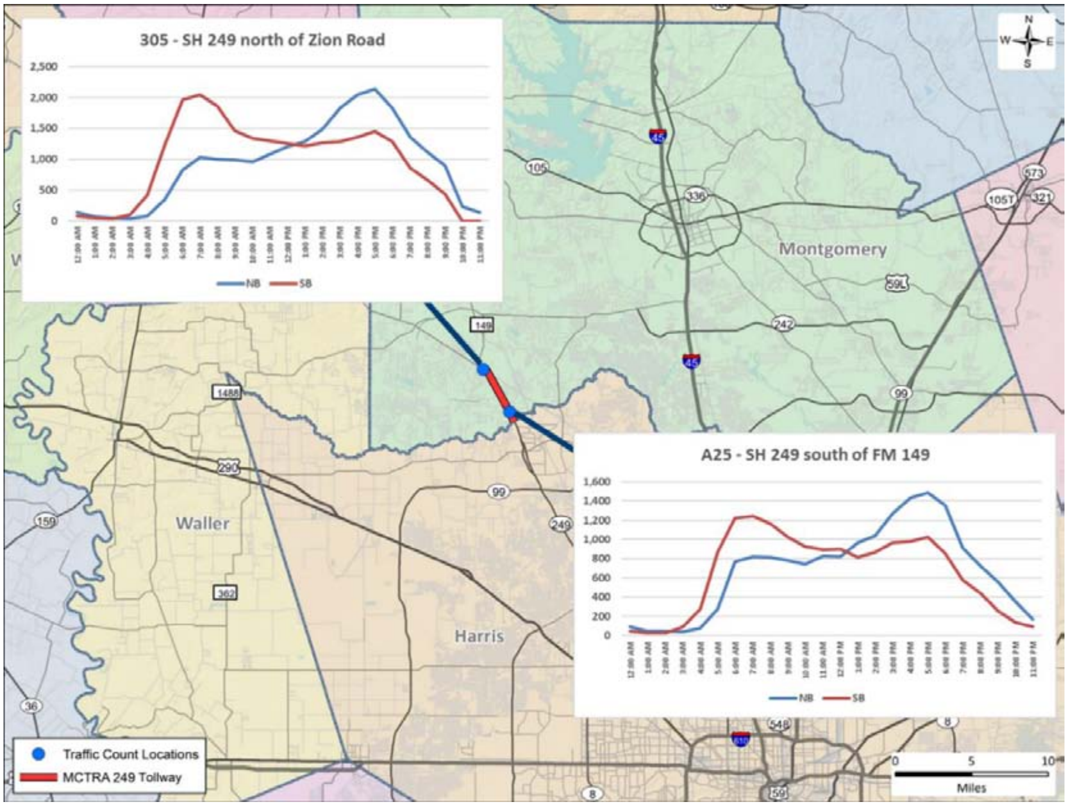


Figure 2-6 Time-of-Day Traffic Proportions (SH 249 – North of Zion Road)

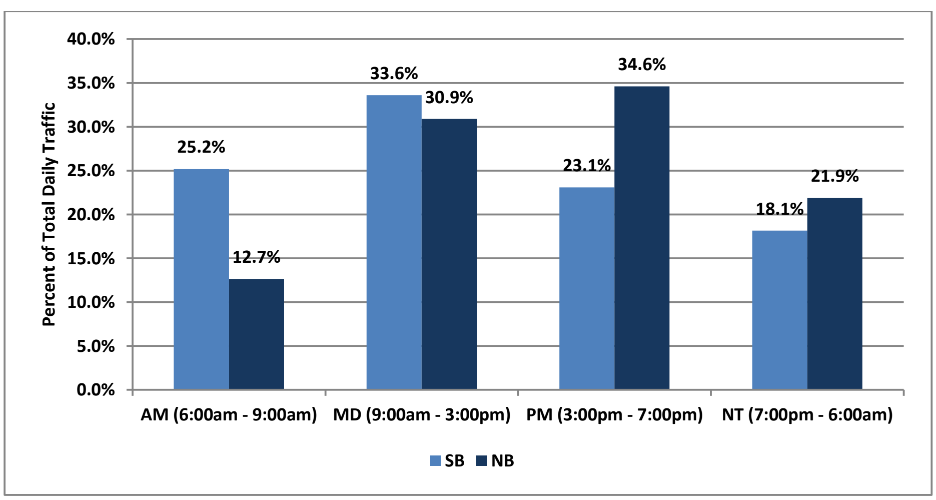


Figure 2-7 Time-of-Day Traffic Proportions (SH 249 – South of FM 149)

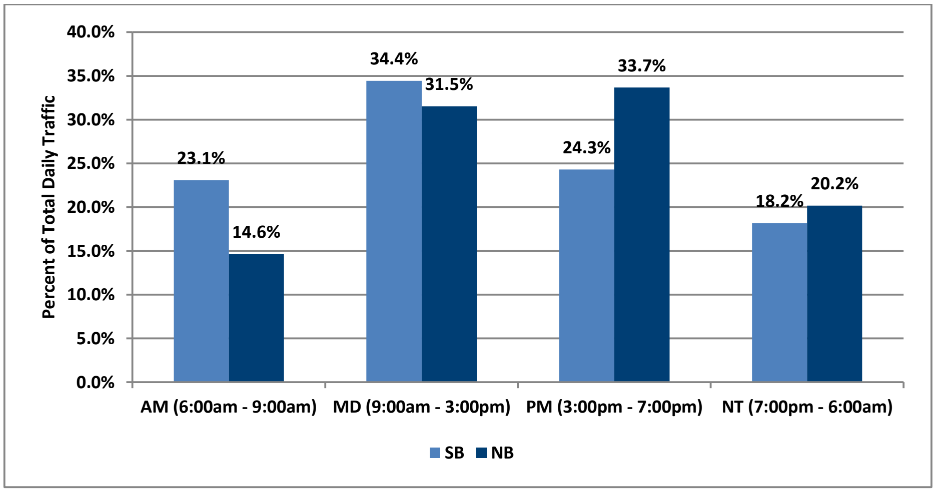


Table 2-3 Directional Splits by Time Period

Location	Direction	AM	Midday	PM	Night
SH 249 - North of Zion Road	Southbound	25%	34%	23%	18%
	Northbound	13%	31%	35%	22%
SH 249 - South of FM 149	Southbound	23%	34%	24%	18%
	Northbound	15%	32%	34%	20%

2.3.3 Day-of-Week Traffic Distribution

Seven-day counts were collected on SH 249 north of Zion Road, and on SH 6 north of US 290, to quantify variations in traffic demand during weekdays and weekend days. The weekend factor, defined as a ratio between the magnitude of average daily weekend traffic compared to the average weekday traffic, was calculated from the traffic count data at these two locations. **Table 2-4** shows the average weekend factors for the two locations by direction. The average weekend traffic on SH 249 is approximately 89 percent of the average weekday traffic. The average weekend traffic on SH 6 is approximately 112 percent of the average weekday traffic, which means that on SH 6 the average weekend traffic volume is higher than the weekday traffic volume by twelve percent. This high weekend factor is due to a high proportion of long-distance recreational traffic demand on this segment of SH 6. The existing segment of SH 249 has a lower weekend factor because it has predominately urban/commuter traffic patterns.

Table 2-4 Average Weekend Traffic Factor

Location	Direction	Average Weekend Factor
249 SB North of Zion Road	Southbound	0.87
	Northbound	0.90
SH 6 North of SH 290	Southbound	1.09
	Northbound	1.16

2.3.4 Truck Shares

Vehicle classification counts were also conducted as part of the traffic data collection program along the MCTRA 249 Tollway and nearby major highways at the following locations:

- SH 249 north of Zion Road
- SH 249 north of Decker Prairie Road
- SH 249 north of FM 2920
- FM 1774 west of FM 1486
- FM 1488 east of FM 1774
- Wright Road north of Decker Prairie Road

The auto (cars/miscellaneous vehicles) and truck (3 axles or higher vehicles) count data is summarized in **Figures 2-8** through **2-13**. Of the six locations studied, the highest truck shares of 5.5 percent and 6.8 percent were observed along FM 1774 west of FM 1486 (in the westbound and eastbound directions, respectively). The lowest proportion of trucks (about 1.2 percent and 1.6 percent in the northbound and southbound directions, respectively) was observed along Wright Road north of Decker Prairie Road.

Figure 2-8 Truck Shares on 249 north of Zion Road

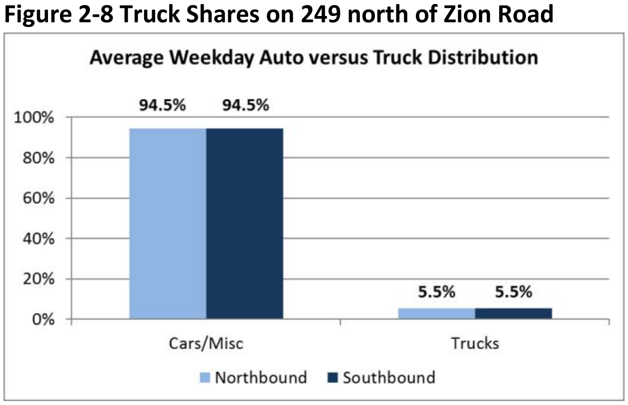


Figure 2-9 Truck Shares on 249 north of Decker Prairie Road

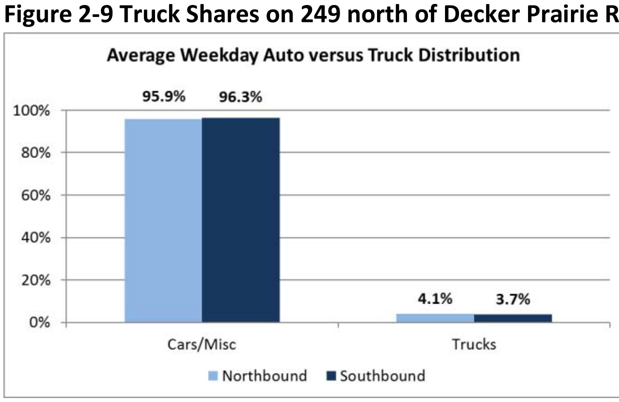


Figure 2-10 Truck Shares on SH 249 north of FM 2920

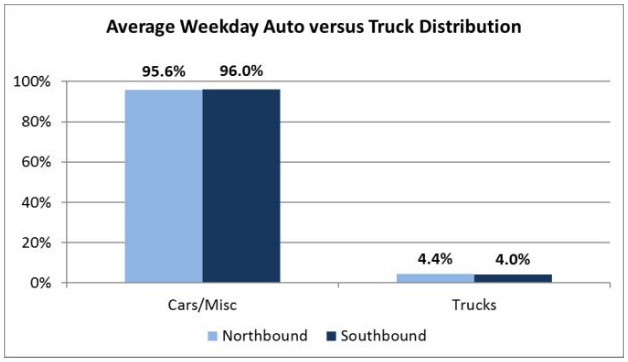


Figure 2-11 Truck Shares on FM 1774 west of FM 1486

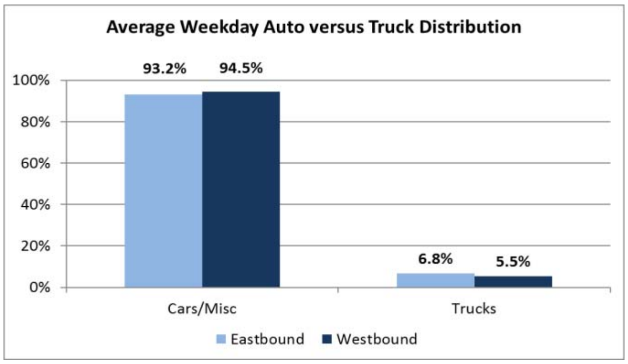


Figure 2-12 Truck Shares on FM 1488 east of FM 1774

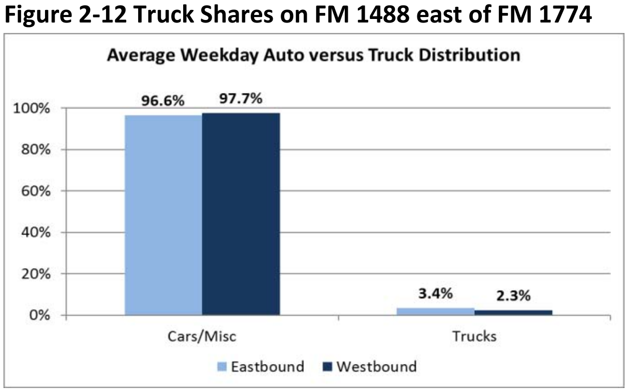
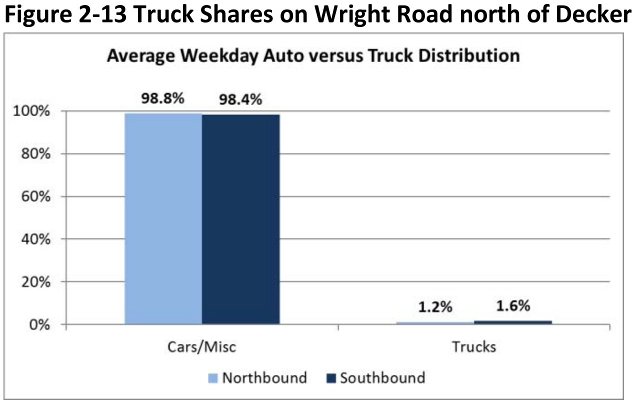


Figure 2-13 Truck Shares on Wright Road north of Decker Prairie Road



2.4 Existing Traffic and Toll Revenue Trends

This section summarizes recent transaction and toll revenue data for toll roads near the proposed MCTRA 249 Tollway.

2.4.1 Tomball Tollway Phase I Transactions and Revenue Trends

In April 2015, the Harris County Toll Road Authority (HCTRA) opened the first phase of the Tomball Tollway (Phase I) south of the proposed MCTRA 249 Tollway. This section contains summaries of transactions and toll revenue trends from the existing Tomball Tollway (Phase I) gantries. This six-lane tolled section of SH 249 extends approximately six miles from south of Northpointe Boulevard to south of Brown Road as shown in **Figure 2-14.** A schematic of the interchanges and toll gantry locations along the Tomball Tollway (Phase I) is shown in **Figure 2-15**. Phase II of the Tomball Tollway is currently under construction and will be open to traffic in late 2019. When these three projects are complete, they will form a continuous ten-mile toll route.

Figure 2-14 Location of Nearby Tollways

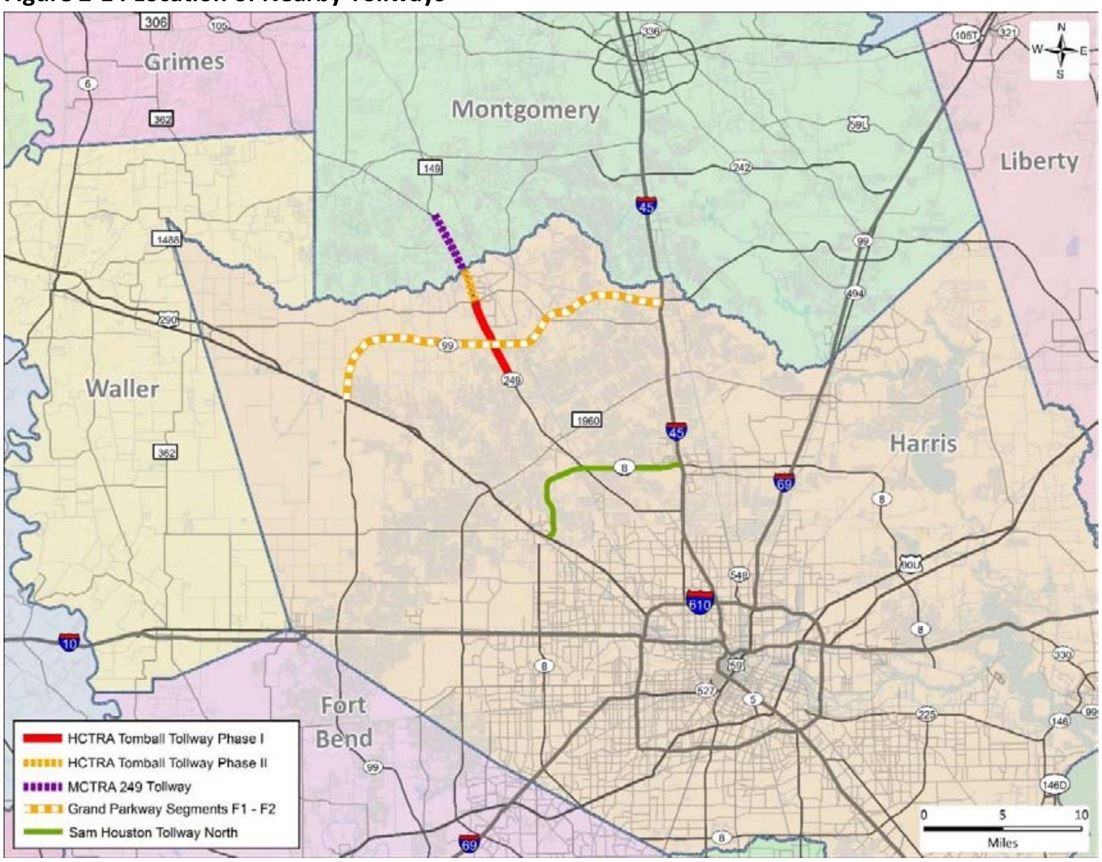
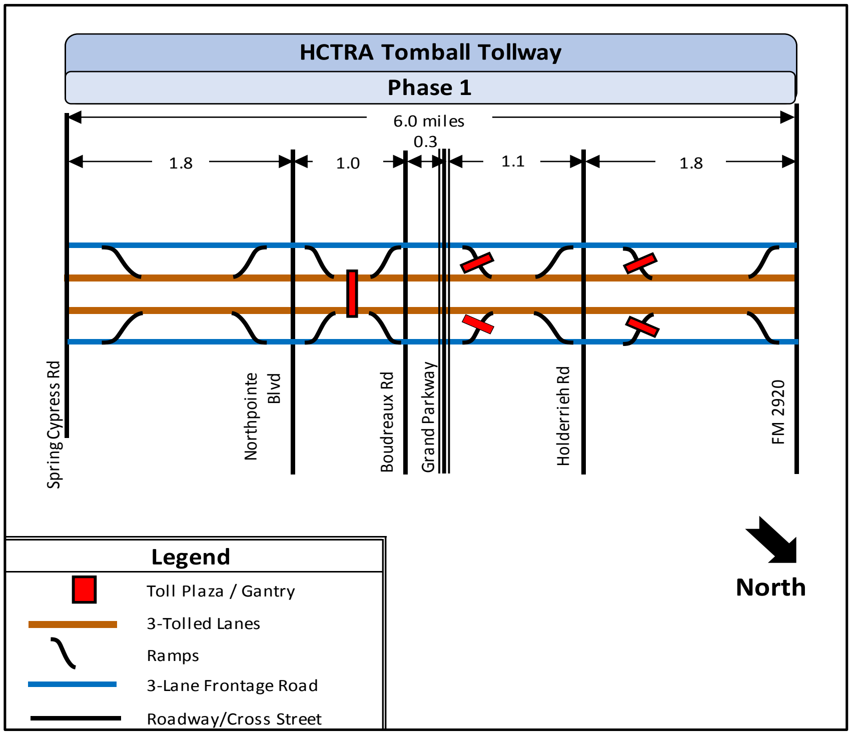
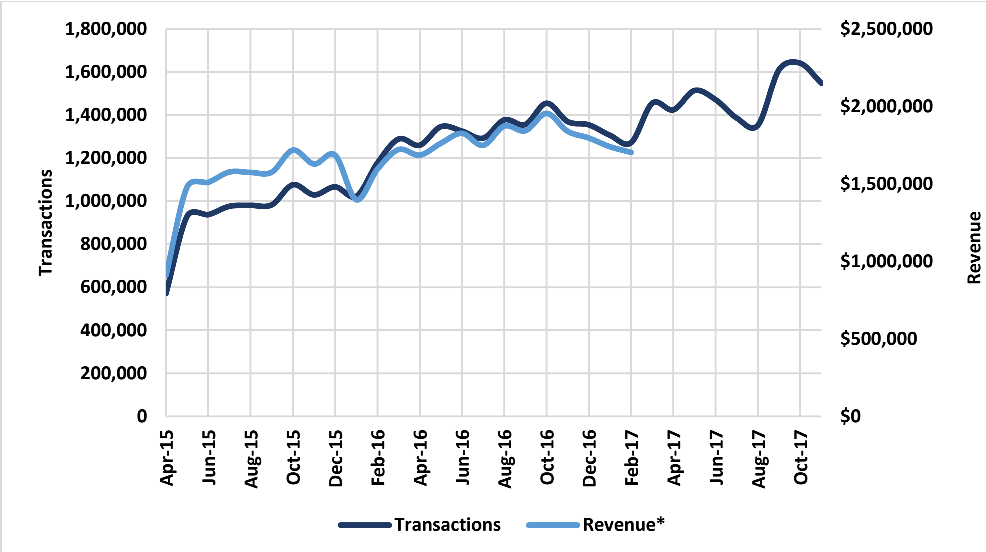


Figure 2-15 Tomball Tollway Phase I Configuration



Tomball Tollway Phase I, which consists of one main lane gantry and four ramp gantries, generated 15.6 million transactions and $21 million revenue in 2016 (unaudited transactions and revenue data received from HCTRA). As seen in **Figure 2-16**, the highest number of transactions during the latest 12-month period, over 1.6 million, occurred during the month of October 2017 while the lowest number of transactions occurred during February 2017. The main lane gantry accounts for approximately 91 percent of the total transactions along Tomball Tollway Phase I.

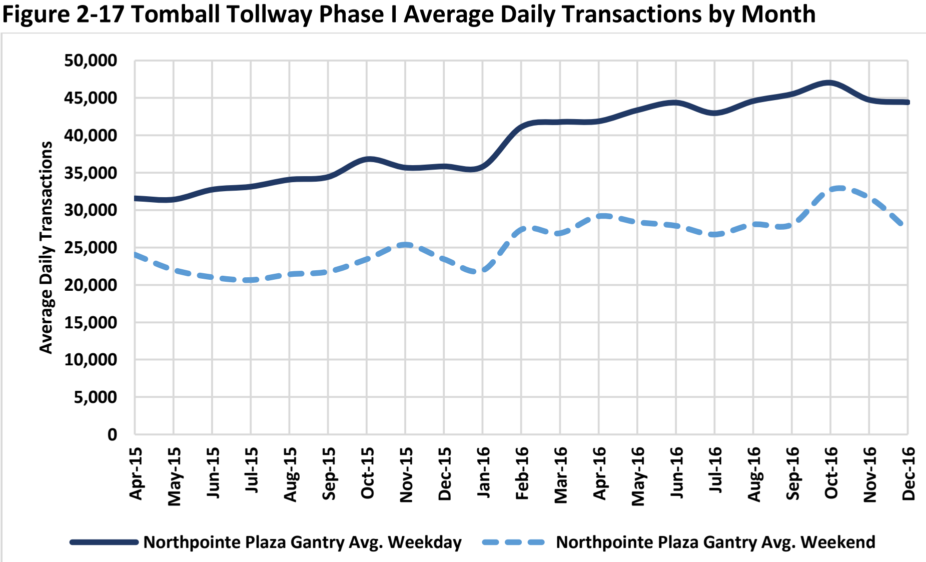
Figure 2-16 Tomball Tollway Phase I Monthly Transactions and Toll Revenue



*Transaction and revenue data received from HCTRA; *Revenue is unaudited*

Figure 2-17 shows the average daily transactions by month for the main lane gantry located north of Northpointe Boulevard. The average weekend transactions were approximately 65 percent of the average weekday transactions in 2016, which means that the average weekend transactions are lower than the weekday transactions by 35 percent.

Figure 2-17 Tomball Tollway Phase I Average Daily Transactions by Month

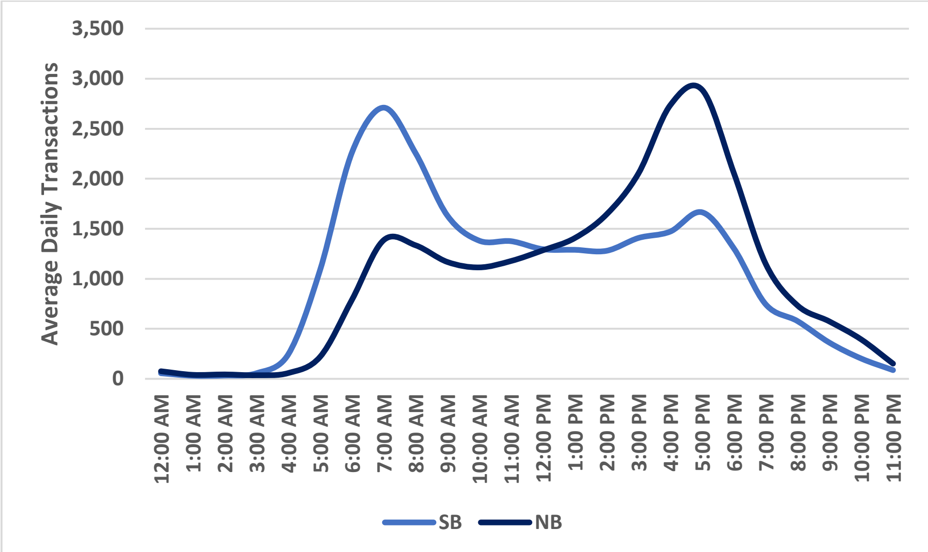


Transaction and revenue data received from HCTRA

2.4.2 Tomball Tollway Transactions by Time Period

Transactions along Tomball Tollway Phase I during the same time period for which the traffic data collection took place (May 2017) were summarized and used to calibrate the travel demand models. **Figure 2-18** shows the average weekday transactions for the Northpointe Plaza gantry by time period. The transactions display typical commuter pattern of traffic traveling towards Houston for work in the morning and returning home in the evening.

Figure 2-18 Transactions by Time-of-Day (Mainlane Gantry – North of Northpointe Boulevard)



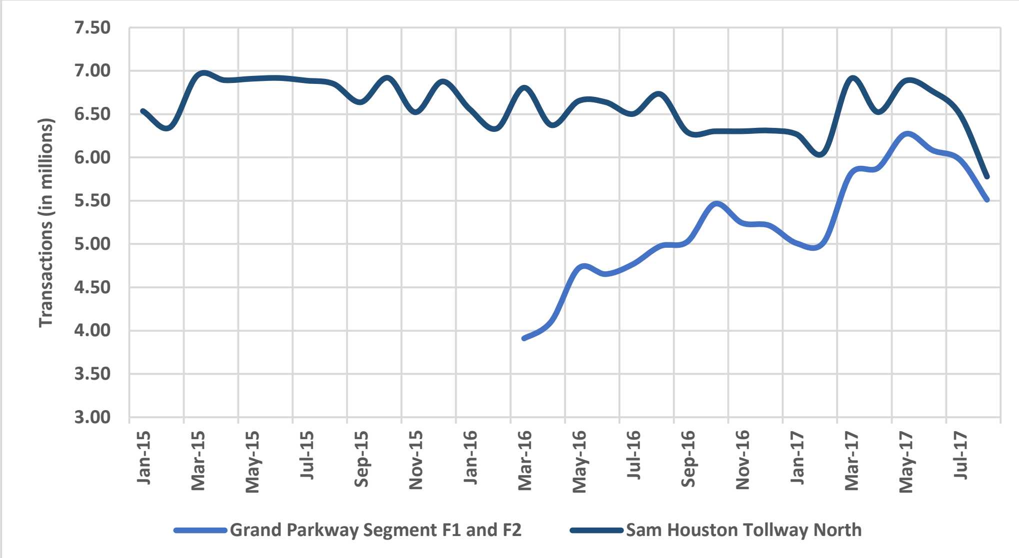
Transaction and revenue data received from HCTRA

2.4.3 Grand Parkway and Sam Houston Tollway Transaction Trends

Monthly transactions for Grand Parkway and Sam Houston Tollway segments between US 290 and I-45 are shown in **Figure 2-19**. Grand Parkway Segments F1 and F2, as seen in **Figure 2-14**, opened in February 2016. Segments F1 and F2 of Grand Parkway connect to Tomball Tollway on the west and east side, respectively. Grand Parkway has seen significant growth in traffic in recent months, growing eleven percent from August 2016 to August 2017.

Sam Houston Tollway North, the section between US 290 and I-45 as shown in **Figure 2-14**, includes direct connectors to SH 249. Transactions on Sam Houston Tollway North dropped at an annual rate of 4.2 percent between 2015 and 2016. The downward trend in transactions on the Sam Houston North section began in February 2016, which corresponds to the opening of Grand Parkway Segments F-1 and F-2. Another contributing factor to this decline was the opening of Grand Parkway Segment G in April 2016.

Figure 2-19 Monthly Transactions for Grand Parkway Segments F1 and F2 and Sam Houston Tollway North



Transaction and revenue data received from HCTRA

2.5 Speed and Delay Information

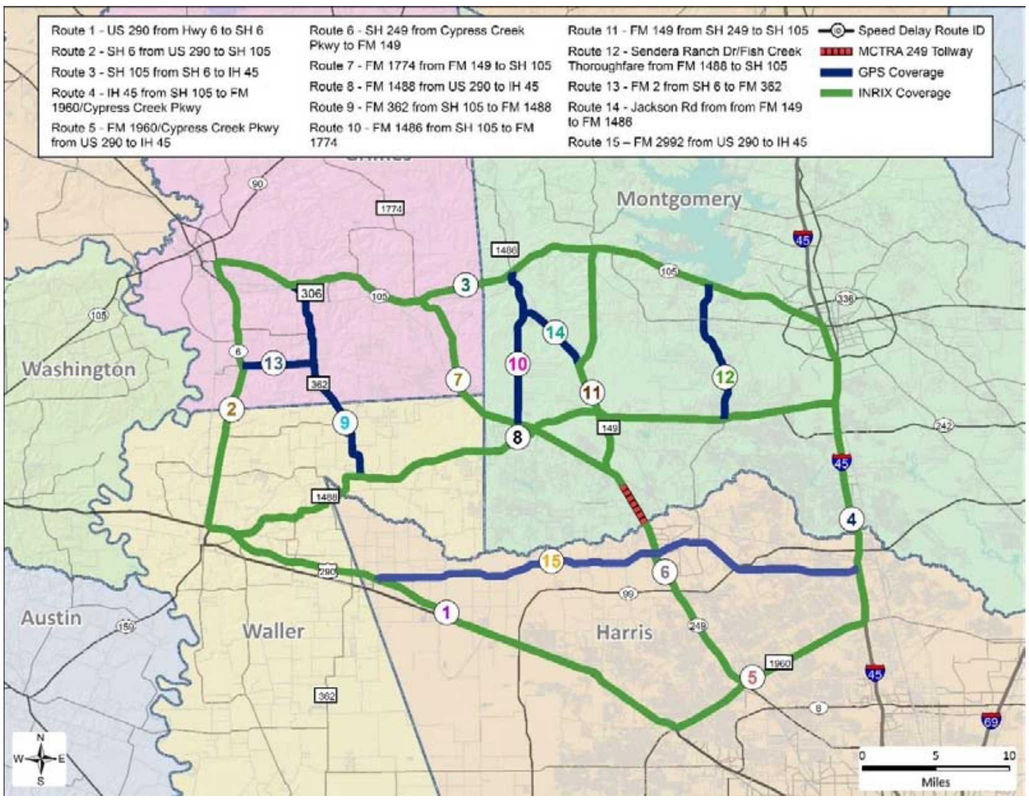
Speed and delay information was obtained from INRIX and also by conducting "speed runs" using a probe vehicle outfitted with a Global Positioning System (GPS) tracking device. There were 15 routes included in the speed and delay study. INRIX provided data for ten of the fifteen routes but was unavailable for the five remaining routes. In place of INRIX data, GPS-based "speed run" data was gathered on these routes. For the speed runs, the cumulative time and distance measurements were recorded on GPS units every one-tenth of a mile, and this data was used to calculate the average operating speeds along these routes. The speed and delay information was collected in September 2016 as part of the 2016 TxDOT SH 249 Study. The speed and delay data was collected to complement the traffic data collection efforts in order to identify situations where congested conditions may have affected the average hourly traffic demand. Additionally, it was used to identify instances where congestion may have artificially lowered the peak period hourly volumes below those observed in the off-peak periods.

Fifteen primary feeder and competing routes to the MCTRA 249 Tollway were identified within the study area. These routes are listed in **Table 2-5** and illustrated in **Figure 2-20**. Speed and delay data was obtained from INRIX for ten routes (Routes 1-8, 11 and 15), while GPS "speed run" data was obtained for five routes (Routes 9, 10, 12, 13 and 14).

Table 2-5 Speed and Delay Data Collection Routes

Speed and Delay Routes	Distance (miles)
Route 1: US 290 from SH 6 to FM 1960	31.5
Route 2: SH 6 from SH 105 to US 290	18.6
Route 3: SH 105 from SH 6 to IH 45	38.9
Route 4: IH 45 from SH 105 to FM 1960/Cypress Creek Parkway	20.6
Route 5: FM 1960/Cypress Creek Parkway from US 290 to IH 45	13.3
Route 6: 249 from FM 149 to Cypress Creek Parkway	17.0
Route 7: FM 1774 from SH 105 to FM 149	17.4
Route 8: FM 1488 from US 290 to IH 45	39.4
Route 9: FM 362 from SH 105 to FM 1488	14.7
Route 10: FM 1486 from SH 105 to FM 1488	10.6
Route 11: FM 149 from SH 105 to SH 249	15.7
Route 12: McCaleb Road/Fish Creek Thoroughfare/Sendera Ranch Drive from SH 105 to FM 1488	9.7
Route 13: FM 2 from SH 6 to FM 362	4.2
Route 14: Jackson Road from FM 1486 to FM 149	5.1
Route 15: FM 2920 from US 290 to IH 45	31.5

Figure 2-20 Routes where Speed and Delay Data was Collected



Figures 2-21 through **2-26** show the AM peak hour, the Midday, and the PM peak hour average travel speeds for freeways and arterials respectively along the fifteen routes as listed in **Table 2-5**.

During the AM peak period, the average travel speeds for the fifteen routes show that there were minor delays in the northwestern part of the study area, and speeds were generally higher than 50 mph. As seen in **Figure 2-21**, two major highways, I-45 and US 290, also maintained high speeds. The slowest route within the study area, as shown in **Figure 2-22**, was FM 1960, which is an at-grade arterial passing through densely developed urban areas with numerous traffic signals that cause the speeds to drop below 40 mph. The speeds on Tomball Tollway, as shown in **Figure 2-21**, varied between 40 and over 60 mph, while speeds on its frontage roads, shown in **Figure 2-22** were between 30 and 50 mph.

During the midday hour shown in **Figures 2-23** and **2-24**, the average travel speeds along most routes appear to be about the same as the morning peak hour.

The PM peak period average travel speeds are shown in **Figure 2-25** and **2-26**. Along most routes, the speeds appear to be about the same as the morning or the midday speeds. The speeds along US 290, as shown in **Figure 2-25**, are mostly above 60 mph during the evening. The observed speeds along I-45 drop to below 30 mph along the southern end segments of the corridor. The slowest speeds are again along FM 1960, as shown in **Figure 2-26**, with several sections degrading to speeds below 30 mph. The speeds along Tomball Tollway were observed to be between 30 and over 60 mph as shown in **Figure 2-25**. The frontage roads in the same area, as shown in **Figure 2-26,** showed speeds below 50 mph for most of the northbound direction.

Figure 2-21 Average Travel Speeds on Freeways – AM Peak Hour (2016)

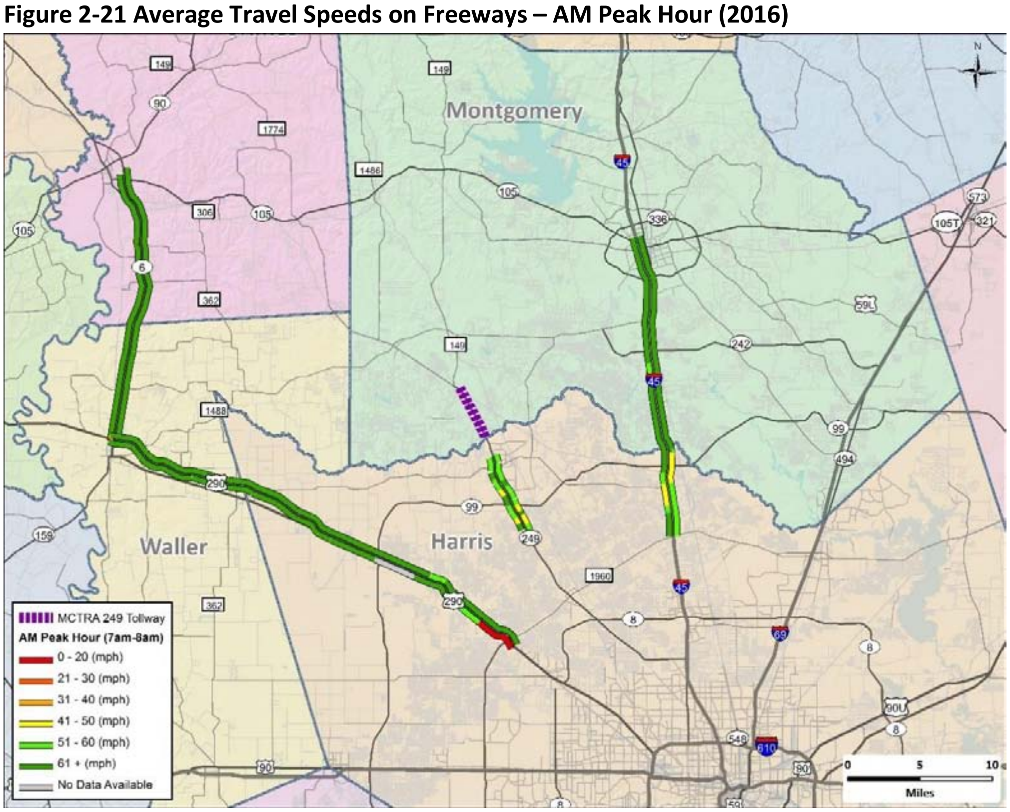


Figure 2-22 Average Travel Speeds on Arterials – AM Peak Hour (2016)

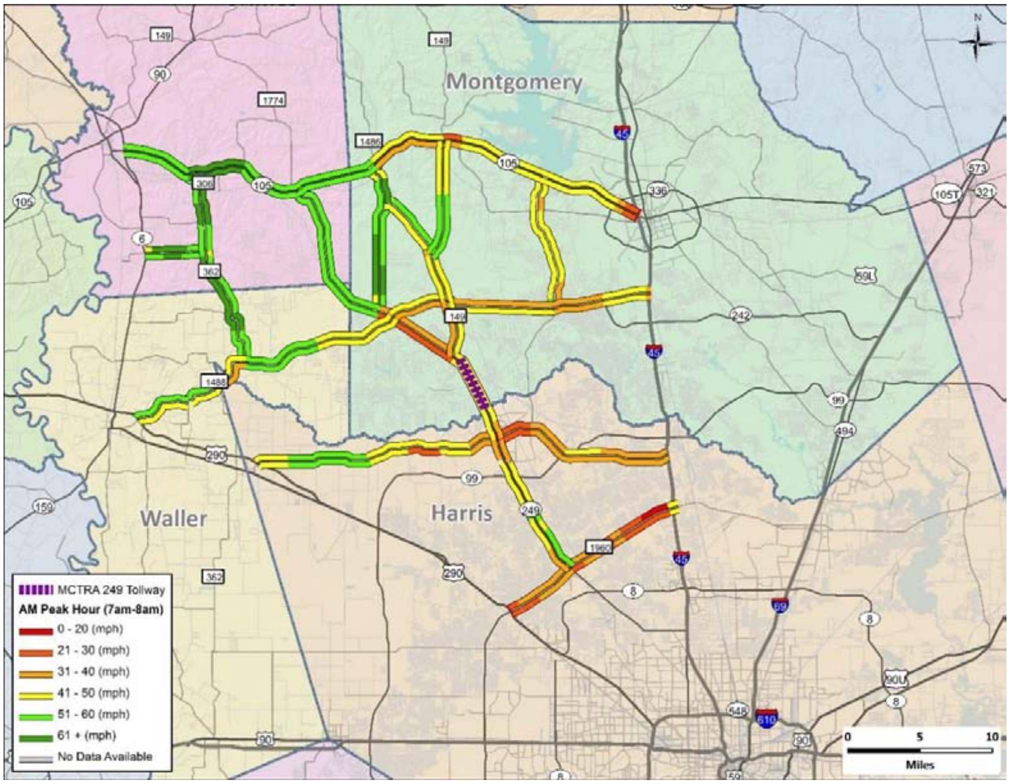


Figure 2-23 Average Travel Speeds on Freeways – Midday (2016)

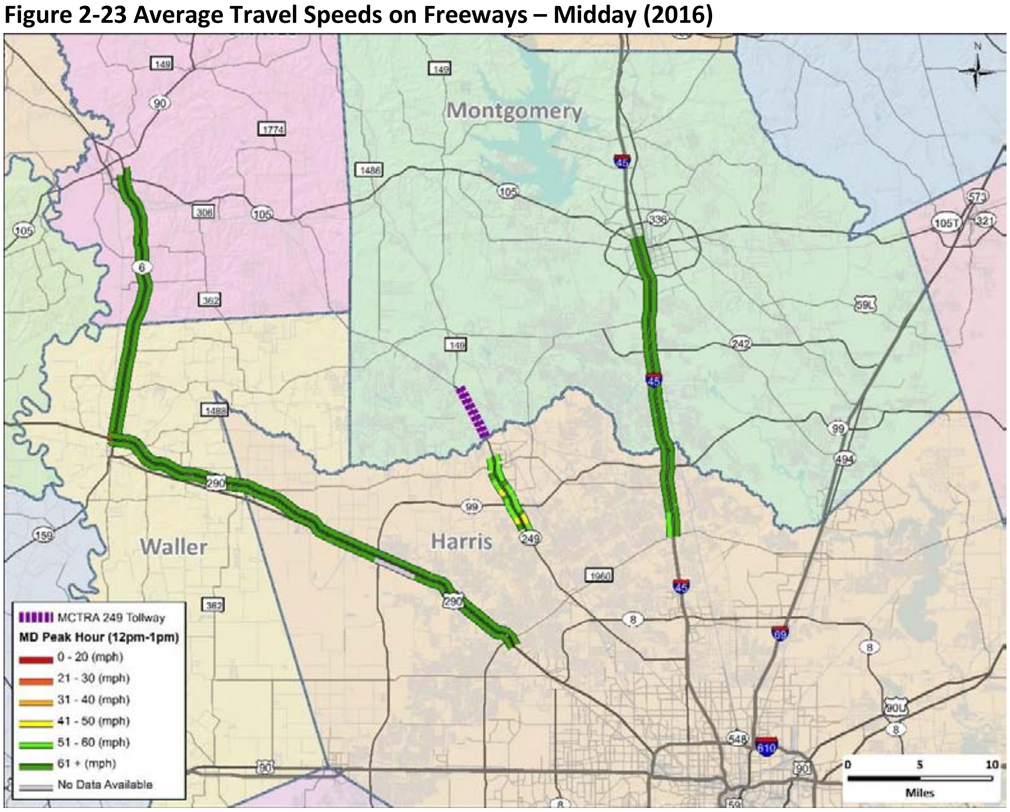


Figure 2-24 Average Travel Speeds on Arterials – Midday (2016)

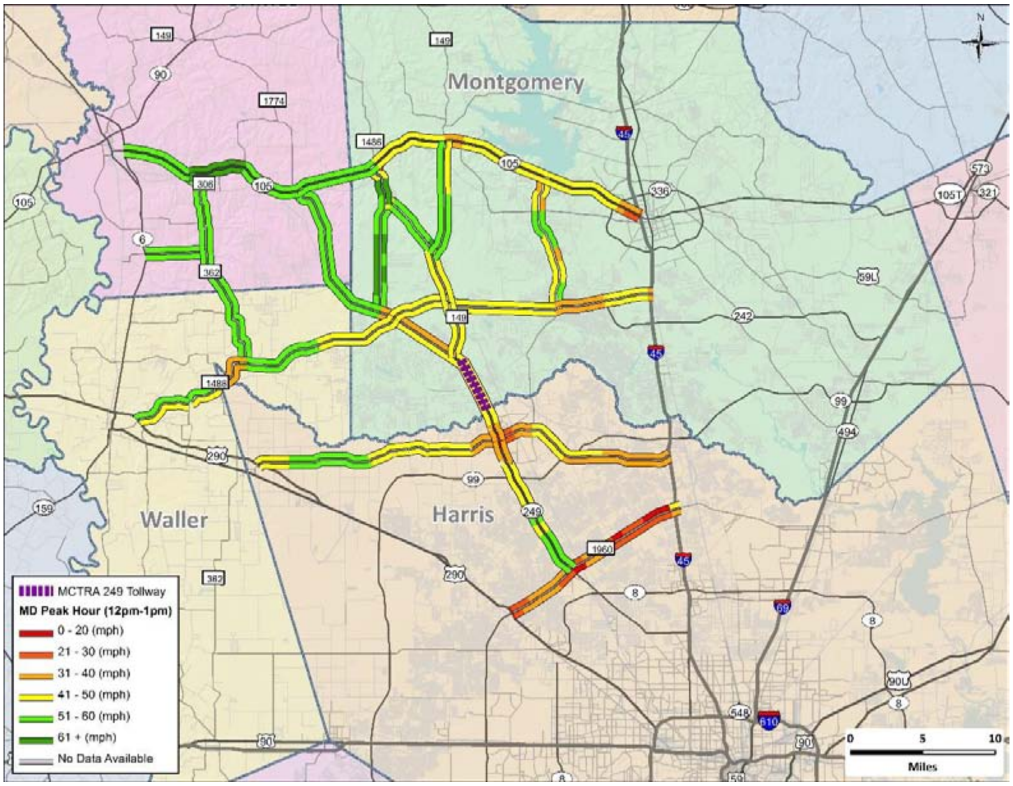


Figure 2-25 Average Travel Speeds on Freeways – PM Peak Hour (2016)

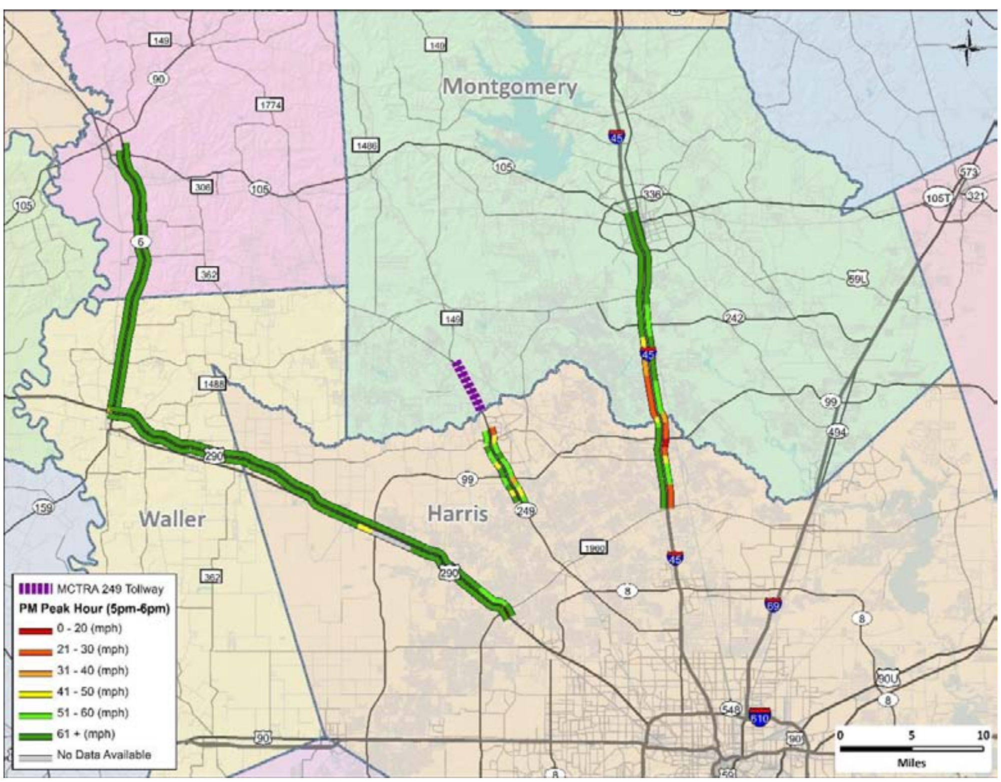
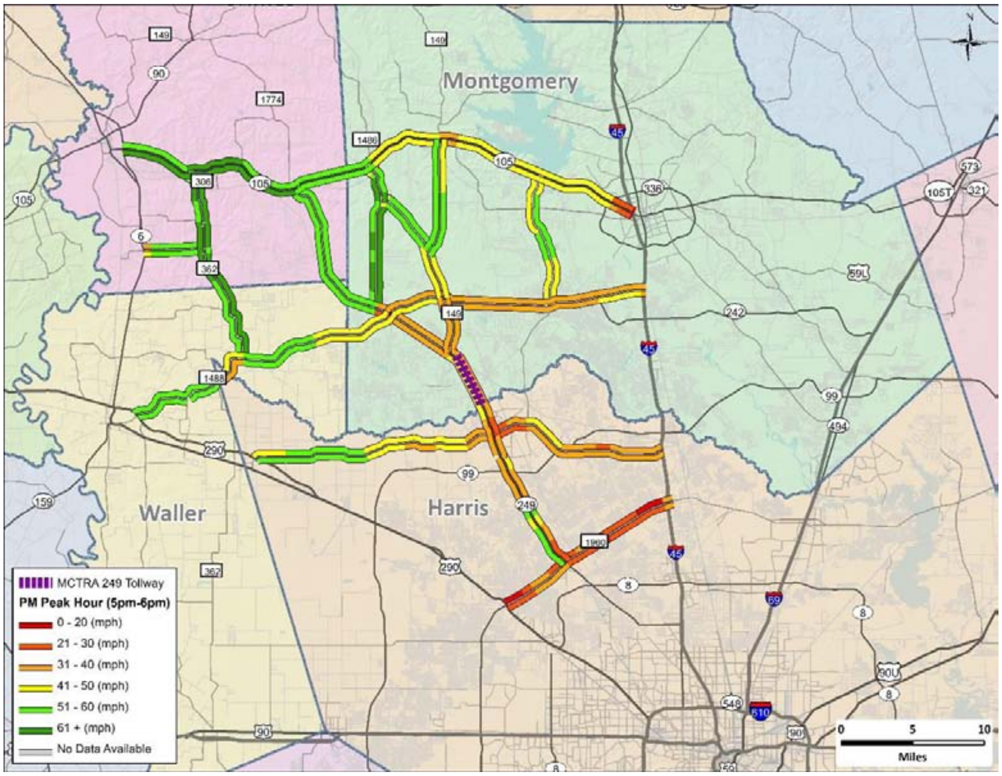


Figure 2-26 Average Travel Speeds on Arterials – PM Peak Hour (2016)



2.6 Origin and Destination Data

Travel pattern information was obtained from INRIX for Harris, Montgomery and all adjacent counties as shown in **Figure 2-27**. Montgomery County was divided into five sectors along major roads as shown in the figure. The data reflects the average travel patterns observed between September 2016 and May 2017. **Table 2-6** and **2-7** illustrate average weekday trip distributions by direction for traffic along the SH 249 frontage roads north of Zion Road.

As expected, the percentage of origin trips going through SH 249 frontage roads north of Zion Road in the northbound direction was similar to the destination percentage of those trips going southbound and vice versa. The highest percentage of trips going northbound originate in Harris County (96 percent) and end in southwest Montgomery County (77 percent). Similarly, the highest percentage of trips going southbound originate in southwest Montgomery County (78 percent) and end in Harris County (95 percent).

Figure 2-27 Origin-Destination Zones Locations

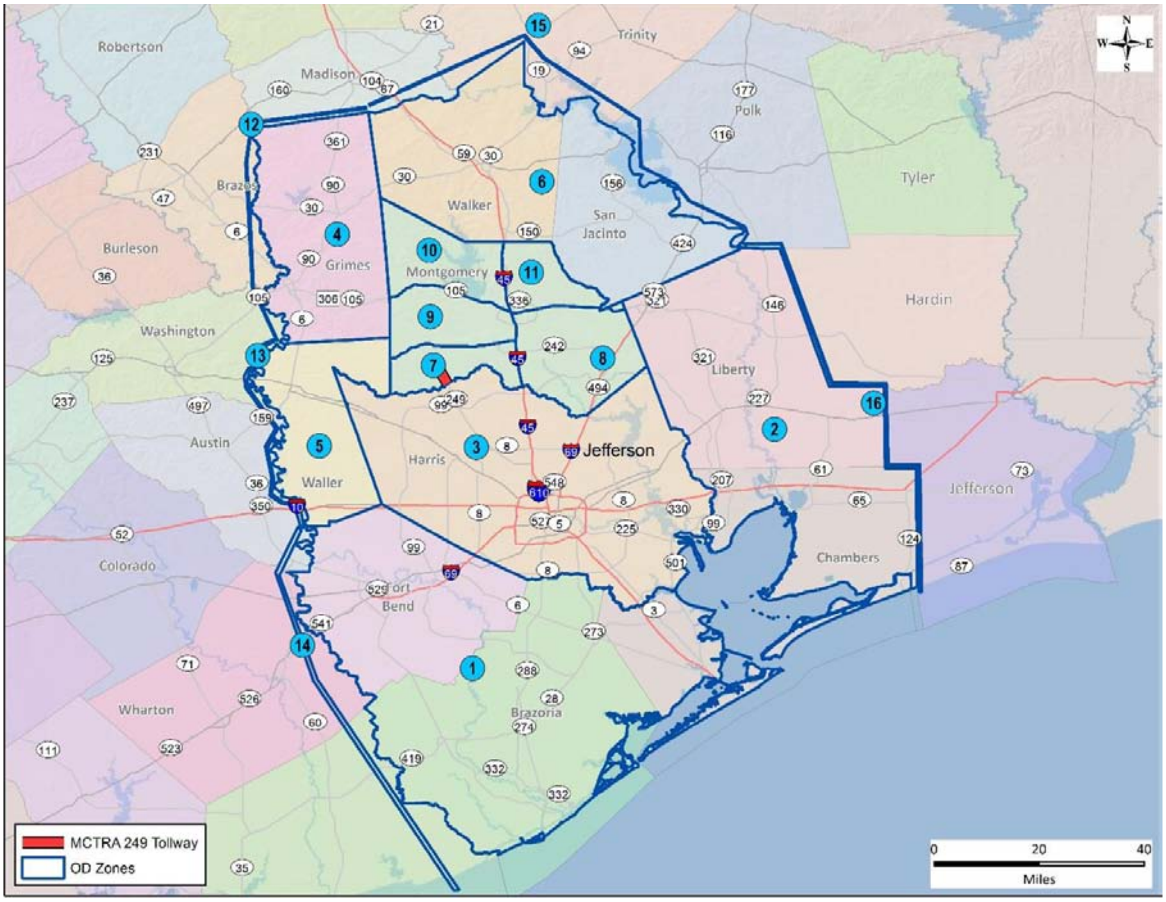


Table 2-6 Average Weekday Trip Distributions – Northbound

Location ID	County	% Origin	% Destination
1	Fort Bend, Brazoria and Galveston Counties	2%	0%
2	Liberty and Chambers County	0%	0%
3	Harris County	96%	1%
4	Grimes County	0%	1%
5	Waller County	0%	1%
6	Walker and San Jacinto Counties	0%	0%
7	Southwest Montgomery County	1%	77%
8	Southeast Montgomery County	0%	0%
9	Central West Montgomery County	0%	12%
10	Northwest Montgomery County	0%	4%
11	Northeast Montgomery County	0%	0%
12	External Grimes County	0%	2%
13	External Waller County	0%	0%
14	External Fort Bend County	0%	0%
15	External Walker County	0%	0%
16	External Liberty County	0%	0%

Table 2-7 Average Weekday Trip Distributions - Southbound

Location ID	County	% Origin	% Destination
1	Fort Bend, Brazoria and Galveston Counties	0%	2%
2	Liberty and Chambers County	0%	0%
3	Harris County	1%	95%
4	Grimes County	2%	0%
5	Waller County	1%	0%
6	Walker and San Jacinto Counties	0%	0%
7	Southwest Montgomery County	78%	2%
8	Southeast Montgomery County	0%	1%
9	Central West Montgomery County	12%	0%
10	Northwest Montgomery County	4%	0%
11	Northeast Montgomery County	0%	0%
12	External Grimes County	2%	0%
13	External Waller County	0%	0%
14	External Fort Bend County	0%	0%
15	External Walker County	0%	0%
16	External Liberty County	0%	0%

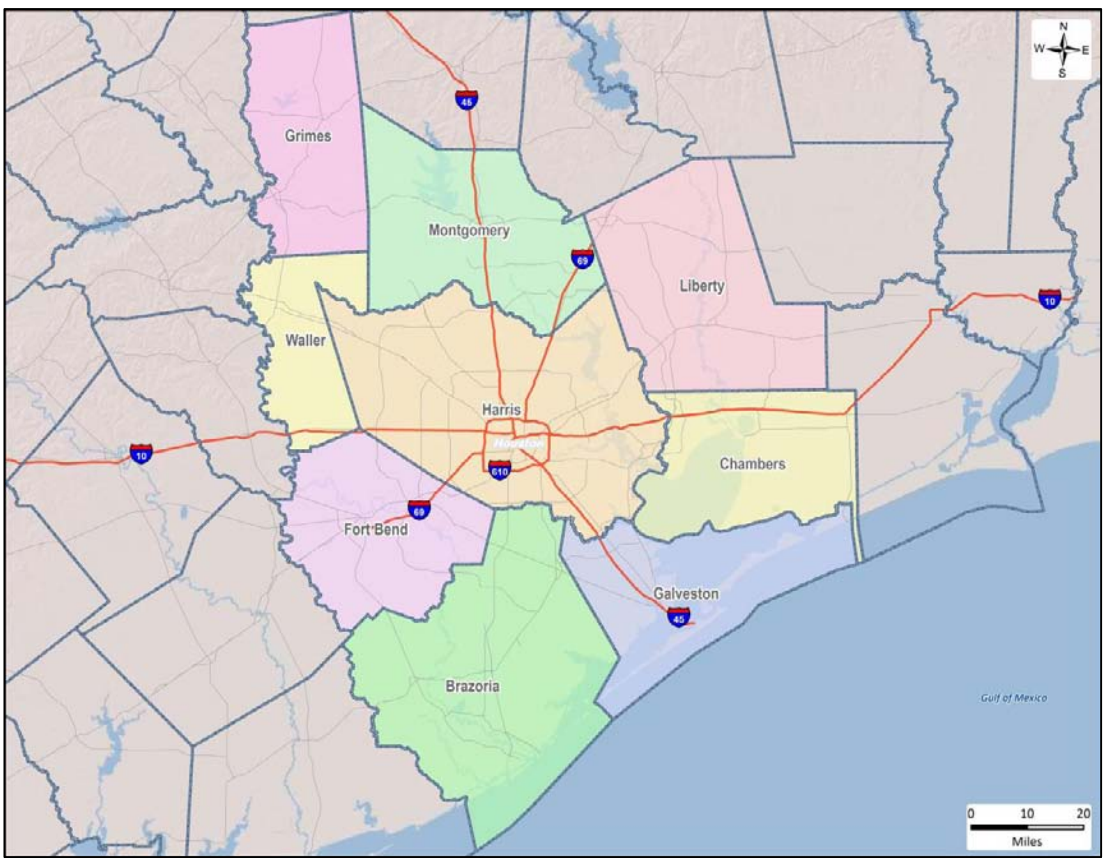
Chapter 3

Economic Growth Assessment

The socioeconomic data forecasts are a critical component of the future year travel demand model development. The estimated number of future year trips is calculated in the "trip generation" step of the travel demand model based on the TAZ-level socioeconomic data.

For the MCTRA 249 Tollway study, *Community Development Strategies (CDS)* produced independent socioeconomic forecasts for nine counties in the Houston region. This nine-county area is illustrated in **Figure 3-1**. CDS summarized its methodology and forecasts in a report completed in November 2017, which is included as **Appendix A** to this report. The Houston-Galveston Area Council (H-GAC) serves as the Metropolitan Planning Organization (MPO) for the greater Houston region. H-GAC produces the official planning forecasts and the official travel demand models for the Houston region. This chapter concludes with a comparison between CDS's independent forecasts and the official H-GAC forecasts.

Figure 3-1 Map of MCTRA 249 Tollway Regional Modeling Area



It should be noted that the H-GAC socioeconomic forecasts cover an eight-county region. The 249 corridor (including the MCTRA 249 Tollway project) begins in the south in Harris County, continues through Montgomery County, and ends in southern Grimes County. Harris and Montgomery Counties are part of the H-GAC forecasts, however Grimes County is not. CDS also included socioeconomic forecasts for Grimes County which was added to the H-GAC models by CDM Smith as part of the regional modeling effort for this study. This chapter includes socioeconomic information for all eight H-GAC counties as well as Grimes County.

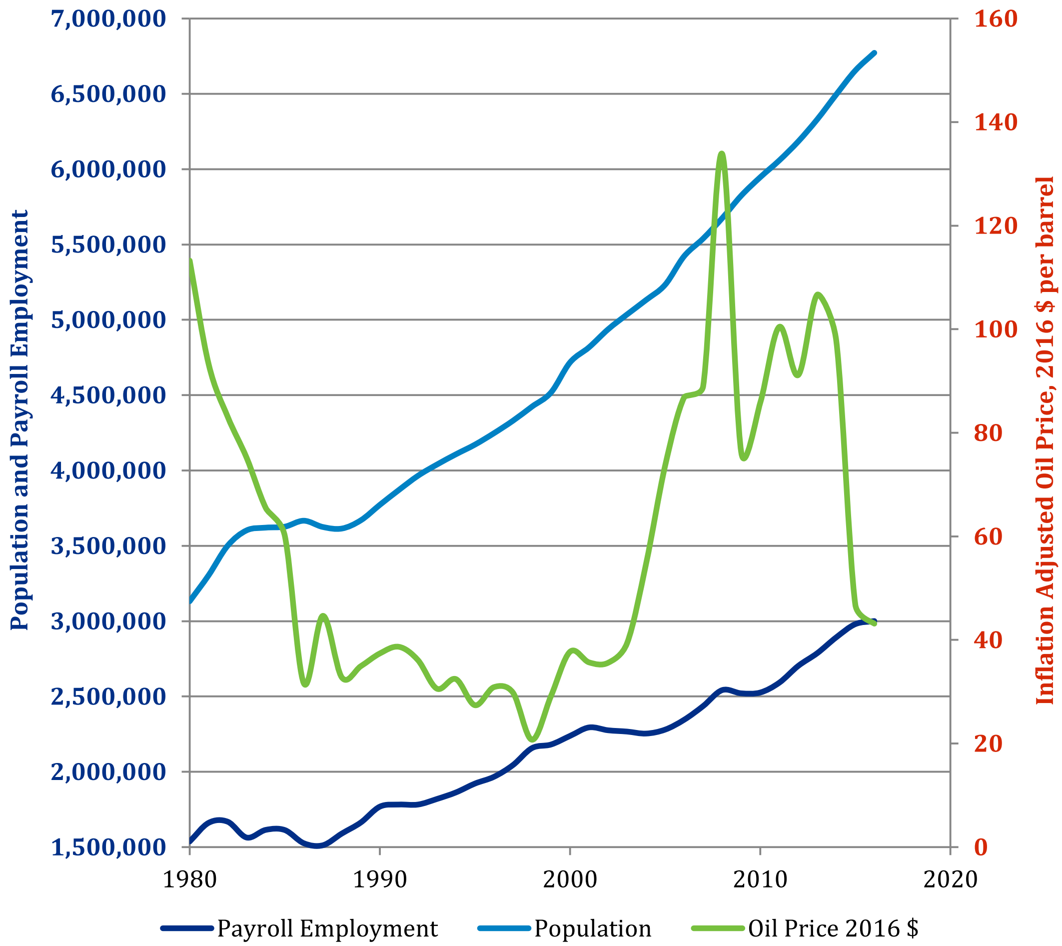
3.1 Houston Region Zoning and Development Patterns

The distribution and growth of population, households, and employment each have a significant impact on the traffic and revenue (T&R) potential of a toll facility. The forecasts of these socioeconomic measures are key inputs used to develop the travel demand model's trip tables. The City of Houston has never had real estate zoning regulations, and land use and development are governed only by codes that address how property can be subdivided. As such, Houston has had a low-density housing development pattern. This has also resulted in Houston's Central Business District (CBD) accounting for a relatively small proportion of regional employment, presently around six percent. A significant portion of the region's employment is scattered amongst a number of "edge cities" (such as the Texas Medical Center, Energy Corridor, Greenway Plaza, Sugar Land, Westchase, Greenspoint and The Woodlands), while the region's heavy industries are clustered around the Houston Ship Channel. The low-density housing and dispersed employment patterns have meant that the region is largely dependent upon the regional highway system for mobility and access. Therefore, having thoroughly reviewed and researched socioeconomic forecasts are critical in developing T&R estimates for the MCTRA 249 Tollway project.

3.2 Houston Economy and Oil Prices

Prior to the 1980s, the Houston economy was heavily dependent on the oil and gas industry (and thus the prices of crude oil and natural gas). Since the oil price bust in the first half of the 1980s, the Houston regional economy is now less dependent on the oil and gas industry. **Figure 3-2** illustrates the population and employment in the Houston region compared to the price of crude oil (adjusted for inflation). While some effect of energy prices is apparent, the effect has not been a significant factor in the long-term growth of the regional economy. This indicates that the Houston region will continue to have population and employment growth for the foreseeable future, regardless of oil and gas prices.

Figure 3-2 Houston Nonfarm Payroll Employment, Population and Oil Prices[1]



3.3 Historical Socioeconomic Trends

This section provides a review of historical socioeconomic indicators in the nine-county region. The historical socioeconomic data shown in this chapter are mainly gathered from federal data sources (such as the U.S. Census Bureau). Reviews of four key socioeconomic variables listed below are covered in the subsections that follow:

1. Population
2. Households
3. Employment
4. Household Income

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[1] *Source: Texas Workforce Commission, for jobs and U.S. Energy Information Agency, adjusted by Macro Trends: http://www.macrotrends.net/1369/crude-oil-price-history-chart*

3.3.1 Historical Population Trends

Table 3-1 shows the historical population trends for the nine counties within the greater Houston region. Since 1970, the total population of the nine-county region has more than tripled, increasing from 2.2 million to nearly 6.8 million in 2016. This represents an increase of 4.6 million and translates to a compounded annual growth rate (CAGR) of 2.5 percent over the 46-year period. This compares to a CAGR of 2.0 percent for Texas, and 1.0 percent for the U.S. as a whole for the same time period. Thus, the Houston region population has been increasing faster than either the population of the U.S. or that of the state of Texas. Population growth is driven by two factors:

1. Natural increase (births minus deaths)
2. Net Migration (immigration minus emigration). Migration can occur domestically (within the U.S.), or internationally (from or to other counties).

From 2010 to 2015, the natural increase in population for the nine-county region accounted for 43.5 percent of the net population change, while net migration accounted for 56.5 percent of the population increase. Of the net migration percentage, domestic immigration accounted for 22.8 percent of the growth, and international immigration accounted for 33.7 percent of the growth. This shows that more than half of the population increase in the Houston area is due to in migration (versus natural increase), which indicates that the region has a strong and growing economy.

Within this 46-year period, the annual population growth rates for the region have varied. In the earliest period (1970-1980), the CAGR was 3.6 percent, which was the highest decennial growth rate and was due to the (relatively) low population at that time. In the 1980s (1980-1990), the population growth rate slowed sharply, due to a large recession in the petroleum industry which significantly impacted the regional economy of Houston. Since this recession, the Houston economy has continued to diversify, and strong economic growth has resumed in the region. Between 1990 and 2016, the regional population has consistently grown at 2.3 percent annually.

Montgomery County is among the fastest growing counties in the Houston region. Between 1970 and 2016, the population has increased at an average annual rate of 5.4 percent. The population has increased from just below 50,000 persons in 1970 to more than 556,000 in 2016: a more than eleven-fold increase over 46 years. While population growth has slowed in recent years, the growth rate in Montgomery County is still high relative to the overall region. In the most recent period, 2010-2016, Montgomery County population increased by 100,000 (from 456,000 to 556,000), equivalent to an average annual growth rate of 3.4 percent.

Harris County, which includes the City of Houston, is the most populous county in the region. Between 1970 and 2016, the population increased from 1.7 million to 4.6 million, with an overall CAGR of 2.1 percent. Population in the county has consistently increased by 1.6 to 2.1 percent per year between 1980 to 2016, but at a slower pace than Houston's "collar" counties. Consequently, Harris County's share of the total nine-county population has declined from 79 percent in 1970 to 68 percent in 2016.

Grimes County is still relatively rural and slow-growing. Between 1970 and 2016, the population increased from approximately 12,000 to 28,000. Compared with the rest of the Houston region, the historical population has had a relatively low CAGR of 1.9 percent. Average annual population growth was highest in the 1980-1990 period (3.1 percent) but has steadily slowed since then. In the most-recent (2010-2016) period, the county only added around 1,000 new residents, which is a CAGR of 0.6 percent.

Table 3-1 Historical Population Growth by County (in thousands)

County	1970	CAGR	1980	CAGR	1990	CAGR	2000	CAGR	2010	CAGR	2016	1970-2016 CAGR
Brazoria	108	4.6%	170	1.2%	192	2.3%	242	2.6%	313	2.1%	354	2.6%
Chambers	12	4.7%	19	0.5%	20	2.7%	26	3.0%	35	2.3%	40	2.7%
Fort Bend	52	9.7%	131	5.6%	225	4.6%	354	5.2%	585	4.0%	741	5.9%
Galveston	170	1.4%	196	1.0%	217	1.4%	250	1.5%	291	2.1%	329	1.4%
Grimes	12	1.6%	14	3.1%	19	2.4%	24	1.2%	27	0.6%	28	1.9%
Harris	1,742	3.3%	2,410	1.6%	2,818	1.9%	3,401	1.9%	4,092	1.9%	4,590	2.1%
Liberty	33	3.6%	47	1.2%	53	2.8%	70	0.8%	76	1.3%	82	2.0%
Montgomery	49	10.0%	127	3.7%	182	4.9%	294	4.5%	456	3.4%	556	5.4%
Waller	14	3.6%	20	1.4%	23	3.7%	33	2.7%	43	2.5%	50	2.8%
9-County Region	**2,192**	**3.6%**	**3,134**	**1.8%**	**3,749**	**2.3%**	**4,694**	**2.3%**	**5,918**	**2.3%**	**6,770**	**2.5%**

Source: US Census Bureau

3.3.2 Historical Household Growth

The number of households is a socioeconomic measure that is closely correlated to population. The major difference is that over the past several decades, the average household size has been gradually decreasing. This has meant that the number of households have been growing at a slightly faster pace than population. Households are also the preferred method for estimating travel demand in the trip generation step of travel demand model since the number of vehicle trips is more strongly correlated with the number of household units, rather than purely the number of persons.

Table 3-2 shows the 25-year trend in housing unit growth in the nine-county region. Since 1990, the number of housing units in the nine-county region has grown by 1.8 percent per year. This compares to a CAGR of 1.3 percent for population over the same time period.

Montgomery County, where the MCTRA 249 Tollway project is located, had among the highest growth rates in households (in the Houston region) over the past 25 years, at 3.9 percent per year. However, the largest absolute growth remained within Harris County, where the number of households increased by nearly a half-million units between 1990 and 2015. This equates to a CAGR of 1.4 percent. Grimes County has the fewest number of households among the nine counties in the study area. It increased from approximately 8,000 households in 1990 to 11,000 households in 2015, which translates to a CAGR of 1.3 percent.

