

Tollway Towers North, Suite 870 Shahram Bohluli, Ph.D., P.E. 15770 North Dallas Parkway Vice President Dallas, TX 75248 sbohluli@candm-associates.com Tel: 214-245-5300 Fax: 214-889-5049 Date: December 13, 2016 To: Mr. Rob Hurmence **Director of Financial Planning and Analysis** North Texas Tollway Authority 5900 W. Plano Parkway, Suite 100 Plano, TX 75093 Subject: NTTA Special Projects System: Traffic and Revenue Bring Down Letter

### Dear Mr. Hurmence,

Pursuant to your recent request, C&M Associates, Inc. (C&M) is pleased to provide you with a traffic and revenue (T&R) bring down letter for the North Texas Tollway Authority (NTTA) Special Projects System (SPS). This letter is intended to support the upcoming Series 2011A & D refunding bonds scheduled for closing in the February 2017 timeframe.

## 1. Introduction

The SPS currently consists of the Chisholm Trail Parkway (CTP) and the President George Bush Turnpike-Western Extension (PGBT-WE). Separate from the NTTA System, the SPS facilities are stand-alone tollways governed by a separate Trust Agreement.

Illustrated in Figure 1, the CTP is a 27.6-mile toll road that extends south from I-30 in downtown Fort Worth to US 67 in Cleburne, providing an alternate north-south route for I-35W. The purpose of the CTP is to provide travelers with a faster and more reliable route choice between southern Tarrant County and Johnson County. The CTP also provides access to I-20 and I-30, the two major freeways dividing the Dallas-Fort Worth (DFW) Metropolitan area. The CTP opened to traffic on May 11, 2014, with tolling operations beginning the same day.

Illustrated in Figure 2, the PGBT-WE is an 11.5-mile extension of the PGBT in the growing loop around Dallas. It extends the PGBT south from SH 183 to I-20. This extension increases the length of the PGBT from 40 to approximately 52 miles, though the PGBT and PBGT-WE are separated by a 3-mile toll-free section north of SH 183, which is owned by TxDOT. The PGBT-WE corridor consists of the tolled mainlanes—featuring electronic toll collection (ETC)—and frontage roads. This corridor serves as a major link within the DFW area, reducing congestion on adjacent corridors by providing an alternative parallel route to the currently congested SH 360.

The PGBT-WE was the first project of the SPS, with Phases 1 through 3 constructed under the direction of TxDOT and opened to traffic in 2009 and 2010, while Phase 4 opened in October 2012 under the direction of NTTA.



