

DESTINO 2019-2022

TRANSPORATION IMPROVEMENT PROGRAM



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DESTINO 2019-2022 TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

El Paso Metropolitan Planning Organization

211 N. Florence, Room 202

El Paso, Texas 79901

Phone: (915) 212-0258 Fax: (915) 212-0257

www.elpasompo.org

Public Meeting Dates March 12th, 13th, 14th, 15th, 19th, 20th, 21st, and 26th, 2018

PARTICIPATING AGENCIES

City of Anthony, NM City of El Paso, TX City of San Elizario, TX City of Socorro, TX City of Sunland Park, NM County of El Paso, TX Dona Ana County, NM Otero County, NM Town of Anthony, TX Town of Anthony, TX Town of Clint, TX Town of Horizon City, TX Village of Vinton, TX New Mexico Department of Transportation, District 1 New Mexico Department of Transportation, District 2 Texas Department of Transportation, El Paso District 24

Prepared by:

El Paso Metropolitan Planning Organization

Approved by:

Transportation Policy Board (TPB), May 18, 2018

Submitted to:

FHWA and FTA

Prepared in cooperation with the Texas Department of Transportation, the New Mexico Department of Transportation, the U.S. Department of Transportation, the Federal Highway Administration and the Federal Transit Administration.

1. Metropolitan Planning Organization

Federal regulations require the creation and management of a Metropolitan Planning Organization (MPO) for every urban area having a population of more than 50,000. Federal regulations require that the TIP shall cover a period of not less than four years, and be updated at least every four years. The El Paso MPO, which was designated by the City of El Paso, Texas, in 1988, produces a fiscally constrained TIP covering a period of four years.

The El Paso's Transportation Policy Board (TPB) is responsible for transportation planning and programming for the El Paso MPO. The TPB directs MPO staff through the Executive Director of the MPO. The MPO office is located at 211 N. Florence, Room 202, El Paso, Texas. The MPO's planning area is El Paso County, Texas, southern Dona Ana County, New Mexico, and a small portion of Otero County, New Mexico. The MPO coordinates urban area-wide multi-modal transportation plans, which involve the study of present transportation regional patterns in relation to current and projected development.

The MPO is responsible for the preparation of the Metropolitan Transportation Plan (MTP), Transportation Improvement Program (TIP), Unified Planning Work Program (UPWP), and other documents as required by federal regulations. The MTP and the TIP accommodate future traffic by improving transportation facilities and programs, expanding transit services, and planning new highways and arterials.

2. Role of the Transportation Policy Board

The Transportation Policy Board (TPB) was established for the purpose of setting transportation policy to ensure that regional transportation projects and studies are developed in accordance with federal and state laws, rules and regulations. The TPB is composed of elected public officials from local governments, membership from the Texas Department of Transportation (TXDOT), the New Mexico Department of Transportation (NMDOT), Texas and New Mexico State Senators and Representatives, the City of El Paso's mass transit provider, and Sun Metro. See section six for the structure of the Transportation Project Advisory Committee (TPAC), which makes recommendations to the TPB for approval of project selection, and technical issues for planning and programming transportation projects in the region.

3. Purpose of the Transportation Improvement Program

The TIP is a short-range program of transportation improvements for the MPO's planning area, and is required by federal law. The TIP is prepared and coordinated by MPO staff with participating agencies that implement transportation projects and programs in accordance with regulations issued by the United States Department of Transportation.

Before adoption by the TPB, the draft TIP is reviewed by the implementing agencies, and is presented for public involvement for at least 30 days. Local officials, the Texas Department of Transportation, the New Mexico Department of Transportation, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) use the adopted TIP as a guide in budgeting funds for regional transportation improvements.

The Destino 2019-2022 TIP is consistent with the El Paso MPO's Destino 2045 Metropolitan Transportation Plan (MTP). The El Paso MPO's Destino documents were produced through a Comprehensive, Cooperative, and Continuing transportation planning process carried on by the MPO in consultation with TXDOT, NMDOT, and the public transit operator(s) in the region. The TIP contains all projects to be funded with federal transportation funds, as well as all regionally significant transportation projects funded with non-federal funds.

The inclusion of a project in the TIP reflects a consensus of priority needs among the citizens living in the MPO study area, locally-elected officials, local transportation agency representatives, transit providers, and representatives of TXDOT and the NMDOT. The TIP is, in effect, a listing of transportation priorities, estimated costs and recommended implementation dates. The TIP may be amended as transportation needs and/or funding levels change.

4. Definition of Area

The City of El Paso, as an urban area having a population of over 200,000, is classified as a Transportation Management Area (TMA). The TMA designation applies to the overall metropolitan planning area, which includes the following primary participants:

- City of El Paso
- City of San Elizario
- City of Socorro, TX
- El Paso County
- Mass Transit Provider Sun Metro
- Town of Anthony, TX
- Town of Clint, TX
- Town of Horizon City, TX
- TXDOT-El Paso District
- Village of Vinton, TX
- City of Anthony, NM
- City of Sunland Park, NM
- Dona Ana County, NM
- NMDOT-District 1
- NMDOT-District 2
- Otero County, NM

5. Public Participation Program

The intent of the Public Participation Program (PPP) for the El Paso Metropolitan Planning Organization (MPO) is to include residents living in the MPO's Study Area, community groups, private and public agencies, and transportation providers in an effort that is proactive and that provides complete information, timely public notice, and full public access to key decisions made through the MPO. The PPP supports early and continuing involvement of the public in developing transportation

plans and programs. All documents have, as a minimum, 30 days of continuing public review and comment periods. Concerns of a wide variety of involved parties are integrated into the PPP and the plan encourages and provides for the greatest level of education on transportation issues. Opportunities for residents to contribute ideas and voice opinions early and often, both during and after the preparation of draft plans and programs is provided by the PPP.

Every effort is made to accommodate traditionally under-served audiences, including low-income and minority households, and persons with disabilities. A concerted effort is made to hold public meetings, public hearings, and open houses at locations that comply with the Americans with Disabilities Act (ADA) requirements, as well as locations in the vicinity of scheduled bus routes.

In compliance with Environmental Justice requirements, the MPO will respond to the needs of lowincome and minority populations by choosing meeting locations, times and formats that are appropriate, accessible and reassuring to affected populations. All accommodations for the visual and/or hearing impaired and Spanish-speaking individuals are provided upon request prior to all public meetings. All public meeting announcements are announced on the MPO website and are published in various local periodicals and announced on regional radio stations.

The PPP applies to the MTP, TIP and may be utilized—with appropriate modifications—for any other MPO document requiring public involvement, including the Public Participation Program itself, which requires 45 days of public review. Specific Public Participation Program measures are described in:

- The Metropolitan Transportation Plan (MTP)
- The Transportation Improvement Program (TIP)
- Amendments to Adopted Documents

For a complete copy of the MPO's Public Participation Program, please contact the MPO at (915) 212-0258 or log on the MPO's web page at <u>www.elpasompo.org</u>.

6. **Project Selection Process**

The TPAC has sixteen (16) voting members. The TPAC makes recommendations to the TPB on issues related to the MTP, TIP, UPWP (Unified Planning Work Program), transportation studies, and project selection criteria. The TPAC reviews and makes recommendations to the TPB on projects for inclusion in the MPO's MTP and TIP. The TPAC has regularly scheduled monthly meetings, but holds special meetings as necessary. The TPAC members are selected by their agency. Nine (9) voting members of the TPAC (50% plus 1) constitutes a quorum.

Table 1. The Transportation Project Advisory Committee's me Voting Members:	
	1 1
City of El Paso	1 member
Texas Department of Transportation	1 member
El Paso County (designated by Commissioner's Court)	1 member
Town of Horizon City	1 member
Village of Vinton	1 member
Town of Anthony, TX	1 member
City of Anthony, NM	1 member
City of Socorro	1 member
City of Sunland Park, NM	1 member
City of San Elizario	1 member
Ysleta Del Sur Pueblo	1 member
Sun Metro	1 member
Town of Clint	1 member
New Mexico Department of Transportation (NMDOT)	1 member
Doña Ana County, New Mexico	1 member
University of Texas at El Paso	1 member

Table 1. The Transportation Project Advisory Committee's membership as of 03/07/18:

The El Paso MPO's Transportation Policy Board (TPB) approved a two-tier project selection process that includes requirements for both the MAP-21 National Goals and the Congestion Management Process strategies. MAP-21 requires MPOs to establish and use a performance-based approach to transportation decision making and development of transportation plans. The planning process established a cooperative, continuous, and comprehensive framework for making transportation investment decisions in metropolitan areas as defined in the MAP-21 Act. A methodology is necessary to reduce project deliverable delays and improve regional planning by the Project Selection Process (PSP). The Fixing America's Surface Transportation Act (FAST Act) maintains current program structures and funding shares between highways and transit, continues efforts of MAP-21, and includes streamlining the approval process for new transportation projects.

The phases of the project selection process begins with Phase 1 Call for projects and Phase 2 Need and Purpose. PSP Tier 1 (MTP) Phase 2.1 MAP-21 National Goals establishes national performance goals for the Federal-aid highway program in seven areas: safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability and reduced project delivery delays. PSP Tier 1 (MTP) Phase 2.2 MPO 2013 Congestion Management Process Strategies identified travel demand management strategies, traffic operation strategies, public transportation strategies, road capacity strategies and non-CMP strategies. PSP Tier 2 (TIP) Phases 2.3 through 2.3H evaluates a project based on information provided by the sponsoring

agency for project financing and project readiness. Phase 3 is the development of a draft Project List, Phase 4 is the TPAC Recommendation, Phase 5 is Public Involvement and Phase 6 is TPB action.

7. Performance Measures

Performance measures are quantifiable indicators of progress towards achieving the goals and objectives set forth in Destino 2045. The United States Department of Transportation has enumerated several performance measures that the El Paso MPO will report progress towards to demonstrate compliance with MAP-21 and the FAST Act. The measures set forth by the USDOT can be considered "tracking" measures, as they rely primarily on observed data to identify trends. To help the MPO position itself to be successful at reporting progress towards the targets it will either set itself or adopt through the Texas and New Mexico DOTs on the federal tracking measures, Destino 2045 and the Destino 2019-2022 TIP proposes the use of several planning-level performance measures that the MPO can estimate or forecast using its existing modeling tools. These measures provide a proxy for the relative performance of different mixes of potential TIP projects – i.e. "alternatives" – and to help the MPO select the best program of projects to help its meet the goals set forth by the community through the visioning process as well as the targets it will set under federal law.

The planning-level performance measures recommended for Destino 2045 (Table 2) can be roughly categorized within the goals of the plan, although several of these measures indicate progress towards multiple goals. Additionally, some indicators (such as crash rates) that are useful for identifying deficiencies on the existing system are not easily adaptable to forecasting tools. For these goals, Destino 2045 recommends performance measures that describe the overall program of projects' ability to introduce safety improvements at crash hotspots, replace deficient infrastructure, and address access and/or operational concerns at Ports of Entry.

	Table 2. Performance Measures					
GOALS	ALTERNATIVES EVALUATION PERFORMANCE					
	MEASURES					
Safety	Number of projects that include safety enhancements located near					
	crash hotspots					
Maintenance & Operations	Number of projects that repair or replace deficient bridges or					
	pavements					
Mobility	Speed Index					
	Annual hours of delay					
Accessibility & Travel	Percentage of jobs, key destinations, and population within 1/2 mile					
Choice	of high-quality, rapid transit					
	Commute times from Environmental Justice zones					
	Percentage non-SOV trips					
	Average trip costs					
	Number of projects that improve operations or multimodal access					
	at current or future POEs					
Sustainability	Estimated emissions					
	Total VMT & VMT per capita					

Economic Vitality	Annual hours of delay along major freight corridors Percentage of jobs accessible within 30 minutes (by any mode)
Quality of Life	There is no specific performance measure for this goal. The indicator
	for this goal is a summary of performance on each goal alternative relative to the other alternatives.

8. Most Used TIP funding Sources

 Table 3. The 12 Traditional federal funding sources used in Texas

CATEGORY	DESCRIPTION
1-Preventive Maintenance and Rehabilitation.	Preventive maintenance and rehabilitation of the existing State Highway System. The rehabilitation funds may be used for rehabilitation of the Interstate Highway System main lanes, frontage roads, structures, rehabilitation of signs, pavement markings, striping, etc. The Transportation Planning and Programming Division may approve the use of rehabilitation funds for the construction of interchanges and HOV lanes on the Interstate Highway System. Rehabilitation funds may not be used for the construction of new SOV lanes.
2 – Metropolitan Area (TMA) Corridor Metro Projects	Mobility and added capacity projects on major state highway system corridors, which serve the mobility needs of the Metropolitan Areas (TMA) MPOs.
3 -Non-Traditional Funding	This funding category will place all the non-traditional funding categories in Texas into Category 3.
4 – Statewide Connectivity Corridor Projects	Mobility and added capacity projects on major state highway system corridors, which provide statewide connectivity between urban areas and corridors, serving mobility needs throughout the state.
5-CMAQ	Addresses attainment of national ambient air quality standard in the non-attainment areas (currently Dallas-Fort Worth, Houston, and El Paso). Funds cannot be used to add capacity for single occupancy vehicles.
6 – Consolidated Structure Rehabilitation	Replacement or rehabilitation of eligible bridges on and off the state highway system (functionally obsolete or structurally deficient). Replacement of existing highway-railroad grade crossings, and the rehabilitation or replacement of deficient railroad underpasses on the state highway system. Specific locations evaluated by cost-benefits derived index (benefits such as improved traffic flow, accident/fatality reduction).
7 – STP Metro-Mobility	Transportation needs within metropolitan area boundaries with populations of 200,000 or greater. Projects selected by Metropolitan Planning Organizations (MPOs).
8 – STP Safety – Federal Hazard Elimination Programs	Safety related projects – on and off state highway system. Projects are evaluated using three years of accident data, and ranked by Safety Improvement index.

8 – STP Safety – Federal Railway Highway Safety Program	Installation of automatic railroad warning devices at hazardous railroad crossing on and off state highway system, selected from statewide inventory list which is prioritized by index (# of trains per day, train speed, ADT, type of existing warning device, train- involved accidents within prior five years, etc.
9 – Enhancements	Projects above and beyond what normally is expected for transportation enhancements – twelve general activities as outlined since TEA-21. Projects recommended by local government entities, reviewed and recommended by committee, selected by Texas Transportation Commission.
9– Transportation Alternatives Program (TAP)	Transportation-related activities as described in the Transportation Alternatives Set-Aside Program, such as on and off-road pedestrian and bicycle facilities, and infrastructure projects for improving access to public transportation.
10 – Miscellaneous – State Park Roads 1992	Construction and rehabilitation of roadways within or adjacent to state parks, fish hatcheries, etc. subject to Memorandum of Agreement between TXDOT and TPWD. Locations selected and prioritized by TPWD.
10 - Miscellaneous-Railroad Grade Crossing Replanking Program 1992	Replacement of rough railroad crossing surfaces on the state highway system (approximately 140 installations per year statewide). Project selection based on conditions of the riding surface (highway, railroad and drainage) and cost per vehicle using the crossing.
10 - Miscellaneous-Railroad Signal Maintenance Program 1992	Contributions to each railroad company based on number of state highway system crossings and type of automatic devices present at each crossing.
10 - Miscellaneous- Construction Landscape Programs 1992	New landscape development projects such as typical Right of Way landscape development, rest area/picnic area landscape development, erosion control and environmental mitigation activities on the state highway system.
10 - Miscellaneous- (Federal) 1992	Federal programs such as Forest Highways, Indian Reservation Highways, Federal Lands Highways, and Ferry Boat Discretionary.
11 – District Discretionary	Miscellaneous projects on the state highway system selected at the district's discretion. A portion of these funds may be used off the state highway system.
12 – Strategic Priority	Commission selected projects, which promote economic development, provide system continually with adjoining states and Mexico or address other strategic needs as determined by the commission.
Proposition 1	Allocates money from the rainy day fund to State Highway Fund for construction, maintenance and rehabilitation.
Proposition 7	Supplies funding to the State Highway Fund from sales and use tax and state motor vehicle tax to build, maintain and restore non-tolled public roads.

FTA Section 5307	Mass Transit apportionment to urbanized areas based on population and operating performance.
FTA Section 5309	Funding for major transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit.
FTA Section 5339	Mass Transit discretionary funds for capital projects only.
FTA Section 5310	Provides federal funds to private nonprofit entities for the transportation of elderly and/or disabled persons.
FTA Section 5311	Rural Transit Program

9. Air Quality

The El Paso Metropolitan Planning Organization (MPO) requested the Texas Commission on Environmental Quality (TCEQ) to petition EPA for a re-designation of the Carbon Monoxide (CO) non-attainment area to attainment status, and EPA proposed approval of the re-designation request, and a maintenance plan on August 4, 2008. The proposal was a direct final, effective on October 3, 2008. The maintenance State Implementation Plan (SIP) for CO for the El Paso MPO is operating under a motor vehicle emission budget of 29.66 tons/day. The carbon monoxide (CO) limited maintenance plan was approved on September 8, 2017 (effective October 10, 2017).

For Particulate Matter 10 (PM-10) the SIP has a motor vehicle emissions budget of 12.1 tons/ day. Texas Administrative Code 30 TAC §111.147(1)(E) was developed in an effort to help develop a maintenance status for PM-10. These efforts include the pavement of new alleyways, unpaved alleyways not being used for residential garbage and recycling collection, and use of reclaimed asphalt pavement as an alternate means to pave the road. Texas Administrative Code 30 TAC §111.147(2) was developed to change the frequency of street sweeping in an effort that the City of El Paso can achieve the goal of street sweeping. In New Mexico, Doña Ana County implemented an erosion control regulations ordinance No 194-2000 to enhance the containment of PM-10 and reduction of negative health effects caused by the creation of fugitive dust. In addition, both the Texas and New Mexico developed a Natural Events Action Plan (NEAP). The NEAP provides analysis and documentation of the exceedances as attributable to uncontrollable natural events due to unusually high winds. In addition, the NEAP is designed to protect public health, educate the public about high wind events, mitigate health impacts on the community during future events, and identify and implement Best Available Control Measures (BACM) for man-made sources of windblown dust.

The MPO boundary had been expanded into a portion of Otero County and additional portions of Doña Ana County, New Mexico, a marginal PM-10 non-attainment area in Anthony, NM is within the area covered by the MTP and TIP. The New Mexico Department of Transportation (NMDOT) and their consultants may prepare a qualitative analysis of roadway projects that fall within the non-attainment area.

Before the TIP is given final approval by the Federal Highway Administration (FHWA), it must be approved for air quality conformity. The MPO prepares an Air Quality Transportation Conformity Statement for the TIP, and comments are received through the public involvement process. The conformity statement is forwarded to the Texas Department of Transportation (TXDOT) and New Mexico Department of Transportation (NMDOT), TCEQ and other state and federal agencies for review through the State Consultative Procedures.

The statement is sent to the Texas and New Mexico FHWA State Division office for review and final approval. The FHWA consults with the Federal Transit Administration (FTA), and the statement is forwarded to the EPA. The FHWA takes into account any comments received by the general public, TCEQ, FTA or the EPA concerning the advisability of constructing certain projects, and grants approval based on federal guidelines. A similar process is followed with New Mexico state agencies such as the New Mexico Environmental Department (NMED), and the New Mexico FHWA State Division office.

The Destino 2019-2022 TIP is part of the Destino 2045 MTP. Transportation Conformity for the Destino 2019-2022 TIP will be determined as part of the conforming Destino 2045 MTP. The conformity statement is evaluated according to the amount of carbon monoxide (CO) and particulate matter (PM-10) emissions that are projected from the existing transportation network along with proposed projects. Changes in conformity rules contain several important differences from previous conformity determinations. Budget tests are made for PM10 and CO.

MOVES 2014a, an emissions modeling tool to help determine the amount of emissions produced by vehicles, was be used for the Destino 2045 MTP and Destino 2019-2022 TIP. The Texas Transportation Institute (TTI) is under a TXDOT contract to run the MOVES model for El Paso.

Projects marked "Exempt" may proceed towards implementation even in the absence of a conforming transportation plan and TIP. The EPA listed certain categories of projects as being exempt from conformity requirements in the Federal Register.

El Paso County, and southern Dona Ana County, New Mexico, and a small portion of Otero County, New Mexico are included on the same traffic model for the purpose of conformity determination. Separate figures are calculated for each area for vehicle miles traveled (VMT) and emissions. The El Paso County conformity determination reports CO, and PM-10 emissions where they must conform to the motor vehicle emissions budget tests. Southern Doña Ana County (including Sunland Park, Santa Teresa, La Union and the Gadsden High School area) does not currently have any emission budget tests. No tests are run for the Anthony, New Mexico PM-10 non-attainment area, since only a qualitative analysis is required.

Once the Destino 2019-2022 TIP receives final approval by the Transportation Policy Board, this TIP is included in NM & TX Statewide Transportation Plans (STIP's), and the document will be available for distribution upon request.

10. Grouped Documentation

Under 23 CFR 450.324(i) projects proposed for FHWA and/or FTA funding that are not considered by the State and MPO to be of appropriate scale for individual identification in a given program year **may be grouped by function, geographic area, and work type** by using applicable classifications under 23 CFR 771.117(c) and (d). In non-attainment and maintenance areas, these classifications must be consistent with the exempt project classifications contained in the U.S. EPA transportation conformity requirements (40 CFR Part 51).

The El Paso MPO is participating by grouping some projects in the Transportation Improvement Program (TIP) that are covered in the Texas Statewide Transportation Improvement Program (STIP). The Texas STIP can be located at http://www.txdot.gov/government/programs/stips.html and the New Mexico STIP at http://dot.state.nm.us/content/dam/nmdot/STIP/Official_STIP.pdf Financial accountability for these projects are the responsibility of the STIP, therefore, are not accounted for in the Financial Summary for the El Paso MPO totals. These projects are "exempt" from conformity requirements. These projects do not need policy approval by the TPB for the purpose of revisions. See the following grouped project categories, and the "Definition of Grouped Projects."

PROPOSED	GROUPED	DEFINITION
CSJ (TXDOT)	PROJECT CATEGORY	
5000-00-950	PE – Preliminary Engineering	Preliminary Engineering for any project except added capacity projects in a nonattainment area. Includes activities which do not involve or lead directly to construction, such as planning and research activities; grants for training; engineering to define the elements of a proposed action or alternatives so that social, economic, and environmental effects can be assessed.
5000-00-951	Right of Way Acquisition	Right of Way acquisition for any project except added capacity projects in a nonattainment area. Includes relocation assistance, hardship acquisition and protective buying.
5000-00-952 5000-00-957 5000-00-958	Preventive Maintenance and Rehabilitation	Projects to include pavement repair to preserve existing pavement so that it may achieve its designed loading. Includes seal coats, overlays, resurfacing, restoration and rehabilitation done with existing ROW. Also includes modernization of a highway by reconstruction, adding shoulders or adding auxiliary lanes (e.g., parking, weaving, turning, climbing, non-added capacity) or drainage improvements associated with rehabilitation.
5000-00-953	Bridge Replacement and Rehabilitation	Projects to replace and/or rehabilitate functionally obsolete or structurally deficient bridges.
5000-00-954	Railroad Grade Separations	Projects to construct or replace existing highway-railroad grade crossings and to rehabilitate and/or replace deficient railroad underpasses, resulting in no added capacity.
5800-00-950	Safety	Projects to include the construction or replacement/rehabilitation of guard rails, median barriers, crash cushions, pavement markings, skid treatments, medians, lighting improvements, highway signs, curb ramps, railroad/highway crossing warning

Table 4. Grouped Projects Categories

		devices, fencing, intersection improvements (e.g., turn lanes), signalization projects and interchange modifications. Also includes projects funded via the Federal Hazard Elimination Program, Federal Railroad Signal Safety Program, or Access Managements projects, except those that result in added capacity.
5000-00-956	Landscaping	Project consisting of typical right-of-way landscape development, establishment and aesthetic improvements to include any associated erosion control and environmental mitigation activities.
5800-00-915	Intelligent Transportation Systems Deployment	Highway traffic operation improvement projects including the installation of ramp metering control devices, variable message signs, traffic monitoring equipment and projects in the Federal ITS/IVHS programs.
5000-00-916	Bicycle and Pedestrian	Construction or rehabilitation of bicycle and pedestrian lanes, paths and facilities.
5000-00-917	Safety Rest Areas and Truck Weigh Stations	Construction and improvement of rest areas, and truck weigh stations.
5000-00-918	Transit Improvements and Programs	Projects include the construction and improvement of small passenger shelters and information kiosks. Also includes the construction and improvement of rail storage/maintenance facilities bus transfer facilities where minor amounts of additional land are required and there is not a substantial increase in the number of users. Also includes transit operating assitance, acquisition of third-party transit services, and transit marketing, and mobility management/coordination. Additionally includes the purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet [See Note3].

Note 1: Projects funded with Transportation Alternatives Program (TAP), Transportation Enhancement, and Congestion Mitigation Air Quality funding require a Federal eligibility determination, and are not approved to be grouped.

Note 2: Projects funded as part of the Recreational Trails Program (RTP) consistent with the revised grouped project category definitions may be grouped. RTP projects that are not consistent with the revised grouped project category definitions must be individually noted in the Transportation Improvement Program (TIP) and State Transportation Improvement Program (STIP).

Note 3: In PM10 and PM2.5 nonattainment or maintenance areas, such projects may be grouped only if they are in compliance with control measures in the applicable implementation plan.

11. Americas with Disabilities Act (ADA)

During the planning process, every effort is made to accommodate the traditionally under-served public, including low-income and minority households and persons with disabilities. Concerted efforts are made to hold all public meetings, public hearings, and open houses at accessible locations that comply with Americans with Disabilities Act (ADA) requirements, as well as locations in the vicinity of scheduled bus routes. Additionally, TIP projects must comply with ADA requirements for accessibility.

12. MPO Glossary – Project Section

		Table 5.						
PROJECT CODE	DEFINITION	EXPLANATION						
CSJ	Control Section Job Number	TXDOT-assigned number for projects entered into the Unified Transportation Plan (UTP)						
CN	Control Number	NMDOT-number assigned for projects in New Mexico State Transportation Improvement Program (STIP)						
PROJ ID	Project Identification	Code assigned by the MPO for local tracking/identification; used to relate projects to the Metropolitan Transportation Plan						
F. CLASS	Federal Functional Classification	Federal classification of streets and highways into functional operating characteristics. Categories: Interstate Other Urban Freeways and Expressways Other Principal Arterials						
FED PROG	Federal Funding Category	PM&R: Preventive Maintenance and Rehabilitation Metro ACP: Metropolitan Area (TMA) Corridor Projects Urban ACP: Urban Area (Non-TMA) Corridor Projects State CCP: Statewide Connectivity Corridor Projects CMAQ: Congestion Mitigation and Air Quality Improvement CSREHAB: Consolidated Structure Rehabilitation STP-MM: Surface Transportation Program - Metro-Mobility SAFE: Safety Projects ENHAN: Enhancement Projects MISC: Miscellaneous Dist Discret: District Discretionary STRATEGIC: Strategic Priority FTA: Federal Transit Administration STP-TPU: New Mexico, Surface Transportation Program- Flexible STP-TPS: New Mexico, Surface Transportation Program- Safety BOR/COR: Borders and Corridors						
PHASE	Project Phase for Federal Funding							

1Texas Highway Projects FHWA & Other Funds

¹ Congestion Mitigation and Air Quality (CMAQ) Analyses can be found in Appendix A provided upon request and/or attached into the electronic version of this document.

WEDNESDAY, MARCH 7, 2018 11:33:49 AM					9-2022	EL PAS	EL PASO MPO DRTATION IMPI SO DISTRICT PI	FI	TIP PAGE: El Paso Metropolitan Planning Organizati			
						F	2019 (SEPT - A	-	-			
DISTRICT (TX DIST. 24	EP	<u>CSJ</u> 0924-06-54	0		<u>WY</u> CS		C,E	ELP		PROJECT SPO COEP		YOE COST
							,	LIF				\$1,500,260
				•					REVISION DATE:	07/2018		
LIMITS FROM:			P history for co						MPO PROJECT ID			
LIMITS TO:			IP history for c	•		,			MTP REFERENCE			
TIP DESCRIPTION:	Construct	bike facilities	astructure Imp citywide to inc markings, and	ude: l	ouffere	d bike lane	s, conventional b	oike lanes,	FUNDING CATEGO VOC (Kg/Day): 0.8	2 CO (Kg/D	bay): 23.207	
REMARKS:			019-22 TIP, 19	•					NOX (Kg/Day): 2.04	18 PM 10 (K	g/Day): 0.596	
							ROJECT HISTC					
						A	mend H2040 MI		9, 17-20 STIP to prog		EXEMPT	
Total Project (-		ed Funding by Cate			T () O
Preliminary Engineer		345	0						Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat	5	CMAQ	\$1,200,208	\$0	\$0	\$300,052	\$0	\$1,500,260
Construction:	\$1,259	9,914	Approved Phases:		Fund	d by Share	\$1,200,208	\$0	\$0	\$300,052	\$0	\$1,500,260
Construction Enginee				:								
Contingencies:	\$0		\$1,500,260									
Indirects:	\$0											
Bond Financing:	\$0											
Potential Change Ord												
Total Project Cost:	\$1,500),260										
02/2017 07/2018 'STIP Rev Date(s	2019 2019 s)' also refers	10/2016 05/2018 to TIP Admin	Program	D204	15 MTF	P, D19-22 T	ÎP, 19-22 STIP,		2019. EXEMPT			
TX DIST. 24	EP	0924-06-54	8	(CS		C,E	El P	aso	COEP		\$1,013,700
TIP PROJECT NAMI	E: Chamizal	Neighborho	od Pedestrian	Enha	incem	ents Phase	el		REVISION DATE:	07/2018		
LIMITS FROM:	S. Piedras	s (Please see	remarks for co	mplet	e stree	t names)			MPO PROJECT ID	: E302X-1		
LIMITS TO:	S. Gama	(Please see re	marks for con	plete	street	names)			MTP REFERENCE	: E302X-1		
TIP DESCRIPTION:	ADA pede	estrian ramps	and crosswalk	s. The	purpo	se of the pi	Construction of s oject is to provid n neighborhood.		FUNDING CATEG	ORY: CAT9TA	AP, CAT 3 LC	
REMARKS:		-	, 19-22 TIP, 19			-	5					
	5	,	, ,		,	, - ·	ROJECT HISTC					
									H17-20 TIP, 17-20 \$	STIP, in FY 2019	. EXEMPT	
Total Project (Cost Informa	ation:		Ţ					ed Funding by Cate			
Preliminary Engineer				i			Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat	9TAF	7 TAP	\$677,743	\$0	\$0	\$169,436	\$0	\$847,179
Construction:	\$736,6	578	Approved	Cat	3I C	Local	\$0	\$0	\$0	\$0	\$166,521	\$166,521
Construction Enginee	ering: \$0		Phases:			Contribu					••••,•=•	+ · · · · · · · · ·
Contingencies:	\$0		\$1,013,700			tion						
Indirects:	\$0				Fund	by Share	\$677,743	\$0	\$0	\$169,436	\$166,521	\$1,013,700
Bond Financing:	\$0			•								
Potential Change Ord	der: \$0											
Total Project Cost:	\$1,013	8,700										
02/2017	2019	05/2016	Amend	o prov	uram H	12040 MTP	H17-20 TIP 17	-20 STIP in F	Y 2019 EXEMPT			
07/2018	2019	05/2018	0			,	IP, 19-22 STIP,	IN FY 2019.				
'STIP Rev Date(s	s)' also refers	to TIP Admin	istrative Amen	dmen	t (Loca	l Revision)	Date					

							SO DISTRICT PI (2019 (SEPT - A			El	Paso Metropolitan Pla	nning Organizatio
DISTRICT	COUNTY	csj		н	WY		PHASE	CIT	ſY	PROJECT SPO		OE COST
TX DIST. 24	EP	0167-01-1	13		6 54		С	El Pa		TXDOT		90,416,143
TIP PROJECT NA	ME: I-10 C	onnect							REVISION DATE:	07/2018		
LIMITS FROM:	Loop	375 (Cesar Chav	ez Border Highv	vay)					MPO PROJECT II	D: 1034X-M	OD	
LIMITS TO:	Yande	ell Dr.							MTP REFERENCE	E: 1034X-M0	DC	
TIP DESCRIPTION REMARKS:	dding	auxiliar	nge Improv ry lanes). FY 2019.	vements (for exai	mple	FUNDING CATEG		Earmark, CAT 7 STP c), CAT 11B	T 7 STP, CAT 12 SP,			
*Project Sponsor p	aying for P	E and/or ROW C	costs, if any.			A	ROJECT HISTO dmin amend to r 7,600,000 of CA	educe CAT 4(3	3c) to \$42,830,269,	add \$10,000,000) to CAT 11 Rider 11	3, and add
Total Brains	+ Cost Infe	rmation		Τ		φ¦	7,600,000 01 CA		d Funding by Cot	ageru/Shore		
Total Projec	t Cost init	ormation:					Federal Share		ed Funding by Cate Regional Share		Lcl Contribution	Total Share
Preliminary Engine	ering: \$4	,588,721		Cat	10	Earmark	\$3,724,699	\$931.175	-	so	\$0	\$4.655.874
Right Of Way:	\$1	,500,000	Cost of	1				1 , -	\$0		• •	1 //-
Construction:	\$9	0,416,143	Approved	Cat		STP-MM		\$1,800,000	\$0	\$0	\$0	\$9,000,000
Construction Engin	neering: \$4	,279,685	Phases:	Cat	12	SP	\$19,144,000	\$4,786,000	\$0	\$0	\$0	\$23,930,000
Contingencies:	\$7	,754,002	\$90,416,143	Cat	4	4(3c)	\$34,264,215	\$8,566,054	\$0	\$0	\$0	\$42,830,269
Indirects:	\$0)		Cat	11	Rider	\$8,000,000	\$2,000,000	\$0	\$0	\$0	\$10,000,000
Bond Financing:	\$0)		į		11B						
Potential Change C	Order: \$5	,506,465			Fund	by Share	\$72,332,914	\$18,083,229	\$0	\$0	\$0	\$90,416,143
Total Project Cost	t: \$1	14,045,016										
				o depi							7, & Cat 12 TXDOT \	
			funds w l	H13-1	6 TIP 8	k H15-18 T	IP (simultaneous	s submittal). Pe	er Tim Juarez (TXD	OT-TPP) found a	as Operational Improv	rement
05/2012	2015	5 05/2012	05/2012	Missio	on 2013	3-2016 Tip						
07/2012	2015	6 07/2012	07/2012	Tpb ((08/2012	2 11-14 Sti	ip) Amend To Ad	ld To Mission 1	1-14 Tip			
11/2012	2013	3 11/2012					l Amend To Mov b When Ready.	e From 2015 T	o 2013 Mission 13-	16 Tip With Moti	on To Only Use Up T	o \$300k For Pe
07/2013	2014	07/2013	Amend T	o Mo	ve Fron	n Fv 2013	To Fy 2014; Did	Not Let In Fv 2	2013			
05/2014	2016	03/2014	Eastbour Cat 3-Icl	nd To (ep C	East To ounty V	o East And /rf), Cat 7,	d West To West & Cat 12 Txdot	Through Us 54 Vrf Match Fund	And I-110; Amend	To Move From F B Epc Cmp, May 2	om Reconstruct Exit I ⁵y 2014 To Fy 2016; / 2014 H13-16 Tip Rev	Amend To Add
07/2014	2016	05/2014	H13-16 T	TIP &	H15-18	TIP (simu	Iltaneous submit	tal)				
	2016						d to FHWA on 1-	,				
03/2015	2019		2013 EP	с см	P proje	ct; Amend	H2040 MTP, H1	15-18 TIP, and			n FY 2016 to FY 2019 n 2121-03-131 to 016	
07/2016	2019	06/2016					, H17-20 TIP, 17	,	•			
01/2017	2019			rative						040 MTP, H17-20) TIP, 17-20 STIP, in	FY 2019
05/2017	2019	04/2017			\$54.64	9.045 of C	AT 4(3c) into an	nended H2040	MTP. H17-20 TIP	17-20 STIP in FY	2019. NONEXEMPT	
02/2018	2019						. ,				Id \$7,600,000 of CAT	
07/2018	2019						TIP, 19-22 STIP,			and at		
	2019	00/2010	, Fiogram	0204		, 019-22 1	n, 19-22 311P,					

EL PASO MPO

2019-2022 TRANSPORTATION IMPROVEMENT PROGRAM

EL PASO DISTRICT PROJECTS

'STIP Rev Date(s)' also refers to TIP Administrative Amendment (Local Revision) Date

WEDNESDAY, MARCH 7, 2018

11:33:52 AM

TIP PAGE: 3

11:33:53 AM	CH 7, 2018			004	0 0000		EL PASO MPO				111	TIP PAGE:
				201	9-2022		ORTATION IMPF		RUGRAM		n	~
							2019 (SEPT - A			ELI	Paso Metropolitan Pla	nning Organizati
DISTRICT C	COUNTY	CSJ		ц	WY	FI	PHASE	CI		PROJECT SPOI		OE COST
TX DIST, 24	EP	0374-02-107	7		52/180		C.E	ELP		TXDOT		\$502,914
TIP PROJECT NAME						ana Ave./A	- /		REVISION DATE:	07/2018		,
LIMITS FROM:	Geronimo	-							MPO PROJECT ID			
LIMITS TO:	Sioux Driv								MTP REFERENCE			
TIP DESCRIPTION:			Improvement	s at M	ontana	Ave./Airpo	ort Rd./Mescalerc	Dr.	FUNDING CATEGO		AQ	
REMARKS:		D2045 MTP, D ²	•						VOC (Kg/Day): 1.00		ay): 10.772	
									NOX (Kg/Day): 2.76		g/Day): 0.738	
							ROJECT HISTO mend H2040 MT		P, 17-20 STIP to prog	i.		
Total Project 0	Cost Informa	ation:		Ţ		<u>-</u>			ed Funding by Cate			
Preliminary Engineeri				i			Federal Share		Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat	5	CMAQ	\$402.331	\$100.583	\$0	\$0	\$0	\$502.914
Construction:	\$487,3	319	Approved	J			, ,,,,,	• • • • • • • •			• •	,-
Construction Enginee			Phases:	ł	Func	I by Share	\$402,331	\$100,583	\$0	\$0	\$0	\$502,914
Contingencies:	\$0		\$502,914									
Indirects:	\$0		•									
Bond Financing:	\$0											
Potential Change Ord	der: \$0											
Total Project Cost:	\$502,9	14										
07/2018	2019							program in FY	2019.			
		05/2018 to TIP Adminis	0			P, D19-22 T	IP, 19-22 STIP,		2013.			
'STIP Rev Date(s		to TIP Adminis	strative Amen	dmen	t (Loca	P, D19-22 T I Revision)	IP, 19-22 STIP, Date			EP County	, \$	2,555,280
'STIP Rev Date(s TX DIST. 24)' also refers EP	to TIP Adminis	strative Amen 4	dmen Johr	t (Loca Hayes	P, D19-22 T I Revision)	IP, 19-22 STIP,	in FY 2019.		EP County 07/2018	· \$	2,555,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME)' also refers EP	to TIP Adminis	strative Amen 4	dmen Johr	t (Loca Hayes	P, D19-22 T I Revision)	IP, 19-22 STIP, Date	in FY 2019.	aso	07/2018		2,555,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM:	EP EP E: John Hay	0924-06-564 0924-06-564 ves (Darringtor	strative Amen 4	dmen Johr	t (Loca Hayes	P, D19-22 T I Revision)	IP, 19-22 STIP, Date	in FY 2019.	aso REVISION DATE:	07/2018 : P004X-PI	E	2,555,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO:	EP EP E: John Hay Pellicano Montwood	to TIP Adminis 0924-06-564 res (Darringtor	strative Amen 4 n/Berryville)	dmen Johr PE Pł	t (Loca Hayes nase	P, D19-22 T I Revision)	IP, 19-22 STIP, Date E	EI P	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE	07/2018 P004X-PI P004X-PI	Ē	2,555,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION:)' also refers EP E: John Hay Pellicano Montwood John Haye	to TIP Adminis 0924-06-564 res (Darringtor	strative Amen 4 n/Berryville) Berryville) PE	dmen Johr PE PI Phas	t (Loca Hayes hase e: Build	P, D19-22 T I Revision) 5	IP, 19-22 STIP, Date	EI P	aso REVISION DATE: MPO PROJECT ID	07/2018 P004X-PI P004X-PI	Ē	2,555,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project ()' also refers EP E: John Hay Pellicano Montwood John Haye Program [to TIP Adminis 0924-06-564 res (Darringtor es (Darrington// D2045 MTP, D ation:	strative Amen 4 n/Berryville) Berryville) PE	dmen Johr PE PI Phas	t (Loca Hayes hase e: Build	P, D19-22 T I Revision) 5	IP, 19-22 STIP, Date	EI P nes	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego	07/2018 : P004X-Pf : P004X-Pf DRY: CAT 7 ST gory/Share	E E IP, CAT 3 LC	
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project (Preliminary Engineeri)' also refers EP E: John Hay Pellicano Montwood John Haye Program [Cost Informating: \$2,555	to TIP Adminis 0924-06-564 res (Darringtor es (Darrington// D2045 MTP, D ation:	strative Amen 4 n/Berryville) Berryville) PE 19-22 TIP, 19	dmen Johr PE PI Phas	t (Loca Hayes hase e: Build	P, D19-22 T I Revision) 5	IP, 19-22 STIP, Date E	EI P nes	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego	07/2018 P004X-PI P004X-PE DRY: CAT 7 ST	Ē	
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way:)' also refers EP E: John Hay Pellicano Montwood John Haye Program [Cost Informa ing: \$2,555 \$0	to TIP Adminis 0924-06-564 res (Darrington/ es (Darrington// D2045 MTP, D ation: 5,280	strative Amen 4 n/Berryville) PE 19-22 TIP, 19 Cost of	dmen Johr PE PI Phas	t (Loca Hayes hase e: Build TIP, in	P, D19-22 T I Revision) 5	IP, 19-22 STIP, Date	EI P nes	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego	07/2018 : P004X-Pf : P004X-Pf DRY: CAT 7 ST gory/Share	E E IP, CAT 3 LC	Total Share
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction:)' also refers EP E: John Hay Pellicano Montwood John Haye Program [Cost Informa ing: \$2,555 \$0 \$28,74	to TIP Adminis 0924-06-564 res (Darrington/ es (Darrington// D2045 MTP, D ation: 5,280	strative Amen 4 h/Berryville) PE 19-22 TIP, 19 Cost of Approved	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local	IP, 19-22 STIP, Date E ided with bike la Federal Share	EI P EI P nes Authorizo State Share	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share	07/2018 : P004X-PI : P004X-PI DRY: CAT 7 ST gory/Share Local Share	E E P, CAT 3 LC Lcl Contribution	Total Share \$1,860,000
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction: Construction Engineer)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0	to TIP Adminis 0924-06-564 res (Darrington/ es (Darrington// D2045 MTP, D ation: 5,280	Approved Phases:	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in 7	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000	EI P EI P nes Authorize State Share \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0	07/2018 P004X-PI ORY: CAT 7 ST gory/Share Local Share \$372,000	E E 'P, CAT 3 LC Lcl Contribution \$0	Total Share \$1,860,000
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction: Construction Engineer Contingencies:)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0	to TIP Adminis 0924-06-564 res (Darrington/ es (Darrington// D2045 MTP, D ation: 5,280	strative Amen 4 h/Berryville) PE 19-22 TIP, 19 Cost of Approved	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in 7 3LC	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu tion	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000 \$0	EI P EI P nes Authoriza State Share \$0 \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0 \$0	07/2018 P004X-PI 0RY: CAT 7 ST gory/Share Local Share \$372,000 \$0	E = "P, CAT 3 LC Lcl Contribution \$0 \$695,280	Total Share \$1,860,000 \$695,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction: Construction Enginee Contingencies: Indirects:)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0 \$0 \$0	to TIP Adminis 0924-06-564 res (Darrington/ es (Darrington// D2045 MTP, D ation: 5,280	Approved Phases:	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in 7 3LC	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000	EI P EI P nes Authorize State Share \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0	07/2018 P004X-PI ORY: CAT 7 ST gory/Share Local Share \$372,000	E E 'P, CAT 3 LC Lcl Contribution \$0	Total Share \$1,860,000 \$695,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineeri Right Of Way: Construction: Construction Enginee Contingencies: Indirects: Bond Financing:)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	to TIP Adminis 0924-06-564 res (Darrington/ es (Darrington// D2045 MTP, D ation: 5,280	Approved Phases:	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in 7 3LC	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu tion	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000 \$0	EI P EI P nes Authoriza State Share \$0 \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0 \$0	07/2018 P004X-PI 0RY: CAT 7 ST gory/Share Local Share \$372,000 \$0	E = "P, CAT 3 LC Lcl Contribution \$0 \$695,280	Total Share \$1,860,000 \$695,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction: Construction Engineer Contingencies: Indirects: Bond Financing: Potential Change Ord)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	to TIP Adminis 0924-06-564 res (Darrington/I 2 es (Darrington/I D2045 MTP, D 2 etion: 5,280 14,689	Approved Phases:	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in 7 3LC	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu tion	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000 \$0	EI P EI P nes Authoriza State Share \$0 \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0 \$0	07/2018 P004X-PI 0RY: CAT 7 ST gory/Share Local Share \$372,000 \$0	E = "P, CAT 3 LC Lcl Contribution \$0 \$695,280	Total Share \$1,860,000 \$695,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction: Construction Engineer Contingencies: Indirects: Bond Financing: Potential Change Ord)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	to TIP Adminis 0924-06-564 res (Darrington/I 2 es (Darrington/I D2045 MTP, D 2 etion: 5,280 14,689	Approved Phases:	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in 7 3LC	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu tion	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000 \$0	EI P EI P nes Authoriza State Share \$0 \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0 \$0	07/2018 P004X-PI 0RY: CAT 7 ST gory/Share Local Share \$372,000 \$0	E = "P, CAT 3 LC Lcl Contribution \$0 \$695,280	Total Share \$1,860,000 \$695,286
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction: Construction Engineer Contingencies: Indirects: Bond Financing:)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	to TIP Adminis 0924-06-564 res (Darrington/ D2045 MTP, D ation: 5,280 14,689 19,969	Approved Phases:	dmen Johr PE PI Phas -22 S	t (Loca Hayes hase e: Build TIP, in 7 3LC	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu tion	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000 \$0	EI P EI P nes Authoriza State Share \$0 \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0 \$0	07/2018 P004X-PI 0RY: CAT 7 ST gory/Share Local Share \$372,000 \$0	E = "P, CAT 3 LC Lcl Contribution \$0 \$695,280	Total Share \$1,860,000 \$695,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineeri Right Of Way: Construction: Construction Engineer Contingencies: Indirects: Bond Financing: Potential Change Orc Total Project Cost:)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	to TIP Adminis 0924-06-564 res (Darrington/ D2045 MTP, D ation: 5,280 14,689 19,969	strative Amen 4 m/Berryville) PE 19-22 TIP, 19 Cost of Approved Phases: \$2,555,280	dmen Johr PE PI -22 S Cat	t (Loca Hayes nase e: Build TIP, in 7 3LC Func	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu tion	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000 \$0	EI P EI P nes Authoriza State Share \$0 \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0 \$0	07/2018 P004X-PI 0RY: CAT 7 ST gory/Share Local Share \$372,000 \$0	E = "P, CAT 3 LC Lcl Contribution \$0 \$695,280	2,555,280 Total Share \$1,860,000 \$695,280 \$2,555,280
'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project O Preliminary Engineeri Right Of Way: Construction Engineer Contingencies: Indirects: Bond Financing: Potential Change Orc Total Project Cost: PROJECT AMENDM)' also refers EP E: John Hay Pellicano Montwood John Haye Program I Cost Informa ing: \$2,555 \$0 \$28,74 ering: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	to TIP Adminis 0924-06-564 res (Darrington/ D2045 MTP, D ation: 5,280 44,689 99,969 RY	A A Berryville) PE 19-22 TIP, 19 Cost of Approved Phases: \$2,555,280 Pate Note/Arr	dmen Johr PE PI 22 S Cat	t (Loca Hayes nase e: Build TIP, in 3LC Func nent	P, D19-22 T I Revision) d 6 lane div FY 2019. STP Local Contribu tion I by Share	IP, 19-22 STIP, Date E ided with bike la Federal Share \$1,488,000 \$0	Authoriza State Share \$0 \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEGO ed Funding by Catego Regional Share \$0 \$0	07/2018 P004X-PI 0RY: CAT 7 ST gory/Share Local Share \$372,000 \$0	E = "P, CAT 3 LC Lcl Contribution \$0 \$695,280	Total Share \$1,860,000 \$695,280