Table 3-2 Historical Housing Units by County (in thousands)

County	1990	CAGR	2000	CAGR	2010	CAGR	2015	1990-2015 CAGR
Brazoria	75	2.0%	91	5.3%	118	1.2%	125	2.1%
Chambers	8	2.3%	10	5.4%	13	1.5%	14	2.3%
Fort Bend	77	4.4%	118	10.8%	197	2.0%	217	4.2%
Galveston	99	1.2%	112	3.3%	132	0.9%	138	1.3%
Grimes	8	2.3%	10	1.9%	11	0.0%	11	1.3%
Harris	1,174	1.1%	1,304	4.2%	1,599	0.8%	1,660	1.4%
Liberty	22	1.7%	26	2.2%	29	0.0%	29	1.1%
Montgomery	74	4.4%	114	9.3%	178	1.4%	191	3.9%
Waller	9	2.9%	12	5.9%	16	0.0%	16	2.3%
Nine-County Region	**1,546**	**1.5%**	**1,797**	**5.0%**	**2,293**	**0.9%**	**2,401**	**1.8%**

Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates, 2015 Version

3.3.3 Historical Employment Trends

Table 3-3 shows historical employment trends in the nine-county region between 1990 and 2015. The total employment of the nine-county region increased by approximately 1.2 million jobs between 1990 and 2015. This equates to a long-term growth rate of 1.9 percent per year. The highest growth rate period (CAGR of 2.6 percent) occurred in the most recent five-year period (between 2010 and 2015).

Harris County has the highest share of employment with 69 percent of the jobs in the region in year 2015. However, Montgomery County has had the highest annual growth rate in employment (along with Fort Bend County) over the 1990-2015 period with a CAGR of 4.2 percent. Grimes County has the fewest jobs of any county in the study area. It had approximately 7,000 jobs in 1990, increasing to 11,000 jobs in 2015. Today, it remains a largely rural county.

Table 3-3 Historical Total Employment Growth by County (in thousands)

County	1990	CAGR	1995	CAGR	2000	CAGR	2005	CAGR	2010	CAGR	2015	1990-2015 CAGR
Brazoria	94	0.8%	98	3.1%	114	2.0%	126	2.4%	142	2.3%	159	2.1%
Chambers	9	2.1%	10	5.4%	13	0.0%	13	2.9%	15	2.5%	17	2.6%
Fort Bend	118	4.6%	148	3.9%	179	4.5%	223	4.3%	275	4.3%	340	4.3%
Galveston	105	2.2%	117	0.8%	122	1.3%	130	0.6%	134	2.3%	150	1.4%
Grimes	7	2.7%	8	2.4%	9	2.1%	10	0.0%	10	1.9%	11	1.8%
Harris	1,472	1.3%	1,571	1.0%	1,653	0.8%	1,720	1.9%	1,893	2.3%	2,124	1.5%
Liberty	22	2.6%	25	2.3%	28	0.7%	29	-1.4%	27	1.4%	29	1.1%
Montgomery	89	4.5%	111	5.8%	147	4.1%	180	2.8%	207	3.5%	246	4.2%
Waller	10	1.9%	11	6.4%	15	0.0%	15	3.7%	18	3.1%	21	3.0%
Nine-County Region	**1,926**	**1.7%**	**2,099**	**1.7%**	**2,280**	**1.4%**	**2,446**	**2.2%**	**2,721**	**2.6%**	**3,097**	**1.9%**

Source: U.S. Bureau of Labor Statistics

3.3.4 Historical Personal Income Trends

Drivers' willingness to pay tolls (i.e., their value-of-time or VOT) is sensitive to disposable household income levels (among other factors). **Table 3-4** shows the historical per capita personal income in the nine-county study area between 1990 and 2016**.** Montgomery County per capita personal income is the highest among all the counties in the region. The regionwide income grew in the range of 3.6 percent to 4.6 percent between 1990 and 2016.

Table 3-4 Historical Per-Capita Personal Income by County

County	1990	CAGR	1995	CAGR	2000	CAGR	2005	CAGR	2010	CAGR	2015	CAGR	2016	1990-2016 CAGR
Brazoria	$17,295	3.3%	$20,329	5.6%	$26,754	2.5%	$30,323	3.8%	$36,574	4.3%	$45,242	-3.1%	$43,842	3.6%
Chambers	$15,383	5.4%	$19,972	6.2%	$27,015	3.6%	$32,198	3.9%	$38,931	5.8%	$51,551	-3.1%	$49,970	4.6%
Fort Bend	$19,810	4.4%	$24,605	6.3%	$33,332	4.0%	$40,642	2.6%	$46,288	3.9%	$55,995	-3.6%	$54,005	3.9%
Galveston	$18,021	4.6%	$22,606	5.4%	$29,337	2.2%	$32,656	4.3%	$40,228	3.9%	$48,703	-2.3%	$47,605	3.8%
Grimes	$12,568	3.6%	$14,975	3.6%	$17,832	4.4%	$22,129	5.9%	$29,519	4.1%	$36,118	-1.2%	$35,677	4.1%
Harris	$20,718	3.7%	$24,863	6.8%	$34,478	2.8%	$39,515	2.7%	$45,223	3.7%	$54,347	-3.5%	$52,452	3.6%
Liberty	$13,886	4.1%	$16,983	4.1%	$20,798	3.9%	$25,221	2.1%	$28,045	4.7%	$35,279	-1.8%	$34,631	3.6%
Montgomery	$17,647	6.0%	$23,604	6.7%	$32,669	4.6%	$40,903	3.5%	$48,571	4.4%	$60,232	-5.8%	$56,730	4.6%
Waller	$13,898	3.6%	$16,600	3.7%	$19,925	6.0%	$26,704	3.4%	$31,616	2.8%	$36,277	-4.6%	$34,602	3.6%

Source: US Bureau of Economic Analysis; All dollar estimates are in current dollars (not adjusted for inflation)
Last updated: November 16, 2017-- new estimates for 2016; revised estimates for 2010-2015.

3.4 CDS Forecasts

CDS was contracted by CDM Smith to produce independent "market-based" socioeconomic forecasts for the nine-county Houston region. The forecasts were produced at five-year intervals between the years 2015 and 2040. CDS summarized its methodology and forecasts in a report dated November 2017, which is included as **Appendix A** to this report. This section presents population, household and employment forecasts developed by CDS and contains a brief description of their forecasting methodology. These CDS forecasts build on prior Houston-region forecasts that they produced for CDM Smith in 2011, 2014 and 2016 (for other projects in the Houston metropolitan area).

MPOs typically produce the official socioeconomic forecasts for a region. The forecasts may be based on planned projects being constructed or planning policies being implemented. By contrast, CDS forecasts are "market-based" and rely on existing economic and real estate factors that affect where future housing and employment development will likely be located. The CDS forecast model relies on two primary factors:

1. The presence of vacant developable land (and conversely, the lack of it in the existing developed areas within the central core)
2. Qualitative factors and market forces which tend to favor outlying locations for many types of new development.

CDS has also assumed that, in the short-term, growth of Houston regional employment will be negatively affected by low energy prices. Houston is also not expected to have the high level of population and employment growth that it has seen over the past fifty years. As the region matures and attractive parcels are developed, growth rates will decrease to more sustainable levels. However, in the long term, the Houston economy will continue to have strong growth. The Houston economy is now more diversified than it was before 1980 and is much less dependent on the energy industry. CDS also expects that the Houston region will continue to be a low-cost, business-friendly, growth-oriented community and will remain attractive to new business start-ups and corporate relocations/expansions.

3.4.1 Forecasts by County

This section presents CDS's forecasts by county. **Tables 3-5, 3-6 and 3-7** show the forecasts for population, households and employment, respectively. The overall 249 project corridor (including the MCTRA 249 Tollway) stretches across three counties: Harris, Montgomery and Grimes. The future growth in these three counties will have the most significant impact on MCTRA 249 Tollway T&R.

Population

Table 3-5 shows population forecasts for the nine-county Houston region developed by CDS. To determine the population control totals by county, CDS reviewed seven independent forecasts of population. They determined that "Regional and County-Level Forecasts" from Institute for Regional Forecasting at the University of Houston would be used as population control totals. These forecasts include the following anticipated population growth in the three counties through which the 249 corridor traverses:

- **Harris County:** In 2015, Harris County accounted for 68 percent of the population of the nine-county region. As the most populated county in the region, Harris County will have the largest absolute population increase in each of the five-year periods between 2015 and 2040. However, due to the diminishing amount of developable land within Harris County, the CAGR in population is forecast to steadily decline from 1.2 percent in the 2020-2025 period to 0.8 percent in the 2035-2040 period.

- **Montgomery County:** CDS forecasts that population growth in Montgomery County will accelerate over the next fifteen years, once the 249 route is completed and scarcity of developable land within Harris County pushes development outward towards Montgomery County. In the 2015-2020 period, the population is expected to increase 2.2 percent per year. This rate will peak at 3.8 percent per year in the 2025-2030 period and will decrease slightly in the latter periods to 3.2 percent per year. In each subsequent five-year period, the absolute population increase will become continually larger: in the 2015-2020 period the population is projected to increase 60,000, and by the 2035-2040 period population is forecast to increase by 166,000.

- **Grimes County:** Located county in the northwest corner of the region, Grimes County is primarily a rural county, and has been growing slowly over the past ten years. CDS expects the modest population growth to continue through 2025. However, growth is expected to accelerate somewhat after 2025, partly because 249 corridor is completed in the county, and some of the development is expected to occur along this route.

Households

Table 3-6 shows household forecasts for the nine-county Houston region developed by CDS. The number of households were estimated from the population forecasts. CDS used historical trends in the ratio of jobs to households, in combination with historical trends in average household size. The average household size varies by county, and is estimated to vary somewhat over time within each county. However, overall, the household growth trends are very similar to the population growth trends at the county level.

Employment

Table 3-7 shows employment forecasts for the nine-county Houston region developed by CDS. Regionwide, the number of jobs is expected to increase by 51 percent, from approximately 2.9 million in 2015 to 4.4 million in 2040. In the 2010-2015 period, employment increased at a rapid 3.1 percent CAGR following the 2008 national recession. That growth is expected to slow to a 1.4 percent CAGR in the 2015-2020 period. The job growth is then expected to rise to a 1.9 percent CAGR in the 2020-2025 period, and trend lower thereafter. Employment growth in the three counties through which the 249 corridor traverses is projected as follows:

- **Harris County:** The population forecasts developed by CDS show progressively more growth occurring outside of Harris County. However, the employment forecasts expect the majority of all regional employment to remain concentrated within Harris County. In 2015, Harris County comprised 79 percent of the regional jobs, and by 2040 the share is projected to decline modestly to 72 percent. Employment is forecast to increase from 2.0 million jobs in 2010 to 3.1 million jobs in 2040, a 36 percent increase (compared to a 107 percent increase for the remaining eight counties).

- **Montgomery County:** CDS forecasts that employment in Montgomery County will increase from 165,000 to 362,000 jobs between 2015 and 2040. This is translated into an overall growth of 119 percent, and an absolute increase of nearly 200,000 jobs. Thus, Montgomery County is expected to have among the highest employment growth rates in the Houston region and the third largest absolute increase (behind Harris and Fort Bend Counties).

- **Grimes County:** The fewest jobs of any county in the Houston region are in Grimes County. In 2015, there were approximately 8,000 jobs in the county. This is expected to increase to 14,000 jobs by 2040. However, the county will continue to have the fewest jobs of all nine counties, with a 0.3 percent share of the total regional employment.

Table 3-5 CDS Population Forecasts by County (in thousands)

County	2010	2015	2020	2025	2030	2035	2040
Brazoria	303	335	362	412	480	553	639
Chambers	35	39	41	47	54	63	74
Fort Bend	579	708	782	896	1,039	1,183	1,335
Galveston	287	316	334	364	403	442	486
Grimes	**24**	**25**	**25**	**27**	**29**	**32**	**36**
Harris	**4,048**	**4,484**	**4,707**	**5,007**	**5,277**	**5,502**	**5,726**
Liberty	70	75	79	91	114	140	169
Montgomery	**453**	**533**	**594**	**696**	**839**	**983**	**1,149**
Waller	40	44	48	61	84	107	135
Nine-County Total	**5,839**	**6,559**	**6,972**	**7,601**	**8,319**	**9,005**	**9,749**

Table 3-6 CDS Households Forecasts by County (in thousands)

County	2010	2015	2020	2025	2030	2035	2040
Brazoria	107	117	127	145	170	197	230
Chambers	12	13	14	16	19	22	26
Fort Bend	187	225	252	293	346	400	457
Galveston	109	119	126	137	151	165	182
Grimes	**9**	**9**	**9**	**9**	**10**	**11**	**13**
Harris	**1,435**	**1,590**	**1,679**	**1,797**	**1,904**	**1,995**	**2,087**
Liberty	25	26	28	32	40	50	61
Montgomery	**163**	**182**	**204**	**241**	**294**	**347**	**410**
Waller	14	15	17	21	30	39	49
Nine-County Total	**2,061**	**2,296**	**2,456**	**2,691**	**2,964**	**3,226**	**3,515**

Table 3-7 CDS Employment Forecasts by County (Non-Farm Payroll Employment) (in thousands)

County	2010	2015	2020	2025	2030	2035	2040
Brazoria	86	104	113	128	145	161	178
Chambers	9	13	14	17	21	24	28
Fort Bend	130	170	193	234	285	346	410
Galveston	95	103	110	123	138	152	168
Grimes	**7**	**8**	**9**	**10**	**11**	**12**	**14**
Harris	**1,994**	**2,291**	**2,425**	**2,618**	**2,798**	**2,956**	**3,122**
Liberty	16	17	18	20	23	27	32
Montgomery	**127**	**165**	**186**	**222**	**266**	**310**	**362**
Waller	13	16	19	23	28	33	39
Nine-County Total	**2,477**	**2,887**	**3,087**	**3,395**	**3,715**	**4,021**	**4,353**

3.4.2 TAZ-Level Forecasts by CDS

CDS developed household and employment forecasts for each Traffic Analysis Zone (TAZ) within the nine-county region. CDS provided additional disaggregation of the forecasts by TAZ as described below. This TAZ-level data was used in the trip generation step of the MCTRA 249 Tollway travel demand model development.

Households

CDS provided the number of households in each TAZ, broken-out into 75 different household size categories. There were five household size categories, three categories according to the number of workers in the household, and five income categories:

- Household Size (5 categories):
  1, 2, 3, 4 and 5+ persons per household
- Number of Workers in Household (3 categories):
  0, 1 and 2+ workers per household
- Household Income (5 categories):
  - $0 to $22,999
  - $23,000 to $39,999
  - $40,000 to $64,999
  - $65,000 to $99,999
  - $100,000 and higher

Employment

CDS provided forecasts of number of jobs within each TAZ according to eight job categories:

1. Primary and secondary education
2. Post-secondary education
3. Retail
4. Industrial and manufacturing
5. Office, non-medical
6. Hospital and clinic
7. Medical professional
8. Government, public agency

3.4.3 TAZ-Level Population Changes

Figure 3-3 shows the projected 2017-2040 population change by TAZ in absolute terms, while **Figure 3-4** shows the percentage increase in population over the same period. **Figure 3-3** shows a significant population increase in TAZs flanking the MCTRA 249 Tollway and in the TAZs just north of the MCTRA 249 Tollway (flanking the TxDOT section of 249).

Figure 3-3 Absolute Population Growth by TAZ (2017-2040)

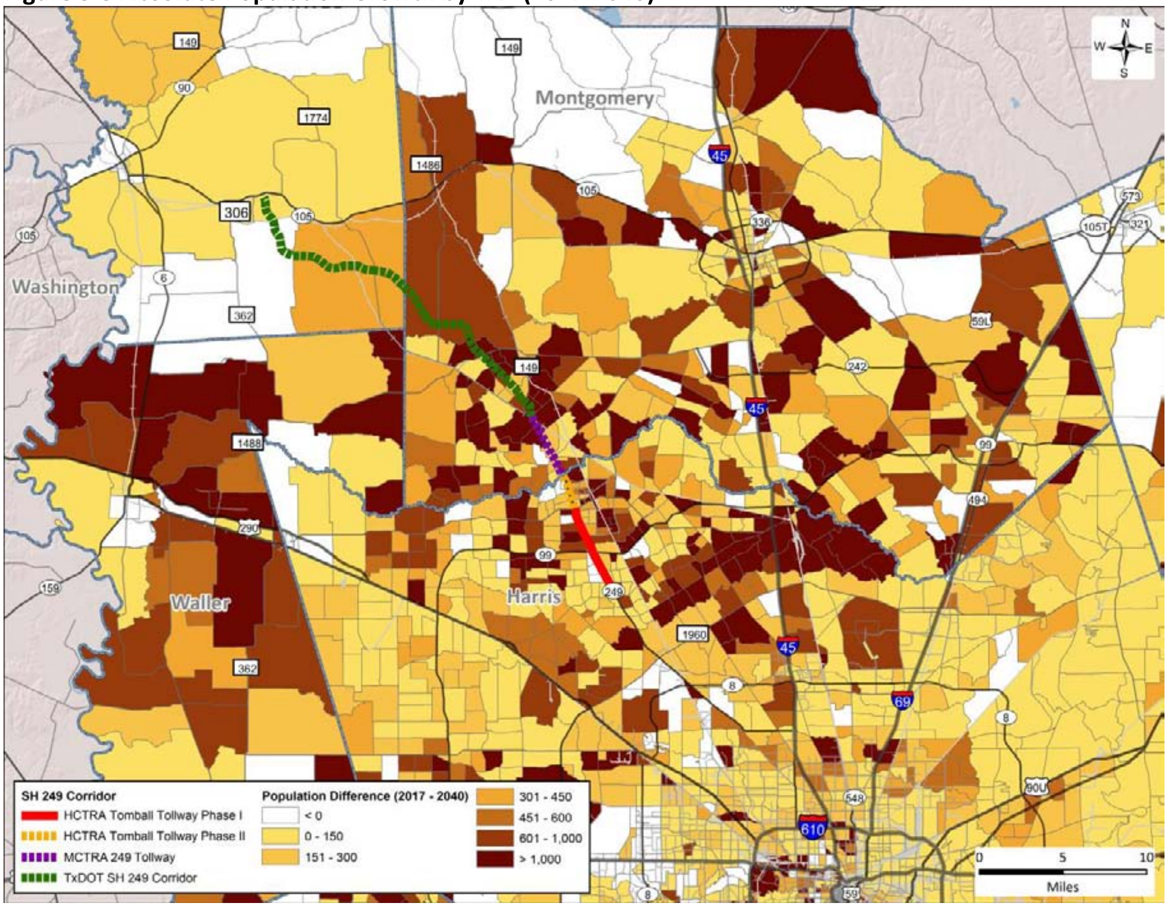
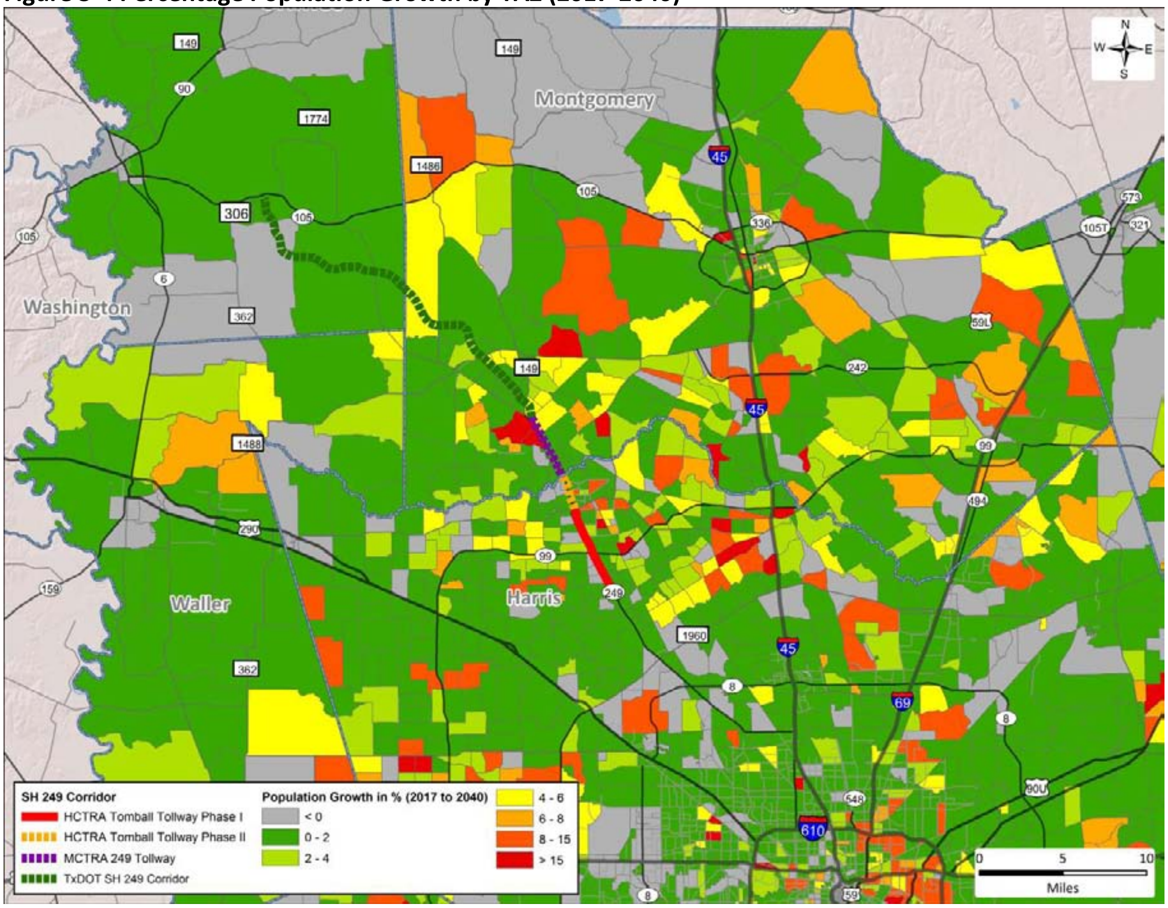


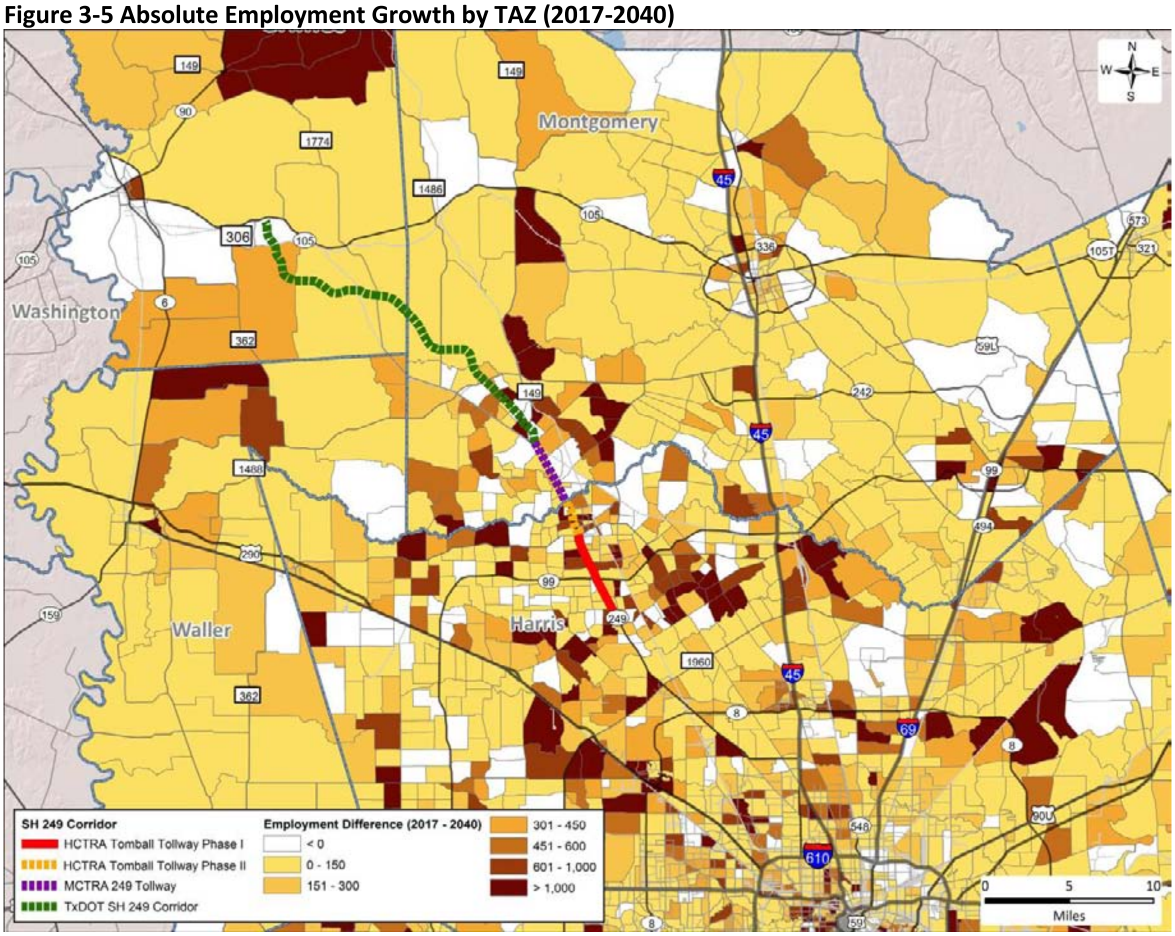
Figure 3-4 Percentage Population Growth by TAZ (2017-2040)



3.4.4 TAZ-Level Employment Changes

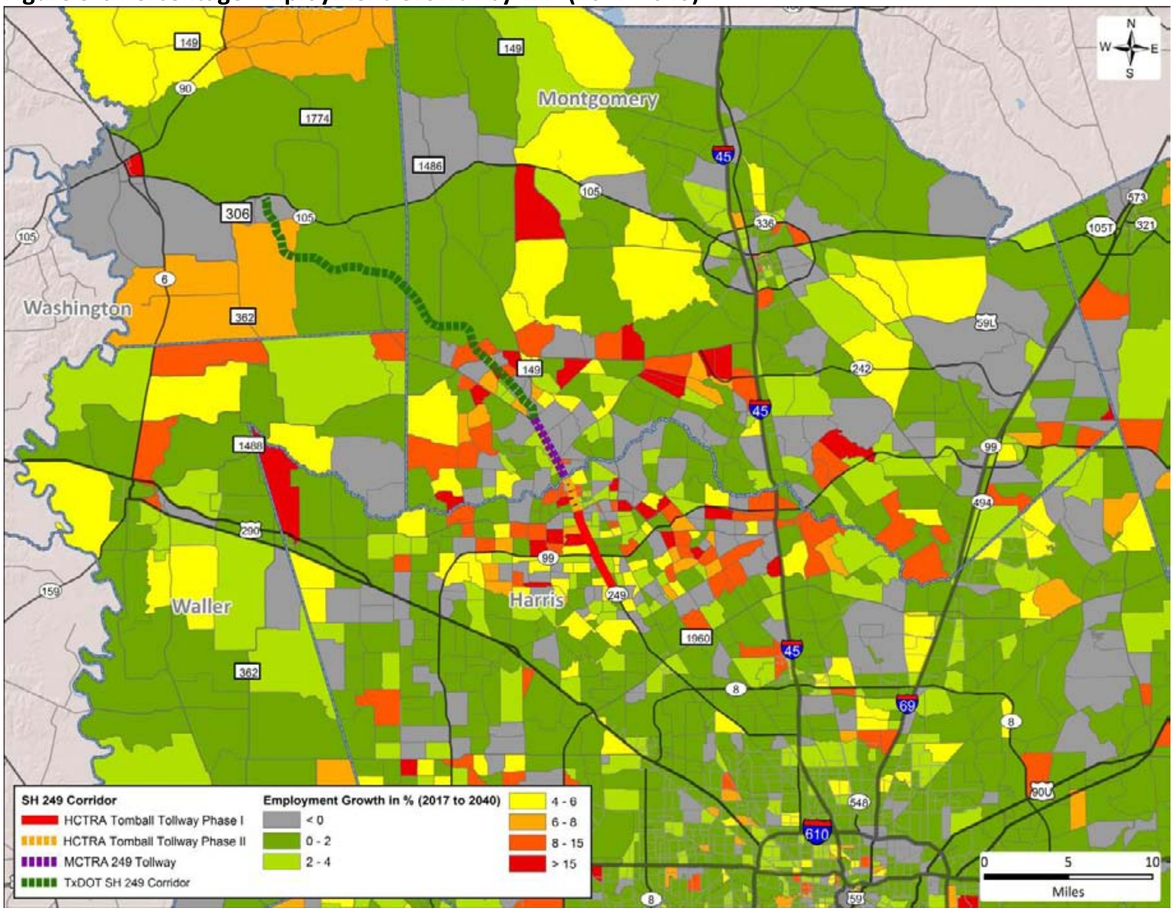
Figure 3-5 shows the projected 2017-2040 change in employment by TAZ in absolute terms, while **Figure 3-6** shows the percentage increase in employment over the same period. Figure 3-5 shows a notable increase in employment in TAZs immediately south and north of the MCTRA 249 Tollway segment. There is virtually no employment growth projected in the TAZs flanking the MCTRA 249 Tollway corridor, because the TAZs contain almost entirely residential development. Figure 3-6 shows large percentage increases in employment flanking the Tomball Tollway portion of 249, and along portions of the Grand Parkway (SH 99) east of 249.

Figure 3-5 Absolute Employment Growth by TAZ (2017-2040)



CDM Smith

Figure 3-6 Percentage Employment Growth by TAZ (2017-2040)



3.5 CDS vs. H-GAC Forecasts

H-GAC is the official MPO for the Houston Transportation Management Area. This area is comprised of eight of the nine counties (excluding Grimes County) for which CDS produced forecasts. H-GAC prepares regional and TAZ-level forecasts that are utilized in transportation and regional planning efforts. H-GAC's most recent forecasts were published in 2016, and contain forecasts extending to the year 2040.

Given that H-GAC publishes the most widely used forecasts for the Houston region, it is important to understand how the CDS forecasts differs from these "official" forecasts. The CDS forecasts are "market-based," and assume that there will be a continuing decentralization of jobs and population from the core Harris County into the surrounding counties. As such, population and employment forecasts developed by CDS for Harris County are lower as compared to the H-GAC projections, but CDS forecasts are higher for the outlying counties. The next two subsections provide county-level comparisons of the population and employment forecasts respectively. Please note that these comparisons omit Grimes County, because it is not part of H-GAC's study area.

3.5.1 Population Forecasts Comparison by County

Table 3-8 compares the CDS population forecasts by County against the latest H-GAC forecasts published in 2016. The table compares only the year 2040 forecasts from the two sources. The overall 249 project corridor (including the MCTRA 249 Tollway) stretches across three counties: Harris, Montgomery and Grimes. Therefore, the population and employment summaries focus mainly on these three counties.

At the eight-county regional level, the CDS population forecast is 3.1 percent lower than the H-GAC forecast for 2040. However, at the individual county level, CDS forecasts are only lower for two counties (Harris and Montgomery), and higher for the six remaining counties. As noted earlier, this difference in population forecasts reflects CDS's assumption that there will be a decentralization in growth away from Harris County.

In Harris County, the CDS population forecasts for 2040 are 8.4 percent lower. In absolute terms, CDS forecasts 528,000 fewer residents in Harris County in 2040. CDS expects lower growth in Harris County (compared to the H-GAC forecasts), largely due to a likely lack of available land in the county's most desirable areas.

In Montgomery County, where the MCTRA 249 Tollway will be located, the CDS population forecast is 2.1 percent lower (25,000 fewer residents) than the H-GAC forecast. While the CDS and H-GAC population forecasts are similar for year 2040, they have larger differences in the interim years (2020-2035). H-GAC expects rapid growth in the near-term, with a leveling-off by 2040. Conversely, CDS forecasts that growth will slow in the near-term, due to challenging economic conditions, but that the growth will accelerate approaching the year 2040.

Table 3-8 Comparison of 2040 H-GAC and CDS Population Forecasts by County (in thousands)

2040 Population	H-GAC Forecast	CDS Forecast	Absolute Difference	Percentage Difference
Brazoria County	555	639	84	15.1%
Chambers County	59	74	15	25.4%
Fort Bend County	1,256	1,335	79	6.3%
Galveston County	468	486	18	3.8%
Harris County	**6,254**	**5,726**	**(528)**	**-8.4%**
Liberty County	144	169	25	17.4%
Montgomery County	**1,174**	**1,149**	**(25)**	**-2.1%**
Waller County	109	135	26	23.9%
8-County H-GAC Region	**10,019**	**9,713**	**(306)**	**-3.1%**

3.5.2 Employment Forecasts Comparison by County

Table 3-9 compares the CDS employment forecasts by county against the latest H-GAC forecasts. The table compares only the year 2040 forecasts from the two sources. At the eight-county regional level, the CDS employment forecast is 2.8 percent lower than the H-GAC forecast for 2040. The CDS employment forecast for 2040 is 12.2 percent lower for Harris County, but is 50.9 percent higher for Montgomery County. Among the jobs that were distributed away from Harris County (in the CDS forecast), 40 percent of the jobs were redistributed to Montgomery County.

The CDS employment forecasts for 2040 are also higher in the remaining six counties (except for a small negative difference in Galveston County).

Table 3-9 Comparison of 2040 H-GAC and CDS Employment Forecasts by County

2040 Employment	H-GAC Forecast	CDS Forecast	Absolute Difference	Percentage Difference
Brazoria County	146	178	32	21.9%
Chambers County	20	28	8	40.0%
Fort Bend County	283	410	127	44.9%
Galveston County	172	168	(4)	-2.3%
Harris County	**3,554**	**3,122**	**(432)**	**-12.2%**
Liberty County	21	32	11	52.4%
Montgomery County	**240**	**362**	**122**	**50.8%**
Waller County	30	39	9	30.0%
8-County Region	**4,466**	**4,339**	**(127)**	**-2.8%**

3.6 Historical and Forecasted Socioeconomic Trends

The ten graphs in **Figure 3-7** combine the historical and CDS-forecasted population by county (plus the nine-county total) from 1970 through 2040.The graphs give a quick overview of the growth trajectory for each county. The graph for Harris County shows that the population growth is expected to level-off in future years, while the remainder of the counties are expected to have strong (even accelerating) growth in the future. The graphs also indicate that the CDS population forecasts are reasonable and are not excessively high or low.

3.7 Building Permits and Home Sales

Building permits can serve as a leading economic indicator for a region. When a building permit is obtained by an individual or company, it implies they will be spending money (i.e., generating economic activity) in the near-term to purchase materials, labor and services to complete the building project for which the permit was obtained. Sustained declines in building permits indicate a slowing economy (or an outright recession). Conversely, increases in the number of building permits issued indicate economic growth. **Figure 3-8** shows the monthly number of single family residential building permits issued in Montgomery County between 1991 and October 2017. Between 1991 and 2006, the annual number of single family building permits increased sharply from approximately 50 to almost 7,500, an increase at a CAGR of 39 percent. However, due to the 2007-2010 national recession, the number of building permits fell sharply after 2006, from approximately 7,500 to 2,800 permits per year. The number of building permits issued rebounded between 2009 and 2014 and more than doubled from approximately 2,800 to 5,500. In 2016, there was a 13 percent decline in building permit activity from the 2014 high, but annual building permit issuances remained well above the 2009-2010 levels that occurred during the recession.

Figure 3-7 Historical and CDS-Forecasted Population by County

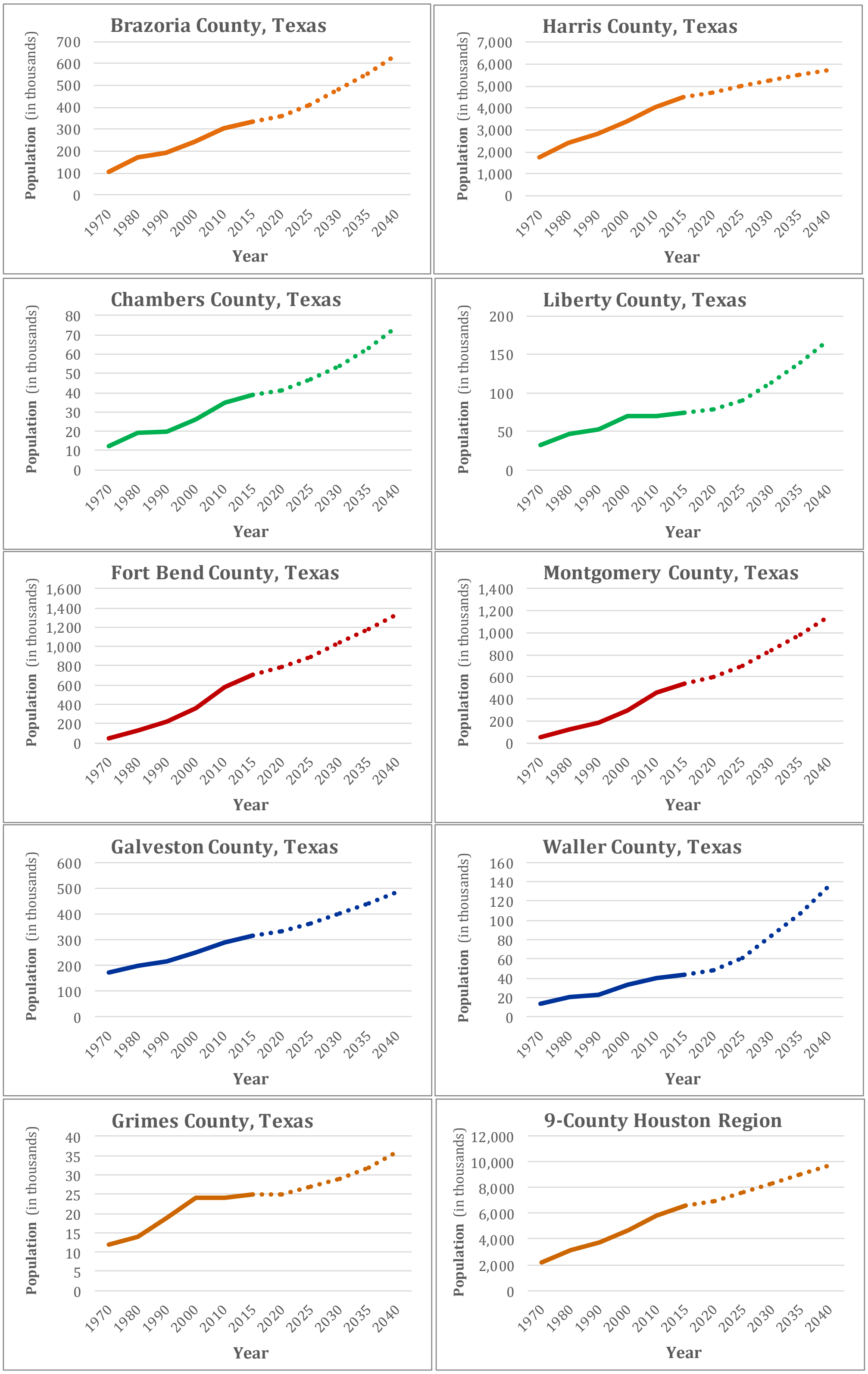
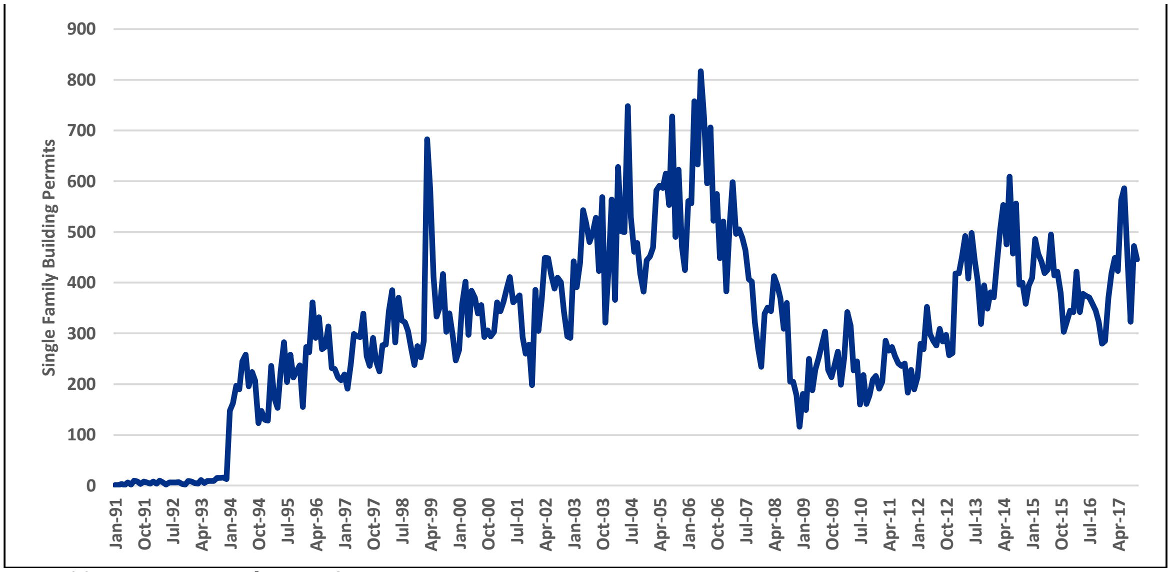


Figure 3-8 Single Family Residential Building Permits in Montgomery County by Month



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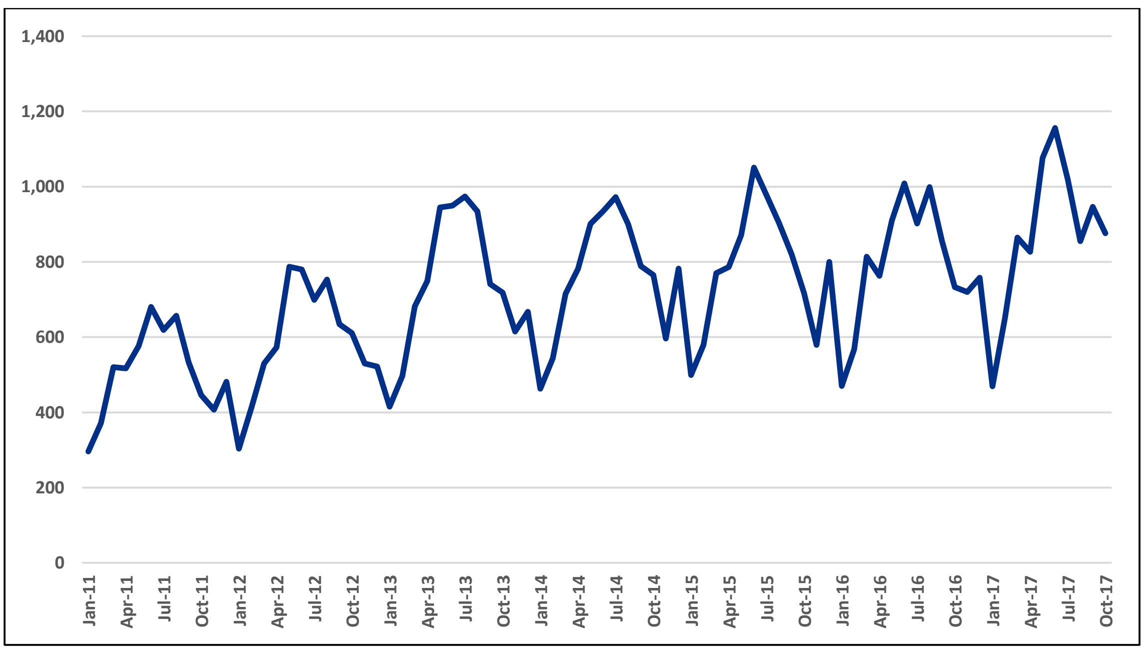
Another economic indicator for an area is home sales. **Figure 3-9** displays monthly home sales in Montgomery County from 2011 to October 2017. Home sales vary month-to-month but have been gradually trending higher overall since 2011.

Figure 3-9 Number of Home Sales by Month in Montgomery County



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3.8 Inflation (Consumer Price Indices)

Inflation is a likely indicator of how much the prices of goods and services (including toll rates and drivers' value-of-time) may increase over time. The consumer price index (CPI) for all urban consumers (CPI-U) is the most widely used measure of inflation. The CPI-U determines the aggregate price-level of a basket of goods and services that are consumed by typical urban households (in each urban region and for the U.S. as a whole). The Bureau of Labor and Statistics (BLS) within the U.S. Department of Labor calculates the CPI-U every month. **Table 3-10** shows the annual CPI-U values (and the corresponding annual percentage increase) for the Houston-Galveston-Brazoria region and nationally. While there have been year-to-year variations between the regional and national percentage increases, the 10- and 30-year CAGR are nearly identical. The 30-year CAGR between 1986 and 2016 has been 2.5/2.6 percent, while the 10-year CAGR between 2006 and 2016 has been 1.8 percent. The lower 10-year average reflects the low inflationary period that occurred during and after the 2008-2009 national economic recession.

Table 3-10 Consumer Price Indices (CPI-U) and Growth Rates

Year	Houston-Galveston-Brazoria, TX	Annual Increase	United States	Annual Increase
1985	104.9	-	107.6	-
1986	103.9	-1.0%	109.6	1.9%
1987	106.5	2.5%	113.7	3.7%
1988	109.5	2.8%	118.3	4.0%
1989	114.1	4.2%	124.0	4.9%
1990	120.6	5.7%	130.7	5.4%
1991	125.1	3.7%	136.2	4.2%
1992	129.1	3.2%	140.3	3.0%
1993	133.4	3.3%	144.5	3.0%
1994	137.9	3.4%	148.3	2.6%
1995	139.8	1.4%	152.4	2.8%
1996	142.7	2.1%	156.9	3.0%
1997	145.4	1.9%	160.6	2.4%
1998	146.8	1.0%	163.0	1.5%
1999	148.7	1.3%	166.6	2.2%
2000	154.2	3.7%	172.2	3.4%
2001	158.8	3.0%	177.1	2.8%
2002	159.2	0.3%	179.9	1.6%
2003	163.7	2.8%	184.0	2.3%
2004	169.5	3.5%	188.9	2.7%
2005	175.6	3.6%	195.3	3.4%
2006	180.6	2.8%	201.6	3.2%
2007	183.8	1.8%	207.3	2.8%
2008	190.0	3.3%	215.3	3.8%
2009	190.5	0.3%	214.5	-0.4%
2010	194.2	1.9%	218.1	1.6%
2011	200.5	3.3%	224.9	3.2%
2012	204.2	1.9%	229.6	2.1%
2013	207.6	1.6%	233.0	1.5%
2014	213.4	2.8%	236.7	1.6%
2015	213.0	-0.2%	237.0	0.1%
2016	216.4	1.6%	240.0	1.3%
2017*	219.5	1.4%	244.1	1.7%
2006 – 2016 CAGR		1.8%		1.8%
1986 – 2016 CAGR		2.5%		2.6%

Source: U.S. Bureau of Labor Statistics

**2017 Data shown is the average CPI from January to June 2017*

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Chapter 4

Traffic and Toll Revenue Estimates

This chapter presents the traffic and revenue (T&R) estimates for the Montgomery County Toll Road Authority 249 Tollway (MCTRA 249 Tollway) for a forty-year forecast period from 2020 through 2059. It also includes a description of the basic assumptions made for the purposes of forecasting T&R for this study. In the following sections, the T&R forecasting process is outlined by explaining the development processes of toll modeling components. Assumptions regarding background highway improvement projects and other T&R parameters are also described. The final section of this chapter provides a summary of the annual T&R forecasts produced from a series of future year model runs.

4.1 Basic Assumptions

T&R estimates for the proposed MCTRA 249 Tollway are predicated on the following basic assumptions, all of which are considered reasonable for purposes of this analysis:

1. The MCTRA 249 Tollway from the Harris/Montgomery County Line to Woodtrace Boulevard will open to traffic on January 1, 2020.

2. The T&R for these proposed facilities have been adjusted downward in the early years to reflect "ramp up". Ramp up was assumed to be 70 percent in 2020, 80 percent in 2021, 90 percent in 2022, and 100 percent in 2023 and beyond.

3. The socioeconomic forecasts prepared by the Houston-Galveston Area Council (H-GAC) were reviewed. For purposes of this T&R analysis, modifications to those forecasts were made by CDS (documented in Appendix A), and the T&R forecasts are based on these revised socioeconomic forecasts.

4. Only an EZ TAG or other interoperable Texas toll tags will be allowed as a payment option, meaning cash and Pay-By-Mail options will not be available along the MCTRA 249 Tollway.

5. Average commercial vehicle toll rates are estimated to be three times higher than passenger cars. Toll rates do not vary by time of day.

6. Tolls have been set as $1.25 (2017$) for the mainlane toll gantry and $0.50 (2017$) for the two ramp toll gantries along the MCTRA 249 Tollway. Toll rates escalate annually at a rate of two percent. Tolls are rounded to the nearest penny.

7. A reduction factor of 4.5 percent has been applied to the annual toll revenue estimates included in this report to reflect toll leakage that also includes non-revenue transactions such as veterans' discounts etc.

8. Only those highway improvements which are committed in the regional transportation improvement plan will be implemented during the projection period. Specific improvements assumed in future year model networks are described subsequently.
9. Several other new toll facility improvements, currently within the jurisdiction of the Texas Department of Transportation and other counties, have also been assumed to be implemented within the timelines specified in the regional transportation plan.
10. Travel demand modeling was performed through estimating weekday travel on the MCTRA 249 Tollway. For the purposes of annualization of transactions and revenue, an annualization factor of 320 was assumed which is consistent with historical data along the existing Tomball Tollway.
11. The MCTRA 249 Tollway will be well-maintained, efficiently-operated and effectively signed and promoted to encourage maximum usage. Effective promotion, both before and after opening of the proposed sections of the system, is critical to minimizing the negative revenue impacts of "ramp up" during early operations.
12. Motor fuel and any other sources of power for operating the motor vehicles will remain in adequate supply and increases in price will not substantially exceed overall inflation over the long-term.
13. No change will occur in vehicle technology that will significantly affect vehicle carrying capacity or vehicle operating speeds.
14. No local, regional or national emergency will arise which would abnormally restrict the use of motor vehicles, or substantially alter economic activity or freedom of mobility.

These basic assumptions are considered reasonable for purposes of this T&R study. Any significant departure from these basic assumptions could materially affect the estimated T&R for the MCTRA 249 Tollway.

4.2 Traffic and Revenue Forecasting Process

The H-GAC travel demand model was utilized to develop T&R forecasts, and was used as the foundation for developing a toll diversion model. The model was then fine-tuned for the base year through an application of appropriate model validation measures. After the base year model validation, future year model datasets including future year networks and trip tables were developed.

Future year traffic assignments were conducted for various model years developed for the MCTRA 249 Tollway. For the development of T&R forecasts for this study, the future year network and trip tables were input to the validated toll diversion model to produce traffic forecasts for future model years of 2020, 2022, 2025, 2030, 2035, and 2040. Using these model year forecasts, traffic estimates were developed for intermediate years by interpolation and for those years beyond the modeling horizon by extrapolation. Forecasted toll transaction at all tolling locations were extracted from the travel model runs. Toll revenues were estimated using the forecasted transactions and the applicable gantry toll rate.

4.2.1 H-GAC Model Information

For this study, the latest official travel demand model datasets were obtained from H-GAC. This included trip tables based on the revised demographics developed by CDS and model networks used in the 2040 Regional Transportation Plan (2040 RTP). The H-GAC model data included:

- H-GAC's 5,263-zone Cube model network structure including 5,217 internal zones and 46 external stations. H-GAC model years are 2017, 2025, 2035 and 2040.
- Zone-level socioeconomic information for the 5,217 internal zones for years 2017, 2025, 2035 and 2040
- H-GAC trip tables by vehicle-class, vehicle occupancy and time period for 2017, 2025, 2035 and 2040. These trip tables were provided for the four time periods: AM peak (6:00 to 9:00 AM), PM peak (3:00 to 7:00 PM), midday (9:00 AM to 3:00 PM) and night (7:00 PM to 6:00 AM) periods.

4.2.2 Highway Network Development

The model network encompasses eight counties: Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery and Waller counties. The base year model network was reviewed and adjusted based on current speed observations, number of lanes, and other link attributes including facility type, capacity and link distance.

The future year networks were also reviewed against the current H-GAC regional transportation plan (2040 RTP) to confirm that committed and funded improvements were included. Modifications to various base year model network attributes including speed, capacity and distance were applied appropriately to the future year model networks.

4.2.3 Model Expansion into Grimes County

The model networks and trip tables obtained from H-GAC were expanded to also include Grimes County as part of the final model that was used for the development of T&R forecasts for this study. This was mainly done to estimate the impact of the extension of the SH 249 corridor into Grimes County as is currently being planned by TxDOT. It is important to note that this expansion did not include a trip distribution model that would encompass the entire nine-county area but rather the trip tables from H-GAC and Grimes County were combined using a process that merged these trip tables using factors based on distribution of external trips within the H-GAC's eight counties as well as Grimes County. The Grimes County model was developed by CDM Smith as a standalone model based on socioeconomic data for Grimes County provided by CDS.

4.2.4 Trip Table Adjustments

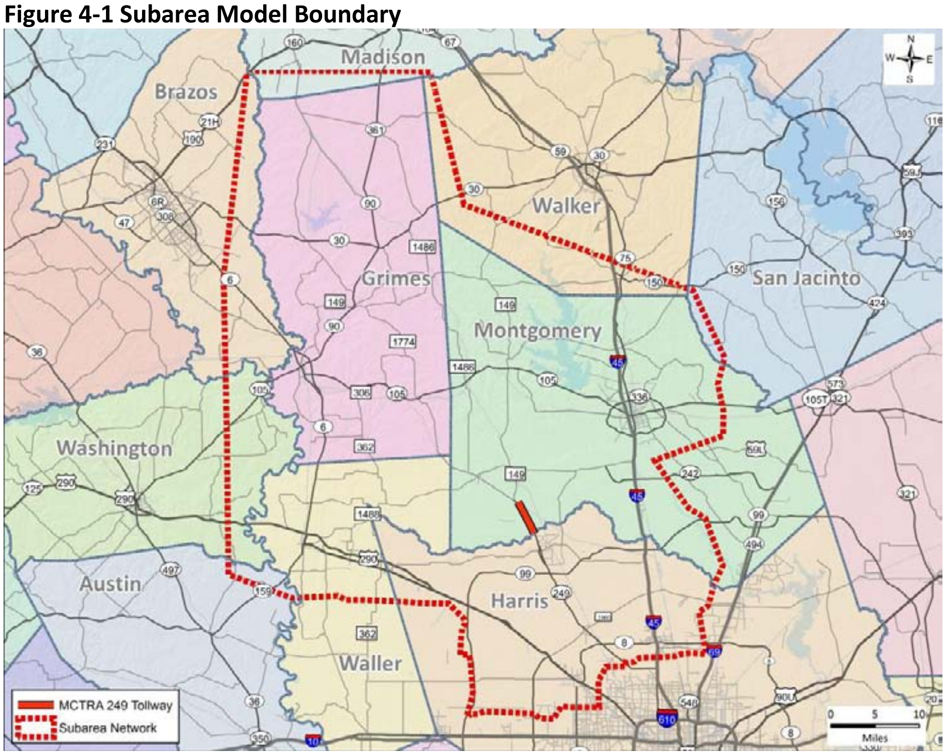
The travel demand model used for the revenue estimation process is based on the forecasts of socioeconomic variables such as population, households, and employment. The revised socioeconomic forecasts, as provided by the independent economist, CDS, were used to generate vehicular trips that are, in turn, assigned on the transportation network.

For this study, CDM Smith requested H-GAC to run the base and future year four-step travel demand models with the revised CDS socioeconomic forecasts to generate the future year trip tables used in this study. CDM Smith utilized the resulting vehicle trip tables from the H-GAC travel demand model and applied the toll diversion methodology as described below.

4.2.5 Subarea Model Calibration

The final step of the modeling process for this study included that creation of a subarea model which was used to develop the traffic and toll revenue forecasts for the MCTRA 249 Tollway. **Figure 4-1** shows the subarea model boundary. The subarea model networks and trip tables were extracted from the combined nine-county model described above. The calibration efforts were mainly focused within the modeling subarea where most of the recently collected traffic data was available as described in **Chapter 2**.

Figure 4-1 Subarea Model Boundary



4.2.6 Toll Diversion Methodology

A toll diversion model was used to estimate the market share of toll and non-toll facilities based on input parameters such as value-of-time (VOT), vehicle operating cost, toll cost, and congestion. The methodology includes determination of minimum time path between each zone pair. The minimum time path for each Origin-Destination (O-D) pair may or may not include the use of toll facilities. For those trips that may potentially use toll facilities, travel time and distance of the toll facility routing was compared with that of the best alternative route not involving a toll payment. A share of the total traffic moving between each pair of zones is then assigned to the toll facility routing, while the remaining portion is assigned to the best toll-free alternative route based on a CDM Smith-developed algorithm. The model's estimate of the toll facility's market share is a function of time savings, distance, toll rates, and estimates of perceived value-of-time and vehicle operating costs by motorists. As the cost of the toll facility route increases compared to the toll-free route, the share of traffic using the toll road decreases. Trip tables used for the toll diversion traffic assignments were classified into distinct market segments for the MCTRA 249 Tollway based on different modes and vehicle classifications. The appropriate toll rates were applied for each of these categories of vehicles as part of the multi-class user equilibrium traffic assignment process.

4.3 Traffic and Toll Revenue Estimation Assumptions

The T&R estimates for the MCTRA 249 Tollway are predicated on several assumptions, which are consistent with observed trends and are considered reasonable for this study.

4.3.1 Truck Traffic Shares

Truck traffic (vehicles with greater than two axles) shares for MCTRA 249 Tollway are shown in **Table 4-1** for various years. Truck shares were validated against existing conditions in the study corridor and the future growth of trucks are based on the future year models.

Table 4-1 Truck Traffic Shares

Year	Truck Share (%)
2020	4.9
2022	5.5
2025	6.1
2030	6.7
2035	7.0
2040	7.2

4.3.2 Annual Revenue Days

"Annual revenue days" is a parameter used in the revenue estimation process to convert the weekday transactions/revenue to annual transactions/revenue. Observed ratios of the weekend to weekday traffic on the Tomball Tollway and other nearby facilities from historical data were used to estimate the annual revenue days. Annual revenue days are assumed to be 320 days for all forecast years.

4.3.3 Traffic Growth Rate Assumptions Beyond 2040

Table 4-2 shows the annual traffic growth rates for forecasts beyond 2040. Traffic is projected to increase at an annual rate of 2.0 percent between 2040 and 2045. After 2045, the estimated rate of traffic growth reduces to 1.5 percent per year between 2045 and 2050, 1.0 percent per year between 2050 and 2055, and 0.5 percent beyond 2055.

Table 4-2 Annual Traffic Growth Rate Assumptions (2040 Onwards)

Year	Annual Growth Rate (%)
2040-2045	2.0
2045-2050	1.5
2050-2055	1.0
Beyond 2055	0.5

4.3.4 Values-of-Time and Vehicle Operating Costs

Motorists' value-of-time (VOT), or willingness to pay tolls to reduce travel time and/or receive an improved level-of-service (LOS) of travel, is estimated based on motorists' income level, work hours, and trip purpose. The VOTs were estimated based on an analysis of the data from the TxDOT SH 249 stated preference (SP) survey conducted in spring 2015. The median values of the peak period and the off-peak VOTs ranged between $12.50 and $14.80 per hour in 2015 dollars.

The VOTs for future years were estimated by inflating to the respective year using a 2.0 percent annual inflation rate. The VOT estimates vary by traffic analysis zone (TAZ) based on the median household income for each zone.

The vehicle operating costs used in the analysis were calculated by taking into account the average per-mile costs of gasoline and oil, and to a lesser extent, maintenance, and wear and tear of tires for vehicles in the area. For this study, it was assumed that fuel efficiency of vehicles would improve in future years. The average fuel efficiency of passenger cars was assumed to increase to about 52 miles per gallon by 2040. The resulting passenger car operating costs adopted for this study are shown in **Table 4-3**. The passenger car operating costs vary from $0.17 per mile in 2017 to about $0.24 per mile in 2040.

Table 4-3 Passenger Car Operating Costs (nominal dollars per mile)

Year	Passenger Car Operating Cost
2017	$0.17
2020	$0.19
2025	$0.20
2035	$0.22
2040	$0.24

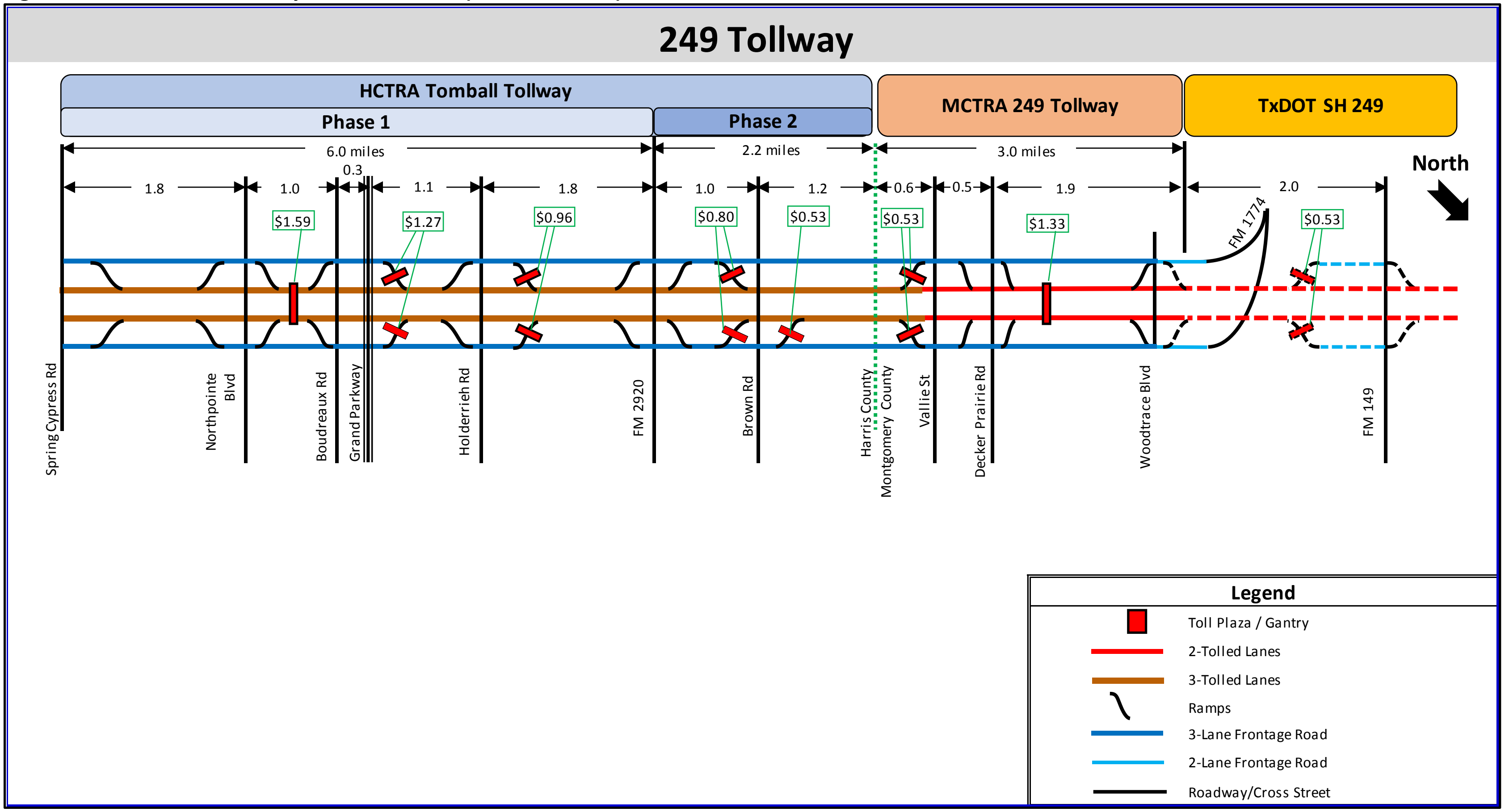
4.4 Toll Rates

This section presents the assumed toll rates for the MCTRA 249 Tollway and adjacent facilities for 2020 as depicted in **Figure 4-2**. A description of toll sensitivity is also provided in this section.

4.4.1 Toll Rates

MCTRA 249 Tollway provides three toll lanes in each direction from Harris/Montgomery County Line to Vallie Street and two toll lanes in each direction from Vallie Street to Woodtrace Boulevard. It includes a mainlane gantry north of Decker Prairie Road and two ramp gantries south of Vallie Street. Figure 4-2 displays toll rates at gantry locations along the 249 facility for the year 2020.

Figure 4-2 MCTRA 249 Tollway 2020 Toll Rates (in 2020 dollars)



4.5 Major Highway Improvements

The most recent Transportation Improvement Program (TIP) and the (2040 RTP) developed and maintained by H-GAC are shown below:

- TIP (2017-2020)
- 2040 RTP

TIP and 2040 RTP projects were reviewed to identify and select the projects which would potentially impact traffic on interstate highways, major arterials, and the existing sections of 249 as well as the proposed MCTRA 249 Tollway. The selected projects mainly include new construction, managed lane, and capacity expansion projects.

TIP and 2040 RTP projects shown in **Figure 4-3** and listed in **Table 4-4** depict the projects which were coded in future year highway networks. Travel demand model networks were prepared for years 2020, 2022, 2025, 2030, 2035 and 2040 by including the projects planned to be open by each of the model years.

