



North Central Texas Council of Governments

TO: Peggy Thurin, P.E.
Texas Department of Transportation

DATE: November 8, 2018

FROM: Jenny Narvaez
Program Manager

SUBJECT: Transmittal of the Congestion Mitigation and Air Quality Performance Plan

As required by the systems performance regulation, 23 United States Code 149(l), the North Central Texas Council of Governments, as the acting Metropolitan Planning Organization for the Dallas-Fort Worth region, has developed the Congestion Mitigation and Air Quality (CMAQ) Performance Plan to support the implementation of CMAQ measures. Attached please find the CMAQ Performance Plan for the Dallas-Fort Worth region.

NCTCOG appreciates the partnership with the Texas Department of Transportation (TxDOT) staff to develop the baseline, targets, and plan for the CMAQ performance measures. NCTCOG will continue to coordinate with TxDOT and other agencies to ensure all requirements are met. Should you have any questions about this transmittal, please feel free to contact me at (817) 608-2342 or jnarvaez@nctcog.org.



Jenny Narvaez

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Attachment

Congestion Mitigation and Air Quality Performance Plan

**North Central Texas Council of Governments
November 8, 2018**

Introduction

The purpose of this report is to document how Congestion Mitigation and Air Quality (CMAQ) transportation funding for projects allocated in the Dallas-Fort Worth ozone nonattainment area help the region meet its two- and four-year targets for peak-hour excessive delay, non-single-occupant-vehicles, and on-road mobile source emissions. These targets were established by the North Central Texas Council of Governments (NCTCOG) in coordination with the Texas Department of Transportation (TxDOT) after consultation with TxDOT and other regional metropolitan planning organizations (MPO) within the State of Texas.

Baseline Condition

To establish targets, NCTCOG and TxDOT looked at baseline conditions in the Dallas-Fort Worth ozone nonattainment area for three specific measures that relate to the CMAQ program:

- Peak-Hour Excessive Delay Measure (PHED)
- Non-Single-Occupant-Vehicle Measure (Non-SOV)
- On-Road Mobile Source Emissions Measure
 - Oxides of Nitrogen (NO_x)
 - Volatile Organic Compounds (VOC)

The results of these analyses for the baseline provided in Table 1 are documented below.

Table 1 – Baseline On-Road Mobile Source Emissions

Pollutant	Baseline
Annual PHED per Capita	N/A
Percent of Non-SOV Travel	19.5%
Emissions – NO _x (kg/day)	2,410.80
Emissions – VOC (kg/day)	499.72

Traffic Condition Measures

Two of the measures relate to traffic conditions: PHED and Non-SOV. The PHED measure is defined as the annual hours of peak-hour excessive delay per capita on the national highway system inside the relevant Urbanized Area boundary. The threshold for excessive delay is based on the travel time at 20 miles per hour or 60 percent of the posted speed limit travel time, whichever is greater. For each relevant roadway link, all delay that occurs below these speed thresholds during peak periods for the year is summed together. This total excessive delay is then multiplied by that roadway link's peak-period traffic volume and occupancy factors to determine the person-hours of delay. The resulting segment-level PHED metric on all relevant segments is summed together, and then divided by the Urbanized Area population to arrive at a final Person-Hours of Peak Hour Excessive Delay per Capita. Peak periods are defined as Monday through Friday 6:00AM – 10:00AM and 3:00PM – 7:00PM. There is no requirement for States to report baseline and/or two-year targets for this measure in the first performance period. The primary data source for this measure is the National Performance Management Research Dataset (NPMRDS) data, aggregated to 15-minute intervals.

The Non-SOV measure is computed as the percent of working population that do not drive alone to work in a car, van, or truck. Rulemaking allows a variety of specific data sources to calculate this measure. NCTCOG and TxDOT, with assistance from the Texas A&M Transportation Institute (TTI) settled on using the 5-Year American Community Survey (ACS) Journey to Work data source. The ACS is a Census Bureau product that is derived from a series of annual surveys, and resulting output is often aggregated into multi-year rolling averages to increase sample size. As of this writing, the 2012-2016 5-Year ACS is the newest available for this measure, which yields a 19.5 percent baseline for this measure for the Dallas-Fort Worth-Arlington Urbanized Area.

On-Road Mobile Source Emissions Measures

The on-road mobile source emissions performance measure is the total emissions reduction measure (two- and four-year cumulative estimated emissions reductions) for all CMAQ-funded projects, of each applicable criteria pollutant and precursor. For the Dallas-Fort Worth nonattainment area, the pollutants measured are NO_x and VOC.