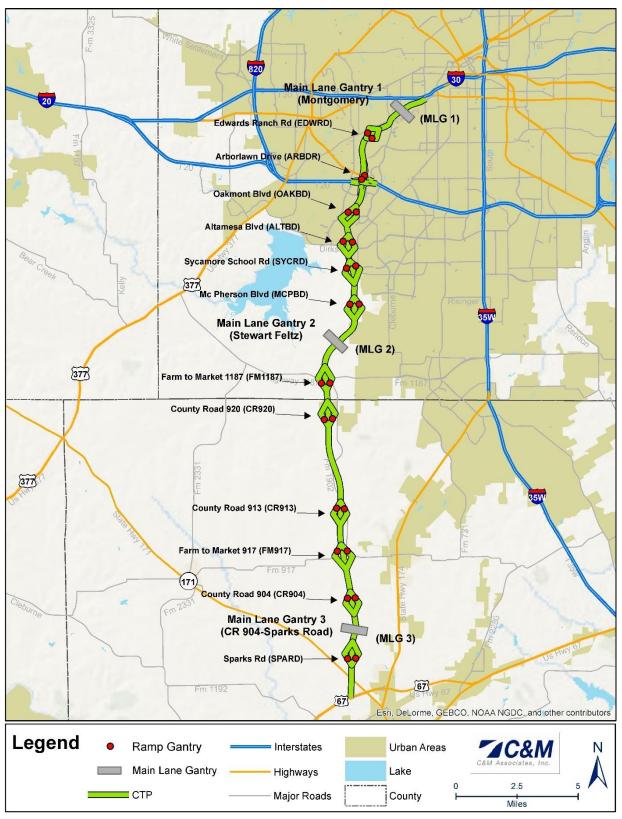


Figure 1. CTP Corridor and Gantry Locations





Figure 2. PGBT-WE Corridor and Gantry Locations



NTTA Special Projects System Traffic and Revenue Bring Down Letter C&M completed the "NTTA SPS Comprehensive Traffic and Revenue Update" study in March 2016, providing a T&R forecast for the SPS over a 50-year period and serving as an update to two T&R studies of the SPS facilities conducted by C&M in 2014: The "Intermediate Level Traffic and Revenue Update for President George Bush Turnpike–Western Extension," which was completed in March 2014, and the "Comprehensive Traffic and Revenue Study for Chisholm Trail Parkway," which was completed in December 2014. The March 2014 T&R study of the PGBT-WE served as an update to an investment grade T&R study that was completed by CDM Smith, Inc. (formerly Wilbur Smith Associates) in December 2010 and updated in October 2012. C&M's updated T&R forecast reflected the latest background models and datasets approved in June 2013 by the North Central Texas Council of Governments (NCTCOG) as part of the Metropolitan Transportation Plan (MTP) "Mobility 2035: 2013 Update." The December 2014 T&R study of the CTP represented a new, comprehensive T&R analysis of the facility by C&M. The study aimed to support future sensitivity studies for the CTP by providing an independent toll revenue forecast over a 50-year period beginning in 2014, the opening year of the CTP.

The March 2016 T&R Update considered the latest existing information and field data regarding traffic trends, as well as historical and forecasted socioeconomic data. C&M used the NCTCOG Dallas-Fort Worth Travel Demand Model for the Expanded Area (NCTCOG DFX) as the basis for its analysis. The NCTCOG DFX was adopted, modified, and calibrated to predict the likelihood that a traveler would use the SPS, thus enabling it to estimate future traffic demand and, ultimately, final T&R forecasts for the CTP and PGBT-WE.

Since the completion of the March 2016 T&R Update, the following new information has become available, which has warranted refinements to the T&R forecasts:

- Recent transaction growth trends on the SPS facilities
- NCTCOG's updated trip tables based on the latest approved long-range Metropolitan Transportation Plan (MTP): Mobility 2040 (MOB40)
- NCTCOG's updated trip networks for MOB40

This letter incorporates the new information listed above and presents the following:

- Review of historical and forecasted socioeconomic conditions
- Comparison of year-to-date actual transactions and estimates
- Summary of T&R assumptions
- Updated T&R forecasts
- Conclusion and recommendations

## 2. Socioeconomic Evaluation

The previous T&R reports by C&M for the CTP and PGBT-WE utilized NCTCOG's Mobility 2035 (MOB35) demographic forecasts, which were approved in February 2011. In June 2015, the NCTCOG Executive Board approved the MOB40 demographic forecasts to be used in the new 2040 MTP in 2016. C&M's March 2016 T&R Update Study utilized the updated MOB40 demographic forecasts to approximate the future year trip tables. At the time, the actual trip tables and final networks were not available for MOB40. Shortly after C&M's study was submitted, NCTCOG's Executive Board approved and issued the new network and trip tables. Although the demographics remain the same, some minor differences in the network configuration and the trip tables necessitated some revisions to the final T&R figures, which are presented in this letter.



The following sections summarize recent trends in several socioeconomic indicators for the DFW area.

## 2.1. Consumer Price Index

Figure 3 illustrates the historical monthly CPI for the DFW area—as reported by the U.S. Department of Labor—in comparison to the toll rate per mile of the SPS. The data in this report is not seasonally adjusted. The U.S. Department of Labor publishes CPI data every two months.

The SPS toll rate per mile is represented as an index to better compare it with CPI. The next SPS toll rate increase is scheduled for July 1, 2017.

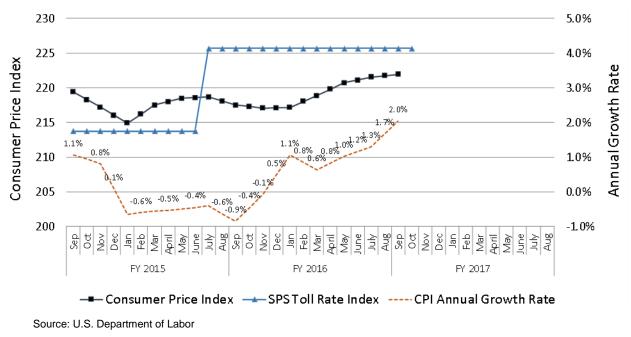


Figure 3. Consumer Price Index of the DFW Area

## 2.2. Unemployment Rate

Figure 4 shows the historical monthly unemployment rate in the DFW metropolitan area. The U.S. Department of Labor publishes the Metropolitan Area Employment and Unemployment data on a monthly base. In August and September 2016, the national unemployment rate was 5.0 and 4.8 percent, respectively (seasonally unadjusted). The DFW metropolitan area unemployment rate for August and September were 4.1 percent.