Figure 4-3 Project Locations

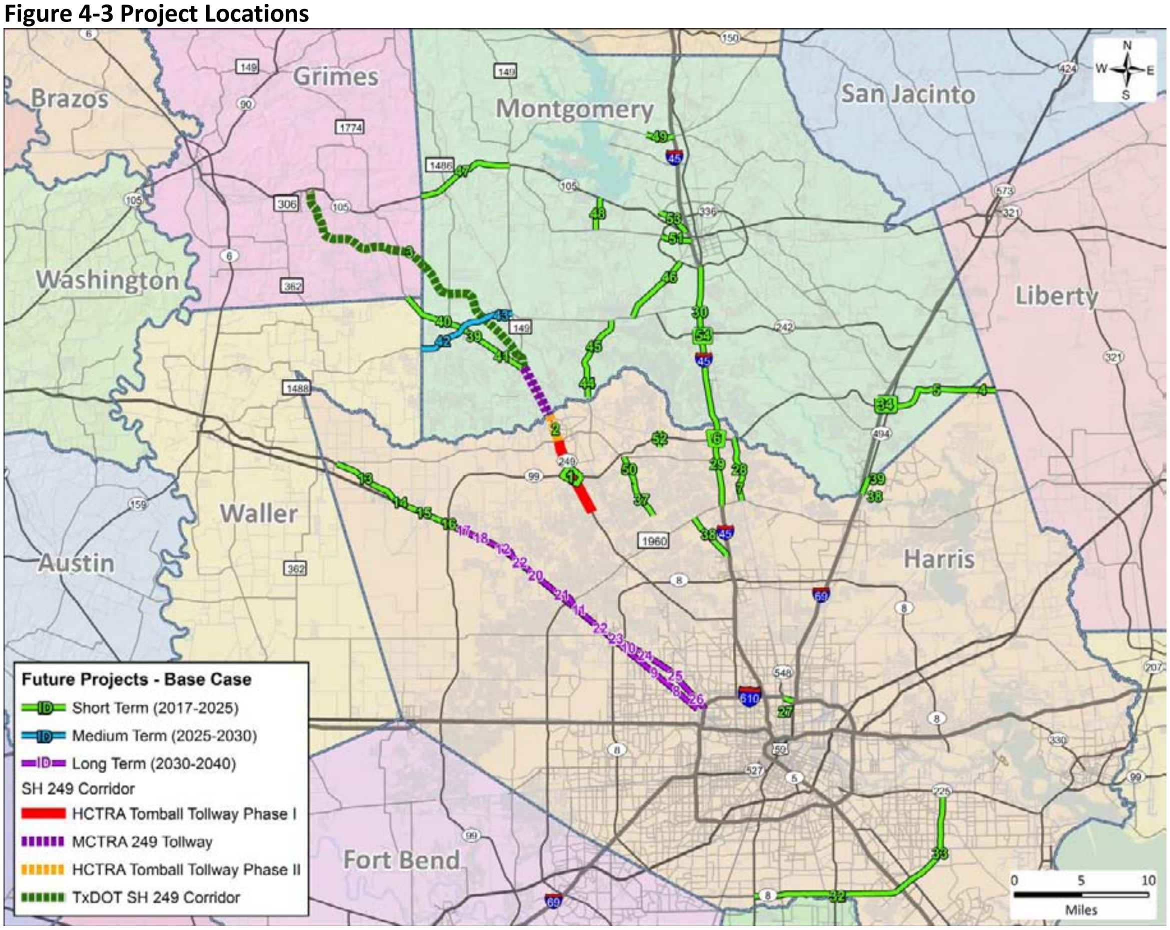


Table 4-4 Project List

Location ID	County	Facility	From	To	Description	H-GAC Fiscal Year	H-GAC Analysis Year	Tollway Study Analysis Year
H-GAC Regional Transportation Plan 2040								
1	Harris	SH 99	AT SH 249		CONSTRUCT 4 DIRECT CONNECTORS (TOLL)	2030	2035	2025
2	Montgomery	SH 249	GRIMES COUNTY LINE	FM 1774/FM 149 IN PINEHURST	CONSTRUCT 4-LANE TOLLWAY IN SECTIONS	2017	2025	2020
3	Harris	SH 249	MONTGOMERY C/L	BROWN RD	CONSTRUCT TWO 3-LANE FRONTAGE ROADS AND CONSTRUCT 6-LANE TOLLWAY WITH GRADE SEPARATIONS AT BROWN, BAKER AND ZION ROADS	2017	2025	2020
4	Harris	SH 99	MONTGOMERY C/L	LIBERTY C/L	SEG H: CONSTRUCT 4-LANE TOLLWAY WITH INTERCHANGES AND TWO NON-CONTINUOUS 2-LANE FRONTAGE ROADS	2017	2025	2025
5	Montgomery	SH 99	US 59 N	HARRIS C/L	SEG H: CONSTRUCT 4-LANE TOLLWAY WITH INTERCHANGES AND TWO NON-CONTINUOUS 2-LANE FRONTAGE ROADS	2017	2025	2025
6	Harris	SH 99	AT IH 45 N		CONSTRUCT 2 DIRECT CONNECTORS (TOLL)	2025	2035	2025
7	Harris	HARDY TOLL RD	SH 99	FM 1960	WIDEN FROM 4 TO 6 LANES	2015	2017	2025
8	Harris	HEMPSTEAD RD	MANGUM	43RD ST/CLAY RD	CONSTRUCT 4 MANAGED LANES WITH TWO 2-LANE FRONTAGE ROADS (TOLL)	2032	2035	2035
9	Harris	HEMPSTEAD RD	GESSNER DR	43RD ST/CLAY RD	CONSTRUCT 4 MANAGED LANES WITH TWO 2-LANE FRONTAGE ROADS (TOLL)	2032	2035	2035
10	Harris	HEMPSTEAD RD	JONES RD	GESSNER	CONSTRUCT 4 MANAGED LANES WITH TWO 2-LANE FRONTAGE ROADS & DC to BW 8 (TOLL)	2032	2035	2035
11	Harris	HEMPSTEAD RD	W OF HUFFMEISTER	JONES RD	CONSTRUCT 4 MANAGED LANES (TOLL)	2032	2035	2035
12	Harris	HEMPSTEAD RD	SH 99	W OF HUFFMEISTER RD	CONSTRUCT 4 MANAGED LANES	2032	2035	2035
13	Harris	US 290	FM 2920	BADTKE RD	WIDEN TO 6-LANES WITH AUXILIARY LANES AND DISCONTINUOUS 2-LANE FRONTAGE ROADS	2015	2017	2017
14	Harris	US 290	0.191 MI W OF BADTKE RD	0.643 MI E OF BADTKE RD	WIDEN TO 6 MAIN LANES WITH AUXILIARY LANES AND TWO 2-LANE FRONTAGE ROADS (SEGMENT 11)	2015	2017	2017
15	Harris	US 290	0.381 MI W OF BADTKE RD	W OF BAUER RD	WIDEN TO 6 MAIN LANES WITH AUXILIARY LANES AND TWO 2-LANE FRONTAGE ROADS	2015	2017	2017
16	Harris	US 290	W OF BAUER RD	W OF MASON RD	WIDEN TO 8 MAIN LANES WITH AUXILIARY LANES AND TWO 2-LANE FRONTAGE ROADS	2015	2017	2017
17	Harris	US 290	SH 99	W OF MASON RD	RESTRIPE TO 8 MAIN LANES WITH AUXILIARY LANES	2032	2035	2017
18	Harris	US 290	E OF MASON RD	E OF MUESCHKE RD	RESTRIPE TO 8 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 2HOV)	2032	2035	2025

Location ID	County	Facility	From	To	Description	H-GAC Fiscal Year	H-GAC Analysis Year	Tollway Study Analysis Year
19	Harris	US 290	E OF MUESCHKE RD	N OF WOODWARD DR	RESTRIPE TO 8 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 2HOV)	2032	2035	2025
20	Harris	US 290	S OF WOODWARD DR	E OF TELGE RD	RESTRIPE TO 8 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 2HOV)	2032	2035	2025
21	Harris	US 290	E OF TELGE RD	W OF ELDRIDGE PKWY	RESTRIPE TO 10 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 2HOV)	2032	2035	2025
22	Harris	US 290	W OF ELDRIDGE PKWY	W OF FM 529	RESTRIPE TO 12 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 3HOV in 2025; 10 Fwy + 3HOV in 2035)	2032	2035	2025/2035
23	Harris	US 290	W OF FM 529	W OF LITTLE YORK RD	RESTRIPE TO 10 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 3HOV in 2025; 12 Fwy + 3HOV in 2035)	2032	2035	2025/2035
24	Harris	US 290	E OF LITTLE YORK RD	W OF PINEMONT DR	RESTRIPE TO 10 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 3HOV in 2025; 10 Fwy + 3HOV in 2035)	2032	2035	2025/2035
25	Harris	US 290	W OF PINEMONT DR	W OF 34TH ST	RESTRIPE TO 12 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 3HOV in 2025; 12 Fwy + 3HOV in 2035)	2032	2035	2025/2035
26	Harris	US 290	W OF 34TH ST	I-610	RESTRIPE TO 10 MAIN LANES WITH AUXILIARY LANES (8 Fwy + 3HOV in 2025; 10 Fwy + 3HOV in 2035)	2032	2035	2025/2035
27	Harris	HARDY TOLL RD	IH 610/SP 548	US 59	CONSTRUCT 4-LANE TOLL ROAD TO COMPLETE HARDY "TOLL" ROAD	2019	2025	2025
28	Harris	HARDY TOLL RD	SH 99	FM 1960	WIDEN FROM 4 TO 6 LANES	2015	2017	2025
29	Harris	IH 45 N	MONTGOMERY/ HARRIS COUNTY LINE	FM 1960	RECONFIGURE TO CREATE 2 MANAGED LANES	2015	2017	2025
30	Montgomery	IH 45 N	LP 336 S	HARRIS/MONTGOMERY CL	RECONFIGURE TO CREATE 2 MANAGED LANES	2015	2017	2025
31	Harris	HARDY TOLL RD	AT BW 8		Construct EB-SB and NB-WB direct connectors	2019	2025	2025
32	Harris	BW 8	SH 288	IH 45 S	WIDEN FROM 4 TO 8 MAIN LANES IN SECTIONS	2016	2025	2025
33	Harris	BW 8	SH 225	IH 45	WIDEN FROM 4 TO 8-MAIN LANES IN SECTIONS	2017	2025	2025
34	Montgomery	SH 99	AT US 59 N		CONSTRUCT 2 DIRECT CONNECTORS (TOLL)	2030	2035	2025
35	Harris	LP 494	N OF SORTERS-MCCLELLAN RD	MONTGOMERY C/L	RECONSTRUCT AND WIDEN TO 4-LANE DIVIDED URBAN SECTION (RAISED MEDIAN)	2024	2035	2035
36	Montgomery	LP 494	N OF KINGWOOD DR	HARRIS C/L	RECONSTRUCT AND WIDEN TO 4-LANE DIVIDED URBAN SECTION (FLUSH MEDIAN)	2024	2035	2035
37	Harris	STUEBNER AIRLINE RD	CYPRESSWOOD DR	SPRING CYPRESS RD	WIDEN TO 6-LANE CONCRETE PAVEMENT W/ STORM SEWERS	2023	2025	2025

Location ID	County	Facility	From	To	Description	H-GAC Fiscal Year	H-GAC Analysis Year	Tollway Study Analysis Year
38	Harris	KUYKENDAHL RD	FM 1960	RANKIN RD	WIDEN 4 TO 6 LANE CONCRETE BLVD	2023	2025	2025
2017-2020 Transportation Improvement Program (June 2016) / H-GAC RTP Online Project Viewer								
39	Montgomery	FM 1774	0.027 MI N OF FM 1488	0.045 MI S OF W LOST CREEK BLVD	RESTRIPE TO WIDEN TO 4-LANE DIVIDED RURAL	2017		2017
40	Montgomery	FM 1774	FM 1486	WALLER C/L	WIDEN TO 4-LANE DIVIDED RURAL	2018		2020
41	Montgomery	FM 1774	GRIMES C/L	MONTGOMERY C/L	WIDEN TO 4-LANE DIVIDED RURAL	2018		2020
42	Montgomery	FM 1488	JOSEPH RD	FM 1774	WIDEN FROM 2 TO 4-LANES	2025	2035	2035
43	Montgomery	FM 1488	FM 1774	W OF FM 149	WIDEN FROM 2 TO 4-LANES	2025	2035	2035
44	Montgomery	FM 2978	FM 1488	S OF DRY CREEK	WIDEN FROM 2 TO 4-LANES	2016		2017
45	Montgomery	FM 2978	S OF DRY CREEK	CONROE HUFFSMITH RD	WIDEN FROM 2 TO 4-LANES	2016		2017
46	Montgomery	OLD CONROE RD	LP 336 S	FM 1488	WIDEN TO 4-LANES AND EXTEND ROADWAY INCLUDING BRIDGE OVER WEST FORK OF SAN JACINTO RIVER	2022		2025
47	Montgomery	SH 105	GRIMES C/L	FM 149	WIDEN TO 4-LANE DIVIDED RURAL ROADWAY WITH INTERSECTION IMPROVEMENTS	2023		2025
48	Montgomery	MCCALEB RD	SH 105	FM 2854	WIDEN TO 4-LANES	2020		2020
49	Montgomery	FM 1097	ANDERSON RD	IH 45 N	RECONSTRUCT AND WIDEN TO 4-LANES WITH CONTINUOUS LEFT TURN LANE	2021		2025
50	Harris	STUEBNER AIRLINE RD	SPRING CYPRESS RD	FM 2920	WIDEN TO 4-LANE CONCRETE BLVD SECTION W/ STORM SEWER DRAINAGE			2017
51	Montgomery	FM 2854	LP 336	IH 45	RECONSTRUCT TO 4-LANE DIVIDED CURB & GUTTER	2017		2017
52	Harris	GOSLING RD	MOSSY OAKS RD	SPRING STUEBNER RD	WIDEN FROM 2 LANE ASPHALT TO 5 LANE CONCRETE	2016		2017
53	Montgomery	LONGMIRE RD	SGT. ED HOLCOMBE RD	FM 1488	CONSTRUCT NEW 4-LANE ROAD (IN SECTIONS)	2023		2025
54	Montgomery	SH 242	AT IH 45 N		CONSTRUCT ELECTRONICALLY TOLLED DIRECT CONNECTORS FROM WB SH 242 TO SB IH 45 & NB IH 45 TO WB SH 242 (PTF)			2017

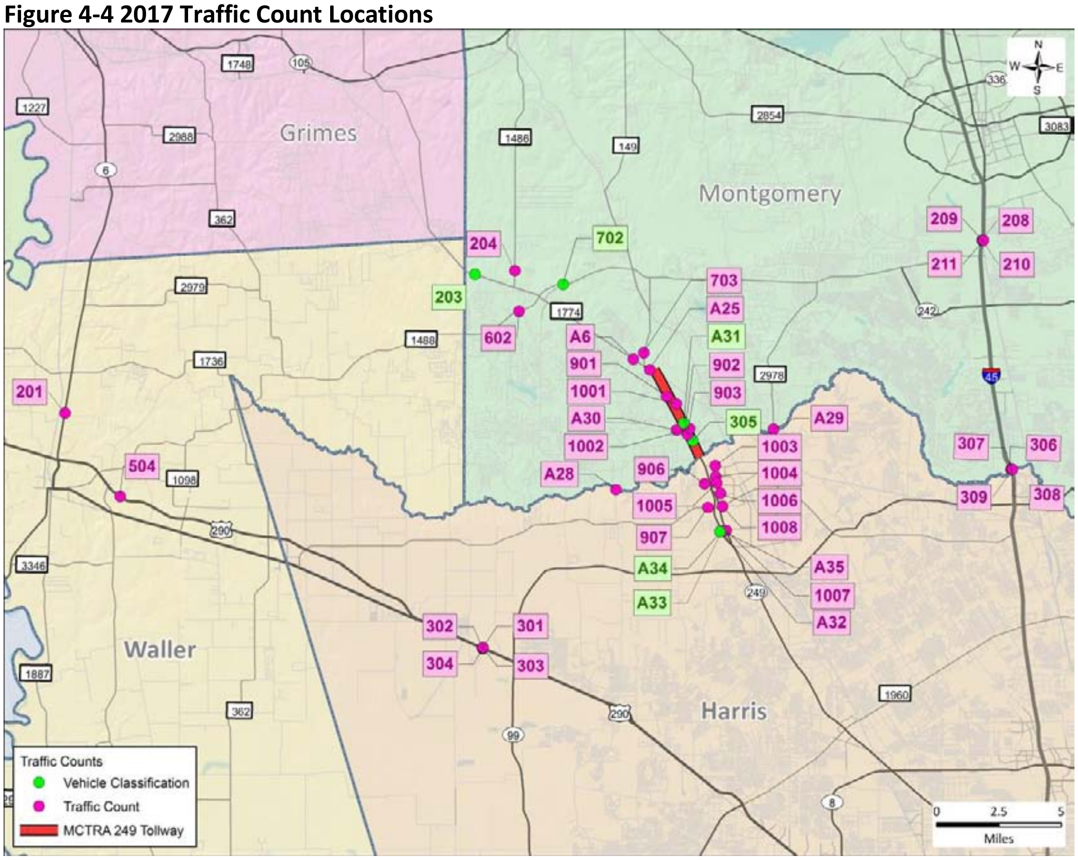
4.6 Base Year Model Calibration

Model calibration involves the adjustment of model inputs and parameters to improve the ability of the model to closely replicate the existing travel patterns before it can be used to estimate reliable forecasts. The model calibration was performed for 2017 as the base year by comparing observed counts with estimated traffic volumes obtained from the base year model run. For this purpose, traffic counts were collected at selected locations across the MCTRA model study area to capture traffic profiles in the area as described in **Chapter 2**.

Traffic counts were obtained from various sources and coded in the base year highway network. In addition to collected count data, the counts were supplemented with HCTRA transaction data and available TxDOT count information. **Figure 4-4** illustrates the location of the various traffic counts used to calibrate the base year model.

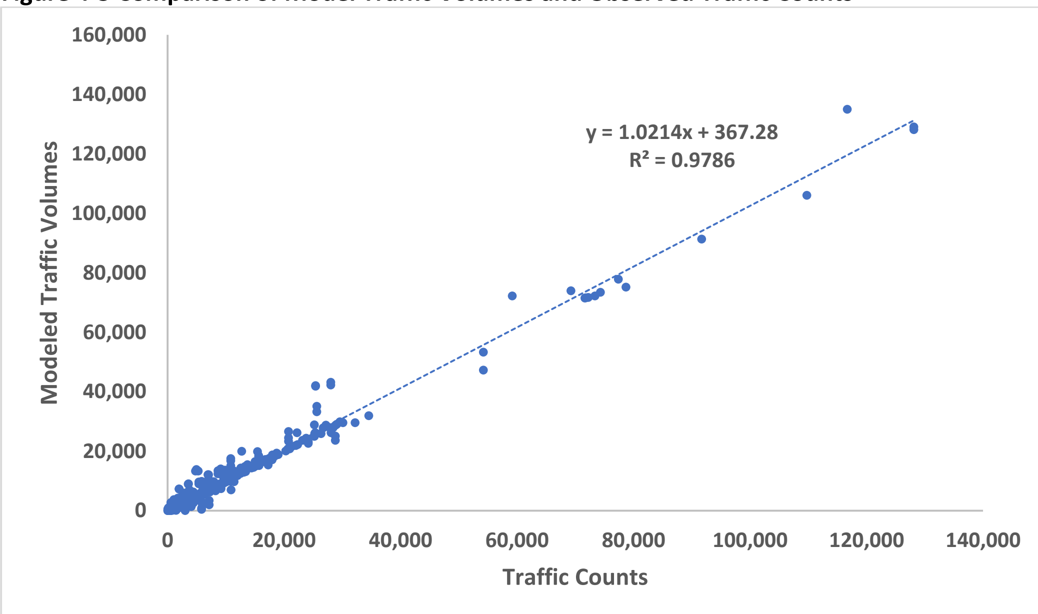
A series of base year model adjustments were made to obtain reasonable matches between the observed and estimated traffic volumes. These included a detailed review of the model network attributes including the number of lanes, roadway functional classification, hourly capacity and speeds along key corridors in the study area.

Figure 4-4 2017 Traffic Count Locations



Various criteria, including minimizing the root mean square error (RMSE), volume count comparisons and R-Squared statistics were used to test model refinements as subsequent calibration steps were performed. **Figure 4-5** depicts a comparison between the modeled traffic volumes and observed traffic count data collected in May 2017 at the various count locations.

Figure 4-5 Comparison of Model Traffic Volumes and Observed Traffic Counts



The plot of model volumes compared to observed traffic counts indicates that the base year model reasonably matches the observed traffic at the majority of locations. In addition to comparing the model estimated traffic volumes to the observed traffic counts, the base year model congested speeds were also compared to observed speed data purchased from INRIX. Adjustments were made to the model base year networks to better match observed speeds.

Another key aspect of model calibration was the ability of the model to replicate the traffic utilizing the existing segments of toll roads in the vicinity of the MCTRA 249 Tollway. **Table 4-5** shows a comparison of model estimated traffic and observed transactions at mainlane toll gantry locations along Tomball Tollway as well as several segments of Grand Parkway. As shown in the table, the model estimates were within five percent of the observed data at four of the five locations. The model estimated approximately eight percent lower traffic along Grand Parkway west of SH 249.

Table 4-5 Calibration of Existing Toll Roads

Toll Gantry Location	Observed	Estimated	% Difference
Tomball Tollway ML Gantry	47,000	48,100	2.3%
Grand Pkwy East of SH 249	54,000	56,700	5.0%
Grand Pkwy West of SH 249	66,800	61,500	-7.9%
Grand Pkwy West of IH 45	57,500	57,000	-0.9%
Grand Pkwy North of US 290	53,200	54,100	1.7%

4.7 Future Toll Rates

Table 4-6 shows the future year toll rates by gantry type for passenger cars for future years.

Table 4-6 Assumed Passenger Car Toll Rates by Gantry Type

Year	Mainlane	Ramps
2020	$1.33	$0.53
2022	$1.38	$0.55
2025	$1.46	$0.59
2030	$1.62	$0.65
2035	$1.79	$0.71
2040	$1.97	$0.79

Toll rates for other toll roads including HCTRA toll roads and various segments of the Grand Parkway were also coded into the models appropriately. Future tolls were computed using an annual escalation rate of two percent then rounded to the nearest penny.

4.8 Estimated Future Year Conditions

Future year traffic assignments were conducted for the entire MCTRA 249 Tollway using the modeling approach described earlier in this chapter. Travel demand model runs were conducted to estimate traffic for years 2020, 2022, 2025, 2030, 2035 and 2040. Traffic assignments reflect typical "weekday" conditions; traffic volumes on weekends would tend to be lower, as would the overall seven-day average daily traffic.

4.8.1 Traffic Projections

Table 4-7 shows the estimated average weekday traffic volumes for 2020, 2022, 2025, 2030, 2035 and 2040. These volumes represent a typical weekday condition, and reflect the model estimated two-way traffic volumes at mainlane and ramp toll gantry locations and do not include any adjustment due to ramp up. The 2020 volumes were estimated to reflect a condition after the completion of TxDOT SH 249 Segment 1 (assumed to be open to traffic in June 2020).

As shown in **Table 4-7**, the estimated traffic in 2020 on MCTRA 249 Tollway is 14,100 vehicles on a typical weekday at the mainlane gantry (both directions combined) located north of Decker Prairie Road. This volume increases to 32,800 by 2030 and to 58,400 by 2040. The traffic growth rate at the mainlane gantry is high in the early years with a growth rate of 11.7 percent between 2020 and 2022. The growth rates are moderate in later years.

It should be noted that in developing these traffic projections for the MCTRA 249 Tollway, CDM Smith made adjustments to the future year trip tables that were produced based on socioeconomic forecasts developed by CDS. In particular, the growth in trips beyond 2025 for selected TAZ's, (as described in Appendix B of CDS Report) was reduced from the original growth forecasted by the H-GAC model based on CDS's socioeconomic inputs. These adjustments were made to reflect the uncertainty of actual development occurring within the time frame of the base case forecast.

Table 4-7 Estimated Future Average Weekday Volumes at MCTRA 249 Tollway Gantries

Year	Mainlane Gantry	Combined Ramp Gantries
2020	14,100	5,900
2022	17,600	6,700
2025	22,700	8,100
2030	32,800	9,700
2035	43,900	12,300
2040	58,400	13,100
Average Annual Growth Rate		
2020 - 2022	11.7%	6.6%
2022 - 2025	8.9%	6.5%
2025 - 2030	7.6%	3.7%
2030 - 2035	6.0%	4.9%
2035 - 2040	5.9%	1.3%

Figures 4-6 and **4-7** display volumes in thousands along sections of MCTRA 249 Tollway for years 2022 and 2040.

Figure 4-6 Traffic Volumes in 2022 (in thousands)

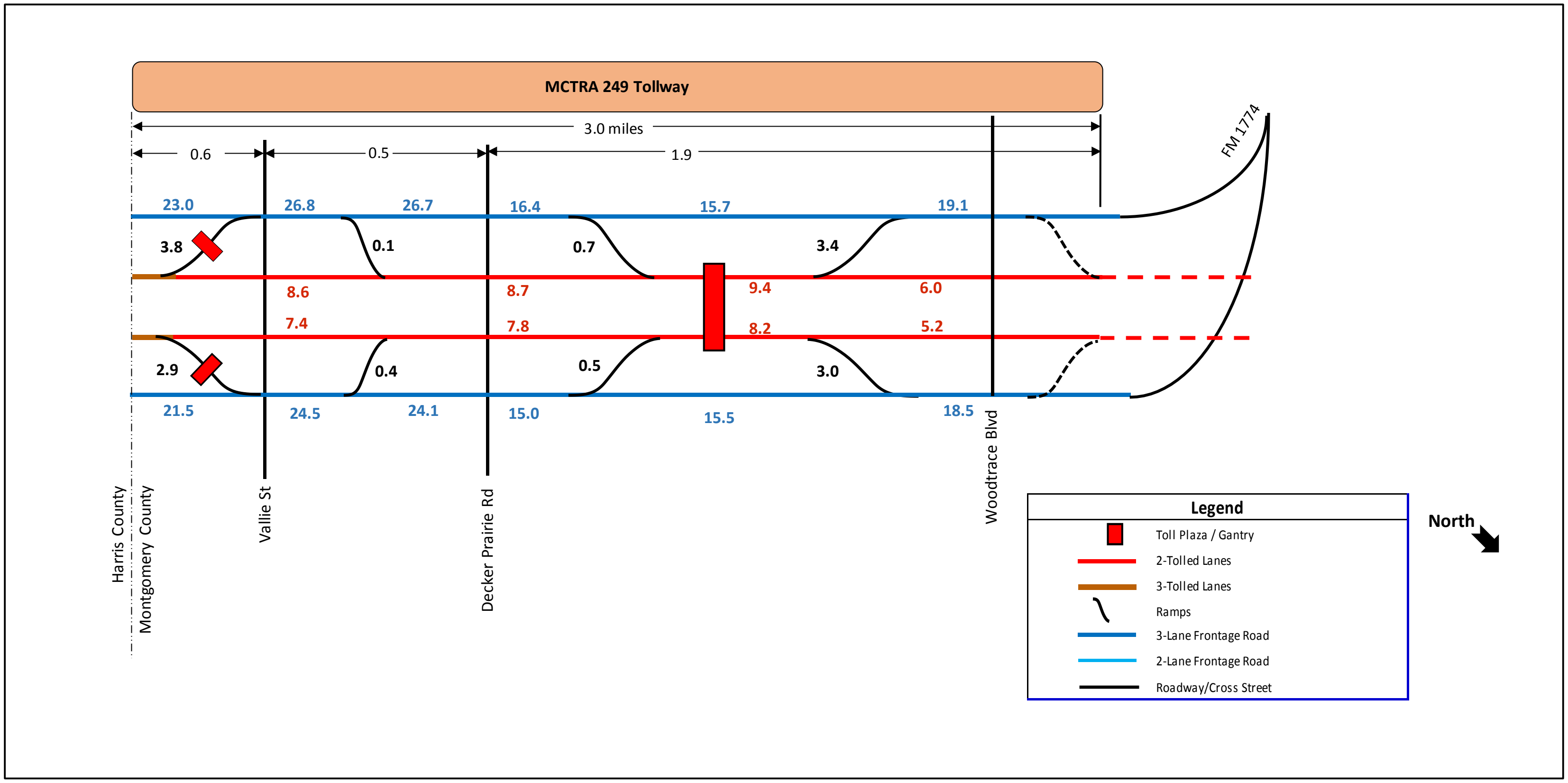
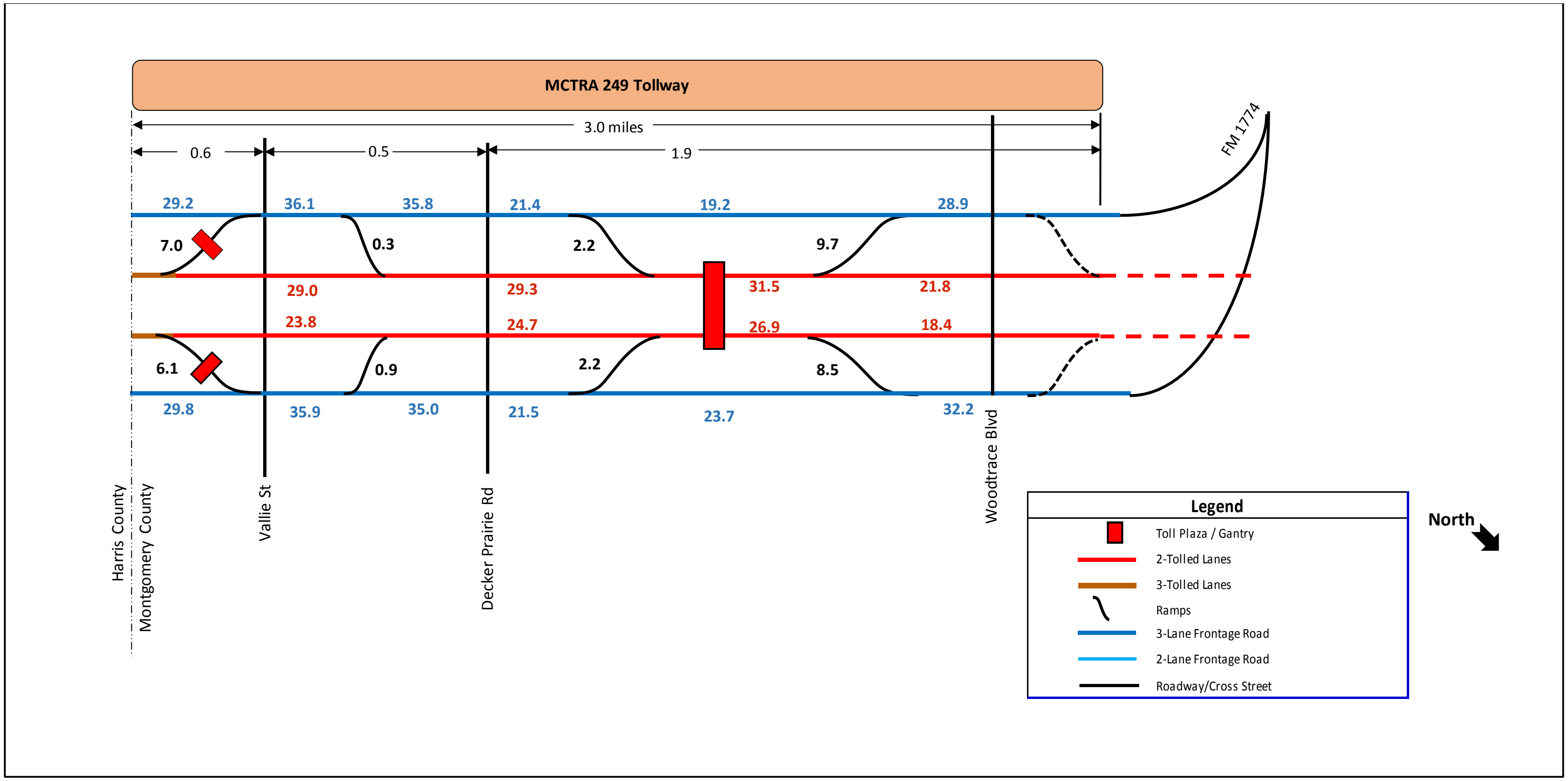


Figure 4-7 Traffic Volumes in 2040 (in thousands)

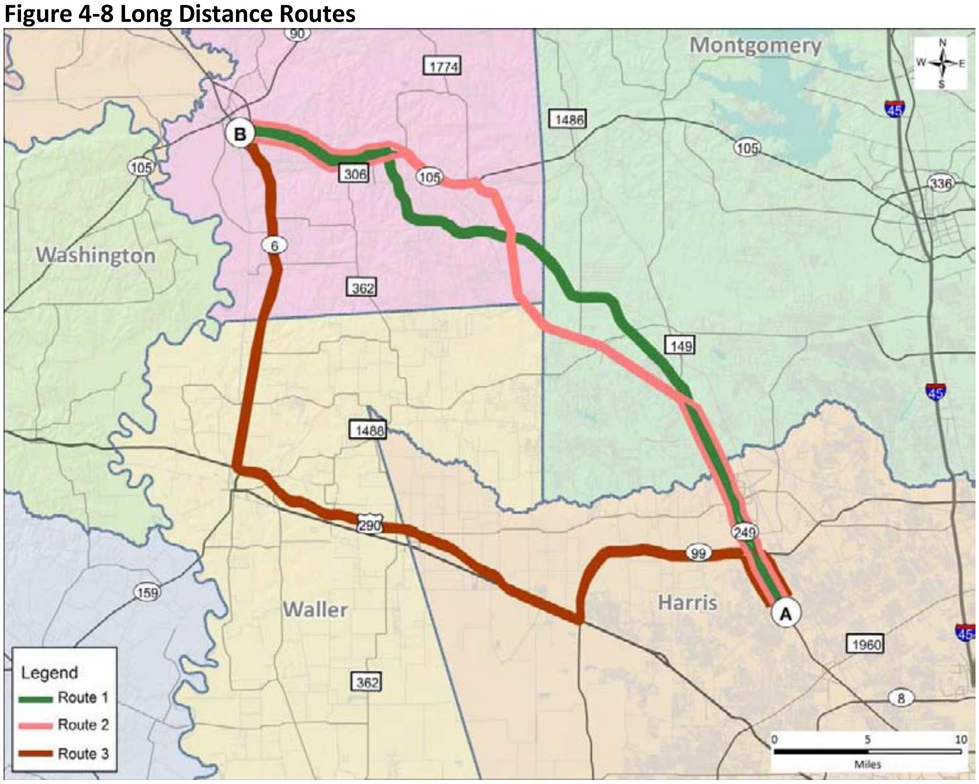


4.8.2 Travel Time Savings

Travel time savings were compared between MCTRA 249 Tollway and competing alternate routes. Both a long-distance and a short-distance comparison was done as seen in **Figures 4-8** and **4-9**.

The long-distance trip was assumed between Tomball Tollway north of Spring Cypress Road (Point A) and SH 6 at SH 105 (Point B). As shown in **Figure 4-8**, Route 1 was along the future 249 Tollway which includes HCTRA Tomball Tollway Phase I and Phase II, MCTRA 249 Tollway, and TxDOT SH 249 Segment 1 and Segment 2. Route 2 was via the future 249 frontage road, which is the existing 249 and FM 1774. Route 3 was along Grand Parkway, US 290, and SH 6. Travel time savings for this trip are summarized in **Table 4-8** and **4-9**. Any changes in the distance for a route between years is due to improvement projects.

Figure 4-8 Long Distance Routes



Route 1 has the lowest travel time for both peak periods in both the northbound and the southbound directions in 2022. Route 1 saves 13 minutes compared to Route 2 and 11 minutes compared to Route 3 in the AM peak period traveling northbound. Traveling southbound, Route 1 saves 21 minutes compared to Route 2 and 14 minutes compared to Route 3 in the AM peak period. During the PM peak period, Route 1 saves 21 minutes compared to Route 2 and 24 minutes compared to Route 3 traveling northbound. Traveling southbound, Route 1 saves 23 minutes compared to Route 2 and 27 minutes compared to Route 3.

Table 4-8 Long Distance Travel Time Savings in 2022

Direction	Time Period	Route 1		Route 2		Route 3	
		Time in Minutes	Distance in Miles	Time in Minutes	Distance in Miles	Time in Minutes	Distance in Miles
Northbound	AM Peak	37.6	40.5	51.2	41.5	48.8	56.8
	PM Peak	41.5	40.5	62.5	41.5	65.1	56.8
Southbound	AM Peak	37.4	40.5	59.1	41.4	52.0	52.7
	PM Peak	37.6	40.5	60.2	41.4	64.5	52.7

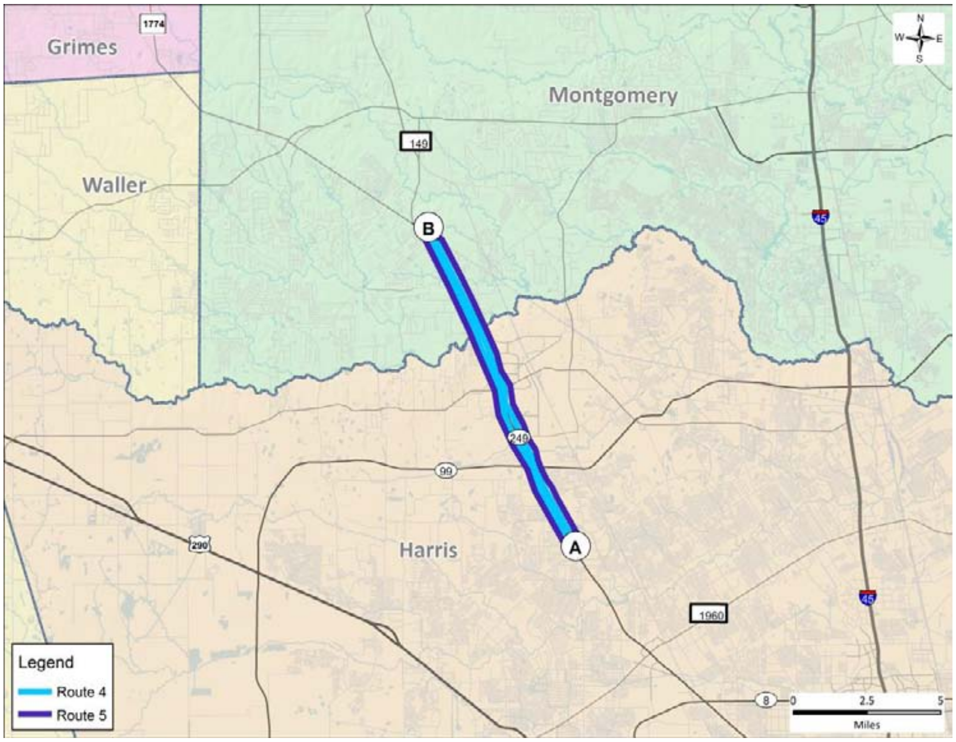
In 2040, Route 1 remains having the lowest travel times. Route 1 saves 17 minutes compared to Route 2 and 13 minutes compared to Route 3 in the AM peak period traveling northbound. Traveling southbound, Route 1 saves 30 minutes compared to Route 2 and 12 minutes compared to Route 3 in the AM peak period. During the PM peak period, Route 1 saves 44 minutes compared to Route 2 and 43 minutes compared to Route 3 traveling northbound. Traveling southbound, Route 1 saves 38 minutes compared to Route 2 and 44 minutes compared to Route 3.

Table 4-9 Long Distance Travel Time Savings in 2040

Direction	Time Period	Route 1		Route 2		Route 3	
		Time in Minutes	Distance in Miles	Time in Minutes	Distance in Miles	Time in Minutes	Distance in Miles
Northbound	AM Peak	38.2	40.5	55.0	41.5	51.3	52.7
	PM Peak	38.8	40.5	83.3	41. 5	82.0	52.7
Southbound	AM Peak	38.5	40.5	68.4	41.4	50.3	52.7
	PM Peak	39.9	40.5	77.9	41.4	84.2	52.7

The short-distance trip was assumed between Tomball Tollway north of Spring Cypress Road (Point A) and FM 1774 at 249 (Point B). As shown in **Figure 4-9**, Route 4 was along the future 249 Tollway which includes HCTRA Tomball Tollway Phase I and Phase II and MCTRA 249 Tollway. Route 5 was via the 249 frontage road. Travel time savings for this trip are summarized in **Table 4-10** and **4-11**.

Figure 4-9 Short-Distance Routes



Route 4 has the lowest travel time for all time periods in both the southbound and northbound directions in 2022. Route 4 saves six minutes compared to Route 5 in the AM peak period and 16 minutes in the PM peak period traveling northbound. Traveling southbound, Route 4 saves 11 minutes compared to Route 5 in the AM peak period and 13 minutes in the PM peak period.

Table 4-10 Short-Distance Travel Time Savings in 2022

Direction	Time Period	Route 4		Route 5	
		Time in Minutes	Distance in Miles	Time in Minutes	Distance in Miles
Northbound	AM Peak	9.7	10.0	15.7	10.0
	PM Peak	10.0	10.0	25.8	10.0
Southbound	AM Peak	9.9	10.1	21.1	10.1
	PM Peak	10.0	10.1	23.4	10.1

In 2040, Route 4 remains having the lowest travel times, saving seven minutes and 26 minutes when compared to Route 5 in the AM and PM period, respectively, traveling northbound. Traveling southbound, Route 4 saves 17 minutes compared to Route 5 in the AM peak period and 21 minutes in the PM peak period.

Table 4-11 Short-Distance Travel Time Savings in 2040

Direction	Time Period	Route 4		Route 5	
		Time in Minutes	Distance in Miles	Time in Minutes	Distance in Miles
Northbound	AM Peak	9.9	10.0	17.3	10.0
	PM Peak	11.3	10.0	37.0	10.0
Southbound	AM Peak	11.1	10.1	28.7	10.1
	PM Peak	10.4	10.1	31.6	10.1

4.9 MCTRA 249 Tollway Estimated Annual Transactions and Toll Revenue

Table 4-12 presents estimated base case annual transactions and toll revenue (in nominal dollars) for the MCTRA 249 Tollway. Transactions and toll revenue are also depicted graphically in **Figure 4-10**.

Annual transactions are expected to be 4.4 million in 2020 and are projected to increase to more than 13.6 million in 2030 and 22.9 million in 2040. This represents a growth of 11.8 percent per year for the ten years following 2020 and 5.3 percent per year for the period between 2030 and 2040. We would note that T&R growth on this facility is highly dependent on future development in the corridor. Changes to the rate of development growth from the study assumptions will result in changes to the T&R presented herein. Chapter 5 presents sensitivity tests related to timing of development implementation and reductions in corridor demand growth by 20 and 50 percent.

With the projected annual growth in traffic and the programmed annual toll increases, revenue is expected to grow at an average rate of about 11.4 percent per year between 2020 and 2040. This forecast is calibrated to reflect the impact of non-revenue vehicles, violations and unpaid tolls.

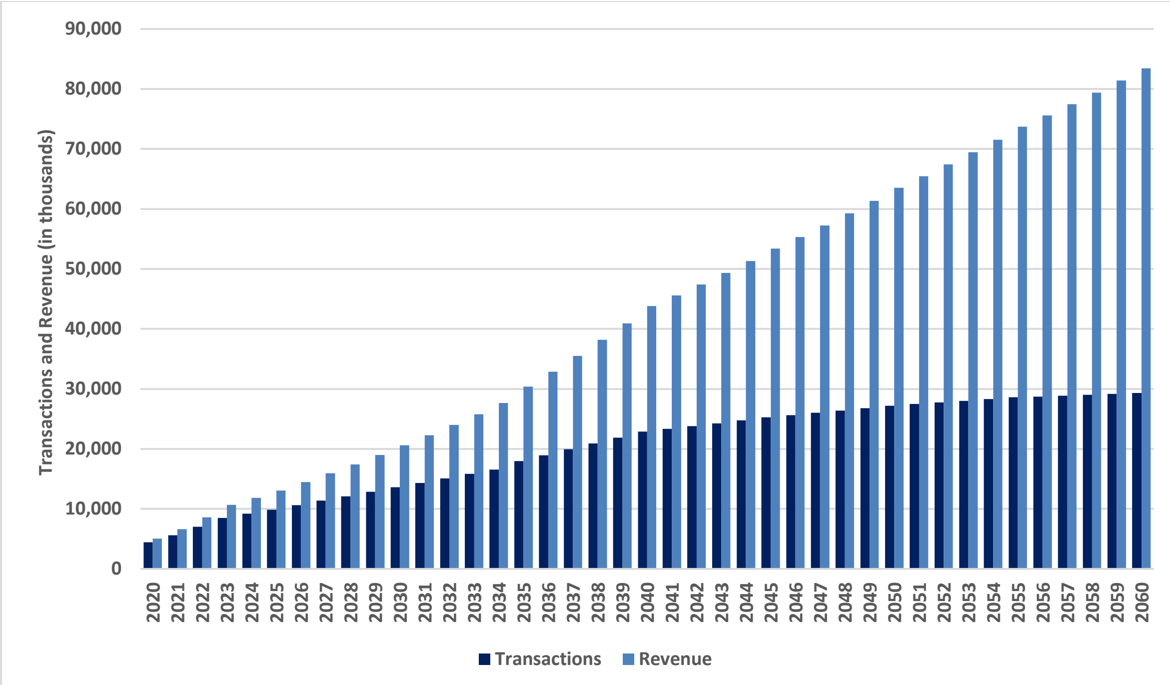
Table 4-12 MCTRA 249 Tollway Estimated Annual Transactions and Toll Revenue

Year	Avg. Weekday Transactions	Annual Transactions (in '000s)	Annual Revenue ($'000s)
2020	13,910	4,451	$5,029
2021	17,570	5,622	$6,630
2022	21,950	7,024	$8,573
2023	26,560	8,498	$10,665
2024	28,730	9,192	$11,846
2025	30,900	9,886	$13,070
2026	33,210	10,629	$14,472
2027	35,530	11,371	$15,924
2028	37,850	12,114	$17,429
2029	40,170	12,856	$18,988
2030	42,490	13,598	$20,602
2031	44,810	14,341	$22,273
2032	47,130	15,083	$24,003
2033	49,450	15,825	$25,793
2034	51,770	16,568	$27,644
2035	56,200	17,983	$30,389
2036	59,250	18,961	$32,894
2037	62,310	19,938	$35,486
2038	65,360	20,916	$38,168
2039	68,420	21,894	$40,944
2040	71,480	22,872	$43,816
2041	72,900	23,329	$45,586
2042	74,360	23,796	$47,428
2043	75,850	24,272	$49,344
2044	77,370	24,757	$51,337
2045	78,910	25,253	$53,411
2046	80,100	25,631	$55,297
2047	81,300	26,016	$57,249
2048	82,520	26,406	$59,270
2049	83,760	26,802	$61,362
2050	85,010	27,204	$63,528
2051	85,860	27,476	$65,447
2052	86,720	27,751	$67,423
2053	87,590	28,028	$69,459
2054	88,460	28,309	$71,557
2055	89,350	28,592	$73,718
2056	89,800	28,735	$75,568
2057	90,250	28,878	$77,465
2058	90,700	29,023	$79,409
2059	91,150	29,168	$81,403

** Leakage of 4.5 percent is applied to the annual revenue. Revenue from fees and fines are not included.*

The annual MCTRA 249 Tollway T&R is illustrated graphically in **Figure 4-10**, with the transactions and revenue showing strong year over year growth.

Figure 4-10 MCTRA 249 Tollway Annual Transactions and Revenue (in thousands)



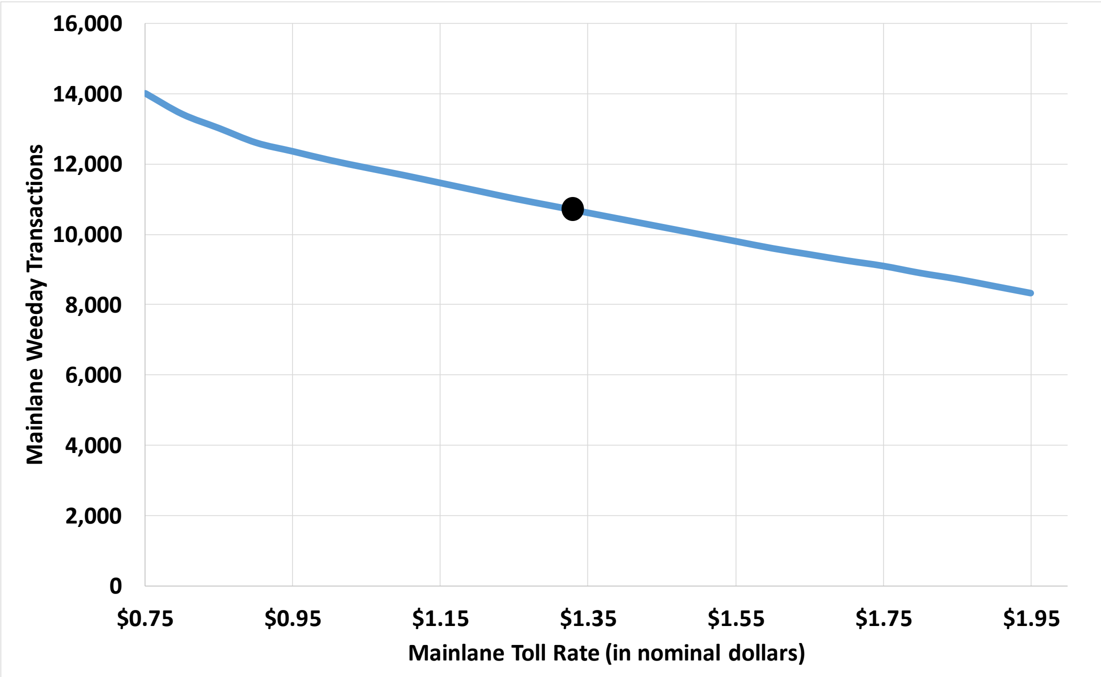
4.10 Toll Sensitivity

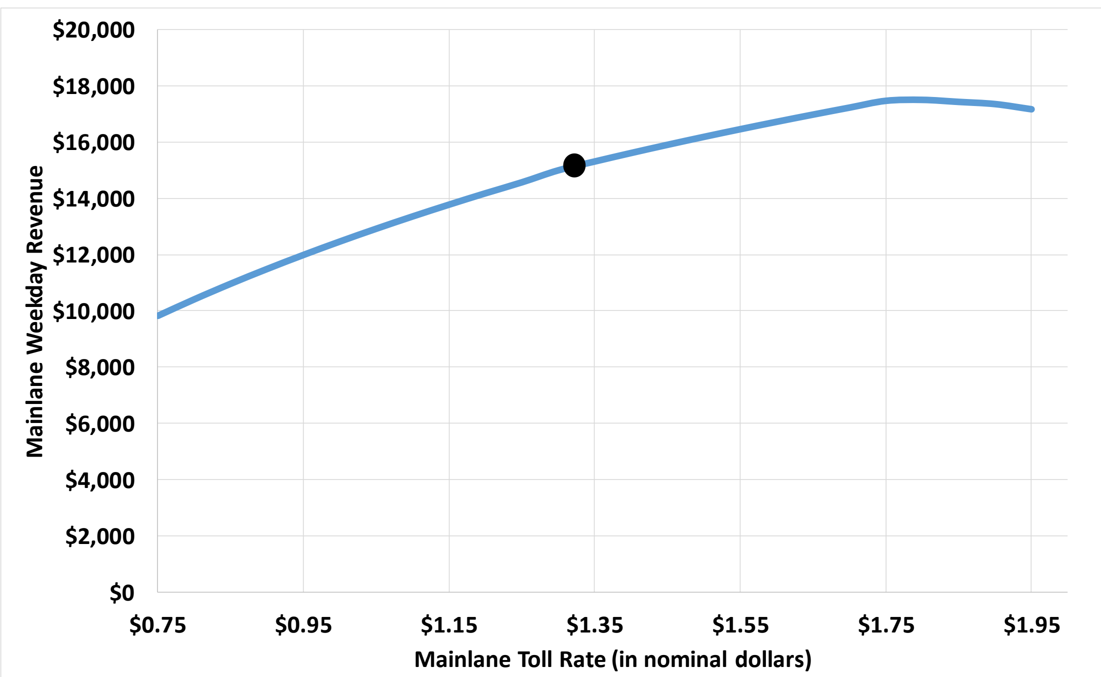
Toll sensitivity analysis is useful in understanding the relationship between toll rates, toll transactions and revenue. It indicates where the proposed rates lie on the curve with respect to the 'optimum' toll which maximizes revenue. At rates beyond the optimum toll rate, toll revenues will decline. Future year toll sensitivity curves are based on changes in traffic characteristics in the corridor including increasing congestion, values of time, competing facilities, and inflationary trends.

For this purpose, CDM Smith conducted toll sensitivity analysis for the model year 2020. **Figure 4-11** illustrates the average weekday toll sensitivity curves for the year 2020 estimated for the MCTRA 249 Tollway. Mainlane gantry toll rates were tested from $0.75 up to $1.95. The base case toll rate in the year 2020 for the MCTRA 249 Tollway gantry is $1.33 ($1.25 in 2017$).

The toll sensitivity analysis results indicate that the assumed future toll rates of the MCTRA 249 Tollway are below the estimated theoretical revenue maximization point. This indicates that there would be potential for revenue enhancement through toll increases above currently assumed rates, if needed. The 'optimum' toll, which maximized revenue was estimated to be at $1.75.

Figure 4-11 Year 2020 Toll Sensitivity Analysis





CDM Smith

Chapter 5

Sensitivity Tests

The MCTRA 249 Tollway Base Case T&R estimates shown previously in **Chapter 4** are based on certain assumptions of future economic growth, values-of-time and other factors. Any forecast of the future is subject to considerable uncertainty. As such, T&R forecasts used to support project financing typically include sensitivity tests; generally, these are intended to provide a broad measure of the potential impact on the Base Case toll revenue forecasts associated with hypothetical changes in certain basic assumptions.

A series of sensitivity tests were conducted to provide a measure of the sensitivity of annual transactions and toll revenue to changes in several specific study assumptions for the MCTRA 249 Tollway. These sensitivity tests are provided as a comparison with the Base Case toll revenue forecasts shown in **Chapter 4**.

A summary of the sensitivity tests results is shown in **Figures 5-1** and **5-2**. These figures display the percentage impact on annual transactions and toll revenue for years 2020 and 2040.

5.1 Growth: Five-Year Lag

The base case forecasts were predicated upon the regional socioeconomic growth forecasts incorporated in the latest H-GAC models. These forecasts were reviewed for reasonableness and adjusted by the independent economist CDS Market Research. However, CDM Smith also tested alternative economic growth scenarios.

This test measured the impact of a five-year lag in socioeconomic growth beyond the year 2025. As such, this test had no effect on the 2020 transactions and toll revenue. For this test, trip tables from the previous five years were used in each future year model. For example, the 2040 model used the 2035 trip tables. This test resulted in decreases of 22.0 and 24.2 percent in transactions and toll revenue estimates, respectively, for year 2040 as compared with the Base Case T&R.

5.2 Twenty Percent Reduction in Travel Demand Growth

This hypothetical case was simulated by simply lowering the rate of annual growth projected by CDS Market Research between 2017 and future year trip tables (2020, 2022, 2025, 2030, 2035, and 2040) by 20 percent.

As can be noted from **Figures 5-1** and **5-2**, a decrease of 20 percent in the growth rate of the underlying trip tables results in lower annual toll revenue by 5.0 percent in 2020 and 21.9 percent in 2040.

5.3 Fifty Percent Reduction in Travel Demand Growth

Similar to the previous sensitivity test, this test also lowered the annual growth rate of trip tables, but by 50 percent as opposed to 20 percent. The 50 percent lower growth results in annual toll revenue that would be 12.2 percent lower in 2020 and 48.9 percent lower in 2040 as compared to the Base Case.

5.4 Revenue Days: 300 Days

For this test, the number of revenue days (annualization factor) was decreased from 320 days to 300 days. As shown in **Figures 5-1** and **5-2**, with 300 revenue days, the MCTRA 249 Tollway toll revenue would be approximately 6.2 percent lower in 2020 and 6.3 percent lower in 2040 as compared to the Base Case.

5.5 Truck Share Reduced by 50 Percent

This test estimated the impact of 50 percent lower truck traffic shares on MCTRA 249 Tollway. For this test, the total number of the transactions was assumed to remain the same as under the Base Case. The toll revenue would be 4.3 percent lower in 2020 and 6.3 percent lower in 2040 when the truck traffic share is reduced by 50 percent.

5.6 Values-of-Time Escalation Reduced by 0.5 Percent Per Year

CDM Smith has a detailed understanding of the values-of-time (VOT) in the Houston region from several studies conducted over the years, its reviews of the impacts of toll increases and stated preference surveys conducted as part of previous studies. In addition, VOT was adjusted based on income distributions throughout the region and other adjustments were made in the calibration of the model to better represent observed traffic volumes at key locations along area toll roads. Nevertheless, VOT can be difficult to project into the future. As such, a sensitivity test was performed considering the potential toll revenue impact of a 0.5 percent reduction in the annual rate of escalation in VOT that was assumed in the Base Case.

Figures 5-1 and **5-2** shows that a decrease of 0.5 percent in the annual rate of escalation of VOT would result 1.2 percent decrease in annual toll revenues in 2020 and 4.3 percent decrease in 2040 as compared to the Base Case.

5.7 Without TxDOT's SH 249 Extension

For this test, TxDOT's SH 249 extension Segments 1 and 2 were assumed to not be constructed. Segment 1 is the section immediately adjacent to and continuous with MCTRA 249 Tollway in Pinehurst and extends to FM 1774 at Todd Mission and is assumed to open in June 2020. Segment 2 is the section between the northern terminus of Segment 1 at FM 1774 and SH 105 set to open in 2022 as a toll-free two-lane arterial. Without these segments providing direct access to the MCTRA 249 Tollway, the forecasted revenue was estimated to decrease by 1.6 percent in 2020 and 24.2 percent in 2040.

5.8 Without Grand Parkway Direct Connectors

TxDOT's Grand Parkway Segments F1 and F2 intersect with the existing HCTRA Tomball Tollway Phase I. The direct connectors (DCs) to and from the south along Tomball Tollway are planned to be constructed by 2025 and the direct connectors to and from the north along Tomball Tollway by 2035. Both sets of DCs are included as background projects for this study. Since the southern DCs only serve the traffic to and from the south on Tomball Tollway, they do not have a material impact on traffic along the MCTRA 249 Tollway which is approximately 5.6 miles north of the Grand Parkway interchange. The northern DCs have a potential impact as they connect southbound Tomball Tollway to eastbound and westbound Grand Parkway as well as eastbound and westbound Grand Parkway to northbound Tomball Tollway. Due to their assumed opening in

2035, the DCs would not affect transactions and toll revenues in 2020. Without the addition of the northern DCs, transactions are estimated to decrease by 4.2 percent and toll revenue by 3.7 percent in 2040 as compared to the Base Case.

5.9 With TxDOT's SH 249 Extension and Four Lanes Along Segment 1

TxDOT's SH 249 extension Segment 1 is the section extending from MCTRA's 249 Tollway in Pinehurst to FM 1774 at Todd Mission opening in June 2020. For this test, SH 249 extension Segment 1 was assumed to be constructed as a four-lane toll road for its entire length as compared to the base case scenario assumption where it was assumed to be two lanes between FM 1488 in Magnolia and FM 1774 at Todd Mission. Segment 2, which is the section between FM 1774 at Todd Mission and SH 105 and assumed to open in 2022 as a toll-free two-lane arterial, remained the same as the Base Case assumption. With these segments included as a continuation of the MCTRA 249 Tollway, the forecasted toll revenue is estimated to increase by 0.3 percent in 2020 and 0.2 percent in 2040.

Figure 5-1 Transactions and Toll Revenue Sensitivities in 2020

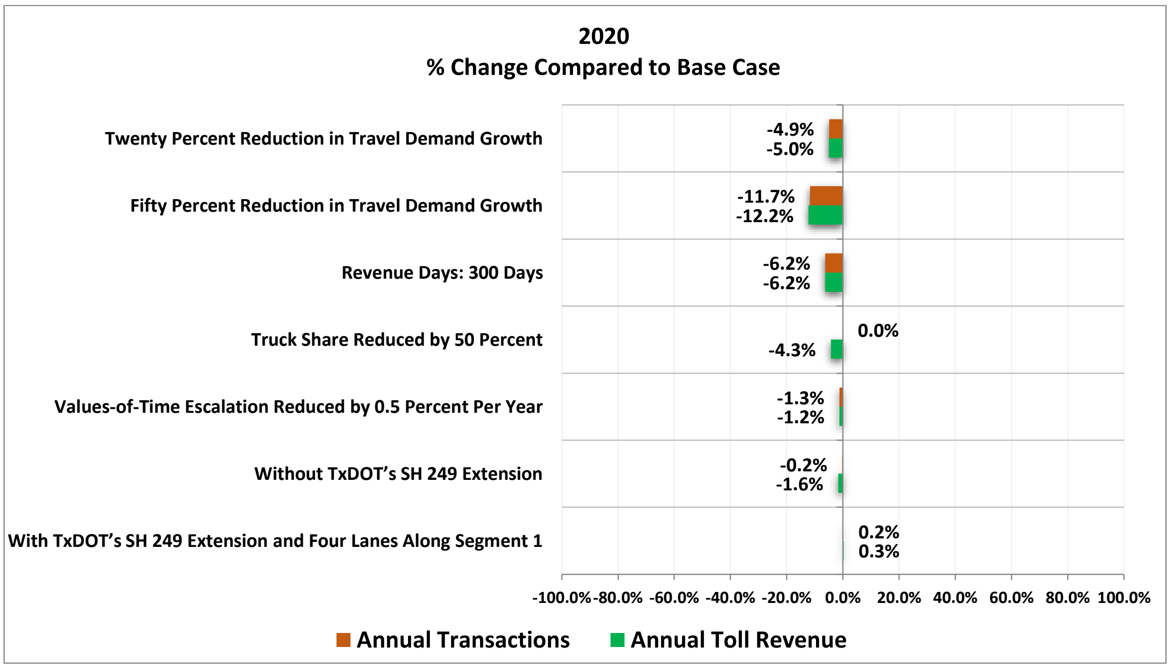
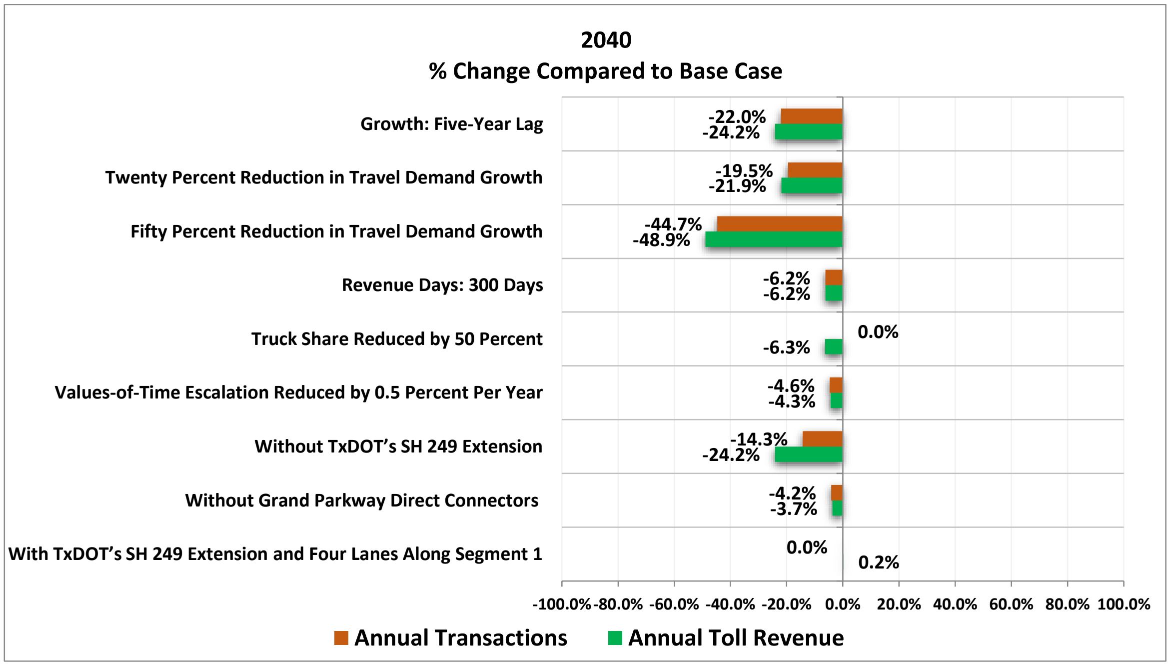


Figure 5-2 Transactions and Toll Revenue Sensitivities in 2040



Appendix A

MCTRA 249 Tollway Economic and Demographic Forecast 2017 Update

CDM Smith

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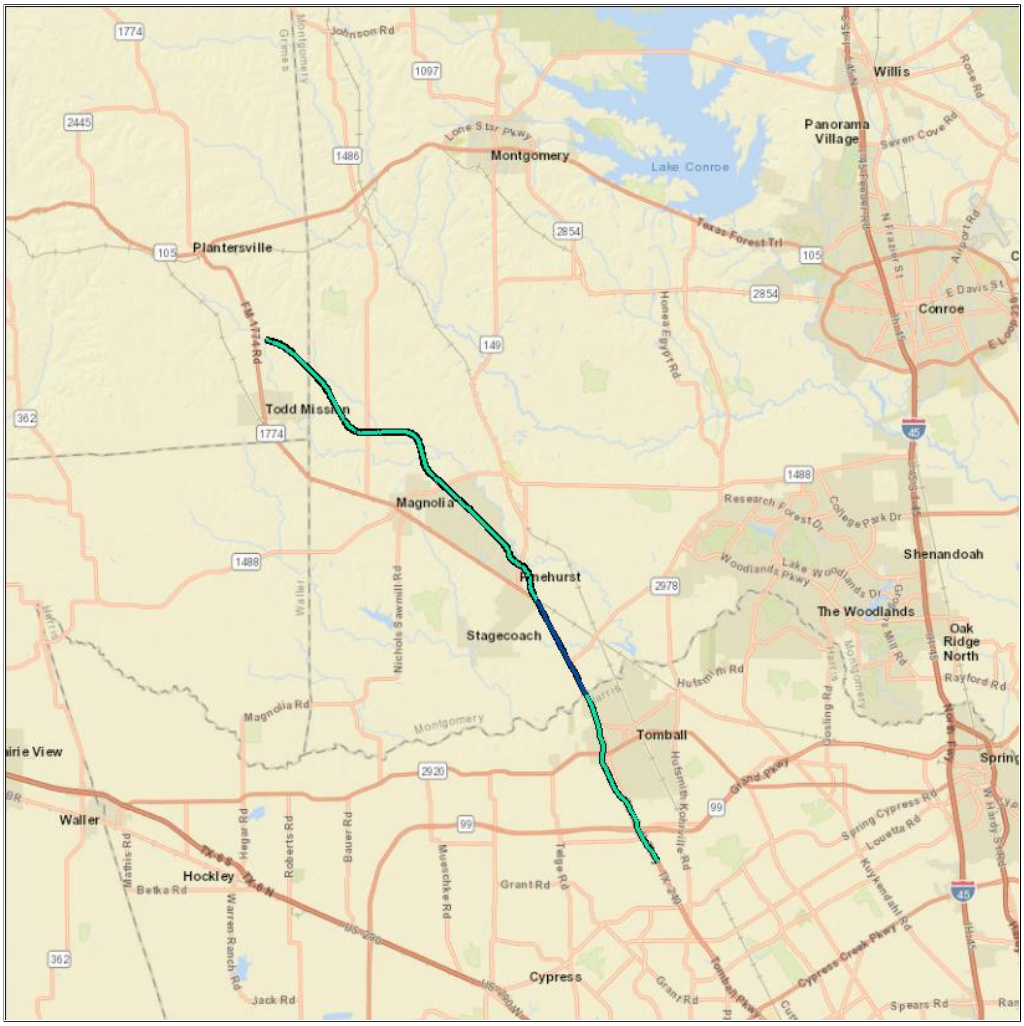
MCTRA SH 249 ECONOMIC AND DEMOGRAPHIC FORECAST 2017 UPDATE



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November 2017

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Table of Contents

TABLE OF EXHIBITS

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INTRODUCTION AND OBJECTIVES

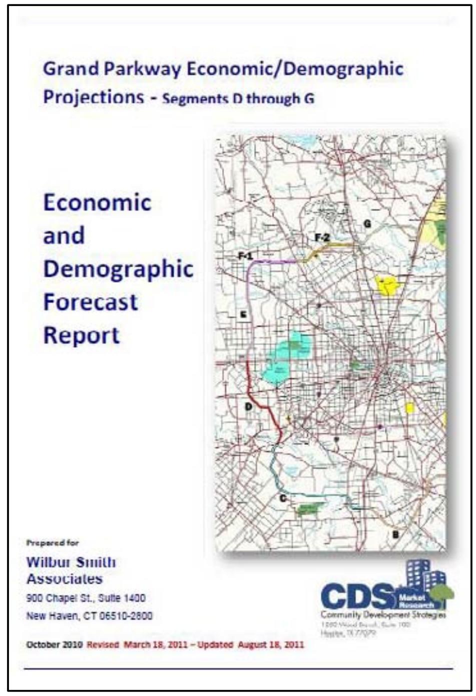
The following work is in support of the Traffic and Revenue Study of the Montgomery County Toll Road Authority (MCTRA) section of the State Highway 249 toll road.

In order to estimate the potential traffic and revenue on the toll lanes, CDM Smith contracted with CDS to provide small area forecasts of population and jobs in five year increments between the years of 2010 and 2040.

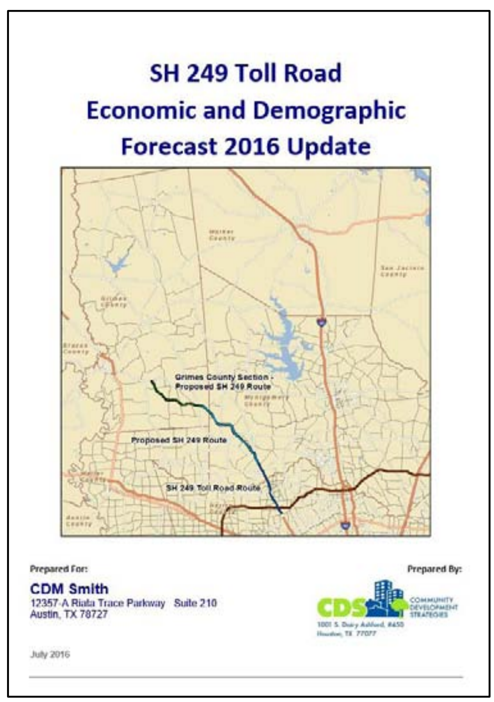
This effort builds upon a 2011 economic and demographic forecast and analysis for the original tolled sections of Grand Parkway Segments D through G. The 2011 analysis and forecast was further refined in a 2013 report focused on the State Highway 249 toll road corridor. The 2013 project was updated in 2015 and again in 2016 to account for additional segments.

This report provides an update and revamp of the forecasts issued in 2016 to account for changing conditions, particularly the economic slowdown brought on by low oil and gas prices, and major “announced” and “under construction” residential and commercial development that has happened since 2016. Information and material from other updates to the original 2011 report, completed from 2011 through 2016 for TxDOT, the Harris County Toll Road Authority (HCTRA), and the Fort Bend County Toll Road Authority (FBCTRA) is also included.

Original 2011 Grand Parkway Report



2016 SH 249 Report



HOUSTON METROPOLITAN TRENDS

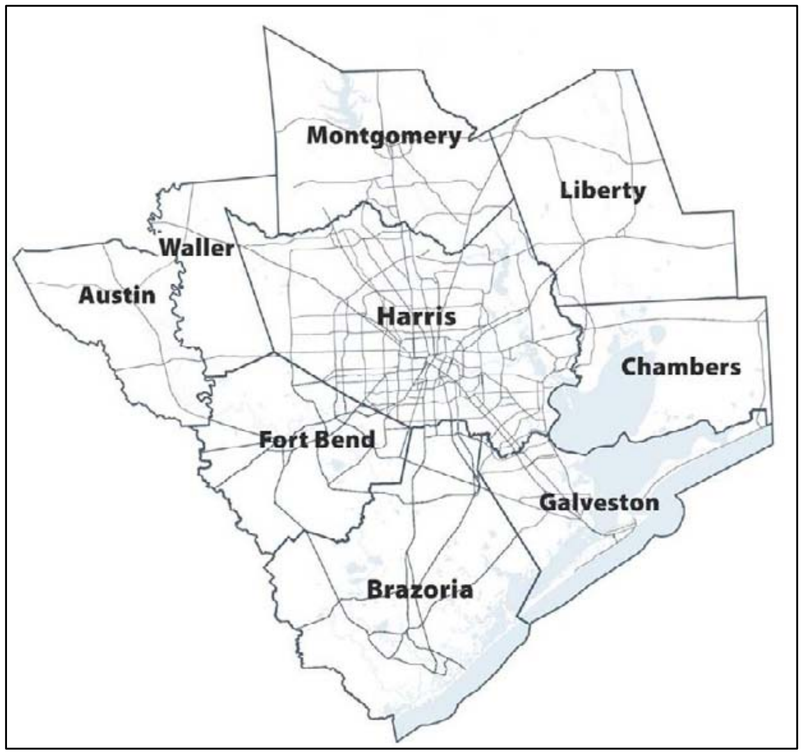
In this report, the overall historical growth of the Houston metropolitan region is presented and analyzed. In addition, various projections of regional growth are investigated and compared. These forecasts, which have a basis in the population and household counts of the 2010 Census, form the starting point for the small area projections that are the end result of this analysis.

Overview of Houston Regional Growth Trends

The Houston Area Economy

Over the years, Houston's economy has evolved from a manufacturing economy to a services based economy. According to the Texas Workforce Commission's March 2016 data, service-related jobs, including Government jobs, now account for 80% of the jobs in the Houston MSA. Houston is evolving into an economy based on multiple industries including engineering, computer, legal, accounting and administrative services. Houston's diversification and growth in the services sector is reflected in the charts depicting changes in jobs by industry seen on the following page.

Houston-The Woodlands-Sugar Land Metropolitan Statistical Area (MSA)*



* San Jacinto County was removed from the MSA in a 2013 change to the MSA definition. It is included in this report for comparison with previous data sets.

In the 12 months from March of 2015 to March of 2016 the Houston economy was seeing the effect of declining energy prices. Crude oil prices declined from $106 per barrel in June 2014 to $30 per barrel in February of 2016, its lowest point. Natural gas prices have also declined by more than 50%. Crude oil has stabilized through May 2016 with prices in the mid-$40's.

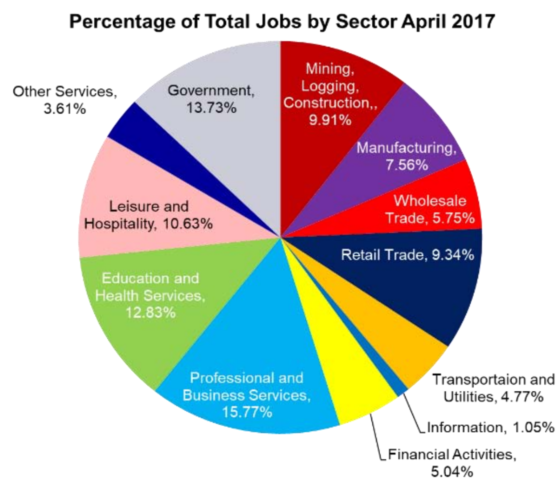
In the six-year period after the Houston region began the recovery from the national recession from January 2010 to January 2016, the region grew by 486,300 jobs averaging 81,050 jobs per year. In the most recent yearly data available from January 2016 to January 2017, regional job growth slowed to 41,900 net new jobs. The sectors encompassing the energy cluster in Houston (Mining, Construction, Manufacturing and Professional Services, primarily "engineering") had job losses. Positive economic growth was from manufacturing, retail trade, professional and business services (not aligned with energy), education and health services, leisure and hospitality and government economic sectors.

The mid-1980's saw Houston's worst recession with job losses of more than 200,000 when oil and natural gas prices declined. Robust economic growth followed that economic downturn with the region adding back all of the lost jobs in a four-year period. The economy was flat during national recessions in the early 90s and early 00s (following the 9/11 attacks) but very robust during the intervening and subsequent years up to 2008. Houston was impacted by the recent national recession with job losses beginning in January 2009. Recent data show Houston's recovery began in early 2010 and the region has added 383,700 jobs from January 2011 to January 2017 averaging 64,000 jobs per year. From January 2017 to March 2017 Houston employment increased by 29,300 net new jobs.