11:33:54 AM	CH 7, 2018			2019-2		PAS	O DISTRICT PI		ROGRAM	E	Paso Metropolitan	Planning Organizati
		001		1.11.47		FΥ	2019 (SEPT - A	-				
DISTRICT C TX DIST, 24	OUNTY EP	CSJ 2552-02-02	8	 LP 3			C PHASE	El P		ROJECT SPO TXDOT	NSOR	YOE COST \$44,663,725
TIP PROJECT NAME						f Ero		LII	REVISION DATE:	07/2018		ψ 4 4,005,725
LIMITS FROM:	Spur 601	(i uipie ilean	t) Widening a			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	mage Roads		MPO PROJECT ID:	F057X-C	ΔΡ	
LIMITS TO:	•	(Montana Av	e)						MTP REFERENCE:	F057X-C/		
TIP DESCRIPTION:	Loop 375 (l	Purple Heart)	,					n 4 to 6 lanes	FUNDING CATEGOR			
REMARKS:			19-22 TIP, 19-	•								
	0			22 011	, 111 1 20		ROJECT HISTO					
*Project Sponsor payir			StS, II arry.						d H2040 MTP, H17-20	TIP. 17-20 ST	IP in FY 2019.	
Total Project C	ost Informat	tion:		Ţ			<u> </u>		ed Funding by Catego			
Preliminary Engineerir				i.		1	Federal Share			Local Share	Lcl Contributio	n Total Share
Right Of Way:	\$7,626,		Cost of	Cat 2	M Prop		\$21,819,200	\$5,454,800	\$0	\$0	\$0	
Construction:	\$44,663		Approved		and/o		φ21,013,200	ψ0, 404 ,000	φυ	φυ	φ	φ21,214,000
Construction Engineer			Phases:		Prop	7						
Contingencies:	\$88,955		\$44,663,725	Cat 4	4(3c))	\$13,911,780	\$3,477,945	\$0	\$0	\$0	\$17,389,725
ndirects:	\$0		. ,,	F	und by SI	nare	\$35,730,980	\$8,932,745	\$0	\$0	\$0	\$44,663,725
Bond Financing:	\$0			!			÷••,• ••,•••	↓ 0,002,1-10	**	ΨŪ	Ψ	÷,000,720
Potential Change Orde	-	672										
Total Project Cost:	\$59,252											
05/2047	2010	04/2017	Amondt		na inta ana	- nd o d						
05/2017	2019	04/2017							-20 STIP in FY 2019.			
07/2018	2019	05/2018	Program	D2045	MTP. D19-			in EV 2010				
STID Pour Data (a)	l alaa rafara t				, -	22 11	IP, 19-22 STIP,	1111 2013.				
STIF Rev Date(S)	also releas t	to TIP Admini	strative Amen	dment (l				1111 2013.				
TX DIST. 24 FIP PROJECT NAME .IMITS FROM:	EP : Paso Del N	0924-06-53	9	CS	ocal Revis	sion) [EIP	REVISION DATE: MPO PROJECT ID:	COEP 07/2018 C035X		\$1,489,645
TX DIST. 24 TIP PROJECT NAME IMITS FROM: LIMITS TO:	EP : Paso Del N El Paso St. Paso Del N accommod	0924-06-53 Norte (PDN) F . at 6th. Ave. Norte PDN-PC late 1 lane and	9 Port of Entry (DE Roundabou d parameters	CS (POE) R It: Desig	oundabout n and consibed in the	sion) [it struct = FHW	Date	EI P o ort 672, to	REVISION DATE:	07/2018 C035X C035X RY: CAT 5 CM CO (Kg/D	MAQ Day): 0.557 [g/Day): 0.024	\$1,489,645
TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION:	EP E Paso Del N El Paso St. Paso Del N accommod include but striping.	0924-06-53 Norte (PDN) F . at 6th. Ave. Norte PDN-PC late 1 lane and not limited to	9 Port of Entry (DE Roundabou d parameters	CS (POE) R It: Desig as descr asphalt	oundabou n and cons ibed in the roadway ir	sion) [it struct : FHW iterse	Date C,E a roundabout to /A NCHRP Rep	EI P o ort 672, to	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044	07/2018 C035X C035X RY: CAT 5 CM CO (Kg/D	0ay): 0.557	\$1,489,645
()	EP E Paso Del N El Paso St. Paso Del N accommod include but striping.	0924-06-53 Norte (PDN) F . at 6th. Ave. Norte PDN-PC late 1 lane and not limited to	9 Port of Entry (DE Roundabou d parameters o concrete and	CS (POE) R It: Desig as descr asphalt	oundabou n and cons ibed in the roadway ir	struct FHW terse 19.	Date C,E a roundabout to /A NCHRP Rep cction, signage, ROJECT HISTC nend H2040 MT	EI P ort 672, to markings and PRY:	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044	07/2018 C035X C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K	0ay): 0.557	\$1,489,645
TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS:	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D	0924-06-53: Norte (PDN) F at 6th. Ave. Norte PDN-PC late 1 lane an not limited to 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters o concrete and	CS (POE) R It: Desig as descr asphalt	oundabou n and cons ibed in the roadway ir	struct FHW terse 19.	Date C,E a roundabout to /A NCHRP Rep action, signage,	EI P ort 672, to markings and RY: 'P, H17-20 TIF	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to program	07/2018 C035X C035X RY: CAT 5 CM CO (Kg/D PM 10 (K am in FY 2019	0ay): 0.557	\$1,489,645
TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project C	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters o concrete and	CS (POE) R It: Desig as descr asphalt	oundabou n and cons ibed in the roadway ir	it struct FHW iterse 19. PF An EX	Date C,E a roundabout to /A NCHRP Rep cction, signage, ROJECT HISTO nend H2040 MT KEMPT	EI P ort 672, to markings and RY: 'P, H17-20 TIF Authorize	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to programe Control Provided Funding by Categor	07/2018 C035X C035X CO (Kg/D PM 10 (K am in FY 2019 Dry/Share	0ay): 0.557	
TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters o concrete and	CS (POE) R as descr asphalt 22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20	tt tt FHW tterse 19. PF An EX	C,E C,E a roundabout to /A NCHRP Rep cction, signage, ROJECT HISTC nend H2040 MT KEMPT Federal Share	EI P ort 672, to markings and PRY: 'P, H17-20 TIF Authorize State Share	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share	07/2018 C035X C035X CO (Kg/D PM 10 (K am in FY 2019 Dry/Share Local Share	Day): 0.557 g/Day): 0.024 Lcl Contributic	n Total Share
TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: TP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir Right Of Way:	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters concrete and 19-22 TIP, 19- Cost of Approved	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to VA NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT KEMPT Federal Share \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authorizo State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share \$0	07/2018 C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K am in FY 2019 pry/Share Local Share \$297,929	Day): 0.557 (g/Day): 0.024 	n Total Share) \$1,489,645
TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: TP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir Right Of Way: Construction:	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297,	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters concrete and 19-22 TIP, 19-	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to /A NCHRP Rep cction, signage, ROJECT HISTC nend H2040 MT KEMPT Federal Share	EI P ort 672, to markings and PRY: 'P, H17-20 TIF Authorize State Share	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share	07/2018 C035X C035X CO (Kg/D PM 10 (K am in FY 2019 Dry/Share Local Share	Day): 0.557 g/Day): 0.024 Lcl Contributic	n Total Share) \$1,489,645
TX DIST. 24 IIP PROJECT NAME IMITS FROM: IMITS TO: IIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir Right Of Way: Construction: Construction Engineer	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ing: \$0	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters of concrete and 19-22 TIP, 19- 19-22 TIP, 19- Cost of Approved Phases:	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to VA NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT KEMPT Federal Share \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authorizo State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share \$0	07/2018 C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K am in FY 2019 pry/Share Local Share \$297,929	Day): 0.557 (g/Day): 0.024 	n Total Share) \$1,489,645
TX DIST. 24 IIP PROJECT NAME IMITS FROM: IMITS TO: IIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir Right Of Way: Construction: Construction Engineer Contingencies:	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ring: \$0 \$0	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters concrete and 19-22 TIP, 19- Cost of Approved	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to VA NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT KEMPT Federal Share \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authorizo State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share \$0	07/2018 C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K am in FY 2019 pry/Share Local Share \$297,929	Day): 0.557 (g/Day): 0.024 	n Total Share) \$1,489,645
TX DIST. 24 FIP PROJECT NAME IMITS FROM: IMITS TO: TIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir Right Of Way: Construction: Construction Engineer Contingencies: ndirects:	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ring: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D 2045 MTP, D	9 Port of Entry (DE Roundabou d parameters of concrete and 19-22 TIP, 19- 19-22 TIP, 19- Cost of Approved Phases:	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to VA NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT KEMPT Federal Share \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authorizo State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share \$0	07/2018 C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K am in FY 2019 pry/Share Local Share \$297,929	Day): 0.557 (g/Day): 0.024 	n Total Share) \$1,489,645
TX DIST. 24 IIP PROJECT NAME IMITS FROM: IMITS TO: IIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir Right Of Way: Construction: Construction Engineer Construction Engineer Contingencies: ndirects: Bond Financing:	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ring: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D 2045 MTP, D	9 Port of Entry (d parameters of concrete and 19-22 TIP, 19- Cost of Approved Phases:	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to VA NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT KEMPT Federal Share \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authorizo State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share \$0	07/2018 C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K am in FY 2019 pry/Share Local Share \$297,929	Day): 0.557 (g/Day): 0.024 	n Total Share) \$1,489,645
TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: TP DESCRIPTION: REMARKS: Preliminary Engineerir Right Of Way: Construction: Construction Engineer Contingencies: ndirects: Bond Financing: Potential Change Orde	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ring: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D tion: 15 000	9 Port of Entry (d parameters of concrete and 19-22 TIP, 19- Cost of Approved Phases:	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to VA NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT KEMPT Federal Share \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authorizo State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share \$0	07/2018 C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K am in FY 2019 pry/Share Local Share \$297,929	Day): 0.557 (g/Day): 0.024 	n Total Share) \$1,489,645
TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: TP DESCRIPTION: REMARKS: Preliminary Engineerir Right Of Way: Construction: Construction Engineer Contingencies: ndirects: Bond Financing: Potential Change Orde	EP : Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ring: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	0924-06-53 Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane and not limited to 2045 MTP, D tion: 15 000	9 Port of Entry (d parameters of concrete and 19-22 TIP, 19- Cost of Approved Phases:	CS (POE) R tt: Desig as descr asphalt -22 STIF	oundabou n and cons ibed in the roadway ir , in FY 20 CMA	tt tt FHW tterse 19. PF iAn EX	C,E C,E a roundabout to VA NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT KEMPT Federal Share \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authorizo State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra ed Funding by Categor Regional Share \$0	07/2018 C035X C035X RY: CAT 5 CN CO (Kg/D PM 10 (K am in FY 2019 pry/Share Local Share \$297,929	Day): 0.557 (g/Day): 0.024 	n Total Share) \$1,489,645
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TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: TP DESCRIPTION: REMARKS: Preliminary Engineerir Right Of Way: Construction: Construction Engineer Construction Engineer Construction Engineer Contingencies: ndirects: Bond Financing: Potential Change Orde	EP El Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ring: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1,247,	0924-06-53: Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane an not limited to 2045 MTP, D 2045 MTP, D iton: 45 000	9 Port of Entry (d parameters concrete and 19-22 TIP, 19 Cost of Approved Phases: \$1,489,645	CS POE) R It: Desig as descr asphalt 22 STIF Cat 5 F	oundabou n and cons ibed in the roadway ir , in FY 20 CMA Gund by SI	sion) [tt FHW terse 19. PF An EX N are	Date C,E a roundabout to /A NCHRP Rep ection, signage, ROJECT HISTC mend H2040 MT KEMPT Federal Share \$1,191,716 \$1,191,716	EI P oort 672, to markings and PRY: P, H17-20 TIF Authoriza State Share \$0 \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra cod Funding by Categor Regional Share \$0 \$0	07/2018 C035X C035X RY: CAT 5 CM CO (Kg/D PM 10 (K am in FY 2019 ory/Share Local Share \$297,929 \$297,929	Day): 0.557 (g/Day): 0.024 Lcl Contributic \$(\$(on Total Share) \$1,489,645) \$1,489,645
TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: TP DESCRIPTION: REMARKS: Preliminary Engineerir Right Of Way: Construction: Construction Engineer Construction Engineer Construction Engineer Contingencies: ndirects: Bond Financing: Potential Change Orde	EP El Paso Del N El Paso St. Paso Del N accommod include but striping. Program D ost Informat ng: \$192,64 \$0 \$1,297, ring: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1,247,	0924-06-53: Norte (PDN) F at 6th. Ave. lorte PDN-PC late 1 lane an not limited to 2045 MTP, D 2045 MTP, D iton: 45 000	9 Port of Entry (d parameters o concrete and 19-22 TIP, 19- Cost of Approved Phases: \$1,489,645 Amend t (Horizon	CS (POE) R as descr asphalt 22 STIF Cat 5 F	oundabou n and cons ibed in the roadway ir , in FY 20 CMA fund by SI fund by SI	sion) [tt struct : FHW terse 19. PF iAn EX nare	Date C,E a roundabout to /A NCHRP Rep ection, signage, ROJECT HISTO mend H2040 MT (EMPT Federal Share \$1,191,716 \$1,191,716 due to no CBI fu	EI P oort 672, to markings and PRY: P, H17-20 TIF Authoriza State Share \$0 \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOF VOC (Kg/Day): 0.044 NOX (Kg/Day): 0.037 P, 17-20 STIP to progra red Funding by Categor Regional Share \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	07/2018 C035X C035X RY: CAT 5 CM CO (Kg/D PM 10 (K am in FY 2019 ory/Share Local Share \$297,929 \$297,929	Day): 0.557 (g/Day): 0.024 Lcl Contributic \$(\$(n Total Share) \$1,489,645) \$1,489,645
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11:33:56 AM	CH 7, 2018			2019	9-2022	EL PA	EL PASO MPC PORTATION IMPF ASO DISTRICT PF FY 2019 (SEPT - A	ROVEMENT PI ROJECTS	ROGRAM	E	Paso Metropolitan Pla	TIP PAGE: 6
DISTRICT C	COUNTY	CSJ		н١	NY		PHASE	.00, СП	v	PROJECT SPO		OE COST
TX DIST, 24	EP	0924-06-53	4		S		C	ELP		County EP		18,000,000
TIP PROJECT NAME				Ŭ	.0		Ū	200	REVISION DATE:	07/2018	Ψ	10,000,000
LIMITS FROM:		-	/Bulla						MPO PROJECT ID			
LIMITS FROM.		(Loop 375)							MTP REFERENCE			
TIP DESCRIPTION:		(Berryville St	,	م/المرارم	d from		nee Divided with (- hike lene				
THE DESCRIPTION.			th and landsca			2 10 0-La	nes Divided, with §	o bike lane			P, CAT 5 CMAQ, C	AT 10 CBI
REMARKS:)19-22 TIP, 19-		ïP, in f	FY 2019.			VOC (Kg/Day): 0.34 NOX (Kg/Day): 1.08		9ay): 12.132 g/Day): 0.746	
*Project Sponsor pay	ing for PE an	d/or ROW Co	osts, if any.				PROJECT HISTO Amend to add \$8,		T 10 CBI (please see	e amend history)		
Total Project C	Cost Informa	tion:		T				Authorize	d Funding by Cate	gory/Share		
Preliminary Engineeri	ing: \$2,700	,000		į.			Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat	5	CMAQ	\$1,424,000	\$0	\$0	\$356,000	\$0	\$1,780,000
Construction:	\$18,00	0,000	Approved	Cat	7	STP	\$6,576,000	\$0	\$0	\$1,644,000	\$0	\$8,220,000
Construction Enginee	ering: \$0		Phases:									
Contingencies:	\$0		\$18,000,000	Cat	10	CBI	\$6,400,000	\$0	\$0	\$1,600,000	\$0	\$8,000,000
Indirects:	\$0		<i>↓,,,,,,,,,,,,,</i>		Fund	by Shar	e \$14,400,000	\$0	\$0	\$3,600,000	\$0	\$18,000,000
Bond Financing:	\$0			•								
Potential Change Ord												
Total Project Cost:		0.000										
	\$20,70											
07/2016	2019	06/2016	Amend t	o prod	ram ar	mended H	H2040 MTP, H17-2	20 TIP 17-20 S	TIP FY 2019			
												40.4 'W'
02/2017	2019	10/2016	Amend F NONEXE		MIP,	H17-20 I	IP, 17-20 STIP to	program in FY	2019 due to eSTIP	upload error on o	doubling the funds to	\$34 million.
11/2017												
11/2017	2019	11/2017	Admin A path and				ct description to "	Widening/Build	from 2 lanes to 6-L	anes Divided, wit	th 5' bike lane and 5'	multi-purpose
02/2018	2019 2019	11/2017 02/2018	path and Amend t	lands o add 9	caping \$8,000),000 Cat	egory 10 Coordina	ited Border Infr		ds with already a	th 5' bike lane and 5' opproved \$8,220,000	
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02/2018 07/2018 'STIP Rev Date(s TX DIST. 24	2019 2019 .)' also refers EP	02/2018 05/2018 to TIP Admin 0924-06-56	path and Amend to (STP/MN Program istrative Ameno	lands o add 9 /) and D2049 dment	caping \$8,000 \$1,780 5 MTP),000 Cat 0,000 of (2, D19-22	egory 10 Coordina CAT 5 CMAQ for a TIP, 19-22 STIP, i	ited Border Infr total construc	astructure (CBI) fun tion cost of \$18,000	ds with already a ,000 in FY 2019. EP County	pproved \$8,220,000	
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WEDNESDAY, MARC 11:33:57 AM	CH 7, 2018			201	9-202	2 TRANSPO	EL PASO MP	-	ROGRAM		111	TIP PAGE: 7
11:33:57 AM				201	3-202		SO DISTRICT P			-	ru	\sim
							2019 (SEPT -)			El	Paso Metropolitan Pla	nning Organization
DISTRICT C	OUNTY	CSJ		н	WY		PHASE	CI	ſY	PROJECT SPO	NSOR	OE COST
TX DIST. 24	EP	0374-02-0	97	US	62/180)	С	El P	aso	TXDOT	\$	121,733,894
TIP PROJECT NAME	: US 62/18) (Montana A	ve.) Expressw	ay &	Front	age Roads,	Phase I		REVISION DATE:	07/2018		
LIMITS FROM:	On US 62	/180 (Montan	a Ave.) Express	sway	& Fror	ntage Roads	s, Phase I at Glo	bal Reach Dr.	MPO PROJECT ID	: F407A-C	AP	
LIMITS TO:	FM 659 (Z	aragoza Rd.))						MTP REFERENCE	E F407A-C	AP	
TIP DESCRIPTION:			Road(FR)Globa						FUNDING CATEG	ORY: CAT 2M,	CAT 4(3c), CAT 12	
							EB FR.Construe sLeeTrevinoDr t					
		work to Zara		parau	01371		SLeenevillobri	012.				
REMARKS:	Program [2045 MTP, I	_ D19-22 TIP, 19-	22 S	TIP, in	FY 2019.						
*Project Sponsor payir	ng for PE ar	nd/or ROW C	osts. if anv.			Р	ROJECT HISTO	DRY:				
5 1 1 5	5		, ,			A	mend to program	n into amendeo	H2040 MTP, H17-2	20 TIP, 17-20 ST	TP in FY 2019.	
Total Project Co	ost Informa	ation:		1				Authorize	ed Funding by Cate	gory/Share		
Preliminary Engineerin	ng: \$6,366	5,239		ļ			Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$38,60	-,	Cost of	Cat	2M	TMA	\$12,669,827	\$3,167,457	\$0	\$0	\$0	\$15,837,284
Construction:	• • •	33,894	Approved Phases:	Cat	4	4(3c)	\$52,717,288	\$13,179,322	\$0	\$0	\$0	\$65,896,610
Construction Engineer	•		FildSes.	Cat	12	SP	\$32,000,000	\$8,000,000	\$0	\$0	\$0	\$40,000,000
Contingencies:	\$2,585	5,472	\$121,733,894		Euro	d hy Shara	\$97,387,115	\$24,346,779	\$0	\$0	\$0	\$121,733,894
Indirects:	\$0			ļ	Fun	a by Share	\$97,367,115	\$24,340,779	\$U	φU	\$ 0	\$121,733,094
Bond Financing:	\$0											
Potential Change Orde	er: \$4,859	9,129										
Total Project Cost:	\$174,1	44,734										
05/2017	2019	04/2017	Amend to	o proę	gram i	nto amende	d H2040 MTP, H	H17-20 TIP, 17-	-20 STIP in FY 2019	. Former project	P457X-CAP.	
07/2018	2019	05/2018	Program	D204	45 MT	P, D19-22 T	IP, 19-22 STIP,	in FY 2019.				
'STIP Rev Date(s)'	' also refers	to TIP Admir	nistrative Amen	dmen	t (Loc	al Revision)	Date					

MONDAY, MARCH 2 1:21:36 PM	26, 2018			201	9-2022	EL PA	EL PASO MPO ORTATION IMPI SO DISTRICT PI Y 2019 (SEPT - A	ROVEMENT PI	ROGRAM	B	Paso Metropolitan Pla	TIP PAGE: 1
DISTRICT	COUNTY	CSJ		н	WY		PHASE	СП	ſY	PROJECT SPO	NSOR)	OE COST
TX DIST. 24	EP	0924-06-06	4	(CS		С	El Pa	aso	UTEP	\$	51,482,914
TIP PROJECT NAM	E: Univers	sity Avenue Ped	lestrian and E	like E	nhance	ement - Pl	hase III		REVISION DATE:	07/2018		
LIMITS FROM:		at a distance of ced City Monume					n on University A	VE from the	MPO PROJECT II			
LIMITS TO:	To a po	int southwesterly	450 feet long	Unive	ersity A	VE			FUNDING CATEG	ORY: CAT 9, C	CAT 3	
TIP DESCRIPTION:	enhance						e III: Pedestrian a ike lanes, lansca					
REMARKS:	Progran	n D2045 MTP, D	19-22 TIP, 19	-22 S	TIP, in	FY 2019.						
*Project Sponsor pay	ying for PE	and/or ROW Co	sts, if any.				PROJECT HISTC Amend H2040 MT		, 17-20 STIP to pro	gram i <u>n</u> FY 2019		
Total Project									ed Funding by Cat			
Preliminary Engineer	•	3,147					Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat	9TAP	TASA	\$530,645	\$0	\$0	\$132,661	\$0	\$663,306
Construction:	• •	90,007	Approved Phases:	Cat	3LC	Local	\$0	\$0	\$0	\$0	\$819,608	\$819,608
Construction Engine						Contribu tion						
Contingencies:	\$69,	/61	\$1,190,007					<u>^</u>	**	\$ 100.001	* 040.000	* 4 400 044
Indirects: Bond Financing:	\$0 \$0			!	Fund	by Share	\$530,645	\$0	\$0	\$132,661	\$819,608	\$1,482,914
Potential Change Or												
Total Project Cost:		82,915										
	ΨΙ,Ψ											
PROJECT AMEND	MENT HIST	ORY										
STIP Rev Date(s	s) FY(s)	Note/Amend I	Date Note/Am	nendn	nent							
02/2018	2019	01/2018	Amend I	12040	MTP,	H17-20 TI	P, 17-20 STIP to	program in FY	2018.			
07/2018	2019	05/2018	Program	D204	45 MTP	, D19-22 1	TIP, 19-22 STIP,	in FY 2019.				
'STIP Rev Date(s	s)' also refe	ers to TIP Admini	strative Amen	dmen	t (Local	Revision)) Date					

