



8140 Walnut Hill Lane, Suite 1000
Dallas, TX 75231
tel: 214 346-2800
fax: 214 987-2017

July 24, 2015

Robert Rangel Jr.
Director of Financial Planning and Analysis
North Texas Tollway Authority
5900 W. Plano Parkway, Suite 100
Plano TX 75093

Subject: NTTA System Traffic and Revenue Letter Update

Dear Mr. Rangel:

Pursuant to your recent request, CDM Smith is pleased to provide you with a traffic and revenue (T&R) letter update for the North Texas Tollway Authority System (NTTA System). It is our understanding that this letter is intended to support the issuance of the upcoming Series 2015B refunding bonds (referred to as the "Series 2015 Bonds") scheduled for closing in September 2015. Currently, the NTTA System consists of the Dallas North Tollway (DNT), the President George Bush Turnpike (PGBT), the President George Bush Turnpike Eastern Extension (PGBT EE), the Sam Rayburn Tollway (SRT), the Addison Airport Toll Tunnel (AATT), the Mountain Creek Lake Bridge (MCLB) and the Lewisville Lake Toll Bridge (LLTB).

Background

CDM Smith completed the NTTA System Comprehensive Traffic and Toll Revenue Study report in March 2014 (the "March 2014 Study"). The North Central Texas Council of Governments (NCTCOG) adopted a new Metropolitan Transportation Plan (MTP) in June 2013 called the Mobility 2035 – 2013 Update. The updated travel demand networks of the new MTP were incorporated into the March 2014 Study. It also included an assessment of current economic conditions and other key factors influencing forecasted T&R on NTTA System facilities. This effort included an independent economic review of the Mobility 2035 – 2013 Update demographics along NTTA System corridors as well as comprehensive traffic count and travel time data collection. Subsequent letter updates to the March 2014 Study were then completed in October 2014 (the "October 2014 Update") and March 2015 (the "March 2015 Bringdown Letter") to modify the T&R forecasts to account for changes in transactions trends, revenue recovery assumptions and the planned completion dates of several capital improvement projects.





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Since the completion of the March 2015 Bringdown Letter, the following new information has become available, which has warranted changes to the NTTA System T&R forecasts:

- The anticipated completion dates for several NTTA capital improvement projects and other regional projects have changed since the completion of the March 2015 Bringdown Letter
- Refinements to the traffic and revenue forecasting models were made by CDM Smith to reflect recent growth trends on the NTTA System
- The planned addition of tolls to the Plano Parkway ramps on DNT, which was previously assumed to go into effect in 2018, has been removed

This letter incorporates the above new information and includes updates to the NTTA System T&R forecasts from years 2015 through 2063.

The remainder of this letter covers the following topics:

- Underlying demographic forecasts and economic climate
- Comparison of year-to-date estimated and actual transactions
- Key assumptions
- Updated long-term traffic and revenue forecasts
- Analysis of NCTCOG's recently adopted 2040 demographic forecast
- Conclusion and recommendations

Underlying Demographic Forecasts and Economic Climate

The underlying demographic forecasts remain the same as presented in the March 2014 Study, October 2014 Update and March 2015 Bringdown Letter. All three previous studies incorporated results of an independent economic review by Research and Demographic Solutions (RDS) of NCTCOG's latest official demographic forecasts. CDM Smith feels that no additional modifications are required to the revised set of demographics and thus they are deemed valid for continued use.

As can be seen in **Figure 1**, the national real Gross Domestic Product (GDP) has seen consistent positive growth since 2012, except for slight drops in the first quarter of 2014 and 2015, both of which were partly attributed to inclement winter weather. The GDP bounced back, however, showing increases of 4.6 percent and 5.0 percent in the second and third quarters of 2014, respectively. CDM Smith tracks the monthly Economic Forecasting Surveys published by The Wall Street Journal (WSJ). Also illustrated in **Figure 1** are the GDP growth forecasts from March 2014, October 2014, March 2015 and July 2015. It is forecasted that the national GDP will continue to show positive growth through the middle of 2016.

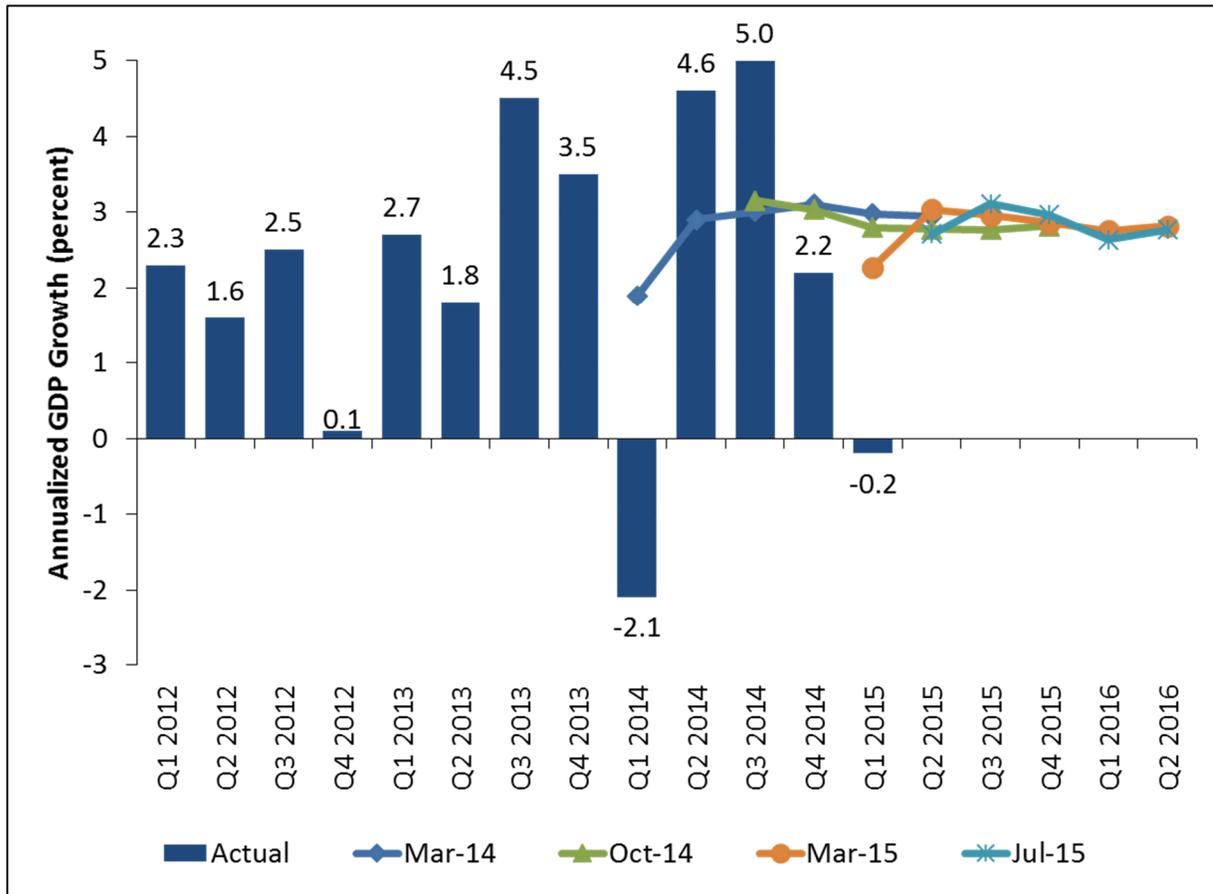


Figure 1. Historical and Forecasted GDP Growth Comparisons by Date of Forecast

Source: Wall Street Journal Economic Forecasting Survey, US Bureau of Economic Analysis (Accessed in July 2015)