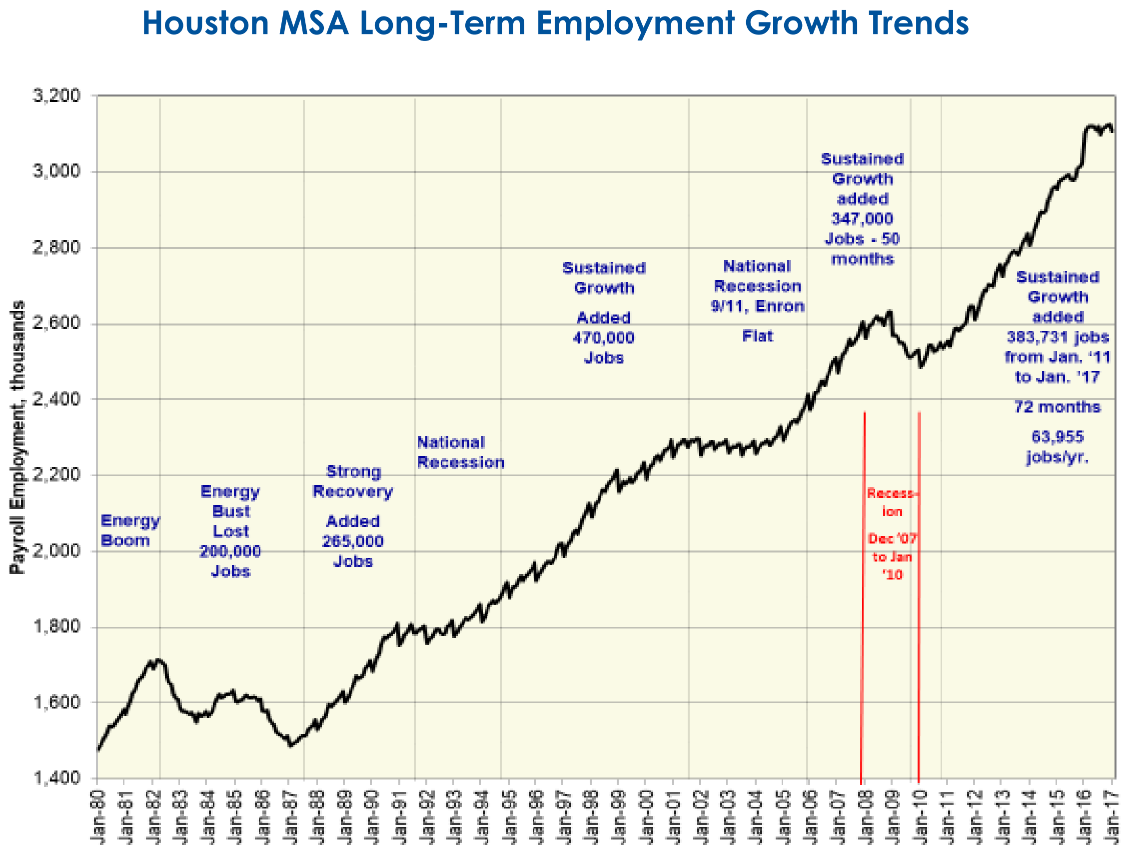
Industry Shares of Job Change

Source: Texas Workforce Commission, From Greater Houston Partnership, April 2017

Employment by Industry



Source: Texas Workforce Commission, From Greater Houston Partnership, April 2017



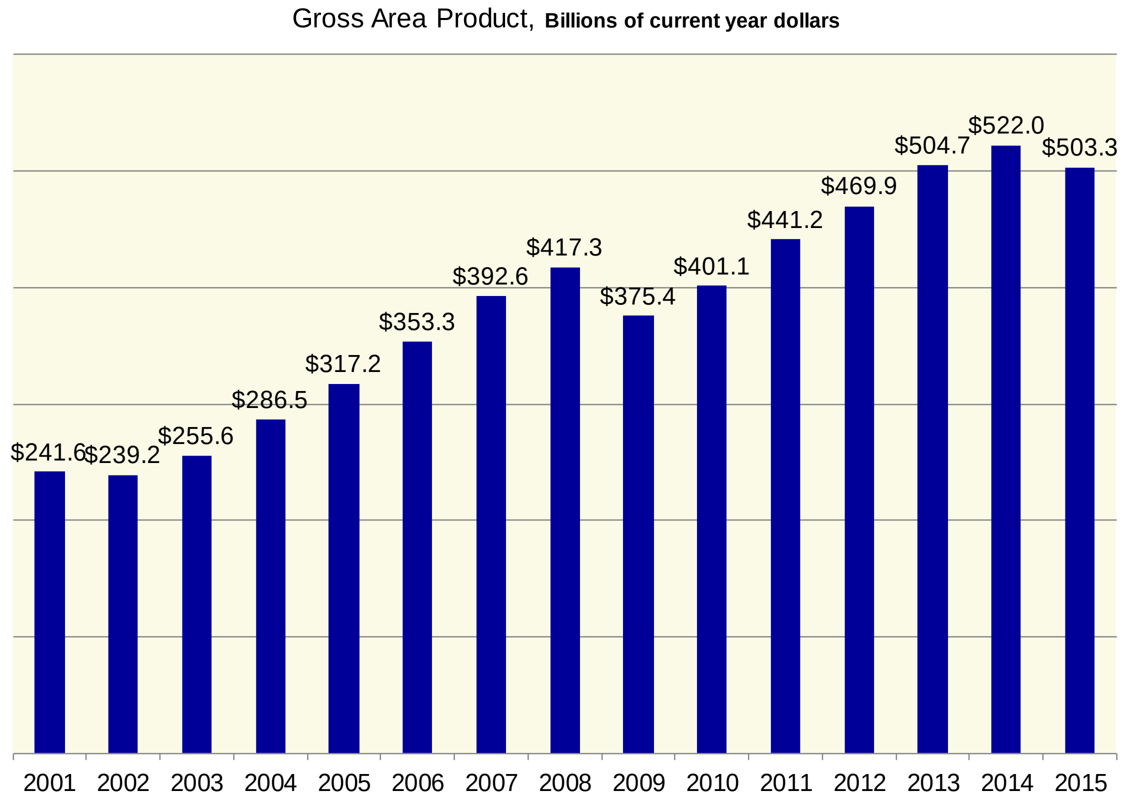
Source: Texas Workforce Commission, March 2016

Houston's economic breadth is substantiated by the number of large employers in the area. According to the Greater Houston Partnership, as of 2016 there are 142 companies in Houston with 1,000 employees or more. Houston's employers rely on a substantial local college and university system. There are 19 community college campuses and 16 university campuses within the Houston MSA. Houston has 421,000 students in 60 degree-granting colleges, universities and technical schools. Additionally, the Houston region has roughly 100 trade, vocational and business schools.

The growth of the Houston region's economy is illustrated in the chart on the next page. The Gross Area Product (GAP) or Real Gross Domestic Product (GDP) by metropolitan area is an inflation-adjusted measure of each area's gross product that is based on national prices for the goods and services produced within the metropolitan area. This is an excellent measure of comparative levels of real regional economic activity. For instance, a cup of coffee served at a restaurant is counted at the same dollar amount (a national average) regardless of whether it is served in high-cost New York City or low-cost Houston, Texas.

Following the national recession, the Houston economy grew by an average annual rate of 7.8% (from 2009 to 2014). The GAP for 2015 the latest year of estimates from the U.S. Bureau of Economic Analysis, illustrates a reduced rate from 2014 by -3.6% primarily due to the impact of low oil prices on the regions oil industry.

Houston MSA GAP



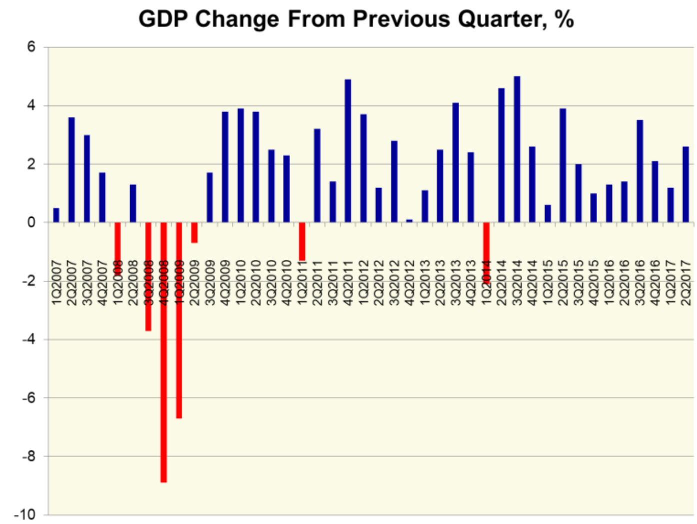
Source: U.S. Bureau of Economic Analysis

Factors Affecting Future Regional Economic Growth

According to the Federal Reserve Bank of Dallas and the Greater Houston Partnership, three factors have governed the state of Houston's economy for the past ten years:

- The health of the national economy
- The value of the U.S. dollar against foreign currencies
- The price of oil and gas

U.S GDP Trends



Source: Bureau of Economic Analysis, August 2017

Major Foreign Currencies vs. the Dollar

Dollar Index U.S. Federal Reserve Bank

Source: U.S. Federal Reserve Bank, August 2017

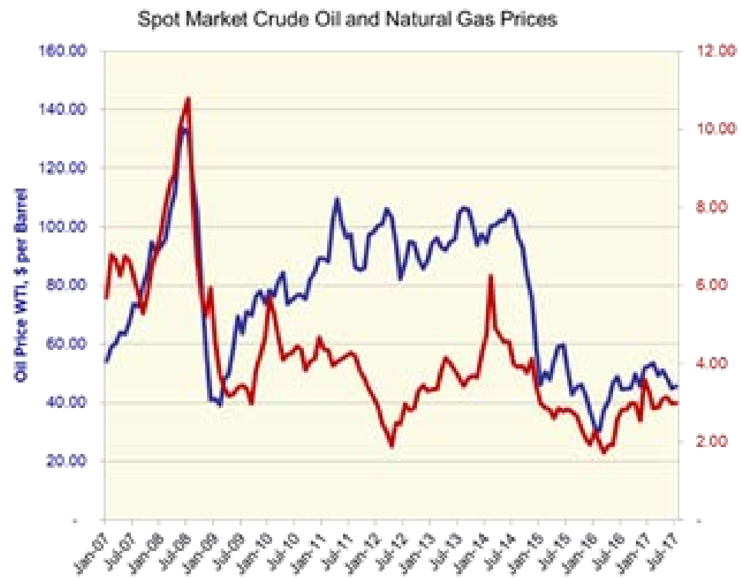
All of the drivers of the economy entered a period of decline starting in mid-2008 as real GDP began to drop, the value of the dollar began to rise and oil prices began a sharp decline. These factors began to have an effect on the Houston economy. However, since that recession, the factors contributing to Houston's growth have been positive. In 2014-15, as oil and gas prices plummeted and the U.S. dollar strengthened, Houston's economy experienced significant stress.

The National Economy— According to the Bureau of Economic Analysis, U.S. real gross domestic product (GDP) peaked at $14.69 trillion in the fourth quarter of 2007 and then declined by $345.0 billion by mid-2009. GDP has subsequently increased in 22 of the past 24 quarters culminating in as estimate of $19.23 trillion in the second of 2017. GDP growth in the second quarter of 2017 was 2.6%.

The U.S. Dollar – The U.S. Dollar remains at a relatively high level today as compared to the long-term historical trend of the Dollar Index of the Federal Reserve Bank. It is however, slightly lower than the peak level of 129 set in late 2001. As of February, 2016 the index was 120.7. A weak dollar stimulates Houston's manufacturing/export sectors; however, such a strong dollar has the negative effect of reducing Houston's exports.

Energy Prices – Lower oil and gas prices reduce demand for oil field equipment and services, which is a strong sector within the Houston economy. Prices for West Texas Intermediate (WTI) crude were in the $20-$30/Barrel range in the first years of this century and remained there until 2004 when crude oil prices began a steady climb to a peak of nearly $140/Bbl. during the first half of 2008. Then, the worldwide recession, accompanied by a fall-off in demand, resulted in a decrease in WTI crude oil prices **(blue line in the graph to right)** to less than $40/Bbl. By 2011, WTI price rebounded to more than $100/Bbl and fluctuated within a range of $85 to $110 until June of 2014 when it declined from a high of $106, dropping to $46 in January of 2015. Oil prices rebounded slightly in the following three months of 2015, reaching $60 by May 2015. Since that point, WTI prices declined to $30 per barrel in February, 2016. As of August 2017, oil prices have rebounded to $46. Concurrently, Henry Hub spot natural gas **(red line in the graph)** remained under $10/mm Btu before falling to a low of $2/mm BTU and then rebounding to $6 in late 2009. Spot natural gas prices again fell to $2 in the spring of 2012, but reached $6.24 by February of 2014. Since that peak, natural gas prices dropped to $2.00 as of February of 2016 and have risen somewhat to stand at $3 as of August of 2017.

Energy Price Trends



Source: U.S. Energy Information Administration, May 2016.

Currently, only one of the three factors that affect the Houston economy, National Economic Growth, presents a positive sign for the Houston economy. Most analysts now expect Houston's economy to be less robust until energy prices rebound to 2010-2014 levels. However, Houstonians can take some comfort in the fact that economic growth will likely continue—albeit at a slightly slower pace. Houston has a long history as a growth-oriented community with conditions that are generally supportive of business expansion, including low cost of living, low real estate prices, low unionization rates, and a pro-business regulatory environment.

Hurricane Harvey and Flooding

In late August 2017, Hurricane Harvey came ashore in the Texas Coastal Bend area as a category 4 storm. It then slowly drifted through inland areas southwest of the Houston region and eventually back out into the Gulf of Mexico off Galveston before returning inland near the Texas–Louisiana border. During this period, it dropped over 50 inches of rain in some parts of the Houston region and caused widespread catastrophic flooding. It followed two previous consecutive years of severe flood events. Most of the damage in all three events has been to residential structures, though businesses were impacted through the suffering of their employees.

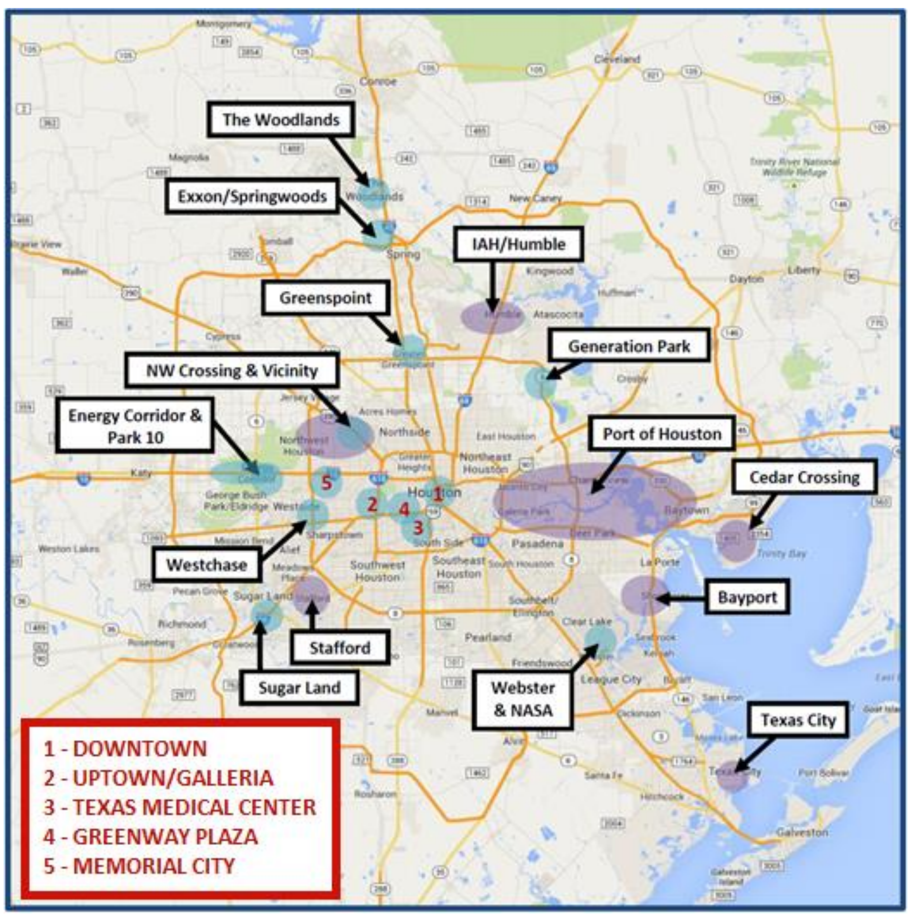
Despite the magnitude of the disasters and ongoing flood risks, research by CDS and others has not indicated that the overall long term economic growth of the Houston region is likely to be impeded. Its key industries have long been aware of the extant flood and storm risks, and in some cases have already made major investments in mitigating those risks. Economic and population growth in Houston and other U.S. cities with healthy economies has not been shown to be noticeably slowed or constrained following disasters of similar magnitude.

Economic Geography

The Houston MSA has historically developed in a low-density suburban form, uninhibited by natural geographic boundaries or excessive political regulation. The region's central business district presently accounts for only about six percent of regional employment. Other loosely-defined 'edge cities' comprise a large portion of the region's employment base. These typically are made up of a loose cluster of office, medical office, hotel, and supportive retail land uses.

Examples within the Houston area include the Uptown/Galleria area and Texas Medical Center in the urban core, or the Energy Corridor and The Woodlands in the suburbs. The region's heavy industries are heavily clustered around the Houston Ship Channel and the Galveston Bay area. Additionally, a significant number of jobs are spread among Houston's suburbs in numerous office parks, retail centers, and light industrial facilities. Emerging clusters include Springwoods Village, Generation Park, and Cedar Crossing. The previous map illustrates the locations of the principal activity centers (in blue) and industrial districts (in purple). Note that all future segments of the Grand Parkway (outer ring) are also shown on the map at right.

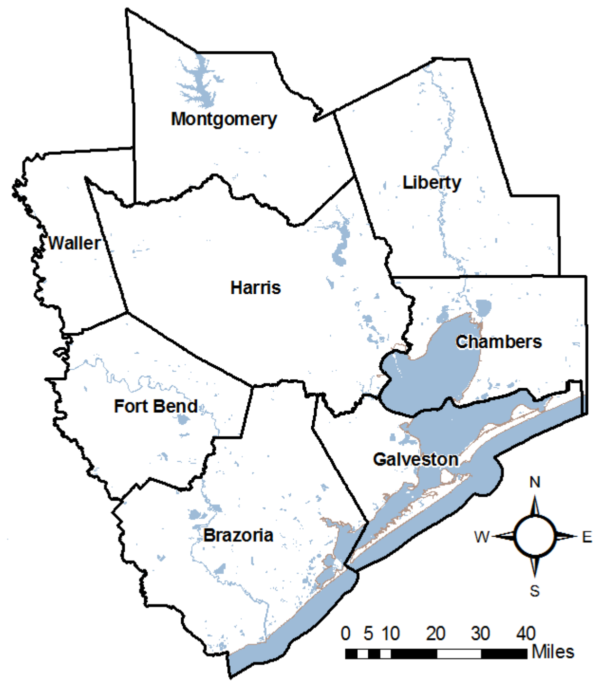
Major Regional Employment & Activity Centers



The H-GAC Transportation Planning Region

As described in the previous sections, the Houston-The Woodlands-Sugar Land Metropolitan Statistical Area (MSA) includes 9 counties as of 2013. The MSA had previously included 10 counties, with San Jacinto County subtracted from the 2013 definition. For transportation planning purposes, the Houston-Galveston Area Council (H-GAC) as the Metropolitan Planning Organization (MPO) currently uses an 8-county region, as the Transportation Management Area (TMA) shown in the map on the right, which until 2004 was defined as the Houston-Galveston- Brazoria Combined Metropolitan Statistical Area (CMSA). Included in that geography are the following counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller. The only currently-defined MSA county that is not a part of the H-GAC management area is Austin County. For the remainder of this report, the 8-county region will be the focus of the analysis.

H-GAC Transportation Management Area



Population

Historic Growth and Projections

Population growth is one of the principal measures of the economic vitality of any area because increasing population is generally the result of more jobs, a high level of immigration and a stable or expanding economy. The Houston region has a history of growth in all areas of the community. Since 1980, the growth has been biased to the southwest, west and northwestern areas of the region. The table entitled Population Growth Trends and Projections summarizes historical Census population counts for 1980, 1990, 2000, and 2010.

The Houston MSA has undergone tremendous growth in recent decades – from 3.1 million in 1980 to 4.7 million in 2000. In 2010, total population reached 5.9 million.

As the table on the right demonstrates, population has grown rapidly in the counties that comprise the 8-county region. The 2010 Census revealed that the population of the region was 5,892,000.

On a percentage basis, Fort Bend County was the fastest growing county between 2000 and 2010 adding 324,000 persons (a 91.5% increase). Montgomery County grew by 162,000 persons (a 55.1% increase) in that 10-year period. Harris County grew the most in number of net new residents adding 691,000 (a 20.3% increase).

Population Growth Trends

Counties 1960 – 2010 (in thousands of persons)

County	Historical Census Population, 1,000s					Census
	1960	1970	1980	1990	2000	2010
Brazoria	76	108	170	192	242	313
Chambers	10	12	19	20	26	40
Fort Bend	41	52	131	225	354	678
Galveston	140	170	196	217	250	291
Harris	1,243	1,742	2,410	2,818	3,401	4,092
Liberty	32	33	47	53	70	76
Montgomery	27	49	129	182	294	456
Waller	12	14	20	23	33	36
8-Co. Total	1,581	2,180	3,122	3,730	4,670	5,892

Source: U.S. Bureau of the Census

Population Growth Accounted for by In-Migration

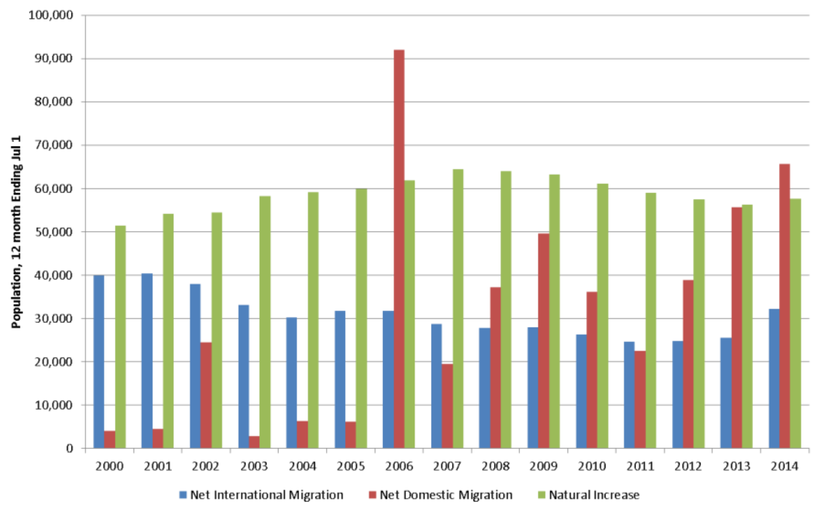
Components of change in the population published by the U.S. Bureau of the Census are presented in the chart below. Net in-migration, which is calculated based on the number of persons moving in versus the number moving out, has accounted for almost 50% of the growth in MSA population over the 2000-2011 period. International migration comprised 29.1% of the total net change while domestic migration made up a slightly smaller share of 21.7% of the net change in population in the region. Natural increase accounted for just over one-half of the increase.

The most recent data on the components of population change is shown in the lower right table. From 2010 to 2014, natural increase in the 8-county region accounts for 43.5% of the net population change while international and domestic migration accounted for 22.8% and 33.7%, respectively.

Harris County received 77.6% of the international migrants accounting for 28.8% of the county's total change. Brazoria, Galveston, Montgomery and Fort Bend counties received the largest share of their net growth from domestic migration.

Components of Population Change

Houston-The Woodlands-Sugar Land MSA (9 County)



Source: U.S. Bureau of the Census, 2014

Components of Population Change by County

Cumulative April 1 2010 to July 1 2014

County	Total Population Change	Natural Increase	International Migration	Domestic Migration
Brazoria	24,997	10,825	2,544	11,303
Chambers	3,049	891	126	1,987
Fort Bend	100,448	23,657	16,646	58,395
Galveston	22,894	6,719	2,873	13,009
Harris	348,359	187,642	100,542	63,037
Liberty	2,474	1,380	238	856
Montgomery	63,183	14,317	6,384	40,967
Waller	3,583	1,278	210	2,044
8-county Region	568,987	246,709	129,563	191,598

Source: U.S. Bureau of the Census, May 2015

Revised Regional and County Forecasts

The most significant change in the Houston area growth trends over the past four years has been the reduced rate of job growth and resulting population growth as a result of the contraction and stagnation of the upstream energy and related sectors. This section describes the process involved in adjusting the current estimates of population, households and employment and adjusting the forecasts in light of the likely effect of low oil prices on the local economy over an extended time period.

Definitions of the Houston Region

The first point of clarification involves the definition of the geographical region. The **CDS model**, using Barton Smith's University of Houston- Institute for Regional Forecasting (UH-IRF) forecasts and methodology, included an eight-county geographical area (formerly called the PMSA). This 8-county region is consistent with the Transportation Planning Region used by the regional MPO, the Houston-Galveston Area Council (H-GAC) and the Texas Department of Transportation (TxDOT). CDS subsequently added Grimes County for use in developing the forecasts for the SH 249 Toll Road Traffic and Revenue Study. However, as of 2013, the official U.S. Census definition of the "Houston, Woodlands-Sugar Land, TX MSA" includes nine counties (Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller). The Texas Workforce Commission uses the nine-county Census metropolitan area definition. For purposes of comparison, the CDS region definition (including Grimes County and not including Austin County) differs from the official census MSA by only 2,036 residents (0.03%). So for all overview comparisons the difference in the two region definitions is not significant.

Counties in the Houston - The Woodlands – Sugar Land MSA	Counties in the CDS/UH-IRF Houston Regional Model
Austin	
Brazoria	Brazoria
Chambers	Chambers
Fort Bend	Fort Bend
Galveston	Galveston
	Grimes
Harris	Harris
Liberty	Liberty
Montgomery	Montgomery
Waller	Waller
2016 Total Estimated Population	
6,772,470	**6,770,383**

In order to make changes in the long-term forecast for regional employment and population growth, recent trends (2010 to 2016) must be evaluated.

Background to the Regional Forecasts

Long-term economic forecasts are most often a reasonable extension of historical trends into the future. However, there is no assurance that those trends will be sustained. It is certain that future growth is likely to deviate, higher or lower than history would suggest. The historical employment growth of the Houston region presented below, confirms that growth is not likely to follow a straight line or smooth curve into the future. All economies go through periods of growth and recession. However one thing is clear: **the Houston regional economy is resilient and oriented to support future growth**.

In the first economic forecasting project for CDM Smith ***– Grand Parkway Economic/Demographic Projections - Segments D through G***— completed in the spring of 2011, CDS considered seven independent forecasts of population from respected organizations and three independent forecasts of employment. After the review, it was determined that "Regional and County-level forecasts" of the University of Houston – Institute for Regional Forecasting should form the appropriate basis for the small area forecasts for the Grand Parkway Investment Grade Traffic and Revenue Study.

In 2012, Dr. Barton Smith updated the forecasts to account for recent changes including the 2010 Census. All subsequent forecasts prepared for toll road traffic and revenue studies are based on these forecasts. Unfortunately, Dr. Smith has retired from the University of Houston and is no longer affiliated with the Institute for Regional Forecasting (UH-IRF). Also regrettably , the UH-IRF, under the new leadership of Dr. Bill Gilmer, has decided to discontinue the long-term regional forecasts prepared historically by Dr. Smith – focusing instead on current and short-range regional economic analyses. The adjustment of the regional forecast is now left to CDS Market Research using a model based on the one Dr. Smith used in his earlier UH-IRF forecasts.

Recent County and Regional Population and Household Trends

The table below presents the most recent annual population estimates from the U.S. Bureau of the Census. Note that the estimates are based on a mid-year date of July 1st each year.

Total Population Estimates by County 2010 to 2016

Geography (County)	Census Apr '10	Population Estimate (as of July 1)						
		2010	2011	2012	2013	2014	2015	2016
Brazoria	313,166	314,498	319,375	324,503	330,340	338,176	346,312	354,195
Chambers	35,096	35,422	35,614	36,406	37,240	38,132	38,863	39,899
Fort Bend	585,375	590,581	607,482	626,808	654,626	686,650	716,087	741,237
Galveston	291,309	292,538	295,611	301,395	307,303	314,283	322,225	329,431
Grimes	26,604	26,614	26,694	26,705	26,824	27,069	27,512	27,671
Harris	4,092,459	4,108,187	4,181,238	4,262,504	4,352,462	4,447,577	4,538,028	4,589,928
Liberty	75,643	75,857	76,074	76,471	77,032	78,200	79,654	81,704
Montgomery	455,746	459,336	471,737	485,004	499,574	519,054	537,559	556,203
Waller	43,205	43,455	44,023	44,337	45,420	46,798	48,656	50,115
9-County Region	**5,918,603**	**5,946,488**	**6,057,848**	**6,184,133**	**6,330,821**	**6,495,939**	**6,654,896**	**6,772,399**

Source: US Bureau of the Census – Annual Population Estimates

The CDS Forecast model, however, uses only household population excluding persons living in group quarters such as dormitories, nursing homes, jails, and prisons. The U.S. Bureau of the Census does not include estimates of persons living in group quarters in either the annual estimates series or the one or five–year estimates of the American Community Survey series. Therefore, CDS used a combination of assumptions to prepare an estimate of the 2015 Population in Households and Number of Households in the 9-county region. The result of the estimate for 2015 is shown in the following table.

Estimate of Population in Households and Number of Households by County

Area	'10-'15 Pop/Pop in HH[1]	Estimated 2015 Pop in HH	2015 Est. Pop in GQ	Estimated 2015 HH	2015 Estimated HH Size	2010 Census HH Size[2]
Brazoria County	1.0335	335,147	10,514	117,014	2.86	2.84
Chambers County	1.0063	38,547	221	13,384	2.88	2.92
Fort Bend County	1.0093	708,446	5,403	224,903	3.15	3.09
Galveston County	1.0144	316,497	5,041	119,433	2.65	2.63
Grimes County	1.1266	24,500	2,918	8,566	2.86	2.65
Harris County	1.0105	4,484,093	49,248	1,590,104	2.82	2.82
Liberty County	1.0720	74,599	5,097	25,993	2.87	2.81
Montgomery County	1.0067	532,889	3,545	181,873	2.93	2.78
Waller County	1.0900	44,353	4,277	15,400	2.88	2.81
9-County Region		**6,559,071**	**86,264**	**2,296,672**	**2.86**	**2.83**

[1] U.S. Bureau of the Census, American Community Survey. 5-Year Estimates 2010-2015.

[2] U.S. Bureau of the Census, 2010 Census.

County and Regional Employment Trends

The following table presents the most recent Nonfarm Payroll Employment estimates of the Texas Workforce Commission. This statistic includes the jobs covered by the Texas Unemployment Insurance program and does not include self-employed workers or agricultural workers. It does include government employees.

Nonfarm Payroll Employment Estimates by County 2010 to 2016

Geography	Employment Estimate (average of all Quarters)						
	2010	2011	2012	2013	2014	2015	2016
Brazoria County	85,863	88,572	92,303	95,434	98,968	103,634	106,034
Chambers County	9,435	10,453	11,492	13,143	11,906	12,748	13,551
Fort Bend County	130,786	135,877	143,560	157,047	163,131	169,844	173,502
Galveston County	94,176	95,250	96,030	98,496	101,503	102,856	107,713
Grimes County	7,256	7,681	8,182	8,162	8,295	7,854	7,080
Harris County	1,992,587	2,039,093	2,112,529	2,181,891	2,257,542	2,290,937	2,266,689
Liberty County	16,365	16,603	17,386	16,785	16,981	16,543	16,517
Montgomery County	127,254	133,750	141,586	149,667	157,680	165,177	168,680
Waller County	13,556	14,213	15,113	15,847	16,234	16,289	15,981
9-County Region	**2,477,277**	**2,541,491**	**2,638,181**	**2,736,472**	**2,832,238**	**2,885,880**	**2,875,747**

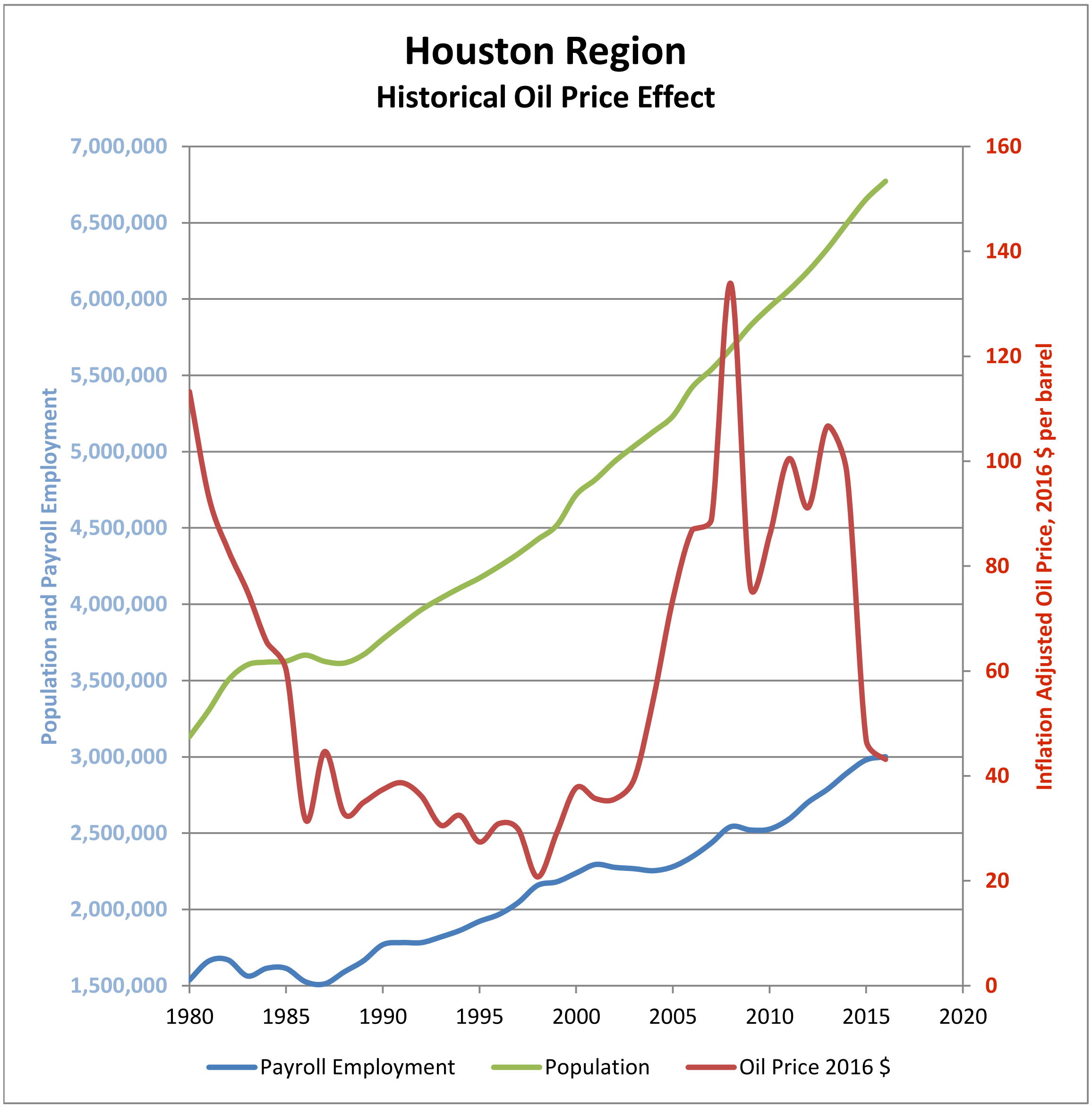
Source: Texas Workforce Commission, Quarterly Census of Employment and Wages, QCEW, August 2017

The region added 398,470 net new jobs over the 6-year period, averaging 64,412 jobs added per year. Job growth did slow at the end of the period adding only 53,642jobs from 2014 to 2015. And then, according to the Texas Workforce Commission, the region registered a loss of payroll jobs from 2015 to 2016. However, recent analysis from the Dallas Federal Reserve suggests that the 2015-2016 job growth was a positive 2,000 jobs.

Houston Economy and Oil Prices

The Houston economy, while certainly affected by the prices of crude oil and natural gas, is less dependent on them today than it was in the last big oil price bust in the early to mid-1980's. The chart below illustrates the job growth in the Houston economy juxtaposed with the price of crude oil (adjusted for inflation). While some effect of energy prices is apparent, the effect has not been a significant factor in the long-term growth of the regional economy.

Houston Nonfarm Payroll Employment, Population and Oil Prices



Source: Texas Workforce Commission, for jobs and U.S. Energy Information Agency, adjusted by Macro Trends, http://www.macrotrends.net/1369/crude-oil-price-history-chart

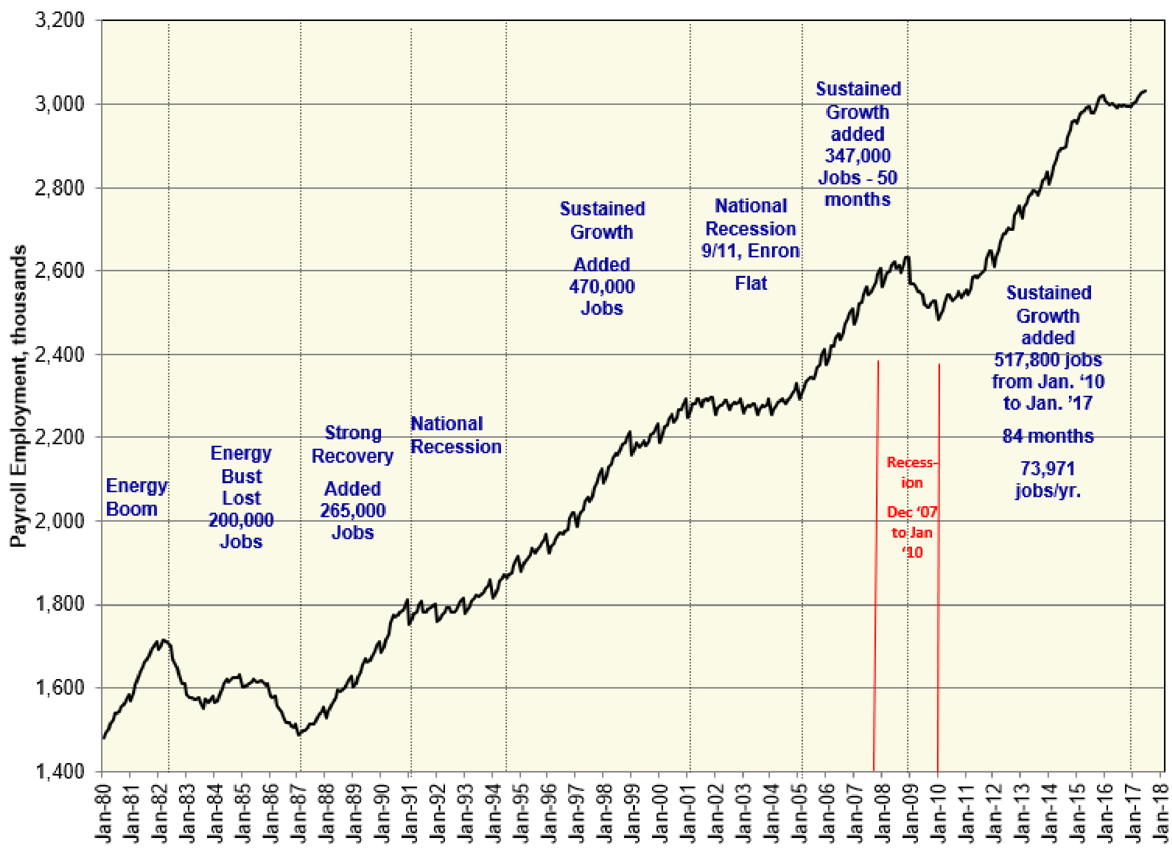
New Regional and County Forecasts

Preparation of new forecasts for the Houston region and its counties is based on three factors; 1) Long-term economic trends of the Houston region; 2) recent economic trends driven by declines in the commodity prices of crude oil and natural gas; and 3) future expectations for national and international economic factors and their effect on the Houston economy.

1. Long-Term Houston Economic Trends

As mentioned previously, the Houston Region has a long history of sustained economic growth. As measured by the Texas Workforce Commission and the Bureau of Labor Statistics payroll employment data, the Houston region has demonstrated sustained growth and resilience to economic recessions.

Houston MSA Long-Term Employment Growth Trends



Source: Texas Workforce Commission, August 2017

The evidence provided by the previous chart, as well as the chart of "Employment, Population and Oil Prices presented previously, supports the contention that the Houston economy has remained strong for many years "weathering" recessions, energy price "busts" and changing global economic conditions.

2. Recent Trends in Energy Prices

The recent regional jobs estimate for May of 2017 presents a relatively gloomy picture of the Houston economy. The following table presents the most recent job estimates by sector. Note that this data reflects the "Houston-The Woodlands- Sugar Land MSA" and is based on the Current Employment Survey, a somewhat different series from the Quarterly Employment and Wages Survey data presented previously.

Houston MSA Nonfarm Payroll Employment May 2015 to May 2017

	Payroll Jobs			24 Month Jobs Chg.	
Industry	May '15	May '16	May '17	May '15 - May '17	
Total Nonfarm	2,999,600	3,003,600	3,048,200	48,600	1.62%
Total Private	2,605,600	2,596,700	2629300	23,700	0.91%
Goods Producing	569,400	532,700	533,700	-35,700	-6.27%
Mining...Oil and Gas Extraction	161,700	139,300	132,500	-29,200	-18.06%
Support Activities for Mining	46,200	36,100	37,800	-8,400	-18.18%
Construction	216,200	221,200	216,200	0	0.00%
Manufacturing of Fabricated Metal Products	59,800	47,600	53,600	-6,200	-10.37%
Manufacturing of. Machinery	55,000	43,400	38,500	-16,500	-30.00%
Manufacturing of Agriculture, Construction, Mining Machinery	39,400	29,300	25,600	-13,800	-35.03%
Manufacturing of Computer and Electronic Products	17,000	15,400	15,500	-1,500	-8.82%
Petroleum and Coal Products Manufacturing	9,600	9,900	10,100	500	5.21%
Chemical Manufacturing	37,400	38,700	38,800	1,400	3.74%
Wholesale Trade	168,700	163,100	159,900	-8,800	-5.22%
Retail Trade	297,500	303,900	302,600	5,100	1.71%
Transportation, Warehousing, and Utilities	140,900	138,500	138,800	-2,100	-1.49%
.Information	32,300	32,700	32,000	-300	-0.93%
.Finance and Insurance	95,600	98,800	101,100	5,500	5.75%
.Real Estate and Rental and Leasing	55,300	55,700	55,100	-200	-0.36%
Legal Services	24,300	24,600	24,800	500	2.06%
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	22,500	24,300	25,000	2,500	11.11%
Architectural, Engineering, and Related Services	72,000	67,100	64,600	-7,400	-10.28%
Computer Systems Design and Related Services	32,400	32,000	31,800	-600	-1.85%
Administrative and Support , Waste Management Services	216,000	212,500	226,500	10,500	4.86%
Educational Services	55,300	57,600	60,200	4,900	8.86%
Ambulatory Health Care Services	145,800	151,600	157,300	11,500	7.89%
Hospitals	80,600	85,200	88,400	7,800	9.68%
Accommodation and Food Services	263,800	281,700	288,800	25,000	9.48%
Other Services	107,600	109,000	110,800	3,200	2.97%
Federal Government	27,800	28,300	28,700	900	3.24%
State Government	81,100	84,300	85,800	4,700	5.80%
Local Government	285,100	294,300	304,400	19,300	6.77%

Source: Texas Workforce Commission, Monthly Employment Estimates, CES Series. August 2017

Payroll employment in the MSA grew by only 48,600 jobs in the two-year period. The weakness of upstream oil and gas business is evident in the 2016 job statistics. The combination of the sectors of the upstream energy cluster reveals total losses of 77,200 jobs over the 12-month period from December 2014 to December 2016. The job estimates for 2017 appear to present evidence of a rebound.

University of Houston economist Bill Gilmer, who is the director of the University's Institute for Regional Forecasting, stated in his autumn 2017 economic outlook presentation ("Slow Growth Returns to Houston in 2017: Can We Bring Back the Oil Jobs in 2018?", November 6, 2017), that if describing the region's downturn in 2015-2016 as a "recession," then the trough was Dec. 2016 after Jan. 2015 peak." He also stated that "While Houston has moved back on a slow to moderate growth track, *stronger growth requires that local oil jobs return in large numbers*" (italics his).

His assessment of the current and near-term prospects for the region's economy identifies four main forces underpinning its future health:

- The oil and gas extraction sector and related industries;
- The U.S. economy;
- The "downstream" petrochemical manufacturing sector and related industries; and
- "Momentum" carried over from the 2011-2014 regional economic boom, mainly secondary industries that are driven by the region's internal growth.

Of these forces, he finds the only one that is now strongly supporting the region's economic growth is the U.S. economy, which has continued its moderate growth pace and appears likely to continue to do so. The oil and gas extraction sector has experienced a mild recovery in 2017 but has uncertain growth prospects in 2018. A rash of new and expanded petrochemical plant facilities, which employed thousands of construction workers, is completing these projects and transitioning to a permanent workforce which will be much smaller. Finally, the momentum from sectors of the economy that cater to the increased job base and local resident population, which after catching up to the region's basic economy growth, is now leveling off.

UH-IRF Preliminary Short-term Jobs Forecast

Year	Job Growth
2014	112,100
2015	11,000
2016	-1,500
Forecast	
2017	40,900
2018	39,500
2019	54,000
2020	62,200

Source: ***Slow Growth Returns to Houston in 2017: Can We Bring Back the Oil Jobs in 2018?***, Robert W. Gilmer, University of Houston Institute for Regional Forecasting, Capstreet Group Presentation, November 2017.

In summary, Dr. Gilmer presented three jobs forecast scenarios, primarily hinging upon the strength of the oil and gas production sector. For 2017, he forecasts a range of calendar year growth from approximately 30,000 jobs at the low end to 66,000 jobs in the most optimistic scenario. A moderate scenario of about 41,000 jobs is viewed as the most likely. He issued a "combined" scenario with weighted averages of 10%/65%/25% for the high/medium/low growth scenarios respectively. This forecast is shown in the table to the right.

This forecast indicates his assessment that the Houston economy suffered a possible mild recession in early 2016 and will not have strong growth forces in the near term, despite a mild recovery in oil and gas production activity. He finds that the U.S. oil and gas production industry, due to readily available capital, short-term financial incentives to drill wells, and the rapidity with which wells can be put into production using fracking technology, will likely keep oil prices within a moderate range that does not encourage rapid employment growth, especially in the research and white-collar jobs in Houston. The industry's firms have also put much greater labor efficiencies in place that reinforce this restraint. The end results is that this pattern will allow for moderate growth at a pace near or somewhat below the region's long-term average through 2020.

3. *National and International Factors Affecting Regional Economic Growth*

As stated earlier, three factors have governed the state of Houston's economy for the past ten years, according to the Federal Reserve Bank and the Greater Houston Partnership:

- The health of the national economy
- The value of the U.S. dollar against foreign currencies
- The price of oil and gas

Further discussion of these three factors is located on pages 6 and 7.

Various Forecasts of the Houston Region

In this section employment and population forecasts for the Houston region are compared. There are seven forecasts presented for comparison with the new CDS 2017 forecasts:

1. **CDS 2016**. Based on the 2014 and 2015 forecasts, this 2016 updated 9-county forecast prepared by CDS accounted for higher employment growth to 2014 as well as lower crude oil prices beginning in 2014. Also included is the 9-county region with Grimes County.
2. **H-GAC 2016**. The most recent forecast from the Houston-Galveston Area Council which includes the 8-county Transportation Planning Region and does not include Grimes County. H-GAC uses only Population in Households excluding the persons in group quarters. For the employment forecasts, H-GAC uses a combination of nonfarm payroll jobs and self-employed persons in the urban areas. H-GAC's 2017 forecast was in the process of being completed during the work on the current forecast and was not available for comparison. *See: http://www.h-gac.com/community/socioeconomic/2040-regional-growth-forecast/default.aspx*
3. **TxSDC 1.0.** The 2014 forecasts from the Texas State Data Center (TxSDC) using the 1.0 Migration Scenario, assuming that the migration rates will be equal to the actual rates measured from 2000 to 2010 in all future years. *See: http://osd.texas.gov/Data/TPEPP/Projections/*. Region used includes the 9-counties as in the CDS forecasts. TxSDC forecasts population and demographic characteristics only, not employment.
4. **TxSDC 0.5.** The 2014 forecasts from the Texas State Data Center (TxSDC) using the 0.5 Migration Scenario, assuming that the migration rates will be half of the actual rates measured from 2000 to 2010 in all future years. *See: http://osd.texas.gov/Data/TPEPP/Projections/*. Region used includes the 9-counties as in the CDS forecasts.
5. **W & P 2017**. The most recent forecast from the firm, Woods and Poole Economics, Inc. W & P uses the 9-county Houston MSA. For the population forecasts, Wood and Poole uses "Total Population" including persons in group quarters. For the employment forecasts, W & P uses "Total Employment" which includes farm workers and self-employed persons. Because the much higher employment numbers can distort the comparative charts, W & P comparisons are not always presented in the following graphical comparisons. The W & P forecasts are proprietary and are available for purchase. *See: https://www.woodsandpoole.com/.*
6. **Moody's 2017.** The most recent Baseline Scenario forecasts from Moody's Analytics for the 9-county Houston MSA. For population forecasts, Moody's uses "Total Population" including persons living in group quarters. For employment, Moody's uses "Payroll Employment." Moody's Houston region includes the 9-county Houston MSA. The Moody's forecasts are proprietary and are available for purchase. *See: http://www.moodysanalytics.com/Products-and-Solutions/Economic-Consumer-Credit-Analytics/Forecasts-with-Alternative-Scenarios*
7. **The Texas Water Development Board (TWDB) 2017 State Water Plan Projections Data.** The most recent population projections from the TWDB. Forecast numbers are only presented every decade. *http://www.twdb.texas.gov/waterplanning/data/projections/2017/popproj.asp*

Comparative Employment Forecasts

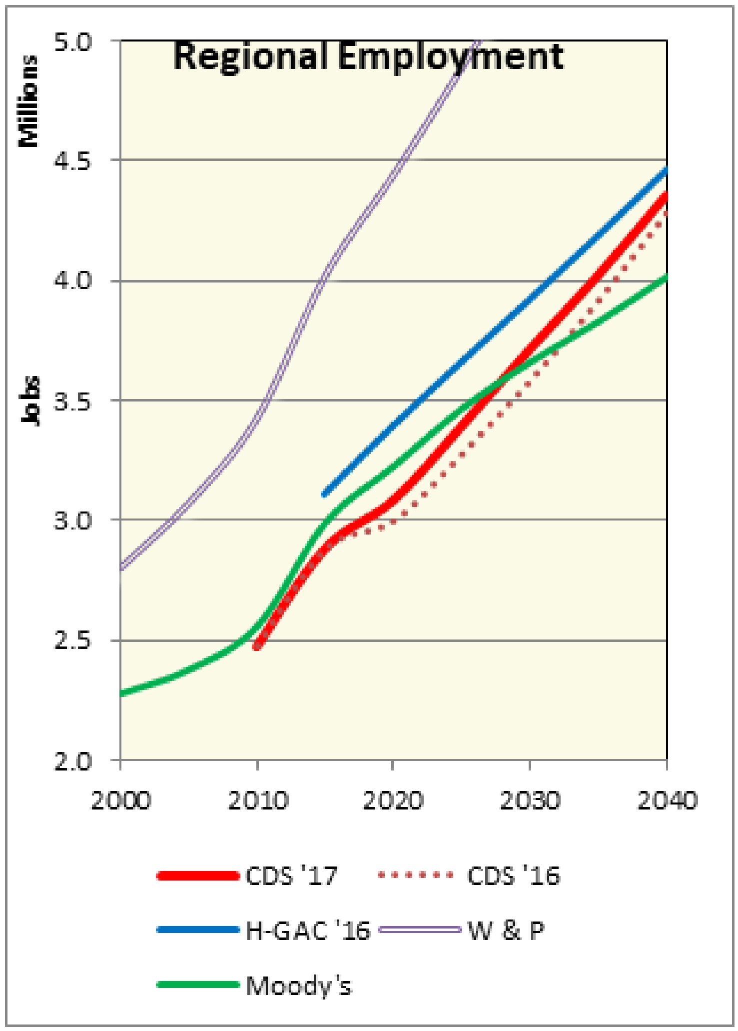
The comparative employment forecasts are illustrated in the chart below. Note that all of the forecasts except Woods and Poole and H-GAC present Nonfarm Payroll Employment. As mentioned previously, Woods and Poole uses Total Employment which is not comparable with the other forecasts. H-GAC's employment forecasts include some additional employment categories in the urban areas. H-GAC 2016 forecast uses 2010 and 2015 jobs estimates that are approximately 200,000 greater than the Texas Workforce Commission's Nonfarm Payroll jobs estimates.

The forecasts using "Payroll Employment" are reasonably consistent – with similar growth rates. Woods and Poole's forecast appear much more "bullish" for the Houston region as demonstrated by a much steeper growth curve. It should be noted that Woods & Poole tracks employment differently than the other forecasts compared.

The H-GAC jobs forecast, presents similar growth rates to the CDS and Moody's forecast – though it starts at a higher base.

The CDS 2017 forecast tracks the Moody's forecast with a slightly higher growth rate, especially approaching 2040.

Houston Region Comparative Employment Forecasts



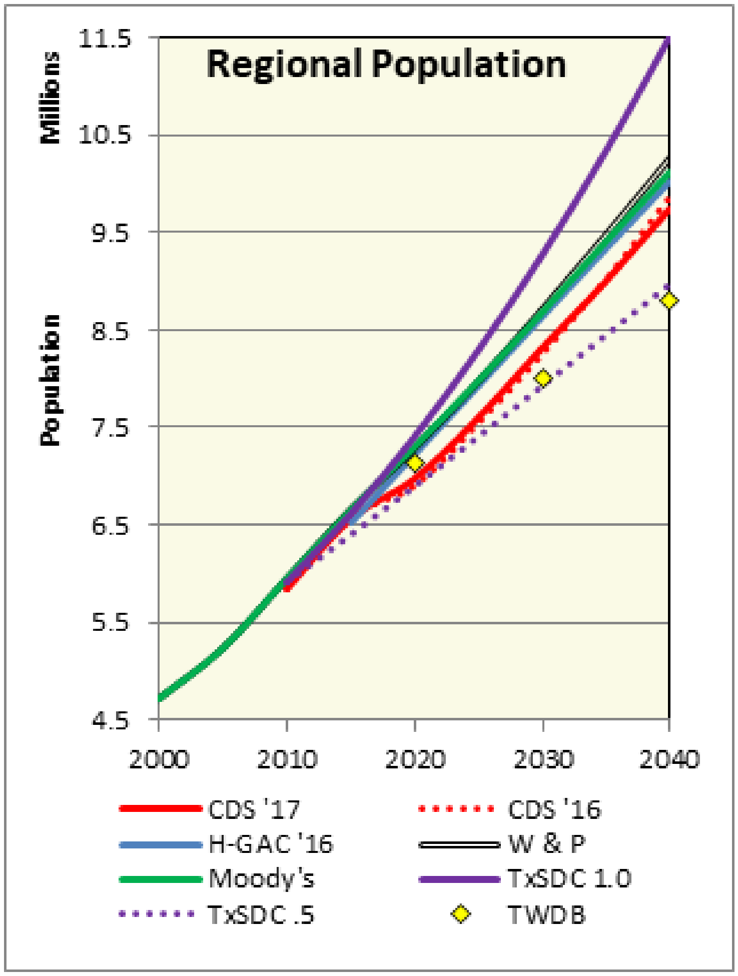
Source: Various – described in the accompanying text.

Comparative Population Forecasts

The comparative population forecasts are illustrated in the chart below. It is important to note some small variations in the base data and regions in the population forecasts.

Given the differences in the base data and the region used, the forecasts are remarkably consistent. All forecasts expect substantial population growth for the Houston region with relatively similar growth rates.

Houston Region Comparative Population Forecasts



Source: Various – described in the accompanying text.

CDS 2017 Regional Forecast

Taking into account the recent decline in oil and gas prices and its effects on the Houston economy, CDS has revised its regional population and employment forecasts,

These revised forecasts began with a look at likely employment growth under the belief that, in the long-term, regional growth is dependent on the creation of jobs that will attract new residents to take advantage of such opportunities.

In preparing this new CDS 2017 forecast, the following assumptions were used:

1. **The short-term growth of regional employment will be affected by low energy prices. For this short-term forecast, CDS used the most recent 2016 and 2017 job growth estimates from Dr. Gilmer, presented previously.**
2. **In the long term, the Houston economy is likely to continue to grow – overcoming short-term oil price disruptions. The Houston economy is much less dependent on the upstream energy industry now than in the past and historical trends support the contention that the Houston region will continue to be a, low cost, business friendly, growth-oriented community – attractive to new business start-ups and corporate relocations and expansions.**
3. **Houston, however, should not expect to continue exponential growth at historical rates. As the region matures and attractive parcels are developed, CDS expects that growth rates will settle down to a sustainable annual rate of job growth. The following table illustrates historical rates of job growth.**

If the CDS model assumed a 2.7% projected annual job growth to 2040, the 2040 payroll jobs would increase to almost 5,250,000 adding an average of 94,300 jobs annually. While that rate of net new jobs is not inconsistent with Houston's growth during good economic times, CDS does not expect that rate of annual job growth to be sustainable in the long-term. Moody's predicts Houston's 2040 payroll jobs to be at 4,018,000,

Historical Houston Region Job Growth Rates

Period	Period Description	Avg Annual Jobs	Jobs CAGR*
1970-2015	Long-term job growth through 35 years of business cycles and oil price increases and declines	46,334	2.70%
1990-2015	25-year period following the recovery from the mid-80s oil price bust.	48,613	3.54%
2000 -2015	Most recent 15-year period including two recessions and Enron collapse.	71,839	2.79%

* Compound annual growth rate

For the revised long-term forecast**, CDS has used an average annual job growth rate of 2.5%.** This rate of growth results in payroll jobs of 4,352,300 by 2040 – an annual average increase of 62,500 jobs.
The table and chart on the following page presents a summary of CDS' short and long-term jobs forecasts compared with other jobs forecasts.

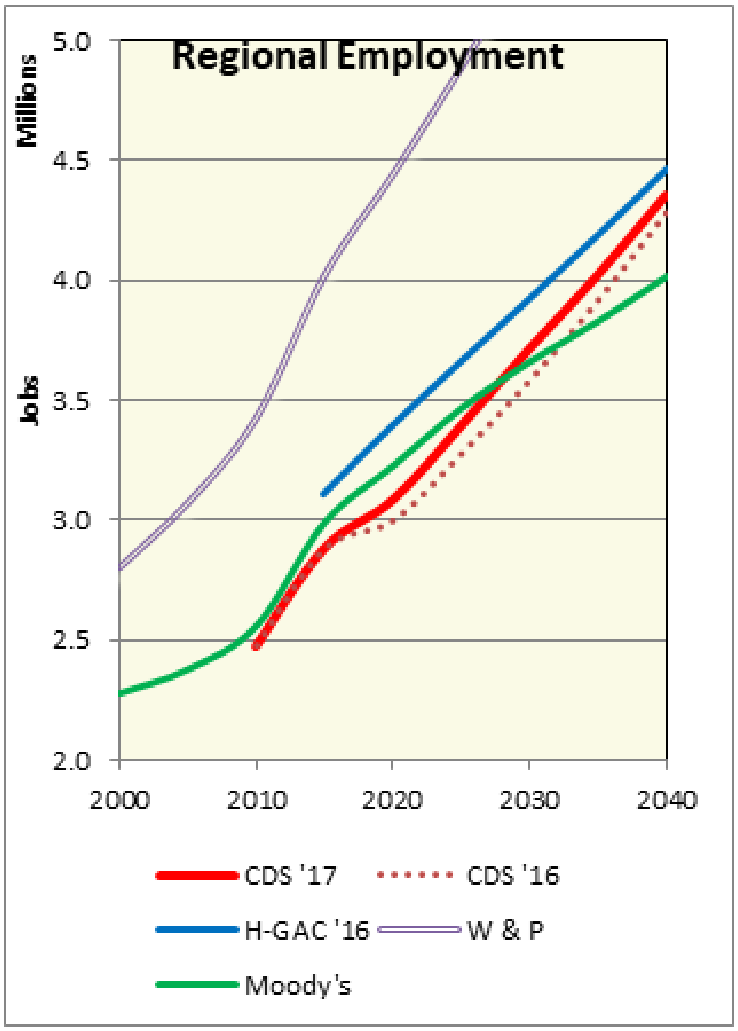
Hurricane Harvey and Flood Risk Impact on Regional Forecast

CDS researched the potential impact of the flooding risk exemplified by Hurricane Harvey and other recent storms. Because established industries in the region are familiar with the risks and have accommodated them, and diversification into new core industries is not anticipated during the forecast term, CDS did not find justification to revise the regional forecast in the wake of Hurricane Harvey.

Houston Region Job Growth Forecast Comparison

Year	New CDS 2017	CDS 2016	H-GAC 2016	W & P 2017	Moody's 2017
2010	**2,477,277**	2,477,277		3,430,691	2,561,414
2015	**2,885,880**	2,883,261	3,112,045	4,025,812	2,993,864
2020	**3,085,448**	2,998,733	3,396,812	4,444,865	3,229,117
2025	**3,393,245**	3,278,512	3,663,653	4,891,204	3,469,619
2030	**3,713,471**	3,584,393	3,925,578	5,357,413	3,663,702
2035	**4,020,209**	3,918,813	4,191,378	5,835,590	3,832,667
2040	**4,352,283**	4,284,434	4,465,474	6,336,988	4,018,886

Houston Region Comparative Employment Forecasts



Source: Various – described in the accompanying text.

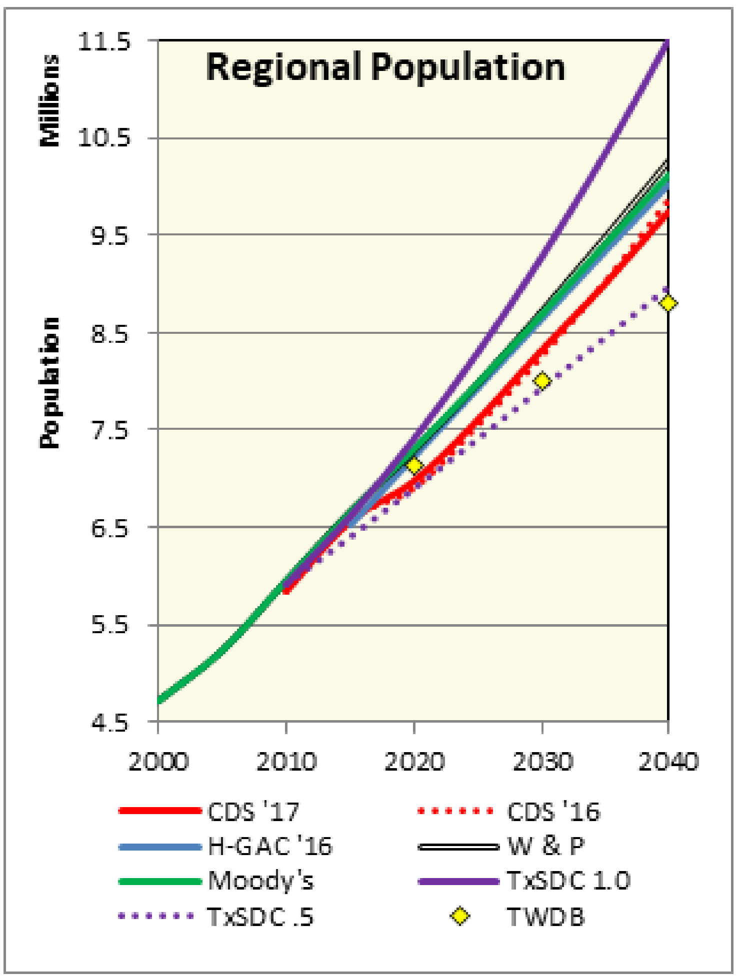
To prepare the regional "population in households" and "household" forecasts, CDS used historical trends of the ratio of jobs to households and historical trends of average household size.

Houston Region Population Growth Forecast Comparison

Year	NEW CDS 2017*	CDS 2016*	H-GAC 2016*	W & P 2017	Moody's 2017	TxSDC 1.0	TxSDC 0.5	TWDB 2017
2010	**5,837,945**	5,837,975		5,946,488	5,946,411	5,918,603	5,918,603	
2015	**6,559,071**	6,570,900	6,517,739	6,654,896	6,645,335	6,618,451	6,401,144	
2020	**6,973,113**	6,897,086	7,221,595	7,283,445	7,293,233	7,407,535	6,894,498	7,131,702
2025	**7,600,868**	7,540,576	7,924,838	7,970,967	7,969,913	8,291,903	7,402,340	
2030	**8,318,176**	8,244,104	8,632,761	8,707,812	8,671,649	9,267,337	7,918,850	7,996,671
2035	**9,005,268**	9,013,269	9,330,926	9,473,315	9,397,904	10,333,507	8,437,933	
2040	**9,749,114**	9,854,197	10,018,623	10,259,377	10,109,535	11,498,699	8,954,980	8,799,011

* Population in Households only.

Houston Region Comparative Population Forecasts



Source: Various – described in the accompanying text.

CDS 2017 County-Level Forecasts

Starting with the regional forecast, the county-level forecasts were prepared using Dr. Barton Smith's Shift-Share model whereby changing shares of regional growth were allocated to each county in the region. The County Forecasts are as follows.

County-Level Payroll Jobs Forecast

	Payroll Employment in the County						
County	2010	2015	2020	2025	2030	2035	2040
9-County Total	**2,477,162**	**2,885,880**	**3,086,311**	**3,394,405**	**3,714,713**	**4,021,292**	**4,352,990**
Brazoria	85,761	103,634	113,095	128,032	144,992	160,794	178,112
Chambers	9,385	12,748	14,431	17,086	20,827	24,140	27,983
Fort Bend	130,168	169,844	192,529	233,555	285,430	345,987	409,724
Galveston	94,522	102,856	110,399	122,719	137,827	151,658	167,705
Grimes	7,274	7,854	9,053	10,041	10,964	11,863	13,737
Harris	1,993,657	2,290,937	2,424,576	2,618,422	2,798,000	2,955,816	3,121,742
Liberty	16,201	16,543	17,539	19,689	22,885	27,472	32,453
Montgomery	127,153	165,177	185,993	221,840	265,936	310,182	362,135
Waller	13,041	16,289	18,695	23,021	27,852	33,380	39,399

County-Level Population Forecast

	Population in Households						
County	2010	2015	2020	2025	2030	2035	2040
9-County Total	**5,837,975**	**6,559,071**	**6,973,113**	**7,600,868**	**8,318,176**	**9,005,268**	**9,749,114**
Brazoria	302,607	335,147	362,343	412,005	480,002	553,183	638,908
Chambers	34,867	38,547	41,436	47,016	54,256	63,137	73,549
Fort Bend	579,439	708,446	782,030	896,225	1,039,050	1,183,333	1,334,998
Galveston	287,012	316,497	333,754	363,759	402,522	441,593	485,837
Grimes	23,592	24,500	25,088	26,657	28,969	31,964	35,961
Harris	4,047,935	4,484,093	4,707,484	5,007,206	5,277,114	5,501,919	5,725,966
Liberty	70,499	74,599	78,733	91,133	113,785	139,689	169,322
Montgomery	452,522	532,889	593,765	695,940	838,765	983,049	1,149,157
Waller	39,502	44,353	48,481	60,927	83,712	107,400	135,416

County-Level Households Forecast

County	Number of Households						
	2010	2015	2020	2025	2030	2035	2040
9-County Total	**2,060,594**	**2,296,672**	**2,455,371**	**2,692,175**	**2,963,589**	**3,227,276**	**3,514,426**
Brazoria	106,589	117,014	126,981	144,983	169,913	197,237	229,502
Chambers	11,952	13,384	14,443	16,466	19,120	22,436	26,355
Fort Bend	187,384	224,903	251,869	293,264	345,628	399,500	456,583
Galveston	108,969	119,433	125,757	136,633	150,845	165,433	182,086
Grimes	8,902	8,566	8,782	9,351	10,198	11,317	12,821
Harris	1,435,155	1,590,104	1,678,937	1,796,833	1,904,214	1,995,296	2,086,802
Liberty	25,073	25,993	27,508	32,002	40,307	49,979	61,133
Montgomery	162,530	181,873	204,182	241,219	293,584	347,456	409,976
Waller	14,040	15,400	16,913	21,425	29,778	38,623	49,168

County Forecast Comparisons

On the following pages, the same sets of forecasts at the county-level are presented and discussed. Note that, because of the wide variation in the population and jobs in the eight counties of the region, the scales on the following graphs are all different making visual comparisons of growth rates difficult.

County Population Comparisons

Brazoria County:

The H-GAC and Woods & Poole forecasts are relatively in line, both being substantially lower by 2040 than the CDS '16 forecast. The CDS '17 forecast, after an expected downturn from 2015 to 2020 limits growth, is largely in line with the growth trajectory of the TxSDC 1.0 forecast, though with a lower total number. The TWDB forecast is notably less optimistic than the others in Brazoria County.

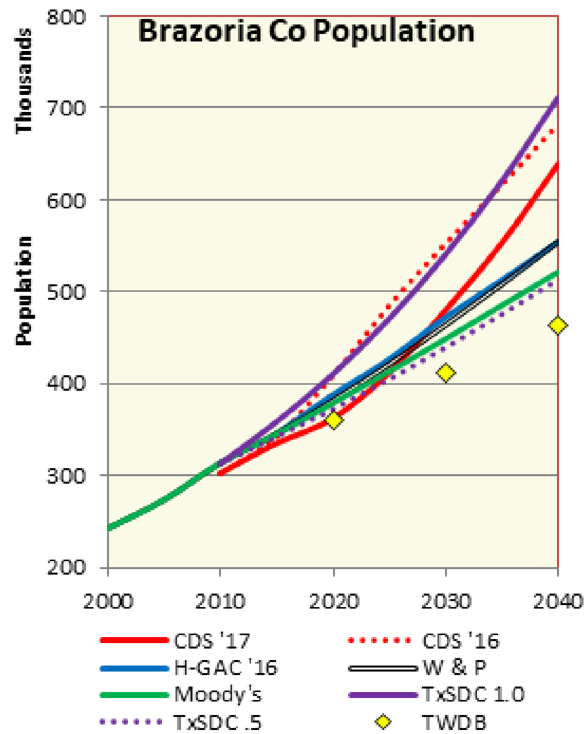
Brazoria County is expected to continue to capture substantial growth in its northern half as the next southerly expansion of the Houston urban region.

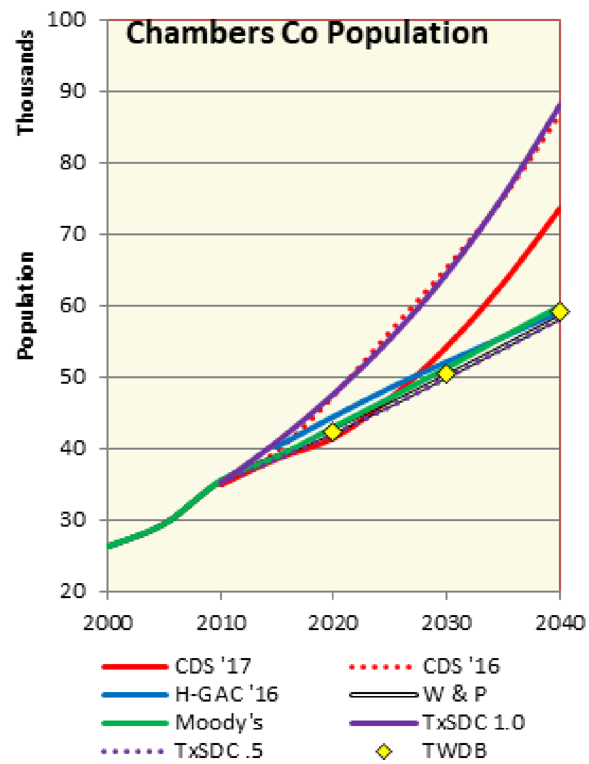
Chambers County:

The CDS '17 forecast sits in between the TxSDC 1.0 forecast and the other forecasts, which are all quite similar. All other forecasts predict slower growth in Chambers, reaching only around 60,000.

The CDS forecasts are notably higher than most other forecasts being compared. This is due to placing an emphasis on growth in the area's outlying counties versus Harris County because of the availability of developable land, as well as information on new developments given to CDS by area officials and experts for this and prior Houston area forecasting projects.