12:40:22 PM	5, 2018			201	9-2022 TR	ANSPO	EL PASO MPC ORTATION IMPR		ROGRAM		111		TIP PAGE:
12.40.22 FW				201		EL PAS	SO DISTRICT PF (2020 (SEPT - A	ROJECTS		ELI	Paso Metropolit	tan Plan	ning Organizat
DISTRICT	COUNTY	CSJ		н	WY	F	PHASE	CI		JECT SPO			OE COST
TX DIST. 24	EP	0924-06-54	3		S		C,E	ELP		COEP			1,800,412
TIP PROJECT NAM	E: Bicycle C			Impro	vements P	hase	,		REVISION DATE:	07/2018		•	.,,
IMITS FROM:		Please see TIF					•		MPO PROJECT ID:	M087B			
IMITS TO:		Please see TIF							MTP REFERENCE:	M087B			
TIP DESCRIPTION:	Bicycle Co citywide to	onnectivity Infra include: buffe	astructure Imp red bike lanes	oroven s, conv	ents Phase	e II: Co	onstruct bicycle fa es, bicycle boulev		FUNDING CATEGORY VOC (Kg/Day): 0.252	CAT 5 CM	/IAQ ay): 7.663		
REMARKS:		ings, and prote D2045 MTP, D	,		IP. in FY 2	2020.			NOX (Kg/Day): 0.649	PM 10 (K	g/Day): 0.211		
	5	· · ,	, .		,								
						A	ROJECT HISTO mend H2040 MT XEMPT		e, 17-20 STIP to program	in FY 2020			
Total Project Preliminary Engineer							Federal Share		ed Funding by Category Regional Share Lo	//Share ocal Share	Lcl Contribu	ution	Total Share
Right Of Way:	\$0		Cost of	Cat	5 CN	/AQ	\$1,440,330	\$0	\$0	\$360,082		\$0	\$1,800,412
Construction:	\$1,566	6.820	Approved	Joal									
Construction Engine		.,-=•	Phases:	ļ	Fund by	Share	\$1,440,330	\$0	\$0	\$360,082		\$0	\$1,800,412
Contingencies:	\$0 \$0		\$1,800,412										
ndirects:	\$0		φ1,000, 4 12										
Bond Financing:	\$0 \$0												
0													
Potential Change Or Total Project Cost:	der: \$0 \$1,800												
···-··		·											
02/2017	2020	10/2016	Amend I	H2040	MTP, H17	-20 TIF	P, 17-20 STIP to	program in FY	2020 EXEMPT				
02/2017 07/2018	2020 2020	10/2016 05/2018	Program From: Lo Yermola	n D204 omalai ind	5 MTP, D1 nd from Tra	9-22 T awood;	TIP, 19-22 STIP, i Pellicano from G	n FY 2020. eorge Dieter;	Trawood from Springwo				
	2020	05/2018	Program From: Lo Yermola To: Lon	n D204 omalai ind naland	5 MTP, D1 nd from Tra to Pellicar	9-22 T awood; no; Pell	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar	n FY 2020. eorge Dieter;					
07/2018	2020	05/2018	Program From: Lo Yermola To: Lon strative Amen	n D204 omalai ind naland idmeni	5 MTP, D1 nd from Tra to Pellicar	9-22 T awood; no; Pell	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar	n FY 2020. eorge Dieter;	Trawood from Springwo 9 Yarbrough; Tierra Este			North	Loop
07/2018 'STIP Rev Date(s TX DIST. 24	2020 s)' also refers EP	05/2018 to TIP Adminis 0167-01-11	Program From: Lo Yermola To: Lon strative Amen	n D204 omalai ind naland idment	5 MTP, D1 nd from Tra to Pellican (Local Re 5 54	9-22 T awood; no; Pell vision)	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E	n FY 2020. eorge Dieter; d; Trawood to EI P	Trawood from Springwo 9 Yarbrough; Tierra Este aso	to Pebble Hi		North	
07/2018 'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAM	2020 s)' also refers EP E: Bluetooti	05/2018 to TIP Adminis 0167-01-11 Detectors an	Program From: Lo Yermola To: Lon strative Amen 5 Ind Radar Veh	n D204 omalai ind naland idment	5 MTP, D1 nd from Tra to Pellican (Local Re 5 54	9-22 T awood; no; Pell vision)	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E	n FY 2020. eorge Dieter; d; Trawood to EI P	Trawood from Springwo y Yarbrough; Tierra Este aso REVISION DATE:	to Pebble Hi TXDOT 07/2018		North	Loop
07/2018 <u>'STIP Rev Date(s</u> TX DIST. 24 IP PROJECT NAM LIMITS FROM:	2020 s)' also refers EP E: Bluetooth Loop 375	05/2018 to TIP Adminis 0167-01-11 Detectors an (Transmountai	Program From: Lo Yermola To: Lon strative Amen 5 Ind Radar Veh	n D204 omalai ind naland idment	5 MTP, D1 nd from Tra to Pellican (Local Re 5 54	9-22 T awood; no; Pell vision)	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E	n FY 2020. eorge Dieter; d; Trawood to EI P	Trawood from Springwo 9 Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID:	to Pebble Hi TXDOT 07/2018 F201X		North	Loop
07/2018 'STIP Rev Date(s TX DIST. 24 IP PROJECT NAM LIMITS FROM: LIMITS TO:	2020 s)' also refers EP E: Bluetoott Loop 375 FM 2529	05/2018 to TIP Administration 0167-01-111 Detectors an (Transmountai (McCombs)	Program From: Lo Yermola To: Lon strative Amen 5 d Radar Veh	n D204 omalan naland dmeni Us icle S	5 MTP, D1 nd from Tra to Pellicar (Local Re 5 54 ensing De	9-22 T awood; no; Pell vision) vices (TIP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E (RVSDs) on US \$	n FY 2020. eorge Dieter; d; Trawood to El P 54	Trawood from Springwo 9 Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE:	to Pebble Hi TXDOT 07/2018 F201X F201X	lls; Pendale to	North	Loop
07/2018 'STIP Rev Date(s TX DIST. 24 IP PROJECT NAM LIMITS FROM: LIMITS TO:	2020 s)' also refers EP E: Bluetoott Loop 375 FM 2529 Bluetooth	05/2018 to TIP Administ 0167-01-11 Detectors and (Transmountai (McCombs) Detectors and	Program From: Lu Yermola To: Lon strative Amen 5 Id Radar Veh in) Radar Vehicl	n D204 omalai ind naland dment US icle S e Sens	5 MTP, D1 nd from Tra to Pellicar (Local Re 5 54 ensing Device	19-22 T awood; no; Pell vision) vices (IP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E (RVSDs) on US 5 SDs) on US 54: li	n FY 2020. eorge Dieter; d; Trawood to EI P i4	Trawood from Springwo 9 Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY	to Pebble Hi TXDOT 07/2018 F201X F201X ': CAT 5 CM	IIs; Pendale to	North	Loop
07/2018 'STIP Rev Date(s TX DIST. 24 IP PROJECT NAM IMITS FROM: IMITS TO:	2020 s)' also refers EP E: Bluetoott Loop 375 FM 2529 Bluetooth Bluetooth	05/2018 to TIP Administration 0167-01-11: Detectors and (Transmountai (McCombs) Detectors and Detectors and	Program From: Lu Yermola To: Lon strative Amen 5 dd Radar Veh in) Radar Vehicl Radar Vehicl	n D204 omalan ind ind ind ind ind ind ind ind ind in	5 MTP, D1 nd from Tra to Pellicar (Local Re 5 54 ensing Device sing Device	9-22 T awood; vision) vices (es (RV: es (RV:	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E (RVSDs) on US \$	n FY 2020. eorge Dieter; d; Trawood to EI P i4 nstallation of I for data	Trawood from Springwo o Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY VOC (Kg/Day): 0.081	TXDOT 07/2018 F201X F201X C CAT 5 CM CO (Kg/D	Ils; Pendale to //AQ ay): 2.434	North	Loop
07/2018 'STIP Rev Date(s	2020 s)' also refers EP E: Bluetoott Loop 375 FM 2529 i Bluetooth Bluetooth gathering	05/2018 to TIP Administration 0167-01-11: Detectors and (Transmountai (McCombs) Detectors and Detectors and	Program From: Lu Yermola To: Lon strative Amen 5 dd Radar Veh n) Radar Vehicl Radar Vehicl el time messa	n D204 omalai ind naland dment icle S icle S e Sens ges or	5 MTP, D1 nd from Tra to Pellicar (Local Re 5 54 ensing Device sing Device 1 US 54 dyn	9-22 T awood; vision) vices (vices (RV es (RV namic	IP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E (RVSDs) on US 5 SDs) on US 54: II SDs) along US 5-	n FY 2020. eorge Dieter; d; Trawood to EI P i4 nstallation of I for data	Trawood from Springwo 9 Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY	TXDOT 07/2018 F201X F201X C CAT 5 CM CO (Kg/D	IIs; Pendale to	North	Loop
07/2018 'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAM IMITS FROM: IMITS TO: TIP DESCRIPTION:	2020 s)' also refers EP E: Bluetoott Loop 375 FM 2529 i Bluetooth Bluetooth gathering	05/2018 to TIP Administration 0167-01-119 Detectors and (Transmountai (McCombs) Detectors and Detectors and to display trave	Program From: Lu Yermola To: Lon strative Amen 5 dd Radar Veh n) Radar Vehicl Radar Vehicl el time messa	n D204 omalai ind naland dment icle S icle S e Sens ges or	5 MTP, D1 nd from Tra to Pellicar (Local Re 5 54 ensing Device sing Device 1 US 54 dyn	9-22 T awood; no; Pell vision) vices (RV: es (TIP, 19-22 STIP, i Pellicano from G Date C,E (RVSDs) on US 54: I SDs) along US 54 message signs (I ROJECT HISTO mend H2040 MT	n FY 2020. eorge Dieter; d; Trawood to El P i4 nstallation of I for data DMS).	Trawood from Springwo o Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY VOC (Kg/Day): 0.081	to Pebble Hi TXDOT 07/2018 F201X F201X CO (Kg/D PM 10 (Kg/D	Ils; Pendale to //AQ ay): 2.434	North	Loop
07/2018 'STIP Rev Date(s TX DIST. 24 TIP PROJECT NAM IMITS FROM: IMITS TO: TIP DESCRIPTION: REMARKS: Total Project	2020 s)' also refers EP E: Bluetooth Bluetooth Bluetooth Bluetooth gathering Program I	05/2018 to TIP Administ 0167-01-111 Detectors and (Transmountai (McCombs) Detectors and Detectors and Detectors and to display trave D2045 MTP, D	Program From: Lu Yermola To: Lon strative Amen 5 dd Radar Veh n) Radar Vehicl Radar Vehicl el time messa	n D204 omalai ind naland dment icle S icle S e Sens ges or	5 MTP, D1 nd from Tra to Pellicar (Local Re 5 54 ensing Device sing Device 1 US 54 dyn	9-22 T awood; no; Pell vision) vices (RV: es (RV: es (RV: namic 2020.	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E (RVSDs) on US 54: li SDs) on US 54: li SDs) along US 55 message signs (I ROJECT HISTO mend H2040 MT XEMPT	n FY 2020. eorge Dieter; d; Trawood to El P 4 stallation of 4 for data DMS). RY: P, H17-20 TIF Authorize	Trawood from Springwo o Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY VOC (Kg/Day): 0.081 NOX (Kg/Day): 0.398 o, 17-20 STIP to program	to Pebble Hi TXDOT 07/2018 F201X F201X CAT 5 CN CO (Kg/D PM 10 (Kg/D PM 10 (Kg/D I in FY 2020 //Share	IIs; Pendale to //AQ (ay): 2.434 g/Day): 0.4	North	Loop \$730,000
07/2018 'STIP Rev Date(s TX DIST. 24 IP PROJECT NAM IMITS FROM: IMITS TO: 'IP DESCRIPTION: REMARKS: Total Project Preliminary Engineer	2020 s)' also refers EP E: Bluetooth Bluetooth Bluetooth Bluetooth gathering Program I Cost Information \$36,53	05/2018 to TIP Administ 0167-01-111 Detectors and (Transmountai (McCombs) Detectors and Detectors and Detectors and to display trave D2045 MTP, D	Program From: Lu Yermola To: Lon strative Amen 5 Nd Radar Vehicl Radar Vehicl el time messa 19-22 TIP, 19	n D204 omalaan naland dmeni us icle S e Sen: ges or -22 ST	5 MTP, D1 to Pellicar (<u>Local Re</u> 5 54 ensing Device ing Device 1 US 54 dyr 1P, in FY 2	9-22 T wwood; vision) vices (vices (vices (vices (RV: es (RV)	TIP, 19-22 STIP, i Pellicano from G Date C,E (RVSDs) on US 54: I SDs) on US 54: I SDs) along US 55 message signs (I ROJECT HISTO mend H2040 MT XEMPT Federal Share	n FY 2020. eorge Dieter; d; Trawood to El P i4 nstallation of f for data DMS). RY: P, H17-20 TIP Authorize State Share	Trawood from Springwo o Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY VOC (Kg/Day): 0.081 NOX (Kg/Day): 0.398 O, 17-20 STIP to program ad Funding by Category Regional Share	to Pebble Hi TXDOT 07/2018 F201X F201X CO (Kg/D PM 10 (Kg/D))))))))))))))))))))))))))))))))))))	Ils; Pendale to //AQ ay): 2.434	North	Loop \$730,000 Total Share
07/2018 'STIP Rev Date(s TX DIST. 24 IP PROJECT NAM IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project reliminary Engineer tight Of Way:	2020 s)' also refers EP E: Bluetooth Bluetooth Bluetooth Bluetooth gathering Program I Cost Information \$36,53 \$0	05/2018 to TIP Administ 0167-01-119 Detectors and (Transmountai (McCombs) Detectors and Detectors and Detectors and to display trave D2045 MTP, D	Program From: Lu Yermola To: Lon strative Amen 5 nd Radar Vehicl Radar Vehicl el time messa 19-22 TIP, 19 Cost of	n D204 omalai ind naland dment icle S icle S e Sens ges or	5 MTP, D1 to Pellicar (<u>Local Re</u> 5 54 ensing Device ing Device 1 US 54 dyr 1P, in FY 2	9-22 T awood; no; Pell vision) vices (RV: es (RV: es (RV: namic 2020.	TIP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E (RVSDs) on US 54: li SDs) on US 54: li SDs) along US 55 message signs (I ROJECT HISTO mend H2040 MT XEMPT	n FY 2020. eorge Dieter; d; Trawood to El P 4 stallation of 4 for data DMS). RY: P, H17-20 TIF Authorize	Trawood from Springwo o Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY VOC (Kg/Day): 0.081 NOX (Kg/Day): 0.398 o, 17-20 STIP to program	to Pebble Hi TXDOT 07/2018 F201X F201X CAT 5 CN CO (Kg/D PM 10 (Kg/D PM 10 (Kg/D I in FY 2020 //Share	IIs; Pendale to //AQ (ay): 2.434 g/Day): 0.4	North	Loop \$730,000 Total Share
07/2018 'STIP Rev Date(s TX DIST. 24 TP PROJECT NAM IMITS FROM: IMITS TO: 'IP DESCRIPTION: REMARKS: Total Project Preliminary Engineer Right Of Way: Construction:	2020 s)' also refers EP E: Bluetooth Bluetooth Bluetooth Bluetooth gathering Program I Cost Information \$36,53 \$0 \$693,4	05/2018 to TIP Administ 0167-01-119 Detectors and (Transmountai (McCombs) Detectors and Detectors and Detectors and to display trave D2045 MTP, D	Program From: Lu Yermola To: Lon strative Amen 5 nd Radar Vehicl Radar Vehicl Radar Vehicl el time messa 19-22 TIP, 19 Cost of Approved	n D204 omalaan naland dmeni us icle S e Sen: ges or -22 ST	5 MTP, D1 to Pellicar (<u>Local Re</u> 5 54 ensing Device ing Device 1 US 54 dyr 1P, in FY 2	9-22 T awood; vision) vivices (es (RV: aamic r 2020. P A A A A A A A A A A A A A	IP, 19-22 STIP, i Pellicano from G licano to Lomalar Date C,E (RVSDs) on US 54: li SDs) along US 54: message signs (I ROJECT HISTO mend H2040 MT XEMPT Federal Share \$584,000	n FY 2020. eorge Dieter; d; Trawood to El P i4 nstallation of f for data DMS). RY: P, H17-20 TIP Authorize State Share	Trawood from Springwo o Yarbrough; Tierra Este aso REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGORY VOC (Kg/Day): 0.081 NOX (Kg/Day): 0.398 O, 17-20 STIP to program ad Funding by Category Regional Share	to Pebble Hi TXDOT 07/2018 F201X F201X CO (Kg/D PM 10 (Kg/D) PM 10 (Kg/D PM 10 (Kg/D) PM 10 (Kg/	IIs; Pendale to //AQ (ay): 2.434 g/Day): 0.4	North	Loop \$730,000 Total Share \$730,000
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						2020 (SEPT - A			ELF	Paso Metropolitar	Planning Organiza
DISTRICT	COUNTY	CSJ		HWY		PHASE	, CIT	Y F	PROJECT SPON	NSOR	YOE COST
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P PROJECT NA	ME: Central B	usiness Distr	ict Phase IV (C	:BD 4)				REVISION DATE:	07/2018		
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IP DESCRIPTION	Mesa, Car	mpbell & Kans		o to Bord	er Hwy and S	f Downtown Stre ixth From Camp to Two-Way		FUNDING CATEGO	DRY: CAT 7 ST	PMM	
EMARKS:			019-22 TIP, 19-2 es: PE \$180240			00 =\$12016000					
					Ad	ROJECT HISTO dministratively an 3-562. EXEMPT		ITP, H17-20 TIP, 17-	20 STIP to chan	nge CSJ from 09	24-06-190 to 0924
Total Projec	t Cost Informa	ation:					Authorize	d Funding by Categ	orv/Share		
reliminary Engine				l		Federal Share		Regional Share	Local Share	Lcl Contributi	on Total Shar
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onstruction:	\$10,21	3,600	Approved		nd by Share	\$9,612,800	\$0	\$0	\$2,403,200		
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otential Change C otal Project Cost	•	94,385									
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DISTRICT C TX DIST. 24	EP	CSJ 0924-06-54	^	CS		C,E	El Pa		COEP	NSOR	OE COST
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EMARKS:		02045 MTP, D	•		Y 2020.						
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Total Project C	ost Informa	tion:		-				d Funding by Catego			
reliminary Engineerir				i	F	Federal Share		• • •	Local Share	Lcl Contribution	Total Share
ight Of Way:	\$0		Cost of	Cat 9TAP	τΔρ	\$658,818	\$0	\$0	\$164,705	\$0	\$823,52
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otential Change Orde											
otal Project Cost:	\$972,8	30									
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onstruction Engineer			Phases:	Cat	4	4(3c)	\$9,819,696	\$2,454,924	\$	0	\$0		\$0	\$12,274,62
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07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION:	2018 2020 ' also refers EP : Spur 601 a SPUR 601 Spur 601 a Westbourn	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY E> th LP 375 Dire d and Eastbo	Program istrative Amen 5 ect Connecto (PY AT LOOP ect Connectors und to Southbo	dmen Ss rs NE 375 (NB/V ound	45 MTF t (Loca 6 601 8/WB a Purple VB and Direct	P, D19-22 T Il Revision) Ind EB/SB Heart) I EB/SB: Co connectors	IP, 19-22 STIP, Date C	n FY 2020. El Pa	aso REVISION DAT MPO PROJEC MTP REFEREN	"E: T ID: NCE:	TXDOT 07/2018 P448X-C/ P448X-C/	4P 4P		
07/2018 'STIP Rev Date(s)	2018 2020 ' also refers EP : Spur 601 a SPUR 601 Spur 601 a Westbourn	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY E> th LP 375 Dire d and Eastbo	Program istrative Amen 5 rect Connecto KPY AT LOOP ect Connectors	dmen Ss rs NE 375 (NB/V ound	45 MTF t (Loca 6 601 8/WB a Purple VB and Direct	P, D19-22 T Il Revision) Ind EB/SB Heart) I EB/SB: Co connectors	IP, 19-22 STIP, Date C	n FY 2020. El Pa	aso REVISION DAT MPO PROJEC MTP REFEREN	"E: T ID: NCE:	TXDOT 07/2018 P448X-C/ P448X-C/	4P 4P		
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION:	2018 2020 ' also refers EP : Spur 601 a SPUR 601 Spur 601 a Westbourn	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY E> th LP 375 Dire d and Eastbo	Program istrative Amen 5 ect Connecto (PY AT LOOP ect Connectors und to Southbo	dmen Ss rs NE 375 (NB/V ound	45 MTF t (Loca 6 601 8/WB a Purple VB and Direct	P, D19-22 T al Revision) and EB/SB Heart) d EB/SB: Co connectors a FY 2020.	IP, 19-22 STIP, Date C	n FY 2020. El Pa und to	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT	TE: T ID: NCE: EGORY:	TXDOT 07/2018 P448X-C/ CAT 2, C/	AP AP AT 7, CAT 11	\$2	3,931,284
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION:	2018 2020 ' also refers EP : Spur 601 a SPUR 601 Spur 601 a Westbourn	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY E> th LP 375 Dire d and Eastbo	Program istrative Amen 5 ect Connecto (PY AT LOOP ect Connectors und to Southbo	dmen Ss rs NE 375 (NB/V ound	45 MTF t (Loca 6 601 8/WB a Purple VB and Direct	P, D19-22 T al Revision) and EB/SB Heart) d EB/SB: Co connectors a FY 2020.	IP, 19-22 STIP, Date C	n FY 2020. El Pa Ind to RY: Amend to	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT Previse the proje	TE: T ID: NCE: EGORY:	TXDOT 07/2018 P448X-C/ CAT 2, C/	AP AP AT 7, CAT 11	\$2	3,931,284
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS:	2018 2020 ' also refers EP : Spur 601 a SPUR 601 Spur 601 a Westbourn Program I	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY E> at LP 375 Dire d and Eastbo D2045 MTP, 1	Program istrative Amen 5 ect Connecto (PY AT LOOP ect Connectors und to Southbo	dmen Ss rs NE 375 (NB/V ound	45 MTF t (Loca 6 601 8/WB a Purple VB and Direct	P, D19-22 T al Revision) and EB/SB Heart) d EB/SB: Co connectors a FY 2020.	IP, 19-22 STIP, Date C onstruct Northbor PROJECT HISTO	n FY 2020. El Pa ind to RY: Amend to o from \$5,820,	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT revise the proje 000 to \$3,400,0	TE: TID: NCE: EGORY: ect name a 00.	TXDOT 07/2018 P448X-C/ P448X-C/ CAT 2, C/	AP AP AT 7, CAT 11	\$2	3,931,284
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project C	2018 2020 ' also refers EP : Spur 601 a SPUR 601 Spur 601 a Westbourn Program I	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY E> at LP 375 Dire d and Eastbo D2045 MTP, 1	Program istrative Amen 5 ect Connecto (PY AT LOOP ect Connectors und to Southbo	dmen Ss rs NE 375 (NB/V ound	45 MTF t (Loca 6 601 8/WB a Purple VB and Direct	P, D19-22 T al Revision) and EB/SB Heart) d EB/SB: Co connectors a FY 2020.	IP, 19-22 STIP, Date C onstruct Northbol PROJECT HISTC Reduce CAT 11 t	IN FY 2020. EI Pa Ind to RY: Amend to b from \$5,820, Authorize	ASO REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT Previse the proje 000 to \$3,400,0 Previne the proje	TE: T ID: NCE: EGORY: ect name a 00. Category/S	TXDOT 07/2018 P448X-C/ P448X-C/ CAT 2, C/ and project Share	AP AP AT 7, CAT 11 description to	\$2 	3,931,284 e EB/SB.
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerin	2018 2020 ' also refers EP :: Spur 601 a Spur 601 a Westbourd Program I ost Informa ng: \$0	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY E> at LP 375 Dire d and Eastbo D2045 MTP, 1	Program istrative Amen- 55 eect Connecto (PY AT LOOP eet Connectors und to Southb D19-22 TIP, 19	a D204 dmen SS rs NE 375 (NB/V ound 9-22 S	45 MTF t (Loca 601 6/WB a Purple VB anc Direct STIP, ir	P, D19-22 T Il Revision) Ind EB/SB Heart) EB/SB: Cd connectors of FY 2020.	IP, 19-22 STIP, Date C Denstruct Northboo PROJECT HISTO Reduce CAT 11 t Federal Share	EI Pa EI Pa Ind to RY: Amend to b from \$5,820, Authorize State Share	ASO REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT revise the proje 000 to \$3,400,0 d Funding by C Regional Sha	TE: T ID: NCE: EGORY: ect name a 00. Category/S re Loc	TXDOT 07/2018 P448X-C/ CAT 2, C/ and project Share al Share	AP AP AT 7, CAT 11	\$2 includ	3,931,284 e EB/SB. Total Share
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project C rreliminary Engineerir tight Of Way:	2018 2020 ' also refers EP : Spur 601 a Spur 601 a Westbourd Program I ost Informa ng: \$0 \$0	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY EX to LP 375 Dire d and Eastbo D2045 MTP, 1	Program istrative Amen 5 ect Connecto (PY AT LOOP ect Connectors und to Southbo	dmen SS 375 (NB/V ound 9-22 S	45 MTF t (Loca 601 6/WB a Purple VB and Direct STIP, ir	P, D19-22 T Il Revision) Ind EB/SB Heart) EEB/SB: Cd connectors TFY 2020.	IP, 19-22 STIP, Date C onstruct Northboo PROJECT HISTO Reduce CAT 11 t Federal Share \$10,117,827	In FY 2020. El Pa and to RY: Amend to p from \$5,820, Authorize State Share \$2,529,457	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT revise the proje 000 to \$3,400,0 d Funding by C Regional Sha \$	TE: T ID: NCE: EGORY: ect name a 00. Category/S are Loc 10	TXDOT 07/2018 P448X-C/ CAT 2, C/ and project Share al Share \$0	AP AP AT 7, CAT 11 description to	\$2 includ	3,931,284 e EB/SB. Total Share \$12,647,28
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project C rreliminary Engineerir Right Of Way: Construction:	2018 2020 ' also refers EP : Spur 601 a Spur 601 a Westbourd Program I ost Informa ng: \$0 \$0 \$23,93	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY EX to LP 375 Dire d and Eastbo D2045 MTP, 1	Program istrative Amen- 55 ect Connecto (PY AT LOOP ect Connectors und to Southbu D19-22 TIP, 19	dmen SS rs NE 375 (NB/V ound 9-22 S	45 MTF t (Loca 601 6/WB a Purple VB and Direct STIP, ir 2M 7	P, D19-22 T al Revision) and EB/SB Heart) d EB/SB: Co connectors o FY 2020. F F F TMA STP-MM	PROJECT HISTOReduce CAT 11 t Federal Share \$10,117,827 \$6,307,200	El Pa El Pa Ind to RY: Amend to p from \$5,820, Authorize State Share \$2,529,457 \$1,576,800	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT o revise the proje 000 to \$3,400,0 cd Funding by C Regional Sha \$	TE: TID: NCE: EGORY: EGORY: ect name a 00. Category/S ire Loc 00	TXDOT 07/2018 P448X-C/ CAT 2, C/ and project Share al Share \$0 \$0	AP AP AT 7, CAT 11 description to	\$2 includ tion \$0 \$0	3,931,284 e EB/SB. Total Share \$12,647,28 \$7,884,00
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerin Right Of Way: Construction: Construction Engineer	2018 2020 ' also refers EP : Spur 601 a Spur 601 a Westbourd Program I ost Informa ng: \$0 \$0 \$23,93	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY EX to LP 375 Dire d and Eastbo D2045 MTP, 1	Program istrative Amen- 15 rect Connector (PY AT LOOP ect Connectors und to Southbu D19-22 TIP, 19 Cost of Approved	dmen SS 375 (NB/V ound 9-22 S	45 MTF t (Loca 601 6/WB a Purple VB and Direct STIP, ir 2M 7	P, D19-22 T al Revision) Ind EB/SB (EB/SB: Cd connectors of FY 2020. F F TMA STP-MM District	IP, 19-22 STIP, Date C onstruct Northboo PROJECT HISTO Reduce CAT 11 t Federal Share \$10,117,827	In FY 2020. El Pa and to RY: Amend to p from \$5,820, Authorize State Share \$2,529,457	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT o revise the proje 000 to \$3,400,0 cd Funding by C Regional Sha \$	TE: T ID: NCE: EGORY: ect name a 00. Category/S are Loc 10	TXDOT 07/2018 P448X-C/ CAT 2, C/ and project Share al Share \$0	AP AP AT 7, CAT 11 description to	\$2 includ	3,931,284 e EB/SB. Total Share \$12,647,28 \$7,884,00
07/2018 'STIP Rev Date(s) TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: 'IP DESCRIPTION: REMARKS:	2018 2020 ' also refers EP : Spur 601 a Spur 601 a Westbourn Program I ost Informa ng: \$0 \$0 \$23,93 ing: \$0	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY EX to LP 375 Dire d and Eastbo D2045 MTP, 1	Program istrative Amen- 55 eect Connecto (PY AT LOOP ect Connectors und to Southbu D19-22 TIP, 19 D19-22 TIP, 19 Cost of Approved Phases:	dmen SS rs NE 375 (NB/V ound 9-22 S	45 MTF t (Loca 601 6/WB a Purple VB and Direct STIP, ir 2M 7	P, D19-22 T al Revision) and EB/SB Heart) d EB/SB: Co connectors o FY 2020. F F F TMA STP-MM	PROJECT HISTOReduce CAT 11 t Federal Share \$10,117,827 \$6,307,200	El Pa El Pa Ind to RY: Amend to p from \$5,820, Authorize State Share \$2,529,457 \$1,576,800	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT o revise the proje 000 to \$3,400,0 cd Funding by C Regional Sha \$	TE: TID: NCE: EGORY: EGORY: ect name a 00. Category/S ire Loc 00	TXDOT 07/2018 P448X-C/ CAT 2, C/ and project Share al Share \$0 \$0	AP AP AT 7, CAT 11 description to	\$2 includ tion \$0 \$0	3,931,284 e EB/SB. Total Share \$12,647,28 \$7,884,00
07/2018 'STIP Rev Date(s) TX DIST. 24 TP PROJECT NAME IMITS FROM: IMITS TO: 'IP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerir Right Of Way: Construction: Construction Engineer Contingencies:	2018 2020 ' also refers EP : Spur 601 a Spur 601 a Westbourn Program I ost Informa ng: \$0 \$0 \$23,93 ing: \$0 \$0	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY EX to LP 375 Dire d and Eastbo D2045 MTP, I	Program istrative Amen- 55 eect Connecto (PY AT LOOP ect Connectors und to Southbu D19-22 TIP, 19 D19-22 TIP, 19 Cost of Approved Phases:	dmen SS rs NE 375 (NB/V ound 9-22 S	45 MTF 45 International 6 601 WWB a Purple VB anco Direct 3TIP, ir 2M 7 11	P, D19-22 T al Revision) md EB/SB: Cd connectors of FY 2020. F TMA STP-MM District Discretio nary	IP, 19-22 STIP, Date C Denstruct Northboo PROJECT HISTO Reduce CAT 11 t Federal Share \$10,117,827 \$6,307,200 \$2,720,000	El Pa El Pa Ind to RY: Amend to o from \$5,820, Authorize State Share \$2,529,457 \$1,576,800 \$680,000	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT revise the proje 000 to \$3,400,0 d Funding by C Regional Sha \$ \$	TE: TID: NCE: EGORY: ect name a 00. Category/S re Loc 00 00 00	TXDOT 07/2018 P448X-C/ CAT 2, C/ and project Share al Share \$0 \$0 \$0	AP AP AT 7, CAT 11 description to	\$2 includ tion \$0 \$0 \$0	3,931,284 E EB/SB. Total Share \$12,647,28 \$7,884,00 \$3,400,00
07/2018 'STIP Rev Date(s) TX DIST. 24 IP PROJECT NAME IMITS FROM: IMITS TO: IP DESCRIPTION: EMARKS: Total Project C reliminary Engineerir light Of Way: construction: construction Engineer contingencies: adirects:	2018 2020 ' also refers EP : Spur 601 a Spur 601 a Westbourn Program I ost Informa ng: \$0 \$0 \$23,93 ing: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	05/2018 to TIP Admin 1046-03-00 at LP 375 Dir LIBERTY EX to LP 375 Dire d and Eastbo D2045 MTP, I	Program istrative Amen- 55 eect Connecto (PY AT LOOP ect Connectors und to Southbu D19-22 TIP, 19 D19-22 TIP, 19 Cost of Approved Phases:	dmen SS rs NE 375 (NB/V ound 9-22 S	45 MTF 45 International 6 601 WWB a Purple VB anco Direct 3TIP, ir 2M 7 11	P, D19-22 T al Revision) md EB/SB: Cd connectors of FY 2020. F TMA STP-MM District Discretio nary	PROJECT HISTOReduce CAT 11 t Federal Share \$10,117,827 \$6,307,200	El Pa El Pa Ind to RY: Amend to p from \$5,820, Authorize State Share \$2,529,457 \$1,576,800	aso REVISION DAT MPO PROJEC MTP REFEREN FUNDING CAT revise the proje 000 to \$3,400,0 d Funding by C Regional Sha \$ \$	TE: TID: NCE: EGORY: EGORY: ect name a 00. Category/S ire Loc :0	TXDOT 07/2018 P448X-C/ CAT 2, C/ and project Share al Share \$0 \$0	AP AP AT 7, CAT 11 description to	\$2 includ tion \$0 \$0	3,931,284

EL PASO MPO 2019-2022 TRANSPORTATION IMPROVEMENT PROGRAM EL PASO DISTRICT PROJECTS

						Y 2020 (SEPT - A			El	Paso Metropolitan Pla	nning Organization
DISTRICT	COUNTY	CSJ		HWY		PHASE	CIT	Y I	PROJECT SPO	NSOR Y	OE COST
TX DIST. 24	EP	0924-06-54	14	US 62/1	80	C,E	El Pa	aso	COEP	\$	3,241,465
TIP PROJECT NAM	IE: MONTAN	IA RTS PEDE	STRIAN ENH	NCEME	NTS			REVISION DATE:	07/2018		
LIMITS FROM:	5 POINTS	S TRANSFER	CENTER on M	1ontana a	nd Piedras			MPO PROJECT ID	T069X		
LIMITS TO:	Far East	Transfer Cente	er at Edgemere	and RC I	POE			MTP REFERENCE	T069X		
TIP DESCRIPTION						and construction of		FUNDING CATEGO	ORY: CAT 5 CM	ЛАQ	
			e Montana RT	S route to	include insta	Ilation of sidewalk	s and	VOC (Kg/Day): 0.36	68 CO (Kg/D	ay): 11.177	
	landscapi	•						NOX (Kg/Day): 0.94	6 PM 10 (K	g/Day): 0.307	
REMARKS:	Program	D2045 MTP, L	019-22 TIP, 19	-22 STIP,	IN FY 2020.						
					Ē	PROJECT HISTO	RY.				
					ŀ			, 17-20 STIP to prog	ram in FY 2020		
Total Project	Cost Inform	ation:		T			Authorize	d Funding by Cate	gory/Share		
Preliminary Enginee	ering: \$427,	693				Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat 5	CMAQ	\$2,593,172	\$0	\$0	\$648,293	\$0	\$3,241,465
Construction:	\$2,81	3,772	Approved Phases:	Fu	ind by Share	\$2,593,172	\$0	\$0	\$648,293	\$0	\$3,241,465
Construction Engine	ering: \$0		Phases:	!	ind by onlard	\$2,000,112	ψ υ	Q	<i>Q010,200</i>	Q	\$0,241,400
Contingencies:	\$0		\$3,241,465								
Indirects:	\$0										
Bond Financing:	\$0										
Potential Change O											
Total Project Cost:	\$3,24	1,465									
	2015	07/2012	07/2012	New In M	ission 2013-2	2016 Tip					
	2015	10/2013	Stayed I	n Fy 2015	For H2013-2	2016;					
					pendiı	ng Coep Rts' Letti	ng Schedule…				
	2019	01/2014	Letter R	eceived Fi	om Coep Fo	or Montana Rts Ch	ange In Letting	0374-02-089 (see /	Attachments)		
	2019	03/2014				15 Due To Montar p Years (15-18).	na Rts Constru	ction Letting Schedu	Ile. Competed F	or Fy 2018 Funds Ho	wever Not
02/2017	2020	10/2016				IP, 17-20 STIP to	program in FY	2020 EXEMPT			
07/2018	2020	05/2018				TIP, 19-22 STIP, i					



MONDAY, MARCH 5,	, 2018			2010 202		EL PASO MPC		DOODAM		111	TIP PAGE:
12:38:35 PM				2019-202		SO DISTRICT PF		RUGRAIVI	2	n	\sim
						2021 (SEPT - A			El	Paso Metropolitan Pla	nning Organizati
DISTRICT C	OUNTY	CSJ		HWY		PHASE	, CL	гү і	PROJECT SPO	NSOR)	OE COST
TX DIST. 24	EP	0924-06-57	7	CS		C,E	El P	aso	COEP		6,830,453
TIP PROJECT NAME	Bicycle I	nfrastructure	Citywide					REVISION DATE:	07/2018		
IMITS FROM:	Citywide	(Please see T	P History for co	mplete stre	et names)			MPO PROJECT ID	: M090X		
IMITS TO:	Citywide	(Please see T	IP History for co	mplete stre	et names)			MTP REFERENCE	M090X		
TIP DESCRIPTION:						wide to include: b		FUNDING CATEGO	ORY: CAT 5 CM	MAQ	
	lanes, co bicycle la		e lanes, bicycle	boulevards	, shared lan	e markings, and	protected	VOC (Kg/Day): 6.51	6 CO (Kg/D	0ay): 231.129	
REMARKS:	,		019-22 TIP, 19-	22 STID in	EV 2021			NOX (Kg/Day): 13.3	51 PM 10 (K	g/Day): 9.141	
CEWIARRO.	Fiografii	D2045 MITF, L	J19-22 HF, 19-	22 3116, 111	FT 2021.						
Total Project C	ost Inform	ation:		Ţ			Authorize	ed Funding by Cate	gory/Share		
Preliminary Engineeri	ng: \$415,	286				Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat 5	CMAQ	\$5,464,363	\$0	\$0	\$1,366,090	\$0	\$6,830,453
Construction:	\$6,41	5,167	Approved	Fun	d by Share	\$5,464,363	\$0	\$0	\$1,366,090	\$0	\$6,830,453
Construction Enginee	ring: \$0		Phases:	i un	u by Share	ψ3,404,303	40	ΨŪ	ψ1,500,050	ψŪ	ψ 0,030, 43.
Contingencies:	\$0		\$6,830,453								
ndirects:	\$0										
ond Financing:	\$0										
otential Change Ord	er: \$0										
otal Project Cost:	\$6,83	0,453									
ROJECT AMENDM	ENT HISTO	DRY									
STIP Rev Date(s)	FY(s)	Note/Amend	Date Note/Am	endment							
07/2018	2021	05/2018	Program	D2045 MT	P. D19-22 T	IP, 19-22 STIP, i	in FY 2021.				
								Agua from Westwind	l; Via Descanso	from Ojo de Agua; V	/ia Serena from
										Dyer; Diana from U	
										n Oregon; Cotton fro om Viscount; Montwo	
										m George Dieter; Pe	
			Pellicano	; George D	ieter from V	ista Del Sol; Bob	Mitchell from	George Dieter; Saul		urner; Nolan Richard	
			Turner; F	Pebble Hills	from Yarbro	ough; Lee Treving	o from Edgem	ere			
			To High I	Ridge to Fr	anklin Hills [.]	Escondido to We	estwind: Oio d	e Aqua to Via Desca	nso: Via Descan	iso to Via Serena; Via	a Serena to
										a to Railroad; Stahal	
										otton to Sixth; Sixth t	
										o Trawood; Phoenix aul Kleinfeld; Saul Kl	
								Sherr; Lee Trevino t		aui Kielillelu, Saul Ki	
'STIP Rev Date(s))' also refer	s to TIP Admir	,			,		,			
TX DIST. 24	EP	2121-01-0	94	IH 10		С	El P	aso	TXDOT	\$	60,418,920
IP PROJECT NAME	: IH 10 WI	DENING						REVISION DATE:	07/2018		
IMITS FROM:	0.25 MI E	AST OF FM 1	905 (TX/NM ST	ATELINE)				MPO PROJECT ID	: I405X-CA	AP	
IMITS TO:	SH 20 (N							MTP REFERENCE	: I405X-CA	NP	
IP DESCRIPTION:	IH 10 WI	DENING: WID	EN FROM 4 TO	0 6 LANES	DIVIDED			FUNDING CATEGO	ORY: CAT 2 TM	MA, CAT 7 STP, CAT	11
EMARKS:	Program	D2045 MTP, [019-22 TIP, 19-	22 STIP, in	FY 2021.						
Project Sponsor payi			osts, if any.								
Total Project C								ed Funding by Cate			_
reliminary Engineeri	-	1,774				Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
right Of May	\$0		Cost of	Cat 2M	TMA	\$29,584,000	\$7,396,000	\$0	\$0	\$0	\$36,980,000
						Ψ20,004,000	ψ1,000,000	ψŪ	φυ	Φ 0	\$30,960,000
Right Of Way: Construction: Construction Enginee	\$60,4	18,920	Approved Phases:	Cat 2	STP	\$16,120,000	\$4,030,000	\$0	\$0 \$0	\$0 \$0	\$20,150,000

Total Project Cost	Information:					Authorize	d Funding by Cate	gory/Share		
Preliminary Engineering:	\$3,591,774				Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0	Cost of	Cat 2M	TMA	\$29,584,000	\$7,396,000	\$0	\$0	\$0	\$36,980,000
Construction:	\$60,418,920	Approved	Cat 7	STP	\$16.120.000	\$4.030.000	\$0	\$0	\$0	\$20,150,000
Construction Engineering:	\$3,151,965	Phases:	Cat 11	District	\$2.631.136	\$657.784	\$0	\$0	\$0	\$3.288.920
Contingencies:	\$131,943	\$60,418,920		Discretio	, , ,	\$057,764	φΟ	φυ	φυ	\$3,200,920
Indirects:	\$0			nary						
Bond Financing:	\$0		Fu	nd by Share	\$48,335,136	\$12,083,784	\$0	\$0	\$0	\$60,418,920
Potential Change Order:	\$3,452,501		:		. , ,	. , ,				
Total Project Cost:	\$70,747,103									

07/2018 2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

EL PASO MPO 2019-2022 TRANSPORTATION IMPROVEMENT PROGRAM EL PASO DISTRICT PROJECTS



							El Dana Matuna	alitan Banaina Bananiantin
				FY 2022 (SEPT - AU	G)		ci Paso Metropi	olitan Planning Organizatio
DISTRICT	COUNTY	CSJ	HWY	PHASE	CIJ	TY PR	OJECT SPONSOR	YOE COST
TX DIST. 24	EP	0924-06-570	CS	C,E	El Pa	aso	COEP	\$4,272,273
TIP PROJECT NAM	ME: Downto	wn Bicycle Improveme	nts Phase I			REVISION DATE:	07/2018	
LIMITS FROM:	Various	(Please see TIP history	for complete street nam	ies)		MPO PROJECT ID:	M089A	
LIMITS TO:	Various	(Please see TIP history	for complete street nam	ies)		MTP REFERENCE:	M089A	
TIP DESCRIPTION	Dominio	vn Bicycle Improvements	Y: CAT 5 CMAQ					
				anes, bike blvds, shared lane markings. Project will			CO (Kg/Day): 3.252	
		associated signage, way	0, 1 0,			NOX (Kg/Day): 0.287	PM 10 (Kg/Day): 0.08	3
REMARKS:	Program	D2045 MTP, D19-22 TI	P, 19-22 STIP, in FY 20)22				
Total Project	Cost Inform	action:			Authoriza	ed Funding by Catego	n/Choro	
•				E 1 1 0 1 0 1			•	
Preliminary Enginee	enng: \$199	.003		Federal Share	state Share	Regional Share I	ocal Share Lcl Contr	ibution Total Share

Preliminary Engineering:			i								
Right Of Way:	\$0	Cost of	Cat	5	CMAQ	\$3,417,819	\$0	\$0	\$854,454	\$0	\$4,272,273
Construction:	\$4,072,710	Approved		Eund	by Share	\$2 417 910	\$0	\$0	\$854,454	\$0	\$4,272,27
Construction Engineering	g: \$0	Phases:	ļ	Fund	by Share	\$3,417,819	φU	φU	\$0 54,454	φυ	\$4,272,27
Contingencies:	\$0	\$4,272,273									
Indirects:	\$0										
Bond Financing:	\$0										
Potential Change Order:	\$0										
Total Project Cost:	\$4,272,273										
PROJECT AMENDMEN	T HISTORY										
STIP Rev Date(s)	FY(s) Note/Amend	Date Note/Am	endm	ent							
07/2018	2022 05/2018	From: El Fe; Myrtl To: Cam	Paso e from pbell t	from F Stante o Pais	ranklin; El on; San An ano; El Pas	tonio from Antho so to Main; El Pa	don; Main from ony; Sheldon fro aso to Paisano;	Santa Fe; Main from om Santa Fe; Virginia Main to El Paso; Main ı to El Paso; Virginia t	to Mills; Magof n to Campbell;	ffin from San Antonio Mills to Virginia; Miss	
'STIP Rev Date(s)' al	lso refers to TIP Admin	istrative Ameno	dment	(Loca	Revision)	Date					
					,						
	P 2121-02-10			10	,	С	El Pa		TXDOT	\$(60,540,000
TIP PROJECT NAME: I	P 2121-02-10				/			REVISION DATE:	07/2018		60,540,000
TIP PROJECT NAME: II LIMITS FROM: S	EP 2121-02-16 H 10 WIDENING SH 20 (MESA ST)	60	IH	10				REVISION DATE: MPO PROJECT ID:	07/2018 I406X-CA	P	60,540,000
TIP PROJECT NAME: IF LIMITS FROM: S LIMITS TO: IF	P 2121-02-10 H 10 WIDENING 34 SH 20 (MESA ST) 35/SUNLAND	0 0 PARK INTER	IH CHAN	10 GE				REVISION DATE: MPO PROJECT ID: MTP REFERENCE:	07/2018 I406X-CA I406X-CA	P	
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II	2121-02-10 H 10 WIDENING SH 20 (MESA ST) H 10/US 85/SUNLAND H 10 WIDENING: WID	60) PARK INTER EN FROM 6 TO	IH CHAN D 8 LA	10 GE NES [DIVIDED			REVISION DATE: MPO PROJECT ID:	07/2018 I406X-CA I406X-CA	P	
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II	P 2121-02-10 H 10 WIDENING 34 SH 20 (MESA ST) 35/SUNLAND	60) PARK INTER EN FROM 6 TO	IH CHAN D 8 LA	10 GE NES [DIVIDED			REVISION DATE: MPO PROJECT ID: MTP REFERENCE:	07/2018 I406X-CA I406X-CA	P	
TIP PROJECT NAME: IFLIMITS FROM:SLIMITS TO:IFTIP DESCRIPTION:IFREMARKS:P	P 2121-02-10 H 10 WIDENING H SH 20 (MESA ST) H H 10/US 85/SUNLAND H H 10 WIDENING: WID Program D2045 MTP, D	60) PARK INTER(EN FROM 6 TC)19-22 TIP, 19-	IH CHAN D 8 LA	10 GE NES [DIVIDED			REVISION DATE: MPO PROJECT ID: MTP REFERENCE:	07/2018 I406X-CA I406X-CA	P	
TIP PROJECT NAME: IF LIMITS FROM: S LIMITS TO: IF TIP DESCRIPTION: IF REMARKS: P *Project Sponsor paying Total Project Cost	P 2121-02-10 H 10 WIDENING SH 20 (MESA ST) H 10/US 85/SUNLAND H 10 WIDENING: WID Program D2045 MTP, I for PE and/or ROW Co t Information:	60) PARK INTER(EN FROM 6 TC)19-22 TIP, 19-	IH CHAN D 8 LA	10 GE NES [DIVIDED			REVISION DATE: MPO PROJECT ID: MTP REFERENCE:	07/2018 I406X-CA I406X-CA RY: CAT 2 TM	Р Р ИА, САТ 7 STP, CAT	
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying Total Project Cost Preliminary Engineering:	P 2121-02-10 H 10 WIDENING BH 20 (MESA ST) H 10/US 85/SUNLAND H 10/US 85/SUNLAND H 10 WIDENING: WID Program D2045 MTP, D for PE and/or ROW Co t t Information: \$3,148,554	60) PARK INTER(EN FROM 6 TC)19-22 TIP, 19-	IH CHAN D 8 LA	10 GE NES [DIVIDED FY 2022.		Authorize	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor	07/2018 I406X-CA I406X-CA RY: CAT 2 TM	P	
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying Total Project Cost Preliminary Engineering:	P 2121-02-10 H 10 WIDENING SH 20 (MESA ST) H 10/US 85/SUNLAND H 10 WIDENING: WID Program D2045 MTP, I for PE and/or ROW Co t Information:	50 D PARK INTER EN FROM 6 TC D19-22 TIP, 19- osts, if any. Cost of	IH CHAN D 8 LA	10 GE NES [IP, in]	DIVIDED FY 2022.	C	Authorize	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor	07/2018 1406X-CA 1406X-CA RY: CAT 2 TM	Р Р ИА, САТ 7 STP, CAT	11
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying Total Project Cost Preliminary Engineering: Right Of Way: Construction:	P 2121-02-10 H 10 WIDENING BH 20 (MESA ST) H 10/US 85/SUNLAND H 10/US 85/SUNLAND H 10 WIDENING: WID Drogram D2045 MTP, D for PE and/or ROW Cd t t Information: \$3,148,554 \$0 \$60,540,000	0 PARK INTER EN FROM 6 TC 019-22 TIP, 19- osts, if any. Cost of Approved	IH CHAN D 8 LA -22 ST	10 GE NES I IP, in I 2M	DIVIDED FY 2022.	C Federal Share	Authorize State Share	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor Regional Share	07/2018 I406X-CA I406X-CA RY: CAT 2 TM ory/Share Local Share	P IA, CAT 7 STP, CAT Lcl Contribution	11 Total Share
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying : Total Project Cost Preliminary Engineering: Right Of Way: Construction: Construction Engineering	P 2121-02-10 H 10 WIDENING BH 20 (MESA ST) H 10/US 85/SUNLAND H 10/US 85/SUNLAND H 10 WIDENING: WID Program D2045 MTP, D for PE and/or ROW Co for PE and/or ROW Co t Information: \$3,148,554 \$0 \$60,540,000 g: \$3,128,710 \$3,128,710	60 PARK INTER(EN FROM 6 TO D19-22 TIP, 19- osts, if any. Cost of Approved Phases:	IH CHAN 28 LA 22 ST Cat Cat	10 GE NES I IP, in I 2M 7	DIVIDED FY 2022.	C Federal Share \$29,248,000 \$16,336,000	Authorize State Share \$7,312,000 \$4,084,000	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor Regional Share \$0	07/2018 1406X-CA 1406X-CA RY: CAT 2 TM CAT 2 TM Ory/Share Local Share \$0	P IA, CAT 7 STP, CAT Lcl Contribution \$0	11 Total Share \$36,560,00 \$20,420,00
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying : Total Project Cost Preliminary Engineering: Right Of Way: Construction: Construction Engineering	P 2121-02-16 H 10 WIDENING SH 20 (MESA ST) H 10/US 85/SUNLANE H 10 WIDENING: WID Program D2045 MTP, E for PE and/or ROW Co t Information: \$3,148,554 \$0 \$60,540,000 g: \$3,128,710 \$130,969	0 PARK INTER EN FROM 6 TC 019-22 TIP, 19- osts, if any. Cost of Approved	IH CHAN 0 8 LA 22 ST Cat	10 GE NES I IP, in I 2M 7	DIVIDED FY 2022.	C Federal Share \$29,248,000	Authorize State Share \$7,312,000	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor Regional Share \$0 \$0	07/2018 1406X-CA 1406X-CA RY: CAT 2 TM COTY/Share Local Share \$0 \$0	P MA, CAT 7 STP, CAT Lcl Contribution \$0 \$0	11 Total Share \$36,560,00
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying : Total Project Cost Preliminary Engineering: Right Of Way: Construction: Construction Engineering Contingencies: Indirects:	P 2121-02-10 H 10 WIDENING SH 20 (MESA ST) H 10/US 85/SUNLAND H 10 WIDENING: WID Program D2045 MTP, D for PE and/or ROW Co t Information: \$3,148,554 \$0 \$60,540,000 g: \$3,128,710 \$130,969 \$0	60 PARK INTER(EN FROM 6 TO D19-22 TIP, 19- osts, if any. Cost of Approved Phases:	IH CHAN 28 LA 22 ST Cat Cat	10 GE NES I IP, in I 2M 7	TMA TIMA DIVIDED FY 2022.	C Federal Share \$29,248,000 \$16,336,000	Authorize State Share \$7,312,000 \$4,084,000	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor Regional Share \$0 \$0	07/2018 1406X-CA 1406X-CA RY: CAT 2 TM COTY/Share Local Share \$0 \$0	P MA, CAT 7 STP, CAT Lcl Contribution \$0 \$0	11 Total Share \$36,560,00 \$20,420,00
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying : Total Project Coss Preliminary Engineering: Right Of Way: Construction: Construction Engineering Contingencies: Indirects: Bond Financing:	2121-02-10 H 10 WIDENING SH 20 (MESA ST) H 10/US 85/SUNLAND H 10 WIDENING: WID Program D2045 MTP, D for PE and/or ROW Co t Information: \$3,148,554 \$0 \$60,540,000 g: \$3,128,710 \$130,969 \$0	60 PARK INTER(EN FROM 6 TO D19-22 TIP, 19- osts, if any. Cost of Approved Phases:	IH CHAN 28 LA 22 ST Cat Cat	10 GE NES I IP, in I 2M 7 11	TMA STP District Discretio nary	C Federal Share \$29,248,000 \$16,336,000	Authorize State Share \$7,312,000 \$4,084,000	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor Regional Share \$0 \$0	07/2018 1406X-CA 1406X-CA RY: CAT 2 TM COTY/Share Local Share \$0 \$0	P MA, CAT 7 STP, CAT Lcl Contribution \$0 \$0	11 Total Share \$36,560,00 \$20,420,00
TIP PROJECT NAME: II LIMITS FROM: S LIMITS TO: II TIP DESCRIPTION: II REMARKS: P *Project Sponsor paying : Total Project Cost Preliminary Engineering: Right Of Way: Construction: Construction Engineering Contingencies: Indirects:	2121-02-10 H 10 WIDENING SH 20 (MESA ST) H 10/US 85/SUNLAND H 10 WIDENING: WID Program D2045 MTP, D for PE and/or ROW Co t Information: \$3,148,554 \$0 \$60,540,000 g: \$3,128,710 \$130,969 \$0	60 PARK INTER(EN FROM 6 TO D19-22 TIP, 19- osts, if any. Cost of Approved Phases:	IH CHAN 28 LA 22 ST Cat Cat	10 GE NES I IP, in I 2M 7 11	TMA STP District Discretio nary	C Federal Share \$29,248,000 \$16,336,000 \$2,848,000	Authorize State Share \$7,312,000 \$4,084,000 \$712,000	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGOR d Funding by Categor Regional Share \$0 \$0 \$0 \$0	07/2018 1406X-CA 1406X-CA RY: CAT 2 TM ory/Share Local Share \$0 \$0 \$0	P MA, CAT 7 STP, CAT Lcl Contribution \$0 \$0 \$0	11 Total Shar \$36,560,00 \$20,420,00 \$3,560,00