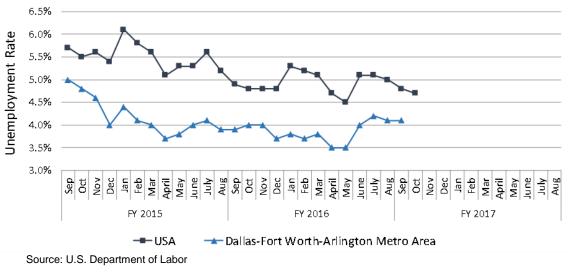


Figure 4. Unemployment Rate in the DFW Area

# 3. Actual and Forecasted Year-to-Date Transactions

The updated T&R figures presented in this letter consider the latest available data regarding actual transactions on the SPS facilities. Figure 5 presents the actual-versus-forecasted transactions on the SPS facilities for fiscal year (FY) 2016 and 2017. The actual transactions are based on NTTA's officially published SPS Monthly Financial Reports. The forecast includes FY 2016 and FY 2017 projections based on C&M's submittal from April 2015 regarding the FY 2016 budget forecast. The forecasted transactions for October 2016 were 0.5 percent higher than the observed transactions. The year-to-date calculation for FY 2017 indicates that the forecasted transactions are 2.2 percent higher than the observed transactions.

Based on the recent trends especially is the last two quarters of fiscal year 2016, C&M adjusted the short term projections as illustrated in figure 5.

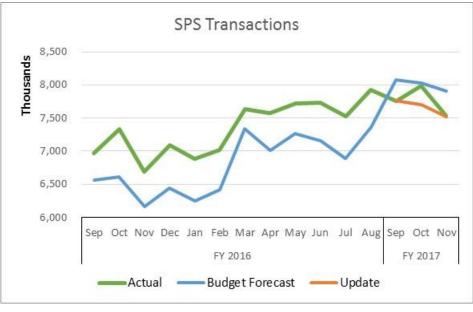






Figure 6 illustrates the actual-versus-forecasted revenue on the SPS facilities for FY 2016. The total forecasted revenue from September to August is 16 percent lower than actual revenue. Similar to total revenue, AVI and ZipCash revenues are 16 and 15 percent lower, respectively.

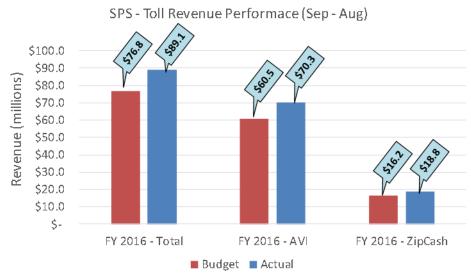


Figure 6. Comparison of Actual and Forecasted FY 2016 Revenue

## 4. Traffic and Revenue Assumptions

For the current update, the key T&R assumptions for the SPS were reevaluated and revised as needed. Assumptions are listed separately for the CTP and PGBT-WE since each of these tollroads has its own corridor-specific conditions. Since these facilities are currently open, the assumptions are based on historical/existing data and trends from these facilities. In addition, C&M's T&R analysis was conducted with the assumption that mainlanes, exit ramps, and entrance ramps have been built with proper geometric configurations and traffic control to ensure that traffic is not negatively affected.

Below are the key assumptions used as part of the current T&R update, including those developed collaboratively with NTTA staff and those determined by C&M.

## 4.1. Assumptions Developed Collaboratively with NTTA

### Toll Rate

СТР

- I-30 to Altamesa Boulevard: Two-axle vehicle AVI rate is \$0.185/mile in July 2009. After July 2009, adjustments are made every 2 years at 2.75 percent per year.
- Altamesa Boulevard to US 67: Two-axle vehicle AVI rate is \$0.145/mile in July 2009. After July 2009, adjustments are made every 2 years at 2.75 percent per year.
- The video toll surcharge is the maximum of (a) 50 percent of the AVI toll charge or (b) \$0.20 per transaction in 2009 dollars, inflated by 2.75 percent per year.
- No congestion pricing is assumed.
- Three or more axle Toll Rate Factor: 3.10



- Tolls for vehicles with more than two axles are calculated based on "N-1" weighting.
- The minimum toll charge is based on a trip length of 1.5 miles.
- Tolls charged to users are rounded to the highest penny.