County Population Forecast Comparisons Brazoria and Chambers Counties

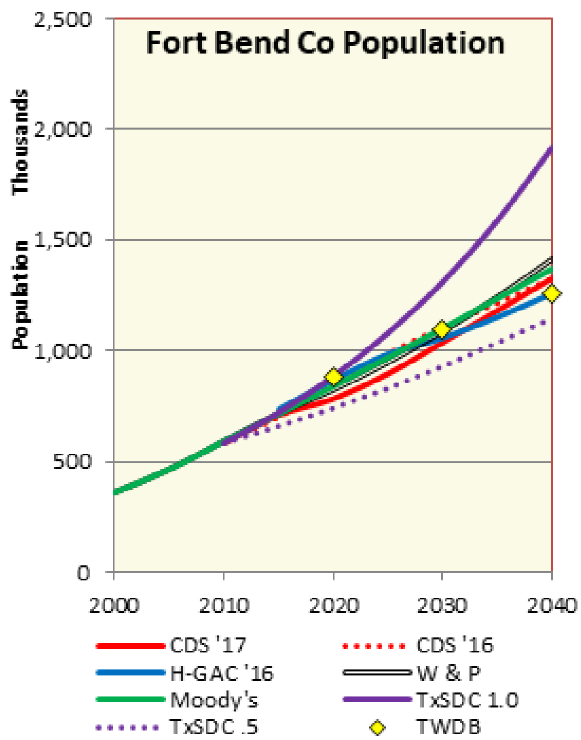




County Population Forecast Comparisons
Fort Bend and Galveston Counties

Fort Bend County:

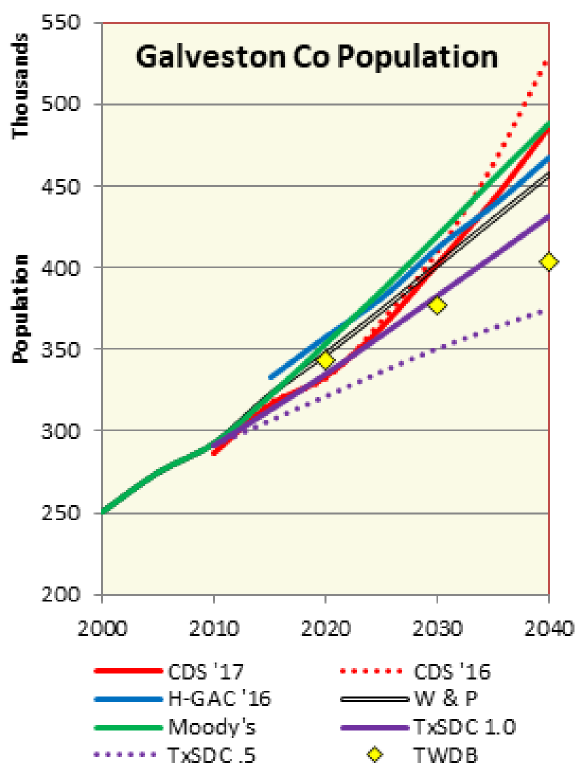
The CDS '17 forecasts for Fort Bend County, consistently one of the fastest growing counties in the U.S. over the past two decades, show the 2040 population approaching 1.4 million residents. The "TxSDC 1.0" forecasts are much higher with a 2040 population of more than 1.9 million. The remaining forecasts are remarkably consistent, all showing around 1.3 million residents by 2040.



Galveston County:

Galveston County saw its population growth slow, compared to other counties in the region, in 2008 with the devastation of Galveston Island and parts of the mainland by Hurricane Ike. However, the northern areas of the county, such as League City, have continued to grow rapidly.

While there is a relatively consistent rate of growth between the H-GAC, Woods & Poole, Moody's, and TxSDC 1.0 forecasts, CDS believes that the county's quantities of available land and well-regarded school districts will produce a higher rate of growth.

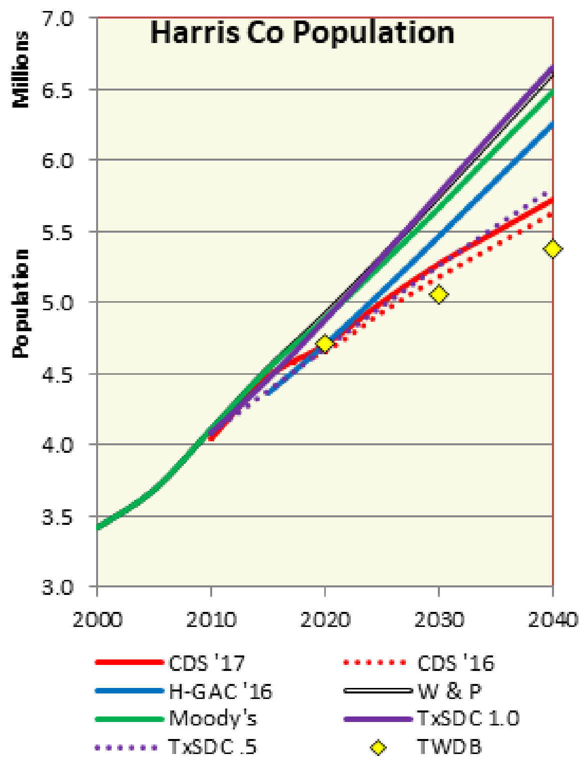


Harris County:

Harris County is by far the largest county in the region, with over 4.0 million residents in 2010. The three non-local forecasts project Harris to grow at a high and steady rate, creating a 45-degree angle on the chart to the right. This rate is mirrored between 2015 and 2020 by the CDS '17 forecast and matches the Census estimates from that time.

CDS expects growth in Harris County to slow approaching 2040, largely due to a likely lack of available land in the county's most desirable areas. The other forecasts compared expect growth to continue into 2040 at a rate similar to previous years.

County Population Forecast Comparisons
Harris and Liberty Counties

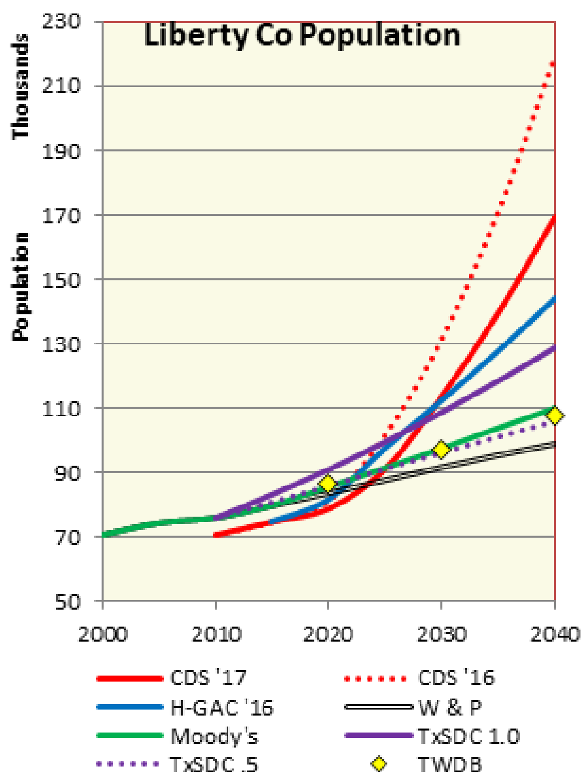


Liberty County:

Liberty County, on the region's east side, has historically grown at a moderate pace (relative to some of Houston's other outlying counties). CDS expects that pace to increase dramatically along with the access provided by US 90 and the Grand Parkway.

Curiously, the Moody's and Woods & Poole forecasts show extremely limited growth in the county throughout the forecast period. This stands in stark contrast to the other forecasts examined, as well as the historical trend. Liberty County's population increased 61.7% in the 30-year period from 1980 to 2010.

The CDS '17 forecast is notably higher for Liberty County than other forecasts being compared. The reasons for this are identical to those discussed for Chambers County earlier.



Montgomery County:

Montgomery County, on the region's north side and home to the Woodlands master planned community and the City of Conroe, has also been one of the fastest growing counties in the country. Recent economic growth in the county and in the northern portion of Harris County will likely result in continued residential development in Montgomery County.

All of the compared forecasts expect significant growth in Montgomery County. The CDS '17 and H-GAC forecasts wind up with a similar total in 2040, but take very different routes to get there. H-GAC expects the most rapid growth of any forecast in the near-term, before leveling off. CDS forecasts that growth will slow in the near-term, due to challenging economic conditions, before picking up at a rapid pace once again.

Waller County:

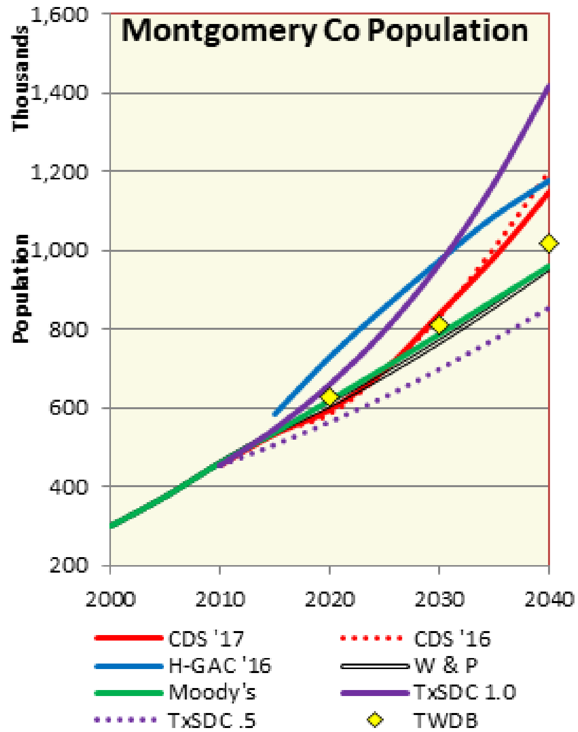
Waller County, on the region's northwest, has been growing at a modest pace over the past 10 years, with approximately 1,000 new residents each year.

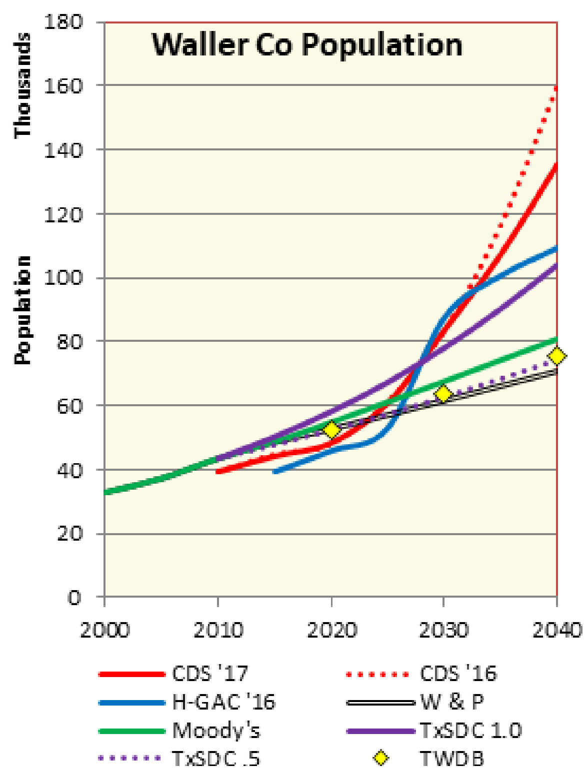
Most forecasts for Waller County (Woods & Poole, Moody's, and TxSDC) continue that modest growth trend with 2040 population projections topping out at between 70,000 and 110,000.

The CDS '17 forecast is much more bullish on Waller County's growth potential. The forecasts expect substantial residential growth as growth in the Houston region trends to the west, with county population topping 130,000 by 2040. Large-scale residential development is currently occurring in the southeastern part of the county.

The CDS '17 forecast is notably higher for Waller County than other forecasts being compared. The reasons for this are identical to those discussed for Chambers County earlier.

County Population Forecast Comparisons Montgomery and Waller Counties



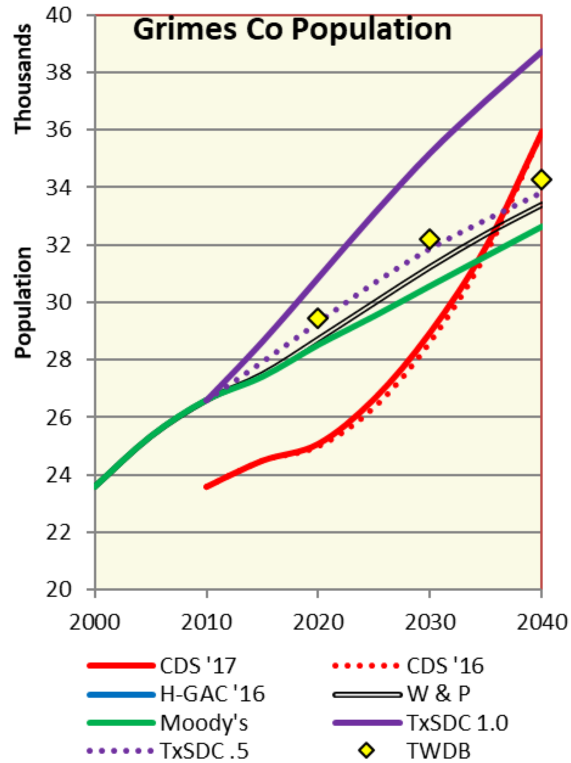


Grimes County:

Grimes County, on the region's far northwest, has been growing slowly over the past 10 years, and CDS expects that modest growth will continue through 2025, when development along the proposed SH 249 route and along SH 105 should accelerate growth. Woods & Poole and Moody's both expect the historically modest growth trends to continue, generally aligning with the Texas State Data Center's 0.5 scenario.

It should be noted that only the CDS forecasts shown here begin with population in households as opposed to total population. Grimes County contains two prisons that add a significant group quarters population outside of households to the total number. It should also be noted that H-GAC forecasts do not include Grimes County.

County Population Forecast Comparisons
Grimes County



County Employment Comparisons

Because the Woods & Poole forecasts are based on total employment rather than payroll employment in the counties, those forecasts are not be included in this section.

Brazoria County:

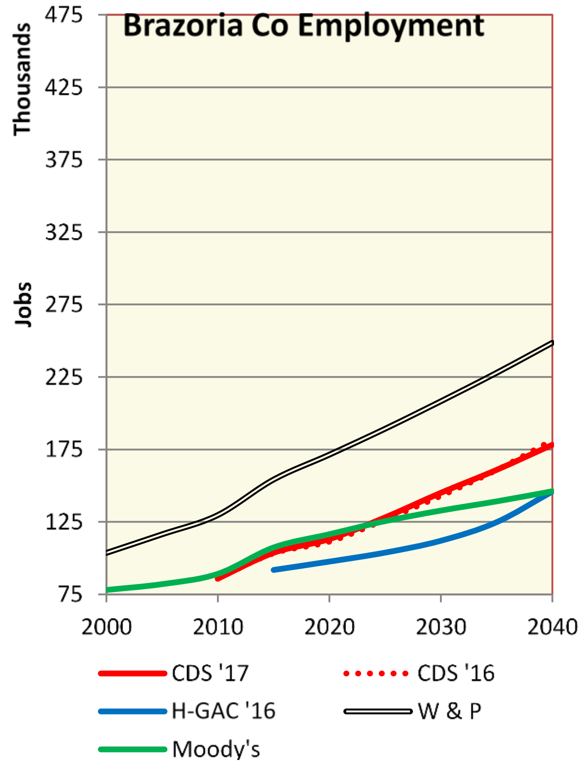
Brazoria County is home to large employers in the petrochemical and medical industries, and CDS expects it to perform better than it historically has producing new jobs in the region. While H-GAC does not project this trend from 2010 to 2020, the Moody's employment forecast does. The CDS '17 forecast diverts from Moody's after 2020, not expecting the historically moderate rate of growth to continue as Brazoria County becomes more populated and begins to create more employment centers of its own.

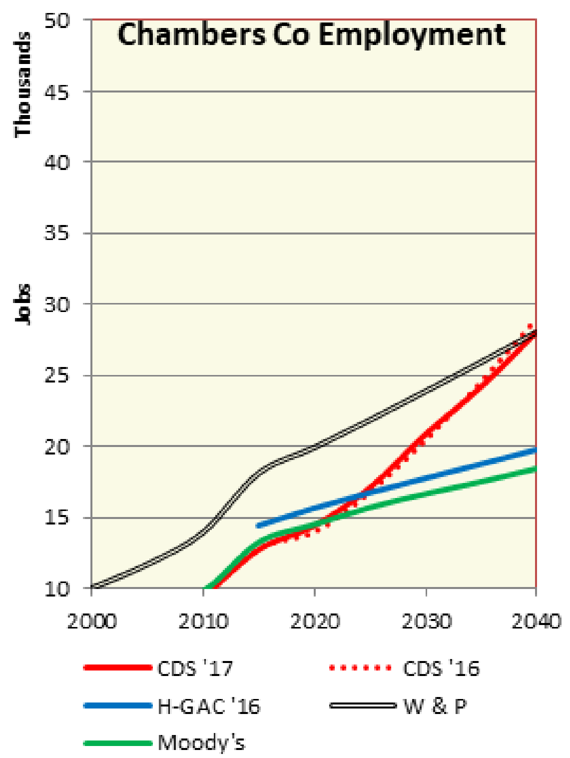
Chambers County:

Like Brazoria County, Chambers County is home to several petrochemical industry employers.

The CDS '17 forecast is much higher than the H-GAC and Moody's forecasts, showing expanded growth in county employment, from about 10,000 in 2010 to nearly 30,000 by 2040. In addition to the expected expansion of petrochemical plants in the county the reasons for this are identical to those discussed for Chambers County population.

County Jobs Forecast Comparisons
Brazoria and Chambers Counties





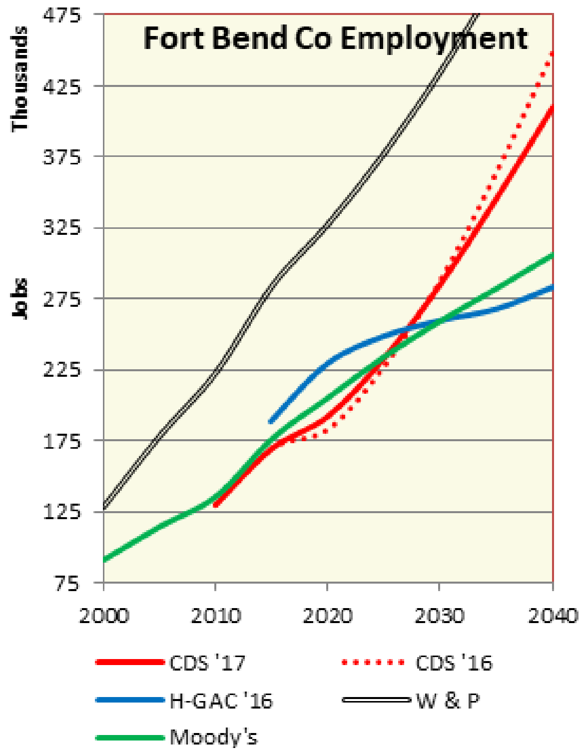
County Jobs Forecast Comparisons
Fort Bend and Galveston Counties

Fort Bend County:

Fort Bend County has seen substantial recent job growth with corporate relocation and expansion in the US 59/I-69 south corridor, primarily in Sugar Land.

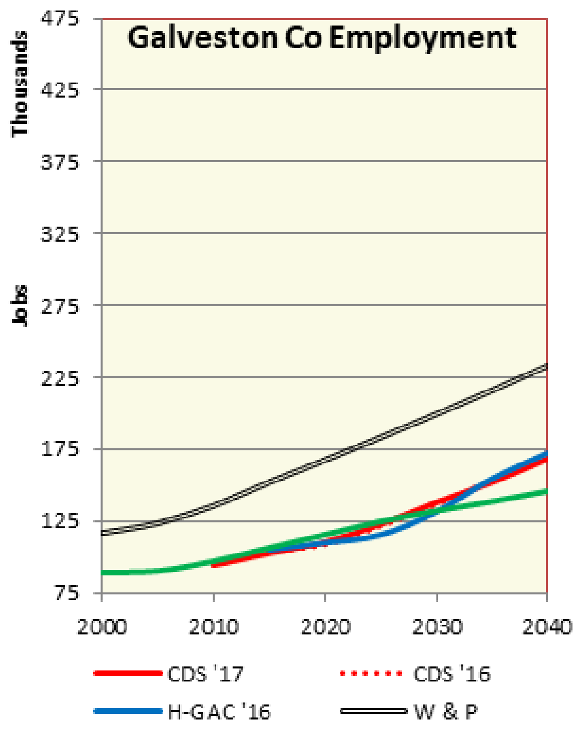
From 2000 to 2010, the county added approximately 4,500 jobs each year. The H-GAC 2016 and Moody's forecasts are fairly consistent with past trends and both reach around 300,000 jobs by 2040. H-GAC expects job growth in the county to level off from a higher rate of growth seen from 2010 to 2020.

The Fort Bend job growth trend is accelerated after 2020 in the CDS '17 forecasts expect over 400,000 jobs to be located in the county by 2040.



Galveston County:

The H-GAC and CDS forecasts are quite consistent in Galveston county, with both projecting the county to hold around 170,000 jobs by 2040. The Moody's forecast expects a more modest rate of growth after 2020, bringing the county to less than 140,000 jobs by 2040.



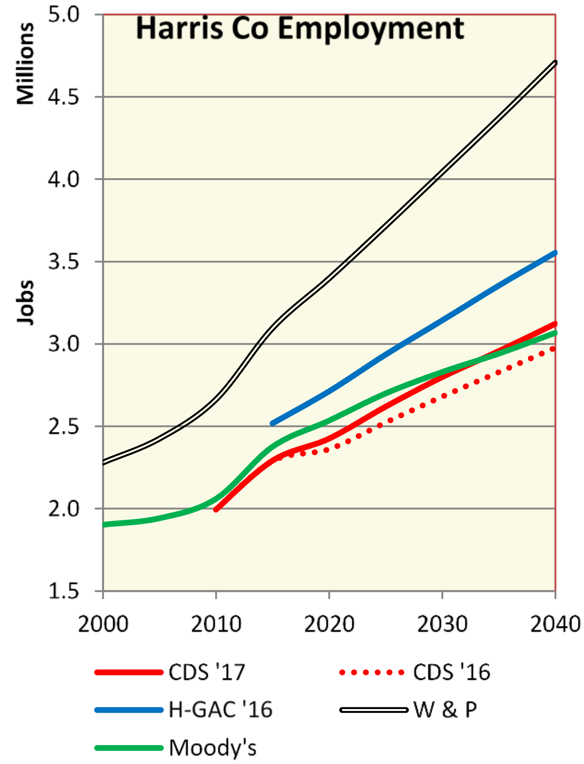
County Jobs Forecast Comparisons
Harris and Liberty Counties

Harris County:

While the H-GAC forecast shows slower job growth for many of the region's suburban counties when compared to the CDS forecasts, they are much more optimistic about job growth in Harris County.

In the past 20 years, Harris County has added jobs at the rate of approximately 26,000 annually. The H-GAC 2016 forecast starts with a higher jobs estimate for 2010 compared to other forecasts and approaches 3.6 million jobs in 2040. The Moody's forecast approaches about 3.2 million by 2040, but begins with about 200,000 fewer jobs.

The CDS '17 forecast is less optimistic about job growth in Harris County compared to H-GAC and comparable to Moody's, attributing a greater share of it to the other seven counties in the forecast region.

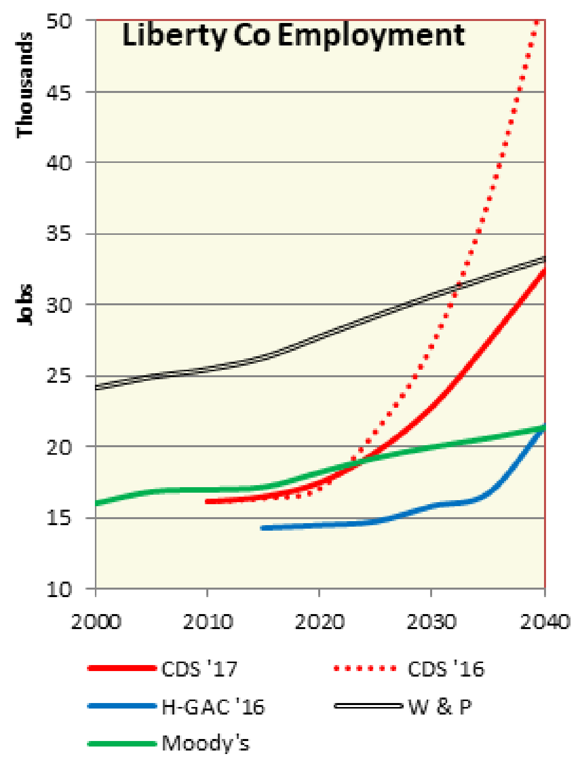


Liberty County:

The CDS '17 forecast expects strong future growth in jobs for Liberty County, reaching more than 50,000 jobs by 2040. Those forecasts are much more aggressive than recent trends for Liberty, which has added only 150 jobs per year over the past 20 years. However, it is expected that Liberty County is poised for stronger growth in the future as growth in Northeast Harris County fills available land and access improves with the construction of the Grand Parkway.

As with the population forecasts, the Moody's forecast predicts virtually no growth in Liberty County. The H-GAC forecast, similarly, shows significant growth only occurring after 2035.

The CDS '17 forecast is notably higher than other forecasts for Liberty County. The reasons for this are identical to those discussed for Chambers County population earlier.



Montgomery County:

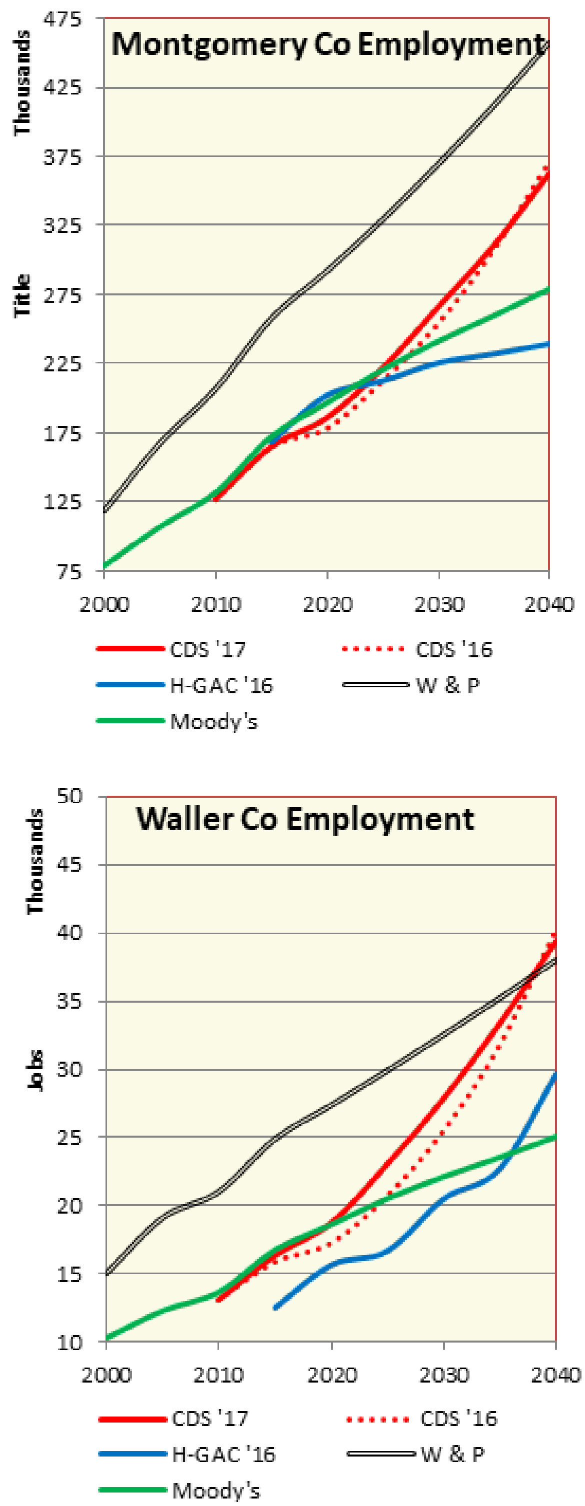
Similar to Fort Bend County, the job growth forecasts for Montgomery County diverge along two paths. The H-GAC and Moody's forecasts both expect job growth in Montgomery County to level off after 2020. The CDS '17 forecast expects job growth to return after 2020 at a similar rate seen from 2010 to 2015.

Waller County:

Similar to Liberty County, the CDS '17 forecast expects job growth to accelerate past historical levels in Waller County, as development and access from Harris County begins to abut the area. This forecast expects 40,000 jobs in the county by 2040. The H-GAC and Moody's forecasts, however, expect the historical and modest growth trends to continue in Waller County and forecast only 25,000 to 30,000 jobs by 2040. It should be noted that H-GAC's forecast begins with more than 1,000 fewer jobs than other forecasts.

The CDS '17 forecast is notably higher for Montgomery and Waller counties as compared to other forecasts. The reasons for this are identical to those discussed for Chambers County population discussed earlier. In addition, significant employment growth is currently occurring in the southeastern part of Waller County with the construction of several industrial and flex buildings.

County Jobs Forecast Comparisons
Montgomery and Waller Counties

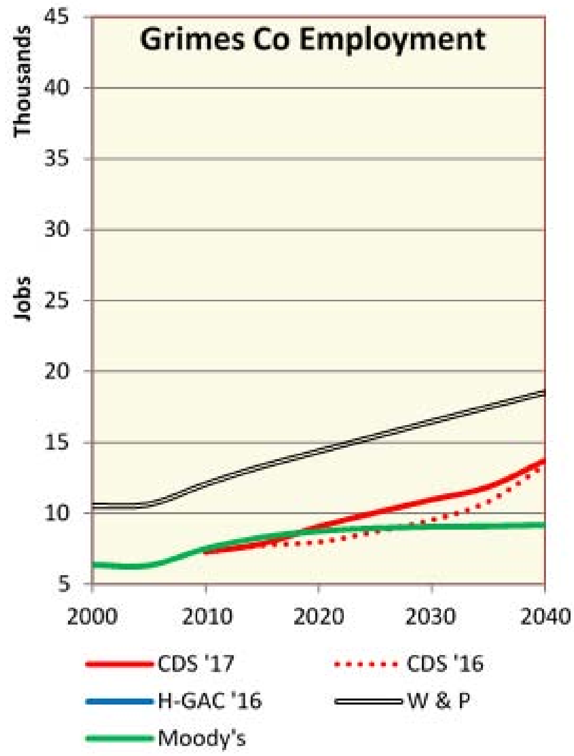


County Jobs Forecast Comparisons
Grimes County

Grimes County:

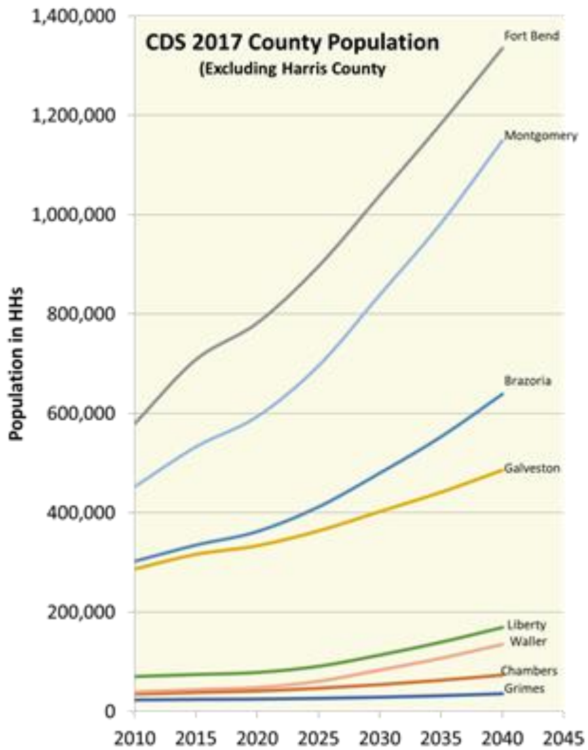
Grimes County employment growth, like population growth, is expected to accelerate after 2025. Most of this employment growth should come from service and education jobs tied to population growth. Moody's employment forecast in Grimes county sees little growth after 2015.

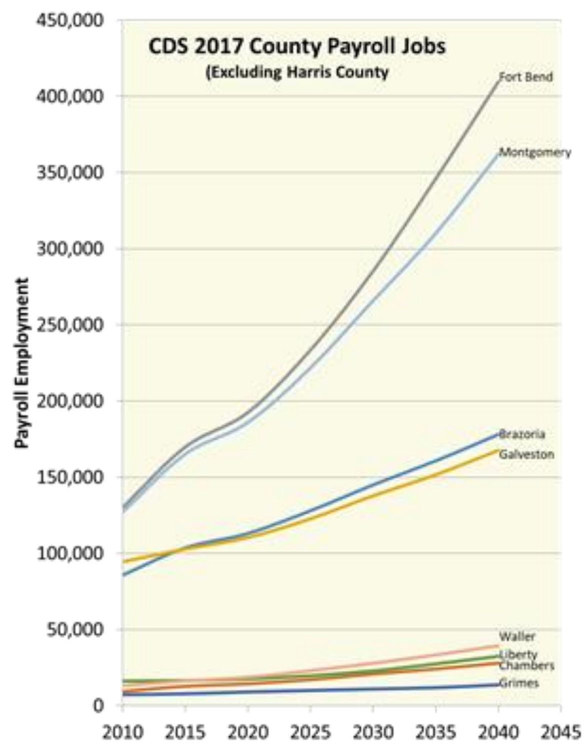
Again, it should be noted that H-GAC forecasts do not include Grimes County .



CDS 2017 County Forecast Charts

Because the previously presented county-level forecast charts have differing vertical scales, the comparison of the various county growth rates is difficult. The charts on this page compare the outlying counties of the region, excluding Harris County in order to better compare the future forecasts.





Selection of Appropriate Regional and County-Level Forecasts

Long-term economic forecasts are most often a reasonable extension of historical trends into the future. There is no assurance that those trends will be sustained. Future growth is likely to deviate, higher or lower than history would suggest. The historical employment growth of the Houston region presented on page 4 of this report confirms that growth is not likely to follow a straight line or smooth curve into the future. All economies go through periods of growth and recession. For the reasons presented in this report, the Houston region is resilient and oriented to support future growth.

The key factor in evaluating forecasts is: ***Are they reasonable given all we know today?*** The best test is to consider multiple independent forecasts and consider which are most likely. Along with H-GAC's regional forecast, this report considered several forecasts of population and employment from respected organizations.

The H-GAC's 2016 regional forecasts, from which their small area forecasts are derived, tended to be in the middle of the independent forecasts considered in this project. It is the conclusion of this project team that the H-GAC 2040 forecasts at the "8-county regional level" were reasonable and consistent with other credible forecasts.

However, the small area and county-level forecasts being produced in the H-GAC 2016 forecast are somewhat discordant with recent growth trends. Recent versions of the H-GAC forecast have improved and have resolved many of the discrepancies uncovered in the previous analysis. H-GAC plans on updating their forecasts for the foreseeable future, and this improvement ought to continue.

The Woods & Poole 2017 Forecasts were reasonable as well for population but their employment forecasts considered self-employed and part-time workers – a determination not shared by the other forecasting groups. The Woods & Poole job forecasts are so much higher than previous forecasting used by the H-GAC travel demand model that their use as control totals would require adjustment in the modeling regimen. The Moody's forecasts while reasonable, were determined to be simple extensions of previous trends and don't capture the dynamics of the likely future spatial growth in the Houston region.

After considering the various forecasts, it was decided to use the 2017 update to the CDS regional forecasts. The regional forecasts of the "CDS '17" will form the appropriate basis for this revised set of small area forecasts for the MCTRA SH 249 Economic and Demographic Forecast 2017 Update. Following are the key points that led to this conclusion:

- The adopted baseline forecast for county totals is the model created and updated by Dr. Barton Smith, formerly of the University of Houston Institute for Regional Forecasting (IRF) and now working as an independent consultant. The original model was not developed for UofH, but for consulting work for TxDOT and Harris County Toll Road Authority and it has been used as the primary macro tool for at least a half dozen toll road studies. Dr. Smith updated the model in 2012, retaining the underlying model structure of the previous region model. CDS Market Research updated the model to capture the remarkable increase in job growth in the region from 2010 to 2015.
- When compared to H-GAC's forecast and others gathered by CDS, the "CDS '17" forecast model is notable for the extent of anticipated decentralization of both jobs and population. This pattern is consistent with what has happened in almost every major urban area in America, including both the older cities in the northeast and the newer ones in the south and west. This results in totals for those two variables in outlying counties which are well above H-GAC's and others' projections, while Harris County ends up with lower

totals. An important reason is that the model is sensitive to two significant factors: the presence of vacant developable land (and conversely the lack of it in existing built-up areas) and the qualitative factors and market forces which tend to favor outlying locations for many types of new development.

- The "CDS '17" model, and its predecessors based on the model developed by Dr. Barton Smith for the UH-IRF, also allows counties to capture accelerating or decelerating (non-linear) shares of growth over time – signifying "tipping points" and changes in market momentum that are similar to patterns that typically play out in the marketplace. This is done through second-degree polynomial formulas incorporated into a shift-share model.
- Dr. Smith had previously adjusted the estimated coefficients further as he became aware of additional information that was particularly relevant such as the expansion of the toll road system in the region and the limited expansion of roadways in the urban core.
- While it is an alteration, the CDS '17 adjustment of the "Smith '12" forecast to consider households and household population instead of housing units and total population does not change the underlying methodology or conclusions of Dr. Smith's forecast. The method behind the alterations is quite simple. Housing units were converted to households by assuming a continuation of recent historical trends in housing occupancy, while total population was converted to household population through the assumption that recent trends in share of population outside of households (group quarters) would continue. These alterations change the forecast totals very slightly, and do not affect the growth rates or shares in any significant way.
- The CDS '17 forecasts present a revised set of regional and county forecasts based on current conditions. However, an extended run of low oil prices and slowdown of the oil and gas industry is not out of the realm of possibility, and could make even the modified scenario that were used for the current forecast somewhat optimistic. While the CDS'17 forecast assumes a near-term downturn in regional economic growth that is moderate in sharpness and duration, sharper and longer downturns are certainly possible.

Forecast Shares

The tables below illustrate the shift-share results for both population and employment in the CDS '17 and H-GAC 2016 forecasts. The percentages in the table represent the county shares of the regional growth in each time period. Historical data is included and the bold type is the forecast shares.

Shares of Historical and Future Growth by County – CDS '17 Forecast

County Share of Regional Population Change

Period	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
1970 to 1980	6.54%	0.68%	8.39%	2.77%	71.24%	1.50%	8.30%	2.11%
1980 to 1990	3.61%	0.25%	15.42%	3.54%	66.70%	0.92%	8.97%	0.59%
1990 to 1995	5.06%	0.46%	13.35%	2.48%	63.33%	1.72%	12.72%	0.88%
1995 to 2000	5.46%	0.73%	13.93%	3.94%	61.49%	1.92%	11.52%	1.04%
2000 to 2005	6.94%	0.66%	17.00%	5.08%	56.24%	0.52%	12.83%	0.70%
2005 to 2010	5.06%	0.78%	20.22%	2.16%	56.85%	0.40%	13.55%	0.97%
2010 to 2015	**4.52%**	**0.51%**	**17.91%**	**4.09%**	**60.56%**	**0.57%**	**11.16%**	**0.67%**
2015 to 2020	**6.58%**	**0.70%**	**17.80%**	**4.17%**	**54.03%**	**1.00%**	**14.72%**	**1.00%**
2020 to 2025	**7.93%**	**0.89%**	**18.24%**	**4.79%**	**47.86%**	**1.98%**	**16.32%**	**1.99%**
2025 to 2030	**9.51%**	**1.01%**	**19.98%**	**5.42%**	**37.75%**	**3.17%**	**19.98%**	**3.19%**
2030 to 2035	**10.70%**	**1.30%**	**21.09%**	**5.71%**	**32.86%**	**3.79%**	**21.09%**	**3.46%**
2035 to 2040	**11.59%**	**1.41%**	**20.50%**	**5.98%**	**30.28%**	**4.01%**	**22.45%**	**3.79%**

County Share of Regional Employment Change

Period	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
1970 to 1980	4.80%	0.56%	3.28%	1.95%	85.84%	0.83%	2.39%	0.35%
1980 to 1990	1.48%	-0.73%	6.64%	3.79%	79.12%	0.20%	8.62%	0.87%
1990 to 1995	1.38%	0.79%	10.27%	3.25%	72.74%	0.63%	10.24%	0.69%
1995 to 2000	1.51%	0.41%	11.49%	1.22%	73.90%	0.38%	10.63%	0.45%
2000 to 2005	3.70%	0.47%	14.90%	1.86%	56.16%	0.39%	19.00%	3.52%
2005 to 2010	3.95%	0.53%	11.74%	3.74%	65.87%	0.09%	13.50%	0.58%
2010 to 2015	**4.38%**	**0.82%**	**9.72%**	**2.04%**	**72.84%**	**0.08%**	**9.32%**	**0.80%**
2015 to 2020	**4.75%**	**0.84%**	**11.39%**	**3.79%**	**67.08%**	**0.50%**	**10.45%**	**1.21%**
2020 to 2025	**4.86%**	**0.86%**	**13.36%**	**4.01%**	**63.12%**	**0.70%**	**11.67%**	**1.41%**
2025 to 2030	**5.31%**	**1.17%**	**16.24%**	**4.73%**	**56.23%**	**1.00%**	**13.81%**	**1.51%**
2030 to 2035	**5.17%**	**1.08%**	**19.81%**	**4.52%**	**51.63%**	**1.50%**	**14.47%**	**1.81%**
2035 to 2040	**5.25%**	**1.17%**	**19.32%**	**4.87%**	**50.31%**	**1.51%**	**15.75%**	**1.82%**

Shares of Historical and Future Growth by County – H-GAC 2016 Forecast

County Share of Regional Population Change

Period	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
2010 to 2015	6.15%	0.74%	21.84%	6.51%	45.48%	0.62%	18.64%	0.01%
2015 to 2020	6.05%	0.60%	18.77%	3.57%	48.60%	0.96%	20.53%	0.93%
2020 to 2025	5.48%	0.57%	16.74%	3.35%	52.74%	2.26%	17.82%	1.02%
2025 to 2030	6.44%	0.51%	10.17%	4.34%	54.87%	2.10%	16.71%	4.86%
2030 to 2035	5.78%	0.49%	13.60%	3.70%	56.28%	2.21%	16.06%	1.87%
2035 to 2040	6.03%	0.51%	15.41%	4.26%	57.18%	2.36%	13.00%	1.25%

County Share of Regional Employment Change

Period	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
2010 to 2015	1.96%	0.53%	10.84%	2.47%	76.14%	0.02%	7.72%	0.33%
2015 to 2020	2.02%	0.43%	14.27%	1.77%	68.33%	0.07%	12.00%	1.10%
2020 to 2025	2.32%	0.41%	7.28%	2.03%	83.53%	0.09%	3.93%	0.39%
2025 to 2030	3.12%	0.39%	4.22%	6.10%	79.27%	0.41%	5.02%	1.46%
2030 to 2035	4.81%	0.38%	3.07%	8.62%	79.45%	0.35%	2.49%	0.83%
2035 to 2040	7.72%	0.37%	5.63%	6.50%	72.91%	1.71%	2.62%	2.54%

The tables below illustrate the forecast shift-share results for both population and employment in the Houston MSA for the CDS ’17 and H-GAC 2016 forecasts. The percentages in the table represent the county shares of the total 8-county region in each time period. Historical data is included and the bold type is the forecast shares.

County Shares of Historical and Future Population and Employment – CDS ‘17 Forecast

County Share of Regional Population

Year	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
1970	4.97%	0.56%	2.40%	7.78%	79.86%	1.51%	2.27%	0.65%
1980	5.44%	0.59%	4.20%	6.28%	77.27%	1.51%	4.08%	0.63%
1990	5.14%	0.54%	6.04%	5.83%	75.53%	1.41%	4.88%	0.63%
1995	5.13%	0.53%	6.57%	5.59%	74.65%	1.44%	5.45%	0.65%
2000	5.18%	0.56%	7.59%	5.36%	72.82%	1.50%	6.29%	0.70%
2005	5.35%	0.57%	8.51%	5.33%	71.20%	1.41%	6.93%	0.70%
2010	5.20%	0.60%	9.97%	4.94%	69.62%	1.21%	7.78%	0.68%
2015	**5.13%**	**0.59%**	**10.84%**	**4.84%**	**68.62%**	**1.14%**	**8.15%**	**0.68%**
2020	**5.22%**	**0.60%**	**11.26%**	**4.80%**	**67.75%**	**1.13%**	**8.55%**	**0.70%**
2025	**5.44%**	**0.62%**	**11.83%**	**4.80%**	**66.11%**	**1.20%**	**9.19%**	**0.80%**
2030	**5.79%**	**0.65%**	**12.53%**	**4.86%**	**63.66%**	**1.37%**	**10.12%**	**1.01%**
2035	**6.16%**	**0.70%**	**13.19%**	**4.92%**	**61.31%**	**1.56%**	**10.96%**	**1.20%**
2040	**6.58%**	**0.76%**	**13.74%**	**5.00%**	**58.95%**	**1.74%**	**11.83%**	**1.39%**

County Share of Regional Employment

Year	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
1970	3.75%	0.39%	1.57%	6.52%	85.49%	0.88%	1.04%	0.38%
1980	4.21%	0.46%	2.32%	4.50%	85.64%	0.86%	1.63%	0.37%
1990	3.92%	0.33%	2.79%	4.43%	84.94%	0.79%	2.39%	0.42%
1995	3.77%	0.36%	3.22%	4.36%	84.24%	0.78%	2.84%	0.44%
2000	3.44%	0.37%	4.43%	3.90%	82.72%	0.72%	3.98%	0.44%
2005	3.45%	0.37%	4.81%	3.83%	81.77%	0.71%	4.52%	0.55%
2010	3.47%	0.38%	5.27%	3.83%	80.72%	0.66%	5.15%	0.53%
2015	**3.60%**	**0.44%**	**5.90%**	**3.57%**	**79.60%**	**0.57%**	**5.74%**	**0.57%**
2020	**3.68%**	**0.47%**	**6.26%**	**3.59%**	**78.79%**	**0.57%**	**6.04%**	**0.61%**
2025	**3.78%**	**0.50%**	**6.90%**	**3.63%**	**77.37%**	**0.58%**	**6.55%**	**0.68%**
2030	**3.91%**	**0.56%**	**7.71%**	**3.72%**	**75.55%**	**0.62%**	**7.18%**	**0.75%**
2035	**4.01%**	**0.60%**	**8.63%**	**3.78%**	**73.72%**	**0.69%**	**7.74%**	**0.83%**
2040	**4.10%**	**0.64%**	**9.44%**	**3.86%**	**71.94%**	**0.75%**	**8.35%**	**0.91%**

County Shares of Historical and Future Population and Employment – H-GAC 2016 Forecast

County Share of Regional Population

Year	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
2010	5.21%	0.60%	9.95%	4.94%	69.62%	1.21%	7.79%	0.68%
2015	**5.31%**	**0.62%**	**11.24%**	**5.11%**	**67.00%**	**1.15%**	**8.97%**	**0.61%**
2020	**5.38%**	**0.61%**	**11.98%**	**4.96%**	**65.20%**	**1.13%**	**10.09%**	**0.64%**
2025	**5.39%**	**0.61%**	**12.40%**	**4.82%**	**64.10%**	**1.23%**	**10.78%**	**0.67%**
2030	**5.48%**	**0.60%**	**12.22%**	**4.78%**	**63.34%**	**1.30%**	**11.27%**	**1.02%**
2035	**5.50%**	**0.59%**	**12.32%**	**4.70%**	**62.81%**	**1.37%**	**11.63%**	**1.08%**
2040	**5.54%**	**0.59%**	**12.53%**	**4.67%**	**62.43%**	**1.44%**	**11.72%**	**1.09%**

County Share of Regional Employment

Year	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller
2010	3.08%	0.45%	5.41%	3.48%	81.55%	0.52%	5.10%	0.41%
2015	**2.95%**	**0.46%**	**6.06%**	**3.36%**	**80.90%**	**0.46%**	**5.41%**	**0.40%**
2020	**2.87%**	**0.46%**	**6.74%**	**3.23%**	**79.85%**	**0.43%**	**5.96%**	**0.46%**
2025	**2.83%**	**0.46%**	**6.78%**	**3.14%**	**80.12%**	**0.40%**	**5.81%**	**0.46%**
2030	**2.85%**	**0.45%**	**6.61%**	**3.34%**	**80.06%**	**0.40%**	**5.76%**	**0.52%**
2035	**2.97%**	**0.45%**	**6.39%**	**3.67%**	**80.02%**	**0.40%**	**5.55%**	**0.54%**
2040	**3.26%**	**0.44%**	**6.34%**	**3.85%**	**79.59%**	**0.48%**	**5.37%**	**0.67%**

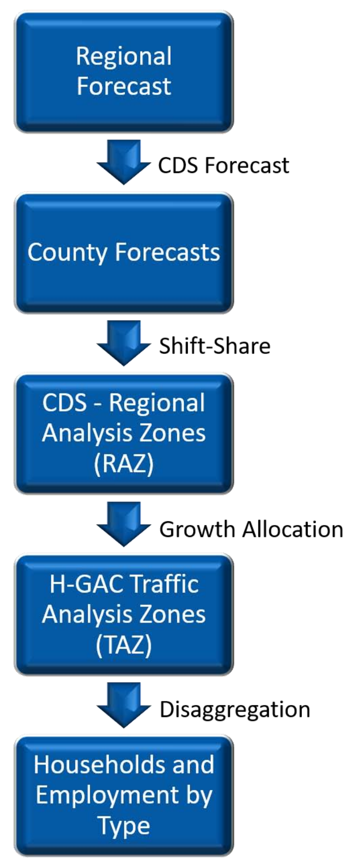
Small Area Forecast Method Overview

The previously mentioned Houston Galveston Area Council (H-GAC) forecast is available at smaller geographic areas in addition to its county and region-wide levels. CDS was tasked with providing an independent forecast using H-GAC's geographic forecasting structure and providing values for the same forecasting data variables. This meant that CDS would need to create datasets for all of H-GAC's Traffic Analysis Zones (TAZs) that include values for all output variables required by the agency's newest traffic model. In general, the methodology to create these independent forecast datasets included the following steps.

1. Begin with the CDS '17 forecast at the regional and county levels.
2. Investigate historical growth trends from:
   - the decennial US Census and other Census Bureau sources such as the American Community Survey (ACS) and Longitudinal Employer-Household Dynamics (LEHD).
   - PCensus for ArcView, a program that distributes and displays Neilsen/Claritas demographic data which included 1990, 2000, and 2010 Census data, estimates for 2005 and 2017 as well as projections to 2022 at the census block level
   - historical employment information from the Texas Workforce Commission (TWC)/Bureau of Labor Statistics (BLS)
   - previous the H-GAC forecasting efforts

3. Investigate the opinions and forecasts of area governmental agencies, private organizations, and area experts.
4. Evaluate the potential growth inducing effects of the HCTRA System and other major infrastructure improvements, including the Grand Parkway.
5. Account for near-term residential and commercial developments that have been recently announced or begun.
6. Implement a "shift-share" forecasting methodology at the Regional Analysis Zone (RAZ) level. CDS created new RAZs for this project, as H-GAC no longer uses these geographies. This takes into account:
   - the historical trends
   - the known historical growth areas for housing and jobs
   - announced major developments
   - the land available for new development
   - likely areas in the community for new development based on locally influenced qualitative factors

7. Disaggregate the RAZ forecast into the smaller Traffic Analysis Zones (TAZ).
8. Disaggregate the TAZ forecast for households and employment by H-GAC's data categories.



Forecasting Population and Jobs – County Control Totals

County-Level and Regional Growth Projections

	Year	8-County CMSA	Brazoria	Chambers	Ft. Bend	Galveston	Harris	Liberty	Montgomery	Waller	Grimes
POPULATION											
	1970	2,181,316	108,312	12,187	52,314	169,812	1,741,913	33,014	49,479	14,285	
	1980	3,118,480	169,587	18,538	130,962	195,738	2,409,547	47,088	127,222	19,798	
	1990	3,731,131	191,707	20,088	225,421	217,399	2,818,199	52,726	182,201	23,390	18,790
	1995	4,021,841	206,421	21,416	264,235	224,620	3,002,304	57,713	219,190	25,941	
	2000	4,669,589	241,767	26,031	354,452	250,158	3,400,578	70,154	293,786	32,663	23,529
	2005	5,109,124	273,338	29,122	451,391	272,316	3,604,232	75,104	367,857	35,764	25,068
Population by Year	2010	5,814,383	302,607	34,867	579,439	287,012	4,047,935	70,499	452,522	39,502	23,592
	2015	6,534,571	335,147	38,547	708,446	316,497	4,484,093	74,599	532,889	44,353	24,500
	2020	6,948,025	362,343	41,436	782,030	333,754	4,707,484	78,733	593,765	48,481	25,088
	2025	7,574,212	412,005	47,016	896,225	363,759	5,007,206	91,133	695,940	60,927	26,657
	2030	8,289,206	480,002	54,256	1,039,050	402,522	5,277,114	113,785	838,765	83,712	28,969
	2035	8,973,303	553,183	63,137	1,183,333	441,593	5,501,919	139,689	983,049	107,400	31,964
	2040	9,713,154	638,908	73,549	1,334,998	485,837	5,725,966	169,322	1,149,157	135,416	35,961
Annual Average Pop. Growth by Period	'00-'10	114,479	6,084	884	22,499	3,685	64,736	35	15,874	684	6
	'10-'20	113,364	5,974	657	20,259	4,674	65,955	823	14,124	898	150
	'20-'30	134,118	11,766	1,282	25,702	6,877	56,963	3,505	24,500	3,523	388
	'30-'40	142,395	15,891	1,929	29,595	8,332	44,885	5,554	31,039	5,170	699
	'10-40	129,959	11,210	1,289	25,185	6,628	55,934	3,294	23,221	3,197	412
JOBS											
	1970	904,142	33,873	3,509	14,159	58,934	772,907	7,919	9,403	3,438	
	1980	1,616,123	68,052	7,482	37,545	72,799	1,384,104	13,854	26,388	5,899	
	1990	1,811,944	70,950	6,048	50,546	80,224	1,539,045	14,251	43,268	7,612	7,460
	1995	1,922,608	72,482	6,921	61,908	83,826	1,619,544	14,951	54,602	8,373	
	2000	2,252,103	77,472	8,288	99,768	94,138	1,855,051	17,901	89,634	9,851	9,260
	2005	2,343,072	80,250	8,787	112,936	96,956	1,906,019	18,862	108,484	10,778	10,110
Jobs by Year	2010	2,469,888	85,761	9,385	130,168	94,522	1,993,657	16,201	127,153	13,041	7,274
	2015	2,878,025	103,634	12,748	169,844	102,856	2,290,937	16,543	165,177	16,289	7,854
	2020	3,077,258	113,095	14,431	192,529	110,399	2,424,576	17,539	185,993	18,695	9,053
	2025	3,384,364	128,032	17,086	233,555	122,719	2,618,422	19,689	221,840	23,021	10,041
	2030	3,703,749	144,992	20,827	285,430	137,827	2,798,000	22,885	265,936	27,852	10,964
	2035	4,009,429	160,794	24,140	345,987	151,658	2,955,816	27,472	310,182	33,380	11,863
	2040	4,339,253	178,112	27,983	409,724	167,705	3,121,742	32,453	362,135	39,399	13,737
Annual Average Jobs Growth by Period	'00-'10	21,779	829	110	3,040	38	13,861	-170	3,752	319	-199
	'10-'20	60,737	2,733	505	6,236	1,588	43,092	134	5,884	565	178
	'20-'30	62,649	3,190	640	9,290	2,743	37,342	535	7,994	916	191
	'30-'40	63,550	3,312	716	12,429	2,988	32,374	957	9,620	1,155	277
	'10-'40	62,312	3,078	620	9,319	2,439	37,603	542	7,833	879	215

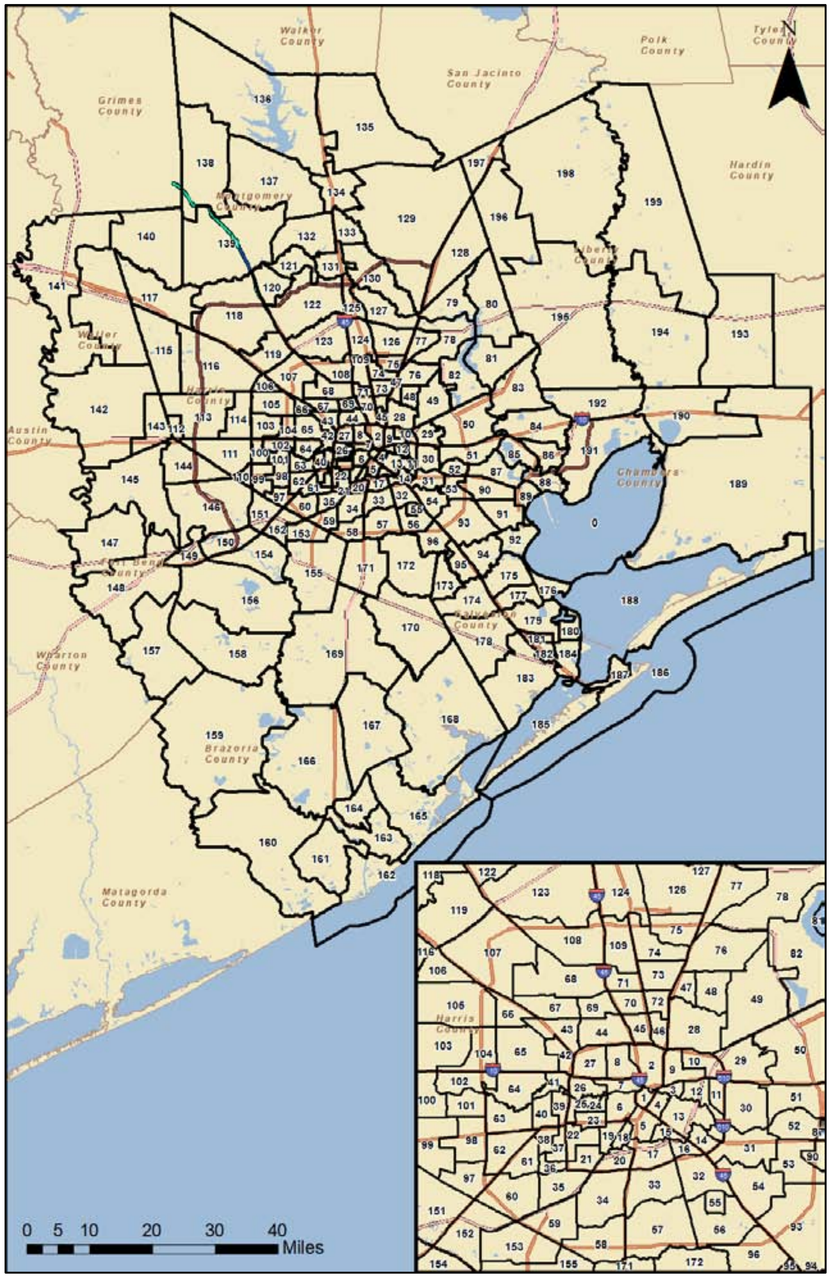
Use of the CDS-defined Regional Analysis Zones (RAZ)

In past forecasting projects, CDS used H-GAC's Regional Analysis Zones (RAZ) as an intermediate step in the shift-share process between the county-level control totals and the smaller TAZ geographies. Several years ago, H-GAC discontinued the use of RAZs for issuing and analyzing forecasts. Despite this, CDS continued to use RAZs as an intermediate step in the shift-share process as the TAZ structure H-GAC and CDM-Smith continued to use remained consistent with the RAZ boundaries.

H-GAC has also since developed a new TAZ structure, which CDS is now using for all forecasts going forward. Unlike the old TAZs, this new structure does not conform precisely to the boundaries of the previous RAZs, though the differences are generally fairly minor. Despite these minor differences, the new TAZs can be matched relatively well with a RAZ geography. CDS matched up the new TAZs as closely as possible to the old RAZ boundaries and created a redefined set of RAZs (map to right) fitted to the boundaries of the new TAZs. These zones are similar to H-GAC's RAZs but are not identical. This was done in order to continue to use the RAZ-level as an intermediate step in the shift-share process and to better enable the use of CDS' previous forecast work done for the old TAZ structure into the new structure.

Map of Regional Analysis Zones

Eight County Region



Starting with Historical and Forecast Data at the RAZ and TAZ levels

It was beyond the scope of this report and the models available to the project team to produce a complete forecast for the entire Houston metropolitan region and every Traffic Analysis Zone (TAZ) from scratch. CDS began this forecasting process, as it has every forecast since the original 2011 Grand Parkway project, by using its most recent previous forecast as a starting point in terms of shift-share allocations at the RAZ and TAZ levels. This is done to incorporate and build upon previous work and expectations, as none of the transportation projects CDS has been asked to consider are assumed to be planned in lieu of others. CDS then compiled the data on recent trends (1990 to 2010) and recent forecasts by H-GAC at the TAZ-level. The data was evaluated and adjustments were made to the forecasts using a variety of methods.

The 2010 Base

The original CDS forecast done in 2011 began by identifying the appropriate 2010 base year data for population, housing units, and employment. This data has carried through all subsequent forecast projects with one major alteration. Beginning with the Grand Parkway Segments D-I forecast issued in 2015, CDS uses population in households and total households/occupied housing units instead of total population and housing units for both base and forecast years. The following is the process by which this information was obtained.

Population and Households

The 2010 population for TAZs was based on the household and household population at the Census-block level from the 2010 Census.

Employment (Jobs)

Determining the 2010 base jobs by RAZ was substantially more difficult than housing and population. The reason is that there are no small area job estimates that are based on reliable data such as the Census. The U.S. Bureau of the Census County Business Patterns provides the most verifiable data but the lowest level of geography available is zip code. For their most recent forecast, H-GAC estimated the number of jobs in small areas using the county appraisal district data, augmented by information from InfoUSA™ and from internal and other sources not revealed to CDS.

One option that CDS has access to is the Nielsen/Claritas Business Facts® database for very small areas (Census block-groups) through PCensus for ArcView. Claritas Business Facts® is developed using the InfoUSA™ data file as its base source. The InfoUSA™ database of over 12 million U.S. businesses is mined from over 4,900 Yellow Page directories published each year by Regional Bell Operating Companies (RBOC's) and independent phone companies. InfoUSA™ also compiles records from over 500 Business White Pages, regular White Pages, federal, state and municipal government Blue Pages, annual reports (publicly-held companies) industrial and regional business journals. InfoUSA™ then processes the information through several routines to ensure that the final product will be dependable for use by salespeople and marketers interested in using its contents for mailing campaigns. That includes calling existing and new businesses at least once each year to verify and collect new information.

Another option for current job estimates is to use the square feet of commercial buildings, office, retail, industrial and institutional buildings from the county appraisal districts to estimate the number of jobs at each facility. CDS applied H-GAC's stated ratios of square-feet per job as shown in the table on the right. Unfortunately, that method did not produce consistent results.

Ultimately, the historical and current employment estimates were developed from a variety of sources. The 1990 and 2000 jobs estimates come from the special tabulations of the U.S. Decennial Census (CTTP) provided by the H-GAC. The 2005 estimates of jobs come from the H-GAC's 2005-2035 forecast. The 2010 employment estimates were ultimately based on figures issued by Nielsen/Claritas based on the InfoUSA data previously described.

In all cases the values for the historical and base-year (2010) data for employment and population were adjusted proportionally to match the county-level totals provided by the Texas Workforce Commission/BLS and the CDS 2016 forecast control totals. The historical and projected population and jobs data by (CDS-defined) RAZ is presented in the appendices of this report.

Square-Feet per Employee by Building Activity

Building Type	SQFT Per Employee
Education	1,400
Health Care	350
Lodging	917
Retail	500
Office	225
Public Assembly	1,000
Warehouse	1,000
Industrial	625
Mobile	0

Differences from prior CDS Forecasts due to the newer H-GAC TAZ structure

The newer H-GAC TAZ forecast structure used for this MCTRA SH 249 Update project differs significantly from the one that formed the basis of CDS' forecasts issued prior to 2015. The old H-GAC TAZ structure, used prior to 2015, contained 2,954 zones. This number grew to over 3,500 zones in more recent forecasts as CDS and CDM-Smith divided several TAZs into smaller zones for additional analysis. The newer H-GAC TAZ structure contains 5,217 zones, and much like with the RAZs, many of these zones do not conform to the boundaries of the old TAZs or the modified zones used in later forecasts.

Future Transportation Network Assumptions

In preparing the small area forecasts, it is clear that future transportation networks and the accessibility of the small area zones are affected by transportation infrastructure improvements over time. It was beyond the scope of this work to develop sophisticated models that took into account all changes in the transportation network including both highways and public transit. Therefore, for this analysis it was assumed that transportation improvements would continue over time to serve the existing and new residents of the community and that any transportation funding crisis, regardless of how real it may seem today, will be ultimately resolved because of citizen demand. Therefore, for the purposes of this effort, it was assumed that the relative accessibility of the various zones in the region would not significantly change over time. However, recently opened and planned facilities such as the extension of the Fort Bend Toll Road and the Westpark Toll Road, the SH 249/Tomball Tollway, the Grand Parkway, the Major Thoroughfare Plans of Houston and other area municipalities, known enhancements to existing facilities such as improvements to US 290, SH 288, I-45 South and I-45 North, and light rail extensions were included.

Contact with Area Agencies and Organizations

In the course of developing small area forecasts for previous Traffic and Revenue studies, CDS sought out the demographic and economic projections and opinions from key public sector agencies and officials and major private sector parties of interest serving both the key areas around the toll roads in question and the Houston region as a whole. CDS's goal was to understand the projections used by these organizations and to account for knowledge and insight gained from conversations with the local organizations. Many of the organizations contacted stated that they did not develop their own projections, and instead utilized those provided for the region by H-GAC. As previously mentioned, H-GAC projections were also considered in CDS's efforts herein. Data from these organizations was collected both by contacting the organizations directly and researching publicly available data offered on their websites and other sources.

CDS spoke with and reviewed an initial forecast with the following organizations for the MCTRA SH 249 Update (listed in the order in which meetings took place):

The comments made by these offices and organizations were factored into many of the adjustments made to the small-area forecasts for this project.

- City of Tomball
- City of Magnolia
- Harris County Precinct 4
- City of Montgomery

The RAZ-Level Forecasts

The forecasts at the RAZ-level of geography were produced using a shift-share forecasting methodology accounting for land availability throughout the process. The methodology involved establishment of county-level forecasts from 2010 to 2040. Then the shares of the future county housing units, population and jobs were estimated for each 5-year period. An example of the methodology, for Waller County is shown below.

Shift Share Analysis Example

RAZ Shares – Share of County Job Growth in Each 5-Year Period

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
140		21.9%	0.8%	13.8%	22.2%	22.4%	22.7%	23.8%	24.3%	24.3%
141		6.9%	4.7%	9.5%	11.1%	10.5%	10.1%	9.7%	9.5%	9.5%
142		67.1%	44.0%	68.1%	33.3%	34.1%	34.1%	34.7%	35.0%	36.0%
143		4.1%	50.5%	8.6%	33.3%	33.0%	33.1%	31.8%	31.1%	30.2%
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

$$\text{Jobs}_{\text{Year } n} = \text{Jobs}_{\text{Year } n\text{-}5} + \text{RAZ Share}_{\text{Year } n} \times [\text{County Jobs}_{\text{Year } n} - \text{County Jobs}_{\text{Year } n\text{-}5}]$$

Jobs – Total Number of Jobs in the RAZ in the Year Shown

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
140	4,238	4,729	4,737	5,010	5,868	7,297	9,152	11,140	13,102	14,927
141	1,874	2,029	2,072	2,260	2,691	3,361	4,186	4,995	5,760	6,473
142	1,227	2,729	3,137	4,487	5,774	7,951	10,734	13,634	16,458	19,159
143	274	365	833	1,004	2,291	4,400	7,099	9,750	12,261	14,523
Total	7,612	9,851	10,778	12,761	16,623	23,008	31,172	39,518	47,581	55,082

In each case, the shares of future growth were based on:

- recent history of growth capture
- information on growth from area agencies and organizations
- expected future capture of the growth
- estimation of the capacity of the vacant developable or redevelopable land in the RAZ for new development

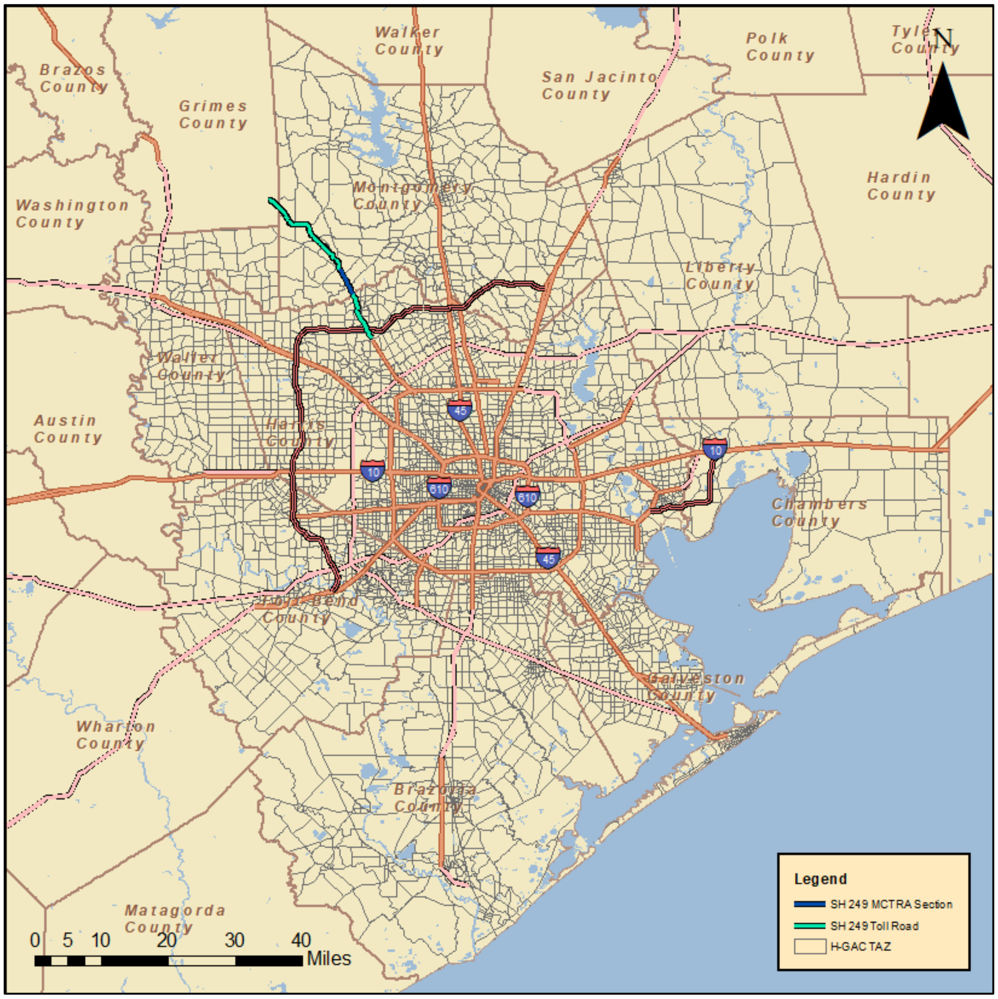
Distributing RAZ-Level Forecast Data to the TAZ and SAZ

RAZ to TAZ Allocation

The forecasts for the 199 RAZs were distributed to the smaller TAZs, for the entire 8-county region. The map on the right illustrates the 5,217 H-GAC TAZs in the region.

The methodology for the distribution of the expected growth within the RAZs to the smaller TAZs was straightforward. For this effort, the CDS team:

CDS Forecast Areas for the MCTRA SH 249 Study



1. Reviewed information for each RAZ, including aerial photographs, data from the appraisal districts, information from area agencies and previous TAZ-level forecasts prepared by the H-GAC;

2. Made an assessment as to the current distribution of housing units, jobs and population within each TAZ as a percentage of the total RAZ (using the team knowledge of trends and development plans); and

3. Made an assessment of the future growth of housing and jobs in each TAZ of the expected growth of the entire RAZ; and applied those growth percentages to the expected RAZ total growth to produce estimates of future growth of housing, population and jobs in the smaller zones.

Summary of Considered Adjustments

The following tables illustrate the considered changes in the forecasts at the small area (RAZ and TAZ) level. The base from which these changes were considered is the HCTRA forecast that CDS issued in late 2016. In some cases, change in the forecast was required, in other cases, the original projections adequately included the growth from the newly announced projects or changing conditions. There are two tables, one for adjustments related to population and housing (residential developments) and one for adjustments related to employment (commercial developments). A total of 236 TAZ and TAZ-level examinations and adjustments were made for this forecast along with 4 RAZ-level adjustments.