To develop the baseline, NCTCOG staff compared existing local Transportation Improvement Plan (TIP) projects from 2014 to 2017 with projects entered into the Federal Highway Administration’s User Profile and Access Control System (UPACS) database for the same period. The results showed only a certain percentage of TIP projects were reported in the database, due the nature of UPACS reporting. UPACS was found to include an average of 78 percent of emissions benefits reported in the TIP for NO_x and 75 percent for VOC. The averages were applied to the total emission reductions for CMAQ-funded TIP projects (2014-2017). Due to NCTCOG’s 2019-2022 TIP not being fully programmed, staff chose these amounts as the established baseline provided in Table 1.

Targets

The results of the analyses for the targets, provided in Table 2, are documented below.

Table 2 – Established State CMAQ-Focused Two- and Four-Year Targets

Performance Measure	2-Year Target	4-Year Target
Annual PHED per Capita	N/A	15
Percent of Non-SOV Travel	19.9%	20.2%
Emissions – NO _x (kg/day)	2,892.96	5,062.68
Emissions – VOC (kg/day)	599.67	1,079.40

Traffic Condition Measures

TTI worked with TxDOT and relevant MPOs to develop a forecast-based target-setting methodology for the PHED measure. NCTCOG supports this methodology and the targets it produced for the Dallas-Fort Worth-Arlington Urbanized Area. Beginning with the calculated 2017 baseline value for this measure, TTI assumed a 2 percent annual growth in excessive delay, and 4 percent annual growth rate in person miles of travel. Their methodology also forecasts substantial increases in population due to two factors: the region’s normal growth, and as a result of the Census Bureau potentially adjusting the Urbanized Area boundary outward after the 2020 Census. The growth rates in congestion coupled with the increase in affected population result in a final PHED forecast that does not change significantly through the duration of the performance period.

NCTCOG developed its own forecast-based methodology to set targets for the non-SOV measure. The data source that TxDOT and NCTCOG are using for this measure is the 5-Year American Community Survey, specifically Table DP-03. As of this writing, data related to this measure is available from ACS final years of 2012 to 2016. NCTCOG applied a Least Squares best-fit trend line to these 2012-2016 values to extrapolate the measure through the end of the performance period. The 2016 baseline for this measure is 19.5 percent, and NCTCOG's forecast increases this slightly to 19.9 percent in 2020 and 20.2 percent in 2022.

On-Road Mobile Source Emissions Measures

NCTCOG coordinates with local stakeholders and TxDOT in selection of CMAQ projects for deployment in the Dallas-Fort Worth ozone nonattainment area. These projects are selected to meet the program goals of reducing congestion and/or reducing emissions of ozone precursor pollutants. Emissions estimates for these projects are estimated by NCTCOG using methodologies developed as part of the Texas Guide to Accepted Mobile Source Emission Reduction Strategies (MOSERS). In cases where no practical MOSERS methodology exists, verified past emission reduction performance is used to create an emissions reduction estimate.

For the first performance period, between 2018 and 2022, NCTCOG coordinated with TxDOT to establish targets for the CMAQ traffic congestion and on-road emissions measures. For the two- and four-year emissions reductions targets, staff analyzed the behavior of emission factors over time and applied percentage reductions to the baseline in an effort to better correlate with potential future reductions. TxDOT was required to set initial targets by May 20, 2018. NCTCOG then had 180 days to establish targets on behalf of the MPO. Below are the TxDOT targets for the three specific measures that relate to the CMAQ program within the Dallas-Fort Worth ozone nonattainment area.

Target Tracking

Traffic Condition Measures

This CMAQ Performance Plan submitted with the State Department of Transportation Baseline Performance Report shall include a description of the projects identified for CMAQ funding and how these projects will contribute to the achievement of the two- and four-year targets for traffic congestion and on-road mobile source emissions. The overall CMAQ benefits include that of congestion mitigation and reduction of emissions from on-road mobile vehicles. While NCTCOG does not quantify PHED and non-SOV benefits, they will be reflected in the previously stated data sets used to track these targets in the coming years.

On-Road Mobile Source Emissions Measures

NCTCOG is only required to report emissions benefits for NO_x and VOC. The two- and four-year emissions benefits reported for the CMAQ performance measures will change as NCTCOG has not yet fully programmed all CMAQ funding into the later years of the TIP and some benefits may not ultimately be reported in the CMAQ Public Access System due to being previously reported for prior fiscal years.

Similar to methodology used to develop the two- and four-year targets, staff analyzed the behavior of emissions factors over time and applied percentage reductions to the emissions benefits for all years to

better correlate with potential future reductions. For a project listing of CMAQ-funded projects for TIP years 2018-2021, please see appended Table 3.

Conclusion

As required by the systems performance regulation, 23 United States Code 149(l), each MPO serving a transportation management area with a population over 1 million that includes a nonattainment or maintenance area is required to develop a CMAQ Performance Plan to support the implementation of CMAQ measures. With the CMAQ Performance Plan and its biennial updates, NCTCOG will continue to report the Dallas-Fort Worth region's two- and four-year targets, describe how we plan to meet the targets, and detail the progress toward achieving the targets over the course of the performance period. NCTCOG will continue the ongoing partnership with TxDOT and other partner agencies to ensure all requirements are met and that performance measures reflect transparent and achievable goals. The specific regional performance measures will continue to closely associate with the region's long-range transportation planning goals.