Texas continues to experience a stronger and faster recovery from the recession than the national average. Economists have referred to this as the “last in-first out” effect. **Figures 2 and 3** illustrate that the Dallas-Fort Worth (DFW) area has been performing better than the rest of the nation in terms of unemployment rates and employment growth. Unemployment in DFW has been below six percent since mid-2013, and the North Texas area has seen consistently strong employment growth since 2010. Recently, Toyota announced that it is establishing a new headquarters in Plano (near the DNT/SRT interchange) for its North American operations. In the next three years, around 4,000 Toyota employees are expected to work at this headquarters.

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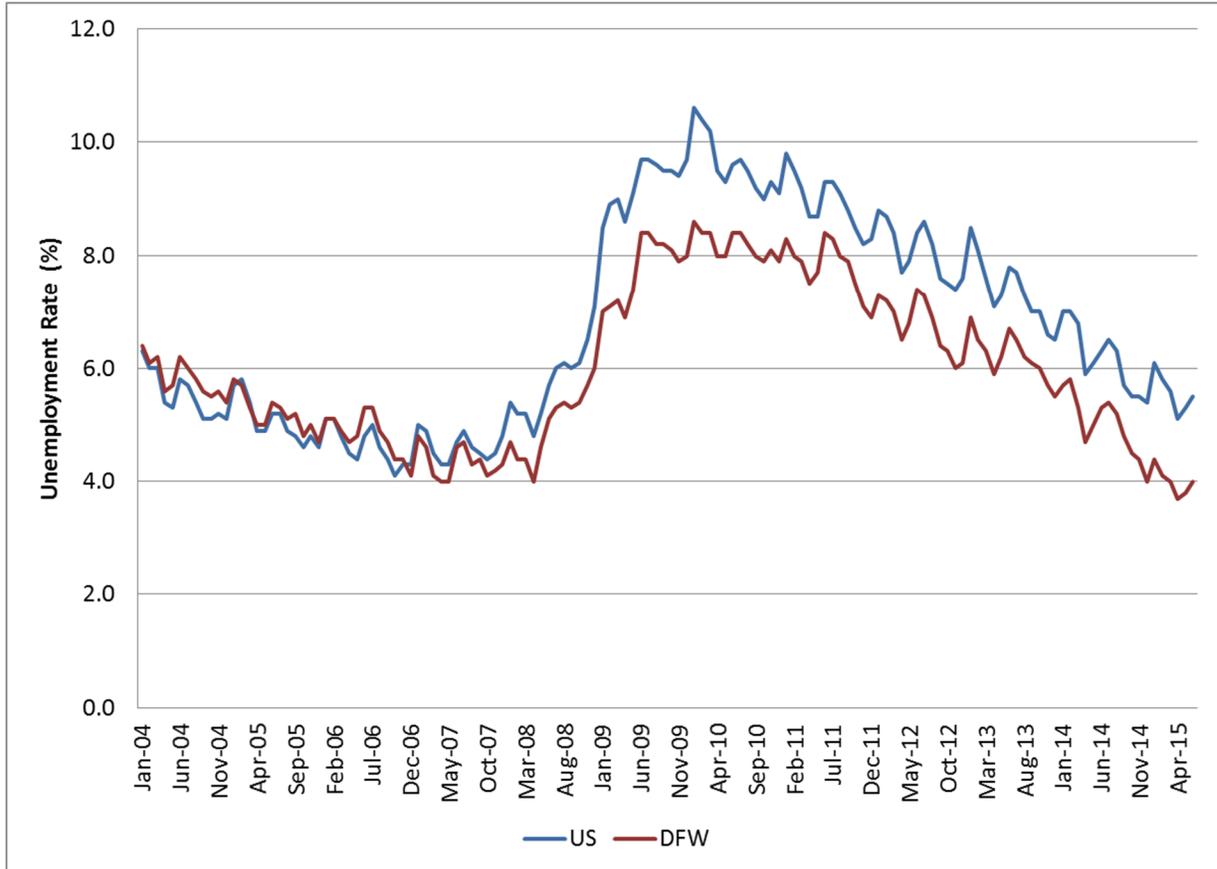


Figure 2. Unemployment Rate Comparisons

Source: Texas Workforce Commission (Accessed in July 2015)