Population and Housing Adjustments

County	RAZ	TAZ	Action	Adjustment/Comment
Harris	65	886	Adjusted up significantly	Meritage Homes purchased former Pine Crest golf course, will develop an 800-resident community there
Harris	85	2548	All residential growth eliminated	No room for residential growth here
Harris	107	1976	All residential growth eliminated	Exclusively commercial, residential redevelopment not expected
Harris	113	1787	Adjusted up	Later phase of Elyson
Harris	113	1826	Forecast sufficient, no adjustment	Elyson, first phase being developed here
Harris	115	1942	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1945	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1946	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1947	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1948	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1950	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1953	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1959	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1960	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Harris	115	1962	Adjusted up slightly	Johnson Development has acquired 1,619 acres on US 290 and Katy-Hockley Road, expected to be a new residential subdivision
Harris	115	1963	Adjusted up slightly	Johnson Development has acquired 1,619 acres on US 290 and Katy-Hockley Road, expected to be a new residential subdivision
Harris	115	1964	Adjusted up slightly	Johnson Development has acquired 1,619 acres on US 290 and Katy-Hockley Road, expected to be a new residential subdivision
Harris	115	1965	Adjusted up slightly	Johnson Development has acquired 1,619 acres on US 290 and Katy-Hockley Road, expected to be a new residential subdivision
Harris	115	1968	Adjusted up slightly	Later phase of Elyson

County	RAZ	TAZ	Action	Adjustment/Comment
Harris	115	1971	Adjusted up slightly	Later phase of Elyson
Harris	116	1616	Adjusted down	Residential growth will be limited
Harris	116	1903	Forecast sufficient, no adjustment	Later phase of Elyson
Harris	116	1904	Adjusted up slightly	Later phase of Elyson
Harris	116	1905	Adjusted up slightly	Later phase of Elyson
Harris	116	1906	Forecast sufficient, no adjustment	Later phase of Elyson
Harris	116	1918	Adjusted down	Residential growth will be limited
Harris	118	2102	Adjusted up slightly	Rosehill Reserve, 1,500 home subdivision under construction soon
Harris	118	2128	Adjusted up slightly	Current golf driving range slated for duplex development
Harris	118	2130	Forecast sufficient, no adjustment	200 acres for sale along Telge Road, expected to become residential development
Harris	118	2131	Forecast sufficient, no adjustment	200 acres for sale along Telge Road, expected to become residential development
Harris	118	2133	Adjusted down significantly	Most expected development already underway, floodplain issues may limit, but not eliminate, growth
Harris	118	2141	Adjusted down	Former Humble oil field, development opportunities limited or restricted to commercial
Harris	118	2142	Adjusted down	Former Humble oil field, development opportunities limited or restricted to commercial
Harris	118	2143	Adjusted down	Former Humble oil field, development opportunities limited or restricted to commercial
Harris	118	2145	Adjusted up	Interest expressed in apartment development here, toll road construction should add drainage improvements which will open up development
Harris	118	2146	Adjusted down	Largely built out, growth will be limited
Harris	118	2147	Adjusted down	Largely built out, growth will be limited
Harris	120	2191	Forecast sufficient, no adjustment	Yaupon Trails, a 37 home subdivision under development here now
Harris	120	2192	Adjusted up slightly	Interest expressed in apartment development here
Harris	120	2193	Adjusted down	Location of Tomball High School, limited opportunities for growth
Harris	120	2194	Adjusted down	Largely built out, contains Tomball Jr. High School, growth will be limited
Harris	120	2196	Adjusted down	Flood plain issues will limit growth
Harris	120	2197	Adjusted up	Tomball zoning has approved zoning for a 350 unit multifamily complex as well as 350 single family home lots
Harris	120	2199	Adjusted down	Residential development should be limited by growth of the Tomball Regional Medical Center and associated medical-oriented businesses
Harris	120	2204	Adjusted up slightly	A 50 lot subdivision developed by Will Benson has been platted here
Harris	120	2205	Forecast sufficient, no adjustment	Apartments, single family subdivisions, and mixed use development zoned on this site
Harris	120	2206	Adjusted down	Largely built out, growth will be limited
Harris	120	2207	Forecast sufficient, no adjustment	Reserves at Spring Lakes subdivision under development with 95 homes, Raleigh Creek under development as well with 350 homes planned

County	RAZ	TAZ	Action	Adjustment/Comment
Harris	120	2210	Forecast sufficient, no adjustment	Alexander Estates, a 251 lot subdivision is planned near the intersection of Spell Road and Huffsmith-Kohrville Road, floodplain issues may restrict growth elsewhere
Harris	120	2211	Adjusted down	Floodplain issues may limit, but not eliminate, growth
Harris	122	2218	Forecast sufficient, no adjustment	Floodplain issues may limit, but not eliminate, growth
Harris	122	2221	Adjusted down	Kickerillo-Mischer Preserve takes up much of this zone's remaining land
Harris	122	2226	Adjusted up	Raveneaux Country Club has been sold and may be redeveloped into housing
Harris	122	2227	Adjusted down	Limited room for growth
Harris	122	2231	Adjusted up significantly	Some home development going on here now, much vacant land available
Harris	122	2233	Forecast sufficient, no adjustment	Laurel Park subdivision under way now, near-term growth
Harris	122	2240	Adjusted down	Somewhat limited room for growth
Harris	122	2242	Adjusted down	Limited room for growth
Harris	122	2243	Adjusted down	Limited room for growth
Harris	122	2251	Adjusted down	Development in this area will be largely commercial
Harris	122	2261	Adjusted up slightly	New apartment complexes recently opened with another expected in the near future
Harris	122	2267	Adjusted down	Limited room for growth
Harris	122	2271	Adjusted down	Limited room for growth
Harris	122	2272	Adjusted down	Limited room for growth
Harris	123	2176	All residential growth eliminated	Exclusively commercial, residential redevelopment not expected
Harris	123	2187	Adjusted up	New home development off of Stuebner Airline and Middlestedt Rd.
Harris	125	2327	Adjusted down	Limited room for growth
Harris	125	2328	Adjusted down	Limited room for growth
Harris	125	2329	Adjusted down	Limited room for growth
Harris	125	2330	Adjusted down	Limited room for growth
Harris	125	2331	Adjusted down	Limited room for growth
Harris	125	2332	Adjusted down	Limited room for growth
Montgomery	136	4272	Adjusted up slightly	Lake Creek Village underway, includes 104 single family lots
Montgomery	136	4274	Adjusted up slightly	Villas of Mia Lago, 42 single family lots under construction
Montgomery	136	4275	Adjusted up slightly	Waterstone section 2 has 84 single family lots platted, also an 80 acre housing development is presently in the planning stages
Montgomery	136	4277	Adjusted up slightly	Terra Vista has 62 single family lots platted, there is also an 80 acre housing development currently in the planning stages
Montgomery	137	4245	Adjusted down significantly	Limited room for growth
Montgomery	137	4246	Forecast sufficient, no adjustment	Growth opportunities here, but several years off
Montgomery	137	4251	Adjusted down	Floodplain issues may limit, but not eliminate, growth
Montgomery	137	4257	Adjusted down	4,000 acre Mitchell Conservancy will limit growth
Montgomery	137	4258	Forecast sufficient, no adjustment	Heritage Plaza apartments adding 64 units

County	RAZ	TAZ	Action	Adjustment/Comment
Montgomery	138	4230	Adjusted up slightly	A total of 111 single family homes planned, most in Hills of Town Creek
Montgomery	138	4235	Forecast sufficient, no adjustment	Escondido Ranch 150 acre subdivision, includes part of 5,900 acre Woodard tract with 1,600 home section planned to start in 2019
Montgomery	138	4236	Adjusted up slightly	Includes part of large "Woodard Tract" which will likely begin development once the toll road opens
Montgomery	138	4237	Adjusted up slightly	Crown Ranch subdivisions nearly built out but the Bluejack National development is still in its early stages
Montgomery	138	4241	Adjusted up slightly	Expansion and extension of Keenan Cut Off Rd. should drive growth
Montgomery	138	4242	Forecast sufficient, no adjustment	Mill Creek residential development, 500+ homes planned, expected to open in late 2018, expansion and extension of Keenan Cut Off Rd. should drive growth
Montgomery	138	4243	Forecast sufficient, no adjustment	Expansion and extension of Keenan Cut Off Rd. should drive growth, 1,200 acre High Meadow Estates subdivision underway now, includes part of large "Woodard Tract" which will likely begin development once the toll road opens
Montgomery	139	4210	Adjusted up slightly	Extension of Nicholls Sawmill Rd. will open up additional development opportunities
Montgomery	139	4211	Adjusted up slightly	Extension of Nicholls Sawmill Rd. will open up additional development opportunities
Montgomery	139	4212	Adjusted down	Limited room for growth
Montgomery	139	4213	Forecast sufficient, no adjustment	548 lot Glen Oaks subdivision under development
Montgomery	139	4214	Adjusted down	Limited room for growth
Montgomery	139	4216	Adjusted up slightly	Large undeveloped tract in the middle of this zone
Montgomery	139	4220	Forecast sufficient, no adjustment	Legacy Trust residential site is 2,600 acres with a 1,400 home first phase to start in 2018, 479 acre Magnolia Ridge subdivision is underway now
Montgomery	139	4221	Forecast sufficient, no adjustment	Legacy Trust owns a 300 acre tract north of FM 1488, Mustang Ridge to include 240 homes on 74 acres, includes part of 5,900 acre Woodard Tract
Montgomery	139	4223	Adjusted down slightly	Magnolia Reserve subdivision under way now, 216 homes being built on 170 acres, floodplain and school district-owned property could limit growth
Montgomery	139	4228	Forecast sufficient, no adjustment	Reynolds Reserve subdivision with 240 homes planned, 1,100 townhomes planned as well
Montgomery	139		Adjusted down at the RAZ level	Too much land built out to hold as much growth as initially expected
Waller	140	3987	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Waller	140	3988	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Waller	140	3991	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Waller	140	3995	Adjusted up significantly	Planned Woodhaven Estates development, 2,700 acres with a 564 home first phase and over 4,000 homes at build-out, timeframe unknown

County	RAZ	TAZ	Action	Adjustment/Comment
Waller	140	3997	Adjusted up significantly	Planned Woodhaven Estates development, 2,700 acres with a 564 home first phase and over 4,000 homes at build-out, timeframe unknown
Waller	140	4001	Adjusted up significantly	Planned Woodhaven Estates development, 2,700 acres with a 564 home first phase and over 4,000 homes at build-out, timeframe unknown
Waller	142	3888	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Waller	142	3889	Adjusted up slightly	LGI Homes planning a 1,000 lot, 281 acre subdivision
Waller	142	3891	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Waller	142	3892	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Waller	142	3893	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Waller	142	3934	All residential growth eliminated	Katy Prairie Conservancy will limit or eliminate growth
Galveston	174		Adjusted up at the RAZ level	League City growth expected to be higher than initially forecast
Galveston	175	4699	Forecast sufficient, no adjustment	Empire Land planning a 206 acre subdivision with 540 homes
Galveston	175		Adjusted up at the RAZ level	League City growth expected to be higher than initially forecast
Galveston	176		Adjusted down at the RAZ level	Growth should be more limited in San Leon and Bacliff
Liberty	195	4480	Adjusted up significantly	River Ranch subdivision development planned, construction to begin before 2020, covers 7,000 acres
Liberty	195	4484	Adjusted up significantly	River Ranch subdivision development planned, construction to begin before 2020, covers 7,000 acres
Liberty	198	4453	Adjusted up significantly	Grand Oaks Reserve, new master planned community just begun on 615 acres at the intersection of SH 105 and 321 in Cleveland, 976 homes, 200 in first phase beginning in 2018

Employment Adjustments

County	RAZ	TAZ	Action	Adjustment/Comment
Harris	18	5095	Adjusted down in the near term, with a recovery bringing jobs just above the original level	MD Anderson Hospital to lay off 1,000 employees, many of them at the Texas Medical Center hospital
Harris	49	1177	Adjusted up	McCord developing 3 buildings with 160,000Sf of industrial/flex space
Harris	50	2495	Adjusted up	LyondellBasell to build a new petrochemical plant next to their Channelview facility, will create 160 new permanent jobs, to be completed in 2021
Harris	58	1530	Adjusted up slightly	Tool-Flo has begun construction on its 80,000 SF headquarters building
Harris	58	1532	Adjusted up slightly	McKee Tessa purchased 17 acres for a new manufacturing facility, 55,000 SF building to open in late 2017
Harris	82	2366	Forecast sufficient, no adjustment	New McCord building opened in 2016, 86,523 SF
Harris	85	2548	Adjusted up slightly	Avera Cos barge mooring facility planned on 41.7 acre site
Harris	87	2646	Adjusted up	Braskem adding a new polypropylene production facility next to their existing plant, 50 new permanent jobs added after 2020
Harris	89	2660	Forecast sufficient, no adjustment	Enterprise Products planned ethylene export terminal
Harris	90	1318	Adjusted up slightly	49,500 SF of new crane-ready industrial space planned by NAI Partners
Harris	104	901	Forecast sufficient, no adjustment	Holiday Inn Express under construction now
Harris	104	1766	Forecast sufficient, no adjustment	Homewood Suites under construction now, expected to be complete by late 2017
Harris	108	1007	Forecast sufficient, no adjustment	Amazon's new 860,000 SF order fulfillment facility in Pinto Park to employ 2,500
Harris	109	1110	Adjusted down	Near term growth prospects limited
Harris	109	1111	Adjusted up	Greenspoint Mall recently sold, desire is to be redeveloped into commercial/mixed use
Harris	111	1735	Forecast sufficient, no adjustment	Part of I-10/99 employment node
Harris	111	1737	Adjusted up slightly	Part of I-10/99 employment node
Harris	113	1787	Adjusted up slightly	Part of 99/FM 529 employment node
Harris	113	1789	Adjusted up significantly	Part of 99/FM 529 employment node
Harris	113	1832	Forecast sufficient, no adjustment	Part of I-10/99 employment node
Harris	113	1837	Adjusted up slightly	New UH Campus planned, part of I-10/99 employment node
Harris	116	1882	Adjusted up slightly	AIV LP and Gulf Coast Modification to build a 320,000 SF office and warehouse facility to finish by late 2018
Harris	116	1901	Adjusted up	Site of planned Bridgeland Town Center

County	RAZ	TAZ	Action	Adjustment/Comment
Harris	116	1905	Adjusted up	Part of 99/FM 529 employment node
Harris	116	1910	Adjusted up	Part of 99/FM 529 employment node, includes recently opened Cypress Park high school
Harris	116	1917	Adjusted up	FedEx facility under construction now, 200,000 SF larger than originally expected, now 1.1 million SF total
Harris	116	1920	Adjusted up	Site of planned Bridgeland Town Center
Harris	116	1922	Adjusted up	Site of planned Bridgeland Town Center
Harris	116	1924	Adjusted up	Site of planned Bridgeland Town Center
Harris	116	1927	Adjusted up	Site of proposed Towne Lake Town Center
Harris	116	1933	Adjusted up	Site of proposed Towne Lake Town Center
Harris	117	2094	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2017	Adjusted up	Premium Outlet Mall
Harris	118	2018	Adjusted up	Major shopping center
Harris	118	2020	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2022	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2025	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2026	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2093	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2096	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2097	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2098	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2101	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2102	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2103	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2130	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2132	Adjusted up	Grand Parkway frontage should encourage growth
Harris	118	2139	Forecast sufficient, no adjustment	Part of 99/SH 249 employment node
Harris	118	2140	Adjusted up	Part of 99/SH 249 employment node
Harris	118	2141	Adjusted up slightly	New Harris County facility and Nabors Drilling facility planned, 2,000 employees expected between the two
Harris	118	2142	Adjusted up slightly	Grand Parkway frontage should encourage growth
Harris	118	2146	Adjusted up slightly	More room for commercial growth expected here than in 2147
Harris	118	2147	Adjusted down slightly	Lone Star College campus here but land is largely built out
Harris	119	2125	Adjusted up slightly	Matzke Elementary relocating and under construction here
Harris	120	2192	Adjusted up slightly	Retail expected along Brown Road toward SH 249
Harris	120	2194	Adjusted down	Largely built out, growth will be limited
Harris	120	2196	Job growth eliminated	No land zoned for commercial development here
Harris	120	2198	Forecast sufficient, no adjustment	Growth expected at Tomball Regional Medical Center and associated medical-oriented businesses
Harris	120	2199	Forecast sufficient, no adjustment	Growth expected at Tomball Regional Medical Center and associated medical-oriented businesses

County	RAZ	TAZ	Action	Adjustment/Comment
Harris	120	2204	Adjusted up	Zoned for mixed-use, retail, office, and a hotel
Harris	120	2206	Adjusted down	Largely built out, growth will be limited
Harris	120	2207	Adjusted down	No land zoned for commercial development here
Harris	120	2208	Adjusted up	Baker Hughes and NOV have facilities here with plans to expand
Harris	120	2210	Adjusted up slightly	Klein ISD plans to open 3 schools here, near the corner of FM 2920 and Huffsmith-Kohrville Road, elementary, middle, and high school
Harris	120	2211	Adjusted up slightly	Commercial opportunities along Grand Parkway frontage
Harris	121	2247	Adjusted down	Limited room for growth
Harris	121	2248	Adjusted up significantly	New Klein ISD middle school planned
Harris	122	2214	Adjusted up slightly	90,000 SF shopping center under construction
Harris	122	2223	Adjusted up slightly	Klein Cain High School recently opened along with redeveloping strip center
Harris	122	2228	Adjusted up slightly	Klein ISD holds property here, Grand Parkway frontage should encourage growth
Harris	122	2229	Adjusted up slightly	Grand Parkway frontage should encourage growth
Harris	122	2231	Forecast sufficient, no adjustment	Klein ISD administration building recently expanded, no future plans
Harris	122	2237	Adjusted up significantly	Grand Parkway Marketplace shopping center now open, much still under construction
Harris	122	2254	Forecast sufficient, no adjustment	HP constructing a 378,000 SF office campus in Springwoods Village, will house 2,400 employees when complete
Harris	122	2254	Forecast sufficient, no adjustment	XTO Energy, an Exxon Mobil subsidiary, moving 1,200 employees to Springwoods Village campus by 2018, another 400 to move in by 2020
Harris	122	2261	Adjusted up slightly	Business Park development with sites expected to be developed
Harris	122	2271	Adjusted up slightly	No reason for significant reduction in jobs
Harris	123	1976	Adjusted up slightly	Some room for additional commercial growth next to shopping center
Harris	123	2154	Adjusted down	Limited room for growth
Harris	123	2155	Adjusted down	Limited room for growth
Harris	123	2172	Adjusted down slightly	Hospital has no current plans for growth
Harris	123	2175	Adjusted up	Clay development beginning construction on a 293,000 SF distribution center in Cutten Road business park
Harris	123	2176	Adjusted up	Willowbrook Mall and surrounding land could add employment through redevelopment
Harris	125	2327	Adjusted up	New business park announced
Montgomery	128	4179	Adjusted up significantly	Insperity Centre 4, 100,000 SF building completed in January 2017, will have at least 200 employees
Montgomery	129	4152	Adjusted up slightly	Valley Ranch Medical District planned on the southern end of the Valley Ranch Development, CHI St. Luke's to build the hospital, no timetable as of yet
Montgomery	132	4115	Forecast sufficient, no adjustment	Commercial growth from major retail center, industrial sites, and recently-opened private school

County	RAZ	TAZ	Action	Adjustment/Comment
Montgomery	136	4271	Adjusted up slightly	35 acres of retail or small office development planned
Montgomery	136	4272	Forecast sufficient, no adjustment	A 125,000 SF Kroger along with additional retail is planned, Lake Creek Village has 22 acres designated for commercial use
Montgomery	136	4275	Adjusted up slightly	Montgomery Summit Business Park section 1, partially occupied on 21 acres
Montgomery	137	4244	Forecast sufficient, no adjustment	Future HEB grocery-anchored retail center
Montgomery	137	4246	Adjusted up	Expansion and extension of Keenan Cut Off Rd. should drive growth
Montgomery	137	4251	Adjusted down	Floodplain issues may limit, but not eliminate, growth
Montgomery	137	4257	Adjusted up	Expansion and extension of Keenan Cut Off Rd. should drive growth
Montgomery	137	4258	Forecast sufficient, no adjustment	47 acres of mixed-use commercial proposed, mostly retail including a McCoy's Hardware store
Montgomery	138	4230	Forecast sufficient, no adjustment	Heritage Place Medical center, an 18,000 SF medical office planned
Montgomery	138	4235	Forecast sufficient, no adjustment	Escondido Ranch development to have business park/commercial component, Along SH 249 route, which should be a major driver of commercial growth
Montgomery	138	4236	Forecast sufficient, no adjustment	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	138	4241	Adjusted up	Expansion and extension of Keenan Cut Off Rd. should drive growth
Montgomery	138	4242	Forecast sufficient, no adjustment	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	138	4243	Forecast sufficient, no adjustment	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	139	4206	Forecast sufficient, no adjustment	Business Park driving growth here
Montgomery	139	4208	Forecast sufficient, no adjustment	Business Park driving growth here
Montgomery	139	4211	Adjusted down	Commercial activity here will be limited
Montgomery	139	4217	Adjusted up slightly	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	139	4218	Adjusted up slightly	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	139	4219	Adjusted up slightly	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	139	4220	Adjusted up slightly	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	139	4221	Adjusted up slightly	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	139	4222	Adjusted down	Limited room for growth
Montgomery	139	4223	Forecast sufficient, no adjustment	Business park planned on two adjacent tracts along FM 1488, Buckgrass and Halberdier
Montgomery	139	4224	Adjusted down	Limited room for growth

County	RAZ	TAZ	Action	Adjustment/Comment
Montgomery	139	4226	Adjusted up slightly	Along SH 249 route, which should be a major driver of commercial growth, New Magnolia ISD High School planned to open in the next 5 years
Montgomery	139	4227	Adjusted up slightly	Along SH 249 route, which should be a major driver of commercial growth
Montgomery	139	4228	Adjusted up slightly	HEB grocery and shopping center to open in late 2018, another shopping center planned off of Spur 149 Rd, Lone Star College is looking for land to build a new campus in this area
Waller	143	3876	Adjusted up significantly	Texas Heritage Marketplace planned by NewQuest, a 450,000 SF grocery-anchored retail center
Fort Bend	148	3822	Adjusted up	Hudson Products to expand their current facility with a 51,600 SF addition, expected to add 150 employees
Fort Bend	156	3755	Adjusted up	TexPharma to construct 210,000 SF building in new Rosenberg Business Park, will have 300 jobs by 2024 and as many as 500 eventually
Galveston	174	4667	Adjusted up	Pinnacle Park commercial development, Cabela's store recently opened with 110 room Fairfield Inn planned, more space available
Chambers	191	4553	Adjusted up	146 acre retail/mixed use project in the conceptual stages at I-10 and SH 146
Chambers	191	4558	Adjusted up slightly	Ravago Americas holds 200 acres and plans to build a 1.5 million SF distribution center,
Chambers	191	4564	Adjusted up slightly	Vinmar and Avera Cos developing 500,000 SF rail-served distribution facility, JSW Steel modernizing its existing facility and considering adding a new facility that would employ 500

Disaggregation of Households and Employment by Type

In addition to producing forecasts using H-GAC's new TAZ structure, CDS was tasked with providing disaggregated forecasts for households and employment as H-GAC does. The household forecast was disaggregated by multiple characteristics: household size, number of workers living in household, and household income level. The employment disaggregation is more straightforward, dividing up the total number of jobs into ten industry-specific categories. All of these categories and disaggregation were defined by H-GAC, and CDS was tasked with matching H-GAC's format in the data that was delivered. The process CDS used to produce these disaggregated forecasts is described in the figures below.

Household Disaggregation

Task	Step	Action
Create master file of households by size, by TAZ for CDS projections	1	Create 2010 base file of number of HHs by size by TAZ from Census
	2	Compute average HH size by TAZ
	3	Create table of breakdown of HHs by size for typical TAZs by average HH size
	4	Using average HH size for each TAZ in future periods, compute distribution of HHs by size by TAZ in all future periods
Create starting Base Demographic File	5	Use H-GAC file percentages of workers per HH and HH income by HH size to compute TAZ breakdowns of all variables for all future periods – using our number of HHs by size – rounded to integers
	6	Locate TAZs where the CDS forecast contains data but the H-GAC forecast does not and fill these gaps with shares from similar nearby TAZs
Make adjustments in the Focus Area based upon reasonable expectation of demographic shifts	7	From the Base Demographic File completed in 5, Compute the average number of workers per household and the average income of each TAZ into future periods
	8	Evaluate each TAZ in the Focus Area on future average income projections and make adjustment to the Base Demographic File based on CDS expectations of future income shifts.
	9	Evaluate each TAZ in the Focus Area on future average workers per HH projections and make adjustment to the Base Demographic File based on CDS expectations of future demographic shifts.

Example Household Disaggregated Data File Structure

The resultant file for each TAZ may look like this, with a maximum of 70 records per TAZ. There are 5 categories for HH size, 3 for workers, and 5 for income (see chart to the right for income category definitions)

TAZ	HHSZ	WORKERS	HH INCOME	HHS
1	1	0	0	2
1	1	1	0	3
1	1	1	1	1
1	1	1	3	9
1	2	0	4	4
1	2	1	1	6
1	2	2+	2	12
1	2	2+	3	25
1	3	1	2	11
1	3	2+	3	6
1	4	1	0	11
1	4	2+	1	2
1	4	2+	2	5
1	5+	1	0	1
1	5+	2+	2	1

H-GAC Income Range Categories

Income Code	Household Income Range
0	$0- 22K
1	$23-40K
2	$41-65K
3	$66-100K
4	$101K+

H-GAC Employment Categories

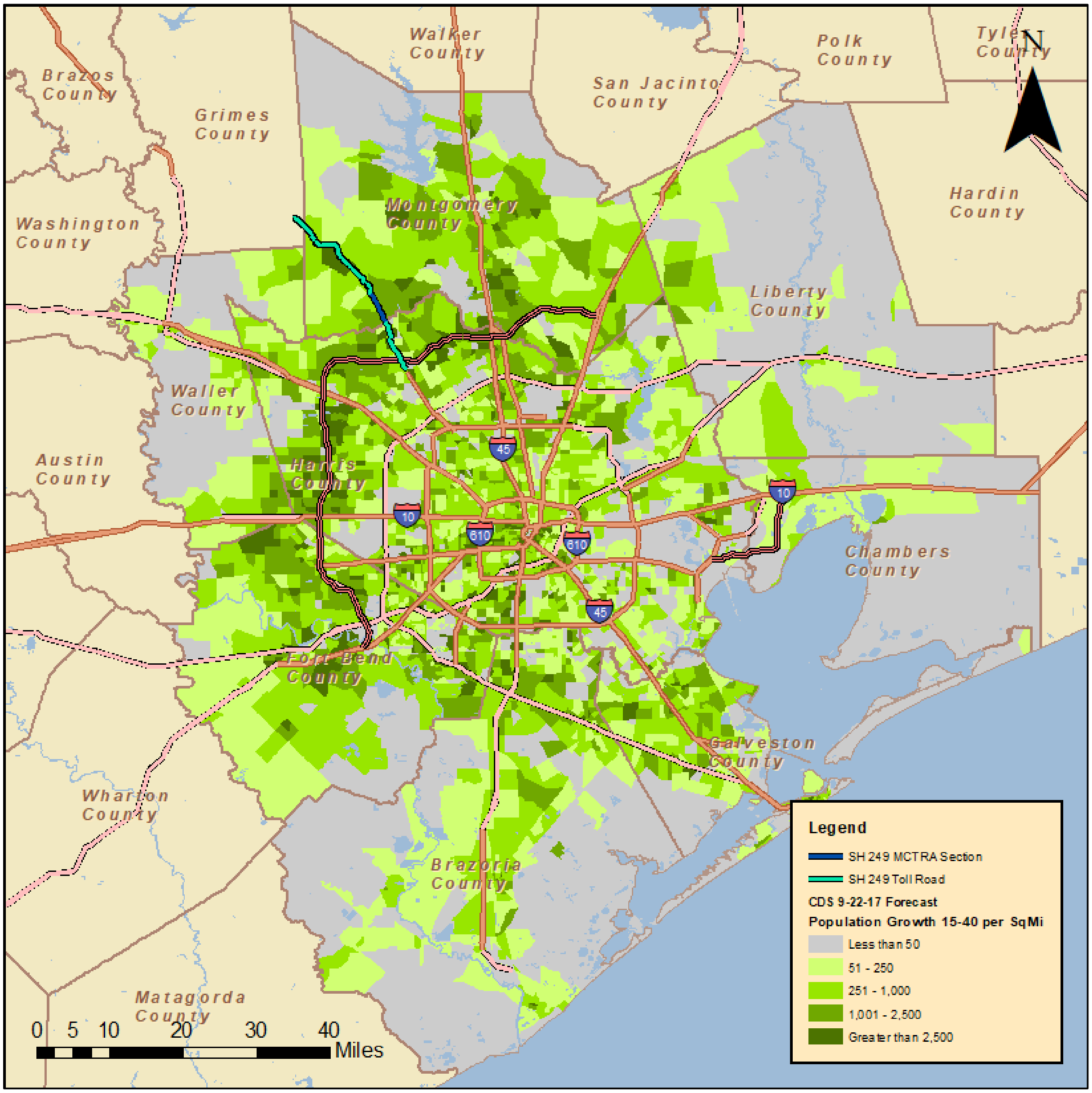
Abbreviation	Description
EDUK12	Primary and secondary education
EDUPOST	Post-secondary education
ENTERTAIN	Entertainment and media *
RESTAUR	Restaurant and hospitality *
RETAIL	Retail
INDUST	Industrial and manufacturing
OFFICE	Office, non-medical
MED1	Hospital and clinic
MED2	Medical professional
GOVERN	Government, public agency

* These two categories remain in H-GAC's disaggregated forecast structure but contain no data throughout every TAZ and forecast year. CDS also does not forecast jobs for these categories, but retains their place in the table structure. Jobs that would fall in these two categories are assumed to be located in the retail category.

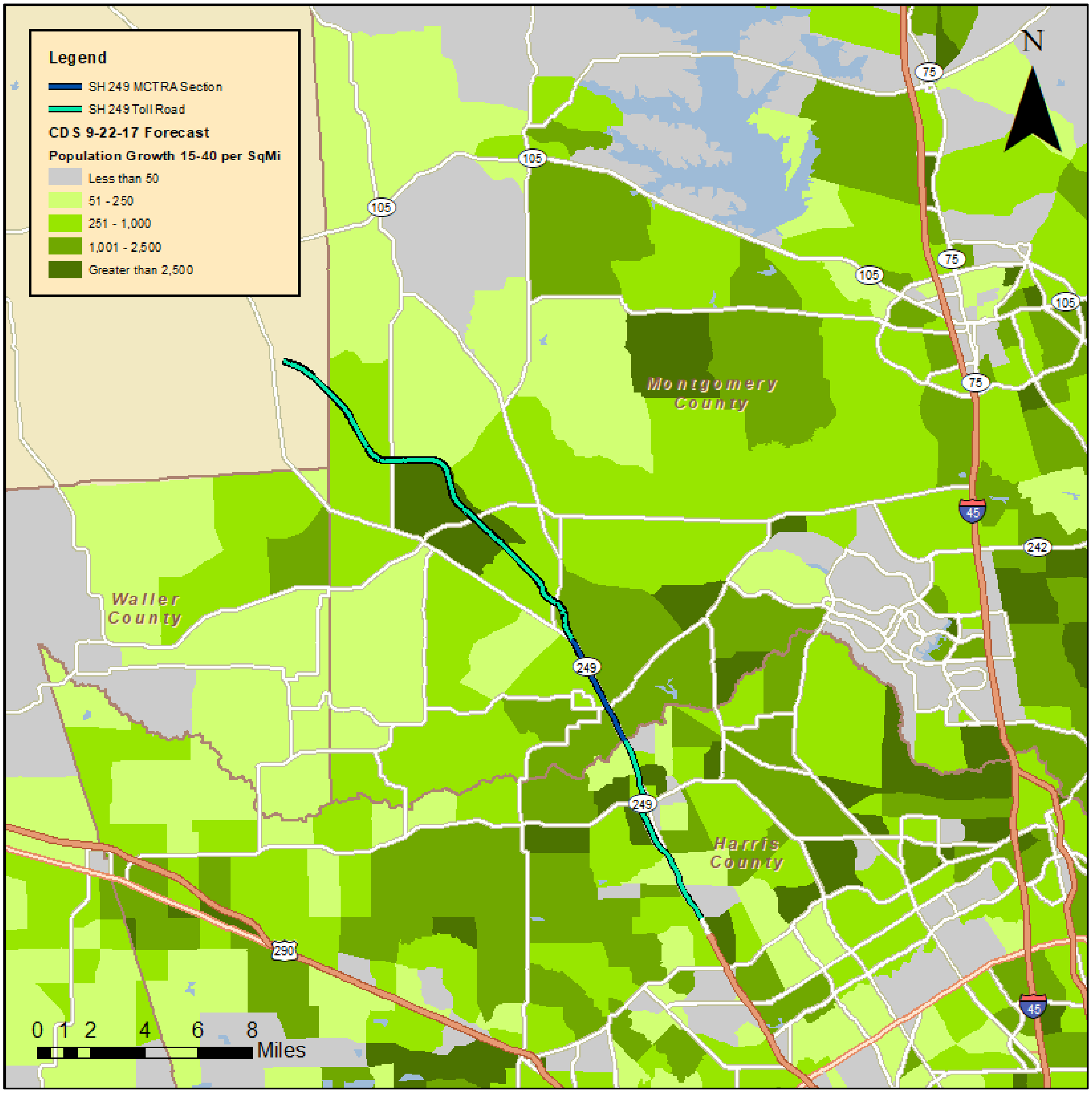
Employment Disaggregation

Task	Step	Action
Create starting Base Employment File	1	Use H-GAC file percentages of jobs by land use category and apply to CDS jobs forecast to compute TAZ breakdowns of all categories for all future periods.
	2	Locate TAZs where the CDS forecast contains data but the H-GAC forecast does not and fill these gaps with shares from similar nearby TAZs
Make adjustments in the Focus Area	3	Within the focus area only, evaluate each TAZ to determine if the distribution of jobs by category is reasonable based on current trends and CDS expectations.
	4	Make adjustments as necessary and create the final jobs file.

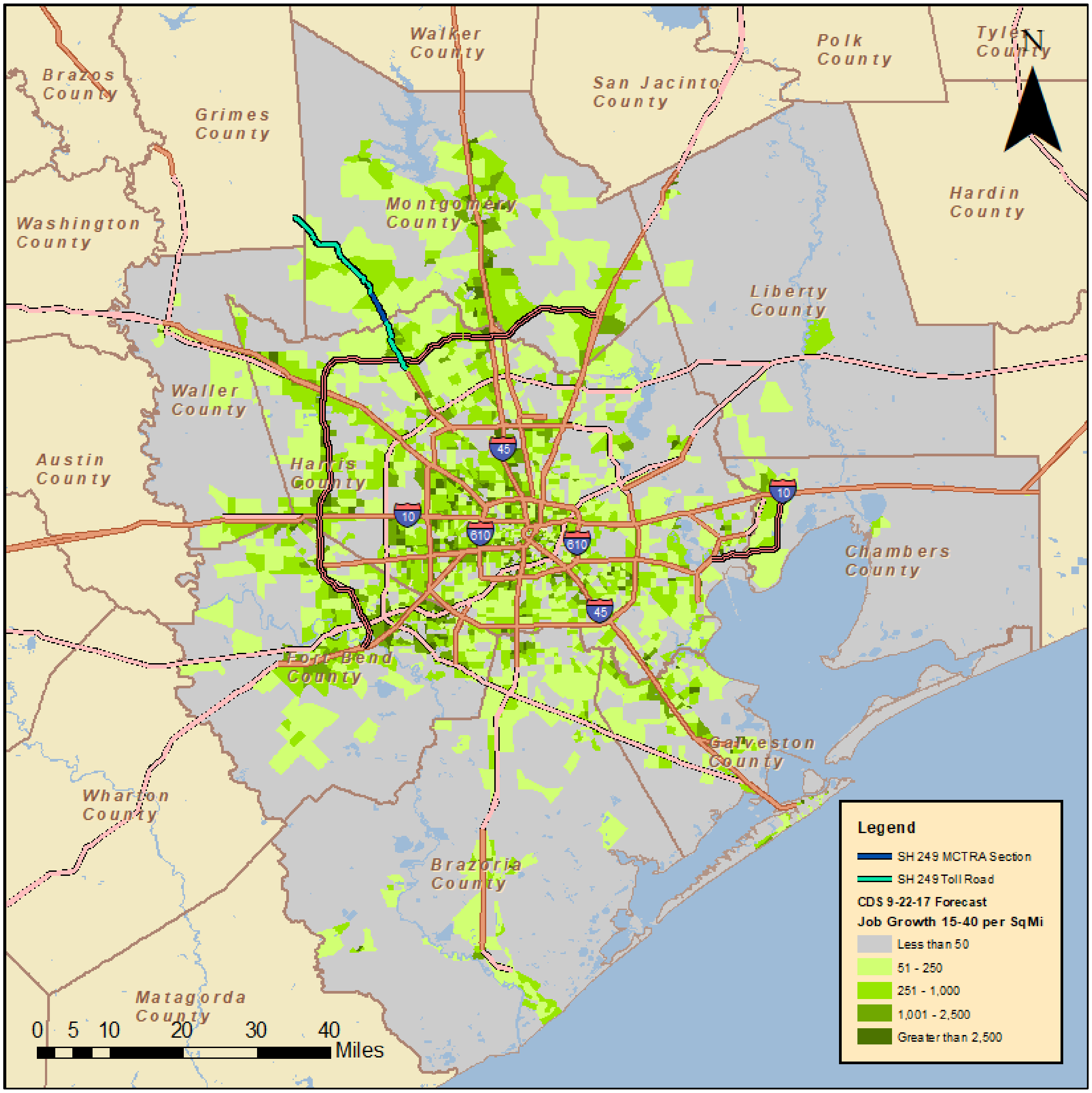
2015 – 2040 Projected Population Growth per Square-Mile by TAZ



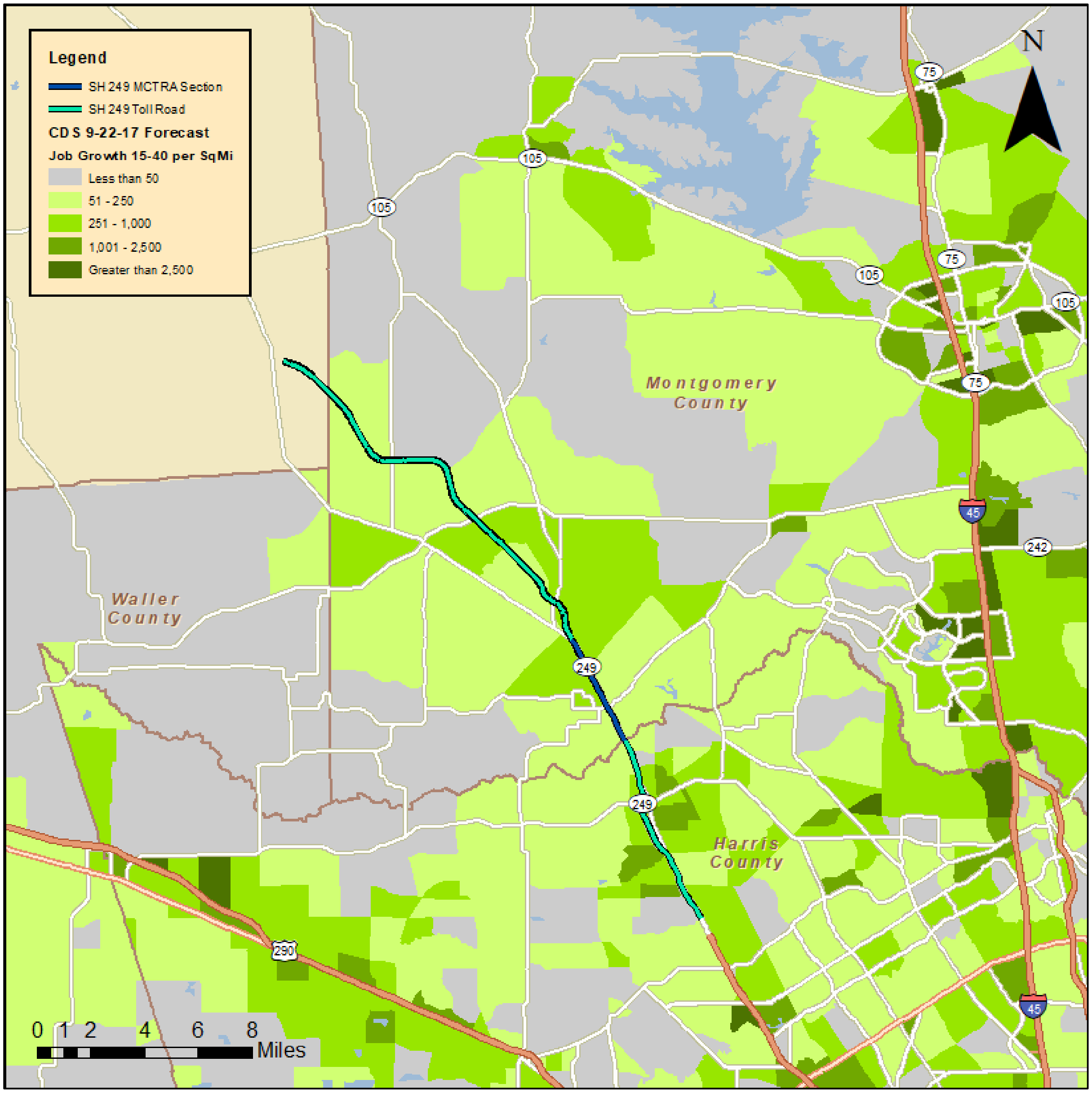
2015 – 2040 Projected Population Growth per Square-Mile by TAZ – SH 249 Area



2015 – 2040 Projected Job Growth per Square-Mile by TAZ



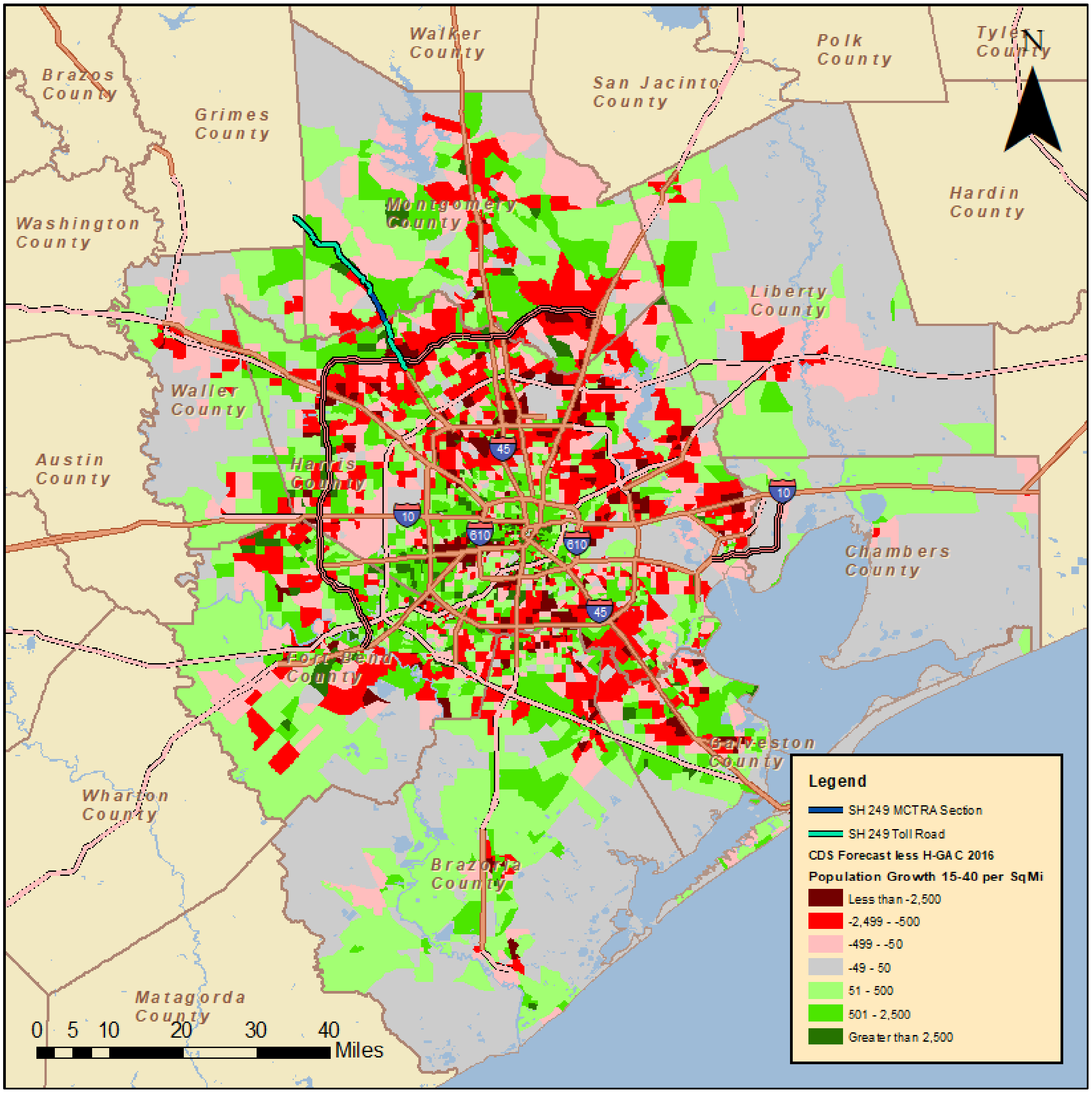
2015 – 2040 Projected Job Growth per Square-Mile by TAZ – SH 249 Area



The following charts compare this most recent CDS forecast with the H-GAC 2040 forecast provided to CDS in 2016. The green areas are where the CDS forecast of population or job growth from 2015 to 2040 is greater than that of H-GAC. The red areas are those where CDS' forecasts are lower than H-GAC. These charts divide the change by the area of the zone to eliminate bias for large vs. small zones.

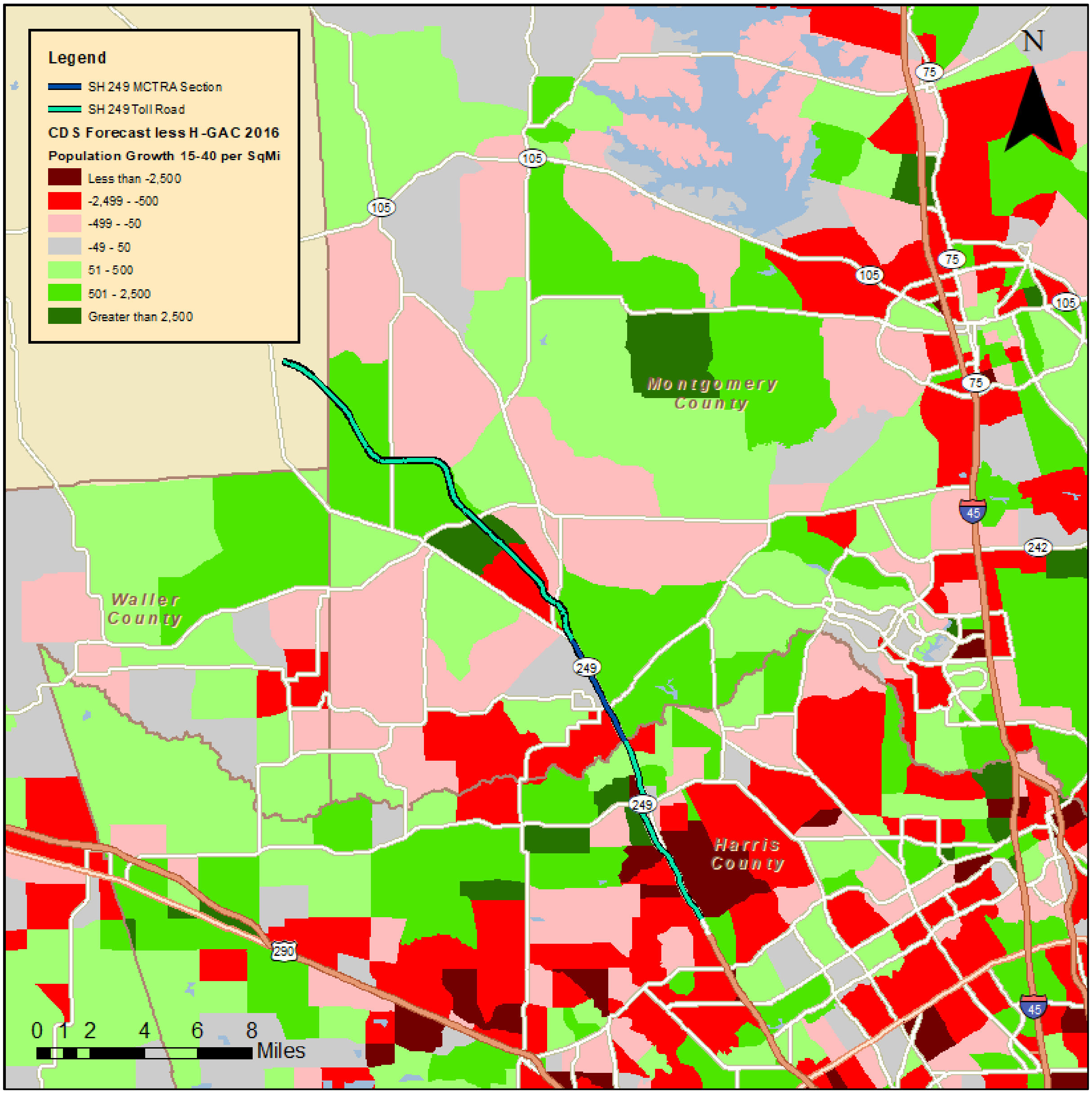
Comparison of Population Growth Density 2015 – 2040

CDS Forecast Compared with 2016 H-GAC 2040 Forecast by TAZ



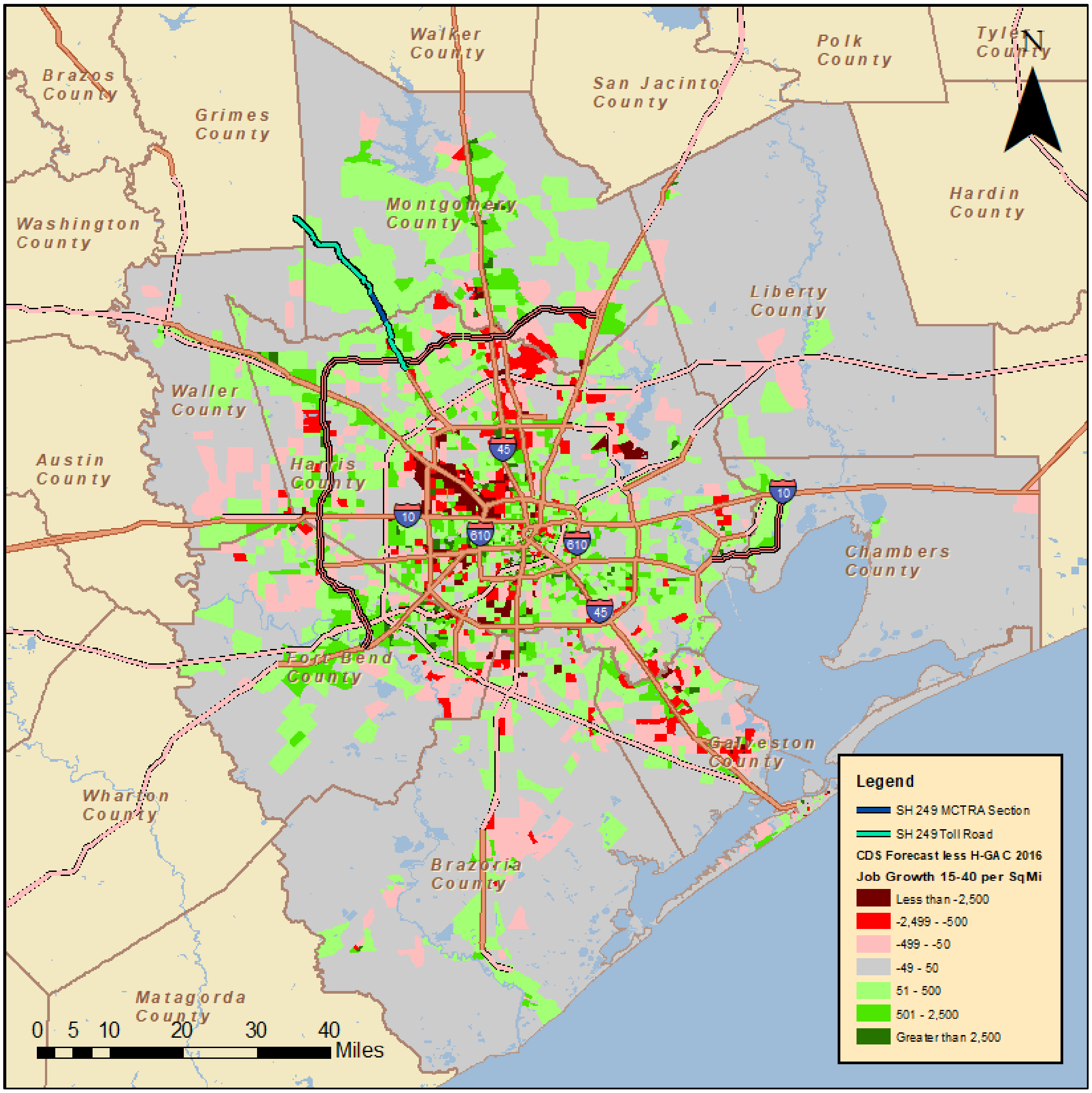
Comparison of Population Growth Density 2015 – 2040 in SH 249 Area

CDS Forecast Compared with 2016 H-GAC 2040 Forecast by TAZ



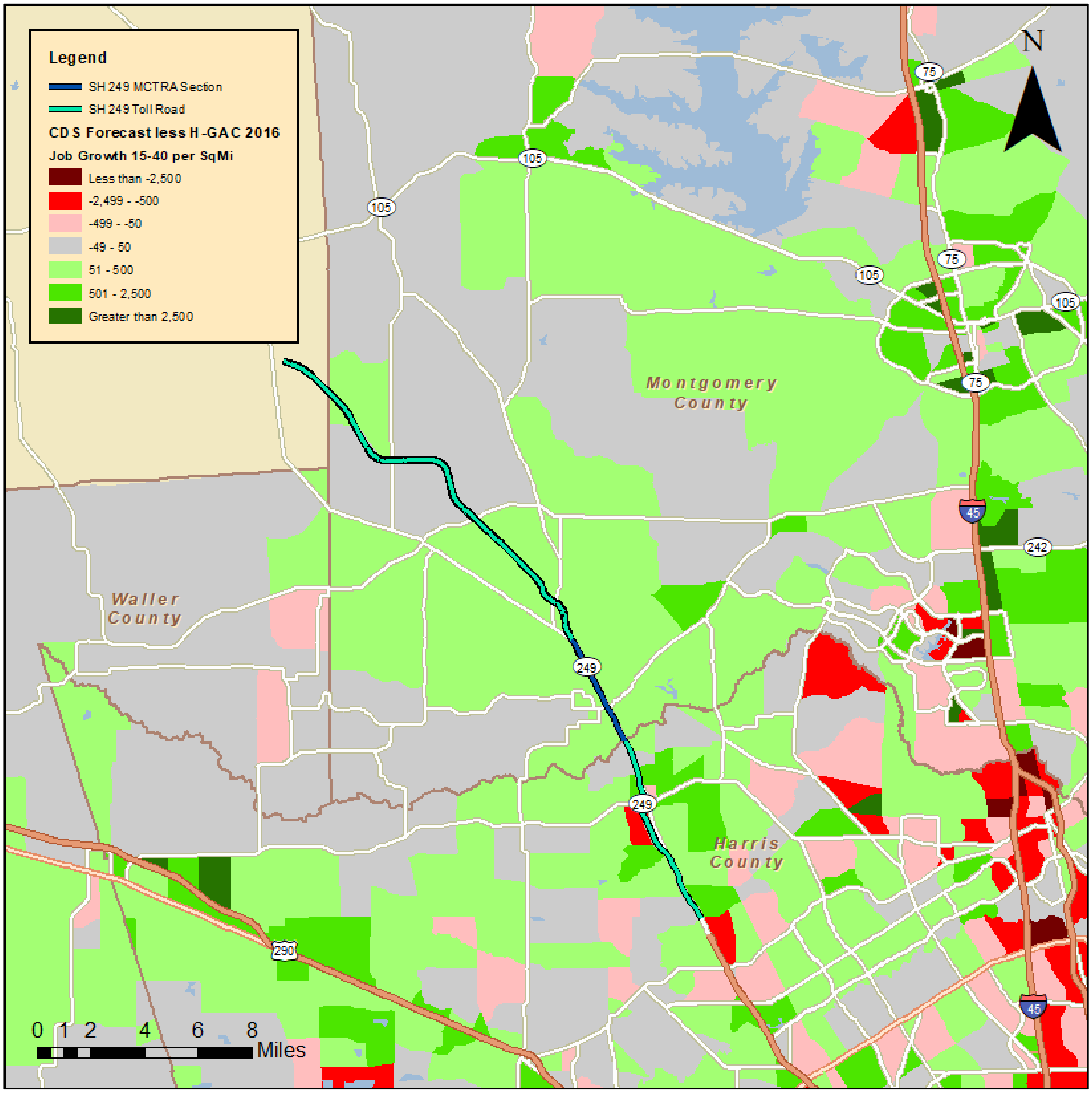
Comparison of Job Growth Density 2015 – 2040

CDS Forecast Compared with 2016 H-GAC 2040 Forecast by TAZ



Comparison of Job Growth Density 2015 – 2040 – SH 249 Area

CDS Forecast Compared with 2016 H-GAC 2040 Forecast by TAZ



PROJECT DELIVERABLES

In addition to this report, several electronic datasets were produced and sent to CDM Smith. A list of the delivered files is below. In addition to the 5-year interval datasets from 2010-2040, 2017 datasets for households and employment were also requested and delivered. These 2017 datasets were created by interpolating the 2015 and 2020 datasets.

1. Excel spreadsheet files:
    a. 9-22-2017 CDS Forecast 2010-2040 Data and Summary.xlsx
    b. 9-22-2017 CDS Forecast 2017 Data and Summary.xlsx
    c. taz5217_employment_2010_CDS_9-22-17.xlsx
    d. taz5217_employment_2015_CDS_9-22-17.xlsx
    e. taz5217_employment_2017_CDS_9-22-17.xlsx
    f. taz5217_employment_2020_CDS_9-22-17.xlsx
    g. taz5217_employment_2025_CDS_9-22-17.xlsx
    h. taz5217_employment_2030_CDS_9-22-17.xlsx
    i. taz5217_employment_2035_CDS_9-22-17.xlsx
    j. taz5217_employment_2040_CDS_9-22-17.xlsx
    k. taz5217_households_tad_2010_CDS_9-22-17.xlsx
    l. taz5217_households_tad_2015_CDS_9-22-17.xlsx
    m. taz5217_households_tad_2017_CDS_9-22-17.xlsx
    n. taz5217_households_tad_2020_CDS_9-22-17.xlsx
    o. taz5217_households_tad_2025_CDS_9-22-17.xlsx
    p. taz5217_households_tad_2030_CDS_9-22-17.xlsx
    q. taz5217_households_tad_2035_CDS_9-22-17.xlsx
    r. taz5217_households_tad_2040_CDS_9-22-17.xlsx
2. ARC GIS shape files:
    a. 9_22_2017_CDS_Forecast_2010_2040_8_County.cpg
    b. 9_22_2017_CDS_Forecast_2010_2040_8_County.dbf
    c. 9_22_2017_CDS_Forecast_2010_2040_8_County.prj
    d. 9_22_2017_CDS_Forecast_2010_2040_8_County.sbn
    e. 9_22_2017_CDS_Forecast_2010_2040_8_County.sbx
    f. 9_22_2017_CDS_Forecast_2010_2040_8_County.shp
    g. 9_22_2017_CDS_Forecast_2010_2040_8_County.shx

APPENDIX A – RAZ-LEVEL FORECASTS

Population

Harris County Population (RAZ 1 to 127)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
1	7,059	6,733	7,070	2,298	4,309	5,334	6,704	7,986	9,045	10,061
2	34,882	40,537	38,432	30,622	31,868	32,743	33,485	34,068	34,512	34,924
3	3,451	3,310	3,572	3,691	4,529	5,527	6,808	8,038	9,052	10,019
4	5,224	5,819	6,743	6,466	8,944	10,413	12,657	15,022	16,975	18,845
5	23,136	23,668	24,054	20,031	22,045	23,266	25,182	27,088	28,678	30,229
6	30,347	32,828	33,931	36,071	38,535	39,788	41,462	43,302	44,844	46,406
7	10,008	10,263	11,901	15,368	19,559	21,206	24,204	25,652	26,854	28,029
8	32,026	30,313	28,539	28,984	30,660	31,550	32,463	33,915	35,113	36,280
9	31,094	32,503	31,681	27,745	28,362	28,769	29,200	29,616	29,964	30,301
10	5,500	5,171	4,638	4,780	5,067	5,338	5,755	6,180	6,537	6,881
11	4,305	3,948	4,016	3,610	4,185	4,480	4,883	5,270	5,595	5,910
12	9,001	9,230	9,004	8,408	8,695	8,843	9,044	9,238	9,400	9,558
13	53,057	54,171	50,745	44,820	46,433	47,043	47,442	47,827	48,149	48,462
14	22,863	24,108	23,126	21,761	23,029	24,066	25,443	26,782	27,889	28,947
15	6,816	7,133	8,392	4,797	5,160	5,383	5,683	5,972	6,212	6,447
16	7,891	10,180	11,002	10,077	13,301	14,115	15,483	17,039	18,532	20,193
17	23,623	24,055	24,432	25,495	28,852	30,357	32,251	34,058	35,543	36,958
18	4,360	4,387	4,396	4,918	6,956	7,624	8,536	9,407	10,125	10,826
19	13,164	12,918	12,544	11,944	12,750	13,157	13,621	14,094	14,492	14,873
20	16,649	19,881	20,735	20,746	23,050	24,134	25,611	27,032	28,220	29,375
21	17,650	20,123	20,835	22,611	25,029	25,842	26,663	27,190	27,629	28,057
22	21,524	25,383	27,226	27,444	27,856	28,067	28,354	28,631	28,863	29,089
23	11,567	14,906	14,658	18,139	22,976	25,416	26,517	27,044	27,483	27,911
24	5,799	6,304	5,919	6,227	6,514	6,665	7,528	8,913	10,072	11,247
25	7,210	8,413	8,118	8,057	11,578	13,344	15,404	16,742	17,302	17,862
26	4,247	4,315	5,321	6,293	7,341	7,753	8,304	8,831	9,270	9,698
27	16,446	16,375	17,513	19,927	24,361	25,009	25,482	25,814	26,054	26,272
28	36,343	35,346	33,431	32,781	33,587	34,197	35,292	36,946	38,314	39,620
29	17,507	18,981	18,621	18,219	19,872	20,922	22,443	23,900	25,100	26,243
30	22,071	23,223	22,235	23,448	24,296	24,815	25,544	26,264	26,864	27,437
31	36,736	43,658	42,406	40,868	41,190	41,352	41,571	41,779	41,948	42,114
32	43,282	50,987	50,646	49,203	50,353	51,119	52,219	53,315	54,230	55,104
33	42,160	40,988	40,022	42,021	45,467	47,008	48,948	50,798	52,318	53,766
34	13,848	15,958	16,908	22,329	27,166	29,610	35,875	41,159	45,552	49,842
35	31,636	34,003	32,734	32,165	33,405	34,245	35,576	36,825	37,855	38,842
36	12,130	12,633	12,263	12,095	12,180	12,225	12,284	12,342	12,391	12,437
37	7,537	8,327	8,990	8,720	8,925	9,218	9,695	10,188	10,603	11,003
38	32,158	45,475	45,779	42,538	44,956	45,769	46,590	47,628	48,563	49,455
39	10,144	10,860	11,210	14,922	20,564	23,385	27,087	29,681	31,813	33,890
40	28,108	33,039	35,142	39,480	41,544	42,805	44,627	46,467	47,769	49,017
41	8,433	9,898	10,288	10,165	10,363	10,463	10,599	10,727	10,832	11,361
42	4,128	5,086	5,248	5,063	5,924	6,239	6,595	6,921	7,186	7,436
43	27,826	31,932	31,716	30,018	30,824	31,638	31,898	32,201	32,465	32,722

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
44	31,464	32,420	31,728	29,582	31,593	32,518	33,696	34,823	35,750	36,635
45	17,983	21,232	21,035	20,698	21,303	21,725	22,240	22,726	23,124	23,503
46	9,300	10,846	10,753	11,708	12,196	12,419	12,701	12,972	13,194	13,406
47	9,240	9,568	9,669	9,559	9,769	9,881	10,180	10,325	10,445	10,562
48	17,151	16,225	15,761	15,531	16,721	17,341	18,169	18,976	19,643	20,281
49	17,404	21,503	23,153	29,302	33,019	34,909	36,872	38,976	40,278	41,378
50	70,823	84,595	90,484	101,675	108,490	111,954	116,442	119,595	122,416	124,768
51	8,193	9,263	9,232	9,144	9,186	9,207	9,236	9,264	9,287	9,309
52	22	47	67	0	41.656056	86.206767	385.81837	530.15541	650.11588	767.21302
53	53,656	60,887	59,208	60,762	60,762	61,158	61,868	62,620	63,258	63,871
54	53,537	62,017	62,150	63,936	65,091	66,120	67,689	69,282	70,617	71,897
55	60	34	31	33	47.99618	70.54654	100.81034	245.14737	365.10784	482.20499
56	17,586	23,450	27,229	38,284	43,241	44,954	46,442	47,826	48,986	50,161
57	21,080	21,826	22,604	28,176	33,818	37,076	41,163	43,399	45,273	46,448
58	12,928	15,404	16,031	22,417	26,448	28,888	32,993	37,148	39,344	41,439
59	12,759	14,774	17,103	25,604	30,561	32,661	35,185	37,551	39,286	40,947
60	62,877	79,845	82,704	76,613	77,188	77,955	79,194	80,470	81,545	82,579
61	30,861	38,268	39,039	34,689	34,717	34,733	34,753	34,772	34,788	34,805
62	51,030	70,290	72,699	69,126	70,467	71,153	72,083	72,948	73,673	74,457
63	37,548	43,258	44,563	48,956	51,777	53,811	56,807	59,404	61,563	63,251
64	22,154	22,884	23,092	23,460	24,321	24,775	25,387	25,978	26,469	26,948
65	72,139	85,193	86,253	81,823	83,514	85,075	86,866	88,479	89,600	90,272
66	6,814	8,137	8,104	9,878	11,118	11,747	12,589	13,377	14,028	14,652
67	22,112	27,488	27,790	24,664	27,825	29,323	31,251	33,106	34,635	36,092
68	59,259	67,714	66,482	73,030	75,313	76,535	78,218	80,058	81,793	83,662
69	10,621	10,940	11,425	11,590	13,183	13,929	14,887	15,805	16,562	17,282
70	21,482	26,282	26,742	28,847	29,184	29,384	29,654	29,914	30,130	30,340
71	11,795	15,152	15,212	17,466	18,086	18,716	19,557	20,345	20,996	21,620
72	10,895	12,591	12,225	11,639	11,681	11,703	11,733	11,821	11,917	12,034
73	17,838	21,347	23,476	23,000	23,085	23,152	23,272	23,561	23,801	24,035
74	17,412	20,111	20,619	20,003	21,689	22,547	23,692	25,531	27,484	29,562
75	6,373	7,181	7,201	10,334	13,208	14,329	16,573	18,938	21,000	23,077
76	9,999	11,306	11,797	16,440	19,458	20,474	21,575	22,561	23,354	24,105
77	11,110	12,956	12,687	16,118	19,490	21,380	24,185	27,076	29,462	31,955
78	25,001	41,496	51,791	72,936	84,985	89,419	94,069	98,105	101,004	103,451
79	41,486	52,748	53,484	56,280	57,966	59,080	61,478	63,790	65,710	67,580
80	7,404	9,538	10,498	13,812	16,430	19,741	24,155	27,635	30,099	32,296
81	9,955	11,421	12,913	15,976	18,535	20,078	22,132	24,248	26,232	27,990
82	2,682	3,263	4,734	13,009	17,894	19,878	22,518	24,635	26,399	27,907
83	8,368	8,830	9,345	9,977	11,713	12,816	15,309	17,955	20,380	22,796
84	18,022	20,803	22,808	29,482	34,257	37,123	41,229	45,198	48,505	51,580
85	8,937	7,745	7,148	6,376	6,616	6,744	6,916	7,084	7,223	7,357
86	45,135	47,632	47,879	50,263	53,137	54,671	56,734	58,747	60,415	62,008
87	25	32	30	8	8	8	8	8	8	8
88	6,305	6,204	5,917	6,095	6,262	6,383	6,561	6,739	6,889	7,032
89	10,041	9,574	9,319	8,431	9,581	10,247	11,168	12,074	12,828	13,549
90	42,301	44,920	45,092	49,553	52,857	54,747	56,991	58,568	59,870	61,118
91	13,449	16,266	17,833	18,956	19,782	20,412	21,534	22,848	24,150	25,606
92	14,593	18,368	19,808	20,793	22,804	23,843	25,225	26,569	27,681	28,743
93	45,634	67,185	71,646	79,010	85,385	87,159	89,529	91,750	93,441	94,909

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
94	42,359	46,270	45,266	48,821	49,666	50,333	51,532	52,691	53,654	54,595
95	16,485	21,585	23,687	27,042	29,361	30,036	30,689	31,245	31,682	32,092
96	39,003	38,650	41,634	53,903	59,077	60,287	61,219	61,902	62,405	62,866
97	43,968	53,531	53,040	53,320	55,619	56,717	58,134	59,498	60,623	61,695
98	34,559	43,660	46,218	50,289	53,237	54,788	56,878	59,473	61,890	64,581
99	41,111	55,811	61,926	71,838	79,263	81,684	84,971	88,027	90,588	93,183
100	16,362	23,565	25,636	32,537	33,857	35,182	35,770	36,306	36,530	36,977
101	31,343	36,953	37,126	34,231	34,231	34,254	34,316	34,373	34,421	34,494
102	30,719	31,640	32,029	32,535	34,836	35,900	37,258	38,560	39,632	40,653
103	114	543	721	463	521	550	1,285	1,320	1,350	1,685
104	21,795	25,103	24,799	23,639	25,703	26,753	28,156	29,470	30,554	31,593
105	23,533	36,702	43,344	46,426	49,730	51,387	53,597	55,607	57,288	58,968
106	8,865	12,732	15,906	17,342	19,025	19,578	20,316	20,987	21,548	22,109
107	42,190	67,320	74,873	84,329	92,952	97,335	101,542	105,221	108,042	110,119
108	29,336	38,191	43,196	51,738	56,282	58,602	61,750	64,678	65,887	66,621
109	25,313	30,555	31,360	31,592	34,483	36,163	38,687	41,316	43,702	46,195
110	18,157	22,395	25,462	29,334	32,057	33,503	35,480	37,367	38,925	40,443
111	29,835	48,607	57,263	61,266	63,270	64,492	66,126	67,684	68,980	70,246
112	6,359	9,611	10,964	11,330	13,599	15,304	17,818	20,344	22,457	24,480
113	27,234	45,245	61,276	110,533	139,990	155,998	178,005	198,645	218,087	238,622
114	27,372	39,961	47,008	67,026	77,500	81,951	84,992	86,444	87,642	88,809
115	665	1,392	1,917	2,062	4,076	7,636	13,108	18,985	25,378	33,690
116	21,618	34,912	49,563	90,894	121,061	136,402	159,004	182,860	202,526	222,167
117	3,312	5,084	5,950	6,440	8,454	11,505	16,978	22,686	28,678	35,684
118	18,576	46,091	68,711	100,709	121,639	137,300	158,372	177,469	194,305	212,314
119	41,607	51,629	58,452	68,047	76,108	79,159	82,169	84,813	86,760	88,504
120	7,587	10,429	11,742	11,709	15,399	17,603	20,830	24,534	27,941	32,335
121	2,329	5,813	7,676	14,152	20,430	24,010	29,428	35,305	40,416	45,298
122	69,796	91,845	105,419	150,318	189,305	207,396	233,122	247,617	258,440	269,245
123	93,646	121,457	132,514	150,909	162,091	166,659	171,309	174,191	175,399	176,378
124	13,861	17,941	22,015	44,226	56,783	61,258	67,375	70,278	73,872	76,087
125	15,643	17,505	18,625	26,658	31,685	34,133	37,174	39,509	41,640	43,718
126	2,905	3,638	4,321	4,832	6,088	6,929	8,267	10,368	11,686	12,946
127	32,857	35,788	39,821	57,461	68,773	72,840	77,766	83,520	87,659	92,541
Total	**2,818,203**	**3,400,582**	**3,604,235**	**4,048,360**	**4,484,518**	**4,707,909**	**5,007,631**	**5,277,539**	**5,502,344**	**5,726,391**