### **PGBT-WE**

- Two-axle vehicle AVI rate is \$0.145/mile in July 2009. After July 2009, adjustments are made every 2 years at 2.75 percent per year.
- The video toll surcharge is the maximum of (a) 50 percent of the AVI toll charge or (b) \$0.20 per transaction in 2009 dollars, inflated by 2.75 percent per year.
- No congestion pricing is assumed.
- Three or more axle Toll Rate Factor: 3.40
- Tolls for vehicles with more than two axles are calculated based on "N-1" weighting.
- The minimum toll charge is based on a trip length of 1.5 miles.
- Tolls charged to users are rounded to the highest penny.

### **Capacity**

Road segment capacity is based on the maximum vehicle throughput by lane, road, and terrain (area) type. The road capacities and transportation improvements are taken from NCTCOG's "MOB40-2016.

### СТР

- Six mainlanes from I-30 to I-20; no further increase in capacity is assumed throughout the forecast period.
- Six mainlanes from I-20 to Sycamore School Road; no further increase in capacity is assumed throughout the forecast period.
- Four mainlanes from Sycamore School Road to FM 1187; no further increase in capacity is assumed throughout the forecast period.
- Barrier-divided Super 2 configuration with intermittent passing lanes between FM 1187 and US 67; based on NCTCOG's MOB40-2016 assumptions, all two-lane and Super 2 segments of the CTP will be converted to four lanes by 2035.
- According to NCTCOG's MOB40-2016, all the following direct connectors are not assumed to be built by 2027: CTP North to I-20W, I-20E to CTP South, CTP North to SH 183W, SH 183E to CTP South, CTP South to I-20E, and I-20W to CTP North.
- Limited capacity improvements to US 67 near the south end of the CTP are assumed to be built by 2027, which includes a two-lane to four-lane expansion of approximately 1 mile in length.

### **PGBT-WE**

- By January 1, 2020, the segment from I-30 to I-20 will be expanded from two to three mainlanes in each direction.
- By January 1, 2031, the segment from Conflans Road to north of Egyptian Way will be restriped to four mainlanes in each direction, and the segment from north of Egyptian Way to I-20 will be expanded from three to four mainlanes in each direction.



- SH 360 between I-30 and I-20 will be expanded to eight lanes by 2028.
- The SH 360/PGBT-WE direct connector is not assumed to be open by 2040.
- SH 360 between Camp Wisdom Road and Debbie Lane will be expanded to eight total lanes by 2035.
- SH 360 between Debbie Lane and US 67 will be expanded to six lanes by 2035.

### AVI Shares

AVI shares are applied on a plaza-by-plaza basis, taking into consideration current observed averages and trends. All presented AVI shares include V-Toll.

### СТР

• The observed AVI share is 77 percent in 2016 and will grow to 85 percent by 2040 and thereafter.

### **PGBT-WE**

• Based on the latest observed information, AVI share is at 70 percent in 2016 and will grow to 85 percent by 2040 and thereafter.

### **Revenue Recovery Rates**

The recovery rates for this study were developed based on historical data and future NTTA goals, with the guidance of NTTA. The recovery rate for AVI revenue is assumed to be 99.5 percent for all years. The recovery rate for ZipCash revenue is ultimately categorized in unpersuable, invoiced, and recovered ZipCash revenue. As with the AVI recovery rates, the ZipCash recovery rates are the same for both SPS facilities, as presented in Table 1. The effective ZipCash toll factor will remain the same from 2019 onward. The projected annual toll revenues included in this letter are revenues projected to be collected in each year (i.e., cash basis) after applying the below-described revenue recovery assumptions to the projected toll transactions for the year.