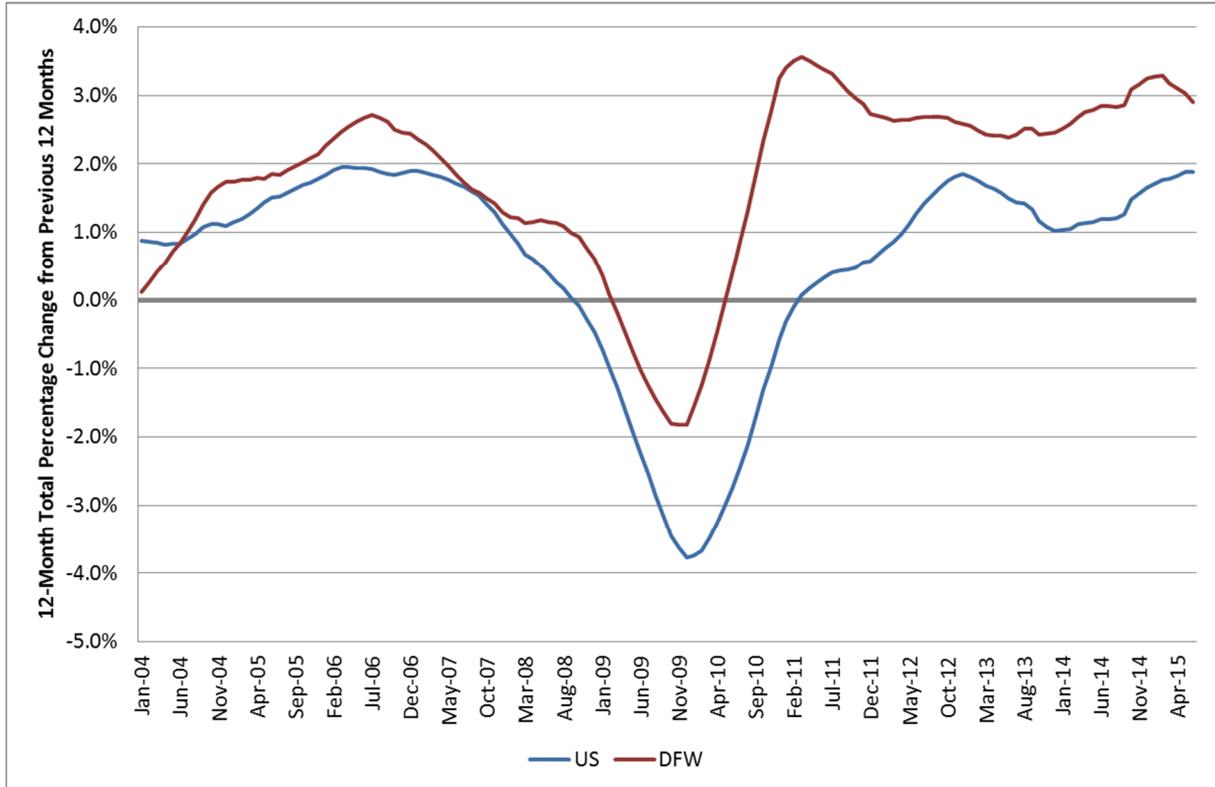


Figure 3. Employment Growth Comparisons

Source: Texas Workforce Commission (Accessed in July 2015)

Figure 4 shows the total number of residential building permits issued annually in the DFW area since 2000. After being severely impacted by the recession, new residential construction has seen significant growth since 2010. **Figure 4** also includes the annual average months of inventory for the housing markets in four local areas (Dallas, Fort Worth, Collin County and Denton County). This metric indicates the average amount of supply (i.e., houses) available for purchase during the year. As shown in **Figure 4**, the average months of inventory in the DFW area has steadily declined since 2011, indicating an increase in demand and a strengthening housing market.

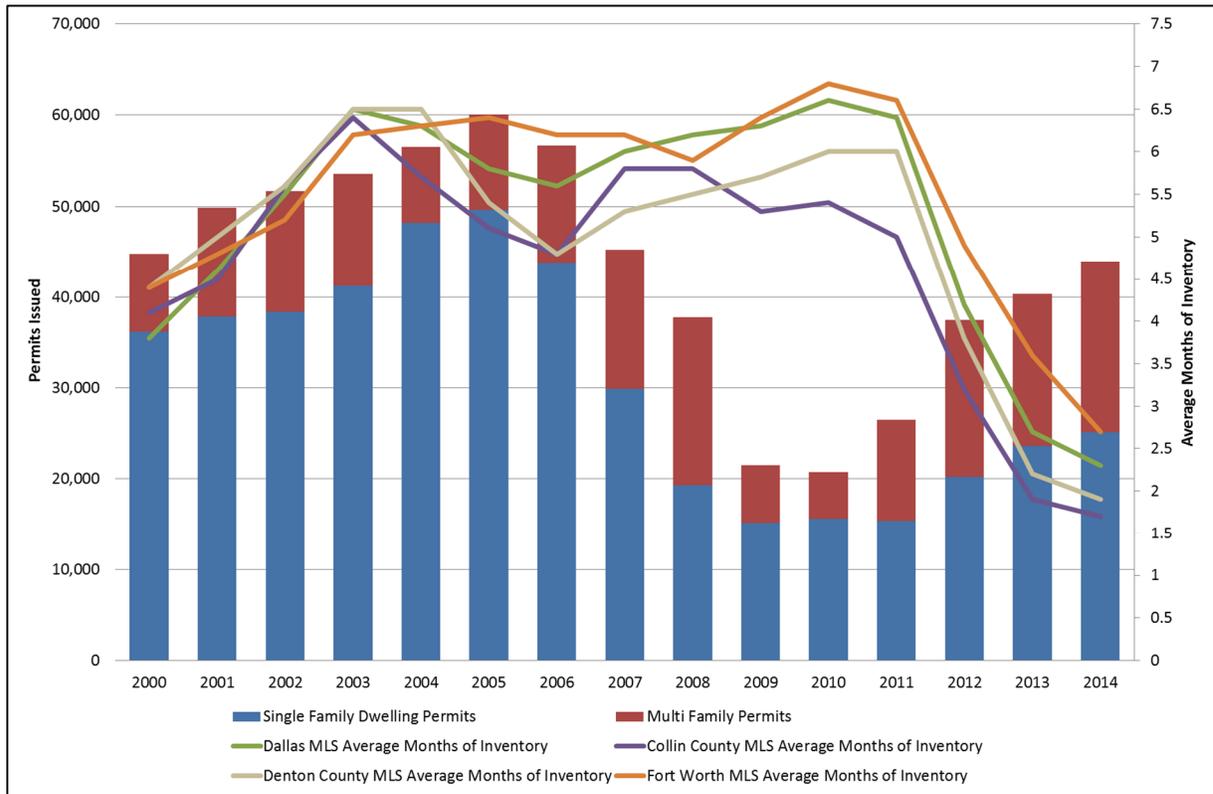


Figure 4. DFW Area Residential Building Permit Trends and Inventory

Source: Real Estate Center at Texas A&M University (Accessed in July 2015)

Year-to-Date Estimated versus Actual Transactions

Figure 5 shows the estimated monthly transactions for the NTTA System as included in the March 2014 Study, October 2014 Update and March 2015 Bringdown Letter, as well as the actual transactions through June 2015. As shown in the figure, actual transactions on the NTTA System greatly exceeded the March 2015 Bringdown Letter forecasts in May and June 2015. For the period of March 2015 through June 2015, actual transactions on the NTTA System exceeded the March 2015 Bringdown Letter projections by 3.3 percent. This recent trend has been incorporated into the current analysis to modify and update the total forecasted T&R for both 2015 and 2016.