Montgomery County Population (RAZ 128 to 139)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
128	16,590	22,420	27,358	29,312	34,245	38,257	45,453	56,027	67,555	79,251
129	27,814	40,085	49,293	60,822	70,687	79,733	97,004	120,795	145,132	172,910
130	3,633	7,026	8,828	31,203	40,389	47,071	57,758	70,749	86,234	103,081
131	24,567	31,077	37,110	35,781	38,833	40,529	42,448	45,091	46,354	47,743
132	21,022	51,447	69,738	81,725	93,169	98,823	103,620	108,907	112,750	115,674
133	4,263	4,778	7,678	10,698	13,456	15,988	20,641	27,212	34,687	44,795
134	22,636	28,640	31,207	33,979	36,946	39,804	44,803	51,453	57,853	65,058
135	17,623	25,523	30,019	35,285	38,962	41,789	47,545	56,797	66,160	77,294
136	18,028	33,425	41,183	53,802	67,155	73,705	82,870	92,379	99,996	108,051
137	6,171	12,641	16,571	21,298	28,927	37,408	52,760	76,551	99,607	128,846
138	2,612	5,142	6,696	6,426	7,248	8,371	10,975	15,297	19,752	25,123
139	17,244	31,582	42,175	52,290	62,971	72,386	90,160	117,607	147,067	181,431
Total	**182,203**	**293,786**	**367,856**	**452,621**	**532,988**	**593,864**	**696,039**	**838,864**	**983,148**	**1,149,256**

Waller County Population (RAZ 140 to 143)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
140	11,236	16,032	16,776	18,128	19,761	21,053	25,050	33,030	41,618	51,804
141	5,709	7,573	9,539	9,117	9,416	9,681	10,487	12,234	14,465	17,615
142	5,155	7,684	7,833	9,663	10,786	11,678	14,232	19,310	25,310	33,200
143	1,290	1,374	1,616	2,508	4,304	5,984	11,071	19,051	25,921	32,712
Total	**23,390**	**32,663**	**35,764**	**39,416**	**44,267**	**48,395**	**60,841**	**83,626**	**107,314**	**135,330**

Fort Bend County Population (RAZ 144 to 158)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
144	2,686	19,074	36,706	77,420	102,276	110,040	118,548	124,842	128,059	129,819
145	3,059	4,656	5,759	10,372	22,297	34,356	56,249	89,320	122,729	152,817
146	31,624	51,744	64,485	111,193	141,008	151,727	168,146	187,988	208,033	230,599
147	1,575	1,865	1,867	1,948	2,676	3,256	4,275	5,667	8,472	13,004
148	4,407	5,655	6,060	7,704	10,190	14,217	21,248	30,464	39,334	49,019
149	29,234	33,803	39,546	35,273	37,387	38,356	39,741	41,514	43,161	44,972
150	4,335	21,407	30,825	33,705	38,677	42,636	48,857	56,906	63,521	69,004
151	30,468	40,185	46,897	51,943	55,672	58,314	61,167	64,817	66,560	68,458
152	16,656	30,337	36,540	36,383	39,201	40,815	43,333	46,556	47,428	47,807
153	38,817	45,727	53,196	50,280	51,523	53,284	54,710	54,893	55,068	55,258
154	23,718	44,277	56,870	61,389	73,636	79,337	87,079	95,294	103,334	112,138
155	28,563	41,940	56,918	78,382	97,025	107,707	124,126	143,292	161,282	179,097
156	2,341	3,343	4,073	11,135	20,933	29,484	44,969	65,504	90,414	117,136
157	4,798	5,843	6,591	6,754	8,935	10,256	13,109	17,672	22,902	30,494
158	3,140	4,594	5,057	5,799	7,253	8,486	10,911	14,561	23,277	35,615
Total	**225,421**	**354,450**	**451,390**	**579,680**	**708,687**	**782,271**	**896,466**	**1,039,291**	**1,183,574**	**1,335,239**

Brazoria County Population (RAZ 159 to 172)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
159	11,591	11,937	12,894	12,036	13,073	13,987	15,847	18,491	21,317	24,576
160	16,761	17,949	19,044	16,742	17,512	18,159	19,358	21,301	23,374	26,204
161	2,998	3,026	3,011	2,844	3,196	3,454	3,949	4,295	4,663	5,171
162	6,931	7,131	7,029	6,593	7,220	7,592	8,271	9,069	9,951	11,136
163	9,784	13,052	13,860	13,619	14,933	15,552	16,549	17,470	18,317	19,238
164	31,015	33,090	33,718	33,770	34,694	35,211	35,691	36,339	37,030	37,838
165	1,377	1,785	1,852	1,672	1,826	1,955	2,195	2,519	2,864	3,269
166	10,860	13,137	14,177	13,503	15,662	17,720	21,800	27,719	34,287	41,973
167	18,756	20,668	20,337	20,083	22,242	24,300	28,620	34,539	41,453	49,543
168	1,917	2,297	2,479	2,727	2,903	3,058	3,404	4,096	5,566	8,105
169	11,299	15,111	16,177	11,324	13,880	17,503	25,294	38,758	54,417	76,606
170	31,835	38,268	40,021	41,776	46,256	50,465	59,071	71,349	85,035	103,454
171	8,164	21,190	32,473	65,628	74,589	81,274	92,144	106,878	121,215	132,727
172	28,419	43,126	56,266	60,140	67,010	71,962	79,662	87,029	93,545	98,918
Total	**191,707**	**241,767**	**273,338**	**302,457**	**334,997**	**362,193**	**411,855**	**479,852**	**553,033**	**638,758**

Galveston County Population (RAZ 173 to 188)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
173	15,214	21,432	25,192	25,319	27,015	27,863	28,417	28,935	29,383	29,859
174	13,089	17,610	24,581	38,985	47,316	52,376	60,113	68,461	76,505	85,196
175	20,133	32,714	40,104	47,881	55,487	58,731	64,226	70,908	76,145	81,804
176	9,641	12,215	12,391	14,387	15,597	16,431	17,843	19,560	21,215	23,002
177	16,382	18,387	18,614	21,382	23,418	24,529	26,560	29,346	32,223	35,487
178	16,471	19,615	20,841	22,073	23,594	25,384	29,595	35,855	42,491	50,087
179	4,059	5,643	5,878	8,180	10,208	11,319	14,089	18,790	24,514	31,494
180	24,800	25,325	26,603	25,748	26,255	26,499	26,554	26,604	26,645	26,688
181	9,756	8,806	9,824	9,263	10,078	10,292	10,492	10,668	10,815	10,968
182	11,848	11,197	11,084	10,673	11,076	11,408	12,107	13,113	14,169	15,373
183	7,786	8,916	9,873	9,794	10,601	11,500	13,523	16,654	20,428	25,030
184	5,006	5,146	5,160	4,766	5,173	5,366	5,697	6,139	6,590	7,101
185	4,661	6,453	6,746	6,679	7,488	7,977	8,539	9,075	9,543	10,042
186	53,504	50,213	49,103	39,043	39,890	40,229	40,956	41,661	42,378	43,144
187	1,740	1,976	2,161	622	703	1,010	1,787	2,965	4,222	5,663
188	3,310	4,511	4,161	2,397	2,778	3,021	3,440	3,969	4,507	5,081
Total	**217,400**	**250,159**	**272,316**	**287,192**	**316,677**	**333,934**	**363,939**	**402,702**	**441,773**	**486,017**

Chambers County Population (RAZ 189 to 192)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
189	7,780	9,788	10,429	9,936	10,442	10,784	11,383	12,100	13,014	14,094
190	2,941	3,188	3,407	2,885	3,629	4,256	5,603	7,616	10,075	13,408
191	5,052	7,797	9,532	15,558	16,500	17,202	18,481	20,011	21,880	23,990
192	4,315	5,258	5,754	6,506	7,994	9,212	11,568	14,547	18,187	22,075
Total	**20,088**	**26,031**	**29,122**	**34,885**	**38,565**	**41,454**	**47,034**	**54,274**	**63,155**	**73,567**

Liberty County Population (RAZ 193 to 199)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
193	545	723	825	795	909.81204	1,019	1,343	1,956	2,807	3,766
194	12,006	12,549	13,054	11,915	12,134	12,348	12,979	14,493	16,871	19,843
195	13,936	24,746	26,869	24,107	25,424	26,668	29,822	36,313	43,745	52,001
196	6,192	8,244	9,180	9,516	11,397	13,267	19,188	28,473	36,836	45,799
197	6,014	7,148	7,332	6,586	6,651	6,747	7,135	8,066	9,551	11,250
198	6,245	7,824	8,810	8,774	9,150	9,524	10,708	13,030	16,375	20,856
199	7,787	8,920	9,034	8,836	8,963	9,190	9,988	11,486	13,534	15,838
Total	**52,725**	**70,154**	**75,104**	**70,529**	**74,629**	**78,763**	**91,163**	**113,815**	**139,719**	**169,352**

Grimes County Population

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
Total	**18,790**	**23,529**	**25,068**	**23,592**	**24,500**	**25,088**	**26,657**	**28,969**	**31,964**	**35,961**

Jobs

Harris County Jobs (RAZ 1 to 127)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
1	131,096	143,372	129,297	144,954	157,867	160,163	167,955	175,899	182,979	190,775
2	14,428	14,288	15,389	17,063	22,854	25,038	28,145	31,227	33,967	36,983
3	12,904	4,411	4,211	4,714	5,296	5,342	5,318	5,264	5,208	5,142
4	10,732	10,053	11,064	11,642	14,274	15,323	16,842	18,359	19,710	21,199
5	13,624	12,600	15,133	15,481	18,113	19,239	20,908	22,586	24,086	25,739
6	35,281	34,724	36,975	34,673	36,108	36,729	38,584	40,403	42,010	43,717
7	16,882	17,668	13,177	13,775	16,380	16,982	17,727	18,092	18,415	18,590
8	14,287	13,813	14,981	16,549	20,094	21,139	22,478	23,756	24,878	26,107
9	4,014	3,899	3,758	3,775	4,387	4,676	5,118	5,567	5,969	6,413
10	8,720	8,249	8,059	8,844	10,621	11,141	11,805	12,439	12,994	13,602
11	5,024	4,185	4,485	5,937	8,806	10,048	11,903	13,722	15,329	17,067
12	11,079	10,268	9,987	11,431	14,112	14,793	15,595	16,333	16,973	17,670
13	23,191	21,600	22,682	23,947	26,629	27,310	28,112	28,850	29,489	30,187
14	3,914	3,739	6,297	6,602	7,180	7,421	7,802	7,984	8,146	8,320
15	12,399	8,294	14,642	14,473	16,009	16,797	18,024	19,277	20,402	21,644
16	5,787	4,968	6,552	7,640	10,530	11,131	11,504	11,686	11,848	12,022
17	8,275	7,908	9,850	12,060	15,993	16,984	18,144	19,210	20,132	21,138
18	45,099	60,437	37,708	72,914	76,453	81,222	87,372	91,702	94,752	97,796
19	15,931	15,109	22,250	23,656	26,451	27,123	27,884	28,573	29,166	29,811
20	20,386	24,252	26,727	28,173	32,477	34,340	37,123	39,851	42,261	44,869
21	7,225	4,880	5,793	7,024	8,386	8,497	8,497	8,498	8,579	8,666
22	11,020	8,790	13,400	13,186	14,960	15,903	17,385	18,902	20,265	21,770
23	52,916	64,887	53,149	51,490	52,935	53,536	54,468	55,380	56,995	58,742
24	4,347	4,213	4,138	4,425	7,963	8,824	10,239	11,090	11,835	12,469
25	10,951	12,440	17,060	17,525	20,289	21,417	23,066	24,715	26,186	27,807
26	3,319	4,158	3,939	4,206	4,707	4,821	4,945	5,056	5,149	5,251
27	24,641	21,351	28,221	29,975	34,803	35,892	37,070	38,112	39,001	39,966
28	6,823	5,415	6,136	6,521	7,638	8,008	8,508	8,996	9,427	9,900
29	7,787	9,683	11,373	12,015	13,692	14,203	14,868	15,507	16,068	16,684
30	5,425	7,306	11,871	12,252	13,685	14,339	15,282	16,152	16,916	17,716
31	19,908	17,061	13,304	13,796	15,726	16,426	17,408	18,378	19,239	20,185
32	16,392	15,253	20,927	20,695	23,391	24,778	26,939	29,146	31,128	33,316
33	6,840	5,779	7,635	7,983	8,939	9,231	9,610	9,974	10,295	10,646
34	10,858	10,543	16,085	15,870	18,739	20,230	22,456	24,638	27,049	29,657
35	7,561	7,764	11,726	11,911	12,778	13,259	14,004	14,734	15,219	15,743
36	2,757	2,845	3,081	3,365	3,494	3,548	3,576	3,589	3,595	3,599
37	5,686	7,704	7,902	7,745	8,435	8,817	9,421	10,042	10,600	11,217
38	15,362	14,034	16,702	16,444	17,022	17,263	18,570	19,908	21,110	22,438
39	57,417	65,455	74,551	70,787	82,581	86,600	91,904	96,164	99,889	103,847
40	28,207	29,849	31,939	30,120	31,564	32,166	33,097	34,009	34,817	35,691
41	6,195	7,593	8,001	7,492	7,550	8,152	9,083	9,119	9,152	9,187
42	16,160	22,261	21,164	21,433	23,481	24,291	25,463	26,631	27,672	28,818
43	19,039	25,482	21,921	21,446	23,833	25,162	27,271	29,436	31,384	33,536
44	18,672	20,100	19,285	19,889	23,028	24,275	26,080	27,881	29,487	31,254
45	8,097	7,621	8,668	8,555	9,991	10,743	11,920	13,123	14,204	15,397
46	3,072	4,864	3,332	3,425	3,957	4,171	4,484	4,796	5,075	5,382

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
47	2,181	1,638	3,776	4,046	4,485	4,566	4,639	4,696	4,743	4,793
48	1,693	2,173	2,180	2,204	2,630	2,828	3,130	3,436	3,710	4,012
49	3,466	4,141	5,230	5,458	6,267	6,590	7,076	7,584	8,064	8,587
50	16,632	18,561	19,194	20,087	22,400	23,075	23,936	24,756	25,475	26,262
51	6,754	12,297	15,234	14,955	16,800	17,978	19,675	21,416	22,943	24,703
52	2,645	1,059	1,552	1,437	1,543	1,674	1,863	2,211	2,516	2,836
53	17,293	15,650	21,703	22,002	25,102	26,452	28,465	30,491	32,303	34,301
54	13,992	17,993	23,573	24,475	28,264	29,687	31,707	33,709	35,489	37,448
55	5,382	5,823	2,220	2,114	2,298	2,429	2,646	2,872	3,077	3,303
56	12,243	11,348	12,690	13,282	15,489	16,294	17,425	18,543	19,536	20,627
57	3,172	3,071	4,768	5,419	8,288	9,530	11,385	13,204	14,811	16,550
58	3,063	3,666	4,518	4,790	6,854	8,002	10,124	12,339	13,978	15,561
59	3,626	3,524	4,275	4,993	6,039	6,458	7,096	7,369	7,614	7,871
60	10,970	16,157	12,353	12,609	14,573	15,408	16,642	17,882	18,990	20,211
61	17,964	13,058	21,916	21,325	23,385	24,243	25,570	26,871	28,023	29,269
62	29,433	32,187	34,593	33,161	35,472	36,555	38,231	40,056	43,288	46,976
63	31,034	39,113	42,891	41,598	45,530	47,334	50,779	54,508	57,921	61,861
64	12,549	14,767	16,994	16,101	17,807	19,003	20,986	23,048	24,910	26,969
65	26,716	31,206	33,472	33,999	37,770	39,285	41,489	43,691	45,654	47,816
66	15,903	27,599	26,678	26,322	29,531	31,206	33,825	36,503	38,908	41,564
67	9,398	16,571	17,091	17,295	19,231	20,040	21,233	22,429	23,497	24,673
68	7,959	9,380	11,883	12,636	14,889	15,650	16,687	17,701	18,598	19,583
69	4,609	3,965	5,164	5,366	6,328	6,707	7,255	7,802	8,289	8,826
70	6,038	5,316	5,671	5,860	6,857	7,257	7,838	8,419	8,937	9,508
71	5,785	6,435	5,948	5,927	7,057	7,623	8,500	9,393	10,195	11,080
72	2,991	2,823	4,890	5,473	6,341	6,496	6,629	6,732	6,814	6,901
73	6,566	4,731	4,701	5,068	6,082	6,416	6,865	7,303	7,689	8,114
74	6,439	10,235	12,804	12,670	14,889	15,580	16,489	17,365	18,136	18,982
75	6,094	14,867	13,417	13,099	14,791	15,740	17,248	18,796	20,190	21,729
76	1,535	1,550	2,322	2,746	3,323	3,416	3,485	3,532	3,568	3,604
77	9,531	10,367	9,551	10,299	11,427	11,610	11,747	11,841	11,913	11,986
78	3,450	7,206	9,028	9,250	10,974	11,720	12,831	13,949	14,948	16,050
79	7,462	10,852	9,720	9,866	10,913	11,331	11,937	12,543	13,082	13,676
80	916	1,576	1,178	1,534	2,235	2,433	2,682	2,917	3,123	3,348
81	1,068	1,366	1,168	1,486	2,347	2,719	3,276	3,821	4,625	5,494
82	1,910	993	2,057	2,184	3,759	4,719	6,505	8,199	9,399	10,191
83	1,557	2,890	2,295	2,528	3,251	3,510	3,871	4,227	4,542	4,889
84	7,134	7,814	6,664	7,299	8,855	9,338	9,973	10,585	11,124	11,715
85	6,700	7,091	4,334	4,239	4,710	4,972	5,390	5,819	6,204	6,630
86	17,590	19,394	19,262	20,039	22,408	23,166	24,177	25,155	26,019	26,967
87	18,213	9,220	7,305	6,803	7,354	8,008	8,951	9,995	10,912	11,872
88	449	1,461	1,453	1,665	3,100	3,845	5,143	6,598	8,045	9,783
89	9,472	7,764	5,956	6,417	7,329	7,722	8,099	8,447	8,752	9,072
90	6,028	19,940	16,719	16,740	18,734	19,661	21,070	22,497	23,775	25,185
91	5,739	9,865	8,140	7,758	8,755	9,540	10,860	12,079	13,148	14,428
92	3,663	10,075	6,509	6,549	7,413	7,806	8,399	8,999	9,536	10,128
93	14,408	27,825	26,217	27,668	31,383	32,493	33,924	35,293	36,496	37,813
94	44,760	36,687	42,258	40,386	42,598	43,344	43,875	45,244	46,446	47,764
95	5,367	7,378	9,006	9,836	10,839	10,922	11,049	11,174	11,284	11,400
96	5,973	8,476	10,852	11,566	13,291	13,798	14,446	15,063	15,605	16,199

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
97	12,637	17,139	15,030	15,344	17,335	18,137	19,305	20,472	21,512	22,658
98	16,275	22,769	25,052	24,624	26,502	27,464	28,954	30,779	32,395	34,143
99	9,702	10,929	10,200	10,420	11,668	12,231	13,178	14,449	15,562	16,744
100	9,665	15,192	13,768	23,549	38,292	41,846	46,313	50,547	53,847	55,430
101	10,966	16,968	14,224	14,693	16,016	16,398	16,883	17,345	17,749	18,191
102	29,548	21,214	23,541	23,508	24,953	26,375	27,894	29,418	30,918	31,948
103	879	557	1,419	1,433	2,299	2,901	4,763	6,588	8,204	10,290
104	15,980	27,527	27,687	26,635	29,291	30,594	32,917	35,457	37,707	39,688
105	6,603	22,725	31,149	30,459	33,529	35,425	38,462	41,510	44,360	47,371
106	1,763	7,136	10,583	10,802	11,872	12,262	12,811	13,353	13,834	14,363
107	11,316	31,415	29,074	29,721	33,656	35,234	37,527	39,818	41,861	44,110
108	5,996	15,264	15,492	15,943	17,886	18,834	20,800	22,493	23,843	24,952
109	24,333	33,477	32,591	31,431	35,507	37,972	41,950	46,055	49,754	53,842
110	5,623	4,753	3,233	3,472	3,968	4,097	4,252	4,395	4,520	4,656
111	6,501	15,291	13,360	13,848	15,581	16,303	17,428	18,536	19,505	21,081
112	4,294	3,866	3,722	3,911	4,497	4,750	5,102	5,449	5,678	5,928
113	2,065	6,248	8,497	9,218	12,734	16,041	21,778	27,253	32,458	38,245
114	6,052	17,100	20,920	21,038	29,006	31,126	33,449	35,820	38,788	42,115
115	38	236	387	794	1,965	2,598	3,657	4,696	5,611	6,610
116	2,226	6,849	7,575	7,945	9,703	12,613	18,350	24,355	29,929	36,543
117	171	893	940	1,273	2,738	13,558	19,069	22,510	24,034	25,459
118	1,836	8,867	9,451	11,234	14,163	15,744	18,391	20,990	23,278	25,776
119	13,495	27,605	15,891	16,476	19,240	20,889	22,299	23,700	24,946	26,317
120	5,668	9,165	8,887	9,610	11,924	13,377	15,471	17,190	18,436	19,807
121	48	447	409	700	1,872	2,251	2,781	3,300	3,758	4,258
122	10,178	21,715	23,170	24,288	38,937	45,794	59,756	66,629	72,595	75,925
123	34,009	44,302	50,188	49,931	61,498	65,969	71,135	76,210	78,346	80,344
124	9,575	14,194	18,993	19,730	21,781	22,540	23,246	23,592	23,898	24,064
125	5,168	7,207	5,576	5,797	6,969	7,348	7,751	8,147	8,498	8,885
126	15,816	27,792	12,666	12,696	13,563	13,924	14,482	15,030	15,514	16,039
127	5,374	5,900	4,443	4,628	5,800	6,306	7,188	8,055	8,589	9,178
Total	**1,539,045**	**1,855,054**	**1,906,018**	**1,993,657**	**2,290,937**	**2,424,576**	**2,618,422**	**2,798,000**	**2,955,816**	**3,121,742**

Montgomery County Jobs (RAZ 128 to 139)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
128	1,058	6,400	6,374	8,488	12,450	14,594	18,414	23,045	28,178	34,543
129	9,741	6,848	5,967	6,982	9,183	11,258	14,839	19,423	24,276	30,619
130	207	527	1,290	1,723	2,604	3,180	4,772	6,709	8,669	10,889
131	5,155	13,348	21,143	22,302	25,410	26,898	29,093	31,346	33,132	34,705
132	879	20,041	20,532	23,530	28,813	31,349	35,329	39,581	42,848	45,491
133	2,571	952	2,507	2,937	5,586	7,214	10,102	13,797	17,348	21,368
134	9,432	16,260	16,681	19,751	26,926	30,525	36,047	42,732	49,783	57,884
135	2,915	6,844	6,300	8,318	13,023	15,288	19,393	24,535	29,626	36,179
136	9,044	11,448	12,601	14,941	17,583	19,245	21,996	25,733	29,528	33,939
137	110	1,668	2,958	3,631	5,392	6,406	8,396	10,900	13,607	16,779
138	651	740	542	644	1,084	1,333	1,816	2,475	3,225	4,315
139	1,505	4,558	11,589	13,906	17,124	18,701	21,642	25,661	29,961	35,423
Total	**43,268**	**89,634**	**108,484**	**127,153**	**165,177**	**185,993**	**221,840**	**265,936**	**310,182**	**362,135**

Waller County Jobs (RAZ 140 to 143)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
140	4,238	4,729	4,737	5,120	5,841	6,380	7,363	8,514	9,859	11,323
141	1,874	2,029	2,072	2,310	2,672	2,924	3,362	3,830	4,355	4,926
142	1,227	2,729	3,137	4,585	5,668	6,488	7,963	9,641	11,578	13,745
143	274	365	833	1,026	2,108	2,903	4,333	5,867	7,589	9,405
Total	**7,612**	**9,851**	**10,778**	**13,041**	**16,289**	**18,695**	**23,021**	**27,852**	**33,380**	**39,399**

Fort Bend County Jobs (RAZ 144 to 158)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
144	1,071	5,672	5,265	6,491	10,461	12,871	16,623	20,863	25,214	29,159
145	323	925	1,896	2,497	3,477	4,161	5,633	8,073	10,674	12,856
146	6,359	5,763	5,038	6,445	11,538	14,549	20,010	26,942	35,066	43,653
147	90	365	417	652	1,145	1,445	2,011	2,780	3,746	4,877
148	484	1,948	2,783	3,618	4,934	5,733	7,241	9,293	11,866	14,882
149	10,100	12,870	19,693	22,330	25,791	27,308	29,610	31,964	34,097	35,694
150	609	6,528	5,132	5,929	8,051	9,569	12,791	17,499	23,900	31,172
151	12,881	21,542	21,683	23,244	27,488	29,005	31,768	34,710	37,555	40,289
152	11,046	23,221	27,177	29,667	35,246	38,651	44,516	51,021	57,578	63,068
153	4,103	4,813	7,685	8,459	10,622	11,935	14,413	17,787	22,015	26,971
154	1,159	8,726	6,697	8,410	11,873	13,962	17,819	22,787	29,289	36,561
155	1,348	4,048	4,234	6,008	9,036	10,874	14,344	19,067	24,987	31,925
156	403	1,939	2,972	3,464	6,059	7,635	10,609	14,657	19,731	25,678
157	516	790	1,421	1,706	2,139	2,402	2,897	3,572	4,418	5,409
158	56	619	843	1,250	1,984	2,429	3,270	4,415	5,851	7,532
Total	**50,548**	**99,769**	**112,936**	**130,168**	**169,844**	**192,529**	**233,555**	**285,430**	**345,987**	**409,724**

Brazoria County Jobs (RAZ 159 to 172)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
159	13,316	3,510	3,239	3,221	3,375	3,688	4,367	5,273	5,769	6,526
160	2,216	3,740	2,267	2,506	3,003	3,234	3,642	4,171	4,652	5,260
161	125	272	181	165	170	215	332	404	424	438
162	9,642	1,429	1,057	1,090	1,918	2,303	2,779	3,308	3,651	4,031
163	9,158	16,650	10,909	11,671	13,361	14,693	16,324	17,809	19,257	20,616
164	9,373	11,582	15,108	15,717	17,830	18,550	19,359	20,656	22,721	24,670
165	191	1,038	418	400	467	498	553	598	639	678
166	1,794	4,228	4,703	5,214	6,354	7,178	8,357	10,310	11,481	12,764
167	4,931	6,548	6,379	6,783	7,970	8,275	8,905	9,561	10,452	11,597
168	4,229	1,795	296	364	1,192	1,654	2,062	2,515	2,790	3,094
169	89	2,819	1,288	1,322	2,979	3,825	5,457	7,270	9,331	11,612
170	9,330	11,200	10,679	11,524	13,495	14,330	15,968	17,449	18,994	21,309
171	130	1,455	4,707	5,598	8,233	10,287	14,116	18,168	21,520	25,008
172	6,426	11,226	19,019	20,186	23,285	24,366	25,812	27,500	29,114	30,509
Total	**70,950**	**77,492**	**80,250**	**85,761**	**103,634**	**113,095**	**128,032**	**144,992**	**160,794**	**178,112**

Galveston County Jobs (RAZ 173 to 188)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
173	2,455	5,573	3,417	3,547	4,387	5,182	6,486	8,088	9,559	11,347
174	1,475	3,563	2,122	2,525	3,911	5,161	7,306	9,927	12,330	15,078
175	8,695	9,705	11,520	11,475	12,453	13,319	14,729	16,472	18,067	19,948
176	1,643	2,757	5,161	5,175	5,386	5,493	5,623	5,764	5,887	6,035
177	4,734	4,052	3,327	3,435	4,183	4,893	6,059	7,491	8,806	10,404
178	730	3,643	8,585	8,426	8,946	9,415	10,172	11,097	11,945	12,976
179	2,077	4,584	2,076	2,533	3,945	5,195	7,199	9,644	11,882	14,601
180	6,212	6,454	2,708	2,796	3,140	3,453	3,838	4,155	4,445	4,616
181	965	2,628	1,868	2,003	2,686	3,335	4,400	5,708	6,908	8,368
182	3,240	2,714	1,794	1,749	1,790	1,829	1,893	1,972	2,044	2,131
183	1,155	2,676	5,506	5,483	5,530	5,606	5,729	5,879	6,017	6,183
184	11,834	6,926	5,569	5,257	5,517	5,751	6,130	6,669	7,164	7,679
185	474	2,461	2,568	2,683	2,855	3,011	3,390	3,865	4,300	4,814
186	32,604	32,759	34,664	31,166	31,253	31,332	31,462	31,622	31,768	31,941
187	1,806	3,283	4,878	4,826	5,259	5,728	6,485	7,641	8,701	9,732
188	125	360	1,193	1,442	1,616	1,694	1,820	1,835	1,835	1,853
Total	**80,224**	**94,138**	**96,956**	**94,522**	**102,856**	**110,399**	**122,719**	**137,827**	**151,658**	**167,705**

Chambers County Jobs (RAZ 189 to 192)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
189	2,174	2,997	1,925	1,184	1,422	1,538	1,716	1,965	2,181	2,431
190	100	197	312	373	522	597	760	1,021	1,304	1,633
191	2,292	2,497	2,781	3,324	4,961	5,786	7,068	8,860	10,419	12,229
192	1,482	2,597	3,769	4,504	5,843	6,510	7,542	8,982	10,236	11,690
Total	**6,048**	**8,288**	**8,787**	**9,385**	**12,748**	**14,431**	**17,086**	**20,827**	**24,140**	**27,983**

Liberty County Jobs (RAZ 193 to 199)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
193	1	27	45	39	42	56	89	140	218	309
194	7,233	7,228	7,371	6,461	6,544	6,777	7,234	7,918	8,971	10,200
195	1,826	3,828	4,631	3,861	3,968	4,247	4,790	5,591	6,789	8,174
196	8	1,077	1,007	732	774	949	1,520	2,375	3,427	4,349
197	3,634	4,828	5,129	4,132	4,214	4,436	4,866	5,499	6,446	7,563
198	985	77	75	50	64	99	167	267	416	589
199	564	839	603	925	938	975	1,023	1,094	1,205	1,270
Total	**14,251**	**17,904**	**18,861**	**16,201**	**16,543**	**17,539**	**19,689**	**22,885**	**27,472**	**32,453**

Grimes County Jobs

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
Total	**7,460**	**9,260**	**10,110**	**7,274**	**7,854**	**9,053**	**10,041**	**10,964**	**11,863**	**13,737**

Households

Harris County Households (RAZ 1 to 127)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
1	374	1,619	1,971	1,736	2,450	2,858	3,397	3,907	4,336	4,751
2	10,542	11,538	11,594	10,140	10,583	10,931	11,223	11,455	11,634	11,802
3	1,078	1,158	1,348	1,324	1,622	2,018	2,522	3,012	3,423	3,818
4	1,446	1,699	2,549	2,949	3,829	4,414	5,296	6,237	7,029	7,792
5	9,045	11,087	11,771	9,434	10,150	10,635	11,389	12,147	12,791	13,424
6	16,219	21,213	23,005	21,916	22,791	23,290	23,948	24,680	25,305	25,943
7	3,367	4,536	6,850	8,311	9,800	10,455	11,634	12,210	12,697	13,177
8	12,969	14,627	15,182	14,061	14,656	15,010	15,369	15,947	16,432	16,909
9	10,003	11,452	11,343	9,195	9,414	9,576	9,746	9,911	10,052	10,190
10	1,762	1,940	1,942	1,675	1,777	1,885	2,049	2,218	2,363	2,503
11	1,532	1,577	1,572	1,386	1,590	1,708	1,866	2,020	2,152	2,280
12	2,362	2,690	2,689	2,396	2,498	2,557	2,636	2,713	2,779	2,843
13	14,790	16,918	16,917	14,261	14,834	15,077	15,234	15,387	15,517	15,645
14	6,450	6,839	7,038	6,325	6,775	7,188	7,729	8,262	8,711	9,143
15	1,600	1,818	2,026	1,978	2,107	2,196	2,313	2,429	2,526	2,622
16	2,299	2,795	2,988	2,900	4,045	4,369	4,907	5,526	6,131	6,810
17	8,147	9,627	10,720	10,040	11,233	11,831	12,576	13,295	13,896	14,475
18	1,753	2,322	2,931	2,711	3,435	3,700	4,060	4,406	4,697	4,983
19	5,525	6,152	6,352	5,825	6,112	6,273	6,455	6,644	6,805	6,961
20	9,011	12,015	12,950	11,886	12,705	13,136	13,716	14,282	14,763	15,235
21	8,821	11,044	11,964	11,208	12,067	12,390	12,713	12,923	13,101	13,276
22	9,188	10,872	11,146	10,770	10,916	11,000	11,113	11,224	11,317	11,410
23	7,104	10,645	12,138	11,431	13,149	14,120	14,553	14,762	14,940	15,115
24	2,671	3,144	3,118	2,800	2,902	2,962	3,302	3,853	4,322	4,802
25	3,798	4,993	4,866	4,461	5,712	6,414	7,224	7,757	7,984	8,212
26	2,056	3,045	3,584	3,465	3,837	4,001	4,218	4,427	4,605	4,780
27	6,666	7,110	8,910	9,719	11,294	11,552	11,738	11,870	11,967	12,056
28	11,507	12,889	12,847	11,023	11,310	11,552	11,983	12,641	13,195	13,728
29	5,475	6,122	6,328	5,591	6,178	6,596	7,194	7,774	8,260	8,727
30	6,884	7,280	7,431	6,877	7,178	7,385	7,671	7,958	8,201	8,435
31	12,082	13,410	13,441	11,573	11,687	11,752	11,838	11,921	11,989	12,057
32	15,495	17,122	17,278	15,486	15,894	16,199	16,632	17,068	17,438	17,795
33	13,286	14,835	15,588	14,527	15,751	16,364	17,127	17,863	18,479	19,070
34	4,150	4,854	6,353	7,252	8,970	9,942	12,407	14,509	16,289	18,041
35	11,968	13,643	13,705	12,835	13,275	13,609	14,133	14,630	15,047	15,450
36	5,453	5,677	5,681	5,201	5,231	5,249	5,272	5,296	5,315	5,334
37	3,086	3,219	3,259	3,108	3,181	3,297	3,485	3,681	3,849	4,013
38	12,302	17,052	16,947	14,208	15,067	15,390	15,713	16,126	16,505	16,870
39	5,562	6,901	8,683	8,701	10,705	11,827	13,283	14,315	15,179	16,028
40	16,015	20,912	21,831	19,854	20,587	21,088	21,806	22,537	23,065	23,575
41	4,214	5,599	5,602	5,244	5,314	5,354	5,407	5,458	5,501	5,717
42	1,388	1,627	1,871	1,691	1,997	2,122	2,262	2,392	2,499	2,601
43	11,146	12,679	12,889	11,503	11,790	12,113	12,215	12,336	12,443	12,548
44	11,715	13,028	13,194	11,639	12,353	12,721	13,184	13,633	14,009	14,370
45	5,814	6,826	6,922	6,437	6,652	6,820	7,022	7,216	7,377	7,532
46	2,967	3,584	3,815	3,586	3,759	3,848	3,959	4,067	4,157	4,243

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
47	2,666	3,040	3,083	2,850	2,925	2,969	3,087	3,144	3,193	3,241
48	4,816	5,357	5,621	5,339	5,762	6,008	6,334	6,655	6,925	7,186
49	5,222	6,664	7,957	8,386	9,707	10,458	11,230	12,067	12,595	13,044
50	23,744	28,681	31,401	30,774	33,195	34,573	36,338	37,592	38,735	39,696
51	2,642	3,003	2,940	2,573	2,588	2,596	2,608	2,619	2,628	2,637
52	0	14	7	0	15	33	150	208	256	304
53	18,273	20,795	20,883	18,756	18,756	18,913	19,193	19,492	19,750	20,001
54	18,281	20,855	21,268	19,149	19,559	19,968	20,586	21,219	21,761	22,283
55	20	19	18	15	20	29	41	99	147	195
56	6,504	8,488	10,509	11,589	13,350	14,031	14,616	15,167	15,637	16,117
57	6,599	7,901	9,720	9,950	11,954	13,250	14,857	15,747	16,506	16,986
58	3,714	4,711	6,022	6,858	8,290	9,260	10,875	12,528	13,418	14,274
59	3,728	4,581	6,306	7,436	9,197	10,032	11,025	11,966	12,669	13,348
60	24,817	30,700	31,395	27,662	27,866	28,171	28,659	29,166	29,602	30,024
61	12,561	14,390	14,255	12,202	12,212	12,218	12,226	12,234	12,240	12,247
62	21,980	27,244	27,946	23,891	24,368	24,640	25,006	25,350	25,644	25,964
63	20,752	25,388	26,444	24,484	25,486	26,295	27,473	28,507	29,382	30,071
64	9,024	10,094	9,746	9,108	9,414	9,594	9,835	10,070	10,269	10,465
65	24,874	29,351	30,052	27,307	27,908	28,528	29,233	29,875	30,329	30,603
66	3,107	3,546	3,808	3,428	3,868	4,119	4,450	4,763	5,027	5,282
67	9,470	12,181	12,540	9,685	10,808	11,403	12,162	12,900	13,519	14,115
68	19,653	22,598	23,925	22,767	23,578	24,064	24,726	25,458	26,161	26,924
69	3,459	4,018	4,218	3,973	4,539	4,836	5,212	5,578	5,884	6,179
70	6,770	7,940	8,322	7,944	8,064	8,143	8,249	8,353	8,441	8,526
71	3,784	4,538	4,685	4,497	4,717	4,968	5,299	5,612	5,876	6,131
72	3,055	3,447	3,417	2,973	2,988	2,997	3,009	3,043	3,082	3,130
73	4,918	5,926	6,152	5,814	5,844	5,871	5,918	6,033	6,130	6,226
74	4,937	5,850	5,809	5,249	5,848	6,189	6,639	7,371	8,163	9,011
75	2,108	2,468	3,214	3,590	4,611	5,057	5,939	6,880	7,716	8,564
76	3,116	3,774	5,074	5,549	6,621	7,025	7,458	7,851	8,172	8,479
77	4,228	5,018	5,583	5,462	6,660	7,412	8,515	9,665	10,632	11,650
78	7,411	13,141	19,072	23,928	28,208	29,972	31,801	33,406	34,581	35,581
79	13,346	18,983	20,509	20,650	21,249	21,692	22,635	23,555	24,333	25,097
80	2432	3,543	4,340	4,713	5,643	6,960	8,696	10,081	11,079	11,976
81	3,387	4,213	5,096	5,589	6,498	7,112	7,919	8,762	9,565	10,283
82	886	1150	2,891	4,330	6,066	6,855	7,893	8,735	9,450	10,066
83	2,768	3,378	3,632	3,479	4,096	4,534	5,515	6,568	7,550	8,537
84	6,031	7,741	9,300	10,079	11,775	12,915	14,530	16,109	17,449	18,705
85	3,041	3,066	2,798	2,250	2,335	2,386	2,454	2,521	2,577	2,632
86	16,157	18,770	19,855	17,717	18,738	19,348	20,160	20,960	21,636	22,287
87	12	4	3	3	3	3	3	3	3	3
88	1996	2,306	2,321	2,005	2,064	2,113	2,182	2,253	2,314	2,372
89	3,454	3,908	3,916	3,274	3,682	3,948	4,310	4,670	4,976	5,270
90	13,662	15,795	16,894	17,129	18,303	19,054	19,937	20,564	21,092	21,602
91	4,363	5,823	6,384	6,643	6,937	7,187	7,628	8,151	8,679	9,273
92	6,091	8,160	8,824	8,308	9,022	9,436	9,979	10,514	10,964	11,398
93	16,891	24,924	27,420	28,383	30,648	31,353	32,285	33,169	33,854	34,454
94	18,643	22,377	23,686	22,276	22,576	22,842	23,313	23,774	24,164	24,549
95	5,913	8,084	9,322	9,988	10,812	11,080	11,337	11,558	11,736	11,903
96	12,693	13,212	16,021	17,912	19,750	20,231	20,598	20,870	21,074	21,262

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
97	17,196	19,628	19,881	17,370	18,187	18,623	19,181	19,724	20,179	20,617
98	13,321	17,850	19,445	18,702	19,749	20,366	21,188	22,221	23,200	24,299
99	16,312	21,274	24,348	24,388	27,026	27,988	29,281	30,497	31,535	32,595
100	8,043	13,029	15,132	15,549	16,018	16,545	16,776	16,989	17,080	17,263
101	12,900	17,346	17,500	15,317	15,317	15,326	15,350	15,373	15,393	15,422
102	11,075	12,411	13,367	12,636	13,453	13,877	14,411	14,929	15,363	15,780
103	43	365	360	228	248	260	549	563	575	712
104	7,650	8,900	9,222	8,432	9,165	9,583	10,135	10,657	11,096	11,521
105	8,637	13,004	14,614	15,332	16,506	17,165	18,034	18,834	19,515	20,201
106	3,082	4,673	5,786	6,468	7,066	7,286	7,576	7,843	8,070	8,300
107	13,698	24,358	28,447	30,212	33,275	35,018	36,673	38,137	39,280	40,128
108	9,714	12,021	14,019	14,581	16,195	17,118	18,356	19,521	20,011	20,311
109	8,665	10,216	10,273	9,132	10,159	10,827	11,820	12,866	13,832	14,851
110	5,906	8,018	9,412	9,680	10,647	11,222	12,000	12,751	13,382	14,002
111	9,237	16,285	19,412	21,493	22,205	22,691	23,334	23,954	24,479	24,996
112	2,019	3,124	3,503	3,750	4,556	5,234	6,223	7,228	8,084	8,910
113	8,708	14,422	24,335	32,549	43,014	49,380	58,036	66,247	74,125	82,511
114	9,179	13,908	18,776	22,070	25,791	27,561	28,757	29,335	29,820	30,297
115	216	474	565	587	1,303	2,718	4,871	7,209	9,799	13,194
116	7,181	11,572	21,125	29,133	39,850	45,951	54,841	64,332	72,300	80,322
117	1087	1840	2038	2,052	2,768	3,981	6,133	8,404	10,832	13,693
118	5,925	15,567	24,931	32,988	40,423	46,651	54,940	62,538	69,359	76,714
119	13,722	18,967	22,993	25,340	28,204	29,417	30,601	31,653	32,442	33,154
120	2,860	4,318	4,802	4,796	6,107	6,983	8,253	9,726	11,107	12,901
121	916	2237	3774.5	4,706	6,936	8,360	10,491	12,829	14,900	16,894
122	22,100	31,153	42,481	50,854	64,704	71,898	82,018	87,785	92,170	96,583
123	36,416	49,508	56,439	55,318	59,291	61,107	62,936	64,083	64,572	64,972
124	6,102	8,045	12,022	13,770	18,231	20,010	22,417	23,571	25,028	25,932
125	5,932	7,169	8,844	9,385	11,171	12,144	13,341	14,269	15,133	15,981
126	1,174	1,624	1,871	1,910	2,356	2,691	3,217	4,053	4,587	5,102
127	10,499	12,212	16,133	18,731	22,750	24,367	26,305	28,594	30,271	32,265
Total	**1,018,601**	**1,288,410**	**1,443,554**	**1,436,014**	**1,590,963**	**1,679,796**	**1,797,692**	**1,905,073**	**1,996,155**	**2,087,661**

Montgomery County Households (RAZ 128 to 139)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
128	5,440	8,453	10,146	10,816	12,003	13,474	16,082	19,959	24,263	28,665
129	9,139	14,289	18,118	20,123	22,497	25,813	32,073	40,796	49,882	60,337
130	1156	2386	6,477	10,153	12,364	14,812	18,687	23,450	29,231	35,572
131	8,836	12,726	14,282	14,555	15,290	15,911	16,607	17,576	18,047	18,570
132	7058	17,858	25,381	31,007	33,761	35,833	37,572	39,511	40,945	42,046
133	1,344	1595	2,648	3,482	4,146	5,074	6,761	9,169	11,960	15,765
134	8,336	11,027	12,075	12,133	12,847	13,894	15,707	18,144	20,534	23,246
135	5,714	8,761	10,629	11,372	12,257	13,293	15,380	18,772	22,267	26,458
136	7,100	16,462	21,423	21,962	25,176	27,576	30,899	34,385	37,229	40,261
137	2347	5,091	6,599	7,594	9,430	12,538	18,103	26,826	35,434	46,439
138	918	1938	2266	2,332	2,530	2,941	3,885	5,470	7,133	9,155
139	5,616	11,038	14,593	17,151	19,722	23,172	29,615	39,678	50,678	63,611
Total	**63,004**	**111,624**	**144,634**	**162,680**	**182,023**	**204,332**	**241,369**	**293,734**	**347,606**	**410,126**

Waller County Households (RAZ 140 to 143)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
140	3,119	5,328	6,389	6,601	7,059	7,532	8,981	11,907	15,114	18,947
141	2,126	3,128	3,483	3,422	3,506	3,603	3,895	4,536	5,369	6,554
142	1,655	2,849	3,259	3,207	3,522	3,849	4,775	6,637	8,876	11,846
143	347	431	657	831	1,335	1,950	3,794	6,720	9,285	11,841
Total	**7,247**	**11,736**	**13,788**	**14,061**	**15,421**	**16,934**	**21,446**	**29,799**	**38,644**	**49,189**

Fort Bend County Households (RAZ 144 to 158)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
144	990	6,336	15,739	24,220	31,449	34,294	37,378	39,686	40,887	41,550
145	1092	1749	2,831	3,644	7,112	11,531	19,467	31,592	44,066	55,391
146	9,069	15,572	25,778	34,470	43,141	47,069	53,021	60,296	67,780	76,274
147	480	647	734	695	907	1,119	1,489	1,999	3,046	4,752
148	1402	1,998	2,356	2,505	3,228	4,704	7,252	10,631	13,943	17,588
149	9,046	11,083	11,941	11,754	12,369	12,724	13,226	13,876	14,491	15,172
150	1418	6,160	8,524	10,524	11,970	13,421	15,676	18,627	21,097	23,161
151	9,625	14,008	16,374	18,001	19,085	20,054	21,088	22,426	23,077	23,791
152	5,554	10,462	12,110	13,198	14,018	14,609	15,522	16,703	17,029	17,172
153	11,551	14,114	15,441	16,019	16,380	17,026	17,543	17,610	17,675	17,747
154	7,155	13,979	17,423	20,232	23,794	25,883	28,690	31,701	34,703	38,017
155	8,475	12,920	19,472	24,452	29,874	33,788	39,740	46,767	53,484	60,189
156	807	1,450	2,663	3,582	6,431	9,565	15,178	22,707	32,008	42,066
157	1,597	2,101	2,345	2,409	3,043	3,527	4,562	6,235	8,187	11,045
158	1,041	1,634	1,892	1,988	2,411	2,863	3,742	5,080	8,334	12,978
Total	**69,302**	**114,213**	**155,621**	**187,693**	**225,212**	**252,178**	**293,573**	**345,937**	**399,809**	**456,892**

Brazoria County Households (RAZ 159 to 172)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
159	4,071	4,886	5,062	4,592	4,924	5,259	5,933	6,903	7,958	9,185
160	5,385	6,951	7,176	6,393	6,640	6,877	7,311	8,024	8,798	9,863
161	1036	1203	1171.5	1,035	1,148	1,242	1,422	1,549	1,686	1,877
162	2,330	2,717	2,656	2,066	2,267	2,403	2,649	2,942	3,271	3,717
163	3,402	5,525	5,768	5,150	5,571	5,798	6,159	6,497	6,813	7,160
164	11,001	12,854	13,329	12,509	12,805	12,995	13,168	13,406	13,664	13,968
165	561	1,661	1878	765	814	862	949	1,067	1,196	1,349
166	3,232	4,408	4,812	4,806	5,498	6,252	7,731	9,901	12,353	15,246
167	6,360	7,684	7,885	7,401	8,093	8,847	10,413	12,583	15,164	18,209
168	676	1,020	1114.5	1,025	1,082	1,138	1,264	1,517	2,066	3,022
169	1909	3,068	3,550	3,648	4,467	5,795	8,619	13,555	19,402	27,753
170	10,898	14,138	15,029	14,691	16,126	17,669	20,788	25,290	30,400	37,333
171	2877	7,927	15,900	22,350	25,221	27,671	31,611	37,013	42,366	46,699
172	9,738	15,728	18,725	20,322	22,523	24,338	27,129	29,830	32,263	34,285
Total	**63,476**	**89,770**	**104,053**	**106,753**	**117,178**	**127,145**	**145,147**	**170,077**	**197,401**	**229,666**

Galveston County Households (RAZ 173 to 188)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
173	5,008	7,354	8,255	8,861	9,463	9,774	9,974	10,164	10,332	10,511
174	4,299	6,146	9,833	13,016	15,973	17,827	20,632	23,692	26,696	29,966
175	7,485	13,241	16,665	18,578	21,277	22,466	24,458	26,908	28,863	30,993
176	3,565	5,639	5,991	5,372	5,801	6,107	6,619	7,248	7,866	8,539
177	5,693	6,863	7,463	7,541	8,264	8,671	9,407	10,428	11,503	12,731
178	5623	7,321	7,990	8,053	8,593	9,249	10,775	13,070	15,548	18,407
179	1,563	2,242	3,056	3,302	4,022	4,429	5,433	7,157	9,294	11,921
180	8,929	9,968	10,096	9,243	9,423	9,512	9,532	9,550	9,566	9,582
181	3809	3,744	4,048	3,744	4,033	4,112	4,184	4,249	4,303	4,361
182	4,419	4,678	4,661	4,078	4,221	4,343	4,596	4,965	5,359	5,812
183	2,862	3,861	4,067	3,677	3,963	4,293	5,026	6,174	7,583	9,315
184	1,873	2,644	2,797	2,203	2,347	2,418	2,538	2,700	2,869	3,061
185	2159	6,229	7,436	3,309	3,596	3,775	3,979	4,175	4,350	4,538
186	21,731	24,590	24,611	16,892	17,193	17,317	17,580	17,839	18,107	18,395
187	421	664	519	274	303	415	697	1,129	1,598	2,141
188	1274	5424	4,066	1,071	1,206	1,295	1,447	1,641	1,842	2,058
Total	**80,713**	**110,608**	**121,550**	**109,214**	**119,678**	**126,002**	**136,878**	**151,090**	**165,678**	**182,331**

Chambers County Households (RAZ 189 to 192)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
189	2,758	4,016	4,047	3,567	3,764	3,889	4,106	4,369	4,710	5,117
190	1031	1352	1327	1,118	1,408	1,638	2,126	2,864	3,782	5,036
191	1,675	2,899	4,189	5,061	5,428	5,685	6,148	6,709	7,407	8,202
192	1,397	1,933	2,184	2,243	2,822	3,268	4,123	5,215	6,574	8,037
Total	**6,861**	**10,200**	**11,746**	**11,989**	**13,421**	**14,480**	**16,503**	**19,157**	**22,473**	**26,392**

Liberty County Households (RAZ 193 to 199)

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
193	197	293	302	290	316	356	473	698	1,016	1,377
194	4,262	5,000	4,998	4,428	4,477	4,555	4,784	5,339	6,227	7,346
195	4,688	7,665	8,460	8,274	8,569	9,025	10,169	12,548	15,323	18,431
196	2174	3,129	3,396	3,262	3,684	4,369	6,516	9,920	13,042	16,416
197	1,943	2,621	2,634	2,346	2,360	2,396	2,536	2,878	3,432	4,072
198	2211	3267	3444.5	3,128	3,212	3,349	3,779	4,630	5,879	7,565
199	2871	4109	4188	3,401	3,429	3,513	3,802	4,351	5,116	5,983
Total	**18,346**	**26,084**	**27,422**	**25,129**	**26,049**	**27,564**	**32,058**	**40,363**	**50,035**	**61,189**

Grimes County Households

RAZ	1990	2000	2005	2010	2015	2020	2025	2030	2035	2040
Total	**6,032**	**9,460**	**10,178**	**8,902**	**8,566**	**8,782**	**9,351**	**10,198**	**11,317**	**12,821**

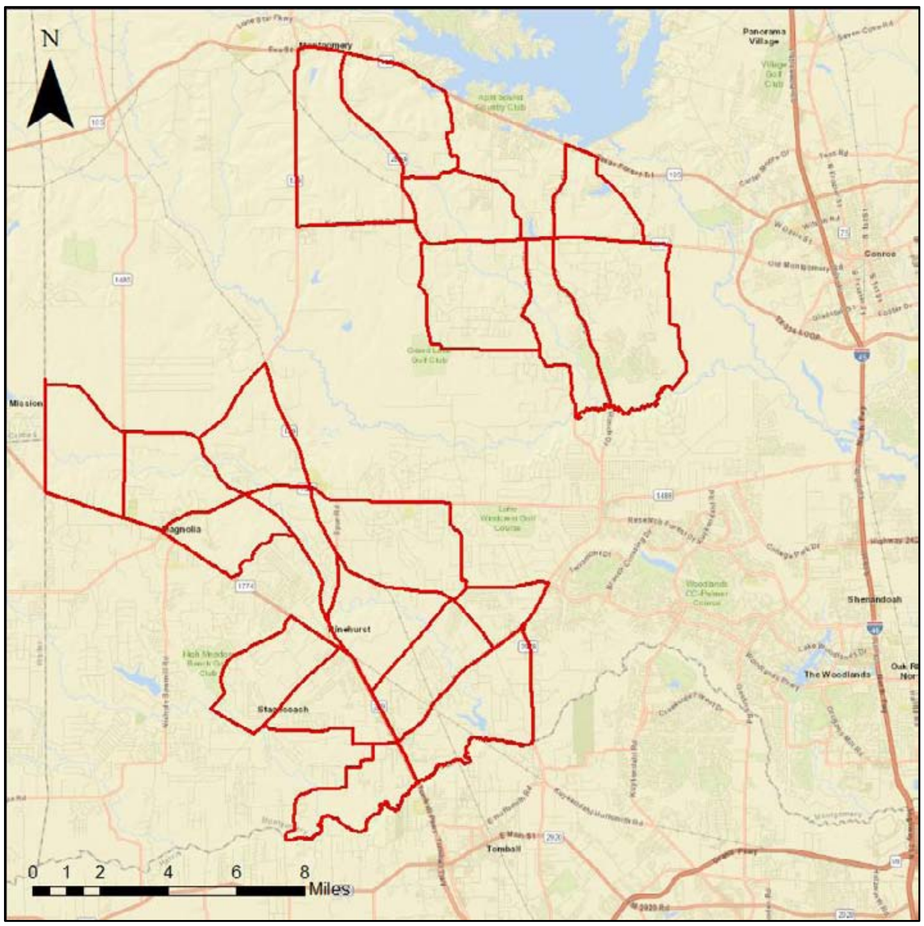
Appendix B – High Growth Zone Analysis

Several TAZs in Montgomery County near the SH 249 corridor are forecast to experience a notably high rate of growth, even when considering that Montgomery County is expected to grow significantly during the forecast period from 2010 to 2040. This level of growth is not without precedent in the Houston region, however. A closer look was taken at these zones and the forecast for them compared to a selection of other areas of suburban Houston that experienced rapid growth in the recent past.

High Growth Zones

The zones in question were identified by CDM Smith and examined by CDS. There are 20 TAZs in two separate but nearby clusters that saw notable growth during the forecast period. These groups of TAZs are located along the SH 249 toll road corridor and in the area along FM 2854 and SH 105 between Conroe and Montgomery. Both of these areas contain large amounts of vacant and developable land and have begun to see the addition of sizable suburban-style housing development during the past decade. That development is expected to continue into the near future. There are 20 TAZs in total between these two clusters, with a combined area of 103.7 square miles. A list of these TAZs can be seen at the end of this Appendix, in the "Additional Data" section.

High Growth Zones near the SH 249 Corridor



Population Growth and Growth Rate

As of the 2010 Census, these 20 TAZs had a population of 26,984. This was estimated to have grown to 33,710 by 2015, a 24.9% increase. The CDS forecast sees this growth rate increase from 25% to over 50% from 2015 to 2030 before falling into the mid-30% range during the last two forecast periods. The period from 2020-2040 was noted for both its high growth rate and the large total number of people added to these 20 geographies during this time, greater than 150,000.

Population Forecast Data – SH 249 TAZs

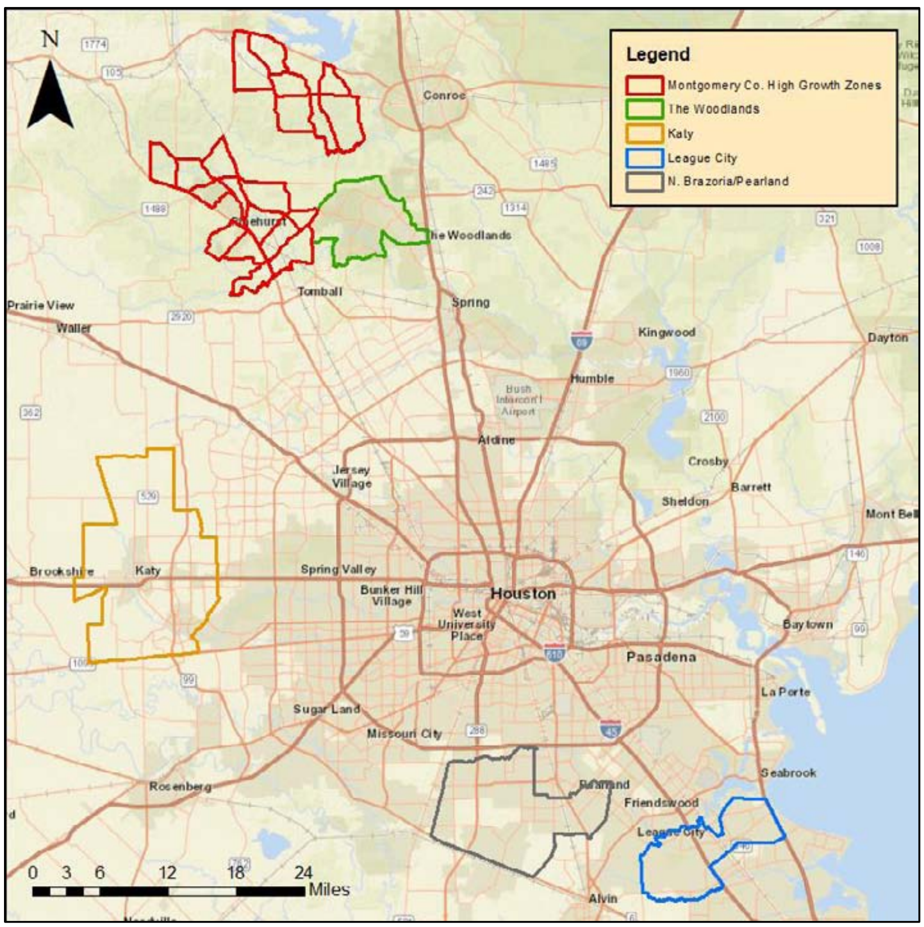
	2010	2015	2020	2025	2030	2035	2040
Total Population	26,984	33,710	44,807	67,910	106,035	146,137	198,010
Population per Sq. Mi.	260.3	325.2	432.2	655.1	1,022.9	1,409.8	1,910.2

		2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Population Growth		6,726	11,097	23,103	38,125	40,102	51,873
Population Growth Rate		24.9%	32.9%	51.6%	56.1%	37.8%	35.5%

Comparison Areas

To compare the high growth rates forecast in these 20 TAZs with historical precedent, CDS selected four suburban locations in the Houston area that have seen high rates and large amounts of growth in the recent past. The four areas chosen were: The Woodlands, Katy, North Brazoria County/Pearland, and League City. Each of these areas has been a well-known center of suburban development over the last two to three decades and could be considered comparable in this recent past to western Montgomery County.

High Growth Zones near the SH 249 Corridor



Comparison Area Data and Time Frame

The 20-year period from 1990 to 2010 was used for the historical comparison of these areas and the 2020-2040 forecast for the 20 Montgomery County TAZs. This is due to both to the comparability of the population and level of development in 1990 in these areas and the current state of the 20 TAZ area in Montgomery County and to the reliability of the US Census data available at the Census Block level, the most precise Census geography available. Each of these four areas in 1990 was comparable to the 20 TAZ area in population size or population density and each saw significant growth over the next two decades, just as forecast in the 20 TAZs.

Historical Population Data – Comparison Areas

	Area (Sq. Mi.)	1990	1995 Est.	2000	2005 Est.	2010
The Woodlands	35.18	14,136	29,634	45,131	56,440	67,748
Katy	124.95	53,547	73,506	93,464	140,830	188,196
N. Brazoria/Pearland	78.4	23,183	35,098	47,013	73,976	100,938
League City	43.54	24,288	31,338	38,388	56,661	74,934

Comparison of 20 TAZs and Comparison Areas

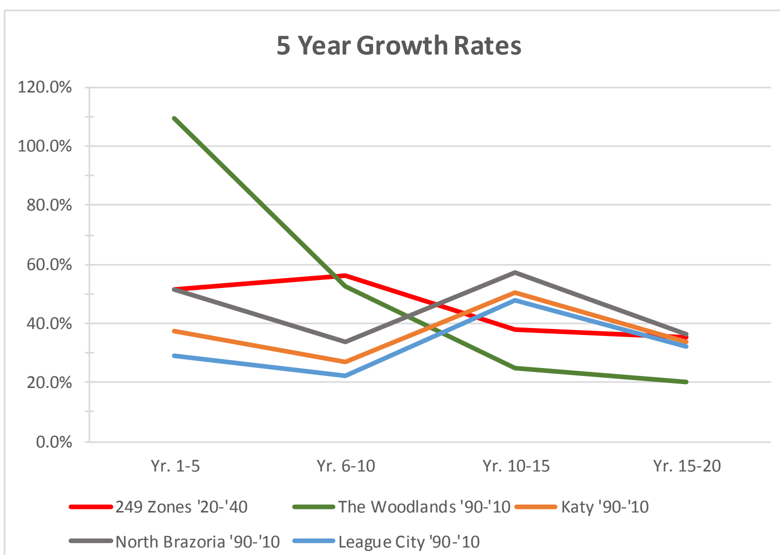
An examination of the 2020-2040 population forecast for the 20 TAZs compared with the 1990-2010 population growth trends in the four comparison areas indicates that the CDS forecast is not out of line with some recent historical precedent. The 2020-2040 forecast in the 20 TAZs is certainly aggressive, but such aggressive growth has occurred in the Houston region before.

While none of the comparison areas precisely mirror the forecast growth rates of the 20 TAZs in and around SH 249, all achieve growth rates comparable to, in several cases even higher than, the zones in question during multiple 5-year periods. Three of the comparable areas saw high growth rates past 2000, into the second decade of the period covered, much as the 20 TAZs see high growth rates even after 10 years of significant growth.

Population Growth Rate Comparison Table

	Yr. 1-5	Yr. 6-10	Yr. 10-15	Yr. 15-20
249 Zones '20-'40	51.6%	56.1%	37.8%	35.5%
The Woodlands '90-'10	109.6%	52.3%	25.1%	20.0%
Katy '90-'10	37.3%	27.2%	50.7%	33.6%
North Brazoria '90-'10	51.4%	33.9%	57.4%	36.4%
League City '90-'10	29.0%	22.5%	47.6%	32.2%

Population Growth Rate Comparison Chart



Population Density

The forecast increase in population density is also comparable to the four comparison areas as well, though the 2040 forecast does wind up being higher than the 2010 figures in three of these areas. CDS holds the opinion that this is likely to happen as suburban development patterns have changed since the 1990-2010 time frame covered for the four comparison areas. Suburban Houston is seeing shrinking average lot sizes and an increasing interest in higher-density housing developments such as townhomes and apartment complexes. Among the comparison areas, these trends began to emerge first in The Woodlands, which is reflected in its dramatic increase in and sizable 2000 and 2010 total figures of population density. That a similar trend could be seen in these 20 TAZs, which are located near The Woodlands, is reasonable.

Population Density Comparison Table

	Yr. 0	Yr. 5	Yr. 10	Yr. 15	Yr. 20
249 Zones '20-'40	432.2	655.1	1,022.9	1,409.8	1,910.2
The Woodlands '90-'10	401.8	842.3	1,282.9	1,604.3	1,925.8
Katy '90-'10	428.5	588.3	748.0	1,127.1	1,506.2
North Brazoria '90-'10	295.7	447.7	599.7	943.6	1,287.5
League City '90-'10	557.8	719.8	881.7	1,301.4	1,721.0

Population Density Comparison Chart

Conclusion

While the 20 West Montgomery County TAZs in question do see a notably high rate and total amount of population and household growth in the CDS 2017 forecast, this level of growth has precedent in the Houston region, as seen in the data on the four comparison areas chosen for this analysis. The ultimate amount of growth and the population density in the 20 TAZs may slightly outstrip the historical data in the comparison areas due to modern development patterns increasing the density of suburban development. Nevertheless, the growth forecast in these 20 TAZs is not out of line with the history of Suburban Houston.

Additional Data

List of TAZs

TAZ	RAZ	County	Area (Sq. Mi.)
4244	137	Montgomery	5.79
4246	137	Montgomery	4.25
4247	137	Montgomery	3.45
4249	137	Montgomery	4.36
4250	137	Montgomery	9.81
4256	137	Montgomery	7.25
4258	137	Montgomery	8.97
4235	138	Montgomery	5.31
4242	138	Montgomery	5.03
4214	139	Montgomery	4.62
4215	139	Montgomery	4.12
4217	139	Montgomery	3.86
4219	139	Montgomery	2.49
4220	139	Montgomery	3.47
4221	139	Montgomery	5.13
4225	139	Montgomery	2.22
4226	139	Montgomery	6.63
4227	139	Montgomery	4.84
4228	139	Montgomery	7.08
4229	139	Montgomery	5.01

List of Noted Residential Developments

In the TAZs in question and from the 2016 and 2017 SH 249 Forecast updates

Forecast	RAZ	TAZ	Action	Comment
2016	137	4247	Forecast sufficient to account for this development	Apartments under construction now
2016	137	4258	Adjusted up slightly	Crown Oaks subdivision, several 90 and 100-acre tracts for sale with residential potential, Bill Randall property expected to be in play eventually, closest part of Montgomery to the growth moving out of the Woodlands
2016	138	4235	Forecast adjusted up significantly	Woodard Tract, 5,900 acres for a "Woodlands type" residential development, 1,600 homes in the 590-acre phase 1 to be called Magnolia Woods, also Escondido Ranch subdivision planned with 540 homes
2016	138	4242	Forecast adjusted up	Legacy property, owned by Yager Development, 2,100 acres slated for residential development
2016	139	4215	Forecast sufficient	Woodtrace subdivision, growth should continue
2016	139	4220	Forecast sufficient	Part of the Legacy property, Magnolia Ridge and Magnolia 1138 developments
2016	139	4221	Forecast sufficient	Mustang Ranch and Mustang Ridge developments, 620 acres and 240 homes in phase 1, part of Legacy property as well
2016	139	4228	Forecast sufficient	1,100 townhomes to be developed near 149 and 1488 as well as 110-acre Reynold's reserve subdivision with 240 homes
2016	139	4229	Forecast sufficient	Richfield Properties site, housing development expected
2017	137	4246	Forecast sufficient, no adjustment	Growth opportunities here, but several years off
2017	137	4258	Forecast sufficient, no adjustment	Heritage Plaza apartments adding 64 units
2017	138	4235	Forecast sufficient, no adjustment	Escondido Ranch 150-acre subdivision, includes part of 5,900-acre Woodard tract with 1,600 home section planned to start in 2019
2017	138	4242	Forecast sufficient, no adjustment	Mill Creek residential development, 500+ homes planned, expected to open in late 2018, expansion and extension of Keenan Cut Off Rd. should drive growth
2017	139	4220	Forecast sufficient, no adjustment	Legacy Trust residential site is 2,600 acres with a 1,400 home first phase to start in 2018, 479-acre Magnolia Ridge subdivision is underway now
2017	139	4221	Forecast sufficient, no adjustment	Legacy Trust owns a 300-acre tract north of FM 1488, Mustang Ridge to include 240 homes on 74 acres, includes part of 5,900-acre Woodard Tract

COMMUNITY DEVELOPMENT STRATEGIES

1001 South Dairy Ashford Street, Suite 450
Houston, TX 77077

281-582-0855
www.cdsmr.com

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SUBMITTED BY

CDM Smith®

APPENDIX C

MCTRA 249 TOLLWAY MAINTENANCE REPORT

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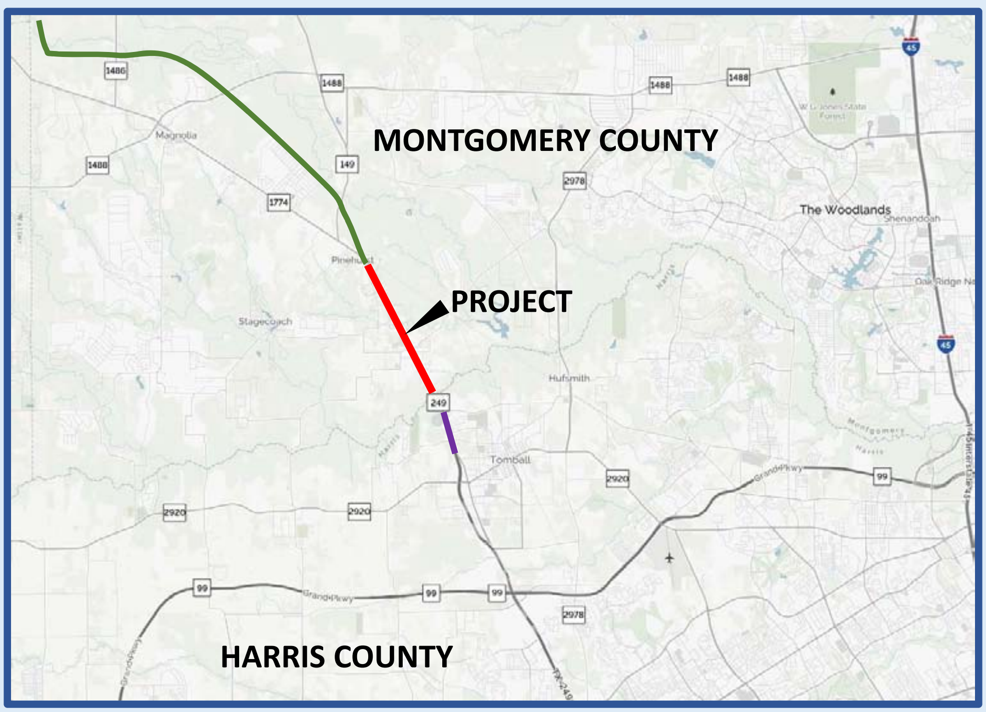
MCTRA 249 TOLLWAY MAINTENANCE REPORT



APRIL 2018

REVISED MAY 22, 2018

JONES | CARTER
1575 Sawdust Road, Suite 400
The Woodlands, Texas 77380

Scope of Work

The purpose of this report is to present the operation and maintenance expenses for the Montgomery County Toll Road Authority (MCTRA) 249 Tollway. Independent estimates of costs were provided through historical data of maintenance from Harris County Toll Road Authority and Texas Department of Transportation (TxDOT). Once completed, the entire 249 Toll road corridor will be operated by three government entities: Harris County Toll Road Authority, Montgomery County Toll Road Authority, and TxDOT.