| ZipCash Revenue Recovery Assumptions<br>(excluding VTolls) | 2016  | 2017  | 2018  | 2019  |
|--|-------|-------|-------|-------|
| Total Unpursuable ZipCash Revenue                          | 24.0% | 23.5% | 23.1% | 22.1% |
| Total ZipCash Revenue in Process (invoiced)                | 76.0% | 76.5% | 76.9% | 77.9% |
| ZipCash Invoiced Revenue Recovered (After 3 Months)        | 52.0% | 53.1% | 54.1% | 55.0% |
| Effective ZipCash Revenue Recovered (After 3 Months)       | 39.5% | 40.6% | 41.6% | 42.8% |
| ZipCash Invoiced Revenue Recovered (After 1 Year)          | 62.4% | 63.7% | 64.9% | 65.5% |
| Effective ZipCash Revenue Recovered (After 1 Year)         | 47.4% | 48.7% | 50.0% | 51.0% |

### Table 1. ZipCash Yearly Reduction Factors for the SPS



## 4.2 C&M Assumptions

### Truck Traffic Shares

The truck percentage, or truck traffic share, is applied on a plaza-by-plaza basis following current observed averages and trends through December 2016. All vehicles with more than two axles are considered trucks. It is assumed that these truck shares will remain constant throughout the forecast period.

### СТР

- I-30 to Altamesa Boulevard: Truck percentage is 1.8 percent
- Altamesa Boulevard to US 67: Truck percentage is 5.0

### **PGBT-WE**

• Truck percentage is 5.0 percent

### **Revenue Days**

The revenue days parameter is used within the T&R estimation to convert weekday values to annual values. Revenue days are applied on a plaza-by-plaza basis following current observed averages and trends through December 2016.

### СТР

• 330 days in 2016 and thereafter

### **PGBT-WE**

• 320 days in 2016, growing to 325 in 2019 and thereafter

### <u>Ramp-Up</u>

Compared to the separate NTTA System, the SPS is relatively new, which is why ramp-up factors were applied to the SPS facilities. Ramp-up represents the time required for a project to reach its full potential, traffic-wise. It is during this period, in the early years of operation, that a project's revenue stream is established. The ramp-up factors used here are based on historical trends and C&M's experience with similar projects. The range of these factors is within the common business practice for T&R studies.

- CTP: Ramp-up begins at 80 percent in 2016 and will grow to 100 percent by 2020.
- PGBT-WE: Ramp-up begins at 95 percent in 2016 and will grow to 100 percent by 2019.

### Additional Assumptions

- 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 Special Project 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 2016 T&R Update Study
- Growth in traveler values of time will not significantly deviate from the assumed rates in the March 2016 T&R Update Study
- No local, regional, or national emergency will arise which would abnormally restrict the use of motor vehicles



# 5. Updated Traffic and Revenue Forecasts

T&R forecasts for the NTTA SPS facilities from 2016 to 2065 are shown in Table 2 and Figure 6. As mentioned earlier, the T&R projections are primarily based on C&M's comprehensive March 2016 T&R study, updated with the new MOB40 trip tables and network adopted by NCTCOG and released in April 2016.

Forecasts beyond year 2040 are based on nominal assumptions regarding future traffic growth with assumed periodic toll rate increases. As illustrated in Table 2, total revenue in 2016 for the PGBT-WE increases from \$51.9 to \$188.3 million by 2040, whereas CTP revenue increases from \$37.3 in 2016 to \$182.4 million by 2040 in nominal dollar.