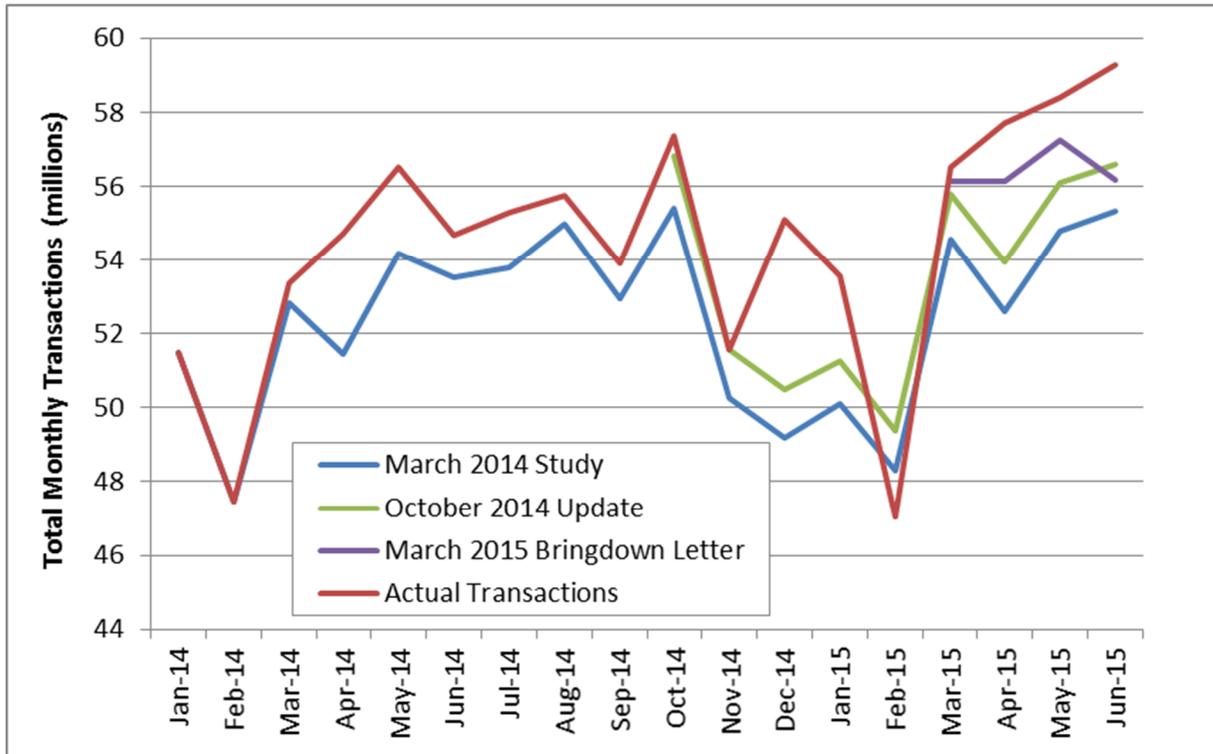


Figure 5. Actual vs. Estimated NTTA System Transactions

Key Assumptions

As part of the current study, the key input assumptions to the T&R forecasting process were reevaluated and updated as needed. Most of the assumptions either remained consistent with the March 2015 Bringdown Letter or were modified only slightly. However, some changes were made to the planned completion dates of certain capital improvement projects on and near the NTTA System. **Table 1** lists the planned completion dates for some of the key capacity improvement projects that were considered as part of the current study.

Table 1. Planned Completion Dates for Key Improvement Projects

Facility	Limits/Location	Improvement	Planned Date	
			March 2015 Bringdown Letter	Current Study
DNT	Keller Springs to PGBT	Lane Expansions	July 2017	October 2017
PGBT	Valwood Parkway Ramps	Additional Access	January 2018	January 2020
SRT	Denton Creek to DNT	Lane Expansions	January 2019	January 2020
SRT	IH 35E Interchange	Additional Access	January 2017	September 2017



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Below are the key assumptions used as part of this traffic and revenue update, including both those developed collaboratively with NTTA staff and those determined by CDM Smith:

Assumptions Developed Collaboratively with NTTA

- NTTA System-wide toll rate increases on July 1 of every odd year by applying an annual toll increase of 2.75 percent. This is in accordance with the NTTA Board's adopted toll rate policy
- The SRT Project Agreement between NTTA and Texas Department of Transportation (TxDOT) will be amended to remove the provision for congestion pricing on SRT. No congestion pricing is assumed on SRT throughout the forecast period.
- Under the PGBT EE project agreement with TxDOT, NTTA retains 80 percent of the AVI transaction revenue generated by the PGBT EE, and the remaining 20 percent of the AVI transaction revenue is paid to TxDOT. NTTA retains 80 percent of the revenue collected from the ZipCash transactions at the AVI rate, but NTTA retains 100 percent of the toll surcharge collected on ZipCash transactions
- DNT's Rockhill (previously Virginia Parkway) Ramps – toll gantries added to accommodate City of Frisco building Rockhill Parkway; assumed to be complete by September 30, 2016
- DNT expansion to four lanes per direction between Trinity Mills Road and PGBT (northbound) and between Frankford Road and south of Keller Springs Road (southbound) assumed to be completed by October 31, 2017. The project construction is assumed to begin from March 1, 2016.
- Expansion of DNT to four lanes per direction between Sam Rayburn Tollway and PGBT, including improvements to the DNT/PGBT interchange and opening of the new Windhaven Parkway toll ramps, assumed to be completed by April 1, 2018. There is a ramp reversal between Windhaven and Parker Road.
- DNT Extension Phase 4A between US 380 and FM 428 opens by January 1, 2023
- DNT Extension Phase 4B between FM 428 and the Grayson County line is assumed to open by January 1, 2028, with frontage road access opening in 2018
- Expansion of PGBT from three lanes to four lanes per direction between DNT and US 75 assumed to be completed by November 1, 2016. Expansion of PGBT from three lanes to four lanes per direction from IH 35E to DNT, and US 75 to SH 78 is assumed to be completed by April 1, 2019. This project's construction is assumed to begin from October 1, 2016
- Capacity improvements on SRT from Denton Creek to DNT from three lanes to four lanes per direction are assumed from January 1, 2020. This project's construction is assumed to begin from January 1, 2018. Capacity improvements on SRT from DNT to US 75 from three



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lanes to four lanes per direction are assumed from January 1, 2022. This project's construction is assumed to begin from January 1, 2019

- SH 161 between SH 183 and Belt Line Road is assumed to operate with an additional lane in each direction during weekday peak periods (6:00-10:00 am and 2:00-7:00 pm) starting from August 1, 2015. This section is assumed to be expanded to eight lanes by January 1, 2019. From January 1, 2019 the two new lanes added in each direction on this facility are assumed to operate as managed lanes
- SH 190/East Branch from IH 30/PGBT EE to IH 20/Loop 9 opens by January 1, 2028 (as recommended by NCTCOG's Mobility 2035 – 2014 Amendment)
- Automatic Vehicle Identification (AVI)/Video toll transaction splits are applied on a plaza by plaza basis. AVI (TollTag) penetration assumed for T&R forecasting purposes include AVI shares at the lane and all types of V-Toll transaction shares with a three-month lag. Based on the actual data and recent trends, the average NTTA System TollTag penetration rate is assumed to be 79.1 percent in 2015. The following are the assumed AVI shares for 2015, shown separately for each facility:

DNT	79.8%
PGBT	79.3%
SRT	79.1%
PGBT EE	74.8%
AATT	79.5%
MCLB	50.4%
LLTB	76.2%
NTTA System	79.1%

- Due to the continued efforts by NTTA staff to improve the AVI transaction shares, it is anticipated that the average AVI transaction shares on all NTTA System facilities will ramp up based on a logistic function from 79.1 percent in 2015 to an average of 81.2 percent in 2020, 83.5 percent in 2030, 84.4 percent in 2040, 84.8 percent in 2050 and 84.9 percent in 2060 and thereafter
- The average NTTA System ZipCash effective revenue recovery rate at one year after the transaction occurred (includes invoiced and un-invoiced transactions and excludes all V-Toll transactions) to be 43.2 percent in 2015 based on the actual data and recent trends. This estimate is expected to grow to 48.8 percent in 2016 and 49.4 percent in 2017 and thereafter, reflecting the continued efforts by NTTA staff to improve ZipCash revenue recovery. The effective revenue recovery from TollTag transactions is assumed to be 99.5 percent in all forecast years, based on historical observations



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- Projected annual toll revenues included in this letter are revenues projected to be collected in each year (i.e., cash basis) after applying the above-described revenue recovery assumptions to the projected toll transactions for the year
- 2058 is the fiftieth year of operation of SRT as part of the NCTTA System. SRT is expected to be returned to TxDOT at the end of August 2058

CDM Smith Assumptions

- Background network for travel demand modeling is based on NCTCOG's Mobility 2035 – 2014 Amendment
- Trip tables are based on NCTCOG's Mobility 2035 demographics, updated to reflect independent economic review by RDS in 2013
- Truck transaction shares are applied on a plaza by plaza basis and averages for each facility for 2015 are as shown below. It is assumed that these truck shares remain constant throughout the forecast period:

DNT	1.1%
PGBT	2.7%
SRT	3.5%
PGBT EE	2.7%
AATT	0.9%
MCLB	1.5%
LLTB	2.8%
NTTA System	2.2%

- NTTA will employ business rules to encourage increases in TollTag shares on its facilities and to increase the ZipCash toll revenue recovery
- In accordance with the existing practice of the Authority, all NTTA System facilities will be well-maintained, efficiently operated, and effectively signed to encourage maximum usage
- Growth in vehicle operating costs (which include fuel, maintenance, and tires) will not significantly deviate from the assumed inflation rate in the March 2014 Study, October 2014 Update and March 2015 Bringdown Letter
- Growth in traveler values of time will not significantly deviate from the assumed rates in the March 2014 Study, October 2014 Update and March 2015 Bringdown Letter
- No local, regional, or national emergency will arise which would abnormally restrict the use of motor vehicles



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Updated Long-Term Traffic and Revenue Forecasts

The updated long-term T&R forecasts for each NTTA System facility from 2015 to 2063 are shown in **Table 2** and **Figure 6**. The transaction projections have been updated based on the information available for the March 2015 Bringdown Letter and the recent transaction data provided by NTTA since the completion of that study.

The projections extend from 2015 through 2063, and include the revenue forecasts for DNT, PGBT, AATT, MCLB, LLTB, PGBT EE and SRT. In each case, forecasts for each of the facilities are based on modeled traffic forecasts at each toll collection location, through the year 2035. The average toll at each location was based on the current mix of passenger car and commercial vehicle traffic, and the current average tolls, modified in future years to reflect changing assumptions in the proportion of TollTag and ZipCash transaction shares. Toll rates for ZipCash transactions are 50 percent higher than the rates for TollTag transactions (with a minimum differential of \$0.24 in 2015 dollars) in each case.

Forecasts beyond year 2035 are based on nominal assumptions regarding future traffic growth with assumed periodic toll rate increases. As shown in **Table 2**, the estimated annual revenue on the DNT is expected to increase from \$221.8 million in 2015 to \$338.9 million by 2025 and \$505.2 million by 2035. Revenue on the PGBT is expected to be \$203.0 million in 2015, increasing to \$311.1 million by 2025 and \$473.7 million by 2035. Revenue on the SRT is expected to be \$142.7 million in 2015, increasing to \$244.5 million by 2025 and \$400.4 million by 2035. As FY2058 is the end of the fifty-year operational agreement of the SRT between NTTA and TxDOT, revenue from SRT is estimated through August 31, 2058, while the other facilities are assumed to generate revenue for NTTA in perpetuity. The PGBT EE toll revenue included in **Table 2** is the NTTA's share of the toll revenue. Under the PGBT EE project agreement with TxDOT, NTTA retains 80 percent of the AVI transaction revenue generated by the PGBT EE, and the remaining 20 percent of the AVI transaction revenue is paid to TxDOT. NTTA retains 80 percent of the revenue collected from the ZipCash transactions at the AVI rate, but NTTA retains 100 percent of the toll surcharge collected on ZipCash transactions. NTTA's share of the revenue on the PGBT EE is expected to be \$28.1 million in 2015, increasing to \$50.5 million by 2025 and \$83.4 million by 2035. Together, the DNT, PGBT and SRT account for the majority of revenue generated by the NTTA System.

Revenue from the AATT, MCLB and LLTB combined is expected to be about \$7.4 million in 2015. By 2025, this is estimated to reach a combined \$13.0 million and increase in 2035 to \$21.9 million, still a very small share of total NTTA System revenue.



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Table 2. Updated NTTA System Annual Toll Revenue Forecasts by Facility