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				2019-202				ROGRAM		S	~
						SO DISTRICT PI 2022 (SEPT - A			El	Paso Metropolitan Pla	nning Organizati
DISTRICT	COUNTY	CSJ		HWY	E I	PHASE	CI	rv 6	ROJECT SPO		OE COST
TX DIST, 24	EP	0924-06-571		CS		C,E	ELP		COEP		\$597,282
TIP PROJECT NA					vements	0,2		REVISION DATE:	07/2018		4001,202
LIMITS FROM:		nio Avenue						MPO PROJECT ID:	E303X		
LIMITS TO:		de Avenue						MTP REFERENCE:			
TIP DESCRIPTIO			Frack Roadwa	y Improve	ments: Proje	ct includes insta	llation of two-	FUNDING CATEGO		MAQ	
	way cycle	e track facilities.						VOC (Kg/Day): 0.02	3 CO (Kg/E	0ay): 0.804	
REMARKS:	Program	D2045 MTP, D1	9-22 TIP, 19-2	22 STIP, ir	ו FY 2022.			NOX (Kg/Day): 0.04	5 PM 10 (K	g/Day): 0.034	
Total Proje	ct Cost Inform	nation:		Ţ			Authorize	ed Funding by Categ	jory/Share		
Preliminary Engine	eering: \$27,9	00				Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat 5	CMAQ	\$477,826	\$0	\$0	\$119,456	\$0	\$597,282
Construction:	\$569	382	Approved	Fur	d by Share	\$477,826	\$0	\$0	\$119,456	\$0	\$597,282
Construction Engin	neering: \$0		Phases:			Ψ-11,020	ψυ	ψŪ	÷10,400	ψŪ	4001,20Z
Contingencies:	\$0		\$597,282								
Indirects:	\$0										
Bond Financing:	\$0										
Potential Change											
Total Project Cos	st: \$597	282									
STIP Rev Date 07/2018 'STIP Rev Dat	2022	05/2018 s to TIP Adminis	•	D2045 MT		IP, 19-22 STIP, i Date	n FY 2022.				
07/2018	2022	05/2018	Program trative Amend	D2045 MT			n FY 2022. El P	aso	COEP		\$5,360,329
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA	2022 te(s)' also refer EP AME: Traffic M	05/2018 s to TIP Adminis 0924-06-566 lanagement Cer	Program trative Amend	D2045 MT Iment (Loc N/A		Date		REVISION DATE:	07/2018		\$5,360,329
07/2018 <u>'STIP Rev Dat</u> TX DIST. 24 TIP PROJECT NA LIMITS FROM:	2022 te(s)' also refer EP AME: Traffic M City of E	05/2018 s to TIP Adminis 0924-06-566 lanagement Cer Paso city limits.	Program trative Amend	D2045 MT Iment (Loc N/A		Date		REVISION DATE: MPO PROJECT ID:	07/2018 S301D		\$5,360,329
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO:	2022 te(s)' also refer EP AME: Traffic N City of E City of E	05/2018 s to TIP Adminis 0924-06-566 lanagement Cer Paso city limits. Paso city limits.	Program trative Amend nter Upgrade	D2045 MT Iment (Loc N/A Phase 1	al Revision)	Date E	EIP	REVISION DATE: MPO PROJECT ID: MTP REFERENCE:	07/2018 S301D S301D		5,360,329
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07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO:	2022 te(s)' also refer EP AME: Traffic N City of E City of E N: Traffic M TMC and	05/2018 s to TIP Adminis 0924-06-566 lanagement Cer Paso city limits. Paso city limits. anagement Cent t Traffic Signal co	Program trative Amend nter Upgrade er Upgrade Pl ontroller equip	D2045 MT Iment (Loc N/A Phase 1 hase 1: Pr ment city	oject include wide. 1st pha	E E s the upgrade of	EI P	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGO VOC (Kg/Day): 3.5	07/2018 S301D S301D ORY: CAT 5 Cl CO (Kg/E	MAQ Day): 68.03	\$5,360,329
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO:	2022 te(s)' also refer EP AME: Traffic N City of E City of E N: Traffic M TMC and Phases 2	05/2018 s to TIP Adminis 0924-06-566 lanagement Cer Paso city limits. Paso city limits. anagement Cent	Program trative Amend nter Upgrade er Upgrade Pi ontroller equip ment and cons	D2045 MT Iment (Loc N/A Phase 1 hase 1: Pr ment city s struction o	oject include wide. 1st pha f the design.	E E s the upgrade of	EI P	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGO	07/2018 S301D S301D ORY: CAT 5 Cl CO (Kg/E	MAQ	\$5,360,329
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO: TIP DESCRIPTIO REMARKS:	2022 te(s)' also refer EP AME: Traffic M City of E City of E City of E N: Traffic M TMC and Phases 2 Program	05/2018 s to TIP Adminis 0924-06-566 lanagement Cert Paso city limits. Paso city limits. anagement Cent 1 Traffic Signal cc 2-5 are the implei D2045 MTP, D1	Program trative Amend nter Upgrade er Upgrade Pi ontroller equip ment and cons	D2045 MT Iment (Loc N/A Phase 1 hase 1: Pr ment city s struction o	oject include wide. 1st pha f the design.	E E s the upgrade of	EI P	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGO VOC (Kg/Day): 3.5 NOX (Kg/Day): 8.91	07/2018 S301D S301D ORY: CAT 5 CI CO (Kg/E PM 10 (K	MAQ Day): 68.03	\$5,360,329
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO: TIP DESCRIPTIO REMARKS:	2022 te(s)' also refer EP AME: Traffic N City of E City of E N: Traffic M TMC and Phases 2 Program	05/2018 s to TIP Adminis 0924-06-566 hanagement Cer Paso city limits. Paso city limits. Paso city limits anagement Cent 1 Traffic Signal or 2-5 are the implei D2045 MTP, D1 hation:	Program trative Amend nter Upgrade er Upgrade Pi ontroller equip ment and cons	D2045 MT Iment (Loc N/A Phase 1 hase 1: Pr ment city s struction o	oject include wide. 1st pha f the design. n FY 2022.	E E s the upgrade of	EI P the COEP phase. Authorize	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGO VOC (Kg/Day): 3.5 NOX (Kg/Day): 8.91 ed Funding by Catego	07/2018 S301D S301D ORY: CAT 5 CI CO (Kg/E PM 10 (K	MAQ Day): 68.03	\$5,360,329
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO: TIP DESCRIPTIO REMARKS: Total Project	2022 te(s)' also refer EP AME: Traffic N City of E City of E N: Traffic M TMC and Phases 2 Program	05/2018 s to TIP Adminis 0924-06-566 hanagement Cer Paso city limits. Paso city limits. Paso city limits anagement Cent 1 Traffic Signal or 2-5 are the implei D2045 MTP, D1 hation:	Program trative Amend nter Upgrade er Upgrade Pi ontroller equip ment and cons	D2045 MT Iment (Loc N/A Phase 1 hase 1: Pr ment city s struction o	oject include wide. 1st pha f the design. n FY 2022.	E s the upgrade of se is the design Federal Share	EI P the COEP phase. Authorize	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGO VOC (Kg/Day): 3.5 NOX (Kg/Day): 8.91 ed Funding by Catego	07/2018 S301D S301D ORY: CAT 5 Cl CO (Kg/E PM 10 (K	MAQ 0ay): 68.03 (g/Day): 10.15	
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO: TIP DESCRIPTIO REMARKS: Total Projec Preliminary Engine	2022 te(s)' also refer EP AME: Traffic N City of E City of E N: Traffic M TMC and Phases 2 Program ct Cost Inform eering: \$5,36 \$0	05/2018 s to TIP Adminis 0924-06-566 lanagement Cer Paso city limits. Paso city limits. anagement Cent 1 Traffic Signal cc 2-5 are the impler D2045 MTP, D1 nation: 0,329	Program trative Amend nter Upgrade Pl ontroller equip ment and cons 9-22 TIP, 19-2 Cost of Approved	D2045 MT Iment (Loc N/A Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 2 STIP, ir	oject include wide. 1st pha f the design. n FY 2022. CMAQ	E s the upgrade of se is the design Federal Share \$4,288,263	EI P the COEP phase. Authorize State Share \$0	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGO VOC (Kg/Day): 3.5 NOX (Kg/Day): 8.91 A Funding by Catego Regional Share \$0	07/2018 S301D S301D ORY: CAT 5 CI CO (Kg/E PM 10 (K Jory/Share Local Share \$1,072,066	WAQ)ay): 68.03 g/Day): 10.15 Lcl Contribution \$0	Total Share \$5,360,329
07/2018 'STIP Rev Dat TX DIST. 24 TIP PROJECT NA LIMITS FROM: LIMITS TO: TIP DESCRIPTIO REMARKS: Total Projec Preliminary Engine Right Of Way:	2022 te(s)' also refer EP AME: Traffic M City of E City of E N: Traffic M TMC and Phases 2 Program ct Cost Inform eering: \$5,36 \$0 \$18,8	05/2018 s to TIP Adminis 0924-06-566 lanagement Cer Paso city limits. Paso city limits. Paso city limits nanagement Cent 1 Traffic Signal cc 2-5 are the implei D2045 MTP, D1 0,329	Program trative Amend nter Upgrade Pontroller equip ment and cons 9-22 TIP, 19-2 Cost of	D2045 MT Iment (Loc N/A Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 1 Phase 2 STIP, ir	oject include wide. 1st pha f the design. n FY 2022.	E s the upgrade of se is the design Federal Share	EI P the COEP phase. Authorize State Share	REVISION DATE: MPO PROJECT ID: MTP REFERENCE: FUNDING CATEGO VOC (Kg/Day): 3.5 NOX (Kg/Day): 8.91 A Funding by Catego Regional Share	07/2018 S301D S301D CO (Kg/E PM 10 (K Joory/Share Local Share	MAQ Day): 68.03 (g/Day): 10.15 Lcl Contribution	Total Share
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²FHWA to FTA Funds Transfer Projects

² Congestion Mitigation and Air Quality (CMAQ) Analyses can be found in Appendix A provided upon request and/or attached into the electronic version of this document.

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						EL PA	SO DISTRICT PI	ROJECTS				
						F	Y 2019 (SEPT - A	UG)		t	Paso Metropolitan	Planning Organizati
	COUNTY	CSJ			WY		PHASE	CI		PROJECT SPO		YOE COST
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Construction:	\$1,000	0,000	Approved			nd by Share		\$0	\$0	\$200,000		
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						FY 2020 (SEPT - /	-				
TX DIST. 24	EP	CSJ 0924-06-55	4		<u>NY</u> /A	T PHASE	El P		PROJECT SPC Sun Metro		YOE COST \$1,000,000
TIP PROJECT NAM						·	2	REVISION DATE:	07/2018		ψ1,000,000
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Preliminary Engineer						Federal Share				Lcl Contribution	on Total Share
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Construction:	\$1,00	0,000	Approved	Jai							
Construction Engine		<u>.</u>	Phases:	ł	Fund by Shar	e \$800,000	\$0	\$0	\$200,000	\$	0 \$1,000,000
Contingencies:	\$0		\$1,000,000								
Indirects:	\$0										
Bond Financing:	\$0										
Potential Change Or	der: \$0										
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12:30:36 PM	, 2018			2019-202		EL PASO MPO PORTATION IMPE ASO DISTRICT PI	ROVEMENT P	ROGRAM		"	
					F	Y 2020 (SEPT - A	AUG)		E	Paso Metropolitan P	tanning Urganizatio
DISTRICT C	OUNTY	CSJ		HWY		PHASE	CI	ГҮ	PROJECT SPO	NSOR	YOE COST
TX DIST. 24	EP	0924-06-55	53	N/A		Т	El P	aso	Sun Metro)	\$1,000,000
TIP PROJECT NAME	E: El Paso S	Streetcar Syst	em 2nd Year	Operating	Assistanc	e		REVISION DATE:	07/2018		
LIMITS FROM:	Father Ra	hm						MPO PROJECT ID): T108X-2		
LIMITS TO:	Glory Roa	ıd						MTP REFERENCE	: T108X-2		
TIP DESCRIPTION:						perating Assistan	ice for 2nd	FUNDING CATEG	ORY: CAT 5 CM	MAQ	
					0	d CO emissions.		VOC (Kg/Day): 0.5	31 CO (Kg/E	0ay): 8.362	
REMARKS:	Program [D2045 MTP, D	019-22 TIP, 19	-22 STIP, ir	n FY 2020.			NOX (Kg/Day): 0.6	38 PM 10 (K	g/Day): 0.101	
					i I	PROJECT HISTO Amend H2040 MT EXEMPT		P, 17-20 STIP to prog	gram in FY 2020		
Total Project C		ation:		· - · · · · · -	i			ed Funding by Cate			
Preliminary Engineerin	•					Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	n Total Share
Right Of Way:	\$0		Cost of	Cat 5	CMAQ	\$800,000	\$0	\$0	\$200,000	\$0	\$1,000,000
Construction:	\$1,000	0,000	Approved Phases:	Fur	nd by Shar	e \$800,000	\$0	\$0	\$200,000	\$0	\$1,000,000
Construction Enginee							20	֥	,	ţ	. ,,-••
Contingencies:	\$0		\$1,000,000								
Indirects:	\$0										
Bond Financing:	\$0										
Potential Change Ord	ler: \$0										
Total Project Cost:	\$1,000	0,000									
02/2017	2020	10/2016	Amend	H2040 MTF	P, H17-20 T	IP, 17-20 STIP to	program in FY	2020 EXEMPT			
07/2018 'STIP Rev Date(s)	2020)' also refers	05/2018 to TIP Admin	Program istrative Amen	n D2045 MT dment (Loc	P, D19-22	TIP, 19-22 STIP,) Date	in FY 2020.		Que Mater		
07/2018 'STIP Rev Date(s) TX DIST. 24	2020)' also refers EP	05/2018 to TIP Admin 0924-06-54	Program istrative Amen	n D2045 MT dment (Loc N/A	P, D19-22 al Revisior	TIP, 19-22 STIP,		aso	Sun Metro		\$1,300,000
07/2018 'STIP Rev Date(s) TX DIST. 24 TIP PROJECT NAME	2020)' also refers EP E: Montana	05/2018 to TIP Admin 0924-06-54 RTS 1st year	Program istrative Amen I1 service opera	n D2045 MT dment (Loc N/A	P, D19-22 al Revisior	TIP, 19-22 STIP,) Date	in FY 2020.	aso REVISION DATE:	07/2018		\$1,300,000
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07/2018 'STIP Rev Date(s) TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO:	2020)' also refers EP E: Montana Five Point Far East 1 Montana F	05/2018 to TIP Admin 0924-06-54 RTS 1st year ts Terminal - 2 Ferminal - R.C RTS 1st year s	Program istrative Amen 11 service opera 1830 Montana 5. Poe - Edgerr	a D2045 MT dment (Loo N/A ating assis	P, D19-22 al Revisior tance	TIP, 19-22 STIP,) Date	EI P	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEG	07/2018 T093X 07/2018 07/	MAQ	\$1,300,000
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07/2018 'STIP Rev Date(s) TX DIST. 24 TIP PROJECT NAME LIMITS FROM:	2020)' also refers EP E: Montana Five Point Far East 1 Montana R operations	05/2018 to TIP Admin 0924-06-54 RTS 1st year ts Terminal - 2 Ferminal - R.C RTS 1st year s s.	Program istrative Amen 11 service opera 1830 Montana 5. Poe - Edgerr	n D2045 MT dment (Loc N/A ating assis nere ng assistan	P, D19-22 al Revisior tance ce: 1st yea	TIP, 19-22 STIP, a) Date T	EI P	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEG	07/2018 T093X 0 CAT 5 CM 0 CAT 5 CM 0 CO (Kg/D	MAQ	\$1,300,000
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07/2018 'STIP Rev Date(s) TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerin Right Of Way: Construction: Construction Enginee Contingencies: Indirects: Bond Financing: Potential Change Ord	2020)' also refers EP E: Montana Five Point Far East T Montana F operations Program I Cost Informa ng: \$0 \$0 \$1,300 ving: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	05/2018 to TIP Admin 0924-06-54 RTS 1st year ts Terminal - 2 Ferminal - R.C RTS 1st year s S. D2045 MTP, D ation:	Program istrative Amen 11 service operati 2830 Montana 2830 Montana 2830 Montana 2830 Montana 2900 - Edgem Service operati 2019-22 TIP, 19 019-22 TIP, 19 019-22 TIP, 19	D2045 MT dment (Loc N/A atting assis here ng assistan -22 STIP, ir	P, D19-22 cal Revision tance ce: 1st yea n FY 2020.	TIP, 19-22 STIP, a) Date T r of Montana BRT PROJECT HISTO Amend H2040 MT EXEMPT Federal Share \$1,040,000	-RTS -RTS -RY: -P, H17-20 TIP Authorize State Share \$0	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEG VOC (Kg/Day): 5.5 NOX (Kg/Day): 2.9 P, 17-20 STIP to prog ed Funding by Cate Regional Share \$0	07/2018 T093X T093X ORY: CAT 5 CI CO (Kg/E 29 PM 10 (K gram in FY 2020 rgory/Share Local Share \$260,000	MAQ Day): 100.325 (g/Day): 1.629 Lcl Contribution \$0	n Total Share \$1,300,000
07/2018 'STIP Rev Date(s) TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: Total Project C Preliminary Engineerin Right Of Way: Construction: Construction Enginee Contingencies: Indirects: Bond Financing:	2020)' also refers EP E: Montana Five Point Far East T Montana F operations Program I Cost Informa ng: \$0 \$0 \$1,300 ving: \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	05/2018 to TIP Admin 0924-06-54 RTS 1st year ts Terminal - 2 Ferminal - R.C RTS 1st year s S. D2045 MTP, D ation:	Program istrative Amen 11 service operati 2830 Montana 2830 Montana 2019 - 2 Edgerr service operati 2019 - 22 TIP, 19 019 - 22 TIP, 19 019 - 22 TIP, 19 Cost of Approved Phases: \$1,300,000	D2045 MT dment (Loc N/A ating assist nere ng assistan -22 STIP, ir -22 STIP, ir Cat 5 Fur	P, D19-22 cal Revision tance ce: 1st yea n FY 2020. CMAQ nd by Shar	TIP, 19-22 STIP, a) Date T r of Montana BRT PROJECT HISTO Amend H2040 MT EXEMPT Federal Share \$1,040,000	EI P -RTS -RTS -RTS -RTS -RTS -RTS -RTS -RTS	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEG VOC (Kg/Day): 5.5 NOX (Kg/Day): 2.9 2, 17-20 STIP to prog 2, 17-20 STIP to prog	07/2018 T093X T093X ORY: CAT 5 CI CO (Kg/E 29 PM 10 (K gram in FY 2020 rgory/Share Local Share \$260,000	MAQ Day): 100.325 (g/Day): 1.629 Lcl Contribution \$0	n Total Share \$1,300,000
07/2018 'STIP Rev Date(s) TX DIST. 24 TIP PROJECT NAME LIMITS FROM: LIMITS FROM: LIMITS TO: TIP DESCRIPTION: REMARKS: REMARKS: Potentianary Engineeria Right Of Way: Construction Engineeria Construction Engineeria Construction Engineeria Construction Engineeria Indirects: Bond Financing: Potential Change Ord Total Project Cost:	2020)' also refers EP E: Montana Five Point Far East T Montana F operations Program D Cost Informa ng: \$0 \$0 \$0 \$1,300 \$0 \$0 \$0 \$0 \$0 \$0 \$1,300 \$0 \$0 \$0 \$0 \$0 \$0 \$1,300 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	05/2018 0924-06-54 RTS 1st year Is Terminal - 2 Ferminal - R.C RTS 1st year s S. D2045 MTP, D ation: 0,000	Program istrative Amen 11 service operati 2830 Montana 2019 - Edgerr service operati 2019 - 22 TIP, 19 019 - 22 TIP, 19 Cost of Approved Phases: \$1,300,000	D2045 MT dment (Loo N/A ating assist nere ng assistan -22 STIP, ir -22 STIP, ir -22 STIP, ir -22 STIP, ir -22 STIP, ir	P, D19-22 cal Revision tance ce: 1st yea n FY 2020. CMAQ nd by Shar	TIP, 19-22 STIP,) Date T r of Montana BRT PROJECT HISTO Amend H2040 MT EXEMPT Federal Share \$1,040,000 e \$1,040,000	EI P -RTS -RTS -RTS -RTS -RTS -RTS -RTS -RTS	aso REVISION DATE: MPO PROJECT ID MTP REFERENCE FUNDING CATEG VOC (Kg/Day): 5.5 NOX (Kg/Day): 2.9 2, 17-20 STIP to prog 2, 17-20 STIP to prog	07/2018 T093X T093X ORY: CAT 5 CI CO (Kg/E 29 PM 10 (K gram in FY 2020 rgory/Share Local Share \$260,000	MAQ Day): 100.325 (g/Day): 1.629 Lcl Contribution \$0	n Total Share \$1,300,000

	5, 2018			201	9-2022	EL PAS	EL PASO M ORTATION IM SO DISTRICT / 2021 (SEPT	PROVEMENT F PROJECTS	PROGRAM		El Paso Metro	politan Pl	TIP PAGE:
DISTRICT	COUNTY	CSJ		н	WY		PHASE	-	ТҮ	PROJECT	SPONSOR		YOE COST
TX DIST. 24	EP	0924-06-572			I/A		Т	EI F	aso	Sun M			\$2,288,542
	/IE: Alameda R	TS 3rd year Operati	ng As	sista	nce				REVISION DAT				
LIMITS FROM:		erminal - Santa Fe							MPO PROJECT				
IMITS TO:		ley Terminal - Alame	-						MTP REFEREN				
TIP DESCRIPTION		TS 3rd year Operating	-				meda RTS ope	erations	FUNDING CATE				
REMARKS:	Program D	2045 MTP, D19-22 TI	P, 19	-22 ST	ΓIΡ, in	FY 2021.			VOC (Kg/Day): 3 NOX (Kg/Day): 6		(Kg/Day): 81.523 10 (Kg/Day): 1.94		
	Cost Informat	ion:		T					ed Funding by C		;		
Preliminary Enginee	ering: \$0						Federal Shar	e State Share	e Regional Sha	e Local Sh	are Lcl Cont	ribution	Total Share
Right Of Way:	\$0	Cost		Cat	5	CMAQ	\$911,887	\$0	\$0) \$227,	972	\$0	\$1,139,859
Construction:	\$2,288,	542 Approv Phase		Cat	3LC	Local	\$0	\$0	\$0)	\$0 \$1,1	148,683	\$1,148,683
Construction Engine	-	1 11030	з.			Contribu							
Contingencies:	\$0	\$2,288,	542			tion							
ndirects:	\$0				Fund	l by Share	\$911,887	\$0	\$0) \$227,	972 \$1,1	148,683	\$2,288,542
Bond Financing:	\$0												
Potential Change O	rder: \$0												
Total Project Cost:	\$2,288,	542											
ROJECT AMEND		v											
STIP Rev Date		ote/Amend Date Not	lo/Δm	ondm	hent								
· ·	, , ,												
07/2018	2021		-				IP, 19-22 STI	P, IN FY 2021.					
	()	o TIP Administrative	Amen			l Revision)							
TX DIST. 24	EP	0924-06-573		Ν	√A/A		Т	ELF	aso	Sun N	<i>l</i> etro		\$1,538,029
IP PROJECT NAM	IE: Dyer RTS	Brd year Operating A	ssist	ance					REVISION DAT				
IMITS FROM:	Downtown	erminal - Santa Fe							MPO PROJECT	ID: T095	5X		
IMITS TO:	Northeast 7	erminal - Dyer @ Dia	na						MTP REFEREN	CE: T095	δХ		
IP DESCRIPTION	: Dyer RTS 3	ord year Operating As	sistar	ice: 3r	d year	of Dyer RT	S operations		FUNDING CATE	GORY: CAT	5 CMAQ, CAT	3 LC	
EMARKS:	Program D	2045 MTP, D19-22 TI	P, 19	-22 ST	ΓIP, in	FY 2021.			VOC (Kg/Day): 3	8.38 CO ((Kg/Day): 68.691	ł	
									NOX (Kg/Day): 5	5.17 PM 1	10 (Kg/Day): 1.5	5	
Total Project	Cost Informat	ion:		Τ				Authoriz	ed Funding by C	ategory/Share	··—··—·· }		
reliminary Enginee				i			Federal Sha	e State Share				ribution	Total Share
Right Of Way:	\$0	Cost	of	Cat	5	CMAQ	\$911,887	\$0	- \$(\$227,	972	\$0	\$1,139,859
Construction:	\$1,538,			1	3LC	Local	\$0		\$0			398.170	\$398,170
Construction Engine	eering: \$0	Phase	s:	out	OLO	Contribu	φο	φυ	φ	,	φο φο	,50,170	φ000, 170
Contingencies:	\$0	\$1,538,	029			tion							
ndirects:	\$0	, ,			Fund	by Share	\$911,887	· \$0	\$0) \$227,	.972 \$3	398,170	\$1,538,029
Bond Financing:	\$0			1			,,	• -	•	,	•	, -	
Potential Change O													
otal Project Cost:)29											
PROJECT AMEND	MENT HISTOR	Y											
STIP Rev Date(s) FY(s) N	ote/Amend Date Not	te/Am	nendm	nent								
07/2018	2021	05/2018 Pro	ogram	D204	15 MTF	P, D19-22 T	TP, 19-22 STI	[,] in FY 2021.					
'STIP Rev Date	(s)' also refers t	o TIP Administrative	Amen	dmen	t (Loca	l Revision)	Date						
TX DIST. 24	EP	0924-06-576			۱/A	,	Т	ELF	aso	Sun N	Vetro		\$2,117,901
		reetcar 3rd year Ope	ratin			е			REVISION DAT				,,
IMITS FROM:		m - Downtown Termin				-			MPO PROJECT				
IMITS TO:	Glory Road								MTP REFEREN				
TIP DESCRIPTION		eetcar 3rd year Opera	atina 4	Assist	ance ^{. c}	Brd vear of	Streetcar oper	ations	FUNDING CATE			310	
REMARKS:		2045 MTP, D19-22 TI	•				otreetcar oper	810115	VOC (Kg/Day): ((Kg/Day): 8.19	5 20	
	, rogram D		., 13	22 0	,	2021.			NOX (Kg/Day): ((Kg/Day): 6.19 10 (Kg/Day): 0.1	04	
				— ····							<u>`</u>	·	
	Cost Informat	ion:					Federal Cl		ed Funding by C				Tetel OL
reliminary Enginee			- 6	-	_			e State Share	-				
light Of Way:	\$0 \$0.447	Cost Approv		Cat		CMAQ	\$911,887		\$0			\$0	\$1,139,859
onstruction:	\$2,117,	901 Approv Phase		Cat	3LC	Local	\$C	\$0	\$0)	\$0 \$9	978,042	\$978,042
onstruction Engine						Contribu							
	\$0	\$2,117,	901		-	tion							
-	\$0			l.	Func	l by Share	\$911,887	\$0	\$0) \$227,	972 \$9	978,042	\$2,117,901
directs:	\$0												
ndirects: ond Financing:													
ndirects: ond Financing:	rder: \$0												
ndirects: cond Financing: otential Change O		901											
Contingencies: Indirects: Bond Financing: Potential Change O Total Project Cost:	\$2,117,												
ndirects: iond Financing: iotential Change O iotal Project Cost: ROJECT AMEND	\$2,117, MENT HISTOR	Y											
directs: ond Financing: otential Change O otal Project Cost: ROJECT AMEND STIP Rev Date(S) FY(s) N	Y ote/Amend Date No											
directs: ond Financing: otential Change O otal Project Cost: ROJECT AMEND	\$2,117, MENT HISTOR	Y ote/Amend Date No				P, D19-22 T	TIP, 19-22 STII	P, in FY 2021.					

MONDAY, MARCH	5, 2018						EL PASO MPO	2			164	TIP PAGE: 2
12:31:57 PM				201	9-2022		ORTATION IMPR		ROGRAM		0	-
							SO DISTRICT PR			FI	Daen Matanaalitan Bla	aning Report Aning
						FY	(2021 (SEPT - A	,			Paso Metropolitan Pla	
	COUNTY	CSJ	-		WY		PHASE	CI		PROJECT SPO		YOE COST
TX DIST. 24	EP	0924-06-574			N/A		Т	ELP		Sun Metro		\$2,288,542
TIP PROJECT NAM		-		ssista	ince				REVISION DATE:	07/2018		
LIMITS FROM:		n terminal - Sar							MPO PROJECT ID			
LIMITS TO:		Terminal - RC F	0						MTP REFERENCE			
TIP DESCRIPTION	: Montana	RTS 2nd year C	Operating Ass	istanc	e: 2nd	l year of Mo	ntana RTS opera	ations	FUNDING CATEG	ORY: CAT 5 CI	MAQ, CAT 3 LC	
REMARKS:	Program	D2045 MTP, D'	19-22 TIP, 19	-22 S	TIP, in	FY 2021.			VOC (Kg/Day): 5.3	71 CO (Kg/E	Day): 110.234	
									NOX (Kg/Day): 8.3	13 PM 10 (K	(g/Day): 2.522	
Total Project	Cost Inform	ation:		Ţ				Authorize	ed Funding by Cate	gory/Share		
Preliminary Enginee	ering: \$0						Federal Share		Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat	5	CMAQ	\$911,887	\$0	\$0	\$227,972	\$0	\$1,139,859
Construction:	\$2,28	8,542	Approved	Cat	3LC	Local	\$0	\$0	\$0	\$0	\$1,148,683	\$1,148,683
Construction Engine	ering: \$0		Phases:			Contribu	• •	• -			• • • • • • • •	• , -,
Contingencies:	\$0		\$2,288,542			tion						
Indirects:	\$0				Fune	d by Share	\$911,887	\$0	\$0	\$227,972	\$1,148,683	\$2,288,542
Bond Financing:	\$0											
Potential Change O	rder: \$0											
Total Project Cost:	\$2,28	8,542										
PROJECT AMEND	MENT HISTO	DRY										
STIP Rev Date(s) FY(s)	Note/Amend D	ate Note/Am	nendn	nent							
07/2018	2021	05/2018	Program	D204	45 MTI	P, D19-22 T	IP, 19-22 STIP, i	in FY 2021.				
STIP Rev Date	s)' also refers	s to TIP Adminis	strative Amen	dmen	t (Loca	al Revision)	Date					
					•	,						

MONDAY, MARCH	5, 2018						EL PASO MPO	С			164	TIP PAGE: 1
12:33:13 PM				201	9-2022				ROGRAM		2	~
							SO DISTRICT PI (2022 (Sept - A			EI	Paso Metropolitan Pla	anning Organization
DISTRICT	COUNTY	CSJ		н	IWY		PHASE	CIT	ſY	PROJECT SPO		YOE COST
TX DIST. 24	EP	0924-06-57	5		N/A		T	ELP		Sun Metro		\$2,411,283
TIP PROJECT NAM	ME: Montana	RTS 3rd year	Operating As	ssista	nce				REVISION DATE:	07/2018		
LIMITS FROM:	Downtow	n terminal - Sa	nta Fe						MPO PROJECT ID	: T097X		
LIMITS TO:	Far East	Terminal - RC	Poe & Edgem	ere					MTP REFERENCE	: T097X		
TIP DESCRIPTION	: Montana	RTS 3rd year 0	Operating Ass	istanc	e: 3rd	year of Mor	ntana RTS opera	tions	FUNDING CATEGO	ORY: CAT 5 C	MAQ, CAT 3 LC	
REMARKS:	Program	D2045 MTP, D	19-22 TIP, 19	-22 S	TIP, in	FY 2022.			VOC (Kg/Day): 5.19	91 CO (Kg/I	Day): 108.402	
									NOX (Kg/Day): 7.7	19 PM 10 (K	(g/Day): 2.588	
Total Project	Cost Inform	ation:		— ——				Authorize	ed Funding by Cate	gory/Share		
Preliminary Enginee	ering: \$0						Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Cat	5	CMAQ	\$973,322	\$0	\$0	\$243,331	\$0	\$1,216,653
Construction:	\$2,41	1,283	Approved	Cat	3LC	Local	\$0	\$0	\$0	\$0	\$1,194,630	\$1,194,630
Construction Engine	eering: \$0		Phases:			Contribu					• , • ,• • •	• • • • • • •
Contingencies:	\$0		\$2,411,283			tion						
Indirects:	\$0				Fund	d by Share	\$973,322	\$0	\$0	\$243,331	\$1,194,630	\$2,411,283
Bond Financing:	\$0											
Potential Change O	rder: \$0											
Total Project Cost:	: \$2,41	1,283										
PROJECT AMEND		 var										
STIP Rev Date		Note/Amend I	Data Nota/An	ondr	nont							
07/2018	2022	05/2018				ד רי הי הי ה						
			0			,	TIP, 19-22 STIP,	III F I 2022.				
'STIP Rev Date	(s) also refer	S TO LIP Admin	Istrative Amen	amen	IT (LOCA	IL Revision)	Date					

'STIP Rev Date(s)' also refers to TIP Administrative Amendment (Local Revision) Date

³New Mexico Highway / Transit Projects

³ NM 2018-2021 STIP

EL PASO MPO 2019-2022 TRANSPORTATION IMPROVEMENT PROGRAM EL PASO TX NMDOT DISTRICT 1 PROJECTS



					LLINC	Fed	FY 2019 (Oct - Se	ept)		El	Paso Metropolitan Pla	anning Organizat
DISTRICT	COUNTY	CSJ/CN			HWY		PHASE	CITY	F	PROJECT SPO	NSOR	YOE COST
NM DIST. 1	DA	E100221	1		CS		С	Anthon	у	Anthony, N	M	\$2,256,165
IP PROJECT NAM	IE: 4th Street	Roadway In	nprovements					RI	EVISION DATE:	07/2018		
IMITS FROM:	Approxima	tely 140 Line	ear feet (0.03 m	i) Sc	outh of Livesa	ay Stree	t	м	PO PROJECT ID:	M638X-B	5	
IMITS TO:	NM 404 (O	'Hara Road)						M	TP REFERENCE:	M638X-B		
TIP DESCRIPTION:	Sidewalk, p	oaved aspha	lt bike lanes, a	nd A	DA wheelcha	air ramp	s and drivepads	FL	JNDING CATEGO	RY: NM CMA	Q, NM STPL	
REMARKS:	Program D	2045 MTP, I	D19-22 TIP, 18	-21 \$	STIP, in FY 2	2019.		V	OC (Kg/Day): 0.00	7 CO (Kg/E	0.158 (Januar)): 0.158	
								N	OX (Kg/Day): 0.02	3 PM 10 (K	g/Day): 0	
							ROJECT HISTOR	Y:			EX 0040	
							EMPT		P, H15-18 TIP, NM	10-19 511P 101	- 1 2019	
Total Project Preliminary Enginee		tion:					Federal Share		Funding by Categ Regional Share		Lcl Contribution	Total Share
Right Of Way:	\$0 \$0		Cost of	-					-			
Construction:		105	Approved	1.1.1	t NM CMAC		\$1,229,562	\$0	\$0	\$214,603	\$0	\$1,444,16
Construction Engine	\$2,256,	100	Phases:	Ca	t NM STPL	Large	\$691,337	\$0	\$0	\$120,663	\$0	\$812,00
•			¢0.056.465			Urban						
Contingencies:	\$0		\$2,256,165					<u>^</u>	**	****	**	* 0.050.40
ndirects:	\$0				Fund b	y Share	e \$1,920,899	\$0	\$0	\$335,266	\$0	\$2,256,16
Bond Financing:	\$0											
Potential Change Or												
Total Project Cost:	\$2,256,	165										
IP PROJECT NAM IMITS FROM: IMITS TO: IP DESCRIPTION: REMARKS:	Lisa Drive Lisa Drive Combined	at McCombs at Lisa Reter multi-purpos	Road, project	is loo ject i rmwa	s located no ater manage	rth and ment fac	allel to Lisa Drive. parallel to Lisa Dr cility	M ive. M	EVISION DATE: PO PROJECT ID: TP REFERENCE: JNDING CATEGC	E602B	CAT 3 LC	
	r togram b	2010 10111 ,1	D 10 22 111 , 10	210	,	PR An	ROJECT HISTOR' nend H2040 MTP, XEMPT		IP and NM 2016-2	2020 STIP to pro	ogram in FY 2019	
Total Project	Cost Informat	tion:		· – -				Authorized I	Funding by Categ	orv/Share		
Preliminary Enginee				i			Federal Share		Regional Share		Lcl Contribution	Total Share
Right Of Way:	\$0		Cost of	Са	t NM TAPL	TAP	\$46,153	\$0	\$0	\$7,865	\$0	\$54,01
Construction:	\$46,153	3	Approved		t 3LC	Local	\$0	\$0	\$0	\$0	\$11,154	\$11,15
Construction Engine			Phases:	Ca		Contri		φΟ	φΟ	4 0	ψ11,104	φ11,13
Contingencies:	\$11,154	ł	\$46,153			bution						
ndirects:	\$0		. ,		Fund b	v Share	\$46,153	\$0	\$0	\$7,865	\$11,154	\$65,17
Bond Financing:	\$0			:			,	÷	÷ •	÷-,-5•	÷··,·*·	+,••
Potential Change Or	der: \$0											
Total Project Cost:	\$65,172	2										
AMENDMENT HIST History STIP Re		rv FY Histo	orv Date Histo	rv N	ote/Amendr	nent						
11/2016	20	•	-	-			020 TIP and NM 3	2016-2020 STIE	^o to program in FY		r	
07/2018	20				,							

07/2018 2019 05/2018 Program D2045 MTP, D19-22 TIP, 18-21 STIP, in FY 2019.

MONDAY, MARCH 5, 2018	
11:38:24 AM	

EL PASO MPO 2019-2022 TRANSPORTATION IMPROVEMENT PROGRAM EL PASO TX NMDOT DISTRICT 1 PROJECTS

11.00.217.00				EL PAS	O TX N	MDOT DISTRIC	T 1 PROJECT	ſS	-		
					Fed I	FY 2019 (Oct - S	ept)		Ell	Paso Metropolitan Pla	inning Urganizati
	COUNTY	CSJ/CN		HWY		PHASE	CIT	Y P	ROJECT SPO	NSOR	YOE COST
NM DIST. 1	DA	E100200	N	IM 404		E	Chaparı	al NM	NMDOT		\$980,000
TIP PROJECT NAM	ME: NM 404 F	hase C/D and Phase II	FY2019	Funding				REVISION DATE:	07/2018		
LIMITS FROM:	I-10/NM 4	04 Intersection						MPO PROJECT ID:	M644X		
LIMITS TO:	NM 404/N	IM 213 Intersection						MTP REFERENCE:	M644X		
TIP DESCRIPTION		D (environmental and pr cts to include: NM 404/I-						FUNDING CATEGO	RY: SBSI Bor	der	
REMARKS:	Program I	D2045 MTP, D19-22 TIF	, 18-21 S	STIP, in FY 2	019.						
						OJECT HISTOR end H2040 MTP		TIP and NM 2016-20	020 STIP to pro	ogram in FY 2019.	
Total Project	Cost Inform	ation:					Authorize	d Funding by Categ	ory/Share		
Preliminary Enginee	ering: \$980,0	000				Federal Share	State Share	e Regional Share	Local Share	Lcl Contribution	Total Share
Right Of Way:	\$0	Cost o	f Ca	t NM State	SBSI	\$837,312	\$142,688	\$0	\$0	\$0	\$980,000
Construction:	\$0	Approv		Funds	Borde						
Construction Engine	eering: \$0	Phases	5:		r						
Contingencies:	\$0	\$980,00	0	Fund b	y Share	\$837,312	\$142,688	\$0	\$0	\$0	\$980,000
Indirects:	\$0										
Bond Financing:	\$0										
Potential Change O	rder: \$0										
Total Project Cost:	: \$980,0	000									
AMENDMENT HIST History STIP Re 02/2018	ev Date Histo	Dry FY History Date H				020 TIP and NM	2016-2020 S	TIP to program in FY	2019.		
	-		_								

02/2018	2019	12/2017	Amend H2040 MTP, H2017-2020 TIP and NM 2016-2020 STIP to program in FY 20
07/2018	2019	05/2018	Program D2045 MTP, D19-22 TIP, 18-21 STIP, in FY 2019.

TIP PAGE: 2

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MONDAY, MARCH 5, 2018 EL P						164	TIP PAGE: 1
11:39:44 AM			2019-2022 TRAN	VEMENT PROGRAM	-0-	2	
			1 PROJECTS	CL D	The Diante Distance		
			ci Paso Metro	politan Planning Urganization			
DISTRICT	COUNTY	CSJ/CN	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
NM DIST. 1	DA	E100202	IH 10	С	Anthony	NMDOT	\$9,500,000
TIP PROJECT NAM	IE: NM 404/I-	10 Bridge Replaceme	ent		REVISION	DATE: 07/2018	
LIMITS FROM:	At I-10 & I	NM 404 Interchange			MPO PRO	JECT ID: B607X	
LIMITS TO:					MTP REFE	RENCE: B607X	
TIP DESCRIPTION:	Bridge Re	placement at NM 404/	I-10 Interchange		FUNDING	CATEGORY: STP Flex, STP Larg	e Urban, SBSI Border,
REMARKS:	Program [D2045 MTP, D19-22 T	NHPP				

Total Project Cost Information:				Authorized Funding by Category/Share							
			į.			Federal Share	State Share	Regional Share	Local Share	Lcl Contribution	Total Share
D II · · · · · ·	* 0		Cat	NM STPF	Flex	\$2,563,200	\$436,800	\$0	\$0	\$0	\$3,000,000
Preliminary Engineering:	\$0		Cat	NM STPL	Large	\$854,400	\$145,600	\$0	\$0	\$0	\$1,000,000
Right Of Way:	\$0	Cost of	out		Largo	<i>\\\\</i>	φ110,000	ψŰ	ψŪ	ψŪ	φ1,000,000
Construction:	\$9,500,000	Approved			Urban						
Construction Engineering	: \$0	Phases:	Cat	NM State	SBSI	\$2,306,880	\$393,120	\$0	\$0	\$0	\$2,700,000
Contingencies:	\$0	\$9,500,000	ļ	Funds	Borde						
Indirects:	\$0		Ì		r						
Bond Financing:	\$0		Cat	NM NHPP		\$2,392,320	\$407,680	\$0	\$0	\$0	\$2,800,000
Potential Change Order:	\$0			Fund by	y Share	\$8,116,800	\$1,383,200	\$0	\$0	\$0	\$9,500,000
Total Project Cost:	\$9,500,000		·								

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2021 05/2018 Program D2045 MTP, D19-22 TIP, 18-21 STIP, in FY 2021.

Transit Projects FTA & Other Funds

Transit projects are included in this TIP. This public notice and time established for public review and comments satisfies FTA Program of Projects (POP) and public participation requirements.

District: TX DIST. 24 YOE = Year of Expenditure **General Project Information** Funding Information (YOE) Project Sponsor: Sun Metro-Transit Fed. Funding Category: Sec. 5307 - Urbanized Formula >200K MPO ID: тзн Other FTA Section: ADA ParaTransit \$1.326.130 Federal (FTA) Funds: Project Name: 2019 State (TXDOT) Funds: Apportionment Year: \$0 Project Phase: N/A Other Funds: \$331.533 Brief Project Description: Provide ADA Para-Transit Service Fiscal Year Cost: \$1.657.663 Construction: \$1.657.663 PE: \$0 ROW: \$0 Sec5309 ID: **Total Project Cost:** \$1,657,663 Amend Date 07/2018 TDC Amount Requested: \$0 Remarks/Amend Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019. TDC Awarded Date & Amount: \$0 _.._..