Table 3 - Expected Benefits of CMAQ Projects in Dallas-Fort Worth Nonattainment Area's TIP

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2018	BIKE/PEDESTRIAN	VELOWEB CONTINUOUS BICYCLE AND PEDESTRIAN PATH	3.09	3.39	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	2 BICYCLE TRAIL LINKS EXTENDING NORTHEAST FROM DOWNTOWN CARROLLTON DART STATION; ONE TRAIL PARALLELS HUTTON BRANCH CREEK/BNSF RAIL LINE AND THE OTHER IS PARALLEL TO THE COTTONBELT RAIL LINE	2.21	2.42	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	NEW SIDEWALK SEGMENTS NEAR SCHOOL SITES AT PECAN CREEK AND WOODROW WILSON ELEMENTARY SCHOOL IN THE CITY OF DENTON	0.05	0.06	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	CONSTRUCT SIDEWALKS ON APPROACHES, ADD LIGHTING, AND IMPLEMENT PEDESTRIAN SAFETY IMPROVEMENTS ON QUAIL DRIVE/IH 635 BRIDGE	0.04	0.04	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	PRELIMINARY ENGINEERING FOR VELOWEB SHARED-USE PATH, INCLUDING CONNECTIONS TO NORTH CARROLLTON/FRANKFORD DART STATION AND TRINITY MILLS DART STATION	4.09	4.48	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	CONSTRUCT NEW BIKE TRAIL, 8-FOOT SIDEWALKS, PEDESTRIAN LIGHTING, BENCHES, LANDSCAPING, INFORMATIONAL KIOSKS, TRASH RECEPTACLES, AND BIKE RACKS WITHIN THE DISTRICT	2.94	3.22	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	BICYCLE AND PEDESTRIAN IMPROVEMENTS ALONG TRE RAIL LINE	2.12	2.32	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	SHARED-USE PATH (TRAIL) FROM THE INTERSECTION OF TRINITY BLVD/ELM ST TO CENTREPORT RAIL STATION; PRELIMINARY ENGINEERING FOR CONNECTION TO MIKE LEWIS TRAIL	2.64	2.89	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	CONSTRUCT BIKE/PEDESTRIAN TRAIL	2.51	2.75	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	CONSTRUCT APPROX 0.5 MILE SIDEWALK	0.02	0.03	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	CONSTRUCT APPROX 1 MILE BIKE/PEDESTRIAN TRAIL EXTENSION	0.32	0.35	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	CONSTRUCT APPROX 2.1 MILES BIKE/PEDESTRIAN TRAIL	1.09	1.20	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BIKE/PEDESTRIAN	SIDEWALK IMPROVEMENTS ALONG WHITE SETTLEMENT ROAD WEST OF HOLLOWAY STREET, AND SIDEWALK IMPROVEMENTS FROM BURTON HILL ROAD EAST TO THE WEST FORK, WEST TRINITY RIVER TRAIL	1.58	1.73	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2018	BIKE/PEDESTRIAN	CONSTRUCT NEW SHARED-USE PATH, CROSSWALKS, AND SIGNAGE	0.79	0.87	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	BUS TRANSIT	7TH STREET DISTRICT CIRCULATOR ELECTRIC BUSES AND CHARGING STATIONS FOR NEW/EXPANDED TRANSIT SERVICE	164.82	97.57	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	HOV	CONVT 2 REV HOV TO 2 REV EXP LN FROM IH 30 TO COLORADO; RECONST & WDN 8 TO 10 GP LN & RECONST 1 REV HOV TO 2 REV EXP LN FROM COLORADO TO US 67; RECONST 4/6 LN CONT FRTG RD FROM COLORADO TO MARSALIS; RECONST 4/6 TO 2/6 LN DIS FRTG RD FROM MARSALIS TO US 67	24.63	11.50	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	HOV	WIDEN 4 TO 6 MAINLANES, RECONSTRUCT EXISTING 2 LANE CONCURRENT HOV TO 1 REVERSIBLE EXPRESS LANE	15.71	7.34	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	INTERSECTION IMPROVEMENT	TRAFFIC SIGNAL AND PEDESTRIAN IMPROVEMENTS	4.95	0.10	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	TRAFFIC SIGNAL AND PEDESTRIAN IMPROVEMENTS	0.20	0.10	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	EXPAND INTERSECTION TO ADD RIGHT AND LEFT TURN LANES	0.36	0.19	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	INTERSECTION IMPROVEMENTS TO REMOVE DOUBLE INTERSECTION, INCLUDING ADDING DUAL LEFT TURN LANES AND A RIGHT TURN LANE ON EACH APPROACH; RECONSTRUCT ALLIANCE BLVD INTERSECTION; ADD SIDEWALKS	0.49	0.29	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	ABRAM-AREA BICYCLE AND PEDESTRIAN DISTRICT: CONSTRUCT NEW BIKE TRAIL, SIDEWALKS, PEDESTRIAN LIGHTING, BENCHES, LANDSCAPING, INFORMATIONAL KIOSKS, TRASH RECEPTACLES, AND BIKE RACKS WITHIN THE DISTRICT	3.80	4.17	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	INTERSECTION IMPROVEMENT TO CONVERT EXISTING FOUR-WAY STOP TO A ROUNDABOUT	0.40	0.21	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	ADD SECOND WESTBOUND LEFT TURN LANE	0.14	0.07	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	INTERSECTION IMPROVEMENTS ON PRESTON ROAD AT MAIN, STONEBROOK/ROLATER, WADE, LEBANON, AND WARREN INCLUDING TURN LANES AND SIGNAL IMPROVEMENTS	19.69	12.45	YES - REDUCES PEAK HOUR DELAY	NO
2018	INTERSECTION IMPROVEMENT	INTERSECTION IMPROVEMENTS-CONSTRUCT TURN LANES	0.32	0.17	YES - REDUCES PEAK HOUR DELAY	NO