Year	DNT	PGBT	SRT*	PGBT EE**	AATT-MCLB-LLTB	NTTA System
2015	\$221,813,600	\$203,018,700	\$142,730,600	\$28,121,900	\$7,425,800	\$603,110,600
2016	\$232,660,800	\$214,404,500	\$153,165,800	\$30,356,600	\$8,034,800	\$638,622,500
2017	\$240,071,300	\$222,128,300	\$161,526,100	\$32,468,200	\$8,499,500	\$664,693,400
2018	\$252,713,300	\$228,542,100	\$169,422,500	\$34,580,300	\$9,033,800	\$694,292,000
2019	\$263,946,100	\$238,871,700	\$175,599,200	\$36,470,500	\$9,511,100	\$724,398,600
2020	\$275,112,600	\$250,852,700	\$190,546,000	\$38,539,400	\$10,016,600	\$765,067,300
2021	\$286,537,700	\$261,927,700	\$199,488,400	\$40,676,500	\$10,529,400	\$799,159,700
2022	\$299,225,200	\$274,159,900	\$209,989,100	\$43,026,900	\$11,105,900	\$837,507,000
2023	\$312,354,500	\$285,572,400	\$220,887,900	\$45,321,500	\$11,686,700	\$875,823,000
2024	\$325,722,500	\$298,026,600	\$232,543,000	\$47,842,000	\$12,330,900	\$916,465,000
2025	\$338,899,000	\$311,126,700	\$244,460,300	\$50,481,300	\$12,960,500	\$957,927,800
2026	\$353,434,300	\$325,561,900	\$257,378,900	\$53,359,800	\$13,656,100	\$1,003,391,000
2027	\$367,992,700	\$339,163,000	\$270,219,500	\$56,219,700	\$14,338,400	\$1,047,933,300
2028	\$384,034,900	\$354,838,800	\$284,011,600	\$61,302,600	\$15,088,900	\$1,099,276,800
2029	\$398,894,700	\$369,734,100	\$297,828,400	\$64,359,600	\$15,929,300	\$1,146,746,100
2030	\$415,371,000	\$386,125,000	\$312,822,000	\$67,512,600	\$16,866,300	\$1,198,696,900
2031	\$431,847,600	\$402,177,000	\$328,382,000	\$70,767,300	\$17,731,400	\$1,250,905,300
2032	\$449,989,600	\$419,720,900	\$345,148,600	\$74,270,200	\$18,673,300	\$1,307,802,600
2033	\$467,306,700	\$437,472,400	\$362,451,000	\$77,743,700	\$19,674,800	\$1,364,648,600
2034	\$486,257,500	\$456,746,200	\$381,030,600	\$81,444,300	\$20,768,100	\$1,426,246,700
2035	\$505,203,000	\$473,669,000	\$400,407,900	\$83,367,300	\$21,919,700	\$1,484,566,900
2036	\$526,027,400	\$494,402,000	\$421,145,300	\$87,407,600	\$23,185,600	\$1,552,167,900
2037	\$546,689,000	\$514,405,100	\$441,888,900	\$91,562,700	\$24,418,600	\$1,618,964,300
2038	\$569,447,700	\$536,209,800	\$464,201,000	\$96,004,700	\$25,764,300	\$1,691,627,500
2039	\$592,496,900	\$558,321,900	\$486,943,900	\$100,580,500	\$27,182,900	\$1,765,526,100
2040	\$617,568,500	\$582,191,400	\$511,122,800	\$105,423,300	\$28,721,700	\$1,845,027,700
2041	\$638,618,300	\$603,301,600	\$532,971,800	\$109,715,100	\$29,989,600	\$1,914,596,400
2042	\$661,523,000	\$626,135,300	\$556,168,000	\$114,228,200	\$31,352,200	\$1,989,406,700
2043	\$684,471,900	\$649,007,400	\$580,636,300	\$118,865,700	\$32,650,300	\$2,065,631,600
2044	\$709,739,800	\$674,035,200	\$606,847,500	\$123,779,800	\$34,054,700	\$2,148,457,000
2045	\$733,589,200	\$698,883,000	\$631,942,200	\$128,883,800	\$35,491,100	\$2,228,789,300
2046	\$758,713,900	\$725,991,800	\$658,778,600	\$133,936,600	\$36,967,600	\$2,314,388,500
2047	\$782,944,500	\$752,816,400	\$686,930,300	\$138,927,600	\$38,471,700	\$2,400,090,500
2048	\$809,448,300	\$781,893,500	\$716,926,700	\$144,169,700	\$40,098,500	\$2,492,536,700
2049	\$835,027,900	\$811,052,200	\$747,223,600	\$149,556,100	\$41,643,400	\$2,584,503,200
2050	\$863,250,300	\$842,971,900	\$779,618,400	\$155,255,800	\$43,315,400	\$2,684,411,800
2051	\$890,530,700	\$872,801,700	\$810,271,400	\$161,064,800	\$44,918,000	\$2,779,586,600
2052	\$920,359,700	\$905,013,400	\$842,635,600	\$167,168,600	\$46,645,700	\$2,881,823,000
2053	\$949,933,500	\$936,579,500	\$876,848,400	\$173,431,000	\$48,270,400	\$2,985,062,800
2054	\$982,480,300	\$971,041,400	\$913,448,700	\$180,057,400	\$50,025,700	\$3,097,053,500
2055	\$1,013,615,000	\$1,005,361,600	\$949,381,800	\$186,902,500	\$51,875,900	\$3,207,136,800
2056	\$1,047,895,700	\$1,042,892,700	\$987,650,000	\$194,109,400	\$53,887,700	\$3,326,435,500
2057	\$1,080,913,300	\$1,079,366,800	\$1,026,964,900	\$201,345,000	\$55,754,200	\$3,444,344,200
2058	\$1,117,572,300	\$1,119,507,300	\$711,427,800	\$209,056,400	\$57,786,200	\$3,215,350,000
2059	\$1,153,655,800	\$1,159,163,400	\$0	\$216,804,200	\$59,906,100	\$2,589,529,500
2060	\$1,193,311,000	\$1,201,817,700	\$0	\$224,978,600	\$62,203,500	\$2,682,310,800
2061	\$1,231,325,000	\$1,242,635,500	\$0	\$233,441,100	\$64,374,200	\$2,771,775,800
2062	\$1,272,800,800	\$1,286,801,800	\$0	\$242,300,400	\$66,706,400	\$2,868,609,400
2063	\$1,313,566,000	\$1,330,134,200	\$0	\$251,366,500	\$69,112,100	\$2,964,178,800

*SRT revenue for year 2058 includes revenue from January to August only, because FY 2058 is the end of the fifty-year operational agreement of the SRT between NTTA and TxDOT