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2016 2019 06/2016 New Project in FY 2019 recurring funding for the development of 2017-2020 Horizon TIP 07/2018 2019 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

General Pro	vject Information	Funding Information (YOE)	
Project Sponsor:	Sun Metro-Transit	Sec. 5307 - Urbanized Formula >200K		
MPO ID:	T3C	Other FTA Section:		
Project Name:	Captial Maintenance	Federal (FTA) Funds:	\$11,062,703	
Apportionment Year:	2019	State (TXDOT) Funds:	\$0	
Project Phase:	N/A	Other Funds:	\$2,765,676	
Brief Project Description	n: Capital Maintenance	Fiscal Year Cost:	\$13,828,379	
		Construction: \$13,828,379 PE: \$0	ROW: \$0	
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$13,828,379	
Remarks/Amend Actior	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.	TDC Amount Requested:	\$0	
		TDC Awarded Date & Amount:	\$0	

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

2019

07/2016 06/2016 New Project in FY 2019 recurring funding for the development of 2017-2020 Horizon TIP 07/2018 2019 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019. General Project Information Funding Information (YOE) Project Sponsor: Sun Metro-Transit Fed. Funding Category: Sec. 5339 - Bus & Bus Facilities >200K MPO ID: T3D Other FTA Section: Federal (FTA) Funds: Project Name: Curb Cuts ADA Improvements (5339) \$200,000 2019 Apportionment Year: State (TXDOT) Funds: \$0 Other Funds: Project Phase: N/A \$50,000 Brief Project Description: Curb Cuts ADA Improvements Fiscal Year Cost: \$250,000 ROW: \$0 Construction: \$250,000 PE: \$0 Sec5309 ID: **Total Project Cost:** \$250,000 Amend Date: 07/2018 TDC Amount Requested: \$0 Remarks/Amend Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019. TDC Awarded Date & Amount: \$0 AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2016 2019 06/2016 New Project in FY 2019 recurring funding for the development of 2017-2020 Horizon TIP Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019. 07/2018 2019 05/2018

District: TX DIST. 24		-					YOE = Year	of Expenditure
General Proj	ect Information	<u>1</u>			Funding Inform	ation (YOE)		
Project Sponsor:	EPMPO			Fed. Funding	Category:	Sec. 5310	- Seniors & People w/Disa	abilities >200K
MPO ID:	T011			Other FTA Se	ction:			
Project Name:	FTA 5310 Enł	nanced Mobili	ty for Seniors and Individuals with Disabilities	Federal (FTA)	Funds:			\$650,000
Apportionment Year:	2019			State (TXDOT) Funds:			\$0
Project Phase:	N/A			Other Funds:				\$0
Brief Project Description:	FTA 5310 Enh	nanced Mobili	ty for Seniors and Individuals with Disabilities	Fiscal	Year Cost:			\$650,000
			ial allocation demonstration. Fed. Distribution Operating, for FFY 2018 funds for use in FY	Construction:	\$650,000	PE: \$0	ROW: \$0	
Sec5309 ID:								
Amend Date:	07/2018			Total Proj	ect Cost:			\$650,000
Remarks/Amend Action:		,	-2020 TIP and 2017-2020 STIP to add to	TDC Amount I	Requested:			\$0
	FY2018 using	FY2017 FTA	5310 Funds EXEMPT	TDC Awarded	Date & Amount:		\$0	
History STIP Rev Dat	te History FY	History Date						
07/2018	2019	05/2018						
General Proj	ect Information	า			Funding Inform	ation (YOE))	
Project Sponsor:	EPMPO	-		Fed. Funding			· - Seniors & People w/Disa	abilities >200K
MPO ID:	T011-14			Other FTA Se		000.0010		
Project Name:		MPO Program	Administration FFY 2017 Funds	Federal (FTA)				\$58,384
Apportionment Year:	2017	in orregiun		State (TXDOT				\$00,001
Project Phase:	C			Other Funds:	,			\$0
•		MPO Program	Administration FFY 2017 Funds: FTA 5310		Year Cost:			\$58,384
	Enhanced Mo	bility for Senic	ors and Individuals with Disabilites Program istration FFY 2017 Funds for use in FY 2019.	Construction:		PE: \$0	ROW: \$0	<i>400,001</i>
Sec5309 ID:				Total Proj	iect Cost			\$58,384
Amend Date:	07/2018			-				
Remarks/Amend Action:	Program D204	45 MTP, D19-	22 TIP, 19-22 STIP, in FY 2019.	TDC Amount I	Requested: Date & Amount:		\$0	\$0
AMENDMENT HISTORY	,							
		History Date	History Note/Amendment					
11/2017	2019	11/2017	FTA 5310 Enhanced Mobility for Seniors an Funds for use in FY 2019. Programming of 1 August 18, 2018.					
07/2018	2019	05/2018	Program D2045 MTP, D19-22 TIP, 19-22 S	TIP, in FY 2019				
General Proi	ect Information	<u>ו</u>			Funding Inform	ation (YOE)		
Project Sponsor:	Sun Metro-Tra			Fed. Funding	-	<u></u>	' Sec. 5339 - Bus & Bus Fa	acilities >200K
MPO ID:	T3I-6			Other FTA Se				
Project Name:		5339 Funding	for Bus & Bus Facilities	Federal (FTA)				\$1,169,504
Apportionment Year:	2019		,	State (TXDOT				\$0
Project Phase:	N/A			Other Funds:	,			\$292,376
-		5339 Funding	: For the purchase of buses and facility		Year Cost:			\$1,461,880
	enhancements security relate	s incl. equipm d needs, ticke	ent such a ADP hardware/software and et vending machines and sales related enance incl rebuilds, bus shelters &	Construction:		PE: \$0	ROW: \$0	• , ,
Sec5309 ID:				Total Proj	iect Cost			\$1,461,880
Amend Date:	07/2018			-				
Remarks/Amend Action:	Program D204	45 MTP, D19-	22 TIP, 19-22 STIP, in FY 2019.	TDC Amount				\$0
				TDC Awarded	Date & Amount:		\$0	
AMENDMENT HISTORY								
•	-	•	History Note/Amendment					
07/2016 07/2018	2019 2019	06/2016 05/2018	New Project in FY 2019 recurring funding for Program D2045 MTP, D19-22 TIP, 19-22 S			Horizon TIF		
01/2010	2010	00/2010		,	•			

\$0

\$0

District: TX DIST. 24 YOE = Year of Expenditure **General Project Information** Funding Information (YOE) Sun Metro-Transit Project Sponsor: Fed. Funding Category: Sec. 5307 - Urbanized Formula >200K MPO ID: T2A Other FTA Section: JARC Federal (FTA) Funds: \$160.000 Project Name: 2019 State (TXDOT) Funds: Apportionment Year: Project Phase: N/A Other Funds: \$40,000 Brief Project Description: Short-range Planning Fiscal Year Cost: \$200,000 Construction: \$200,000 PE: \$0 ROW: \$0 Sec5309 ID: Total Project Cost: \$200,000 07/2018 Amend Date: TDC Amount Requested: Remarks/Amend Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019. TDC Awarded Date & Amount: \$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2019 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

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General Proje	ect Information	Funding Information (Y	<u>OE)</u>		
Project Sponsor:	Sun Metro-Transit	Sec. 5339 - Bus & Bus Facilities >200K			
MPO ID:	ТЗВ	Other FTA Section:			
Project Name:	Other Capital Program Items (5339)	Federal (FTA) Funds:	\$198,378		
Apportionment Year:	2019	State (TXDOT) Funds:	\$0		
Project Phase:	N/A	Other Funds:	\$49,594		
Brief Project Description:	Computer Hardware/software	Fiscal Year Cost:	\$247,972		
		Construction: \$247,972 PE: \$	0 ROW: \$0		
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$247,972		
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amount:	\$0		

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2016	2019	06/2016	New Project in FY 2019 recurring funding for the development of 2017-2020 Horizon TIP
07/2018	2019	05/2018	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

General Proj	ect Information	Funding Information (YOE)			
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K		
MPO ID:	ТЗА	Other FTA Section:			
Project Name:	Planning	Federal (FTA) Funds:	\$816,000		
Apportionment Year:	2019	State (TXDOT) Funds:	\$0		
Project Phase:	N/A	Other Funds:	\$204,000		
Brief Project Description:	Short-range Planning	Fiscal Year Cost:	\$1,020,000		
Sec5309 ID: Amend Date:	07/2018	Construction: \$1,020,000 PE: \$0 Total Project Cost:	ROW: \$0 \$1,020,000		
	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amount:	\$0		
AMENDMENT HISTORY					

History STIP Rev Date History FY History Date History Note/Amendment

07/2016 2019 06/2016 New Project in FY 2019 recurring funding for the development of 2017-2020 Horizon TIP 07/2018 2019 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

YOE = Year of Expenditure

District: TX DIST. 24

General Pro	ject Information	Funding Information (YOI	E)
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
MPO ID:	T3E	Other FTA Section:	
Project Name:	Security Equipment	Federal (FTA) Funds:	\$137,017
Apportionment Year:	2019	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$34,254
Brief Project Description	n: Security Program	Fiscal Year Cost:	\$171,271
See5200 ID:		Construction: \$171,271 PE: \$0	ROW: \$0
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$171,271
Remarks/Amend Actior	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

 07/2016
 2019
 06/2016
 New Project in FY 2019 recurring funding for the development of 2017-2020 Horizon TIP

 07/2018
 2019
 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

General Proj	ect Information	Funding Information (Y	<u>OE)</u>		
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200k		
MPO ID:	T3F	Other FTA Section:			
Project Name:	Support Vehicles/Bus Rehab (5339)	Federal (FTA) Funds:	\$161,929		
Apportionment Year:	2019	State (TXDOT) Funds:	\$0		
Project Phase:	N/A	Other Funds:	\$40,482		
Brief Project Description:	Support Vehicles/Bus Rehab	Fiscal Year Cost:	\$202,411		
Sec5309 ID:		Construction: \$202,411 PE: \$	0 ROW: \$0		
Amend Date:	07/2018	Total Project Cost:	\$202,411		
	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amount:	\$0		

07/2018 2019 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

District: TX DIST. 24 YOE = Year of Expenditure **General Project Information** Funding Information (YOE) Project Sponsor: Sun Metro-Transit Fed. Funding Category: Sec. 5307 - Urbanized Formula >200K MPO ID: тзн Other FTA Section: ADA ParaTransit Federal (FTA) Funds: \$1.339.391 Project Name: 2020 State (TXDOT) Funds: Apportionment Year: \$0 Project Phase: N/A Other Funds: \$334,848 Brief Project Description: Provide ADA Para Transit Service Fiscal Year Cost: \$1,674,239 Construction: \$1,674,239 PE: \$0 ROW: \$0 Sec5309 ID: **Total Project Cost:** \$1,674,239 07/2018 Amend Date: TDC Amount Requested: \$0 Remarks/Amend Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020. TDC Awarded Date & Amount: \$0 _.._..

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

 07/2016
 2020
 06/2016
 New Project in FY 2020 recurring funding for the development of 2017-2020 Horizon TIP

 07/2018
 2020
 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

General Pro	ject Information	Funding Information (YOE)		
Project Sponsor:	Sun Metro-Transit	Sec. 5307 - Urbanized Formula >200K			
MPO ID:	T3C	Other FTA Section:			
Project Name:	Capital Maintenance	Federal (FTA) Funds:	\$11,173,330		
Apportionment Year:	2020	State (TXDOT) Funds:	\$0		
Project Phase:	N/A	Other Funds:	\$2,793,333		
Brief Project Descriptior	: Capital Maintenance	Fiscal Year Cost:	\$13,966,663		
0		Construction: \$13,966,663 PE: \$0	ROW: \$0		
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$13,966,663		
Remarks/Amend Action	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amount:	\$0		

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2016	2020	06/2016	New Project in FY 2020 recurring fun	ding for development o	of 2017-2020 Ho	rizon TIP				
07/2018	2020	05/2018	Program D2045 MTP, D19-22 TIP, 19	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.						
General Pro	ject Information	<u>1</u>			Funding Inform	nation (YOE	Ð			
Project Sponsor:	Sun Metro-Tra	ansit		Fed. Funding	Category:		Sec. 5339 - Bus & Bus I	Facilities >200K		
MPO ID:	T3D			Other FTA Se	ction:					
Project Name:	Curb Cuts AD	A Improveme	nts (5339)	Federal (FTA)	Funds:		\$800,000			
Apportionment Year:	2020			State (TXDOT) Funds:			\$0		
Project Phase:				Other Funds:				\$200,000		
Brief Project Description	n: Curb Cuts AD	A Improveme	nts	Fiscal	Year Cost:			\$1,000,000		
0				Construction:	\$1,000,000	PE: \$0	ROW: \$0			
Sec5309 ID: Amend Date:	07/2018			Total Proj	ect Cost:			\$1,000,000		
Remarks/Amend Action	: Program D204	45 MTP, D19-	22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:				\$0		
				TDC Awarded	Date & Amount	:	\$0			
AMENDMENT HISTOR	Y									

History STIP Rev Date History FY History Date History Note/Amendment

07/2016	2020	06/2016	New Project in FY 2020 recurring funding for development of 2017-2020 Horizon TIP
07/2018	2020	05/2018	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

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		EL PAS	D MPO TRANSPORTATION IMPROVE		5KAWI (TIP) 20	19-2022		
District: TX DIST. 24								r of Expenditure
General Pro	ject Information				Funding Inform	ation (YOE)	
Project Sponsor:	EPMPO			Fed. Funding		Sec. 5310) - Seniors & People w/Dis	abilities >200k
MPO ID:	T011			Other FTA Se	ction:			
Project Name:	FTA 5310 Enhance	ed Mobility	r for Seniors and Individuals with Disabilities	Federal (FTA)				\$650,000
Apportionment Year:	2020			State (TXDOT) Funds:			\$0
Project Phase:	N/A			Other Funds:				\$0
Brief Project Description			ofor Seniors and Individuals with Disabilities	Fiscal	Year Cost:			\$650,000
	of \$650,000 for Ca 2020.	apital and (al allocation demonstration. Fed. Distribution Operating, for FFY 2019 funds for use in FY	Construction:	\$650,000	PE: \$0	ROW: \$0	
Sec5309 ID:				Total Brai	inat Cast			¢650.000
Amend Date:	07/2018			Total Proj	eci Cosi.			\$650,000
Remarks/Amend Action			2020 TIP and 2017-2020 STIP to add to	TDC Amount	Requested:			\$0
	FY2020 using FY2		5310 Funds EXEMPT	TDC Awarded	Date & Amount:		\$0	
History STIP Rev Da	te History FY Hist							
07/2018	-	05/2018						
General Pro	ject Information				Funding Inform	ation (YOF)	
Project Sponsor:	Sun Metro-Transit			Fed. Funding			2 Sec. 5339 - Bus & Bus I	acilities >2001
MPO ID:	T3I-7			Other FTA Se			0ec. 5555 - Bus & Bus I	aciiities >2001
Project Name:		9 Eunding	for Bus & Bus Facilities	Federal (FTA)				\$1,181,199
Apportionment Year:	2020	9 i unung	tor bus a bus r actitues	State (TXDOT				\$1,101,199 \$0
Project Phase:	2020 N/A			Other Funds:) i unus.			\$295,300
		0 Eundina:	For the purchase of buses and facility		Year Cost:			\$295,300 \$1,476,499
			ent such a ADP hardware/software and			55 44		\$1,470,499
			vending machines and sales related nance incl rebuilds, bus shelters &	Construction:	\$1,476,499	PE: \$0	ROW: \$0	
Sec5309 ID:	amonaoo							
Amend Date:	07/2018			Total Proj	ect Cost:			\$1,476,499
Remarks/Amend Action	Program D2045 M	ITP, D19-2	2 TIP, 19-22 STIP, in FY 2020.	TDC Amount	Requested:		\$0	
				TDC Awarded	Date & Amount:	\$0		
AMENDMENT HISTOR	·							
History STIP Rev Da	te History FY Hist	tory Date	History Note/Amendment					
07/2016	2020 0	06/2016	New Project in FY 2020 recurring funding for	or development o	of 2017-2020 Ho	rizon TIP		
07/2018	2020 0	05/2018	Program D2045 MTP, D19-22 TIP, 19-22 S	TIP, in FY 2020				
General Pro	ject Information				Funding Inform	ation (YOE)	
Project Sponsor:	Sun Metro-Transit			Fed. Funding	Category:	•	- Sec. 5339 - Bus & Bus I	acilities >200
MPO ID:	ТЗВ			Other FTA Se	0,1			
Project Name:	Other Capital Prog	aram Items	(5339)	Federal (FTA)				\$200,362
Apportionment Year:	2020	,	()	State (TXDOT				\$0
Project Phase:	N/A			Other Funds:				\$50,090
Brief Project Description		re/software	2	Other Funds: Fiscal Year Cost:				\$250,452
		,		Construction:		PE: \$0	ROW: \$0	4-00,40E
Sec5309 ID:						ι μ . φυ	ιτονν. φυ	\$050 450
Amend Date:	07/2018			Total Proj	ect Cost:			\$250,452
Remarks/Amend Action	Program D2045 M	ITP, D19-2	2 TIP, 19-22 STIP, in FY 2020.	TDC Amount	Requested:			\$0
				TDC Awarded	Date & Amount:		\$0	
AMENDMENT HISTOR	(
History STIP Rev Da	te History FY Hist	tory Date	History Note/Amendment					
07/2016	2020 0	06/2016	New Project in FY 2020 recurring funding for	or development o	of 2017-2020 Hor	izon TIP		
07/2018	2020 0	05/2018	Program D2045 MTP, D19-22 TIP, 19-22 S	TIP, in FY 2020				

District: TX DIST. 24 YOE = Year of Expenditure **General Project Information** Funding Information (YOE) Project Sponsor: Sun Metro-Transit Fed. Funding Category: Sec. 5307 - Urbanized Formula >200K MPO ID: Other FTA Section: Т3А Planning Federal (FTA) Funds: \$824.160 Project Name: 2020 State (TXDOT) Funds: Apportionment Year: \$0 Project Phase: N/A Other Funds: \$206,040 Brief Project Description: Short-range Planning Fiscal Year Cost: \$1,030,200 Construction: \$1,030,200 PE: \$0 ROW: \$0 Sec5309 ID: **Total Project Cost:** \$1,030,200 07/2018 Amend Date: TDC Amount Requested: \$0 Remarks/Amend Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020. TDC Awarded Date & Amount: \$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

 07/2016
 2020
 06/2016
 New Project in FY 2020 recurring funding for development of 2017-2020 Horizon TIP

 07/2018
 2020
 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

General Project Information		Funding Information (YO	<u>E)</u>
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
MPO ID:	T3E	Other FTA Section:	
Project Name:	Security Equipment	Federal (FTA) Funds:	\$138,386
Apportionment Year:	2020	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$34,597
Brief Project Description	: Security Program	Fiscal Year Cost:	\$172,983
0 5000 10		Construction: \$172,983 PE: \$0	ROW: \$0
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$172,983
Remarks/Amend Action	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2010	2020	00/2010	New Project in Fit 2020 recurring	iunuing for development o	1 2017-2020 H			
07/2018	2020	05/2018	Program D2045 MTP, D19-22 TIF	P, 19-22 STIP, in FY 2020.				
General Pro	ect Informatio	<u>n</u>			Funding Infor	mation (YOE	<u>.</u>)	
Project Sponsor:	Sun Metro-Tra	ansit		Fed. Funding (Category:		Sec. 5339 - Bus & Bus F	acilities >200K
MPO ID:	T3F			Other FTA Sec	ction:			
Project Name:	Support Vehic	cles/Bus Reha	ıb (5339)	Federal (FTA)	Funds:			\$415,532
Apportionment Year:	2020			State (TXDOT)) Funds:			\$0
Project Phase:	N/A			Other Funds:				\$103,883
Brief Project Description	Support Vehic	cles/Bus Reha	ıb	Fiscal Y	ear Cost:			\$519,415
0				Construction:	\$519,415	PE: \$0	ROW: \$0	
Sec5309 ID: Amend Date:	07/2018			Total Proje	ect Cost:			\$519,415
		45 MTP, D19-	22 TIP, 19-22 STIP, in FY 2020.	TDC Amount F	Requested:			\$0
				TDC Awarded	Date & Amour	nt:	\$0	

06/2016 New Project in EX 2020 recurring funding for development of 2017-2020 Horizon TIP

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History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2020 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

District: TX DIST. 24 YOE = Year of Expenditure **General Project Information** Funding Information (YOE) Project Sponsor: Sun Metro-Transit Fed. Funding Category: Sec. 5339 - Bus & Bus Facilities >200K MPO ID: T3G Other FTA Section: Transit Enhancements (5339) Federal (FTA) Funds: \$800.000 Project Name: 2020 State (TXDOT) Funds: Apportionment Year: \$0 Project Phase: N/A Other Funds: \$200,000 Brief Project Description: Transit Enhancements \$1,000,000 Fiscal Year Cost: Construction: \$1,000,000 PE: \$0 ROW: \$0 Sec5309 ID: Total Project Cost: \$1,000,000 07/2018 Amend Date: TDC Amount Requested: \$0 Remarks/Amend Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020. TDC Awarded Date & Amount: \$0 ------AMENDMENT HISTORY History STIP Rev Date History FY History Date History Note/Amendment

New Project in FY 2020 recurring funding for development of 2017-2020 Horizon TIP

Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

07/2016

07/2018

2020

2020

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05/2018

District: TX DIST. 24 YOE = Year of Expenditure **General Project Information** Funding Information (YOE) Sun Metro-Transit Project Sponsor: Fed. Funding Category: Sec. 5307 - Urbanized Formula >200K MPO ID: тзн Other FTA Section: ADA ParaTransit Federal (FTA) Funds: \$1.352.786 Project Name: 2021 State (TXDOT) Funds: Apportionment Year: \$0 Project Phase: N/A Other Funds: \$338,196 Brief Project Description: Provide ADA Para Transit Service \$1,690,982 Fiscal Year Cost: Construction: \$1,690,982 PE: \$0 ROW: \$0 Sec5309 ID: Total Project Cost: \$1,690,982 07/2018 Amend Date: TDC Amount Requested: \$0 Remarks/Amend Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021. TDC Awarded Date & Amount: \$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

General Proj	ect Information	Funding Information (YOE	
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
MPO ID:	T3C	Other FTA Section:	
Project Name:	Capital Maintenance	Federal (FTA) Funds:	\$11,125,064
Apportionment Year:	2021	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$2,781,266
Brief Project Description:	Capital Maintenance	Fiscal Year Cost:	\$13,906,330
Sec5309 ID:		Construction: \$13,906,330 PE: \$0	ROW: \$0
Amend Date:	07/2018	Total Project Cost:	\$13,906,330
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

AMENDMENT HISTORY

STIP Re 07/2018

History STIP Rev Date History FY History Date History Note/Amendment

2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

General Proj	General Project Information			Funding Information (YOE)			
Project Sponsor:	EPMPO		Fed. Funding	Category:	Sec. 5310 - Sei	niors & People w/Dis	abilities >200K
MPO ID:	T011		Other FTA Se	ction:			
Project Name:	FTA 5310 En	hanced Mobility for Seniors and Individuals with Disabilities	Federal (FTA)	Funds:			\$650,000
Apportionment Year:	2021		State (TXDOT) Funds:			\$0
Project Phase:	N/A		Other Funds:				\$0
Brief Project Description:	Brief Project Description: FTA 5310 Enhanced Mobility for Seniors and Individuals with Disabilities Program. Project for financial allocation demonstration. Fed. Distribution of \$650,000 for Capital and Operating, for FFY 2020 funds for use in FY 2021.	Fiscal	Year Cost:			\$650,000	
		Construction:	\$650,000	PE: \$0	ROW: \$0		
Sec5309 ID:							
Amend Date:	07/2018		Total Proj	ect Cost:			\$650,000
Remarks/Amend Action:	Amend H204	0 MTP, H2017-2020 TIP and 2017-2020 STIP to add to	TDC Amount	Requested:			\$0
	FY2021 using	g FY2020 FTA 5310 Funds EXEMPT	TDC Awarded	Date & Amount		\$0	
History STIP Rev Dat	te History FY	History Date					
07/2018	2021	05/2018					

DIST. 24			YOE = Year of Expenditure
eral Proje	ect Information	Funding Information ()	<u>(OE)</u>
:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200K
	T3I-8	Other FTA Section:	
	FY 2021 FTA 5339 Funding for Bus & Bus Facilities	Federal (FTA) Funds:	\$1,120,000
'ear:	2021	State (TXDOT) Funds:	\$0
	N/A	Other Funds:	\$280,000
scription:	: FY 2021 FTA 5339 Funding: For the purchase of buses and facility	Fiscal Year Cost:	\$1,400,000
enhancements incl. equipment such a ADP hardware/software and security related needs, ticket vending machines and sales related software. Capitalized maintenance incl rebuilds, bus shelters & amenities	security related needs, ticket vending machines and sales related	Construction: \$1,400,000 PE: \$	\$0 ROW: \$0
		THERE	A
	07/2018	Total Project Cost:	\$1,400,000
Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0
	ral Proje ear: cription:	ral Project Information Sun Metro-Transit T3I-8 FY 2021 FTA 5339 Funding for Bus & Bus Facilities ear: 2021 N/A cription: FY 2021 FTA 5339 Funding: For the purchase of buses and facility enhancements incl. equipment such a ADP hardware/software and security related needs, ticket vending machines and sales related software. Capitalized maintenance incl rebuilds, bus shelters & amenities. 07/2018	ral Project Information Funding Information () Sun Metro-Transit Fed. Funding Category: T3I-8 Other FTA Section: FY 2021 FTA 5339 Funding for Bus & Bus Facilities Federal (FTA) Funds: ear: 2021 N/A Other Funds: cription: FY 2021 FTA 5339 Funding: For the purchase of buses and facility enhancements incl. equipment such a ADP hardware/software and security related needs, ticket vending machines and sales related software. Capitalized maintenance incl rebuilds, bus shelters & amenities. Fiscal Year Cost: 07/2018 Total Project Cost: Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021. TDC Amount Requested:

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment 07/2018 2021

05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021

2021 05/2018 Program D2045 MTP, D19-22 TIP	, 13-22 0111 , 111 1 2021.	
ect Information	Funding Information (YOE	<u>=)</u>
Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
T2A	Other FTA Section:	
JARC	Federal (FTA) Funds:	\$160,000
2021	State (TXDOT) Funds:	\$0
N/A	Other Funds:	\$40,000
Short-range Planning	Fiscal Year Cost:	\$200,000
	Construction: \$200,000 PE: \$0	ROW: \$0
07/2018	Total Project Cost:	\$200,000
Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0
	TDC Awarded Date & Amount:	\$0
	ect Information Sun Metro-Transit T2A JARC 2021 N/A : Short-range Planning	Ext Information Funding Information (YOE Sun Metro-Transit Fed. Funding Category: T2A Other FTA Section: JARC Federal (FTA) Funds: 2021 State (TXDOT) Funds: N/A Other Funds: Short-range Planning Fiscal Year Cost: 07/2018 Total Project Cost: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021. TDC Amount Requested:

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

General Project Information		Funding Information (YO	<u>DE)</u>
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200K
MPO ID:	ТЗВ	Other FTA Section:	
Project Name:	Other Capital Program Items (5339)	Federal (FTA) Funds:	\$80,000
Apportionment Year:	2021	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$20,000
Brief Project Description	n: Computer hardware/software	Fiscal Year Cost:	\$100,000
		Construction: \$100,000 PE: \$0	0 ROW: \$0
Sec5309 ID:	07/00/0	Total Project Cost:	\$100,000
Amend Date:	07/2018		\$0
Remarks/Amend Action	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	
		TDC Awarded Date & Amount:	\$0
AMENDMENT HISTOR	Υ		

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

District: TX DIST. 24			YOE = Year of Expenditure
General Proj	ect Information	Funding Information (YOE)	
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
MPO ID:	ТЗА	Other FTA Section:	
Project Name:	Planning	Federal (FTA) Funds:	\$832,402
Apportionment Year:	2021	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$208,100
Brief Project Description:	Short-range Planning	Fiscal Year Cost:	\$1,040,502
Sec5309 ID:		Construction: \$1,040,502 PE: \$0	ROW: \$0
Amend Date:	07/2018	Total Project Cost:	\$1,040,502
	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021. 2021

General Proj	ect Information	Funding Information (YO	<u>E)</u>
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
MPO ID:	ТЗЕ	Other FTA Section:	
Project Name:	Security Equipment	Federal (FTA) Funds:	\$139,760
Apportionment Year:	2021	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$34,940
Brief Project Description:	Security Program	Fiscal Year Cost:	\$174,700
		Construction: \$174,700 PE: \$0	ROW: \$0
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$174,700
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

General Project Information		Funding Information (YO	<u>E)</u>
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200K
MPO ID:	T3F	Other FTA Section:	
Project Name:	Support Vehicles/Bus Rehab (5339)	Federal (FTA) Funds:	\$429,287
Apportionment Year:	2021	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$107,322
Brief Project Description	n: Support Vehicles/Bus Rehab	Fiscal Year Cost:	\$536,609
Sec5309 ID:		Construction: \$536,609 PE: \$0	ROW: \$0
Amend Date:	07/2018	Total Project Cost:	\$536,609
	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0
Remarks/Ameria Action	. Flogram D2043 WIF, D13-22 HF, 13-22 SHF, III 1 2021.	·	
		TDC Awarded Date & Amount:	\$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021. 2021

General Project Information		Funding Information (YOE	E)
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200K
MPO ID:	T3G	Other FTA Section:	
Project Name:	Transit Enhancements (5339)	Federal (FTA) Funds:	\$800,000
Apportionment Year:	2021	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$200,000
Brief Project Descriptior	: Transit Enhancements	Fiscal Year Cost:	\$1,000,000
Sec5309 ID:		Construction: \$1,000,000 PE: \$0	ROW: \$0
Amend Date:	07/2018	Total Project Cost:	\$1,000,000
	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

\$0

District: TX DIST. 2	24		YOE = Year of Expenditure
General Pr	oject Information	Funding Information (YOE	5)
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
MPO ID:	ТЗН	Other FTA Section:	
Project Name:	ADA ParaTransit	Federal (FTA) Funds:	\$1,366,313
Apportionment Year:	2022	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$341,578
Brief Project Description	n: Provide ADA Para Transit Service	Fiscal Year Cost:	\$1,707,891
0 5000 ID		Construction: \$1,707,891 PE: \$0	ROW: \$0
Sec5309 ID:	07/0040	Total Project Cost:	\$1,707,891
Amend Date: Remarks/Amend Actio	07/2018 n: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.	TDC Amount Requested:	\$0
rtemarks//timena /telle	1. Trogram D2040 Witt, D10-22 Till, 10-22 OTIL, IITT 2022.		

AMENDMENT HISTORY History STIP Rev Date History FY History Date History Note/Amendment

> 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022. 07/2018 2022

General Pro	ect Information	Funding Information (YOE)			
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K		
MPO ID:	T3C	Other FTA Section:			
Project Name:	Capital Maintenance	Federal (FTA) Funds:	\$11,236,314		
Apportionment Year:	2022	State (TXDOT) Funds:	\$0		
Project Phase:	N/A	Other Funds:	\$2,809,079		
Brief Project Description	Capital Maintenance	Fiscal Year Cost:	\$14,045,393		
0 5000 10		Construction: \$14,045,393 PE: \$0	ROW: \$0		
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$14,045,393		
	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amount:	\$0		

TDC Awarded Date & Amount:

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022. 07/2018 2022

General Pro	ject Information	Funding Information (YO	<u>E)</u>		
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200K		
MPO ID:	T3D	Other FTA Section:			
Project Name:	Curb Cuts ADA Improvements (5339)	Federal (FTA) Funds:	\$800,000		
Apportionment Year:	2022	State (TXDOT) Funds:	\$0		
Project Phase:	N/A	Other Funds:	\$200,000		
Brief Project Description	: Curb Cuts ADA Improvements	Fiscal Year Cost:	\$1,000,000		
Sec5309 ID:		Construction: \$1,000,000 PE: \$0	ROW: \$0		
Amend Date:	07/2018	Total Project Cost:	\$1,000,000		
	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:	\$0		
Remarks/Ameria Action	. FIOGRAM D2043 MIF, D13-22 HF, 13-22 SHF, MIT 1 2020.	TDC Awarded Date & Amount:			
		TDC Awarded Date & Amount:	\$0		

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020. 2022

General Proje	ect Information	Funding Information (YOE)				
Project Sponsor:	EPMPO	Fed. Funding Category:	Sec. 5310 - Seniors	iors & People w/Disabilities >200		
MPO ID:	T011	Other FTA Section:				
Project Name:	FTA 5310 Enhanced Mobility for Seniors and Individuals with Disabilities	Federal (FTA) Funds:			\$650,000	
Apportionment Year:	2022	State (TXDOT) Funds:		\$0		
Project Phase:	N/A	Other Funds:			\$0	
Brief Project Description:	FTA 5310 Enhanced Mobility for Seniors and Individuals with Disabilities	Fiscal Year Cost:			\$650,000	
	Program. Project for financial allocation demonstration. Fed. Distribution of \$650,000 for Capital and Operating, for FFY 2021 funds for use in FY 2022.	Construction: \$650,000	PE: \$0	ROW: \$0		
Sec5309 ID:		Training				
Amend Date:	07/2018	Total Project Cost:			\$650,000	
Remarks/Amend Action:	Amend H2040 MTP, H2017-2020 TIP and 2017-2020 STIP to add to	TDC Amount Requested:			\$0	
	FY2022 using FY2020 FTA 5310 Funds EXEMPT	TDC Awarded Date & Amount:		\$0		
History STIP Rev Dat	e History FY History Date					
07/2018	2022 05/2018					

							YC)E = Yea	r of Expendi	iture
		Fu	nding Info	orma	tion (YO	<u>E)</u>				
d. Fur	nding	Cate	egory:			Sec. 53	339 - Bus	& Bus I	-acilities >2	200K
her FT	TA Se	ectio	n:							
deral	(FTA)) Fur	nds:						\$1,148,0	000
ate (T)	XDOT	T) Fu	unds:							\$0
her Fu	unds:								\$287,0	000
Fiscal Year Cost:				\$1,435,000			000			
onstruc	ction:	\$	1,435,000	D	PE: \$0		RO	W: \$0		
-			• • • •							
Tota	ii Proj	oject	Cost:						\$1,435,00	10
DC Am	nount l	Req	uested:						\$	50
DC Aw	arded	d Da	te & Amou	unt:			\$0)		

History STIP Rev Date History FY History Date History Note/Amendment

07/2018	2022 05/2018 Program D2045 MTP, D19-22 TIP, 19	-22 STIP, in FY 2022.			
General Pro	ject Information	Funding Information (YC	<u>)E)</u>		
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200K		
MPO ID:	ТЗВ	Other FTA Section:			
Project Name:	Other Capital Program Items (5339)	Federal (FTA) Funds:	\$84,000		
Apportionment Year:	2022	State (TXDOT) Funds:	\$0		
Project Phase:	N/A	Other Funds:	\$21,000		
Brief Project Description	n: Computer hardware/software	Fiscal Year Cost:	\$105,000		
Sec5309 ID: Amend Date:	07/2018	Construction: \$105,000 PE: \$0 Total Project Cost:	ROW: \$0 \$105,000		
Remarks/Amend Action	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amount:	\$0		

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2022 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.

General Proj	ect Information	Funding Information (YOE)
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5307 - Urbanized Formula >200K
MPO ID:	ТЗА	Other FTA Section:	
Project Name:	Planning	Federal (FTA) Funds:	\$840,726
Apportionment Year:	2022	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$210,181
Brief Project Description:	Short-range Planning	Fiscal Year Cost:	\$1,050,907
Sec5309 ID:		Construction: \$1,050,907 PE: \$0	ROW: \$0
Amend Date:	07/2018	Total Project Cost:	\$1,050,907
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2022 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.

YOE = Year of Expenditure

District: TX DIST. 24

General Pro	ject Information	Funding Information (YOE	<u>)</u>
Project Sponsor:	Sun Metro-Transit	Sec. 5307 - Urbanized Formula >200K	
MPO ID:	T3E	Other FTA Section:	
Project Name:	Security Equipment	Federal (FTA) Funds:	\$143,254
Apportionment Year:	2022	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$35,814
Brief Project Description	: Security Program	Fiscal Year Cost:	\$179,068
		Construction: \$179,068 PE: \$0	ROW: \$0
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$179,068
	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2022 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.

General Proj	<u>OE)</u>		
Project Sponsor:	Sun Metro-Transit	Fed. Funding Category:	Sec. 5339 - Bus & Bus Facilities >200K
MPO ID:	T3F	Other FTA Section:	
Project Name:	Support Vehicles/Bus Rehab (5339)	Federal (FTA) Funds:	\$443,120
Apportionment Year:	2022	State (TXDOT) Funds:	\$0
Project Phase:	N/A	Other Funds:	\$110,780
Brief Project Description:	Support Vehicles/Bus Rehab	Fiscal Year Cost:	\$553,900
C 5200 ID:		Construction: \$553,900 PE: \$	0 ROW: \$0
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$553,900
	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amount:	\$0

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2022 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.

FTA from FHWA Transfer Transit Projects



Mon Mar 05, 2018

YOE = Year of Expenditure

General Proj	ect Information	Funding Info	rmation (YOE)
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significant or Other (incl FHWA transfers)
MPO ID:	T064X	Other FTA Section:	FHWA CAT 5 - CMAQ Transfer to FTA
Project Name:	Alameda RTS Operating Assistance YR1 - 2019	Federal (FTA) Funds:	\$800,000
Apportionment Year:	2019	State (TXDOT) Funds:	\$0
Project Phase:	Т	Other Funds:	\$200,000
Brief Project Description	Alameda RTS Operating Assistance YR1 - 2019: 1st Year of Alameda	Fiscal Year Cost:	\$1,000,000
0 F 200 ID:	BRT-RTS operations.	Construction: \$1,000,000	PE: \$0 ROW: \$0
Sec5309 ID:	1539	Total Project Cost:	\$1,000,000
Amend Date:	07/2018	-	
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amou	nt: \$0

11/2016201907/20182019

 10/2016
 Amend H2040 MTP, H17-20 TIP, 17-20 STIP to program in FY 2019 EXEMPT

 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

General Proj	ect Information	Funding Infor	rmation (YOE)			
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significant or Other (incl FH	IWA transfers)		
MPO ID:	T065X	Other FTA Section:	FHWA CAT 5 - CMAQ T	ransfer to FTA		
Project Name:	Dyer RTS Operating Assistance YR1 - 2019	Federal (FTA) Funds:		\$800,000		
Apportionment Year:	2019	State (TXDOT) Funds:	\$0			
Project Phase:	Т	Other Funds:		\$200,000		
Brief Project Description:	, , , ,	Fiscal Year Cost:		\$1,000,000		
	operations.	Construction: \$1,000,000	PE: \$0 ROW: \$0			
Sec5309 ID:	1539	Total Project Cost:		\$1,000,000		
Amend Date:	07/2018	Total Troject Cost.		\$1,000,000		
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.	TDC Amount Requested:		\$0		
		TDC Awarded Date & Amour	nt: \$0			

11/2016 07/2018 2019

2019

 10/2016
 Amend H2040 MTP, H17-20 TIP, 17-20 STIP to program in FY 2019 EXEMPT

 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2019.

<u>General Proj</u>								
Project Sponsor:	Sun Metro			Fed. Funding (Category:	ignificant or Other (incl FHWA transfer		
MPO ID:	T108X-1			Other FTA Sec	ction:		FHWA CAT 5 - CMAQ T	ransfer to FTA
Project Name:	El Paso Stree	tcar System 1	st Year Operating Assistance	Federal (FTA)	Funds:			\$800,000
Apportionment Year:	2019			State (TXDOT) Funds:			\$0
Project Phase:	т			Other Funds:				\$200,000
Brief Project Description:	El Paso Stree	tcar System 1	st Year Operating Assistance: Operating	Fiscal Year Cost:				\$1,000,000
	Assistance for congestion an	,	ew transit service intended to reduce ns.	Construction:	\$1,000,000	PE: \$0	ROW: \$0	
Sec5309 ID:	1539			Tetal Desi				¢4 000 000
Amend Date:	07/2018			Total Proj	ect Cost:			\$1,000,000
Remarks/Amend Action:	Program D20	45 MTP, D19-	22 TIP, 19-22 STIP, in FY 2019.	TDC Amount F	Requested:			\$0
				TDC Awarded	Date & Amou	int:	\$0	
11/2016	2019	10/2016	Amend H2040 MTP, H17-20 TIP, 17-20 S	STIP to program in	FY 2019 EXE	MPT		
07/2018	2019	05/2018	Program D2045 MTP, D19-22 TIP, 19-22	STIP, in FY 2019.				



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District: TX DIST. 24	ļ						YOE = Year	r of Expenditure	
General Project Information (YOE)									
Project Sponsor:	Sun Metro			Fed. Funding	Category:		Sec. 5309 - Fixed Guideway Investmen		
MPO ID:	BP006			Other FTA Se	ction:		FHWA CAT 5 - CMAQ	Transfer to FTA	
Project Name:	Procurement	of 3 Buses		Federal (FTA)	Funds:			\$1,440,000	
Apportionment Year:	2020			State (TXDOT) Funds:			\$0	
Project Phase:	т			Other Funds:				\$360,000	
Brief Project Description			un Metro seeks to procure three buses in	Fiscal Year Cost:				\$1,800,000	
	anticipation of around the Mo and the MCA-	ontecillo Deve	1	Construction: \$1,800,000 PE: \$0		PE: \$0	ROW: \$0		
Sec5309 ID:	1539			T. () D				• · · · · · · · ·	
Amend Date:	07/2018			Total Proj	ect Cost:			\$1,800,000	
Remarks/Amend Action:	Program D204	45 MTP, D19-	22 TIP, 19-22 STIP, in FY 2019.	TDC Amount I	Requested:			\$0	
				TDC Awarded Date & Amount:		\$0			
11/2016	2019	10/2016	Amend H2040 MTP, H17-20 TIP, 17-20 S	TIP to program in	FY 2019 NONE	XEMPT			
07/2018	2019	05/2018	Program D2045 MTP, D19-22 TIP, 19-22	STIP, in FY 2019					

District: T	X DIST. 24					VOE = Vear	of Expenditure	
		ect Information	YOE = Year of Expenditure Funding Information (YOE)					
Project Spons	-	Sun Metro	Fed. Funding C		· · · ·	gnificant or Other (incl Fl	IWA transfers)	
MPO ID:		T091X-2	Other FTA Sec	0,		FHWA CAT 5 - CMAQ 1	,	
Project Name):	Alameda RTS Operating Assistance YR2 - 2020	Federal (FTA)	Funds:			\$800,000	
Apportionmer	nt Year:	2020	State (TXDOT)) Funds:			\$0	
Project Phase	e:	Т	Other Funds:				\$200,000	
Brief Project		Alameda RTS Operating Assistance YR2 - 2020: 2nd Year of Alameda	Fiscal Y	/ear Cost:			\$1,000,000	
0 5000 10		BRT-RTS operations.	Construction:	\$1,000,000	PE: \$0	ROW: \$0		
Sec5309 ID: Amend Date:		1539	Total Project Cost:			\$1,000,000		
		07/2018 I Action: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.		TDC Amount Requested:			\$0	
i tomanto, i un		, ingrain 22010 mm, 210 22 m, 10 22 0 m, int 1 2020.	TDC Awarded Date & Amour		nt:	\$0	·	

11/2016202007/20182020

 10/2016
 Amend H2040 MTP, H17-20 TIP, 17-20 STIP to program in FY 2020 EXEMPT

 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

General Pro	pject Information	Funding Info				
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Sig	Regionally Significant or Other (incl FHWA transfers		
MPO ID:	T065X-2	Other FTA Section:	FHWA CAT 5 - CMAQ		Transfer to FTA	
Project Name:	Dyer RTS Operating Assistance YR2 - 2020	Federal (FTA) Funds:			\$800,000	
Apportionment Year:	2020	State (TXDOT) Funds:			\$0	
Project Phase:	Т	Other Funds:			\$200,000	
Brief Project Description	 Dyer RTS Operating Assistance YR2 - 2020: 2nd Year of Dyer BRT-RTS operations. 	Fiscal Year Cost:			\$1,000,000	
Sec5309 ID:	1539	Construction: \$1,000,000	PE: \$0	ROW: \$0		
Amend Date:	07/2018	Total Project Cost:			\$1,000,000	
Remarks/Amend Action	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:			\$0	
		TDC Awarded Date & Amou	unt:	\$0		

11/2016 07/2018

11/2016

07/2018

2020

2020

2020

2020

 10/2016
 Amend H2040 MTP, H17-20 TIP, 17-20 STIP to program in FY 2020 EXEMPT

 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

General Pro	ject Information	Funding Inf	formation (YOE)
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significant or Other (incl FHWA transfers
MPO ID:	T108X-2	Other FTA Section:	FHWA CAT 5 - CMAQ Transfer to FT
Project Name:	El Paso Streetcar System 2nd Year Operating Assistance	Federal (FTA) Funds:	\$800,000
Apportionment Year:	2020	State (TXDOT) Funds:	\$0
Project Phase:	т	Other Funds:	\$200,000
Brief Project Description	: El Paso Streetcar System 2nd Year Operating Assistance: Operating	Fiscal Year Cost:	\$1,000,000
	Assistance for 2nd year of new transit service intended to reduce congestion and CO emissions.	Construction: \$1,000,000	0 PE: \$0 ROW: \$0
Sec5309 ID:	1539	Total Desired Oracle	¢4,000,000
Amend Date:	07/2018	Total Project Cost:	\$1,000,000
Remarks/Amend Action	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:	\$0
		TDC Awarded Date & Amo	punt: \$0

 10/2016
 Amend H2040 MTP, H17-20 TIP, 17-20 STIP to program in FY 2020 EXEMPT

 05/2018
 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.