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2018	INTERSECTION IMPROVEMENT	INTERSECTION IMPROVEMENT	1.86	0.99	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	ACTIVE CORRIDOR MANAGEMENT SYSTEM; REAL TIME TRAVELER INFORMATION WITH HIGH SPEED COMMUNICATIONS	1475.06	247.15	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	INSTALLATION OF WIRELESS ITS	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	INSTALLATION OF WIRELESS ITS	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	IMPLEMENT ADAPTIVE TRAFFIC SIGNAL SYSTEMS AT TRAFFIC SIGNALS ALONG PRESTON ROAD, GAYLORD PARKWAY, AND WARREN PARKWAY; INCLUDES ADAPTIVE TRAFFIC SIGNAL CONTROL SYSTEM, SOFTWARE AND AUTOMATED PERFORMANCE MEASURES	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	INSTALLATION OF NEW ITS FIBER AND EQUIPMENT	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	INSTALLATION OF ITS FIBER AND EQUIPMENT	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	INSTALL NEW COMMUNICATION EQUIPMENT AT 140 LOCATIONS	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2018	ITS	INSTALLATION OF NEW ITS FIBER, ITS EQUIPMENT, & SATELLITE BUILDING	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2018	RAIL STATION	CONSTRUCT 100 SPACE PARK AND RIDE FACILITY IN TXDOT ROW BENEATH FM 1938 RAMPS AT NE MALL INTERCHANGE	0.46	0.18	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	RAIL TRANSIT	CONSTRUCTION OF NEW COMMUTER RAIL LINE	7.45	4.41	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2018	SPECIAL STUDIES	REGIONAL MINOR INTERSECTION EQUIPMENT PROGRAM-MINOR IMPROVEMENTS SUCH AS TRAFFIC SIGNAL CABINETS, ETC.	391.76	247.50	NO	NO
2018	SPECIAL STUDIES	EMISSIONS REDUCTION STRATEGIES FOR OZONE PRECURSORS INCLUDING VOLATILE ORGANIC COMPOUND (VOC) CONTROLS AND OTHER DESIGNATED POLLUTANTS	290.57	183.62	NO	NO
2018	SPECIAL STUDIES	EMISSIONS REDUCTION STRATEGIES FOR OZONE PRECURSORS INCLUDING VOLATILE ORGANIC COMPOUND (VOC) CONTROLS AND OTHER DESIGNATED POLLUTANTS	290.57	183.62	NO	NO
2018	TRAFFIC SIGNAL IMPROVEMENT	TRAFFIC SIGNALS AND INTERSECTION IMPROVEMENT	2.61	1.35	YES - REDUCES PEAK HOUR DELAY	NO