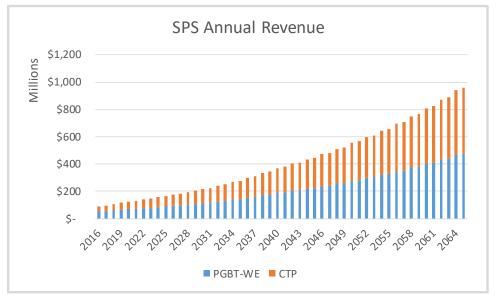


Figure 7. SPS Annual Toll Revenue Forecasts



|               | Annual Transactions Annual Toll Revenue |            |             |    |             |    |             |     |             |
|---------------|---|------------|-------------|----|-------------|----|-------------|-----|-------------|
| Fiscal Year — | PGBT-WE                                 | CTP        | SPS         |    | PGBT-WE     |    | СТР         |     | SPS         |
| 2016          | 59,906,000                              | 28,206,000 | 88,112,000  | \$ | 51,894,000  | \$ | 37,255,000  | \$  | 89,149,000  |
| 2017          | 62,410,000                              | 32,330,000 | 94,740,000  | \$ | 54,942,000  | \$ | 41,097,000  | \$  | 96,039,000  |
| 2018          | 64,754,000                              | 35,491,000 | 100,245,000 | \$ | 60,062,000  | \$ | 48,219,000  | \$  | 108,281,000 |
| 2019          | 66,957,000                              | 38,034,000 | 104,991,000 | \$ | 62,782,000  | \$ | 52,157,000  | \$  | 114,939,000 |
| 2020          | 69,008,000                              | 39,941,000 | 108,949,000 | \$ | 67,891,000  | \$ | 57,357,000  | \$  | 125,248,000 |
| 2021          | 70,673,000                              | 41,140,000 | 111,813,000 | \$ | 70,292,000  | \$ | 59,651,000  | \$  | 129,943,000 |
| 2022          | 72,380,000                              | 42,374,000 | 114,754,000 | \$ | 75,554,000  | \$ | 64,393,000  | \$  | 139,947,000 |
| 2023          | 74,128,000                              | 43,644,000 | 117,772,000 | \$ | 78,225,000  | \$ | 66,968,000  | \$  | 145,193,000 |
| 2024          | 75,919,000                              | 44,954,000 | 120,873,000 | \$ | 84,079,000  | \$ | 72,293,000  | \$  | 156,372,000 |
| 2025          | 77,752,000                              | 46,302,000 | 124,054,000 | \$ | 87,051,000  | \$ | 75,184,000  | \$  | 162,235,000 |
| 2026          | 79,630,000                              | 47,692,000 | 127,322,000 | \$ | 93,564,000  | \$ | 81,160,000  | \$  | 174,724,000 |
| 2027          | 81,553,000                              | 49,123,000 | 130,676,000 | \$ | 96,868,000  | \$ | 84,406,000  | \$  | 181,274,000 |
| 2028          | 83,522,000                              | 50,596,000 | 134,118,000 | \$ | 104,115,000 | \$ | 91,116,000  | \$  | 195,231,000 |
| 2029          | 85,539,000                              | 52,115,000 | 137,654,000 | \$ | 107,789,000 | \$ | 94,758,000  | \$  | 202,547,000 |
| 2030          | 85,989,000                              | 53,678,000 | 139,667,000 | \$ | 113,808,000 | \$ | 102,290,000 | \$  | 216,098,000 |
| 2031          | 87,794,000                              | 55,288,000 | 143,082,000 | \$ | 117,463,000 | \$ | 106,380,000 | \$  | 223,843,000 |
| 2032          | 89,638,000                              | 56,947,000 | 146,585,000 | \$ | 125,873,000 | \$ | 114,835,000 | \$  | 240,708,000 |
| 2033          | 91,520,000                              | 58,654,000 | 150,174,000 | \$ | 129,913,000 | \$ | 119,426,000 | \$  | 249,339,000 |
| 2034          | 93,442,000                              | 60,415,000 | 153,857,000 | \$ | 139,213,000 | \$ | 128,916,000 | \$  | 268,129,000 |
| 2035          | 95,404,000                              | 62,227,000 | 157,631,000 | \$ | 143,678,000 | \$ | 134,069,000 | \$  | 277,747,000 |
| 2036          | 97,408,000                              | 64,094,000 | 161,502,000 | \$ | 153,959,000 | \$ | 144,723,000 | \$  | 298,682,000 |
| 2037          | 99,453,000                              | 66,017,000 | 165,470,000 | \$ | 158,894,000 | \$ | 150,507,000 | \$  | 309,401,000 |
| 2038          | 101,542,000                             | 67,997,000 | 169,539,000 | \$ | 170,261,000 | \$ | 162,467,000 | \$  | 332,728,000 |
| 2039          | 103,674,000                             | 70,037,000 | 173,711,000 | \$ | 175,713,000 | \$ | 168,959,000 | \$  | 344,672,000 |