General Project Information			Funding Information (YOE)				
Project Sponsor:	Sun Metro	Fed. Funding Category: Regionally S		Regionally Sig	nally Significant or Other (incl FHWA transfers		
MPO ID:	T093X	Other FTA Sec	TA Section: FHWA CAT 5 - C		FHWA CAT 5 - CMAQ T	ransfer to FTA	
Project Name:	Montana RTS 1st year service operating assistance	Federal (FTA) Funds:			\$1,040,000		
Apportionment Year:	2020	State (TXDOT) Funds:			\$0		
Project Phase:	Т	Other Funds:			\$260,000		
Brief Project Description:	Montana RTS 1st year service operating assistance: 1st year of Montana BRT-RTS operations.		Year Cost:			\$1,300,000	
Sec5309 ID:	1539	Construction:	, ,,	PE: \$0	ROW: \$0		
Amend Date:	07/2018	Total Project Cost:				\$1,300,000	
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.	TDC Amount Requested:				\$0	
		TDC Awarded	Date & Amour	nt:	\$0		

11/2016	2020	10/2016	Amend H2040 MTP, H17-20 TIP, 17-20 STIP to program in FY 2020 EXEMPT
07/2018	2020	05/2018	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2020.



YOE = Year of Expenditure

General Pro	pject Information	Funding Information (YOE)			
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significant or Other (incl FHWA transfers)		
MPO ID:	T096X	Other FTA Section:	FHWA CAT 5 - CMAQ Transfer to FTA		
Project Name:	Alameda RTS 3rd year Operating Assistance	Federal (FTA) Funds:	\$911,887		
Apportionment Year:	2021	State (TXDOT) Funds:	\$0		
Project Phase:	Т	Other Funds:	\$1,376,655		
Brief Project Descriptio	n: Alameda RTS 3rd year Operating Assistance: 3rd year of Alameda RTS	Fiscal Year Cost:	\$2,288,542		
Sec5309 ID:	operations	Construction: \$2,288,542 Total Project Cost:	PE: \$0 ROW: \$0 \$2.288,542		
Amend Date:	07/2018	Total Project Cost.	\$2,200,542		
Remarks/Amend Action	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amou	nt: \$0		

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AMENDMENT HISTORY

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

General Pro	pject Information	Funding Info				
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significa	Significant or Other (incl FHWA transfers)		
MPO ID:	T095X	Other FTA Section:	FHV	A CAT 5 - CMAQ Transfer to FT		
Project Name:	Dyer RTS 3rd year Operating Assistance	Federal (FTA) Funds:		\$911,887		
Apportionment Year:	2021	State (TXDOT) Funds:		\$0		
Project Phase:	Т	Other Funds:		\$626,142		
Brief Project Descriptio	n: Dyer RTS 3rd year Operating Assistance: 3rd year of Dyer RTS	Fiscal Year Cost:		\$1,538,029		
Sec5309 ID:	operations.	Construction: \$1,538,029 Total Project Cost:	PE: \$0	ROW: \$0 \$1,538,029		
Amend Date:	07/2018	-		\$1,000,020		
Remarks/Amend Actior	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:		\$0		
		TDC Awarded Date & Amou	int:	\$0		

AMENDMENT HISTORY

/ STIP Re 07/2018

History STIP Rev Date History FY History Date History Note/Amendment

2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

General Pro	ject Information	Funding Information (YOE)			
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significant or Other (incl FHWA transfers)		
MPO ID:	T108X-3	Other FTA Section:	FHWA CAT 5 - CMAQ Transfer to FTA		
Project Name:	El Paso Streetcar 3rd year Operating Assistance	Federal (FTA) Funds:	\$911,887		
Apportionment Year:	2021	State (TXDOT) Funds:	\$0		
Project Phase:	Т	Other Funds:	\$1,206,014		
Brief Project Description	n: El Paso Streetcar 3rd year Operating Assistance: 3rd year of Streetcar	Fiscal Year Cost:	\$2,117,901		
Sec5309 ID:	operations.	Construction: \$2,117,901 Total Project Cost:	PE: \$0 ROW: \$0 \$2.117.901		
Amend Date:	07/2018	Total Project Cost.	\$2,117, 3 01		
Remarks/Amend Actior	: Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amou	nt: \$0		

AMENDMENT HISTORY

07/2018

History STIP Rev Date History FY History Date History Note/Amendment

2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.

General Proj	ect Information	Funding Information (YOE)			
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significant or Other (incl FHWA transfers)		
MPO ID:	T092X	Other FTA Section:	FHWA CAT 5 - CMAQ Transfer to FTA		
Project Name:	Montana RTS 2nd year Operating Assistance	Federal (FTA) Funds:	\$911,887		
Apportionment Year:	2021	State (TXDOT) Funds:	\$0		
Project Phase:	Т	Other Funds:	\$1,376,655		
Brief Project Description: Montana RTS 2nd year Operating Assistance: 2nd year of Montana RTS		Fiscal Year Cost:	\$2,288,542		
0	operations.	Construction: \$2,288,542	2 PE: \$0 ROW: \$0		
Sec5309 ID: Amend Date:	07/2018	Total Project Cost:	\$2,288,542		
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2021.	TDC Amount Requested:	\$0		
		TDC Awarded Date & Amo	unt: \$0		
AMENDMENT HISTORY					
History STIP Rev Da	te History FY History Date History Note/Amendment				
07/2018	2021 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 S	TIP, in FY 2021.			



District: TX DIST. 24			YOE = Year of Expenditure			
General Proj	ect Information	Funding Information (YOE)				
Project Sponsor:	Sun Metro	Fed. Funding Category:	Regionally Significant or Other (incl FHWA transfers)			
MPO ID:	Т097Х	Other FTA Section:	FHWA CAT 5 - CMAQ Transfer to FTA			
Project Name:	Montana RTS 3rd year Operating Assistance	Federal (FTA) Funds:	\$973,322			
Apportionment Year:	2022	State (TXDOT) Funds:	\$0			
Project Phase:	Т	Other Funds:	\$1,437,961			
Brief Project Description:	Montana RTS 3rd year Operating Assistance: 3rd year of Montana RTS	Fiscal Year Cost:	\$2,411,283			
	operations.	Construction: \$2,411,283	3 PE: \$0 ROW: \$0			
Sec5309 ID:		Total Project Cost:	\$2,411,283			
mend Date:	07/2018		¢2,411,200			
Remarks/Amend Action:	Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.	TDC Amount Requested:	\$0			
		TDC Awarded Date & Amo	unt: \$0			

History STIP Rev Date History FY History Date History Note/Amendment

07/2018 2022 05/2018 Program D2045 MTP, D19-22 TIP, 19-22 STIP, in FY 2022.

Financial Section

Transit projects are included in this TIP. This public notice and time established for public review and comments satisfies FTA Program of Projects (POP) and public participation requirements.

EL PASO MPO - District 24 FY 2019 - 2022 Transportation Improvement Program

inding b	y Category									mursuay,	, April 26, 2018
		FY 2019		FY	FY 2020 FY 2021			FY 2022		Total FY 2019 - 2022	
Category	Description	Programmed	Authorized	Programmed	Authorized	Programmed	Authorized	Programmed	Authorized	Programmed	Authorized
1	Preventive Maintenance & Rehabilitation	\$20,540,000	\$20,540,000	\$21,270,000	\$21,270,000	\$22,000,000	\$22,000,000	\$22,780,000	\$22,780,000	\$86,590,000	\$86,590,000
2M or 2U	Urban Area (Non- TMA) Corridor Projects	\$43,110,000	\$43,110,000	\$34,872,664	\$35,100,000	\$36,980,000	\$36,980,000	\$36,560,000	\$36,560,000	\$151,522,664	\$151,750,000
3	Non-Traditionally Funded Transportation Project (Includes Prop 12v1, Prop 12v2, Prop 14, Lcl funds)	\$1,706,932	\$1,706,932	\$149,307	\$149,307	\$3,673,578	\$3,673,578	\$1,194,630	\$1,194,630	\$6,724,447	\$6,724,447
4	Statewide Connectivity Corridor Projects	\$126,116,604	\$126,120,000	\$12,274,620	\$12,274,620	\$0	\$0	\$0	\$O	\$138,391,224	\$138,394,620
5	CMAQ	\$10,072,819	\$10,980,000	\$10,666,933	\$11,240,000	\$11,389,889	\$11,390,000	\$11,446,537	\$11,540,000	\$43,576,178	\$45,150,000
5 Flex	Map21 Flex	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$O	\$0	\$0
6	Structures	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Metro Mobility & Rehab	\$19,080,000	\$19,080,000	\$19,900,000	\$19,900,000	\$20,150,000	\$20,150,000	\$20,420,000	\$20,430,000	\$79,550,000	\$79,560,000
8	Safety	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Transportation Enhancements	\$2,465,500	\$2,465,500	\$0	\$0	\$0	\$0	\$0	\$0	\$2,465,500	\$2,465,500
9 Flex	ТАР	\$1,510,485	\$2,063,306	\$823,523	\$1,400,000	\$0	\$1,400,000	\$0	\$1,400,000	\$2,334,008	\$6,263,306
10	Supplemental Transportation Projects (Includes:Earmark, GR, CBI, KTXB)	\$12,655,874	\$12,665,874	\$0	\$0	\$0	\$0	\$0	\$0	\$12,655,874	\$12,665,874
11	District Discretionary	\$10,000,000	\$13,560,000	\$3,400,000	\$3,560,000	\$3,288,920	\$3,560,000	\$3,560,000	\$3,560,000	\$20,248,920	\$24,240,000
12	Strategic Priority	\$63,930,000	\$63,930,000	\$0	\$0	\$0	\$0	\$0	\$0	\$63,930,000	\$63,930,000
120	Strategic Priority RECON (CMAQ)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
125	Strategic Priority RECON (STP)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SBPE	Strategy Budget PE	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$O	\$0	\$0
SB 102	Strategy 102 Budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total	\$311,188,214	\$316,221,612	\$103,357,047	\$104,893,927	\$97,482,387	\$99,153,578	\$95,961,167	\$97,464,630	\$607,988,815	\$617,733,747

Funding Participation Source

Source	FY 2019	FY 2020	FY 2021	FY 2022	Total
Federal	\$247,586,052	\$82,566,192	\$87,130,831	\$87,921,230	\$505,204,305
State	\$55,870,200	\$16,205,268	\$4,400,000	\$4,556,000	\$81,031,468
Local Match	\$6,025,030	\$4,436,280	\$2,277,978	\$2,289,307	\$15,028,595
CAT 3 - Local/State Contributions	\$1,706,932	\$149,307	\$3,673,578	\$1,194,630	\$6,724,447
Total	\$311,188,214	\$103,357,047	\$97,482,387	\$95,961,167	\$607,988,815



EL PASO MPO - New Mexico District 1 & 2 2018- 2021 NM State Transportation Improvement Program Destino 2019-2022 TIP

Funding by Category

Monday, March 5, 2018

	FY 2019		FY 2020		FY 2021		Total FY 2018 - 2021	
Description	Programmed	Authorized	Programmed	Authorized	Programmed	Authorized	Programmed	Authorized
CAQ (CMAQ Mandatory)	\$1,444,165	\$1,444,165	\$0	\$0	\$0	\$0	\$1,444,165	\$1,444,165
Dona Ana County	\$11,154	\$11,154	\$0	\$0	\$0	\$0	\$11,154	\$11,154
HPP (High Priority Projects)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
NHPP (National Highway Performance Program)	\$0	\$0	\$0	\$0	\$2,800,000	\$2,800,000	\$2,800,000	\$2,800,000
NHPP (National Highway Performance Program)-Freight	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
NM State Funds	\$980,000	\$980,000	\$0	\$0	\$2,700,000	\$2,700,000	\$3,680,000	\$3,680,000
STPF (Surface Transp Prog Flexible)	\$0	\$0	\$0	\$0	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000
STPL (Surface Transp Prog Large Urban >200K)	\$812,000	\$812,000	\$0	\$0	\$1,000,000	\$1,000,000	\$1,812,000	\$1,812,000
TAPL (Transp. Alternative Prog Large Urban >200K)	\$54,018	\$54,018	\$0	\$0	\$0	\$0	\$54,018	\$54,018
Total	\$3,301,337	\$3,301,337	\$0	\$0	\$9,500,000	\$9,500,000	\$12,801,337	\$12,801,337

Funding Participation Source

Source	FY 2019	FY 2020	FY 2021	Total
Federal Participation	\$2,804,364	\$0	\$8,116,800	\$10,921,164
State Participation	\$142,688	\$0	\$1,383,200	\$1,525,888
Local Participation	\$343,131	\$0	\$0	\$343,131
Local/State Contributions	\$11,154	\$0	\$0	\$11,154
Total	\$3,301,337	\$0	\$9,500,000	\$12,801,337



Transit Financial Summary

El Paso MPO - TXDOT District 24

FY 2019 - 2022 Transportation Improvement Program

All Figure	Il Figures in Year of Expenditure (YOE) Dollars									
	Transit Program		FY 2019		FY 2020		FY 2021			
	Transit Program	Federal	Match	Total	Federal	Match	Total	Federal	Match	Total
1	Sec. 5307 - Urbanized Formula >200K	\$13,501,850	\$3,375,463	\$16,877,313	\$13,475,267	\$3,368,818	\$16,844,085	\$13,610,012	\$3,402,502	\$17,012,514
2	Sec. 5307 - Urbanized Formula <200K	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	Sec. 5309 - Fixed Guideway Investment	\$1,440,000	\$360,000	\$1,800,000	\$0	\$0	\$0	\$0	\$0	\$0
4	Sec. 5337 - State of Good Repair	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	Sec. 5339 - Bus & Bus Facilities >200K	\$1,729,811	\$432,452	\$2,162,263	\$3,397,093	\$849,273	\$4,246,366	\$2,429,287	\$607,322	\$3,036,609
6	Sec. 5310 - Seniors & People w/Disabilities >200K	\$708,384	\$0	\$708,384	\$650,000	\$0	\$650,000	\$650,000	\$0	\$650,000
7	Sec. 5316 - JARC >200K	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	Sec. 5317 - New Freedom >200K	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Other FTA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Regionally Significant or Other (incl FHWA transfers)	\$2,400,000	\$600,000	\$3,000,000	\$3,440,000	\$860,000	\$4,300,000	\$3,647,548	\$4,585,466	\$8,233,014
	Total Funds		\$4,767,915	\$24,547,960	\$20,962,360	\$5,078,091	\$26,040,451	\$20,336,847	\$8,595,290	\$28,932,137
Transportation Development Credits										
	Requested			\$0			\$0			\$0
	Awarded			\$0			\$0			\$0

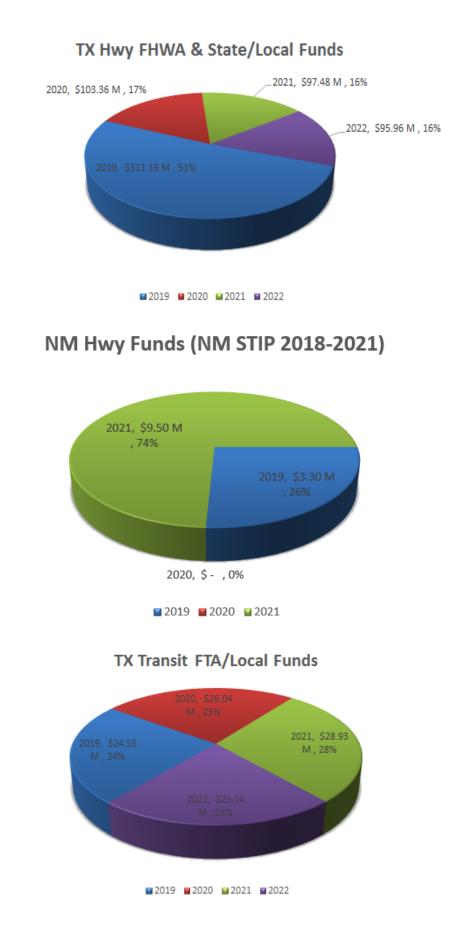
All Figures in Year of Expenditure (YOE) Dollars

	Transit Program		2022			TOTAL	
			State/Other	Total	Federal	State/Other	Total
1	Sec. 5307 - Urbanized Formula >200K	\$13,586,607	\$3,396,652	\$16,983,259	\$54,173,736	\$13,543,435	\$67,717,171
2	Sec. 5307 - Urbanized Formula <200K	\$0	\$0	\$0	\$0	\$0	\$0
3	Sec. 5309 - Fixed Guideway Investment	\$0	\$0	\$0	\$1,440,000	\$360,000	\$1,800,000
4	Sec. 5337 - State of Good Repair	\$0	\$0	\$0	\$0	\$0	\$0
5	Sec. 5339 - Bus & Bus Facilities >200K	\$2,475,120	\$618,780	\$3,093,900	\$10,031,311	\$2,507,828	\$12,539,138
6	Sec. 5310 - Seniors & People w/Disabilities >200K	\$650,000	\$0	\$650,000	\$2,658,384	\$0	\$2,658,384
7	Sec. 5316 - JARC >200K	\$0	\$0	\$0	\$0	\$0	\$0
8	Sec. 5317 - New Freedom >200K	\$0	\$0	\$0	\$0	\$0	\$0
9	Other FTA	\$0	\$0	\$0	\$0	\$0	\$0
10	Regionally Significant or Other (incl FHWA transfers)	\$973,322	\$1,437,961	\$2,411,283	\$10,460,870	\$7,483,427	\$17,944,297
Total Funds		\$17,685,049	\$5,453,393	\$23,138,442	\$78,764,301	\$23,894,690	\$102,658,990
	Transportation Development Credits						
	Requested			\$0			\$0
	Awarded			\$0			\$0



Analyses Section

The illustrations below show a summary of the Total Costs per Fiscal Year for Texas Highway FHWA/Local Funds, New Mexico Highway/Transit Funds, and Texas Transit FTA/Local Funds.

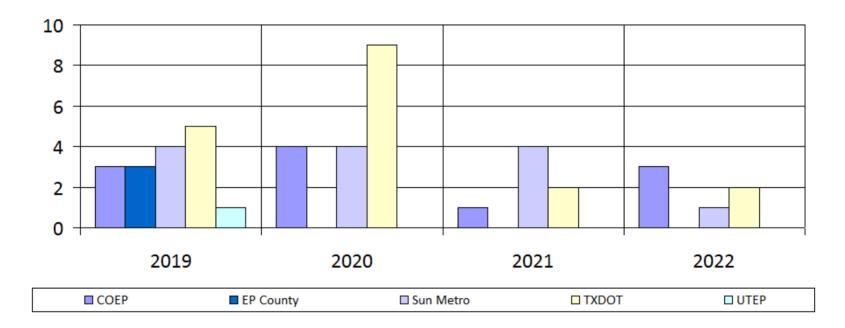


Destino 2019-2022 TIP

TX FHWA & State/Local Funds

Fiscal Year Total YOE TXDOT UTEP Total Projects County EP Sun Metro-COEP Transit 17 2019 \$311,188,214 3 3 4 5 1 17 2020 \$108,357,047 9 4 4 _ _ \$97,482,387 2021 7 1 4 2 \$96,591,167 6 2022 3 1 2 -_ \$607,988,815 47 11 3 13 18 1

TX FHWA & State/Local Funds



75

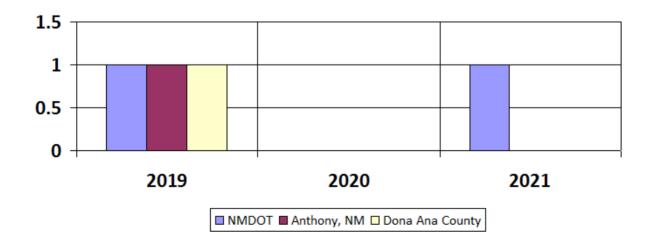
Monday, March 5, 2018

Destino 2019-2022 TIP

NM Hwy Funds

1	Fiscal Year	Total YOE	Total Projects	NMDOT	Anthony, NM	Dona Ana County
	2019	\$3,301,337	3	1	1	1
	2020	\$0				
	2021	\$9,500,000	1	1		
		\$12,801,337	4	2	1	1

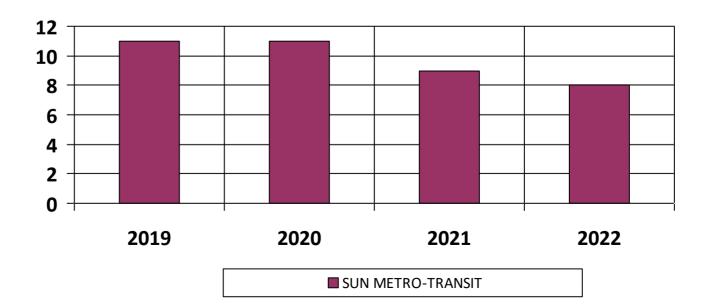
NM Hwy Funds (NM STIP 2018-2021)



Destino 2019-2022 TIP

TX FTA & Local Funds					Monday, March 5, 2018
	Fiscal Year	Total YOE	Total Projects	Sun Metro- Transit	
	2019	\$24,547,960	17	11	
	2020	\$26,040,451	16	11	
	2021	\$28,932,137	14	9	
	2022	\$23,138,442	10	8	
		\$10 2, 658,990	57	39	

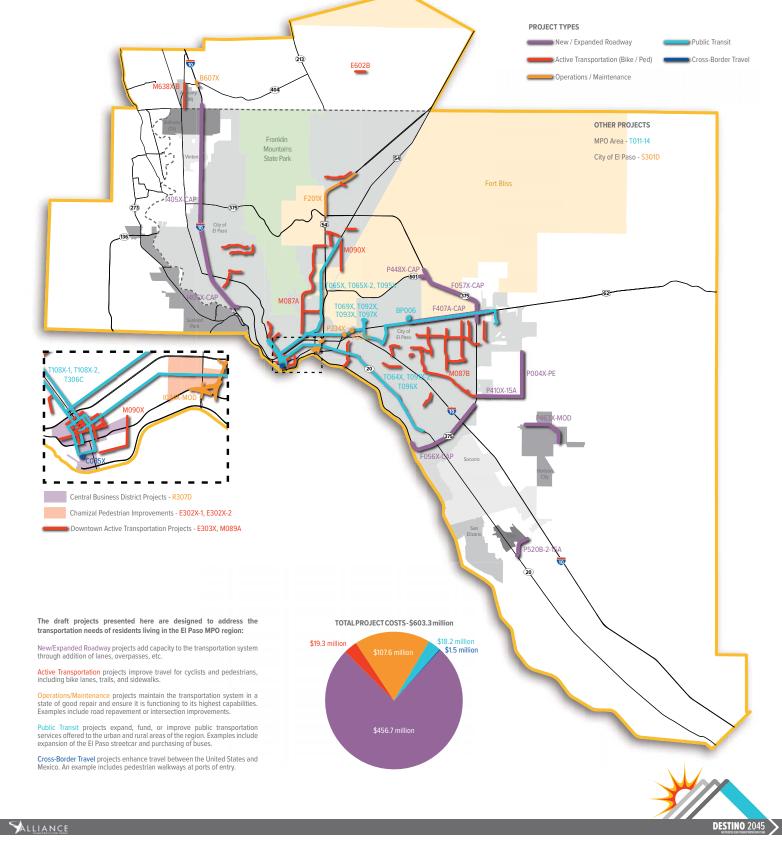
TX FTA & Local Funds



⁴Map Section

⁴ *Map may not contain all projects in this document, only map-able projects will be illustrated.

DRAFT PROGRAM OF TIP PROJECTS



MPO Self-Certification

MPO SELF-CERTIFICATION

In accordance with 23 CFR Part 450.336 and 450.220 of the Fixing America's Surface Transportation Act (FAST Act):, the Texas Department of Transportation, and the El Paso Metropolitan Planning Organization for the El Paso urbanized area(s) hereby certify that the transportation planning process is addressing the major issues in the metropolitan planning area and is being conducted in accordance with all applicable requirements of:

- 1. 23 U.S.C. 134, 49 U.S.C. 5303, and this subpart;
- In nonattainment and maintenance areas, sections 174 and 176(c) and (d) of the Clean Air Act, as amended (<u>42</u> U.S.C. <u>7504</u>, <u>7506(c)</u> and (d)) and <u>40 CFR part 93</u>
- 3. Title VI of the Civil Rights Act of 1964, as amended (<u>42 U.S.C. 2000d-1</u>) and <u>49 CFR part 21;</u>
- <u>49 U.S.C. 5332</u>, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity;
- Section 1101(b) of the FAST Act (<u>Pub. L. 114-357</u>) and <u>49 CFR part 26</u> regarding the involvement of disadvantaged business enterprises in DOT funded projects;
- 23 CFR part 230, regarding the implementation of an <u>equal employment opportunity program</u> on Federal and Federal-aid <u>highway</u> construction contracts;
- The provisions of the Americans with Disabilities Act of 1990 (<u>42 U.S.C. 12101</u>et seq.) and <u>49</u> CFR parts <u>27</u>, <u>37</u>, and <u>38</u>;
- The Older Americans Act, as amended (<u>42 U.S.C. 6101</u>), prohibiting discrimination on the basis of age in programs or activities receiving Federal financial assistance;
- 9. Section 324 of title 23 U.S.C. regarding the prohibition of discrimination based on gender; and
- 10. Section 504 of the Rehabilitation Act of 1973 (<u>29 U.S.C. 794</u>) and <u>49 CFR part 27</u> regarding discrimination against individuals with disabilities.

District

Texas Department of Transportation

Robert Bielek, P.E.

District Engineer

6/4/2018 Date

Metropolitar Planning Organization Policy Board Chairperson

Joe Moody

Chairperson

2018

rent I

District New Mexico Department of Transportation

Trent Doolittle, P.E.

District Engineer

5-30-18

Date

MPO SELF-CERTIFICATION FOR NON-ATTAINMENT AREAS CERTIFICATION STATEMENT

The following information provides a summary of policies, procedures, and planning activities of the El Paso Metropolitan Planning Organization (MPO) and its Transportation Policy Board set forth to meet the requirements of federal transportation and air quality planning regulations in carrying out the FY2014 and FY 2015 Unified Planning Work Program for Regional Transportation Planning and biennial development of the Transportation Improvement Program.

Metropolitan Planning: 23 U.S.C. 134, 49 U.S.C 5303, and implementing regulations;

The El Paso MPO's planning process is based on using state-of-the-art procedures, encompassing accurate data and methodologies, applied in a professional and unbiased manner. This planning process is carried out through an open approach that includes all local, state and federal transportation and air quality related agencies and organization, local elected officials and the public in the decision-making process. The continued focus of the MPO planning process is on the use of innovative techniques, as well as facilitating communication and partnerships as key mechanisms for improving mobility and air quality.

This process is carried out through the implementation of the Unified Planning Work Program through Performance Based Planning and the development of a financial and fiscally constrained long-range multi-modal transportation plan for the region; the biennial development of the Transportation Improvement Program; the development and adoption of the Metropolitan Transportation Plan every four years; the ongoing implementation of the region's Congestion Management Process focusing on the Travel Demand Management (TDM), Transportation Systems Management (TSM), and Intelligent Transportation System (ITS) technology; working closely with transportation providers throughout the region to conduct major investment and corridor feasibility studies which serve to evaluate, refine, and select transportation options for implementation; and ensuring that policies, programs, and projects when implemented will result in improved air quality for the region through the air quality conformity process.

Statewide Planning: U.S.C. Title 23, Sec. 135, U.S.C. Title 49, Ch. 53, Secs 5307-5311 and 5323(l); and 23 CFR Part 450.220

El Paso MPO works closely with TXDOT-El Paso District Office, the TXDOT Transportation Planning and Programming Division, and the Texas Transportation Commission to support the planning, funding, and implementation of transportation improvements. Whenever called upon, planning assistance is provided to assist TXDOT in meeting Statewide Planning requirements. The MPO and the State share financial information to carry out the financial constraint requirements of the planning process.

Clean Air Act: Air Pollution Prevention and Control: In non-attainment and maintenance area, section 174 and 176 © and (d) of the Clean Air Act, as amended (42, U.S.C. 7504, 7506 (c) and (d)) and 40 CFR part 93;

It is the policy of the El Paso MPO and its Transportation Policy Board that the continuing, cooperative, and comprehensive transportation planning process carried out by the MPO shall be done in coordination with the transportation-air quality planning process carried out by the State of Texas. Furthermore, it is the policy of the El Paso MPO and its Transportation Policy Board to not adopt a Metropolitan Transportation Plan or a Transportation Improvement Program until each plan or program has been demonstrated to be in conformity with the State Implementation Plan for Air Quality, including the air quality conformity requirements as set forth in the Clean Air Act Amendments of 1990. Resources are allocated biennially as part of the Unified Planning Work Program to ensure the coordination of the El Paso MPO transportation and air quality planning activities, and support determination of the air quality conformity process of the Metropolitan Transportation Improvement Program. The El Paso MPO is an active partner with state and federal agencies as a member of the Air Quality Conformity Consultation Process.

Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d-1) and 49 CRF part 21; The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the bases of age in programs or activities receiving Federal financial assistance; and Section 324 of title 23 U.S.C. regarding the prohibition of discrimination based on gender;

The El Paso MPO is committed throughout the development of its plans and programs to ensure that no person on the grounds of age, gender, race color or national origin is excluded from participation in, denied the benefits of, or subjected to discrimination under any program receiving federal financial assistance. No plans, programs or policies developed or implemented by the El Paso MPO will have a disproportionately high adverse human health or environmental effect on minority and low-income populations. The El Paso MPO plans continue to work on improving the accessibility of employment to the identified protected populations. Further, many of the current MPO public meetings are held in minority and low-income communities in the region and are located near accessible public transit facilities. Funding is allocated as part of the Unified Planning Work Program for a Title VI Plan to maintain an analytical approach that produces projects adequately consider effects on low-income and minority segments of the population.

Disadvantaged Business Enterprises (DBE) in planning projects: 49 U.S.C. 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex or age in employment business opportunity; and Section 1101 (b) of the SAFETEA-LU (Pub. L. 109-59) and 49 CFR part 26 regarding the involvement of disadvantaged business enterprises in USDOT funded projects; 23 CFR part 230, regarding the implementation of an equal employment opportunity program on Federal and Federal-aid highway construction contracts;

The El Paso MPO follows the City of El Paso's Disadvantaged Business Enterprise which in turn follows the TXDOT DBE Plan. Funding is allocated as part of the Unified Planning Work Program to maintain an analytical approach that produces procedures that meet Environmental Justice requirements by ensuring that federally-funded transportation projects adequately consider effects on low-income and minority segments of the population.

Americans with Disabilities Act of 1990: The provision of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) and 49 CFR parts 27, 37, and 38; and Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities.

It is the policy of the El Paso MPO to ensure that all agency programs and services are accessible to people with disabilities and are in compliance with the applicable regulations as a condition of receiving Federal financial assistance from the Department of Transportation. The El Paso MPO will make reasonable accommodations to a qualified individual with a disability who attends onsite meetings and meeting facilities meet this requirement. Every effort is made to ensure that meeting facilities off-site are ADA accessible. A notice is published in advance of all MPO public meetings that reasonable accommodations will be provided for meeting locations on and off-site with a phone number and contact persons listed to provide assistance if needed. In addition, the El Paso MPO staff is actively involved in various ADA-related initiatives which are being carried out as part of the Unified Planning Work Program including Elderly and Disabled Planning, the Job Access/Reverse Commute Program, and the review of ADA compliance documents developed by the region's transit and paratransit agencies, all of which focus on ensuring that transportation program and services across the region are accessible to those citizens with disabilities.

Restrictions on influencing certain federal activities: CFR 29, Part 20;

It is the policy of the El Paso MPO that no state or federal funds received by the agencies shall be paid to any person for the purpose of influencing the award of a federal contract, grant, or loan or the entering into of a cooperative agreement. NO state or federal funds received by the agencies shall be used directly or indirectly to influence any member of Congress, any membe3r of the State Legislature, or any local elected official to favor or oppose the adoption of any prosed legislation pending before any federal, state, or local legislative body.

Glossary

	A second With Dischilleting A st
ADA	Americans With Disabilities Act
ADT	Average Daily Traffic
ATS	Austin Transportation Study
BEEP	Buspool Express El Paso
BOTA	Bridge of the Americas
CAAA	Clean Air Act Amendments
CBD	Central Business District
CBI	Coordinated Border Infrastructure
CMAQ	Congestion, Mitigation, & Air Quality
CMP	Congestion Management Program
CO	Carbon Monoxide
DHDCC	Department Heads Development Coordinating Committee
TP&P	Transportation Planning and Programming Division, TXDOT Austin
EMPACT	Environmental Monitoring for Public Access and Community Tracking
EPA	U.S. Environmental Protection Agency
EPUTS	El Paso Urban Transportation Study
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FAST Act	Fixing America's Surface Transportation Act
GIS	Geographic Information System
HOV	High Occupancy Vehicle
HSMS	Highway Safety Management System
ISTEA	Intermodal Surface Transportation Efficiency Act
ITS	Intelligent Transportation System
IVHS	Intelligent Vehicle Highway System
MAP-21	Moving Ahead for Progress in the 21 st Century
MBE	Minority Business Enterprise Program
MPO	Metropolitan Planning Organization: City of El Paso
MTD	Mass Transit Department (Sun Metro)
MTP	Metropolitan Transportation Plan
NAFTA	North American Free Trade Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHS	National Highway System
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NOx	Nitrogen Oxide
O-D	Origin-Destination
PAC	Policy Advisory Committee
PC	Personal Computer
PDP	Project Development Plan
PIP	Public Involvement Program
POE	Port-of-Entry
	ron or Linuy

PM10	Particulate Matter 10 Microns or Less
PMIO PMIS	
	Pavement Management Information System
RFP	Request For Proposal
ROW	Right of Way
RPC	Regional Planning Commission
RPO	Regional Planning Organization
RTC	Regional Transportation Commission
	USafe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users
SAM	Statewide Analysis Model
SCC	Subdivision Coordinating Committee
SIP	State Implementation Plan
SOV	Single Occupancy Vehicle
S.T.E.P.	Statewide Transportation Enhancement Program
STIP	Statewide Transportation Improvement Program
STP-MM	Surface Transportation Program – Metro-Mobility
TAP	Transportation Alternatives Program
TAZ	Transportation Analysis Zone
TCSP	Transportation, Community and System Preservation
TIF	Tax Increment Financing
T&T	Traffic and Transportation Department
TCM	Transportation Control Measure
TEA-21	Transportation Equity Act for the 21 st Century
TIP	Transportation Improvement Program
TMA	Transportation Management Area
TCEQ	Texas Commission on Environmental Quality
TPB	Transportation Policy Board
TPC	Transportation Planning Coordinator
TRZ	Transportation Reinvestment Zone
TSC	Transportation Steering Committee
TSM	Transportation System Management
TTC	Texas Transportation Commission
TTI	Texas Transportation Institute
TXDOT	Texas Department of Transportation
TWG	Technical Work Group
UPWP	Unified Planning Work Program
USP	Urban Street Program
UTA	University of Texas at Arlington
UTEP	University of Texas at El Paso
UTP	Unified Transportation Program
VOC	Volatile Organic Compound
VMT	Vehicles Miles Traveled
VRF	Vehicle Registration Fee
WtW	Welfare to Work
YOE	Year of Expenditure
2008 CMP	2008 Comprehensive Mobility Plan
2008 CIVII 2013 EPC CN	· ·
2013 LIC C	

Appendix A CMAQ Analyses

CMAQ ANALYSES

DESTINO 2019-2022 TIP

C035X 0924-06-539Paso Del Norte (PDN) POE Roundabout95	age Number
	5
	-
1087A 0924-06-542Bicycle Connectivity Infrastructure Improvements Phase I10	01
333X 0374-02-107Intersection Operational Improvements at Montana10Ave./Airport Rd./Mescalero Dr.	07
P410X-15A 0924-06-534 Pellicano Dr. Widening/Build 11	14
O65X 0924-06-537 Dyer RTS Operating Assistance YR1 - 2019 12	26
BP006 0924-06-538 Procurement of 3 Buses 13	33
M638X-B E1002214th Street Roadway Improvements14	40
F064X 0924-06-550Alameda RTS Operations Assistance YR1 - 201915	50
F108X-1 0924-06-552El Paso Streetcar System 1st Year Operations Assistance15	57
2020	
[MPO ID# CSJ/CN)PROJECT NAMEPa	age Number
M087B 0924-06-543 Bicycle Connectivity Infrastructure Improvements Phase II 16	64
T065X-2 0924-06-540 Dyer RTS Operating Assistance Year 2 - 2020 17	70
TO69X 0374-02-544Montana RTS Pedestrian Enhancements17	77
1093X 0924-06-541Montana RTS 1st Year Service Operating Assistance18	83
Operational Improvements at Montana Ave./Paisano Dr. 19	90
201X 0167-01-115 Bluetooth Detectors and Radar Vehicle Sensing Devices 19 (RVSDs) on US 54	97
C091X-2 0924-06-551 Alameda RTS Operations Assistance YR 2 - 2020 20	02
108X-2 0924-06-553El Paso Streetcar System 2 nd Year Operating Assistance20	09
2021	
	age Number
M090X 0924-06-577 Bicycle Infrastructure Citywide 21	16
C306C 0924-06-576El Paso Streetcar 3rd year Operating Assistance22	24
092X 0924-06-574Montana RTS 2nd year Operating Assistance23	31
C095X 0924-06-573Dyer RTS 3rd year Operating Assistance23	38
O96X 0924-06-572Alameda RTS 3rd year Operating Assistance24	45
2022	
	age Number
MPO ID# CSJ/CN) PROJECT NAME Pa	
	52
1089X 0924-06-570Downtown Bicycle Improvements Phase I25	59

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Paso Del Norte POE Roundabout

April 2016

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (ITI) was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct a one lane traffic roundabout at the intersection of S. El Paso St. and E. 6th Ave. just north of the Paso Del Norte port of entry.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Paso Del Norte POE Roundabout

The City of El Paso proposes to construct the Paso Del Norte (PDN) POE Roundabout at S. El Paso St. and E. 6th Ave. just north of the port of entry. The roundabout replaces an unsignalized intersection with one stop sign on westbound E. 6th Ave. The city will design and construct a roundabout to accommodate 1 lane and parameters as described in the FHWA NCHRP Report 672, to include but not limited to concrete and asphalt roadway intersection, signage, markings and striping. The project length is 0.14 miles

Data Sources

The City of El Paso provided several items containing project information and data for the analysis: project description and scope plus the design plans for the roundabout. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014a Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

To better understand the traffic improvements from roundabouts, the research team reviewed the Mississippi Department of Transportation State Study 213: *Performance Evaluation of Roundabouts for Traffic Delay and Crash Reductions in Oxford, MS* published in June 2011.

Analysis Methods

TTI staff used a modified version of the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 7.2 - *Traffic Operations*. The equation attempts to estimate the improvements in idling emission and speed changes as a result of operational improvements. For this particular project, the primary benefit is the changes in idling emissions. The modified equation is provided below in Strategy Equation.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- The analysis year used is 2019.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and dieselfueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31). These vehicle types appear to be the vast majority in the area at this port of entry.

- Running exhaust and evaporative emissions, break wear and tire wear emissions rates were calculated.
- Considering the project area and the type of emissions reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Idling speed in MOVES2014a is speed bin 1.
- The analysis period is from 6:00 a.m. to 6:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the roundabout can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The idling emissions reduced as a result of project were distributed across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff attempted to determine a valid delay reduction from the intersection improvement. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- In reviewing the data and information provided, the primary emissions benefit from this project is the reduction in delay from removal the existing stop sign on westbound 6th Ave. traffic from the gated parking lot on the west side of the intersection appears negligible. Northbound traffic on S. El Paso St. will actually see a speed reduction from a current 30 mph to 15 mph through the roundabout. This will increase safety, but the model may also show a slight increase in emissions, which are greater at slower speeds.
- Light-duty passenger vehicle and light-duty passenger truck projected AADT of 2,750 is estimated for E. 6th St. This figure is estimated based on 2012 TxDOT traffic counts east of the intersection and 2014 City of El Paso traffic counts at 4th Ave. and S. El Paso St. Future AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It also assumes two-thirds of traffic at the intersection is incoming westbound.
- Average delay reduction is assumed to be 20 seconds in peak hours and 5 seconds in offpeak hours.
- Facility length of 0.14 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 7.2, Traffic Operations (modified)

Daily Emission Reduction = $(I_P + I_{OP}) * EF_I$

Change in idling exhaust emissions from improved traffic flow during the peak and off-peak periods

Where

 $I_P = (N_{PH} * V_{H, P} * DR_P)/3600 \text{ seconds per hour}$ $I_{OP} = (N_{OPH} * V_{H, OP} * DR_{OP})/3600 \text{ seconds per hour}$

Reduction of idling in the peak and off-peak period

Final unit of measure: grams/day Source: Texas A&M Transportation Institute (modified from CARB and FHWA Southern Resource Center)

Variables:	DR _P :	Estimated delay reduction during peak period (seconds)
	DR _{OP} :	Estimated delay reduction during off- peak period (seconds)
	EF <i>i</i> :	Idling emission factor (grams/hour)
	I _P :	Peak hour reduction in idling emissions (vehicle-hours)
	I _{OP} :	Off-peak hour reduction in idling emissions (hours)
	N _{PH} :	Number of peak hours
	N _{OPH} :	Number of off-peak hours
	V <i>_{H, P}</i> :	Number of vehicles that pass through the intersection per hour during the peak period
	V _{<i>H</i>, <i>ор</i>:}	Number of vehicles that pass through the intersection per hour during the off-peak period

Analysis

Results

Daily Emission Reduction = $(I_P + I_{OP}) * EF_I$

Note: For presentation purposes, the individual emissions rates are not given in the results below.

Where

 $I_P = (6 * 150 * 20)/3600$ seconds per hour

 $I_{OP} = (6 * 100 * 5)/3600$ seconds per hour

$$(5 + 0.83) = 5.83$$

For CO:

 $5.83 * EF_{I} = 556.861 \text{ grams/day}$

Daily emission reduction is equal to 0.557 kg/day

For NOx:

 $5.83 * EF_{I} = 37.124 \text{ grams/day}$

Daily emission reduction is equal to 0.037 kg/day

For VOC:

 $5.83 * EF_{I} = 44.295 \text{ grams/day}$

Daily emission reduction is equal to 0.044 kg/day

For **PM-10**:

 $5.83 * EF_{I} = 23.861 \text{ grams/day}$

Daily emission reduction is equal to 0.024 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the roundabout are modest, but an emissions benefit in the El Paso region can be expected from this project.

Table 1. Estimated Emissions Benefits from Paso Del Norte POE Roundabout

Pollutant	Emissions Reduction (kg/day)
СО	0.557
NOx	0.037
VOC	0.044
PM_{10}	0.024

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Bicycle Connectivity Infrastructure Improvements Phase 1

April 2016

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (TTI) Arlington office was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct 10.7 miles of bike lane infrastructure improvements in the region.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Bicycle Connectivity Infrastructure Improvements - Phase 1

The Bicycle Connectivity Infrastructure Improvements – Phase 1 project will install 10.7 miles of bicycle in the El Paso region. These facilities will encourage an alternative form of transportation in the region. The infrastructure will be installed within City right-of-way and no property acquisition is anticipated.