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2018	TRAFFIC SIGNAL IMPROVEMENT	CITYWIDE SIGNAL SYSTEM UPGRADE TO SIGNAL CONTROLLERS	177.00	111.87	YES - REDUCES PEAK HOUR DELAY	NO
2018	TRAFFIC SIGNAL IMPROVEMENT	CITYWIDE SIGNAL SYSTEM UPGRADE TO SIGNAL CONTROLLERS	34.95	22.03	YES - REDUCES PEAK HOUR DELAY	NO
2018	TRAFFIC SIGNAL IMPROVEMENT	DEVELOP AND IMPLEMENT TRAFFIC SIGNAL COORDINATION IN DFW NONATTAINMENT AREA	140.73	89.01	YES - REDUCES PEAK HOUR DELAY	NO
2018	TRAFFIC SIGNAL IMPROVEMENT	CONSTRUCT A COMMUNICATION LINK BETWEEN FRISCO AND NTTA, TRAFFIC SIGNAL COMMUNICATIONS CITYWIDE, AND TRAFFIC SIGNAL SYSTEM INFRASTRUCTURE CITYWIDE	1475.06	247.15	YES - REDUCES PEAK HOUR DELAY	NO
2018	TRAFFIC SIGNAL IMPROVEMENT	FRISCO CITYWIDE TRAFFIC CAMERA, TRAFFIC SIGNAL, AND SIGNAL COMMUNICATION UPGRADES	70.15	44.37	YES - REDUCES PEAK HOUR DELAY	NO
2019	BIKE/PEDESTRIAN	BIKE AND PEDESTRIAN TRAIL	4.12	4.52	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	NEW SIDEWALK SEGMENTS NEAR SCHOOL SITES AT PECAN CREEK AND WOODROW WILSON ELEMENTARY SCHOOL IN THE CITY OF DENTON	0.05	0.06	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	REALIGN INTERSECTION AND ADD TRAFFIC SIGNAL AT ROBERTS CUT OFF, CONSTRUCT ROUNDABOUT AT LTJG BARNETT, RECONSTRUCT MEANDERING ROAD FROM 4 TO 3 LANES, AND ADD SIDEWALKS AND BICYCLE LANES	1.14	1.19	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	SHARED-USE PATH (TRAIL) FROM THE INTERSECTION OF TRINITY BLVD/ELM ST TO CENTREPORT RAIL STATION; PRELIMINARY ENGINEERING FOR CONNECTION TO MIKE LEWIS TRAIL	2.64	2.89	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	CONSTRUCT APPROX 2.1 MILES BIKE/PEDESTRIAN TRAIL	1.09	1.20	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	CONSTRUCT BIKE/PEDESTRIAN TRAIL	1.45	1.50	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	SAFE ROUTES TO SCHOOL; PEDESTRIAN IMPROVEMENTS INCLUDING SIDEWALKS AND CROSSWALKS	0.03	0.03	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	SAFE ROUTES TO SCHOOL PEDESTRIAN IMPROVEMENTS IN PROXIMITY TO SMITHFIELD MIDDLE SCHOOL INCLUDING NEW CROSSWALKS, SIGNAGE, AND SIDEWALK SPOT IMPROVEMENTS TO COMPLETE EXISTING NETWORK GAPS	0.06	0.06	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	SAFE ROUTES TO SCHOOL; CONSTRUCT PEDESTRIAN IMPROVEMENTS INCLUDING SIDEWALKS, CROSSWALKS, PEDESTRIAN SIGNALS, AND SIGNAGE	0.02	0.01	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2019	BIKE/PEDESTRIAN	CONSTRUCT NEW SHARED-USE PATH, CROSSWALKS, AND SIGNAGE	0.79	0.87	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	CONSTRUCT BICYCLE AND PEDESTRIAN IMPROVEMENTS INCLUDING SHARED-USE PATH, BIKEWAYS, SIDEWALKS, CROSSWALKS, AND SIGNAGE	0.16	0.11	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	CONSTRUCT BIKE/PEDESTRIAN BRIDGE OVER US 75 (ON SYSTEM SECTION)	5.68	6.24	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BIKE/PEDESTRIAN	CONSTRUCT APPROACHES TO A BICYCLE/PEDESTRIAN FACILITY OVER US 75 AND CONSTRUCT A BICYCLE/PEDESTRIAN BRIDGE OVER WHITE ROCK CREEK (OFF SYSTEM SECTION)	6.18	6.78	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	BUS TRANSIT	PILOT PROGRAM TO IMPLEMENT AND OPERATE NEW FIXED AND FLEXIBLE STOP ROUTE TRANSIT SERVICE FOR CITIZENS OF FOREST HILL, EVERMAN AND CROWLEY, INCLUDING THE PROVISION OF BUSES AND BUS STOPS	0.17	0.10	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	GRADE SEPARATION	REPLACE RAILROAD UNDERPASS AND IMPROVE BS 114K DRAINAGE	0.10	0.06	YES - REDUCES PEAK HOUR DELAY	NO
2019	INTERSECTION IMPROVEMENT	9 INTERSECTION IMPROVEMENTS	1.98	1.22	YES - REDUCES PEAK HOUR DELAY	NO
2019	INTERSECTION IMPROVEMENT	INTERSECTION IMPROVEMENTS, INCLUDING ADDITIONAL LEFT TURN LANES AND DEDICATED RIGHT TURN LANES AND NEW SIGNAL IMPROVEMENTS	0.07	0.04	YES - REDUCES PEAK HOUR DELAY	NO
2019	INTERSECTION IMPROVEMENT	INTERSECTION IMPROVEMENTS INCLUDING NEW TRAFFIC SIGNALS AND CONSTRUCTION OF DEDICATED TURN LANES	0.17	0.09	YES - REDUCES PEAK HOUR DELAY	NO
2019	INTERSECTION IMPROVEMENT	WIDEN 2 LANE ROADWAY TO 3 LANES URBAN; INTERSECTION IMPROVEMENTS INCLUDING TURN LANES AND NEW SIGNAL IMPROVEMENTS	0.09	0.05	YES - REDUCES PEAK HOUR DELAY	NO
2019	INTERSECTION IMPROVEMENT	CONSTRUCT INTERSECTION IMPROVEMENT	0.18	0.09	YES - REDUCES PEAK HOUR DELAY	NO
2019	INTERSECTION IMPROVEMENT	CONSTRUCT INTERSECTION IMPROVEMENTS INCLUDING TRAFFIC SIGNAL UPGRADES WITH RADAR DETECTION, PEDESTRIAN IMPROVEMENTS WITH CROSSWALKS AND ADA RAMPS	1.26	0.65	YES - REDUCES PEAK HOUR DELAY	NO
2019	INTERSECTION IMPROVEMENT	RECONSTRUCT 4 LANE UNDIVIDED RURAL TO 4 LANE DIVIDED URBAN ROADWAY WITH INTERSECTION AND SIDEWALK IMPROVEMENTS	0.28	0.16	YES - REDUCES PEAK HOUR DELAY	NO
2019	ITS	FREEWAY INCIDENT MANAGEMENT PROGRAM	1475.06	247.15	YES - REDUCES PEAK HOUR DELAY	NO