** NTTA's share of the revenue collected from PGBT EE.

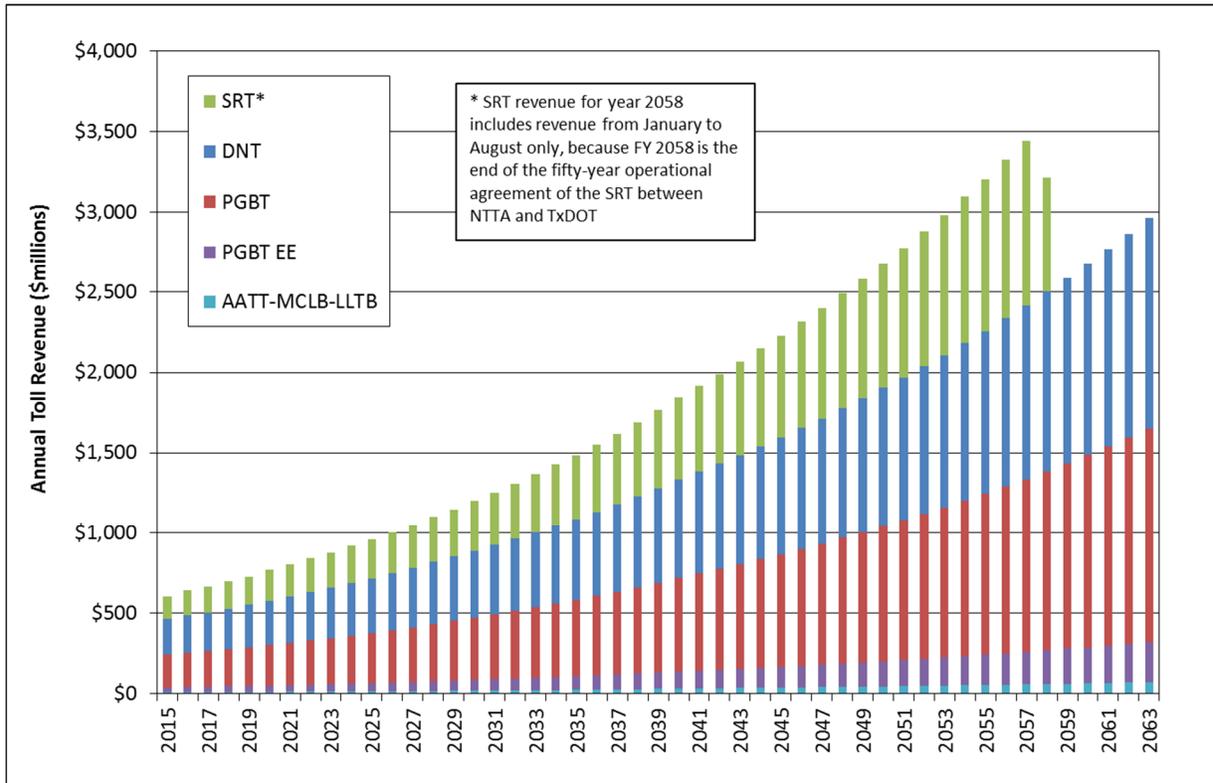


Figure 6. Updated NTTA System Toll Revenue Forecasts by Facility

The estimated annual transactions and toll revenue for the NTTA System are shown in **Table 3**. Total revenue on the existing NTTA System is expected to increase from about \$603.1 million in 2015 to \$957.9 million in 2025 and \$1.48 billion in 2035. Driven by nominal traffic growth and continued assumed modest inflationary adjustments in toll rates, annual revenue on the NTTA System is expected to reach more than \$2 billion per year by 2043.

Table 4 shows the projected annual transaction and revenue growth rates on the NTTA System. Annual transaction and revenue growth rates from 2015 through 2020 are equal to 1.5 percent and 4.9 percent, respectively. The transaction growth during this period captures the demographic growth, continued traffic ramp-up on the SRT and PGBT EE, and the impact of capacity improvements along sections of the DNT, PGBT and SRT that are expected to be implemented in the 2015-2020 timeframe. Revenue growth during this period includes traffic growth, toll rate growth and improvements to effective revenue recovery (due to improvement in AVI transaction shares and the ZipCash revenue recovery). Annual transaction and revenue growth rates from 2020 through 2030 are equal to 1.7 percent and 4.6 percent, respectively. The annual transaction growth rates progressively decrease to 1.5 percent between 2030 and 2040, and to 1.0 percent



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between 2040 and 2050. The corresponding annual growth rates in revenue are 4.4 percent and 3.8 percent respectively, which incorporate the traffic growth and the assumed toll rate increases.

Table 3. Updated NTTA System Annual Toll Transactions and Revenue Forecasts

Year	Toll Transactions	Toll Revenue	Year	Toll Transactions	Toll Revenue
2015	666,013,600	\$603,110,600	2040	981,472,500	\$1,845,027,700
2016	672,098,200	\$638,622,500	2041	991,620,000	\$1,914,596,400
2017	677,060,600	\$664,693,400	2042	1,001,913,200	\$1,989,406,700
2018	687,462,000	\$694,292,000	2043	1,012,439,200	\$2,065,631,600
2019	698,732,500	\$724,398,600	2044	1,023,141,700	\$2,148,457,000
2020	718,406,000	\$765,067,300	2045	1,033,681,900	\$2,228,789,300
2021	729,783,400	\$799,159,700	2046	1,043,463,700	\$2,314,388,500
2022	742,081,200	\$837,507,000	2047	1,053,273,700	\$2,400,090,500
2023	755,107,500	\$875,823,000	2048	1,063,167,400	\$2,492,536,700
2024	767,552,000	\$916,465,000	2049	1,073,500,400	\$2,584,503,200
2025	780,462,200	\$957,927,800	2050	1,083,893,800	\$2,684,411,800
2026	793,665,900	\$1,003,391,000	2051	1,093,097,400	\$2,779,586,600
2027	807,127,600	\$1,047,933,300	2052	1,102,028,600	\$2,881,823,000
2028	822,537,400	\$1,099,276,800	2053	1,111,371,400	\$2,985,062,800
2029	834,707,800	\$1,146,746,100	2054	1,120,843,700	\$3,097,053,500
2030	847,076,100	\$1,198,696,900	2055	1,130,433,700	\$3,207,136,800
2031	859,698,700	\$1,250,905,300	2056	1,140,201,100	\$3,326,435,500
2032	872,603,300	\$1,307,802,600	2057	1,149,827,300	\$3,444,344,200
2033	885,942,800	\$1,364,648,600	2058	1,059,579,400	\$3,215,350,000
2034	899,345,300	\$1,426,246,700	2059	867,754,900	\$2,589,529,500
2035	910,738,800	\$1,484,566,900	2060	873,831,400	\$2,682,310,800
2036	924,163,600	\$1,552,167,900	2061	879,753,600	\$2,771,775,800
2037	938,167,400	\$1,618,964,300	2062	885,565,700	\$2,868,609,400
2038	952,370,800	\$1,691,627,500	2063	891,309,100	\$2,964,178,800
2039	966,887,100	\$1,765,526,100	Total	44,876,956,600	\$90,916,603,000



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Table 4. NTTA System Transactions and Revenue Annual Growth

Period	Annual Transaction Growth (%)	Annual Revenue Growth (%)
2015-2020	1.5	4.9
2020-2030	1.7	4.6
2030-2040	1.5	4.4
2040-2050	1.0	3.8

Table 5 shows comparisons between the updated T&R forecasts included in this letter and the forecasts included in the March 2015 Bringdown Letter. The updated toll transaction forecasts for 2015 and 2016 are 1.0 percent and 0.2 percent greater than the March 2015 Bringdown Letter forecasts and 0.6 percent lower in 2018. Transactions are 1.3 and 0.4 percent lower in 2019 and 2020, due to delay in planned expansion of the SRT and the removal of the previously planned implementation of tolls on the DNT’s Plano Parkway ramps. The overall reduction in transactions between 2030 and 2050 is approximately 0.5 percent. The updated toll revenue forecasts for 2015 and 2016 are 0.9 percent and 0.3 percent higher than the March 2015 Bringdown Letter forecasts, respectively. The revenue forecast is lower than the March 2015 estimates from 2018 through the end of the forecast period due to the removal of the Plano Parkway tolling assumption. Also, the delay of SRT expansion from 2019 to 2020 resulted in additional revenue reduction in 2019.