The project will construct bicycle facilities citywide to include: buffered bike lanes, conventional bike lanes, bicycle boulevards, shared lane markings, and protected bicycle lanes. The project will include associated signage, wayfinding, striping, and intersection treatments.

The limits of the improvements are seven roadways: Alabama from Atlas to Arizona; Viscount from Montwood to Interstate Highway 10; Resler from Belvidere to Enid; High Ridge from Resler to Franklin Hills; Robinson from Oregon to Virginia; Fort from Alabama to Dyer; Los Angeles from Yandell to Oregon.

Data Sources

The City of El Paso provided several items containing project information and data for the analysis: project description and scope plus current average speed data for the affected roadways. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

T^{*}TI staff used 2009 American Community Survey data to compute a bicycle mode share for El Paso, along with a future growth rate for the mode in the region.

Analysis Methods

T^{*}TI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths.*

Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to bicycle mode, multiplied by the bike facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the bike lane.

The detailed equation is provided below in Strategy Equation.

The analysis year used is 2019. For planning purposes, the emissions benefit of a static program will decline over time. Without the increased use of the bike lanes over the project lifetime, any benefits accrued by the mode shift to bicycles may be negated by the increased emissions from potential higher traffic volumes in the corridor over time.

Assumptions in the MOVES2014 output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and dieselfueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Running exhaust and evaporative emissions and start emissions rates were calculated.
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Overall average speed in the seven roadways is assumed to be 30 mph (Speed bin 7).
- The analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the bicycle lanes can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The vehicle-miles traveled (VMT) reduced as a result of the mode shift to bicycle were distributed proportionally across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to bicycle by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- Light-duty passenger vehicle and light-duty passenger truck AADT of 49,605 is estimated. This figure is based on 2012 and 2013AADT and ADT traffic counts from TxDOT and the City of El Paso. AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It assumes 86% of the traffic is passenger vehicles.
- The current percent bicycle mode share for the El Paso region is estimated to be 2.0% and can serve as an optimistic mode share increase for the new bike facilities.
- The 0.02 increase in mode share represents new cyclists (vehicle trips replaced).
- Bike lane facility length of 10.7 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * L * EF_B

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

- **EF***_B*: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)
- L: Length of facility (miles)

PMS: Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = AADT * PMS * L * EF_B

Note: For presentation purposes, the individual emissions rates are not given in the results below.

For CO:

 $49,605 * 0.02 * 10.7 * EF_B = 23,206.786 \text{ grams/day}$

Daily emission reduction is equal to 23.207 kg/day

For NOx:

 $49,650 * 0.02 * 10.7 * EF_B = 2,048.159 \text{ grams/day}$

Daily emission reduction is equal to 2.048 kg/day

For VOC:

 $49,605 * 0.02 * 10.7 * EF_B = 820.184 \text{ grams/day}$

Daily emission reduction is equal to 0.820 kg/day

For PM-10:

 $49,650 * 0.02 * 10.7 * EF_B = 595.501 \text{ grams/day}$

Daily emission reduction is equal to 0.596 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the new bike lanes are modest and are dependent on increased use of bicycles as a travel mode in the city and region, but an emissions benefit in the El Paso region can be expected from this project.

Table 1. Estimated Emissions	Benefits from	Bicycle Infrastructure	Improvements – Phase 1

Pollutant	Emissions Reduction (kg/day)
СО	23.207
NOx	2.048
VOC	0.820
PM_{10}	0.596

Emission Reduction Analysis for TxDOT Proposed CMAQ Project

Operational Improvements at Montana Avenue/Airport Road/Mescalero Drive Intersection

May 2016

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (ITI) was tasked by the Texas Department of Transportation (TxDOT) to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The state agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct operational improvements to the intersection of Montana Avenue /Airport Road /Mescalero Drive.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

Operational Improvements at Montana Ave./Airport Rd./Mescalero Dr. Intersection

The proposed improvements at this location consist of modifying the Airport Road approach to Montana Avenue by relocating it to the east and creating a modified T-intersection between westbound Montana Avenue and Airport Road. The improvements turn both approaches of Mescalero Drive into right-in/right-out intersections. The purpose of these improvements is to increase capacity at this intersection, reducing delays and providing continuous flow for eastbound Montana Avenue.

Data Sources

TxDOT provided several items containing project information and data for the analysis: a project description and scope plus the design plans for the intersection. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014a Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Analysis Methods

TTI staff used a modified version of the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 7.2 - *Traffic Operations*. The equation attempts to estimate the improvements in idling emission and speed changes as a result of operational improvements. For this particular project, focus was placed on the changes in idling emissions and delay reduction. The modified equation is provided below in Strategy Equation.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- The analysis year used is 2021. The project is requested for fiscal year 2019 with construction by 2020.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), motorcycles, light commercial trucks, single unit short and long-haul trucks, and combination short and long-haul trucks, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 11, 21, 31, 32, 52, 53, 61, 62).
- Running exhaust and evaporative emissions, brake wear, and tire wear emissions rates were calculated.

- Considering the project area and the type of emissions reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Idling speed in MOVES2014a is speed bin 1.
- The analysis period is from 6:00 a.m. to 6:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the intersection occurs throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The idling emissions reduced as a result of project were distributed across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff attempted to determine a valid delay reduction from the intersection improvement.

The following assumptions were made for the project:

- In reviewing the data and information provided, the primary emissions benefit from this project is the reduction in delay from operational improvements.
- Projected ADT of 38,750 is estimated for Montana Ave.; 7,440 for Airport Road; 2,070 for Mescalero Drive. This figure is derived from 2012 TxDOT traffic counts 2013 City of El Paso traffic counts. Future ADT is estimated based on the data plus an annual growth rate of 1.105%. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis: 31,000 for Montana Ave.; 5,952 for Airport Road; 1,656 for Mescalero Drive.
- 6 peak hours and 6 off-peak hours are assumed in the analysis period. Traffic volumes in the peak hours are assumed to be twice off-peak hours. Two-thirds of the estimated AADT is distributed in the 6 peak hours; one-third in the off peak hours.
- Average delay reduction is assumed to be 15 seconds in peak hours and 5 seconds in offpeak hours. Benefits will accrue for all approaches to the intersection.
- Total facility length of 0.7 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 7.2, Traffic Operations (modified)

Daily Emission Reduction = $(I_P + I_{OP}) * EF_I$

Change in idling exhaust emissions from improved traffic flow during the peak and off-peak periods Where

> $I_P = (N_{PH} * V_{H, P} * DR_P)/3600 \text{ seconds per hour}$ $I_{OP} = (N_{OPH} * V_{H, OP} * DR_{OP})/3600 \text{ seconds per hour}$

Reduction of idling in the peak and off-peak period

Final unit of measure: grams/day Source: Texas A&M Transportation Institute (modified from CARB and FHWA Southern Resource Center)

Variables:	DR	Estimated delay reduction during peak period (seconds)
	DR _{OP} :	Estimated delay reduction during off- peak period (seconds)
	EF <i>i</i>	Idling emission factor (grams/hour)
	I _P :	Peak hour reduction in idling emissions (vehicle-hours)
	I _{OP} :	Off-peak hour reduction in idling emissions (hours)
	\mathbf{N}_{PH} :	Number of peak hours
	N _{OPH} :	Number of off-peak hours
	V _{<i>н, Р</i>:}	Number of vehicles that pass through the intersection per hour during the peak period
	V _{<i>н</i>, <i>ор</i>:}	Number of vehicles that pass through the intersection per hour during the off-peak period

Analysis

Daily Emission Reduction = $(I_P + I_{OP}) * EF_I$

Note: For presentation purposes, the individual emissions rates are not given in the results below.

As stated in the *Variables* section above, the numbers presented below represent the delay reduction in seconds during peak and off-peak hours. These numbers were calculated by distributing the projected AADT for each roadway, assuming 80% of the total occurs in the 12 hour analysis period and distributing it though the 12 hours (6 peak, 6 off-peak). For example, as shown on page 3, future 2021 AADT for Montana Ave is 38,750. Thus, 38,750*0.80=31,000 vehicles

Since no traffic simulation model exists for this intersection, researchers made the assumption using professional experience that approximately 2/3 of the 31,000 vehicles will be circulating during the peak periods. For example, on Montana Avenue, 31,000 * (2/3) = 20,666 distributed through the 6 hours to get the numbers of vehicles per hour.

 $V_{H,P} = 20,666/6 = 3,444$ vehicles-hour $V_{H,OP} = 10,333/6 = 1,722$ vehicles-hour

The two variables are then summed for all three roadways: 4,289 during peak hours, 2,144 for off-peak.

Where

 $I_P = (6 * 4,289 * 15)/3600$ seconds per hour $I_{OP} = (6 * 2,144 * 5)/3600$ seconds per hour

(107.23 + 17.87) = 125.10

For CO:

 $125.10 * EF_{I} = 10,772.455 \text{ grams/day}$

Daily emission reduction is equal to 10.772 kg/day

For NOx:

 $125.10 * EF_{I} = 2,766.261 \text{ grams/day}$

Daily emission reduction is equal to 2.766 kg/day

For VOC:

 $125.10 * EF_{I} = 1003.273 \text{ grams/day}$

Daily emission reduction is equal to 1.003 kg/day

For **PM-10**:

 $125.10 * EF_{I} = 737.748 \text{ grams/day}$

Daily emission reduction is equal to 0.738 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. An emissions benefit in the El Paso region can be expected from this project.

Pollutant	Emissions Reduction (kg/day)
СО	10.772
NOx	2.766
VOC	1.003
PM ₁₀	0.738

Table 1. Estimated Emissions Benefits from Operational Improvements at
Montana Ave/Airport Rd./Mescalero Dr. Intersection

Emission Reduction Analysis for County of El Paso Proposed CMAQ Project

Pellicano Drive Widening Final Report

June 2016

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by the County of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The County is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct 3.0 miles of traffic operational improvements including lane reconfigurations, traffic signalization, right turn lanes, bike lanes and sidewalk infrastructure on Pellicano Drive in the East El Paso area.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Pellicano Drive Operational Improvements

The County of El Paso is proposing to construct traffic operational improvements in both directions of a 3-mile segment of Pellicano Drive between Loop 375 and Berryville St. on the Far Eastside of El Paso region. The facilities will enhance transportation options in an area of new and future residential developments. They will also connect with future bicycle facilities in the area.

The project will construct modifications to the current lane configuration, signalization improvements, right turn lanes, and 5-foot bicycle lanes and sidewalk facilities to include conventional bike lanes and shared lane markings. The project will include associated signage, wayfinding, striping, and intersection treatments. Estimated completion date is 2020.

Data Sources

The County of El Paso provided several items containing project information and data for the analysis: project description and scope plus the estimated current average speed data for the affected roadway. The agency also provided the November 2011 *West Texas Estates Traffic Impact Analysis* conducted by Conde, Inc. for a residential development in the project area. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

TTI staff used 2009 American Community Survey data to compute a bicycle mode share for El Paso, along with a future growth rate for the mode in the region.

Analysis Methods

In reviewing the proposed improvements to Pellicano Drive, it appears the more significant emissions reductions will come from the new bike lanes and pedestrian facilities. The reductions in VMT from use of the bike lanes and/or walking are a direct benefit in the analysis period.

TTI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths.*

Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to bicycle mode, multiplied by the bike facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the bike lane.

Secondary emissions benefit can accrue from the traffic operational improvements proposed within the roadway. Current average speed along the roadway is good (40 mph) and, even with the projected development in the area, the proposed right turn lanes, signalization, and design improvements should maintain the flow of traffic. To capture these benefits, TTI staff used a modified version of the analysis method outlined in the August 2008 version of the MOSERs Guide. TTI staff based the analysis on the MOSERs Guide equation 7.2 - *Traffic Operations*. The equation is below:

$(\mathbf{EF}_{B, P} - \mathbf{EF}_{A, P}) * \mathbf{VMT}_{PH}$

Stated in words, the equation measures the change in running exhaust emissions from improved traffic flow during the peak period multiplied by the vehicle miles traveled affected by the strategy in the peak period.

The detailed equations are provided below in Strategy Equation.

The analysis year used is 2020. For planning purposes, the emissions benefit of a static program will decline over time. Without the increased use of the bike lanes over the project lifetime, any benefits accrued by the mode shift to bicycles may be negated by the increased emissions from potential higher traffic volumes in the corridor over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for CO, VOC, NOx, and PM-10.
- For the bike lanes, light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- For the traffic operations improvements, light-duty passenger vehicles and light-duty passenger trucks (SUVs), motorcycles, light commercial trucks, single unit short and long-haul trucks, and combination short and long-haul trucks, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 11, 21, 31, 32, 52, 53, 61, 62).
- Running exhaust and evaporative emissions, brake wear and tire wear emissions rates were calculated.
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- An average speed improvement from 40 mph to 42 mph is assumed (Speed bin 9 to bin 10) as a result of implementation.
- For the bike lanes, the analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the bicycle lanes can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime hours mode shift.
- For traffic operations improvements, the analysis period is AM peak hours of 6:00-9:00 a.m. and PM peak hours of 4:00-7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.

- The vehicle-miles traveled (VMT) reduced as a result of the mode shift to bicycle was distributed proportionally across the 12 hours and by passenger vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.
- The emissions reduced as a result of operations improvements were distributed across the 6 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equations. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to bicycle by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- For the bike lanes, light-duty passenger vehicle and light-duty passenger truck 2020 AADT of 7,654 is estimated for the 12-hour analysis period. This figure is based on the Conde, Inc. traffic impact analysis and the 2012 and 2013 AADT and ADT traffic counts from TxDOT and the City of El Paso along and around the Pellicano Drive project area. AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. Researchers then assume 80% of the projected average daily traffic along the roadway occurs in the 12-hour daytime period under analysis. It also assumes 86% of the traffic is passenger vehicles.
- The current percent bicycle mode share for the El Paso region is estimated to be 2.0% and can serve as an optimistic mode share increase for the new bike facilities.
- The 0.02 increase in mode share represents new cyclists (vehicle trips replaced).
- Total project length of 3.0 miles is computed.
- For the operations improvements, an estimated 2020 ADT in the peak period of 5,910 for the roadway segment. This figure is estimated based on Conde, Inc. traffic impact analysis.
- VMT of 2.0 miles per vehicle as most vehicles will not travel the entire 3.0-mile roadway section.
- The total VMT of 11,820 was distributed across the peak hours being analyzed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equations

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * L * EF_B

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

- **EF***_B*: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)
- **L:** Length of facility (miles)
- **PMS:** Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = AADT * PMS * L * EF_B

Note: For presentation purposes, the individual emissions rates generated for the speed, hour, and each pollutant (\mathbf{EF}_B) are not shown in the equations below.

For CO:

 $7,654 * 0.02 * 3.0 * EF_B = 9,223.215 \text{ grams/day}$

Daily emission reduction is equal to 9.223 kg/day

For NOx:

 $7,654 * 0.02 * 3.0 * EF_B = 910.228 \text{ grams/day}$

Daily emission reduction is equal to 0.910 kg/day

For VOC:

 $7,654 * 0.02 * 3.0 * EF_B = 292.953 \text{ grams/day}$

Daily emission reduction is equal to 0.293 kg/day

For **PM-10**:

 $7,654 * 0.02 * 3.0 * EF_B = 197.625 \text{ grams/day}$

Daily emission reduction is equal to 0.198 kg/day

Equation 7.2, Traffic Operations (Modified)

Daily Emission Reduction = $(EF_{B, P} - EF_{A, P}) * VMT_{PH}$

Change in running exhaust emissions from improved traffic flow during the peak period

Where

 $VMT_{PH} = N_{PH} * V_{H, P} * L$

Vehicle miles traveled affected by the strategy in the peak period

Final unit of measure: grams/day Source: Texas Transportation Institute (modified from CARB and FHWA Southern Resource Center)

Variables:

EF <i>_A, p</i> :	Speed-based running exhaust emission factor during the peak period after implementation (grams/mile)
EF _{<i>B</i>, <i>P</i>:}	Speed-based running exhaust emission factor during the peak period before implementation (grams/mile)
L:	Length of affected roadway (miles)
N _{PH} :	Number of peak hours
V _{<i>H</i>, <i>р</i>:}	Number of vehicles that pass through the roadway section per hour during the peak period
VMT PH:	Vehicle miles-traveled during peak period

Results

Due to the extensiveness of the data and to help presentation of results, the individual emission rates per distance $(\mathbf{EF}_{B, P}, \mathbf{EF}_{A, P})$ per vehicle type per pollutant computed are not presented.

 $VMT_{PH} = 6 * 985 * 2 = 11,820$

 $(EF_{B, P} - EF_{A, P}) * 11,820$

Change in running exhaust emissions from improved traffic flow during the peak period

For CO:

Daily emission reduction is equal to 2909.266 grams/day

Daily emission reduction is equal to = 2.909 kg/day

For NOx:

Daily emission reduction is equal to 170.110 grams/day

Daily emission reduction is equal to = 0.170 kg/day

For VOC:

Daily emission reduction is equal to 53.047 grams/day

Daily emission reduction is equal to = 0.053 kg/day

For **PM-10**:

Daily emission reduction is equal to 548.498 grams/day

Daily emission reduction is equal to = 0.548 kg/day

Summary of Results

The individual and overall emissions analysis results for the project are shown in Tables 1-3. The estimated emissions benefits from the new bike lanes and operational improvements are modest and are dependent on increased use of bicycles as a travel mode in the city and region, but an emissions benefit in the El Paso region can be expected from this project.

Pollutant	Emissions Reduction (kg/day)
СО	9.223
NOx	0.910
VOC	0.293
PM_{10}	0.198

Table 1. Estimated Emissions Benefits from Pellicano DriveBicycle and Pedestrian Improvements

Table 2. Estimated Emissions Benefits from Pellicano Drive
Traffic Operations Improvements

Pollutant	Emissions Reduction (kg/day)
СО	2.909
NOx	0.170
VOC	0.053
PM_{10}	0.548

Table 3. Total Estimated Emissions Benefits from Pellicano Drive Widening

Pollutant	Emissions Reduction (kg/day)
СО	12.132
NOx	1.080
VOC	0.346
PM_{10}	0.746

Strategy Equation

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B - C - D

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	ЕF <i>в</i> :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)

F _{<i>T</i>} , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
N _{TR} :	New transit ridership
TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
TL _W :	Average auto trip length (miles)
VMT BUS:	VMT by transit vehicle
VMT _{<i>r</i>} :	Reduction in daily automobile VMT
VT BUS:	Daily vehicle trips by transit vehicle
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (3400 * 2) * 0.50 = 3,400 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 3,400 * 12.0 = 40,824$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Dyer RTS operational assistance project.

Table 1. Dyer RTS Operational Assistance – Phase 2 Emission Reductions

Pollutant	Emissions Reduction (kg/day)
СО	109.653
NOx	9.118
VOC	6.931
PM_{10}	2.166

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Dyer RTS Operations Assistance Phase 1

April 2016 (Updated April 2018)

Prepared for



Bу



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is operational assistance for the first phase of the Rapid Transit Service, BRIO, in the Dyer corridor in northeast El Paso region.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

Dyer RTS Operations Assistance - Phase 1

Sun Metro transit agency is proposing operational assistance for the future 12-mile BRIO line in the Dyer corridor in northeast El Paso. The RTS line begins at the Downtown Transfer Center and ends at the future Northeast Transfer Center. Eight buses will operate along the route with 22 stations.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2019. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is implemented after the RTS is initiated; therefore no transit vehicle emissions are included in the analysis.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access.
- Average speed on IH-10 during operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 3,400 was assumed.
- APTA ridership survey reports show 55% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,550 per day.
- The analysis assumes 50% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 25% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However this new service actively seeks SOV commuters.
- An average trip length of 12.0 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B - C - D

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	ЕF <i>в</i> :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)

F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
N _{TR} :	New transit ridership
TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	Average auto trip length (miles)
VMT BUS:	VMT by transit vehicle
VMT _R :	Reduction in daily automobile VMT
VT _{BUS} :	Daily vehicle trips by transit vehicle
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (3400 * 2) * 0.50 = 3,400 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 3,400 * 12.0 = 40,824$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Dyer RTS operational assistance project.

Table 1. Dyer RTS Operational Assistance – Phase 1 Emission Reductions

Pollutant	Emissions Reduction (kg/day)
СО	109.653
NOx	9.118
VOC	6.931
PM_{10}	2.166

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Three New Buses for West and Central El Paso

May 2016

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is the purchase of three new buses: two serving the new Montecillo development in west El Paso, one to provide circulator service around the Texas Tech Medical Center and the County hospital in central El Paso.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

Three New Buses for West and Central El Paso

Sun Metro transit agency is proposing the purchase of three (3) new buses to increase frequency to areas with anticipated increased economic development and opportunity.

Two new units will serve the Montecillo area. It is a retail-commercial and residential community on either side of Mesa Street with anticipated transit service needs for the northwest communities in the vicinity of the development.

The third new unit will also increase frequency to Texas Tech Medical Center and the County Hospital through the use of a circulator service in the area. Texas Tech University has plans to expand classrooms, medical and science labs, and may include a dormitory area for staff. The plan will greatly impact economic activity in a traditional low-income area.

Data Sources

Sun Metro provided an analysis of the proposed new routes to the TTI team: anticipated bus operating hours, VMT, and estimated average daily ridership.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.1 - *System/Service Expansion*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2019. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

• Output created for VOC, CO, NOx, and PM-10.

- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, and transit buses are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Transit vehicle (source type 42) emission rates were included as these will be new buses on new routes.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access, was used for the passenger and transit vehicles.
- Average transit vehicle speed is assumed 11 mph (speed bin 3) based on data received from Sun Metro with passenger vehicles assumed to be 30 mph (speed bin 7).
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-9:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across 15 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 2,395 was assumed for all three buses; 1,520 for the Montecillo buses, 875 for the Medical Center circulator.
- The analysis assumes 50% of these commute passengers are former single occupant vehicle (SOV) drivers. This should be considered very optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However, this new service seeks SOV commuters.
- An average passenger trip length of 3 miles for the Montecillo buses and 2 miles for the Medical Center Circulator was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.1 System/Service Expansion

Daily Emission Reduction (for each pollutant) = A + B - C - D

 $A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

 $B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$D = VMT_{BUS} * EF_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

$$VT_R = N_{TR} * F_{T, SOV}$$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)
	F _{<i>t</i>, sov} :	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
	N _{<i>TR</i>} :	New transit ridership
	TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TL _w :	Average auto trip length (miles)
	VMT _{BUS} :	VMT by transit vehicle

VMT_R :	Reduction in daily automobile VMT
VT _{BUS} :	Daily vehicle trips by transit vehicle
VT_R :	Reduction in number of daily automobile vehicle trips

Analysis

For presentation purposes, the MOVES calculation results and extensive results from the equation calculations are not presented in the results below.

For Montecillo buses:

 $VT_R = (1,520 * 2) * 0.50 = 1,520 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_{R} = 1,520 * 3 = 4,560$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

For Texas Tech Medical Center circulator bus:

 $VT_{R} = (875 * 2) * 0.50 = 875 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 875 * 2 = 1,750$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis results for the project are shown in the tables below. Table 1 shows the total emissions reduction for the CMAQ application. Tables 2 and 3 show the estimated benefits for the new buses on each route There are modest emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the 3 New Buses in west and central El Paso project.

Pollutant	Emissions Reduction (kg/day)
СО	38.354
NOx	0.137
VOC	1.561
PM_{10}	0.348

Table 1. Three New Buses Emission Reductions - Total

Pollutant	Emissions Reduction (kg/day)
СО	24.341
NOx	0.087
VOC	0.991
PM_{10}	0.221

Table 3. Three New Buses Emission Reductions – Texas Tech Medical Center Circulator

Pollutant	Emissions Reduction (kg/day)
СО	14.013
NOx	0.050
VOC	0.570
PM ₁₀	0.127

Emission Reduction Analysis for Proposed CMAQ Project

City of Anthony, New Mexico – North 4th Street Bike Lanes and Road Improvements

September 2015

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (ITTI) Arlington office was tasked by Wilson & Company, Inc. Architects and Engineers New Mexico office to perform a mobile source emissions analysis for a proposed project in the City of Anthony, New Mexico in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project is 1.69 miles in length and consists of reconstructing the existing 2-lane roadway to full depth, curb & gutter, and sidewalk. The project will also install bike lanes in short segments where the right-of-way is wide enough to accommodate them (less than 2,000 linear feet).

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

North 4th Street Bike Lanes in City of Anthony

The North 4th Street improvement project will reconstruct the existing 2-lane roadway to full depth, curb & gutter, and sidewalk. The project will also install bike lanes in short segments where the right-of-way is wide enough to accommodate them (less than 2,000 linear feet), along with pedestrian accommodations. The project lies within the City of Anthony, New Mexico, approximately 21 miles from downtown El Paso. The project limits are from State Line Drive north to State Highway 404 (O'Hara Road). The project is approximately 1.69 miles long and will provide improvements to 85% of the distance, 15% having already been completed.

Bicycle facilities will also be integrated into the roadway. Bicycle facilities are provided along the outsides of the roadway in short segments where the right-of-way is wide enough to accommodate them, approximately 22% (less than 2,000 linear-feet) of the project length.

Data Sources

Wilson & Company provided several items containing project information and data for the analysis: a map of the city with the project location, current traffic volume and classification data along the roadway, and current speed data for N. 4th St. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014 model. TTI staff created MOVES2014 output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

TTI staff used 2009 American Community Survey data to compute a bicycle mode share for El Paso, along with a future growth rate for the mode in the region. The traffic data provided by Wilson & Company also contained bicycle counts along the project roadway.

Analysis Methods

T^{*}TI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths*.

The detailed equation is provided below in Strategy Equation. Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to bicycle mode, multiplied by the bike facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the bike lane.

The analysis year used is 2015. For planning purposes, the emissions benefit of a static program will decline over time. Without the increased use of the bike lanes over the project lifetime, any benefits accrued by the mode shift to bicycles may be negated by the increased emissions from potential higher traffic volumes in the corridor due to the roadway improvements.

Assumptions in the MOVES2014 output for the project included:

- Output created for VOC, CO, NOx.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Running exhaust emissions (Process ID 1) rates were calculated.
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Average speed on N. 4th St. is assumed to be 22 mph (Speed bin 6).
- The analysis period is AM peak hours of 6:00-10:00 a.m. and PM peak hours of 3:00-7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx and VOC. Use of the bicycle lanes can occur throughout the day, but the greatest impact on emissions will occur with any peak hour mode shift.
- The vehicle-miles traveled (VMT) reduced as a result of the mode shift to bicycle were distributed proportionally across the eight peak hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region and the Wilson & Company classification data.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to bicycle by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- Light-duty passenger vehicle and light-duty passenger truck AADT of 1,960 is estimated. This figure is based on the northbound and southbound passenger vehicle components of the vehicle classification data provided by Wilson & Company to TTI.
- Current bicycle mode share on N. 4th St. is 0.1%. The current percent bicycle mode share for the El Paso region is calculated to be 2.8% and can serve as an optimistic mode share increase for the new bike facilities.
- The 0.027 increase in mode share represents new cyclists (vehicle trips replaced).
- Bike lane facility length of 0.38 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * $L * EF_B$

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

- **EF**_B: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)
- L: Length of facility (miles)
- **PMS:** Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = AADT * PMS * L * EF_B

Note: For presentation purposes, the individual emissions rates are not given in the results below. Two vehicle types, two fuel types, and eight hours analyzed produced 96 emission rates used in the analysis equation. The rates are provided in the attached appendix.

For VOC:

 $1,960 * 0.027 * 0.38 * EF_B = 6.204 \text{ grams/day}$

Daily emission reduction is equal to 0.007 kg/day

For CO:

 $1,960 * 0.027 * 0.38 * EF_B = 143.926 \text{ grams/day}$

Daily emission reduction is equal to 0.158 kg/day

For NOx:

 $1,960 * 0.027 * 0.38 * EF_B = 20.822 \text{ grams/day}$

Daily emission reduction is equal to 0.028 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the new bike lanes are very modest and are dependent on increased use of bicycles as a travel mode in the city and region, but an emissions benefit in the El Paso region can be expected from this project.

Table 1. Estimated Emissions Benefits from Bike Lanes on N. 4^{th} St.

Pollutant	Emissions Reduction (kg/day)
VOC	0.007
СО	0.158
NOx	0.023

						Source	Fuel	Road	Speed			Rate Per
Year	Month	Day	Hour	Pollutant	Process	Туре	Туре	Туре	Bin	Temp	Humidity	Distance
2015	1	5	7	2	1	21	1	5	6	41.2	48.0	3.8428
2015	1	5	8	2	1	21	1	5	6	41.6	47.4	3.8428
2015	1	5	9	2	1	21	1	5	6	43.9	43.6	3.8428
2015	1	5	10	2	1	21	1	5	6	46.7	39.9	3.8428
2015	1	5	16	2	1	21	1	5	6	59.9	23.1	3.8428
2015	1	5	17	2	1	21	1	5	6	59.8	23.2	3.8428
2015	1	5	18	2	1	21	1	5	6	58.3	24.6	3.8428
2015	1	5	19	2	1	21	1	5	6	56.5	26.6	3.8428
2015	1	5	7	2	1	21	2	5	6	41.2	48.0	4.4780
2015	1	5	8	2	1	21	2	5	6	41.6	47.4	4.4780
2015	1	5	9	2	1	21	2	5	6	43.9	43.6	4.4780
2015	1	5	10	2	1	21	2	5	6	46.7	39.9	4.4780
2015	1	5	16	2	1	21	2	5	6	59.9	23.1	4.4780
2015	1	5	17	2	1	21	2	5	6	59.8	23.2	4.4780
2015	1	5	18	2	1	21	2	5	6	58.3	24.6	4.4780
2015	1	5	19	2	1	21	2	5	6	56.5	26.6	4.4780
2015	1	5	7	2	1	31	1	5	6	41.2	48.0	11.6136
2015	1	5	8	2	1	31	1	5	6	41.6	47.4	11.6136
2015	1	5	9	2	1	31	1	5	6	43.9	43.6	11.6136
2015	1	5	10	2	1	31	1	5	6	46.7	39.9	11.6136
2015	1	5	16	2	1	31	1	5	6	59.9	23.1	11.6136
2015	1	5	17	2	1	31	1	5	6	59.8	23.2	11.6136
2015	1	5	18	2	1	31	1	5	6	58.3	24.6	11.6136
2015	1	5	19	2	1	31	1	5	6	56.5	26.6	11.6136

APPENDIX - MOVES2014 Analysis Emission Rates

2015	1	5	7	2	1	31	2	5	6	41.2	48.0	6.8159
2015	1	5	8	2	1	31	2	5	6	41.6	47.4	6.8159
2015	1	5	9	2	1	31	2	5	6	43.9	43.6	6.8159
2015	1	5	10	2	1	31	2	5	6	46.7	39.9	6.8159
2015	1	5	16	2	1	31	2	5	6	59.9	23.1	6.8159
2015	1	5	17	2	1	31	2	5	6	59.8	23.2	6.8159
2015	1	5	18	2	1	31	2	5	6	58.3	24.6	6.8159
2015	1	5	19	2	1	31	2	5	6	56.5	26.6	6.8159
2015	7	5	7	3	1	21	1	5	6	76.8	43.2	0.5014
2015	7	5	8	3	1	21	1	5	6	78.9	40.6	0.5128
2015	7	5	9	3	1	21	1	5	6	81.6	37.1	0.5206
2015	7	5	10	3	1	21	1	5	6	84.2	33.9	0.5295
2015	7	5	16	3	1	21	1	5	6	94.4	19.8	0.5915
2015	7	5	17	3	1	21	1	5	6	94.3	20.3	0.5887
2015	7	5	18	3	1	21	1	5	6	93.6	21.1	0.5846
2015	7	5	19	3	1	21	1	5	6	92.3	22.3	0.5779
2015	7	5	7	3	1	21	2	5	6	76.8	43.2	0.3970
2015	7	5	8	3	1	21	2	5	6	78.9	40.6	0.4058
2015	7	5	9	3	1	21	2	5	6	81.6	37.1	0.4116
2015	7	5	10	3	1	21	2	5	6	84.2	33.9	0.4182
2015	7	5	16	3	1	21	2	5	6	94.4	19.8	0.4592
2015	7	5	17	3	1	21	2	5	6	94.3	20.3	0.4577
2015	7	5	18	3	1	21	2	5	6	93.6	21.1	0.4549
2015	7	5	19	3	1	21	2	5	6	92.3	22.3	0.4503
2015	7	5	7	3	1	31	1	5	6	76.8	43.2	1.5446
2015	7	5	8	3	1	31	1	5	6	78.9	40.6	1.5747

2015	7	5	9	3	1	31	1	5	6	81.6	37.1	1.5956
2015	7	5	10	3	1	31	1	5	6	84.2	33.9	1.6197
2015	7	5	16	3	1	31	1	5	6	94.4	19.8	1.7954
2015	7	5	17	3	1	31	1	5	6	94.3	20.3	1.7873
2015	7	5	18	3	1	31	1	5	6	93.6	21.1	1.7757
2015	7	5	19	3	1	31	1	5	6	92.3	22.3	1.7568
2015	7	5	7	3	1	31	2	5	6	76.8	43.2	2.9268
2015	7	5	8	3	1	31	2	5	6	78.9	40.6	3.0085
2015	7	5	9	3	1	31	2	5	6	81.6	37.1	3.0617
2015	7	5	10	3	1	31	2	5	6	84.2	33.9	3.1223
2015	7	5	16	3	1	31	2	5	6	94.4	19.8	3.4752
2015	7	5	17	3	1	31	2	5	6	94.3	20.3	3.4629
2015	7	5	18	3	1	31	2	5	6	93.6	21.1	3.4389
2015	7	5	19	3	1	31	2	5	6	92.3	22.3	3.3981
2015	7	5	7	87	1	21	1	5	6	76.8	43.2	0.1175
2015	7	5	8	87	1	21	1	5	6	78.9	40.6	0.1188
2015	7	5	9	87	1	21	1	5	6	81.6	37.1	0.1196
2015	7	5	10	87	1	21	1	5	6	84.2	33.9	0.1205
2015	7	5	16	87	1	21	1	5	6	94.4	19.8	0.1243
2015	7	5	17	87	1	21	1	5	6	94.3	20.3	0.1242
2015	7	5	18	87	1	21	1	5	6	93.6	21.1	0.1240
2015	7	5	19	87	1	21	1	5	6	92.3	22.3	0.1235
2015	7	5	7	87	1	21	2	5	6	76.8	43.2	0.2152
2015	7	5	8	87	1	21	2	5	6	78.9	40.6	0.2175
2015	7	5	9	87	1	21	2	5	6	81.6	37.1	0.2188
2015	7	5	10	87	1	21	2	5	6	84.2	33.9	0.2203

2015	7	5	16	87	1	21	2	5	6	94.4	19.8	0.2265
2015	7	5	17	87	1	21	2	5	6	94.3	20.3	0.2265
2015	7	5	18	87	1	21	2	5	6	93.6	21.1	0.2260
2015	7	5	19	87	1	21	2	5	6	92.3	22.3	0.2252
2015	7	5	7	87	1	31	1	5	6	76.8	43.2	0.5436
2015	7	5	8	87	1	31	1	5	6	78.9	40.6	0.5484
2015	7	5	9	87	1	31	1	5	6	81.6	37.1	0.5513
2015	7	5	10	87	1	31	1	5	6	84.2	33.9	0.5546
2015	7	5	16	87	1	31	1	5	6	94.4	19.8	0.5682
2015	7	5	17	87	1	31	1	5	6	94.3	20.3	0.5680
2015	7	5	18	87	1	31	1	5	6	93.6	21.1	0.5671
2015	7	5	19	87	1	31	1	5	6	92.3	22.3	0.5653
2015	7	5	7	87	1	31	2	5	6	76.8	43.2	0.7223
2015	7	5	8	87	1	31	2	5	6	78.9	40.6	0.7295
2015	7	5	9	87	1	31	2	5	6	81.6	37.1	0.7339
2015	7	5	10	87	1	31	2	5	6	84.2	33.9	0.7388
2015	7	5	16	87	1	31	2	5	6	94.4	19.8	0.7590
2015	7	5	17	87	1	31	2	5	6	94.3	20.3	0.7588
2015	7	5	18	87	1	31	2	5	6	93.6	21.1	0.7573
2015	7	5	19	87	1	31	2	5	6	92.3	22.3	0.7547

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Alameda RTS Operations Assistance Phase 1

April 2016 (Updated April 2018)

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is operational assistance for the first phase of the Rapid Transit Service, BRIO, in the Alameda corridor in east El Paso region.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

Alameda RTS Operations Assistance - Phase 1

Sun Metro transit agency is proposing operational assistance for the future 14.9-mile BRIO line in the Alameda corridor in northeast El Paso. The RTS line begins at the Downtown Transfer Center and ends at the Mission Valley Transfer Center. Fourteen buses will operate along the route with 29 stations.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2019. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is implemented after the RTS is initiated; therefore no transit vehicle emissions are included in the analysis.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access.
- Average speed on IH-10 during operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 3,450 was assumed.
- APTA ridership survey reports show 55% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,588 per day.
- The analysis assumes 50% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 37.5% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However this new service actively seeks SOV commuters.
- An average trip length of 14.9 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B - C - D

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF <i>_B</i> :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)

F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
N _{TR} :	New transit ridership
TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	Average auto trip length (miles)
VMT BUS:	VMT by transit vehicle
VMT _R :	Reduction in daily automobile VMT
VT _{BUS} :	Daily vehicle trips by transit vehicle
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (3,450 * 2) * 0.50 = 3,450 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 3,450 * 14.9 = 51,405$ vehicle-miles/day Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Alameda RTS Phase 1 operational assistance project.

Table 1. Alameda RTS Operational Assistance - Phase 1 Emission Reductions

Pollutant	Emissions Reduction (kg/day)
СО	130.357
NOx	10.944
VOC	8.076
PM_{10}	2.722

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

El Paso Streetcar Operations Assistance Phase 1

April 2016

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is the El Paso Streetcar - Phase 1in the central region of the metropolitan area.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

El Paso Streetcar – Phase 1

The proposed El Paso Streetcar Project consists of a two-mile, double-tracked corridor, beginning in the area near the Downtown Shopping District and International Bridges, traveling north through downtown to the University of Texas at El Paso area, the Cincinnati Entertainment District and back.

The guideway would be positioned within existing traffic lanes; along the right lane, adjacent to the curb or parking lane. The streetcar stops would be located two to three blocks apart along the right edge of traffic. A maintenance facility would be constructed within the Downtown Transfer Center.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, projected ridership, the mileage, hours of operation, and operating costs for the route.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.1 - *System/Service Expansion*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2019. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The streetcar appears to be an electrified rail line; therefore no transit vehicle emissions are included in the analysis.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, primarily short distance, emissions on Road Type 5, urban unrestricted access.
- Average speed on surrounding roadways during operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 7:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 800 was assumed.
- The analysis assumes 50% of the passengers in the analysis year are using the streetcar for a local trip for which they would have used a vehicle. This should be considered optimistic. The APTA survey report showed 14.3% of transit passengers would drive alone as an alternative if no transit service was available. However, this new service actively seeks SOV drivers.
- An average trip length of 3.0 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.1 System/Service Expansion

Daily Emission Reduction (for each pollutant) = A + B - C - D

 $A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)

F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
N _{TR} :	New transit ridership
TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	Average auto trip length (miles)
VMT BUS:	VMT by transit vehicle
VMT _R :	Reduction in daily automobile VMT
VT _{BUS} :	Daily vehicle trips by transit vehicle
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (800 * 2) * 0.50 = 800 \text{ trips/day}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 800 * 3.0 = 2,400$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from Phase 1 of the El Paso Streetcar project.

Table 1. Estimated Emission R	Reductions for El l	Paso Streetcar – Phase 1
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Pollutant	Emissions Reduction (kg/day)
СО	12.339
NOx	0.977
VOC	0.792
PM_{10}	0.141

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Bicycle Connectivity Infrastructure Improvements Phase 2

April 2016

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (TTI) Arlington office was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct 5.38 miles of bike lane infrastructure improvements in the region.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Bicycle Connectivity Infrastructure Improvements - Phase 2

The Bicycle Connectivity Infrastructure Improvements – Phase 2 project will install 5.38 miles of bicycle facilities in the El Paso region. These facilities encourage an alternative form of transportation in the region. The infrastructure will be installed within City right-of-way and no property acquisition is anticipated.

The project will construct bicycle facilities citywide to include: buffered bike lanes, conventional bike lanes, bicycle boulevards, shared lane markings, and protected bicycle lanes. The project will include associated signage, wayfinding, striping, and intersection treatments.

The limits of the improvements are five roadways: Lomaland from Trawood to Pellicano; Pellicano from George Dieter to Lomaland; Trawood from Springwood to Yarbrough; Tierra Este from RC Poe to Pebble Hills; Pendale from Yermoland to North Loop.

Data Sources

The City of El Paso provided several items containing project information and data for the analysis: project description and scope plus current average speed data for the affected roadways. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

TTI staff used 2009 American Community Survey data to compute a bicycle mode share for El Paso, recent BikeTexas studies along with a future growth rate for the mode in the region.

Analysis Methods

T^{*}TI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths*.

Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to bicycle mode, multiplied by the bike facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the bike lane.

The detailed equation is provided below in Strategy Equation.

The analysis year used is 2020. For planning purposes, the emissions benefit of a static program will decline over time. Without the increased use of the bike lanes over the project lifetime, any benefits accrued by the mode shift to bicycles may be negated by the increased emissions from potential higher traffic volumes in the corridor over time.

Assumptions in the MOVES2014 output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and dieselfueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Running exhaust and evaporative emissions and start emissions rates were calculated.
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Overall average speed in the five roadways is assumed to be 30 mph (Speed bin 7).
- The analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the bicycle lanes can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The vehicle-miles traveled (VMT) reduced as a result of the mode shift to bicycle were distributed proportionally across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to bicycle by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- Total light-duty passenger vehicle and light-duty passenger truck AADT of 35,088 is estimated for all five roadways. This figure is based on 2012 and 2013AADT and ADT traffic counts from TxDOT and the City of El Paso. AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It assumes 86% of the traffic is passenger vehicles.
- The current percent bicycle mode share for the El Paso region is estimated to be 2.0% and can serve as an optimistic mode share increase for the new bike facilities.
- The 0.02 increase in mode share represents new cyclists (vehicle trips replaced).
- Bike lane facility length of 5.38 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * L * EF_B

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

- **EF***_B*: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)
- L: Length of facility (miles)

PMS: Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = AADT * PMS * L * EF_B

Note: For presentation purposes, the individual emissions rates are not given in the results below.

For CO:

 $35,088 * 0.02 * 5.38 * EF_B = 7662.547 \text{ grams/day}$

Daily emission reduction is equal to 7.663 kg/day

For NOx:

 $35,088 * 0.02 * 5.38 * EF_B = 648.762 \text{ grams/day}$

Daily emission reduction is equal to 0.649 kg/day

For VOC:

 $35,088 * 0.02 * 5.38 * EF_B = 252.473 \text{ grams/day}$

Daily emission reduction is equal to 0.252 kg/day

For PM-10:

 $35,088 * 0.02 * 5.38 * EF_B = 210.588 \text{ grams/day}$

Daily emission reduction is equal to 0.211 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the new bike lanes are modest and are dependent on increased use of bicycles as a travel mode in the city and region, but an emissions benefit in the El Paso region can be expected from this project.