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2019	ITS	INSTALLATION OF 4 NEW CCTV CAMERAS AND 5 NEW DMS ALONG SH 180 TO FACILITATE TRAFFIC MANAGEMENT BY VIEWING TRAFFIC CONDITIONS VIA CCTV AND ADJUSTING SIGNAL TIMING AND PROVIDING FEEDBACK TO MOTORING PUBLIC VIA DMS	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2019	ITS	INSTALLATION OF NEW ITS FIBER AND EQUIPMENT	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2019	ITS	INSTALL NEW COMMUNICATION EQUIPMENT AT 140 LOCATIONS	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2019	ITS	INSTALLATION OF NEW DYNAMIC MESSAGE SIGNS AND NEW CCTV CAMERAS	-	-	YES - REDUCES PEAK HOUR DELAY	NO
2019	RAIL TRANSIT	ENGINEERING, ENVIRONMENTAL, AND CONSTRUCTION FOR COTTON BELT REGIONAL RAIL PROJECT (COTTON BELT PROJECT #2)	7.16	4.24	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	RAIL TRANSIT	ENGINEERING, ENVIRONMENTAL, AND CONSTRUCTION OF COTTON BELT REGIONAL RAIL PROJECT (COTTON BELT PROJECT #4)	7.16	4.24	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2019	SPECIAL STUDIES	DEPLOY AUTOMATED, ELECTRIC, SHUTTLE SERVICE IN UNIVERSITY AND RESIDENTIAL/COMMERCIAL ENVIRONMENTS TO REDUCE AUTO TRIPS TO/AROUND CAMPUS, SUPPORT REMOTE PARKING LOTS, PROVIDE MOBILITY OPTIONS FOR PEDESTRIANS/DISABLED (NEW TRANSIT SERVICE)	3.07	2.17	NO	NO
2019	TRAFFIC SIGNAL IMPROVEMENT	PEDESTRIAN AND BICYCLE ENHANCEMENTS INCLUDING TRAFFIC SIGNALS, SIDEWALKS, CROSSWALKS, AND LIGHTING	1.35	0.70	YES - REDUCES PEAK HOUR DELAY	NO
2019	TRAFFIC SIGNAL IMPROVEMENT	NEW SIGNAL IMPROVEMENTS, INCLUDING RETIMING	0.33	0.17	YES - REDUCES PEAK HOUR DELAY	NO
2019	TRAFFIC SIGNAL IMPROVEMENT	SIGNAL IMPROVEMENTS INCLUDING CORRIDOR RETIMING	0.18	0.09	YES - REDUCES PEAK HOUR DELAY	NO
2020	BIKE/PEDESTRIAN	CONSTRUCT SHARED USE PATH AND RELATED PEDESTRIAN AND BICYCLE IMPROVEMENTS (PEDESTRIAN CROSSWALKS, SIGNAGE, LIGHTING, AND SIGNALS) IN PROXIMITY OF THE FUTURE CYPRESS WATERS COTTON BELT RAIL STATION	1.31	1.43	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	RECONSTRUCT FROM 3 TO 2 LANES, ADD BICYCLE LANES, NEW SIDEWALKS, ADD ON-STREET PARKING, AND CONSTRUCT TWO ROUNDABOUTS	0.41	0.40	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	RECONSTRUCT FROM 2 TO 2 LANES, ADD BICYCLE LANES, WIDEN/EXPAND SIDEWALKS, AND ADD ON-STREET PARKING	0.80	0.88	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2020	BIKE/PEDESTRIAN	CONSTRUCT APPROX 2.1 MILES BIKE/PEDESTRIAN TRAIL	1.09	1.20	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	CONSTRUCT BIKE/PEDESTRIAN TRAIL, SIDEWALK, AND ON-STREET BIKE LANES	1.59	1.74	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	CONSTRUCT BIKE/PED SAFETY IMPROVEMENTS INCL INSTALLING FLASHING BEACONS, BIKE/PED SIGNALS, CROSSWALKS, SIGNAGE, SIDEWALKS, BIKEWAYS, REFUGE ISLANDS AT INTERSECTIONS, AND SHARED USE PATH FROM EXISTING COTTON BELT TRAIL TO EXISTING JOHN BARFIELD TRAIL	1.91	2.10	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	SAFE ROUTES TO SCHOOL PEDESTRIAN IMPROVEMENTS IN PROXIMITY TO SMITHFIELD MIDDLE SCHOOL INCLUDING NEW CROSSWALKS, SIGNAGE, AND SIDEWALK SPOT IMPROVEMENTS TO COMPLETE EXISTING NETWORK GAPS	0.06	0.06	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	SAFE ROUTES TO SCHOOL; CONSTRUCT PEDESTRIAN IMPROVEMENTS INCLUDING SIDEWALKS, CROSSWALKS, PEDESTRIAN SIGNALS, AND SIGNAGE	0.02	0.01	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	CONSTRUCT BICYCLE AND PEDESTRIAN IMPROVEMENTS INCLUDING SHARED-USE PATH, BIKEWAYS, SIDEWALKS, CROSSWALKS, AND SIGNAGE	0.16	0.11	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	CONSTRUCT AND RECONSTRUCT SIDEWALKS, CROSSWALKS, SIGNAGE, BICYCLE/PEDESTRIAN SIGNALS, AND BIKEWAYS (SAFE ROUTES TO SCHOOLS FOR 3 SCHOOLS IN THE NORTH DISTRICT)	0.96	1.06	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	CONSTRUCT AND RECONSTRUCT SIDEWALKS, CROSSWALKS, SIGNAGE, BICYCLE/PEDESTRIAN SIGNALS, AND BIKEWAYS (SAFE ROUTES TO SCHOOLS FOR 2 SCHOOLS IN THE SOUTH DISTRICT)	2.39	2.63	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BIKE/PEDESTRIAN	CONSTRUCT AND RECONSTRUCT SIDEWALKS, CROSSWALKS, SIGNAGE, BICYCLE/PEDESTRIAN SIGNALS, AND BIKEWAYS (SAFE ROUTES TO SCHOOLS FOR 2 SCHOOLS IN THE SOUTH DISTRICT)	0.43	0.47	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	BUS TRANSIT	PILOT PROGRAM TO IMPLEMENT AND OPERATE NEW FIXED AND FLEXIBLE STOP ROUTE TRANSIT SERVICE FOR CITIZENS OF FOREST HILL, EVERMAN AND CROWLEY, INCLUDING THE PROVISION OF BUSES AND BUS STOPS	0.17	0.10	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	INTERSECTION IMPROVEMENT	ADD RIGHT TURN LANES FOR SOUTHBOUND TRAFFIC	0.03	0.01	YES - REDUCES PEAK HOUR DELAY	NO