Table 5. NTTA System Annual T&R Comparisons – Change from March 2015 T&R Forecasts

Year	Transactions	Toll Revenue
2015	1.0%	0.9%
2016	0.2%	0.3%
2017	0.0%	0.0%
2018	-0.6%	-0.1%
2019	-1.3%	-0.7%
2020	-0.4%	-0.1%
2030	-0.5%	-0.1%
2040	-0.5%	-0.1%
2050	-0.5%	-0.1%
2060	-0.7%	-0.2%
2015-2020	-0.2%	0.0%
2015-2063	-0.5%	-0.1%



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NCTCOG 2040 Demographic Forecast

NCTCOG is currently in the process of developing its Mobility 2040 metropolitan transportation plan for the Dallas-Fort Worth region. As part of this process, a new demographic forecast was developed for the new horizon year of 2040. These new population and employment forecasts for the region were formally adopted by the NCTCOG Executive Board in May 2015 and will form the demographic basis for the Mobility 2040 plan.

CDM Smith engaged the services of Research and Demographic Solutions (RDS) to complete an assessment of the changes to the new demographic forecasts compared to the revised demographic forecasts used for the current traffic and revenue analysis. RDS observed that the population and employment forecast throughout the region was increased from the previous forecasts and concluded that the new forecasts were reasonable. In addition, RDS noted the potential for further growth due to the strong growth of the DFW economy, particular along NTTA System corridors. A copy of RDS's findings is attached at the end of this letter.

Conclusion and Recommendations

While the state of the North Texas economy, population and employment growth, specifically along the NTTA System corridors, are critical to the transactions and revenue on NTTA System facilities, the following are other critical parameters that will continue to have a material impact on the NTTA System T&R:

- AVI transaction shares and ZipCash revenue recovery rates
- Growth in the NTTA System toll rates and toll rates on the non-NTTA managed lane facilities that will open in the next few years
- Growth in the perceived NTTA System traveler values of time
- Gasoline prices
- Truck traffic usage on NTTA System facilities
- Regional air quality requirements and the regional MTP
- Future growth and performance of the regional economy
- The timing of capacity improvements along sections of DNT, PGBT and SRT; impacts that the associated construction activities will have on traffic flow during construction
- Improvements or openings of complementary and competing transportation facilities along the existing NTTA System corridors; impacts the associated construction activities will have on the NTTA System's T&R. The critical non-NTTA System roadway facilities/improvements that could materially impact NTTA System's T&R include the SH 161 Three-Mile-Section, PGBT Western Extension, DNT Extension Phase 4A/4B/5, IH 635 Project, DFW Connector Project, US 75, IH 35E Managed Lanes Project, SH 183 Managed Lane Project and SH 190/East Branch



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In summary, based on the evaluation of the new information that has become available since the completion of the March 2015 Bringdown Letter, CDM Smith recommends that the NTTA System traffic and revenue forecasts included in **Table 3** in this letter be used to support the issuance of the upcoming Series 2015 Bonds.

I trust that this information addresses your current needs. In the meantime, should any questions arise, please do not hesitate to contact us.

Very truly yours,

A handwritten signature in black ink, appearing to read "Kamran Khan", with a horizontal line underneath.

Kamran Khan
Senior Vice President
CDM Smith, Inc.

DISCLAIMER

CDM Smith used currently accepted professional practices and procedures in the development of these traffic and revenue forecasts. 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 forecasts, CDM Smith reasonably relied upon the accuracy and completeness of information provided (both written and oral) by the North Texas Tollway Authority (NTTA). 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 forecasts 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 forecasts and projections reported herein are based on CDM Smith's experience and judgment and on a review of information obtained from multiple agencies, including NTTA. These forecasts and projections may not be indicative of actual or future values, and are therefore subject to substantial uncertainty. Future developments cannot be predicted with certainty, and may affect the forecasts 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 this letter, 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 that study, 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 NTTA and does not owe a fiduciary duty pursuant to Section 15B of the Exchange Act to NTTA with respect to the information and material contained in this report. CDM Smith is not recommending and has not recommended any action to NTTA. NTTA 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.



RESEARCH & DEMOGRAPHIC SOLUTIONS

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July 21, 2015

To: CDM Smith
One Glen Lakes
8140 Walnut Hill Lane
Suite 1000
Dallas, TX 75231

From: Research and Demographic Solutions
556 Silicon Dr. Suite 101
Southlake, TX 76092

Subject: NTTA System 2015 Letter Update

In light of NCTCOG's May 2015 release of new 2040 Demographic Forecast data, Research and Demographic Solutions (RDS) was commissioned by CDM Smith to examine the new data near the NTTA System corridors for accuracy. RDS conducted a review of the overall NTTA System demographics at the macro-level, as well as focusing on large scale developments currently announced or under construction along NTTA toll facilities as of July 2015.

The 2040 Demographic Forecast data released by NCTCOG in May 2015 includes new household, household population and employment data at the traffic survey zone-level for the entire region. This data was released for two years, 2005 and 2040. In July 2013, RDS completed an independent socioeconomic analysis of the NTTA System corridors for the years 2012, 2018, 2028 and 2035. For the current study, it was determined by CDM Smith and RDS that the new NCTCOG data would be interpolated linearly to create 2035 totals which would then be compared to the previous RDS 2035 data. NCTCOG's 2005 totals would serve as the baseline figures.

Current commercial and residential development has seen an appreciable increase since RDS' initial 2013 review. Along the NTTA System corridors, many significant projects have already begun, or will soon begin, construction within the upcoming year. Overall, RDS' review affirms that the revised demographic forecasts developed by RDS in 2013 is valid for use, noting that actual growth in the region is likely to be higher based on current underlying economic development and construction trends. It is important to note that most, if not all, of the new developments currently underway will be completed before 2020. Subsequently, as NCTCOG releases interim year data, it would likely necessitate further review to ensure that the demographic totals will be correct for future applications.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rocky Gardiner', is written over a light blue horizontal line.

Rocky Gardiner, President
Research & Demographic Solutions, LLC