| 2040          | 105,852,000                             | 72,139,000 | 177,991,000 | \$ | 188,281,000 | \$ | 182,384,000 | \$  | 370,665,000 |
| 2041          | 106,910,000                             | 73,221,000 | 180,131,000 | \$ | 191,858,000 | \$ | 186,762,000 | \$  | 378,620,000 |
| 2042          | 107,979,000                             | 74,319,000 | 182,298,000 | \$ | 203,082,000 | \$ | 198,621,000 | \$  | 401,703,000 |
| 2043          | 109,059,000                             | 75,434,000 | 184,493,000 | \$ | 206,940,000 | \$ | 203,388,000 | \$  | 410,328,000 |
| 2044          | 110,149,000                             | 76,565,000 | 186,714,000 | \$ | 219,046,000 | \$ | 216,303,000 | \$  | 435,349,000 |
| 2045          | 111,251,000                             | 77,714,000 | 188,965,000 | \$ | 223,207,000 | \$ | 221,494,000 | \$  | 444,701,000 |
| 2046          | 112,363,000                             | 78,879,000 | 191,242,000 | \$ | 236,265,000 | \$ | 235,559,000 | \$  | 471,824,000 |
| 2047          | 113,487,000                             | 80,062,000 | 193,549,000 | \$ | 240,754,000 | \$ | 241,213,000 | \$  | 481,967,000 |
| 2048          | 114,622,000                             | 81,263,000 | 195,885,000 | \$ | 254,839,000 | \$ | 256,530,000 | \$  | 511,369,000 |
| 2049          | 115,768,000                             | 82,482,000 | 198,250,000 | \$ | 259,681,000 | \$ | 262,686,000 | \$  | 522,367,000 |
| 2050          | 116,926,000                             | 83,719,000 | 200,645,000 | \$ | 274,872,000 | \$ | 279,367,000 | \$  | 554,239,000 |
| 2051          | 118,095,000                             | 84,556,000 | 202,651,000 | \$ | 280,094,000 | \$ | 284,676,000 | \$  | 564,770,000 |
| 2052          | 119,276,000                             | 85,402,000 | 204,678,000 | \$ | 296,480,000 | \$ | 301,329,000 | \$  | 597,809,000 |
| 2053          | 120,469,000                             | 86,256,000 | 206,725,000 | \$ | 302,113,000 | \$ | 307,054,000 | \$  | 609,167,000 |
| 2054          | 121,674,000                             | 87,119,000 | 208,793,000 | \$ | 319,787,000 | \$ | 325,017,000 | \$  | 644,804,000 |
| 2055          | 122,890,000                             | 87,990,000 | 210,880,000 | \$ | 325,863,000 | \$ | 331,192,000 | \$  | 657,055,000 |
| 2056          | 124,119,000                             | 88,870,000 | 212,989,000 | \$ | 344,926,000 | \$ | 350,567,000 | \$  | 695,493,000 |
| 2057          | 125,361,000                             | 89,759,000 | 215,120,000 | \$ | 351,479,000 | \$ | 357,227,000 | \$  | 708,706,000 |
| 2058          | 126,614,000                             | 90,656,000 | 217,270,000 | \$ | 372,041,000 | \$ | 378,126,000 | \$  | 750,167,000 |
| 2059          | 127,880,000                             | 91,563,000 | 219,443,000 | \$ | 379,109,000 | \$ | 385,310,000 | \$  | 764,419,000 |
| 2060          | 129,159,000                             | 92,478,000 | 221,637,000 | \$ | 401,288,000 | \$ | 407,850,000 | \$  | 809,138,000 |
| 2061          | 130,451,000                             | 93,403,000 | 223,854,000 | \$ | 408,912,000 | \$ | 415,599,000 | \$  | 824,511,000 |
| 2062          | 131,755,000                             | 94,338,000 | 226,093,000 | \$ | 432,833,000 | \$ | 439,912,000 | \$  | 872,745,000 |
| 2063          | 133,073,000                             | 95,281,000 | 228,354,000 | \$ | 441,057,000 | \$ | 448,270,000 | \$  | 889,327,000 |
| 2064          | 134,403,000                             | 96,233,000 | 230,636,000 | \$ | 466,859,000 | \$ | 474,494,000 | \$  | 941,353,000 |
| 2065          | 135,748,000                             | 97,196,000 | 232,944,000 | \$ | 475,729,000 | \$ | 483,509,000 | \$  | 959,238,000 |
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### Table 2. SPS Annual Transaction and Toll Revenue Forecasts