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2020	INTERSECTION IMPROVEMENT	ADD RIGHT TURN LANE FOR SOUTHBOUND TRAFFIC INTO AIRPORT'S NORTHERN ENTRANCE (MAIN ENTRANCE FOR JET FUEL TRUCKS)	0.03	0.01	YES - REDUCES PEAK HOUR DELAY	NO
2020	INTERSECTION IMPROVEMENT	CONSTRUCT INTERSECTION IMPROVEMENT	0.18	0.09	YES - REDUCES PEAK HOUR DELAY	NO
2020	INTERSECTION IMPROVEMENT	WIDEN BRIDGE TO PROVIDE 2 LEFT TURN LANES FOR PGBT ENTRANCE RAMPS; ADD SB RIGHT TURN LANE AT PGBT	0.33	0.17	YES - REDUCES PEAK HOUR DELAY	NO
2020	ITS	INSTALLATION OF 4 NEW CCTV CAMERAS AND 5 NEW DMS ALONG SH 180 TO FACILITATE TRAFFIC MANAGEMENT BY VIEWING TRAFFIC CONDITIONS VIA CCTV AND ADJUSTING SIGNAL TIMING AND PROVIDING FEEDBACK TO MOTORING PUBLIC VIA DMS	1475.06	247.15	YES - REDUCES PEAK HOUR DELAY	NO
2020	RAIL STATION	CONSTRUCT NEW CARPENTER RANCH RAIL STATION ON ORANGE LINE IN IRVING	0.41	0.24	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	RAIL STATION	CONSTRUCT NEW SHARED-USE PATH FOR BICYCLISTS AND PEDESTRIANS; BIKEWAY AND PEDESTRIAN IMPROVEMENTS INCLUDING SIDEWALKS, BICYCLE/PEDESTRIAN SIGNALS, CROSSWALKS, SIGNAGE, AND BICYCLE/PEDESTRIAN TRAFFIC COUNT EQUIPMENT	13.62	14.94	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	RAIL TRANSIT	ENGINEERING, ENVIRONMENTAL, AND CONSTRUCTION OF COTTON BELT REGIONAL RAIL PROJECT (COTTON BELT PROJECT #4)	7.16	4.24	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2020	TRAFFIC SIGNAL IMPROVEMENT	PEDESTRIAN AND BICYCLE ENHANCEMENTS INCLUDING TRAFFIC SIGNALS, SIDEWALKS, CROSSWALKS, AND LIGHTING	1.35	0.70	YES - REDUCES PEAK HOUR DELAY	NO
2020	TRAFFIC SIGNAL IMPROVEMENT	NEW SIGNAL IMPROVEMENTS, INCLUDING RETIMING	0.33	0.17	YES - REDUCES PEAK HOUR DELAY	NO
2020	TRAFFIC SIGNAL IMPROVEMENT	PLANO CITYWIDE TRAFFIC CAMERA, TRAFFIC SIGNAL, AND SIGNAL COMMUNICATION UPGRADES	183.47	86.91	YES - REDUCES PEAK HOUR DELAY	NO
2020	TRAFFIC SIGNAL IMPROVEMENT	SIGNAL CONTROLLER AND SOFTWARE UPGRADES	19.56	9.23	YES - REDUCES PEAK HOUR DELAY	NO
2021	BIKE/PEDESTRIAN	SHARED-USE PATH (TRAIL) FROM THE INTERSECTION OF TRINITY BLVD/ELM ST TO CENTREPORT RAIL STATION; PRELIMINARY ENGINEERING FOR CONNECTION TO MIKE LEWIS TRAIL	2.64	2.89	YES - REDUCES PEAK HOUR DELAY	NO
2021	INTERSECTION IMPROVEMENT	ADD RIGHT TURN LANES FOR SOUTHBOUND TRAFFIC	0.03	0.01	YES - REDUCES PEAK HOUR DELAY	NO