All estimates and projections reported herein are based on Jones|Carter’s experience and judgment and on a review of information obtained from multiple agencies, including MCTRA. These estimates and projections may not be indicative of actual or future values, and are therefore subject to substantial uncertainty. Future developments, economic conditions cannot be predicted with certainty, and may affect the estimates or projections expressed in this report, such that Jones|Carter does not specifically guarantee or warrant any estimate or projection contained within this report.

Project Description

State Highway 249 is in the northwest portion of the greater Houston region. SH 249 originates from north-central Houston and continues towards the northwest. The overall SH 249 corridor is about 50 miles in length. At its southern end, it begins at IH-45 North (approximately 11 miles north of Downtown Houston), and traverses in a northwesterly direction to its current terminus in Pinehurst, Texas, near the intersection of FM 149 and FM 1774. It consists of a variety of roadway classifications including urban arterial, non-tolled multi-lane highways with non-tolled frontage roads, and tolled multi-lanes highways with non-tolled frontage roads.

The map (Figure 1) shows the location of the existing and proposed toll and non-toll highways in the region.

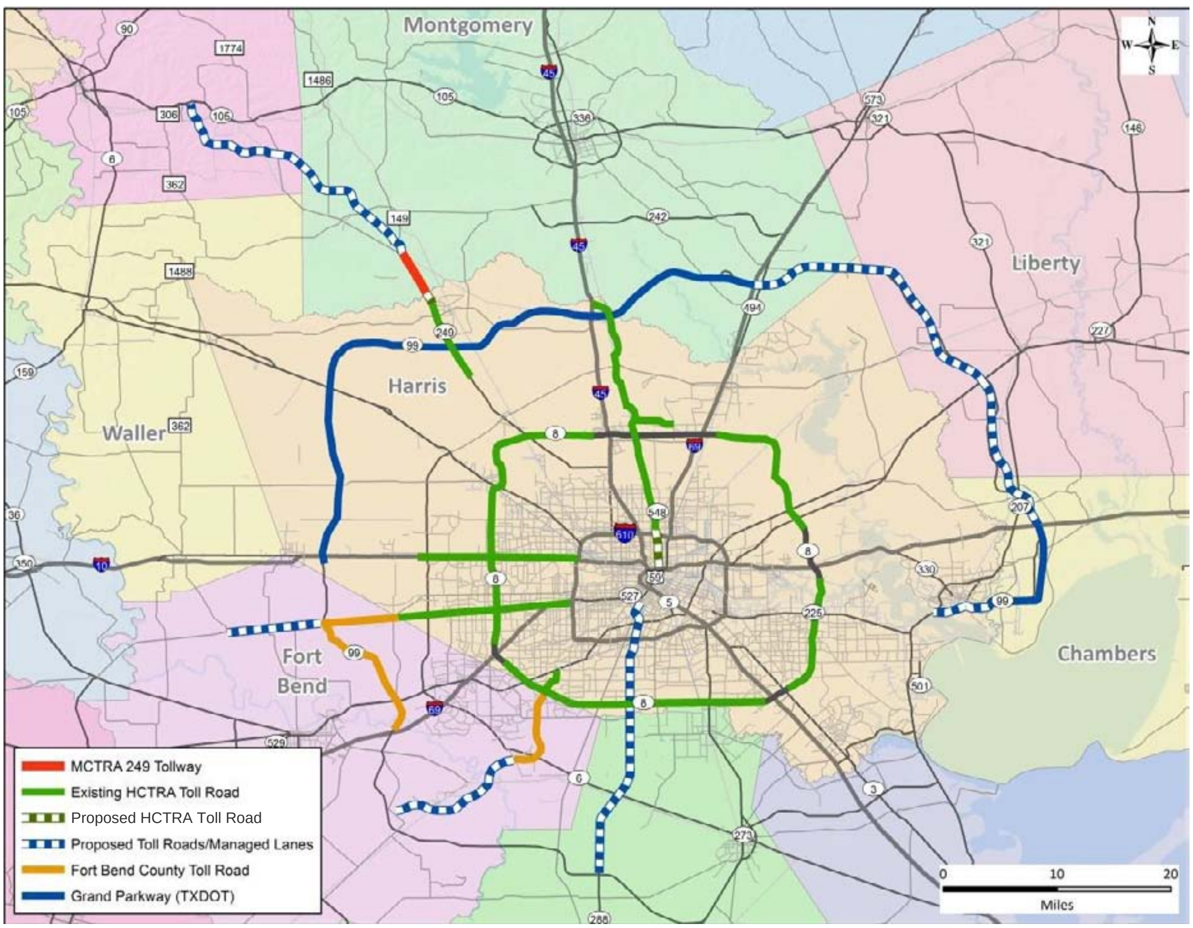


Figure 1: Regional Toll System

MCTRA SH 249 Tollway is a 3.0-mile extension of the HCTRA Tomball Toll Road, which ends at Spring Creek, with the overall SH 249 corridor being constructed between the existing frontage roads. The SH 249 corridor, as seen in Figure 2, includes three other existing or planned segments:

- SH 249 (Existing): The 14.2-mile southeast portion of SH 249 operates as toll-free roadway from IH-45 in the southeast to Spring Cypress Road in Harris County, Texas.
- Tomball Tollway Phase 1 (Existing): This segment is a recently constructed HCTRA facility. The 6.0-mile segment of SH 249 extends from Spring Cypress Road to FM 2920 in Tomball, Texas. This portion of the route provides three toll lanes in each direction, with continuous non-tolled frontage roads.
- Tomball Tollway Phase II (Under Construction): This segment is a 2.2-mile extension of Tomball Tollway currently being constructed by HCTRA. This segment is expected to open by late 2019, and will extend the existing Tomball Tollway from FM 2920 to the Harris-Montgomery county line at Spring Creek. The northern terminus of this route will meet the southern terminus of the MCTRA SH 249 Tollway.

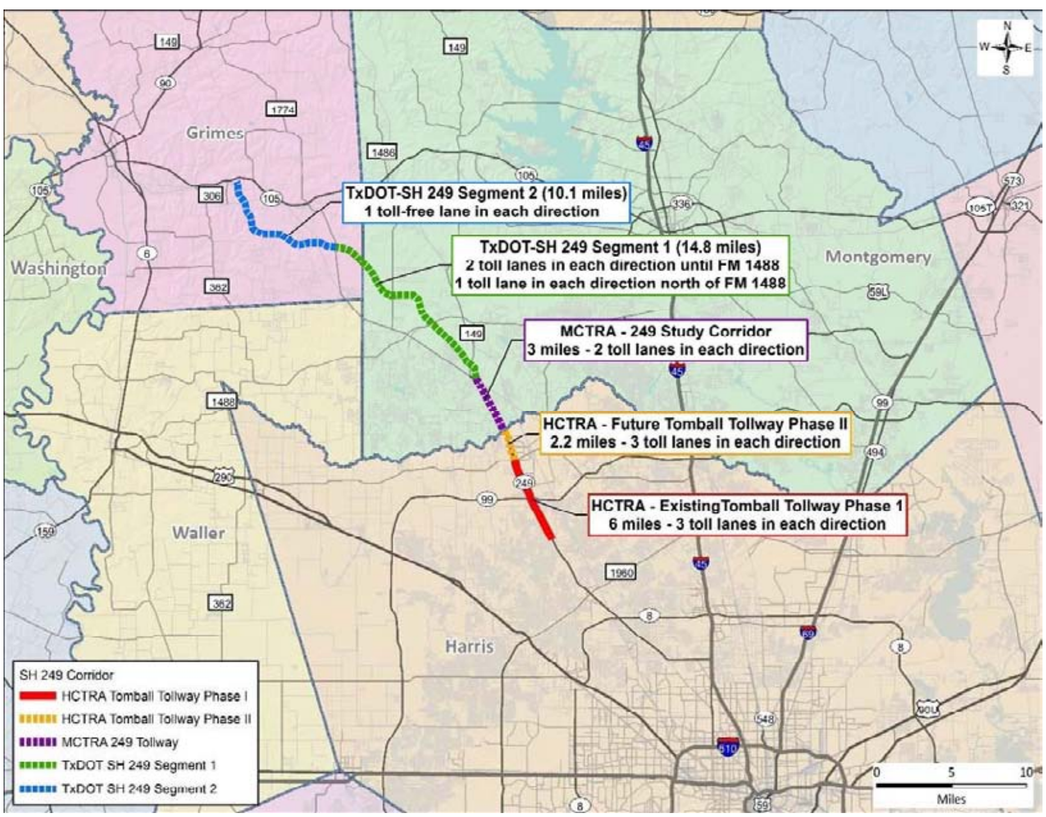


Figure 2: State Highway 249 Corridor

- TxDOT 249 Extension: TxDOT plans to construct two additional segments of the 249 corridor. These two segments of 249 will start at the northern terminus of the MCTRA 249 Tollway north of Woodtrace Boulevard and will extend northwest to SH 105 west of Plantersville in Grimes County. The first segment, between Woodtrace Boulevard and FM 1488 in Magnolia will be a four-lane section and between FM 1488 and FM 1774 at Todd Mission it will transition to a two-lane limited-access toll facility with non-continuous frontage roads. The first segment is scheduled for opening in mid-2020. The second segment between FM 1774 and SH 105 will be constructed as a two-lane at-grade non-tolled arterial facility with completion in early 2022.
- The MCTRA 249 Tollway project (Figure 3) begins at the Harris-Montgomery County line and extends northward to Woodtrace Boulevard. The project will have tolled main lanes with four pairs of entrance/exit ramps between existing continuous frontage roads. Northbound traffic will be tolled at the exit ramp to Hardin Store Road and at the mainlane gantry. Southbound traffic will be tolled at the mainlane gantry and the entrance ramp south of Hardin Store Road.

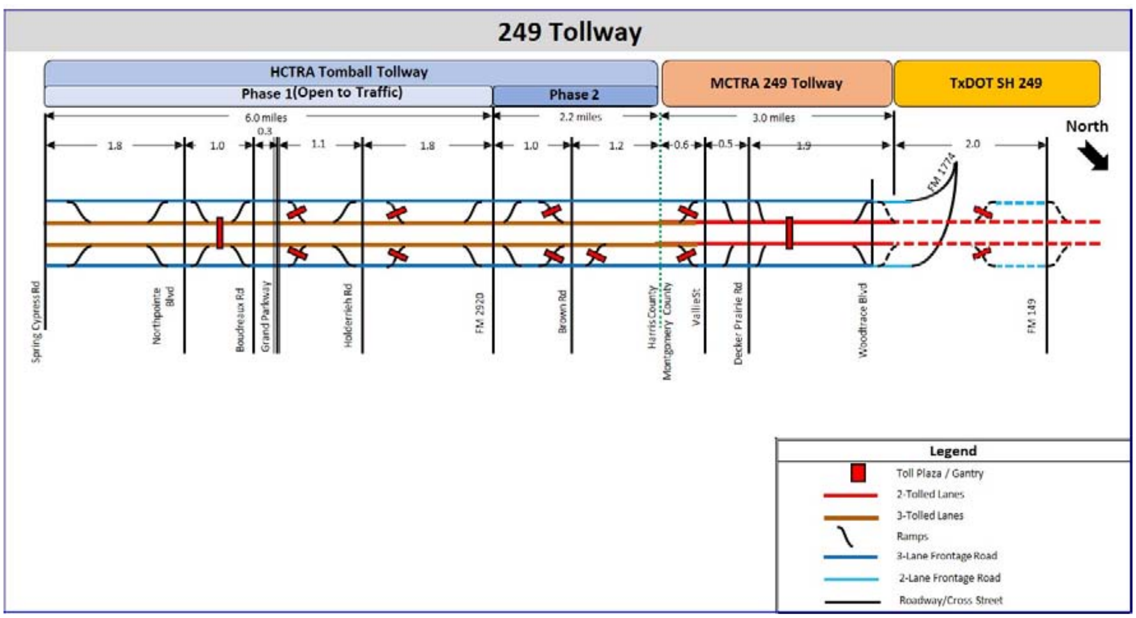


Figure 3: 249 Tollway Diagrammatic

Toll Collection, Operations and Maintenance

This section discusses the specifics of toll collection and toll road operations and maintenance related to both the roadway and toll system. It also includes a discussion of the proposed Tolling Services Agreement between Harris County and Montgomery County Toll Road Authority.

Toll Collection, Operations and Maintenance

On March 31, 2015, Harris County and Montgomery County Toll Road Authority entered into an Interlocal Agreement for the Harris County Toll Road Authority to provide tolling services on all segments of toll roads in Montgomery County, Texas, including customer service-related services, EZ TAG transponder supply, toll systems collections, back office system services, and interoperability services. The agreement was amended on November 6, 2017 to include the 249 Tollway. The executed Agreement and draft First Amendment are provided in **Appendix A**.

The mainlane toll gantries will be configured for the typical mainlane sections, as dictated by traffic characteristics. These will be equipped with ETC/AVI for cashless open-road toll collection at normal highway speeds. Ramp toll plazas will have toll lanes configured with ETC/AVI, as dictated by traffic characteristics. Typical gantry hardware includes overhead transponder antennas, violation camera, strobes, and classification equipment. Classification loops are cut into the pavement that work with the overhead equipment. Finally, roadside equipment is housed in a cabinet or hut that includes transponder readers, lane controllers, uninterruptable power supplies, generators, and other computer equipment. All these components work together as a system at each toll point to record the appropriate data in order to assess a correct and valid toll or violation transaction.

Toll road customers will need to obtain a transponder prior to use of the facility. Those using the facility without a transponder will be in violation of the toll policy. Customers without a transponder that drive on the roadway will have an image of their license plate captured by the system and will be mailed a violation notice.

Harris County will provide all tolling services for Montgomery County 249 Tollway, including customer service, customer account maintenance (for EZ Tag customers), EZ TAG transponder supply, toll collection, bank clearinghouse, back office system, toll violation invoices in, and interoperability services.

Harris County will provide collection services for tolls, fines, and costs associated with Toll Violations that occur within the MCTRA limits, but will not pursue collection beyond referral of collection accounts to the outside collection firm hired by MCTRA.

MCTRA will install all tolling equipment and systems, make emergency road system repairs, set toll rates and classifications, and will provide toll violation and traffic enforcement for the project.

The toll collection system equipment will be 100% compatible with existing Harris County toll collection equipment in form, function and operation, and produce data, messages and use communication protocols that are 100% compatible with the existing Harris County collection system software.

MCTRA will pay Harris County 8% of the toll amount for all transactions. Harris County will be a collecting agent acting on behalf of MCTRA with respect to all amounts owing or remitted by the applicable users. Harris County will receive and retain all administrative fees associated with toll violations and will pass-through direct costs for reviewing video transactions for toll violations. Transactions received will be processed by Harris County through HCTRA's back office system.

Toll Operation and Maintenance Estimates

Toll system maintenance is considered to be the routine servicing of equipment that occurs on a usual interval of weekly, monthly or annual basis.

Toll maintenance includes all the costs associated with maintaining the toll collection equipment, including the electronic toll collection system, the traffic management system, the network control system, and the provision of the maintenance transportation.

Toll systems costs include continual replacement of electronic toll collection systems (ETCS), back office systems, traffic management systems, and network control systems. The system replacement cost relative to the initial construction cost varies over time. Since many of the components of the ETCS will be replaced and/or upgraded throughout operations as equipment fails or reaches its end of useful life, there is no large expenditure assumed in any single year for a complete system replacement.

Toll Operation and Maintenance Estimates are shown in **Appendix B**.

Scope of Operations and Maintenance

The Operations and Maintenance (O&M) cost models were developed to:

- Ensure that the O&M strategy is in accordance with best practices
- Confirm the quantities and unit prices used to develop to O&M costs;
- Confirm the capital maintenance and renewals schedule; and
- Ensure all assets are maintained at a high level throughout the designated (30-year) maintenance term.

Roadway Routine Maintenance

Roadway Routine Maintenance is detailed in **Appendix C**.

Heavy Maintenance

The cost model assumes concrete pavement will be used for all road segments. Typical strategies and associated time intervals including pavement restriping, roadway repair, rehabilitation, and reconstruction. The maintenance frequency varies by strategy as shown below:

- Restriping – every 5 years;
- Roadway Repair – every 5 years; and
- Rehabilitation – every 7 years after 1st 20 years
- Reconstruction – 50 years after opening

Traffic control costs will be incurred with respect to heavy maintenance projects.

Pavement life is assumed to be 20 years without significant intervention. The methodology for capital expenditure involves utilizing a series of periodic and routine repair and rehabilitation strategies to extend the useful life of the pavements. However, the performance of the pavement should be actively monitored against the proposed deterioration during the life of the System to enable the strategies to be revised as necessary.

Heavy maintenance can be budgeted through surplus funds, reserves, or new bond issuance.

Roadway Heavy Maintenance is detailed in **Appendix D**.

Further description of each maintenance item is detailed in **Appendix E**.

APPENDIX A – INTERLOCAL AGREEMENTS AND AMENDMENTS

1.c.2.h

HARRIS COUNTY TOLL ROAD AUTHORITY

March 31, 2015

Vote of the Court:

	Yes	No	Abstain
Judge Emmett	☐	☐	☐
Comm. Lee	☐	☐	☐
Comm. Morman	☐	☐	☐
Comm. Radack	☐	☐	☐
Comm. Cagle	☐	☐	☐

Commissioners Court
Administration Building
Houston, Texas 77002

SUBJECT: Recommendation that Commissioners Court approve an Interlocal Agreement between Harris County and Montgomery County Toll Road Authority for the Toll Road Authority to provide tolling services on all segments of toll roads in Montgomery County, Texas

Dear Court Members:

It is recommended that Commissioners Court approve an Interlocal Agreement between Harris County and Montgomery County Toll Road Authority for the Toll Road Authority to provide tolling services on all segments of toll roads in Montgomery County, Texas, including customer service-related services, EZ TAG transponder supply, toll systems collections, back office systems services, and interoperability services.

The Toll Road Authority recommends that all appropriate officials be granted authority to take all necessary actions to execute this agreement. Attached are six (6) originals. Please return three (3) fully executed originals to the Toll Road Authority. This agreement has been reviewed and approved by the Harris County Attorney's Office.

Sincerely,

Gary K Trietsch

Gary K. Trietsch, P.E.
Executive Director

GKT:LC:pfh
Attachments

US- org Letter 1 org Agmt

cc: HCTRA Management
Nick Turner
Tisha Laws
Agenda File

TRA copy Letter 5 org Agmt

Rec'd 6 org Agmt

Aud- copy

Lance- copy

Presented to Commissioners' Court

MAR 3 1 2015

APPROVE C\L

Recorded Vol._____ Page_____

HARRIS COUNTY
BUDGET MANAGEMENT
DEPARTMENT
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#27
25A
3-24-15

INTERLOCAL AGREEMENT FOR TOLLING SERVICES

March 31, 2015

between

Montgomery County Toll Road Authority

and

Harris County

TOLLING SERVICES AGREEMENT

THIS TOLLING SERVICES AGREEMENT ("Agreement"), by and between the MONTGOMERY COUNTY TOLL ROAD AUTHORITY, a local government corporation organized under the laws of the State of Texas ("MCTRA") and HARRIS COUNTY, a body corporate and politic organized under the laws of the State of Texas, is executed to be effective the 31st day of March, 2015 ("Effective Date").

RECITALS:

A. MCTRA and Harris County (each a "Party," together "Parties") are entering into this Agreement pursuant to which Harris County will provide tolling services on all segments of toll roads in Montgomery County, Texas, which are opened to the traveling public after the date of this Agreement (collectively called "the Project").

B. Pursuant to Section 284.003 of the Texas Transportation Code, MCTRA is authorized to construct, acquire, improve, operate and maintain a toll project within and outside Montgomery County.

C. Pursuant to Section 284.003 of the Texas Transportation Code Harris County is authorized to operate and maintain a toll project located within and outside Harris County. Harris County shall operate the Project through the Harris County Toll Road Authority ("HCTRA"), a department of Harris County.

D. Pursuant to the Interlocal Cooperation Act (Tex. Gov't Code, Chapter 791), MCTRA and Harris County are authorized to contract with other governmental entities and political subdivisions.

E. Pursuant to Commissioners Court Order dated March 31, 2015, the Harris County Commissioners Court has approved this Agreement and authorized the Harris County Judge to execute and deliver this Agreement on behalf of Harris County.

F. Pursuant to Order dated March 24, 2015, the Montgomery County Toll Road Authority has approved this Agreement and authorized its Chairman to execute and deliver this Agreement on behalf of MCTRA.

NOW, THEREFORE, for and in consideration of the premises and the mutual covenants and agreements set forth in this Agreement, MCTRA and Harris County agree as follows:

AGREEMENT:

1. Definitions. Unless otherwise defined herein, terms with initial capital letters and abbreviations used in this Agreement have the definitions set forth in Exhibit A.

2. Engagement, Term and Termination.

a. MCTRA engages Harris County to provide tolling services on the Project and such tolling services in accordance with the provisions hereof. The term ("Term") of this Agreement begins on the Effective Date and ends on the third anniversary of the Effective Date. This Agreement will automatically renew annually for an additional two years from and after the end of the then-expiring Term, unless a Party provides a written notice of termination to the other Party at least 180 days before the end of the Term.

b. Either Party may terminate this Agreement, with or without cause, by providing written notice to the other Party not less than 180 days prior to the stated termination date. Harris County will continue to provide tolling services as provided in this Agreement occurring up to the termination date.

c. This Agreement may also be terminated upon agreement of the Parties.

3. Harris County Responsibilities.

a. Beginning on the Service Commencement Date, Harris County will provide all tolling services for the Project, including customer service, customer account maintenance (for EZ TAG customers), EZ TAG transponder supply, toll collection, bank clearinghouse, Back Office System, Toll Violation Invoices, and interoperability services. Harris County will also provide initial toll equipment installation at an estimated cost of $510,000 (including tag readers, network & fiber) and maintenance (costs to be reimbursed to Harris County as provided in section 6) for the State Highway 242 Facility. If it can do so through its existing maintenance contract for its own toll facilities, Harris County will also provide roadway equipment maintenance for all other portions of the Project. Harris County will not provide road maintenance, road repair, or roadway customer assistance services for the Project.

b. Harris County will not provide law enforcement services for toll violation enforcement for the Project.

c. Harris County will provide collection services for tolls, fees, fines, and costs associated with Toll Violations that occur on the Project, but will not pursue collection beyond referral of collection accounts to the outside collection firm hired by MCTRA. If MCTRA selects a firm different from the one hired by Harris County, MCTRA will be responsible for the cost of developing any necessary system changes that ensue. Harris County will not be involved in any administrative hearing process.

d. Harris County will supply tolling services on a non-discriminatory basis (i) in accordance with the requirements of this Agreement and Harris County's standard management practices, procedures, protocols and business rules with which it performs such services and functions for its own facilities, and (ii) at the same level of service Harris County provides customers on its own toll facilities.

e. Harris County will be a collecting agent acting on behalf of MCTRA with respect to all amounts owing or remitted by the applicable Users.

f. Harris County will apply partial payments utilizing the same standard management practices, procedures, protocols and business rules that it applies to accounts related to its own facilities.

g. Harris County will make any Adjustments consistent with its practices and business rules in respect of its own facilities and on a non-discriminatory basis. Harris County may specifically waive or reduce Administrative Fees and other charges (i) to settle valid customer disputes, (ii) encourage customers to obtain EZ TAG transponders and open transponder-based customer accounts in accordance with Harris County's own practices with respect to its own facilities; and (iii) provide for Non-Revenue Transactions on the Project consistent with Harris County's own non-revenue policies for its all-electronic toll facilities, except that Harris County vehicles shall not enjoy free passage on the Project. Harris County may otherwise waive tolls owed to MCTRA only when approved by MCTRA, or when the Transaction cannot be posted to the User's account or the toll violation system because of technological errors (*i.e.*, system malfunction, interface errors, etc.), power supply interruptions, or process failures.

h. At its sole discretion, Harris County may make emergency facility, equipment and infrastructure repairs or replacements when it deems necessary to protect the health, safety and/or welfare of the public or maintain tolling functionality. Where possible, Harris County will make reasonable efforts to notify MCTRA of the need to make repairs and coordinate such repairs. MCTRA will reimburse Harris County for actual costs associated with any such repairs within 60 days of receiving an invoice for same.

4. MCTRA Responsibilities.

a. To facilitate Harris County's performance of tolling services, MCTRA will be financially responsible for installation of all necessary roadway tolling equipment (including electrical power, tag readers, network & fiber) for the Project and ensure that such equipment is compatible and interoperable with Harris County's toll collection system. The toll collection system equipment will be 100% compatible with existing Harris County toll collection equipment in form, function and operation, and produce data, messages and use communication protocols that are 100% compatible with the existing Harris County collection system software.

b. MCTRA will make all non-emergency roadway repairs upon request from Harris County and will incur all costs associated with those repairs.

c. MCTRA will set the toll rates and toll classifications on the Project. MCTRA will provide the initial toll schedule to Harris County prior to opening a portion of the Project or any segment of the Project and will promptly notify Harris County in writing of any changes in the toll schedule. Harris County will implement such toll rate changes within 60 days of receipt of official notice from MCTRA.

d. MCTRA agrees to use electronic toll collection systems on the Project and Harris County will utilize toll collection payment methods on the Project that are consistent with the payment methods used on its own all-electronic toll facilities. If Harris County elects to change the toll collection payment methods utilized on its own all-electronic facilities, the same changes will also apply to the Project.

e. MCTRA will provide or arrange to provide, at its discretion, law enforcement services for Toll Violation and traffic enforcement for the Project.

5. Cooperative Efforts.

a. The Parties will make appropriate representatives available to help each other resolve issues arising in connection with their performance under this Agreement.

b. The Parties will provide each other with information for purposes of training each Party's customer service personnel to respond to customer inquiries concerning operation of the Project.

c. MCTRA will provide Harris County at least 180 days advance written notice of the Service Commencement Date of each new segment of the Project as it is completed and ready to be tolled. The Parties will cooperate with each other to conduct and complete, prior to the Service Commencement Date, all work necessary for interconnection and interoperability of the Electronic Toll Collection System with HCTRA's back office, including demonstration and performance testing of HCTRA's back office toll collection system.

d. The Parties will keep one another informed of any marketing activities and publicity specifically targeting the Project, and will cooperate to maximize EZ TAG transponder penetration in Montgomery County.

e. The Parties will cooperate on toll violation enforcement (law enforcement) efforts of the Project.

f. The Parties will seek cost effective ways to continuously improve tolling services.

6. Compensation for Services.

a. MCTRA will pay Harris County for the services Harris County has agreed to provide in Section 3 as follows:

(i) 8% of the toll amount for all Transactions (including EZ TAG transactions) originating on the Project (8% being the current interoperability rate);

(ii) Harris County's image review costs for all Video Transactions and Non-Complying Transactions at Harris County's cost; and

b. Harris County will receive and retain all Administrative Fees associated with Toll Violations on the Project.

c. Transactions received from the Project will be processed by Harris County through HCTRA's Back Office System. Harris County will separately account for all tolls and third-party collection fees collected on the Project and will remit those tolls and fees to MCTRA on a monthly basis on approved Harris County-audited monthly financials and net of Harris County's compensation.

d. MCTRA will reimburse Harris County for replacement parts and equipment upgrades for roadside tolling equipment.

e. MCTRA may request Harris County to provide other services, such as civil design; installation and connection; and software changes, including new functionality, additional parameters, and toll rate changes. If Harris County provides other requested services, MCTRA shall reimburse Harris County for such services, at Harris County's cost.

f. Unless MCTRA's bond financing requires otherwise, Harris County will deduct its compensation each month from the tolls to be remitted to MCTRA pursuant to this Section 6. Harris County will invoice MCTRA once a month for all other services rendered.

g. Harris County will not charge MCTRA for Transactions during testing periods or when tolling has been suspended by MCTRA.

7. <u>Confidential Information</u>. The Parties will maintain Customer Confidential Information as confidential information and in compliance with applicable privacy laws and consistent with their policies and practices regarding the confidential information of their customers. As a merchant accepting payment cards, Harris County is required to maintain compliance with the Payment Card Industry (PCI) Data Security Standard (DSS) for cardholder information within its systems. Harris County will not provide MCTRA with Customer Confidential Information in any reports; however, Harris County will provide MCTRA with names, addresses, e-mail addresses, telephone numbers, and account profiles of Users upon request by MCTRA.

8. <u>Records and Audit Rights</u>.

a. HCTRA will maintain, consistent with its practices regarding customers of its own facilities, accurate and complete books and records relating to Harris County's performance of this Agreement, including electronic data of or relating thereto and data and other information relevant to the fees that HCTRA charges to MCTRA and Users. HCTRA will make these books and records available during normal business hours for audit and inspection by MCTRA and and/or MCTRA's designees, at the location where such books and records are customarily maintained. HCTRA will provide to MCTRA and its designee copies of such records upon request and at MCTRA's expense. HCTRA will retain the books and records described in this Section 8 for a minimum of five years after the date the record or document is generated. Any records relating to claims and disputes between the Parties, or any known third party claim against Harris County or MCTRA, will be retained until such claims or disputes are finally resolved.

b. By the 15th day of each month Harris County shall provide to MCTRA a report of the Transactions for the previous month. The report shall (a) report the number of Transactions during the preceding month, and (b) categorize the Transactions as: Transponder Transactions, Video Transactions, Interoperable Transactions, or Non-Complying Transactions. Non-Complying Transactions shall be further categorized by the reasons for them being categorized as Non-Complying Transactions. Harris County will allow MCTRA access to the Back Office System for financial and transactional reports related to the Project. MCTRA may request reports containing additional information, but must reimburse Harris County for its design and programming costs.

9. Remedies. If either Party fails to observe or perform any covenant, agreement, term or condition required to be observed or performed by it under this Agreement and such failure continues for a period of 60 days after written notice is given by the other Party specifying said failure, the other Party will be entitled to seek an action in mandamus against that Party, or to exercise any and all other rights and remedies available to it under this Agreement, at law or in equity. The Parties will utilize the dispute resolution procedures in Section 10 before exercising the remedies in this section.

10. Dispute Resolution Procedures. Any disputes between the Parties concerning this Agreement that cannot be resolved at the staff level will be referred to HCTRA's Executive Director or his/her designee and MCTRA's Chairperson or his/her designee to resolve. If they do not resolve the dispute, the Parties agree to use the procedures in this Section 10. The Party making a claim may advance it in accordance with the statutes and administrative rules applicable on the Effective Date. The Parties agree to use any alternative dispute resolution procedure that is a part of the applicable claim procedure. The Parties will satisfy the requirement for alternative dispute resolution by participating in non-binding mediation, unless otherwise agreed to by the Parties.

11. Transition Upon Termination. Harris County will assist MCTRA and cooperate in providing a smooth transition of tolling services and transfer data from HCTRA to MCTRA upon the termination of this Agreement. Harris County and MCTRA will cooperate in development of a Transition Plan, which will include (i) transition of collection and customer service; and (ii) transfer of data identified in the Transition Plan from HCTRA to MCTRA. Harris County will continue to provide tolling services as provided in this Agreement until the date designated in the Transition Plan.

12. Successors and Assigns.

a. Neither MCTRA nor Harris County may assign, lease, sublet, or transfer its interest in this Agreement without the prior written consent of the other Party to this Agreement.

b. This Agreement will bind and be for the sole and exclusive benefit of the Parties and their legal successors, including without limitation any successor public agency or entity to either Party.

13. No Third Party Beneficiaries. Nothing in this Agreement or in any approval subsequently provided by either Party hereto shall be construed as conferring any benefits, rights, remedies, or claims to any Person not a party to this Agreement, including, without limitation, the public in general.

14. Severability. If any provision of this Agreement, or the application thereof to any Person or circumstance, is rendered or declared illegal for any reason and is invalid or unenforceable, the remainder of this Agreement and the application of such provision to other Persons or

circumstances will not be affected thereby but shall be enforced to the greatest extent permitted by applicable law.

15. Written Amendments. Any changes in the character, agreement, terms and/or responsibilities of the Parties must be enacted through a written amendment and executed by the Parties.

16. Notices. All notices to either Party by the other required under this Agreement must be delivered personally, sent by email followed by deposit in the U.S. Mail, or sent by certified or registered U.S. Mail, proper postage prepaid, addressed to such Party at the following respective addresses:

If to HARRIS COUNTY:

Harris County
1001 Preston, 9th Floor
Houston, Texas 77002
Attention: Harris County Judge

With a copy to:

Harris County Toll Road Authority
7701 Wilshire Place Dr.
Houston, Texas 77040
Attention: Executive Director

If to MCTRA:

Craig Doyal, Chairman
Montgomery County Toll Road Authority
501 North Thompson
Suite 401
Conroe, Texas 77301

With copy to:

Mark Mooney, P.E.
501 North Thompson
Suite 103
Conroe, Texas 77301

All personally delivered notices will be deemed given on the date so delivered. All notices mailed by certified or registered mail will be deemed given three days after being deposited in the U.S. mail. Either party hereto may change the above address by sending written notice of such change to the other in the manner provided for above.

17. Limitations. All covenants and obligations of the Parties under this Agreement will be deemed to be valid covenants and obligations of said entities, and no officer, director, or employee of MCTRA or Harris County will have any personal obligations or liability hereunder.

18. Relationship of the Parties. Nothing in this Agreement shall be deemed or construed by the Parties, or by any third party, as creating the relationship of principal and agent between the Parties, or any joint enterprise.

19. Exhibits. Exhibits referred to in this Agreement and attached hereto are incorporated herein in full by this reference as if each of such exhibits were set forth in the body of this Agreement and duly executed by the Parties.

20. Authorization. Each Party to this Agreement represents to the other that it is fully authorized to enter into this Agreement and to perform its obligations hereunder and that no waiver, consent, approval, or authorization from any third party is required to be obtained or made in connection with the execution, delivery, or performance of this Agreement in accordance with its terms, other than those that have been obtained.

21. Interpretation. No provision of this Agreement shall be construed against or interpreted to the disadvantage of any Party by any court or other governmental or judicial authority by reason of such Party having or being deemed to have drafted, prepared, structured, or dictated such provision. The use of the word "will" in this Agreement connotes a contractual right, covenant or obligation, as applicable. Wherever the word "including" is used, it is deemed to mean "including, without limitation,"

22. Captions. The captions used for the Sections in this Agreement are inserted only as a matter of convenience and for reference and in no way define, limit or describe the scope or the intent of this Agreement or any Section hereof.

23. Governing Law. The laws of the State of Texas shall govern this Agreement.

24. Counterparts. This Agreement may be executed in one or more counterparts, all of which together will be deemed an original.

IN WITNESS WHEREOF, the Parties have executed this Agreement by seven multiple counterparts on the dates shown below, effective on the Effective Date.

[SIGNATURE PAGE FOLLOWS]

APPROVED AS TO FORM:

VINCE RYAN
Harris County Attorney

By Nick Turner
NICK TURNER
Assistant Harris County Attorney

HARRIS COUNTY

By Ed Emmett sn
ED EMMETT
County Judge

Date: MAR 3 1 2015

MONTGOMERY COUNTY TOLL ROAD AUTHORITY

By: Craig Doyal
CRAIG DOYAL
Chairman

Date: 3-24-15

EXHIBIT A

DEFINITIONS

As used in the foregoing agreement, the following terms have the respective meanings indicated:

"Adjustments" means the following adjustments, made in accordance with HCTRA's standard business practices: (i) adjustments for duplicate toll payments and Non-Complying Transactions, (ii) adjustments for payment of interoperability fees, (iii) adjustments for settling or otherwise resolving User disputes respecting Transactions from the Project, (iv) adjustments for waivers, (v) adjustments for refunds to accounts or Video Transaction Users due to inaccurate toll charges on the applicable Project, (vi) adjustments for tolls previously credited to MCTRA that are paid with bad checks or via a charged back credit or debit card transaction, (vii) adjustments for inaccurate Transactions transmitted from MCTRA to HCTRA, (viii) adjustments to tolls and fees, as applicable, whenever a Transaction is reclassified, (ix) credits to MCTRA for prior overcharges to MCTRA for the same Transaction, (x) credits to MCTRA for duplicate Base Transaction Fees charged to MCTRA for the same Transaction, (xi) adjustments for Non-Revenue Transactions; and (xii) any other adjustments that MCTRA and HCTRA may mutually approve in writing.

"Administrative Fees" means any fees, fines, court costs, administrative costs collected from Users associated with collection of tolls in the Toll Violation Invoice process. These fees are in addition to the toll amounts and are meant to compensate Harris County for the costs incurred in collecting tolls from Users receiving a Toll Violation Invoice. MCTRA shall adopt fees equal to those charged by Harris County, which are currently as follows: (i) invoiced administrative costs - $10/violation; (ii) court costs - $60/hearing; and (iii) fines - $1 to $500 as determined by the hearing officer.

"Back Office System" (BOS) means the system used by HCTRA to receive, collect, process, analyze, and store all tolls and toll transactions to include a Customer Service Center, a Violation Enforcement Center, IOP Peer, and a Host.

"Customer Confidential Information" means the toll account and travel records of Users, including all personal information such as names, addresses, Social Security numbers, e-mail addresses, telephone numbers, financial profiles, credit card information and driver's license information.

"ETCS" means the electronic toll collection system, including its components, systems and subsystems, the hardware and physical infrastructure, and the software.

"Interface Control Document" or ICD" means the document setting forth interface standards for HCTRA's back office and the ETCS, including the manner in which data must be transmitted and received between HCTRA's back office and the ETCS, as such document may be revised or updated by HCTRA or MCTRA from time to time with prior written consent of the other Party (which consent will not be unreasonably withheld or delayed).

"Interoperable Transaction" means Transponder Transactions involving Toll Operators other than HCTRA.

"Non-Complying Transaction" means a toll transaction that is submitted to HCTRA's back office but that HCTRA returns to MCTRA rather than processes for payment because MCTRA does not submit all of the information required by the Business Rules or ICD.

"Non-Revenue Transaction" means a transaction for which no toll is required. These include, but are not limited to, transactions involving authorized emergency vehicles, military vehicles, and vehicles qualifying for free passage under Tex. Transp. Code, § 372.053. MCTRA will adopt a non-revenue policy that is consistent with Harris County's non-revenue policy, except that Harris County vehicles will not have free passage on the Project.

"Project" has the meaning set forth in the Recitals.

"Readable Video Image" means an image produced by MCTRA's ETCS and transmitted to HCTRA's back office in which both plate number and issuing jurisdiction can be reliably read electronically or by the human eye.

"Roadside Toll Collection System" or "ETCS" means the electronic toll collection system, including its components, systems and subsystems, the hardware and physical infrastructure, and the software.

"Service Commencement Date" means (i) the Effective Date of this Agreement with respect to all lanes that are open for normal and continuous operations and use by the traveling public on that date, and (ii) the date upon which additional lanes of the Project or segments of the Project are opened by MCTRA for normal and continuous operations and use by the traveling public.

"State Highway 242 Facility" means the two (2) tolled overpasses located on State Highway 242 that crosses Interstate Highway 45 in Montgomery County, Texas.

"Tag Validation List" means the consolidation of the Transponder Issuers' master tag validation lists and updates of all known transponders and their current known status that is created by HCTRA and electronically distributed by HCTRA to MCTRA and/or its integrator.

"Toll Operator" means any Person, who or which (a) manages and operates a tolled roadway in the State of Texas, and (b) participates with HCTRA in interoperability protocols, agreements and arrangement.

"Toll Violation" means a failure or refusal to pay the toll imposed by MCTRA for operation of a vehicle on the Project.

"Toll Violation Invoice" means a notice prepared and sent by Harris County to collect tolls and fees associated with violations.

"Transaction or Transactions" means a Transponder Transaction, Video Transaction, and Non-Complying Transaction.

"Transition Plan" means a plan jointly developed by Harris County and MCTRA which describes in detail how upon the termination of this agreement tolling services will be transitioned from Harris County to MCTRA without the loss of data or interruption in the collection of tolls.

"Transponder Issuer" means any Person, who or which (a) issues transponders for mounting in vehicles and transacting Transponder Transactions on any tolled roadway in the State of Texas and (b) participates with HCTRA in interoperability protocols, agreements and arrangement.

"Transponder Transaction" means each electronic record of a toll, which may include video images and video data that together constitute one toll payable from a customer, that are properly transmitted to HCTRA's back office in accordance with the ICD respecting a vehicle that (a) passes through a toll lane on a Project, (b) is equipped with a transponder issued by a Transponder Issuer, and (c) has a sufficient account balance at the time of posting or re-posting to pay in full the applicable toll rate.

"User(s)" means the registered owner of a vehicle traveling on the Project.

"Video Transaction" means an electronic record of a toll and set of contemporaneous video images of license plates and other video data (as required by the ICD) that are properly transmitted to HCTRA's back office in accordance with the ICD respecting (a) a vehicle that passes through a toll lane on the Project and is not equipped with a working transponder issued by a Transponder Issuer but for which MCTRA transmits to HCTRA's back office (i) a Readable Video Image of a license plate that bears a serialized or personalized plate number and means to identify the issuing jurisdiction; and (ii) video data as required by the ICD; or (b) a vehicle that passes through a toll lane on a Project and is equipped with a transponder that is (i) issued by a Transponder Issuer and (ii) associated with an account not closed at the time of transmission but having an insufficient account balance at the times of debit and re-debits to pay in full the applicable Transponder Transaction toll rate.

ORDER OF COMMISSIONERS COURT
Authorizing Interlocal Agreement With The Montgomery County Toll Road Authority

The Commissioners Court of Harris County, Texas, met in regular session at its regular term at the Harris County Administration Building in the City of Houston, Texas, on MAR 3 1 2015, with all members present except none.

A quorum was present. Among other business, the following was transacted:

ORDER AUTHORIZING INTERLOCAL AGREEMENT WITH THE MONTGOMERY COUNTY TOLL ROAD AUTHORITY FOR HARRIS COUNTY TO PROVIDE TOLLING SERVICES FOR TOLL ROADS IN MONTGOMERY COUNTY, TEXAS

Commissioner Cagle introduced an order and moved that Commissioners Court adopt the order. Commissioner Lee seconded the motion for adoption of the order. The motion, carrying with it the adoption of the order, prevailed by the following vote:

	Yes	No	Abstain
Judge Ed Emmett	☑	☐	☐
Comm. El Franco Lee	☑	☐	☐
Comm. Jack Morman	☑	☐	☐
Comm. Steve Radack	☑	☐	☐
Comm. R. Jack Cagle	☑	☐	☐

The County Judge thereupon announced that the motion had duly and lawfully carried and that the order had been duly and lawfully adopted. The order adopted follows:

IT IS ORDERED that:

1. The Harris County Judge is authorized to execute on behalf of Harris County an Interlocal Agreement for Tolling Services with the Montgomery County Toll Road Authority ("MCTRA") for Harris County to operate toll roads in Montgomery County for MCTRA. The Agreement is incorporated by reference and made a part of this order for all intents and purposes as though set out in full word for word.

2. All Harris County officials and employees are authorized to do any and all things necessary or convenient to accomplish the purposes of this order.

Presented to Commissioner's Court

MAR 3 1 2015

APPROVE C\L

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FIRST AMENDMENT TO INTERLOCAL AGREEMENT BETWEEN MONTGOMERY COUNTY TOLL ROAD AUTHORITY AND HARRIS COUNTY

THIS AMENDMENT (referred to herein as this "Amendment") is entered into by and between the MONTGOMERY COUNTY TOLL ROAD AUTHORITY, a local government corporation organized under the laws of the State of Texas ("MCTRA") and HARRIS COUNTY, a body corporate and politic organized under the laws of the State of Texas (the "County"). This Amendment becomes effective when fully executed by both parties.

RECITALS:

A. Effective March 31, 2015, MCTRA and Harris County entered into an Interlocal Agreement (the "Agreement") for Harris County to provide tolling services on all segments of toll roads in Montgomery County, Texas which are opened to the traveling public after the date of the Agreement (collectively called "the Project").

B. The Parties wish to amend the Agreement to address toll equipment and installation costs associated with the Tomball Toll Facility, to match Harris County's compensation for services with the interoperability rates Harris County charges to other toll authorities in the state, and to modify the division of Administrative Fees to more accurately correspond to the parties' costs.

In consideration of the mutual covenants and agreements contained herein, MCTRA and Harris County mutually agree as follows:

I.

Section 3.a. of the Agreement titled "Harris County Responsibilities" is hereby amended to read as follows:

> a. Beginning on the Service Commencement Date, Harris County will provide all tolling services for the Project, including customer service, customer account maintenance (for EZ TAG customers), EZ TAG transponder supply, toll collection, bank clearinghouse, Back Office System, Toll Violation Invoices, and interoperability services. Harris County will also provide initial toll equipment installation at an estimated cost of $510,000 (including tag readers, network, and fiber) for the State Highway 242 Facility and provide initial toll equipment installation at an estimated cost of $2,300,000 (including tag readers and network) for the Tomball Tollway Facility. Harris County will also provide toll equipment maintenance (costs to be reimbursed to Harris County as provided in section 6) for the Project. If it can do so through its existing maintenance contract for its own toll facilities, Harris County will provide toll equipment maintenance for all portions of the Project. Harris County will not provide road maintenance, road repair, or roadway customer assistance services for the Project.

II.

Section 5 of the Agreement titled "Cooperative Efforts" is hereby amended to add the following:

g. The Parties will coordinate on all planned segments of the Project to, among other things, efficiently allocate resources, review plans, and procure needed equipment.

III.

Section 6.a.(i) of the Agreement titled "Compensation and Services" is hereby amended to read as follows:

(i) An amount equal to the Transaction Fees for all Transactions (including EZ TAG Transactions) originating on the Project;

IV.

Section 6.b. of the Agreement titled "Compensation and Services" is hereby amended to read as follows:

b. Harris County will receive and retain 100% of the Administrative Fee collected for Toll Violations on the Project. Harris County will remit to MCTRA 0% of the Administrative Fee collected for Toll Violations on the Project. MCTRA will receive all Hearing Fees and Fines collected for Toll Violations on the Project. MCTRA shall adopt an Administrative Fee and Hearing Fee equal to those charged by Harris County on Harris County's toll facilities.

V.

Exhibit A ("Definitions") attached to the Agreement is amended to revise the definition for "Administration Fees," which shall read as follows:

"<u>Administrative Fees</u>" means the fees authorized by Texas Transportation Code, § 284.0701(b) which are currently set at $10.00/toll violation and which are imposed to recover the expense of collecting unpaid tolls. The amount of this fee and/or the allocation of this fee between the Parties may be adjusted from time to time to reflect Harris County and MCTRA's actual costs of collection. Harris County shall have the right to periodically conduct an audit of MCTRA's collection costs in order to re-evaluate the amount of the Administrative Fee and/or to correctly allocate the Administrative Fee between the Parties.

VI.

Exhibit A ("Definitions") attached to the Agreement is amended to add the following definitions:

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"Court Costs" means fees charged to offset the cost of the administrative hearing procedure authorized by Texas Transportation Code, § 284.204 (currently set at $60.00/hearing).

"Fines" means the fines imposed at the discretion of administrative hearing officers under the authority of Texas Transportation Code, § 284.208 or § 284.209.

"Tomball Tollway Facility" means a Mainlane Toll Plaza which includes 4+0 ORT lanes in both directions, an Entrance Toll Ramp Plaza with 2+0 ORT lanes, and an Exit Toll Ramp Plaza with 2+0 ORT lanes located along the Tomball Tollway from Spring Creek to approximately 2,538 feet north of Woodtrace Boulevard in Montgomery County, Texas.

"Transaction Fees" means the charges (as modified or established from time to time) set forth in the "Agreement Regarding Interoperability of Toll Systems and Transponders" pertaining to the Central US Interoperability Hub.

VII.

All other terms and provisions of the Agreement shall remain in full force and effect as originally written.

APPROVED AS TO FORM:

VINCE RYAN
Harris County Attorney

By: ____________________________
NICK TURNER
Assistant County Attorney

HARRIS COUNTY

By: ____________________________
ED EMMETT
County Judge

DATE: __________________________

MONTGOMERY COUNTY TOLL ROAD AUTHORITY

By: ____________________________
CRAIG DOYAL
Chairman

DATE: __________________________

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APPENDIX B – TOLL OPERATIONS AND MAINTENANCE COSTS

ESTIMATED TOLL OPERATIONS AND MAINTENANCE COSTS*

Year	Annual Transactions (in '000's)*	Annual Revenue (in '000's)*	Annual Toll Operation & Toll Maintenance Costs (8%) (in '000's)*
2020	2616	$2,937	$235
2021	5216	$6,139	$491
2022	6545	$7,964	$637
2023	7990	$10,010	$801
2024	9017	$11,601	$928
2025	9711	$12,820	$1,026
2026	10441	$14,182	$1,135
2027	11183	$15,629	$1,250
2028	11925	$17,128	$1,370
2029	12668	$18,681	$1,494
2030	13410	$20,289	$1,623
2031	14153	$21,954	$1,756
2032	14895	$23,678	$1,894
2033	15637	$25,461	$2,037
2034	16380	$27,307	$2,185
2035	17624	$29,835	$2,387
2036	18713	$32,414	$2,593
2037	19691	$34,997	$2,800
2038	20669	$37,669	$3,014
2039	21646	$40,435	$3,235
2040	22624	$43,296	$3,464
2041	23214	$45,360	$3,629
2042	23678	$47,192	$3,775
2043	24151	$49,099	$3,928
2044	24634	$51,082	$4,087
2045	25127	$53,146	$4,252
2046	25535	$55,090	$4,407
2047	25918	$57,035	$4,563
2048	26307	$59,048	$4,724
2049	26702	$61,132	$4,891
2050	27102	$63,290	$5,063

* Table 1 - CDM Smith Letter to Judge Doyal, May 21, 2018

APPENDIX C – ROADWAY ROUTINE MAINTENANCE COSTS

SH 249 MAINTENANCE COST SUMMARY														
YEAR	ROUTINE MAINTENANCE												Montgomery County Administrative Support	FISCAL YEAR TOTAL
	Litter Pickup/Disposal	Debris Removal (2 crew - 4 people)	Mowing	Roadway Sweeping/High-Pressure Cleaning	Drainage Maintenance	Lighting Maintenance	Herbicide	Pressure Washing/Painting Crew (1 crew - 2 people)	Facility Maintenance	Replace Crash Cushion Attenuators	Barrier Maintenance	Detention Pond Maintenance		
2020	$ 5,170.43	$ 17,225.90	$ 12,402.65	$ 29,973.07	$ 9,043.60	$ 16,795.25	$ 34,882.45	$ 7,536.33	$ 43,064.75	$ 27,389.18	$ 36,174.39	$ 21,704.64	$ 50,000.00	**$ 311,400.00**
2021	$ 9,307.31	$ 31,024.35	$ 22,337.53	$ 53,982.37	$ 16,287.78	$ 30,248.74	$ 62,824.31	$ 13,573.15	$ 77,560.88	$ 49,328.72	$ 65,151.14	$ 39,090.68	$ 51,500.00	**$ 522,300.00**
2022	$ 9,772.67	$ 32,575.57	$ 23,454.41	$ 56,681.49	$ 17,102.17	$ 31,761.18	$ 65,965.52	$ 14,251.81	$ 81,438.92	$ 51,795.15	$ 68,408.69	$ 41,045.22	$ 53,045.00	**$ 547,300.00**
2023	$ 10,261.30	$ 34,204.35	$ 24,627.13	$ 59,515.56	$ 17,957.28	$ 33,349.24	$ 69,263.80	$ 14,964.40	$ 85,510.86	$ 54,384.91	$ 71,829.13	$ 43,097.48	$ 54,636.35	**$ 573,700.00**
2024	$ 10,774.37	$ 35,914.56	$ 25,858.49	$ 62,491.34	$ 18,855.15	$ 35,016.70	$ 72,726.99	$ 15,712.62	$ 89,786.41	$ 57,104.16	$ 75,420.58	$ 45,252.35	$ 56,275.44	**$ 601,200.00**
2025	$ 11,313.09	$ 37,710.29	$ 27,151.41	$ 65,615.91	$ 19,797.90	$ 36,767.53	$ 76,363.34	$ 16,498.25	$ 94,275.73	$ 59,959.36	$ 79,191.61	$ 47,514.97	$ 57,963.70	**$ 630,200.00**
2026	$ 11,878.74	$ 39,595.81	$ 28,508.98	$ 68,896.70	$ 20,787.80	$ 38,605.91	$ 80,181.51	$ 17,323.17	$ 98,989.51	$ 62,957.33	$ 83,151.19	$ 49,890.72	$ 59,702.61	**$ 660,500.00**
2027	$ 12,472.68	$ 41,575.60	$ 29,934.43	$ 72,341.54	$ 21,827.19	$ 40,536.21	$ 84,190.58	$ 18,189.32	$ 103,938.99	$ 66,105.20	$ 87,308.75	$ 52,385.25	$ 61,493.69	**$ 692,300.00**
2028	$ 13,096.31	$ 43,654.38	$ 31,431.15	$ 75,958.61	$ 22,918.55	$ 42,563.02	$ 88,400.11	$ 19,098.79	$ 109,135.94	$ 69,410.46	$ 91,674.19	$ 55,004.51	$ 63,338.50	**$ 725,700.00**
2029	$ 13,751.13	$ 45,837.09	$ 33,002.71	$ 79,756.54	$ 24,064.47	$ 44,691.17	$ 92,820.12	$ 20,053.73	$ 114,592.74	$ 72,880.98	$ 96,257.90	$ 57,754.74	$ 65,238.66	**$ 760,800.00**
2030	$ 14,438.68	$ 48,128.95	$ 34,652.84	$ 83,744.37	$ 25,267.70	$ 46,925.73	$ 97,461.12	$ 21,056.42	$ 120,322.37	$ 76,525.03	$ 101,070.79	$ 60,642.48	$ 67,195.82	**$ 797,500.00**
2031	$ 15,160.62	$ 50,535.40	$ 36,385.49	$ 87,931.59	$ 26,531.08	$ 49,272.01	$ 102,334.18	$ 22,109.24	$ 126,338.49	$ 80,351.28	$ 106,124.33	$ 63,674.60	$ 69,211.69	**$ 836,000.00**
2032	$ 15,918.65	$ 53,062.17	$ 38,204.76	$ 92,328.17	$ 27,857.64	$ 51,735.61	$ 107,450.89	$ 23,214.70	$ 132,655.42	$ 84,368.85	$ 111,430.55	$ 66,858.33	$ 71,288.04	**$ 876,400.00**
2033	$ 16,714.58	$ 55,715.28	$ 40,115.00	$ 96,944.58	$ 29,250.52	$ 54,322.39	$ 112,823.43	$ 24,375.43	$ 139,288.19	$ 88,587.29	$ 117,002.08	$ 70,201.25	$ 73,426.69	**$ 918,800.00**
2034	$ 17,550.31	$ 58,501.04	$ 42,120.75	$ 101,791.81	$ 30,713.05	$ 57,038.51	$ 118,464.60	$ 25,594.20	$ 146,252.60	$ 93,016.65	$ 122,852.18	$ 73,711.31	$ 75,629.49	**$ 963,300.00**
2035	$ 18,427.83	$ 61,426.09	$ 44,226.79	$ 106,881.40	$ 32,248.70	$ 59,890.44	$ 124,387.83	$ 26,873.91	$ 153,565.23	$ 97,667.48	$ 128,994.79	$ 77,396.87	$ 77,898.37	**$ 1,009,900.00**
2036	$ 19,349.22	$ 64,497.40	$ 46,438.12	$ 112,225.47	$ 33,861.13	$ 62,884.96	$ 130,607.23	$ 28,217.61	$ 161,243.49	$ 102,550.86	$ 135,444.53	$ 81,266.72	$ 80,235.32	**$ 1,058,900.00**
2037	$ 20,316.68	$ 67,722.27	$ 48,760.03	$ 117,836.74	$ 35,554.19	$ 66,029.21	$ 137,137.59	$ 29,628.49	$ 169,305.66	$ 107,678.40	$ 142,216.76	$ 85,330.05	$ 82,642.38	**$ 1,110,200.00**
2038	$ 21,332.51	$ 71,108.38	$ 51,198.03	$ 123,728.58	$ 37,331.90	$ 69,330.67	$ 143,994.47	$ 31,109.92	$ 177,770.95	$ 113,062.32	$ 149,327.59	$ 89,596.56	$ 85,121.65	**$ 1,164,100.00**
2039	$ 22,399.14	$ 74,663.80	$ 53,757.93	$ 129,915.01	$ 39,198.49	$ 72,797.20	$ 151,194.19	$ 32,665.41	$ 186,659.49	$ 118,715.44	$ 156,793.97	$ 94,076.38	$ 87,675.30	**$ 1,220,600.00**
2040	$ 23,519.10	$ 78,396.99	$ 56,445.83	$ 136,410.76	$ 41,158.42	$ 76,437.06	$ 158,753.90	$ 34,298.68	$ 195,992.47	$ 124,651.21	$ 164,633.67	$ 98,780.20	$ 90,305.56	**$ 1,279,800.00**
2041	$ 24,695.05	$ 82,316.84	$ 59,268.12	$ 143,231.30	$ 43,216.34	$ 80,258.92	$ 166,691.59	$ 36,013.62	$ 205,792.09	$ 130,883.77	$ 172,865.36	$ 103,719.21	$ 93,014.73	**$ 1,342,000.00**
2042	$ 25,929.80	$ 86,432.68	$ 62,231.53	$ 150,392.86	$ 45,377.16	$ 84,271.86	$ 175,026.17	$ 37,814.30	$ 216,081.70	$ 137,427.96	$ 181,508.62	$ 108,905.17	$ 95,805.17	**$ 1,407,300.00**
2043	$ 27,226.29	$ 90,754.31	$ 65,343.10	$ 157,912.50	$ 47,646.01	$ 88,485.45	$ 183,777.48	$ 39,705.01	$ 226,885.78	$ 144,299.36	$ 190,584.06	$ 114,350.43	$ 98,679.33	**$ 1,475,700.00**
2044	$ 28,587.61	$ 95,292.03	$ 68,610.26	$ 165,808.13	$ 50,028.31	$ 92,909.73	$ 192,966.36	$ 41,690.26	$ 238,230.07	$ 151,514.32	$ 200,113.26	$ 120,067.96	$ 101,639.71	**$ 1,547,500.00**
2045	$ 30,016.99	$ 100,056.63	$ 72,040.77	$ 174,098.54	$ 52,529.73	$ 97,555.21	$ 202,614.67	$ 43,774.78	$ 250,141.57	$ 159,090.04	$ 210,118.92	$ 126,071.35	$ 104,688.90	**$ 1,622,800.00**
2046	$ 31,517.84	$ 105,059.46	$ 75,642.81	$ 182,803.46	$ 55,156.22	$ 102,432.97	$ 212,745.41	$ 45,963.51	$ 262,648.65	$ 167,044.54	$ 220,624.87	$ 132,374.92	$ 107,829.56	**$ 1,701,900.00**
2047	$ 33,093.73	$ 110,312.43	$ 79,424.95	$ 191,943.64	$ 57,914.03	$ 107,554.62	$ 223,382.68	$ 48,261.69	$ 275,781.08	$ 175,396.77	$ 231,656.11	$ 138,993.67	$ 111,064.45	**$ 1,784,800.00**
2048	$ 34,748.42	$ 115,828.06	$ 83,396.20	$ 201,540.82	$ 60,809.73	$ 112,932.35	$ 234,551.81	$ 50,674.77	$ 289,570.14	$ 184,166.61	$ 243,238.92	$ 145,943.35	$ 114,396.38	**$ 1,871,800.00**
2049	$ 36,485.84	$ 121,619.46	$ 87,566.01	$ 211,617.86	$ 63,850.22	$ 118,578.97	$ 246,279.40	$ 53,208.51	$ 304,048.65	$ 193,374.94	$ 255,400.86	$ 153,240.52	$ 117,828.28	**$ 1,963,100.00**
2050	$ 38,310.13	$ 127,700.43	$ 91,944.31	$ 222,198.75	$ 67,042.73	$ 124,507.92	$ 258,593.37	$ 55,868.94	$ 319,251.08	$ 203,043.69	$ 268,170.91	$ 160,902.54	$ 121,363.12	**$ 2,058,900.00**
													TOTAL	**$ 34,036,700.00**

APPENDIX D – ROADWAY HEAVY MAINTENANCE COSTS

SH 249 MAINTENANCE COST SUMMARY					
YEAR	HEAVY MAINTENANCE				FISCAL YEAR TOTAL
	Replace Pavement Markings	Replace Signing	Bridge Maintenance	Tolling Maintenance	
2020	$ 23,254.97	$ 7,751.66	$ 12,402.65	-	**$ 43,500.00**
2021	$ 41,882.87	$ 13,960.96	$ 22,337.53	-	**$ 78,200.00**
2022	$ 43,977.02	$ 14,659.01	$ 23,454.41	-	**$ 82,100.00**
2023	$ 46,175.87	$ 15,391.96	$ 24,627.13	-	**$ 86,200.00**
2024	$ 48,484.66	$ 16,161.55	$ 25,858.49	-	**$ 90,600.00**
2025	$ 730,285.12	$ 54,876.92	$ 1,609,160.04	$ 527,662.66	**$ 2,922,000.00**
2026	$ 53,454.34	$ 17,818.11	$ 28,508.98	-	**$ 99,800.00**
2027	$ 56,127.05	$ 18,709.02	$ 29,934.43	-	**$ 104,800.00**
2028	$ 58,933.41	$ 19,644.47	$ 31,431.15	-	**$ 110,100.00**
2029	$ 61,880.08	$ 20,626.69	$ 33,002.71	-	**$ 115,600.00**
2030	$ 932,049.43	$ 70,038.40	$ 2,053,741.29	$ 2,020,338.37	**$ 5,076,200.00**
2031	$ 68,222.79	$ 22,740.93	$ 36,385.49	-	**$ 127,400.00**
2032	$ 71,633.93	$ 23,877.98	$ 38,204.76	-	**$ 133,800.00**
2033	$ 75,215.62	$ 25,071.87	$ 40,115.00	-	**$ 140,500.00**
2034	$ 78,976.40	$ 26,325.47	$ 42,120.75	-	**$ 147,500.00**
2035	$ 1,189,557.51	$ 89,388.71	$ 2,621,152.15	$ 859,506.87	**$ 4,759,700.00**
2036	$ 87,071.48	$ 29,023.83	$ 46,438.12	-	**$ 162,600.00**
2037	$ 91,425.06	$ 30,475.02	$ 48,760.03	-	**$ 170,700.00**
2038	$ 95,996.31	$ 31,998.77	$ 51,198.03	-	**$ 179,200.00**
2039	$ 100,796.13	$ 33,598.71	$ 53,757.93	-	**$ 188,200.00**
2040	$ 1,518,210.31	$ 114,085.17	$ 3,345,328.16	$ 3,290,918.31	**$ 8,268,600.00**
2041	$ 111,127.73	$ 37,042.58	$ 59,268.12	-	**$ 207,500.00**
2042	$ 116,684.12	$ 38,894.71	$ 62,231.53	-	**$ 217,900.00**
2043	$ 122,518.32	$ 40,839.44	$ 65,343.10	-	**$ 228,800.00**
2044	$ 128,644.24	$ 42,881.41	$ 68,610.26	-	**$ 240,200.00**
2045	$ 1,937,663.83	$ 145,604.80	$ 4,269,580.65	$ 1,400,046.12	**$ 7,752,900.00**
2046	$ 141,830.27	$ 47,276.76	$ 75,642.81	-	**$ 264,800.00**
2047	$ 148,921.79	$ 49,640.60	$ 79,424.95	-	**$ 278,000.00**
2048	$ 156,367.88	$ 52,122.63	$ 83,396.20	-	**$ 291,900.00**
2049	$ 164,186.27	$ 54,728.76	$ 87,566.01	-	**$ 306,500.00**
2050	$ 2,473,004.62	$ 185,832.72	$ 5,449,187.06	$ 5,360,559.15	**$ 13,468,600.00**
				TOTAL	**$ 46,344,400.00**

APPENDIX E – LIST OF ROUTINE MAINTENANCE ACTIVITIES

LIST OF ROUTINE MAINTENANCE ACTIVITIES

DESCRIPTION	% of Maintenance
Litter Pickup/Disposal	0.80%
Debris Removal (2 crew - 4 people)	2.68%
Mowing	1.93%
Roadway Sweeping/High-Pressure Cleaning	4.66%
Drainage Maintenance	1.41%
Lighting Maintenance	2.61%
Herbicide	5.42%
Pressure Washing/Painting Crew (1 crew - 2 people)	1.17%
Facility Maintenance	6.69%
Replace Crash Cushion Attenuators	4.26%
Barrier Maintenance	5.62%
Detention Pond Maintenance	3.37%
Replace Pavement Markings	14.07%
Replace Signing	1.79%
Bridge Maintenance	26.28%
Tolling Maintenance	17.23%

Routine Maintenance to be provided by Montgomery County Precinct 2 Road Crews. Montgomery County to provide administrative support. Heavy Maintenance may be provided by bidding specific projects.

WORK ACTIVITY DEFINITIONS:

Litter Pickup/Disposal: Remove and dispose of litter, including objects not part of the highway facility, such as trash, garbage, scrap metal, paper, wood, plastic, glass products, animal remains, rubber products, tires, auto parts, furniture, mattresses, household appliances, and large bulky items.

Debris Removal: Remove and dispose of debris discarded or deposited on or adjacent to the pavement. Debris includes all objects not part of the highway facility, such as dead animals, tires, tire fragments, wood, furniture, mattresses, household appliances, and scrap metal.

Mowing: Mow roadside vegetation, including the Spring Creek, Woodtrace and Foxwood Detention Ponds.

Roadway Sweeping/High-Pressure Cleaning: Completely remove debris from pavement surfaces and other areas designated on the plans, such as all sides of raised pavement markers, barrier drain slots, slotted drains, inlet openings, attenuators, and guardrails. Debris is defined as dirt and other objects not part of the highway facility including dead animals, tires, tire fragments, wood, furniture, mattresses, household appliances, and scrap metal. Collect the debris and dispose of it off the right of way in accordance with federal, state, and local regulations. Ensure debris is not swept or blown onto traffic lanes.

Drainage Maintenance: includes, but is not limited to, inlet and manhole maintenance, flume maintenance, riprap maintenance, lateral maintenance, and channel maintenance.

Lighting Maintenance: Replace high mast LED lights and underpass lights.

Herbicide: Apply herbicide to control undesirable vegetation within the highway right of way.

Facility Maintenance: Includes having a Skilled HVAC technician and Licensed Electrician on call 24/7 for various facility repairs needed at toll buildings.

Replace Crash Cushion Attenuators: Repair or replace damaged attenuators or crash cushions.

Replace Pavement Markings: Contractor to furnish all pavement markings and delineators to be replaced or restriped. Traffic control to be provided by the contractor.

Replace Signing: Contractor to supply all materials to replace damaged signing. All signing to be evaluated every 5th year and replaced as deemed necessary by the County.

Detention Pond Maintenance: Maintenance includes riprap, flume, box culvert, lateral, inlet, manhole, headwall, supplemental end treatment, fencing, and gate maintenance. Contractor to supply and materials and equipment necessary for maintenance.

Barrier Maintenance: Barrier maintenance includes realigning barrier and replacing it. All work relating to realignment and replacement of barrier to be approved by Montgomery County Engineer prior.

Bridge Maintenance: Routine bridge Maintenance includes cleaning of scuppers, bridge drains, blowing out and resealing joints, and visual inspection of bridge slab deck, railing, and underside. Heavy maintenance shall occur every 5 years and should be a total inspection of all bridges including replacement as deemed necessary by the Engineer. Traffic control to be included as required.

Tolling Maintenance: Tolling equipment upgrades are handled by a third-party and costs will be invoiced to MCTRA.

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APPENDIX D

FORM OF CO-BOND COUNSEL'S OPINION

ORRICK, HERRINGTON & SUTCLIFFE LLP	**THE MULLER LAW GROUP, PLLC**
609 Main Street, 40th Floor	**202 Century Square Boulevard**
Houston, Texas 77002	**Sugar Land, Texas 77478**

_______________ , 2018

We have acted as bond counsel to the Montgomery County Toll Road Authority (the "Authority") in connection with issuance of $ _________ aggregate principal amount of Montgomery County Toll Road Authority Senior Lien Toll Road Revenue Bonds, Series 2018 (the "Bonds"), issued pursuant to the resolution adopted by the Authority (the "Resolution"), a Master Trust Indenture, dated as of June 1, 2018, and the First Supplemental Trust Indenture dated as of June 1, 2018 (together, the "Indenture") between the Authority and Regions Bank, in its capacity as Trustee. Capitalized terms not otherwise defined herein shall have the meanings ascribed thereto in the Indenture.

In such connection, we have reviewed the Resolution, the Indenture, the Tax Certificate and Agreement, dated the date hereof (the "Tax Certificate"), certificates of the Authority, and such other documents, opinions and matters to the extent we deemed necessary to render the opinions set forth herein.

The opinions expressed herein are based on an analysis of existing laws, regulations, rulings and court decisions and cover certain matters not directly addressed by such authorities. Such opinions may be affected by actions taken or omitted or events occurring after the date hereof. We have not undertaken to determine, or to inform any person, whether any such actions are taken or omitted or events do occur or any other matters come to our attention after the date hereof. Accordingly, this letter speaks only as of its date and is not intended to, and may not, be relied upon or otherwise used in connection with any such actions, events or matters. We have assumed the genuineness of all documents and signatures presented to us (whether as originals or as copies) and the due and legal execution and delivery thereof by, and validity against, any parties other than the Authority. We have assumed, without undertaking to verify, the accuracy of the factual matters represented, warranted or certified in the documents and of the legal conclusions contained in the opinions, referred to in the second and third paragraphs hereof. Furthermore, we have assumed compliance with all covenants and agreements contained in the Resolution, Indenture, and the Tax Certificate, including (without limitation) covenants and agreements compliance with which is necessary to assure that future actions, omissions or events will not cause interest on the Bonds to be included in gross income for federal income tax purposes. We call attention to the fact that the rights and obligations under the Bonds, the Resolution, the Indenture, and the Tax Certificate and their enforceability may be subject to bankruptcy, insolvency, receivership, reorganization, arrangement, fraudulent conveyance, moratorium and other laws relating to or affecting creditors' rights, to the application of equitable principles, to the exercise of judicial discretion in appropriate cases and to the limitations on legal remedies against authorities the State of Texas. We express no opinion with respect to any indemnification, contribution, liquidated damages, penalty (including any remedy deemed to constitute a penalty), right of set-off, arbitration, choice of law, choice of forum, choice of venue, non-exclusivity of remedies, waiver or severability provisions contained in the foregoing documents. Our services did not include financial or other non-legal advice. Finally, we undertake no responsibility for the accuracy, completeness or fairness of the Official Statement or other offering material relating to the Bonds and express no opinion with respect thereto.

Based on and subject to the foregoing, and in reliance thereon, as of the date hereof, we are of the following opinions:

1. The transcript of certified proceedings evidences complete legal authority for the issuance of the Bonds in full compliance with the Constitution and laws of the State of Texas presently in effect; the Bonds constitute valid and legally binding special limited obligations of the Authority enforceable in accordance with the terms and conditions thereof and of the Resolution and the Indenture and entitled to the benefits thereof, except to the extent that the rights and remedies of the owners of the Bonds may be limited by laws heretofore or hereafter enacted relating to bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the rights of creditors and the exercise of judicial discretion in appropriate cases; and the Bonds have been authorized and delivered in accordance with law;

2. The Bonds are payable, both as to principal and interest, from a pledge of and first lien on the Trust Estate (as defined in the Indenture);

3. The Resolution has been duly adopted and the Indenture has been duly authorized, executed and delivered by the Authority, each is in full force and effect and constitutes a legal, valid and binding obligation of the Authority;

4. The Indenture creates a valid pledge of and lien on the Trust Estate, subject only to the provisions of the Indenture permitting the application of the Trust Estate for the purposes and on the terms and conditions set forth therein; and

5. Interest on the Bonds is excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986. Interest on the Bonds is not a specific preference item for purposes of the federal alternative minimum tax. We express no opinion regarding other tax consequences related to the ownership or disposition of, or the amount, accrual or receipt of interest on, the Bonds.

Faithfully yours,

MONTGOMERY COUNTY TOLL ROAD AUTHORITY (MONTGOMERY COUNTY, TEXAS) • SENIOR LIEN TOLL ROAD REVENUE BONDS, SERIES 2018

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