Table 3 presents the compound annual growth rates (CAGR) of transactions and revenue for the SPS as a whole and for each facility.

| Period    | Annual Transactions Growth |      |      | Annual Toll Revenue Growth |       |      |  |
|-----------|----------------------------|------|------|----------------------------|-------|------|--|
| Penou     | PGBT-WE                    | СТР  | SPS  | PGBT-WE                    | СТР   | SPS  |  |
| 2016-2020 | 3.6%                       | 9.1% | 5.4% | 6.9%                       | 11.4% | 8.9% |  |
| 2020-2030 | 2.2%                       | 3.0% | 2.5% | 5.3%                       | 6.0%  | 5.6% |  |
| 2030-2040 | 2.1%                       | 3.0% | 2.5% | 5.2%                       | 6.0%  | 5.5% |  |
| 2040-2065 | 1.1%                       | 1.3% | 1.2% | 4.1%                       | 4.3%  | 4.2% |  |

### Table 3. SPS Transaction and Revenue Forecast Growth Rates

Table 4 compares the updated T&R forecasts included in this letter and the forecasts included in the March 2016 T&R Update Study. The updated toll transaction forecasts for 2016 and 2017 are 0.2 percent and 4.5 percent lower than the March 2016 T&R Update Study forecasts, 6.4 percent lower in 2018, and 6.8 percent lower in 2019. Transactions are 5.3 percent higher in 2016, 2.2 percent lower in 2017, and almost 9 percent lower in 2018 and 2019. Overall, transactions and revenue from 2016 to 2020 decrease by 5.1 percent and 5.4 percent, respectively. Transactions and revenue from 2016 to 2065 decrease by 5.5 percent and 4.0 percent, respectively.

### Table 4. NTTA SPS Annual T&R Comparisons – Change from March 2016 T&R Update Study

| Year      | Transactions | Revenue |
|-----------|--------------|---------|
| 2016      | -0.2%        | 5.3%    |
| 2017      | -4.5%        | -2.2%   |
| 2018      | -6.4%        | -8.7%   |
| 2019      | -6.8%        | -8.9%   |
| 2020      | -6.4%        | -8.3%   |
| 2040      | -5.4%        | -4.3%   |
| 2065      | -5.4%        | -2.7%   |
| 2016-2020 | -5.1%        | -5.4%   |
| 2016-2065 | -5.5%        | -4.0%   |



# 6. Conclusion and Recommendations

Observing the latest trends in traffic growth on the PGBT-WE and CTP indicates a moderate slowdown in the rapid growth observed for the last three years. The potential development growth around these facilities supports steady growth, and this slowdown may just be an indication of a longer ramp-up period. C&M believes there is still significant room to grow based on the potential population and employment growth and projected land use by NCTCOG.

The AVI penetration and recovery rate on ZipCash is one of the key factors for the SPS T&R projections. NTTA's efforts for improved marketing and increased collection can also have an important impact on total revenue in future years.

The differences between the previous T&R projections and those presented in this letter are primarily the result of three important factors:

- 1. Moderate slowdown in the ramp-up periods of the CTP and PGBT-WE, which impacts short-term projections
- 2. Network updates within the vicinity of the SPS
- 3. Utilization of recently approved MOB40-2016 trip tables, which contributes to differences in long-term projections, especially in 2040.

The differences throughout the forecast period are a product of these changes, which are inter/extrapolated from the model years.

In summary, based on the evaluation of the new information that has become available since the completion of the March 2016 Study, C&M Associates recommends that the NTTA SPS T&R forecasts included in Table 2 of this letter be used to support the refunding of the Series 2011A & D bonds through the issuance of the upcoming Series 2017A 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,

Shahram "Sam" Bohluli

Vice President C&M Associates, Inc.



# 7. Disclaimer

The results presented in this report constitute the opinion of C&M with respect to the tolled facilities' future traffic and revenue. The traffic and revenue projections were developed based on standard professional practices and the information available at the time the analysis was executed, subject to the time and budget constraints of the project's scope of work. C&M reasonably relied on the accuracy and completeness of information provided (both written and orally) by the North Texas Tollway Authority and independent parties. C&M is unaware of any material facts that would call into question the information that was received. Publicly available material has not been independently verified, and C&M does not assume responsibility for verifying such material.

As with any forecast, differences between projected and actual outcomes may occur due to future events and circumstances outside of C&M's control. C&M cannot guarantee or ensure future events in connection to this traffic and revenue forecast, though the projections and other forward-looking statements included herein are based on reasonable assumptions as of the date this study was completed.

The information and results presented in this report should be considered as a whole. Selecting portions of any individual result without considering the intent of the whole may promote a misleading or incomplete view of this study's findings and the methodologies used to obtain these findings. C&M does not endorse the value or merit of partial information extracted from this report.