TIP FY	PROJECT TYPE	PROJECT DESCRIPTION	NOX (kg/day)	VOC (kg/day)	PHED BENEFIT	NON-SOV BENEFIT
2021	INTERSECTION IMPROVEMENT	ADD RIGHT TURN LANE FOR SOUTHBOUND TRAFFIC INTO AIRPORT'S NORTHERN ENTRANCE (MAIN ENTRANCE FOR JET FUEL TRUCKS)	0.03	0.01	YES - REDUCES PEAK HOUR DELAY	NO
2021	INTERSECTION IMPROVEMENT	RECONSTRUCT AND WIDEN FROM 2/3 LANES TO 5 LANE URBAN; INTERSECTION IMPROVEMENTS INCLUDING A ROUNDABOUT	0.21	0.11	YES - REDUCES PEAK HOUR DELAY	NO
2021	INTERSECTION IMPROVEMENT	WIDEN 4 TO 6 LANES DIVIDED URBAN WITH NEW GRADE SEPARATIONS AT FM 423, FM 720, NAVO RD, TEEL PKWY, AND LEGACY DR, WITH SIDEWALK IMPROVEMENTS	4.18	2.20	YES - REDUCES PEAK HOUR DELAY	NO
2021	INTERSECTION IMPROVEMENT	ADD RAISED MEDIAN WITH LEFT TURN LANES, ADD RIGHT TURN LANES AND RESTRIPE FOR SHARED USE	0.57	0.49	YES - REDUCES PEAK HOUR DELAY	NO
2021	RAIL TRANSIT	DALLAS LOVE FIELD AIRPORT LIGHT RAIL TRANSIT CONNECTION; PLACEHOLDER	26.75	13.81	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2021	RAIL TRANSIT	ENGINEERING, ENVIRONMENTAL, AND CONSTRUCTION OF COTTON BELT REGIONAL RAIL PROJECT (COTTON BELT PROJECT #4)	7.16	4.24	YES - REDUCES PEAK HOUR DELAY	YES - INCREASES NON-SOV TRAVEL
2021	ITS	INSTALLATION OF NEW ITS FIBER AND EQUIPMENT	1475.06	247.15	YES - REDUCES PEAK HOUR DELAY	NO