Table 1. Estimated Emissions	Benefits from I	Bicycle Infrastructure	Improvements – Phase 2

Pollutant	Emissions Reduction (kg/day)
СО	7.663
NOx	0.649
VOC	0.252
PM_{10}	0.211

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Dyer RTS Operations Assistance Phase 2

April 2016 (Updated April 2018)

Prepared for



Bу



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is operational assistance for the second phase of the Rapid Transit Service, BRIO, in the Dyer corridor in northeast El Paso region.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Dyer RTS Operations Assistance - Phase 2

Sun Metro transit agency is proposing operational assistance for the future 12-mile BRIO line in the Dyer corridor in northeast El Paso. The RTS line begins at the Downtown Transfer Center and ends at the future Northeast Transfer Center. Eight buses will operate along the route with 22 stations.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2020. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is implemented after the RTS is initiated; therefore no transit vehicle emissions are included in the analysis.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access.
- Average speed on IH-10 during operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 3,450 was assumed.
- APTA ridership survey reports show 55% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,588 per day.
- The analysis assumes 35% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 26.25% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However this new service actively seeks SOV commuters.
- An average trip length of 14.9 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B - C - D

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	ЕF <i>в</i> :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)

F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)	
N _{TR} :	New transit ridership	
TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)	
TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)	
TL _W :	Average auto trip length (miles)	
VMT BUS:	VMT by transit vehicle	
VMT _R :	Reduction in daily automobile VMT	
VT _{BUS} :	Daily vehicle trips by transit vehicle	
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips	

Analysis

 $VT_R = (3,450 * 2) * 0.35 = 2,415 \text{ trips/day}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 2,415 * 12.0 = 28,980$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Dyer RTS operational assistance.

Table 1. Dyer RTS Operational Assistance – Phase 2 Emission Reductions

Pollutant	Emissions Reduction (kg/day)
СО	72.787
NOx	5.788
VOC	3.626
PM_{10}	1.555

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Montana Pedestrian Enhancements

April 2016

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (TTI) Arlington office was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct 1.7 miles of pedestrian infrastructure enhancements along a future bus rapid transit service.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Montana Pedestrian Enhancements

The project will provide for the design and construction of pedestrian enhancements along the future Montana rapid transit service (RTS) route to include the installation of sidewalks and landscaping. The project will enhance a total of 1.7 miles of the route from the Five Points Transfer Center at Piedras Street and Montana Avenue, east on Montana to Airway to Convair to Viscount to Hawkins to Montana, continuing east on Montana to the Far East Transfer Center at RC Poe & Edgemere.

Data Sources

The City of El Paso provided several items containing project information and data for the analysis: project description and scope plus current average speed data for the affected roadways. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Analysis Methods

TTI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths.*

Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to pedestrian mode, multiplied by the pedestrian facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the sidewalk.

The detailed equation is provided below in Strategy Equation.

The analysis year used is 2020. For planning purposes, the emissions benefit of a static program will decline over time. Without the increased pedestrian use of the facilities over the project lifetime, any benefits accrued by the mode shift to walking may be negated by the increased emissions from potential higher traffic volumes in the corridor over time.

Assumptions in the MOVES2014a output for the project included:

• Output created for VOC, CO, NOx, and PM-10.

- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and dieselfueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Running exhaust and evaporative emissions and start emissions rates were calculated.
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Average speed along Alameda is assumed to be 30 mph (Speed bin 7).
- The analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the sidewalks can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The vehicle-miles traveled (VMT) reduced as a result of the mode shift to pedestrian were distributed proportionally across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to pedestrian by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- Total light-duty passenger vehicle and light-duty passenger truck AADT of 161,680 is estimated for the Montana corridor. This figure is based on 2012 and 2013AADT and ADT traffic counts from TxDOT and the City of El Paso. Future AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It assumes 86% of that traffic is passenger vehicles.
- The current percent pedestrian commuter mode share for the El Paso region is estimated to be 2.0% and can serve as the mode share increase for the new pedestrian facilities.
- The 0.02 increase in mode share represents new pedestrians (VMT replaced).
- Pedestrian facility length of 1.7 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * $L * EF_B$

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle/pedestrian trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

- **EF***_B*: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)
- **L:** Length of facility (miles)

PMS: Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = $AADT * PMS * L * EF_B$

Note: For presentation purposes, the individual emissions rates are not given in the results below.

For CO:

 $161,680 * 0.02 * 1.7 * EF_B = 11,176.581 \text{ grams/day}$

Daily emission reduction is equal to 11.177 kg/day

For NOx:

 $161,680 * 0.02 * 1.7 * EF_B = 946.328 \text{ grams/day}$

Daily emission reduction is equal to 0.946 kg/day

For VOC:

 $161,680 * 0.02 * 1.7 * EF_B = 368.257 \text{ grams/day}$

Daily emission reduction is equal to 0.368 kg/day

For **PM-10**:

 $161,680 * 0.02 * 1.7 * EF_B = 307.164 \text{ grams/day}$

Daily emission reduction is equal to 0.307 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the new pedestrian facilities are modest and are dependent on increased use of walking as a travel mode in the city and region, but an emissions benefit in the El Paso region can be expected from this project.

Pollutant	Emissions Reduction (kg/day)
СО	11.177
NOx	0.946
VOC	0.368
PM_{10}	0.307

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Montana RTS Operations Assistance

April 2016

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is operations assistance for the first year of the future Rapid Transit Service, BRIO, in the Montana corridor in east El Paso region.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

Montana RTS Operations Assistance

Sun Metro transit agency is proposing operations assistance for the first year of the future 16.8-mile BRIO line in the Montana corridor in east El Paso region. The RTS line begins at the Five Points Terminal and ends at the future Far East Transfer Center. Twelve buses will operate along the route with 26 stations.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, the bus mileage, anticipated ridership, and hours of operation for the route.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.1 - *System/Service Expansion*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2019. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, and transit buses are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Transit vehicle (source type 42) emission rates were included as this will be a new service.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)

- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access, was used for the passenger vehicles. Road type 5, urban unrestricted access, was used for the transit vehicles.
- Average speed on IH-10 during operating hours (peak and off-peak) is assumed 30 mph.
- Average transit vehicle speed is assumed 20 mph (speed bin 5) based on data received from Sun Metro.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 3,300 was assumed.
- The analysis assumes 52% of these commute passengers are former single occupant vehicle (SOV) drivers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However this new service actively seeks SOV commuters.
- An average trip length of 12.6 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.1 System/Service Expansion

Daily Emission Reduction (for each pollutant) = A + B - C - D

$\mathbf{A} = \mathbf{V}\mathbf{T}_R * \mathbf{T}\mathbf{E}\mathbf{F}_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$\mathbf{C} = \mathbf{V}\mathbf{T}_{BUS} * \mathbf{T}\mathbf{E}\mathbf{F}_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)
	F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
	N _{TR} :	New transit ridership
	TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TL _w :	Average auto trip length (miles)
	VMT _{BUS} :	VMT by transit vehicle
	VMT _R :	Reduction in daily automobile VMT

VT BUS:	Daily vehicle trips by transit vehicle
VT <i>_{<i>R</i>}:</i>	Reduction in number of daily automobile vehicle trips

Analysis

For presentation purposes, the MOVES calculation results and extensive results from the equation calculations are not presented in the results below.

 $VT_R = (3,300 * 2) * 0.52 = 3,432 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 3,432 * 12.6 = 43,243$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Montana RTS operations assistance project.

Table 1. Montana RTS Operations Assistance Emission Reductions

Pollutant	Emissions Reduction (kg/day)
СО	100.325
NOx	2.929
VOC	5.553
PM_{10}	1.629

Emission Reduction Analysis for TxDOT Proposed CMAQ Project

Operational Improvements at Montana Avenue/Paisano Drive Intersection

May 2016

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (TTI) was tasked by the Texas Department of Transportation (TxDOT) to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The state agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct operational improvements to the intersection of Montana Avenue and Paisano Drive.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

Operational Improvements at Montana Avenue/Paisano Drive Intersection

The proposed improvements at the Montana Avenue and Paisano Drive intersection consist of modifying the signalized intersection between southbound Paisano Drive and eastbound Montana Avenue into a T-intersection between eastbound Montana Avenue and both directions of Paisano Drive. This improvement eliminates the existing weaving on eastbound Montana Avenue between Paisano Drive and Magruder Street, provides route continuity for US 62, increases eastbound and southbound capacity, and provides a crosswalk for Montana Avenue across Paisano Drive.

Data Sources

TxDOT provided several items containing project information and data for the analysis: a project description and scope plus the design plans for the intersection. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014a Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Analysis Methods

TTI staff used a modified version of the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 7.2 - *Traffic Operations*. The equation attempts to estimate the improvements in idling emission and speed changes as a result of operational improvements. For this particular project, focus was placed on the changes in idling emissions and delay reduction. The modified equation is provided below in Strategy Equation.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- The analysis year used is 2022. The project is requested for fiscal year 2020 with construction by 2021.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), motorcycles, light commercial trucks, single unit short and long-haul trucks, and combination short and long-haul trucks, gasoline and diesel-fueled, are included according to a projected regional VMT' fleet mix (Source Type ID 11, 21, 31, 32, 52, 53, 61, 62).
- Running exhaust and evaporative emissions, brake wear, and tire wear emissions rates were calculated.
- Considering the project area and the type of emissions reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.

- Idling speed in MOVES2014a is speed bin 1.
- The analysis period is from 6:00 a.m. to 6:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the intersection occurs throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The idling emissions reduced as a result of project were distributed across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff attempted to determine a valid delay reduction from the intersection improvement.

The following assumptions were made for the project:

- In reviewing the data and information provided, the primary emissions benefit from this project is the reduction in delay from operational improvements.
- Projected AADT of 43,890 is estimated for Montana Ave.; 29,365 for Paisano Drive. This figure is derived from 2012 TxDOT traffic counts 2013 City of El Paso traffic counts. Future AADT is estimated based on the data plus an annual growth rate of 1.105%. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis: 35,110 for Montana Ave.; 23,490 for Paisano Drive.
- 6 peak hours and 6 off-peak hours are assumed in the analysis period. Traffic volumes in the peak hours are assumed to be twice off-peak hours. Two-thirds of the estimated AADT is distributed in the 6 peak hours; one-third in the off peak hours.
- Average delay reduction is assumed to be 20 seconds in peak hours and 10 seconds in offpeak hours. Benefits will accrue for all approaches to the intersection.
- Total facility length of 0.5 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 7.2, Traffic Operations (modified)

Daily Emission Reduction = $(I_P + I_{OP}) * EF_I$

Change in idling exhaust emissions from improved traffic flow during the peak and off-peak periods Where

 $I_P = (N_{PH} * V_{H, P} * DR_P)/3600 \text{ seconds per hour}$ $I_{OP} = (N_{OPH} * V_{H, OP} * DR_{OP})/3600 \text{ seconds per hour}$

Reduction of idling in the peak and off-peak period

Final unit of measure: grams/day

Source: Texas A&M Transportation Institute (modified from CARB and FHWA Southern Resource Center)

Variables:	DR _P :	Estimated delay reduction during peak period (seconds)
	DR _{OP} :	Estimated delay reduction during off- peak period (seconds)
	EF <i>i</i>	Idling emission factor (grams/hour)
	I _P :	Peak hour reduction in idling emissions (vehicle-hours)
	I _{0P} :	Off-peak hour reduction in idling emissions (hours)
	N _{PH} :	Number of peak hours
	N _{OPH} :	Number of off-peak hours
	V <i>_{H, P}</i> ∶	Number of vehicles that pass through the intersection per hour during the peak period
	V _{<i>H</i>, <i>ор</i>:}	Number of vehicles that pass through the intersection per hour during the off-peak period

Analysis

Daily Emission Reduction = $(I_P + I_{OP}) * EF_I$

Note: For presentation purposes, the individual emissions rates are not given in the results below.

As stated in the *Variables* section above, the numbers presented below represent the delay reduction in seconds during peak and off-peak hours. These numbers were calculated by distributing the projected AADT for each roadway, assuming 80% of the total occurs in the 12 hour analysis period and distributing it though the 12 hours (6 peak, 6 off-peak). For example, as shown on page 3, future 2022 AADT for Montana Ave is 43,890. Thus, 43,890 * 0.80 = 35,110 vehicles

Since no traffic simulation model exists for this intersection, researchers made the assumption using professional experience that approximately 2/3 of the 35,110 vehicles will be circulating during the peak periods. For example, on Montana Avenue, 31,000 * (2/3) = 23,406 distributed through the 6 hours to get the numbers of vehicles per hour.

 $V_{H, P} = 23,406/6 = 3,901$ vehicles-hour $V_{H, OP} = 11,703/6 = 1,950$ vehicles-hour The two variables are then summed for both roadways: 6,511 during peak hours, 3,255 for off-peak.

Where

 $I_P = (6 * 6,511 * 20)/3600$ seconds per hour $I_{OP} = (6 * 3,255 * 10)/3600$ seconds per hour

$$(217.03 + 54.25) = 271.28$$

For CO:

 $271.28 * EF_{I} = 22,001.750 \text{ grams/day}$

Daily emission reduction is equal to 22.002 kg/day

For NOx:

 $271.28 * EF_I = 5,322.266 \text{ grams/day}$

Daily emission reduction is equal to 5.322 kg/day

For VOC:

 $271.28 * EF_{I} = 1,989.442 \text{ grams/day}$

Daily emission reduction is equal to 1.989 kg/day

For **PM-10**:

271.28 * EF_I = 1,552.226 grams/day

Daily emission reduction is equal to 1.552 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. An emissions benefit in the El Paso region can be expected from this project.

Pollutant	Emissions Reduction (kg/day)
СО	22.002
NOx	5.322
VOC	1.989
PM_{10}	1.552

Table 1. Estimated Emissions Benefits from Operational Improvements at Montana Ave/Paisano Dr. Intersection

Emission Reduction Analysis for TxDOT Proposed CMAQ Project

Bluetooth Detectors and Radar Vehicle Sensing Devices (RVSDs) on US 54

May 2016

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (ITI) was tasked by the Texas Department of Transportation (TxDOT) to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The state agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

Individual Project Analysis

The emissions analysis for the project is presented below. Data sources and analysis assumptions are provided. The equation used from the Texas Guide to Accepted Mobile Source Emission Reduction Strategies (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Bluetooth Detectors and Radar Vehicle Sensing Devices (RVSDs) on US 54

This project consists of installation of Bluetooth Detectors and Radar Vehicle Sensing Devices(RVSDs) along 3.9 miles of US 54 for data gathering to display travel time messages on US 54 dynamic message signs (DMS) from Loop 375 (Transmountain) to FM 2529 (McCombs).

Data Sources

TxDOT provided items containing project information and data including project descriptions, cost estimates, design plans. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014a Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Traffic data for the various roadways was garnered from 2012 TxDOT traffic count data for the El Paso District available online. A growth rate was estimated and applied to the numbers.

Analysis Methods

TTI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 7.4 – *Intelligent Transportation Systems (ITS)*. The equation estimates the sum of each ITS link's change in running exhaust emissions resulting from improved traffic flow due to the ITS improvements. The equation is provided below in Strategy Equation.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- The analysis year is 2021.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), motorcycles, light commercial trucks, single unit short and long-haul trucks, and combination short and long-haul trucks, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 11, 21, 31, 32, 52, 53, 61, 62).
- Running exhaust and evaporative emissions, break wear and tire wear emissions rates were calculated.
- Considering the project area and the type of emissions reduced through the strategy, emissions on Road Type 4, urban restricted access were analyzed.
- An average speed improvement from 45 mph to 50 mph is assumed (speed bin 10 to speed bin 11) as a result of implementation.

- The analysis period is from 6:00 a.m. to 6:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. The effects of the ITS can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime activity.
- The emissions reduced as a result of project were distributed across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

The following assumptions were made for the project:

- An average total AADT of 155,030 is estimated for the roadway segments affected by installation of the equipment. This figure is estimated based on 2012 TxDOT traffic counts. Future AADT is estimated based on the estimated current number plus application of a 1.105 percent annual growth factor.
- Assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. Thus, projected 2021 AADT is 124,020.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 7.4, Intelligent Transportation Systems (ITS)

Daily Emission Reduction = $\sum_{i=1}^{n} [\mathbf{L}_{i} * \mathbf{ADT}_{i} * (\mathbf{EF}_{B} - \mathbf{EF}_{A})_{i}]$

The sum of each ITS link's change in running exhaust emissions resulting from improved traffic flow.

Variables:	ADT ;:	Average daily traffic for each affected roadway	
	EF ₄ :	Speed-based running exhaust emission factor after implementation (NO $_x$ and VOC) (grams/mile)	
	EF _B :	Speed-based running exhaust emission factor before implementation (NO _x and VOC) (grams/mile)	
	L_{i}	Length of each freeway affected by ITS (miles)	
	N:	Number of affected corridors	

Summary of Results

The emissions analysis results for the project are shown in Table 1.

Table 1. Estimated Emissions Benefits from Bluetooth Detectors and Radar VehicleSensing Devices (RVSDs) on US 54

Pollutant	Emissions Reduction (kg/day)
СО	2.434
NOx	0.398
VOC	0.081
PM10	0.400

For CMAQ application purposes, an emissions benefit must be shown for a project. ITS projects create a dilemma for planners. The system is often built through implementation of individual pieces in phases. Some of the pieces, particularly communications cable and wiring, do not create an emissions reduction in and of themselves. Only when connected and active with cameras and message signs do they begin to fulfill their role in emissions reductions. Maricopa Association of Governments (MAG) in Phoenix, Arizona developed a simple, straightforward way to apportion benefits for ITS components for CMAQ application and reporting purposes:

Allocate the Project's total benefits to each element based on the individual element's cost or its effective centerline miles.

- 1. Cost or,
- 2. Effective centerline miles or,
- 3. Effective coverage area (sq. miles)

Here are the project details for this analysis:

ITS Project	Cost (dollars)	Centerline Miles
US 54 Bluetooth Detectors and Sensing Devices	730,000	3.9

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Alameda RTS Operations Assistance Phase 2

April 2016 (Updated April 2018)

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is operational assistance for the second phase of the Rapid Transit Service, BRIO, in the Alameda corridor in east El Paso region.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

Alameda RTS Operations Assistance - Phase 2

Sun Metro transit agency is proposing operational assistance for the future 14.9-mile BRIO line in the Alameda corridor in northeast El Paso. The RTS line begins at the Downtown Transfer Center and ends at the Mission Valley Transfer Center. Fourteen buses will operate along the route with 29 stations.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2020. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is implemented after the RTS is initiated; therefore no transit vehicle emissions are included in the analysis.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access.
- Average speed on IH-10 during operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 3,500 was assumed.
- APTA ridership survey reports show 55% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,625 per day.
- The analysis assumes 35% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 26.25% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However this new service actively seeks SOV commuters.
- An average trip length of 14.9 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B - C - D

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)

F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)	
N _{TR} :	New transit ridership	
TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)	
TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)	
TL _W :	Average auto trip length (miles)	
VMT BUS:	VMT by transit vehicle	
VMT _{<i>r</i>} :	Reduction in daily automobile VMT	
VT BUS:	Daily vehicle trips by transit vehicle	
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips	

Analysis

 $VT_R = (3,500 * 2) * 0.35 = 2,450 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 2,450 * 14.9 = 36,505$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Alameda RTS Phase 2 operational assistance project.

Table 1. Alameda RTS Operational Assistance – Phase 2 Emission Reductions

Pollutant	Emissions Reduction (kg/day)
СО	86.446
NOx	6.936
VOC	4.125
PM_{10}	1.594

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

El Paso Streetcar Operations Assistance Phase 2

April 2016

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is the El Paso Streetcar - Phase 2 in the central region of the metropolitan area.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

Given the short time available to conduct these analyses, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for submission but more time available and effort would increase the accuracy of the emissions benefits. As a result, *this analysis should not be used for conformity purposes*.

El Paso Streetcar – Phase 2

The proposed El Paso Streetcar Project consists of a two-mile, double-tracked corridor, beginning in the area near the Downtown Shopping District and International Bridges, traveling north through downtown to the University of Texas at El Paso area, the Cincinnati Entertainment District and back.

The guideway would be positioned within existing traffic lanes; along the right lane, adjacent to the curb or parking lane. The streetcar stops would be located two to three blocks apart along the right edge of traffic. A maintenance facility would be constructed within the Downtown Transfer Center.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, projected ridership, the mileage, hours of operation, and operating costs for the route.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.1 - *System/Service Expansion*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel.

The analysis year used is 2020. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The streetcar appears to be an electrified rail line; therefore no transit vehicle emissions are included in the analysis.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, primarily short distance, emissions on Road Type 5, urban unrestricted access.
- Average speed on surrounding roadways during operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 7:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data and a growth rate provided by Sun Metro, an average daily ridership of 824 was assumed.
- The analysis assumes 35% of the passengers in the analysis year are using the streetcar for a local trip for which they would have used a vehicle. This should be considered optimistic. The APTA survey report showed 14.3% of transit passengers would drive alone as an alternative if no transit service was available. However, this new service actively seeks SOV drivers.
- An average trip length of 3.0 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

3.1 System/Service Expansion

Daily Emission Reduction (for each pollutant) = A + B - C - D

 $A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

$C = VT_{BUS} * TEF_{BUS}$

Increase in emissions from additional bus starts

$\mathbf{D} = \mathbf{VMT}_{BUS} * \mathbf{EF}_{BUS}$

Increase in emissions from additional bus running exhaust emissions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	ΕF <i>_B</i> :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	EF _{BUS} :	Speed-based running exhaust emission factor for transit vehicle (NO _x , VOC, or CO) (grams/mile)

F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)	
N _{TR} :	New transit ridership	
TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)	
TEF _{BUS} :	Bus (or other transit vehicle) trip-end emission factor (NO _x , VOC, or CO) (grams/trip)	
	Average auto trip length (miles)	
VMT BUS:	VMT by transit vehicle	
VMT _R :	Reduction in daily automobile VMT	
VT BUS:	Daily vehicle trips by transit vehicle	
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips	

Analysis

 $VT_R = (824 * 2) * 0.35 = 577 \text{ trips/day}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 577 * 3.0 = 1,730$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from Phase 2 of the El Paso Streetcar project.

Table 1. Estimated Emission Reductions for El Paso Streetcar – Phase 2

Pollutant	Emissions Reduction (kg/day)
СО	8.362
NOx	0.638
VOC	0.531
PM_{10}	0.101

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Bicycle Infrastructure Citywide

February 2018

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (ITI) was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct 42.2 miles of bike lane infrastructure improvements in the region.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Bicycle Infrastructure Citywide

The Bicycle Infrastructure Citywide project will install 42.2 miles of bicycle lane improvements along 32 roadways in the El Paso region. The project will serve the City of El Paso by increasing its regional infrastructure coupled with existing transit projects, educational centers, and commercial developments. Bicycle facilities will support and provide connectivity to existing bicycle facilities Citywide with connection to mass transit centers and facilities, and provide an alternative method of transportation. The infrastructure will be installed within City right-of-way and no property acquisition is anticipated.

The project will construct bicycle facilities citywide to include: buffered bike lanes, conventional bike lanes, bicycle boulevards, shared lane markings, and protected bicycle lanes. The project will include associated signage, wayfinding, striping, and intersection treatments.

The limits of the improvements involve numerous roadways:

Limit from:

High Ridge from Resler; Escondido from Resler; Ojo de Agua from Westwind; Via Descanso from Ojo de Agua; Via Serena from Via Descanso; Marcus Uribe from Martin Luther King Jr; Sean Haggerty from US 54; Will Ruth from Dyer; Diana from US 54; Stahala from Diana; Hondo Pass from US 54; Magentic from Hondo Pass; Stanton from Cliff; Robinson from Oregon; Cotton from San Antonio; Sixth from Cotton; Val Verde from Paisano; Fonseca from Loop 375; Clark from Delta; Montwood from Viscount; Montwood from Zanzibar; Lomaland from Montwood; Phoenix from Hawkins; Alameda from Loop 375; Pellicano from George Dieter; Peter Cooper from Pellicano; George Dieter from Vista Del Sol; Bob Mitchell from George Dieter; Saul Kleinfeld from Turner; Nolan Richardson from Turner; Pebble Hills from Yarbrough; Lee Trevino from Edgemere

Limit to:

High Ridge to Franklin Hills; Escondido to Westwind; Ojo de Agua to Via Descanso; Via Descanso to Via Serena; Via Serena to High Ridge; Marcus Uribe to Benny Emler; Sean Haggerty to Rushing; Will Ruth to McCombs; Diana to Railroad; Stahala to Hondo Pass; Hondo Pass to Magnetic; Magnetic to Atlas; Stanton to Brentwood; Robinson to Piedmont; Cotton to Sixth; Sixth to Campbell; Fonseca to Delta; Clark to Trowbridge; Montwood to McRae; Montwood to Lee Trevino; Lomaland to Trawood; Phoenix to Giles; Pellicano to Loop 375; Peter Cooper to Ben Proctor; George Dieter to Edgemere; Bob Mitchell to Saul Kleinfeld; Saul Kleinfeld to Bob Mitchell; Nolan Richardson to Pebble Hills; Pebble Hills to Lisa Sherr; Lee Trevino to Trawood

The components of the project are part of the August 2016 City of El Paso Bike Plan.

Data Sources

The City of El Paso provided the project description and scope project information and data for the analysis. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

TTI staff used American Community Survey data to compute a bicycle mode share for El Paso, along with a future growth rate for the mode in the region.

Analysis Methods

T^{*}TI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths.*

Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to bicycle mode, multiplied by the bike facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the bike lane.

The detailed equation is provided below in Strategy Equation.

The analysis year used is 2026, the first year of operation. *For planning purposes, the emissions benefit of a static program will decline over time.* Without the increased use of the bike lanes over the project lifetime, any benefits accrued by the mode shift to bicycles may be negated by the increased emissions from potential higher traffic volumes in the corridor over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and dieselfueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Running exhaust and evaporative emissions and start emissions rates were calculated. (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Overall average speed in the seven roadways is assumed to be 30 mph (Speed bin 7).
- The analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the bicycle lanes can

occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.

• The vehicle-miles traveled (VMT) reduced as a result of the mode shift to bicycle were distributed proportionally across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to bicycle by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- Light-duty passenger vehicle and light-duty passenger truck AADT of 195,444 is estimated. This figure is based on 2012 and 2013AADT and ADT traffic counts from TxDOT and the City of El Paso. AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It assumes 86% of the traffic is passenger vehicles.
- The current percent bicycle mode share for the El Paso region is estimated to be 2.0% and can serve as an optimistic mode share increase for the new bike facilities.
- The 0.02 increase in mode share represents new cyclists (vehicle trips replaced).
- Bike lane facility length of 42.2 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * $L * EF_B$

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

EF_B: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)

L: Length of facility (miles)

PMS: Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = $AADT * PMS * L * EF_B$

Note: Due to the large amount of data generated by the MOVES model and the required off-model computations, for presentation purposes the individual emissions rates are not provided in the results below.

For CO:

 $195,444 * 0.02 * 42.2 * EF_B = 231,128.805 \text{ grams/day}$

Daily emission reduction is equal to 231.129 kg/day

For NOx:

 $195,444 * 0.02 * 42.2 * EF_B = 13,351.197 \text{ grams/day}$

Daily emission reduction is equal to 13.351 kg/day

For VOC:

 $195,444 * 0.02 * 42.2 * EF_B = 6,515.939$ grams/day

Daily emission reduction is equal to 6.516 kg/day

For **PM-10**:

 $195,444 * 0.02 * 42.2 * EF_B = 9,141.294 \text{ grams/day}$

Daily emission reduction is equal to 9.141 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the new bike lanes are significant and are dependent on increased use of bicycles as a travel mode in the city and region, therefore an emissions benefit in the El Paso region can be expected from this project.

Pollutant	Emissions Reduction (kg/day)
СО	231.129
NOx	13.351
VOC	6.516
PM_{10}	9.141

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

El Paso Streetcar Operations Assistance Phase 3

December 2017

Prepared for



Ву



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Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement it.

The project is operations assistance for the third phase of the El Paso Streetcar in the central region of the metropolitan area.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ program submission, but *this analysis should not be used for conformity purposes*.

El Paso Streetcar – Phase 3

The El Paso Streetcar project consists of a two-mile, double-tracked corridor, beginning in the area near the Downtown Shopping District and International Bridges, traveling north through downtown to the University of Texas at El Paso area, the Cincinnati Entertainment District and back.

The guideway would be positioned within existing traffic lanes; along the right lane, adjacent to the curb or parking lane. The streetcar stops would be located two to three blocks apart along the right edge of traffic. A maintenance facility would be constructed within the Downtown Transfer Center.

Data Sources

Sun Metro provided several data sources to the TTI team: a map of the proposed route, projected ridership, the mileage, hours of operation, and operating costs for the route.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.1 - *System/Service Expansion*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel. The analysis year used is 2021. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The streetcar appears to be an electrified rail line; therefore no transit vehicle emissions are included in the analysis.
- Running exhaust, running evaporative, and start emissions (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, primarily short distance, emissions on Road Type 5, urban unrestricted access.
- Average speed on surrounding roadways during operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 7:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data and expected ridership growth, an average daily ridership of 850 was assumed.
- The analysis assumes 35% of the passengers in the analysis year are using the streetcar for a local trip for which they would have used a vehicle. This should be considered optimistic. The APTA survey report showed 14.3% of transit passengers would drive alone as an alternative if no transit service was available. However, this new service actively seeks SOV drivers.
- An average trip length of 3.0 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Note: Due to the extensiveness of the MOVES model output data and to help presentation of results, the individual start rates and emission rates per distance (\mathbf{TEF}_{AUTO} and \mathbf{EF}_{B}) per vehicle type computed are not presented but are available for review if needed. As noted above, the streetcar appears to be an electrified rail line; therefore, no transit vehicle emissions are included in the analysis.

3.1 System/Service Expansion

Daily Emission Reduction (for each pollutant) = A + B

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
	N _{TR} :	New transit ridership
	TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TL _w :	Average auto trip length (miles)

VMT _{<i>R</i>} :	Reduction in daily automobile VMT
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (850 * 2) * 0.35 = 595 \text{ trips/day}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 595 * 3.0 = 1,785$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are continued, significant daily emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from Phase 3 of the El Paso Streetcar project.

Table 1. Estimated Emission	Reductions	for El Paso	Streetcar –	Phase 3

Pollutant	Emissions Reduction (kg/day)
СО	8.190
NOx	0.595
VOC	0.513
PM_{10}	0.104

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Montana RTS Operations Assistance Phase 2

December 2017

Prepared for



Ву



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Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ).

The project is operational assistance for the second phase of the Rapid Transit Service, BRIO, in the Montana corridor in east-central El Paso region.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ program submission, but *this analysis should not be used for conformity purposes*.

Montana RTS Operations Assistance - Phase 2

Sun Metro transit agency is proposing operations assistance for the second phase of the 16.8-mile BRIO line in the Montana corridor in east El Paso region. The RTS line begins at the Five Points Terminal and ends at the future Far East Transfer Center. Twelve buses will operate along the route with 26 stations.

Data Sources

Sun Metro provided several data sources to the TTI team for the original analysis: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel. The analysis year used is 2021. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is assumed to be implemented in the analysis; therefore, no transit vehicle emissions are included in the analysis.
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access was used.
- Average speed on IH-10 during RTS operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro and factoring in ridership growth, an average daily ridership of 3,600 was assumed.
- APTA ridership survey reports show 52% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,700 per day.
- The analysis assumes 35% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 26.25% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However, this new service actively seeks SOV commuters.
- An average trip length of 12.6 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Note: Due to the extensiveness of the MOVES model output data and to help presentation of results, the individual start rates and emission rates per distance (\mathbf{TEF}_{AUTO} and \mathbf{EF}_{B}) per vehicle type computed are not presented but are available for review if needed. Also, the project is assumed implemented by phase 3 thus transit vehicle emissions (parts C and D) are not included in this analysis.

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
	N _{TR} :	New transit ridership
	TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TL _w :	Average auto trip length (miles)

VMT _{<i>R</i>} :	Reduction in daily automobile VMT
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (3,600 * 2) * 0.52 = 3,744 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 3,744 * 12.6 = 47,174$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant daily emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Montana RTS Phase 2 operational assistance project.

Pollutant	Emissions Reduction (kg/day)
СО	110.234
NOx	8.313
VOC	5.371
PM_{10}	2.522

Table 1. Montana RTS Operational Assistance - Phase 2 Emission Reductions

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Dyer RTS Operations Assistance Phase 3 Update

December 2017

Prepared for



Ву



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Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform an updated mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ).

The project is operational assistance for the third phase of the Rapid Transit Service, BRIO, in the Dyer corridor in east El Paso region. The agency requested an update of the analysis using 2021 as the analysis year instead of the original 2020 data.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ program submission, but *this analysis should not be used for conformity purposes*.

Dyer RTS Operations Assistance - Phase 3

Sun Metro transit agency is proposing operational assistance for the future 12-mile BRIO line in the Dyer corridor in northeast El Paso. The RTS line begins at the Downtown Transfer Center and ends at the future Northeast Transfer Center. Eight buses will operate along the route with 22 stations.

Data Sources

Sun Metro provided several data sources to the TTI team for the original analysis: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel. The analysis year used is 2021. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is assumed to be implemented in the analysis; therefore, no transit vehicle emissions are included in the analysis.
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access was used.
- Average speed on IH-10 during RTS operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 3,450 was assumed.
- APTA ridership survey reports show 55% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,588 per day.
- The analysis assumes 35% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 26.25% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However this new service actively seeks SOV commuters.
- An average trip length of 12.0 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Note: Due to the extensiveness of the MOVES model output data and to help presentation of results, the individual start rates and emission rates per distance (\mathbf{TEF}_{AUTO} and \mathbf{EF}_{B}) per vehicle type computed are not presented but are available for review if needed. Also, the project is assumed implemented by phase 3 thus transit vehicle emissions (parts C and D) are not included in this analysis.

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
	N _{TR} :	New transit ridership
	TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TL _w :	Average auto trip length (miles)

VMT _R :	Reduction in daily automobile VMT
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (3,450 * 2) * 0.35 = 2,415 \text{ trips/day}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 2,415 * 12.0 = 28,980$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant daily emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Dyer RTS Phase 3 operational assistance project.

Table 1. Dyer RTS Operational Assistance – Phase 3 Emission Reductions

Pollutant	Emissions Reduction (kg/day)
СО	68.691
NOx	5.170
VOC	3.380
PM_{10}	1.550

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Alameda RTS Operations Assistance Phase 3 Update

December 2017

Prepared for



Ву



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Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform an updated mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ).

The project is operational assistance for the third phase of the Rapid Transit Service, BRIO, in the Alameda corridor in east El Paso region. The agency requested an update of the analysis using 2021 as the analysis year instead of the original 2020 data.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ program submission, but *this analysis should not be used for conformity purposes*.

Alameda RTS Operations Assistance - Phase 3

Sun Metro transit agency is proposing operational assistance for the future 14.9-mile BRIO line in the Alameda corridor in northeast El Paso. The RTS line begins at the Downtown Transfer Center and ends at the Mission Valley Transfer Center. Fourteen buses will operate along the route with 29 stations.

Data Sources

Sun Metro provided several data sources to the TTI team for the original analysis: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel. The analysis year used is 2021. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is assumed to be implemented in the analysis; therefore, no transit vehicle emissions are included in the analysis.
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access was used.
- Average speed on IH-10 during RTS operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro, an average daily ridership of 3,500 was assumed.
- APTA ridership survey reports show 55% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,625 per day.
- The analysis assumes 35% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 26.25% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However, this new service actively seeks SOV commuters.
- An average trip length of 14.9 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Note: Due to the extensiveness of the MOVES model output data and to help presentation of results, the individual start rates and emission rates per distance (\mathbf{TEF}_{AUTO} and \mathbf{EF}_{B}) per vehicle type computed are not presented but are available for review if needed. Also, the project is assumed implemented by phase 3 thus transit vehicle emissions (parts C and D) are not included in this analysis.

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
	N _{TR} :	New transit ridership
	TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TL _w :	Average auto trip length (miles)

VMT _{<i>R</i>} :	Reduction in daily automobile VMT
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (3,500 * 2) * 0.35 = 2,450 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 2,450 * 14.9 = 36,505$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Alameda RTS Phase 3 operational assistance project.

Pollutant	Emissions Reduction (kg/day)
СО	81.523
NOx	6.188
VOC	3.842
PM_{10}	1.948

Table 1. Alameda RTS Operational Assistance - Phase 3 Emission Reductions

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Downtown Bicycle Improvements – Phase 1

April 2016

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (TTI) Arlington office was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct 3.7 miles of bike lane infrastructure improvements in the downtown area.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

Given the short time available to conduct this analysis, it is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Downtown Bicycle Improvements - Phase 1

The first phase of the Downtown Bicycle Improvements project will install 3.7 miles of bicycle facilities in downtown El Paso (south of I-10, north of Paisano, east of Union Depot, and west of Virginia). These facilities will assist the existing bike share and encourage an alternative form of transportation in the downtown area. The infrastructure will be installed within City right-of-way and no property acquisition is anticipated.

The project will construct bicycle facilities to include: buffered bike lanes, conventional bike lanes, bicycle boulevards, shared lane markings, and protected bicycle lanes. The project will include associated signage, wayfinding, striping, and intersection treatments. Bicycle facilities will support and provide connectivity to existing bike share station locations within downtown El Paso, provide access to Rapid Transit System and El Paso Streetcar stops, coordinating with the Bicycle Infrastructure Citywide (M080X), and to connect to existing bicycle infrastructure.

Campbell from Missouri to Paisano; El Paso from Franklin to Main; El Paso from Sheldon to Paisano; Main from Santa Fe to El Paso; Main from Oregon to Campbell; Mills from Sheldon to Virginia; Missouri from Santa Fe to Campbell; Myrtle from Stanton to Campbell; San Antonio from Anthony to Virginia; Sheldon from Santa Fe to El Paso; Virginia from Mills to San Antonio; Magoffin from San Antonio to Virginia

Data Sources

The City of El Paso provided several items containing project information and data for the analysis: project description and scope plus current average speed data for the affected roadways. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

Emission rates used in the analyses were obtained from the U.S. Environmental Protection Agency's MOVES2014a model. TTI staff created MOVES2014a output files using their "MOVES2014 Statewide Non-Link On-Road Emissions Inventory for 2006, 2012, and 2018." This inventory file is currently being updated by TTI with 2014 data and the research team was granted access to these newer inputs for this analysis. The input files used to generate emission rates are consistent with those used for conformity analysis.

El Paso regional vehicle fleet mix fractions were derived from the TTI study *Production of Statewide* Non-Link-Based, On-Road Emissions Inventories with the MOVES Model for the Eight-Hour Ozone Standard Attainment Demonstration Modeling, conducted in August 2013.

TTI staff used 2009 American Community Survey data to compute a bicycle mode share for El Paso, along with a future growth rate for the mode in the region.

Analysis Methods

T^{*}TI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths*.

Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to bicycle mode, multiplied by the bike facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the bike lane.

The detailed equation is provided below in Strategy Equation.

The analysis year used is 2017. For planning purposes, the emissions benefit of a static program will decline over time. Without the increased use of the bike lanes over the project lifetime, any benefits accrued by the mode shift to bicycles may be negated by the increased emissions from potential higher traffic volumes in the corridor over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for CO, VOC, NOx, and PM-10.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and dieselfueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Running exhaust and evaporative emissions and start emissions rates were calculated.
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Overall average speed in the twelve roadways is assumed to be 30 mph (Speed bin 7).
- The analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the bicycle lanes can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The vehicle-miles traveled (VMT) reduced as a result of the mode shift to bicycle were distributed proportionally across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to bicycle by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

- Light-duty passenger vehicle and light-duty passenger truck AADT of 20,158 is estimated. This figure is based on 2012 and 2013AADT and ADT traffic counts from TxDOT and the City of El Paso. AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. It assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It assumes 86% of the traffic is passenger vehicles.
- The current percent bicycle mode share for the El Paso region is estimated to be 2.0% and can serve as an optimistic mode share increase for the new bike facilities.

- The 0.02 increase in mode share represents new cyclists (vehicle trips replaced).
- Bike lane facility length of 3.7 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * $L * EF_B$

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

- **EF***_B*: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)
- **L:** Length of facility (miles)
- **PMS:** Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = AADT * PMS * $L * EF_B$

Note: For presentation purposes, the individual emissions rates are not given in the results below.

For CO:

 $20,158 * 0.02 * 3.7 * EF_B = 3,251.572 \text{ grams/day}$

Daily emission reduction is equal to 3.252 kg/day

For NOx:

 $20,158 * 0.02 * 3.7 * EF_B = 286.974 \text{ grams/day}$

Daily emission reduction is equal to 0.287 kg/day

For VOC:

 $20,158 * 0.02 * 3.7 * EF_B = 114.918 \text{ grams/day}$

Daily emission reduction is equal to 0.115 kg/day

For **PM-10**:

 $20,158 * 0.02 * 3.7 * EF_B = 83.437 \text{ grams/day}$

Daily emission reduction is equal to 0.083 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the new bike lanes are modest and are dependent on increased use of bicycles as a travel mode in the city and region, but an emissions benefit in the El Paso region can be expected from this project.

Table 1. Estimated Emissions	Benefits from Downtown	n Bicycle Improvements –	Phase 1
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Pollutant	Emissions Reduction (kg/day)
СО	3.252
NOx	0.287
VOC	0.115
PM_{10}	0.083

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Stanton Two-Way Cycle Track Roadway Improvements

February 2018

Prepared for



Ву



Task Summary

The Texas A&M Transportation Institute (ITI) was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) to help implement the project.

The project will construct 0.76 miles of bicycle lane infrastructure improvements in the region.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Stanton Two-Way Cycle Track Roadway Improvements

The Stanton Two-Way Cycle Track Roadway Improvements project will install 0.76 miles of twoway cycle track in downtown El Paso along Stanton St between San Antonio Ave. and Rio Grande Ave. Two-way cycle tracks (also known as protected bike lanes, separated bikeways, and on-street bike paths) are physically separated cycle tracks that allow bicycle movement in both directions on one side of the road. Two-way cycle tracks share some of the same design characteristics as one-way tracks, but may require additional considerations at driveway and side-street crossings.

The project will serve the City of El Paso by increasing its regional infrastructure coupled with existing transit projects, educational centers, and commercial developments. Bicycle facilities will support and provide connectivity to existing bicycle facilities Citywide with connection to mass transit centers and facilities, and provide an alternative method of transportation. The infrastructure will be installed within City right-of-way and no property acquisition is anticipated.

The components of the project are consistent with the August 2016 City of El Paso Bike Plan.

Data Sources

The City of El Paso provided the project description and scope project information and data for the analysis. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

TTI staff used American Community Survey data to compute a bicycle mode share for El Paso, along with a future growth rate for the mode in the region.

Analysis Methods

T^{*}TI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 11.1 – *Bicycle and Pedestrian Lanes or Paths.*

Stated in words, the average annual daily traffic (AADT) of the corridor is multiplied by the percentage of drivers shifting to bicycle mode, multiplied by the bike facility length, multiplied by the speed-based running exhaust emission factor for participants' trip before utilizing the bike lane.

The detailed equation is provided below in Strategy Equation.

The analysis year used is 2027, the first year of operation. For planning purposes, the emissions benefit of a static program will decline over time. Without the increased use of the bike lanes over the project lifetime, any benefits accrued by the mode shift to bicycles may be negated by the increased emissions from potential higher traffic volumes in the corridor over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), gasoline and dieselfueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- Running exhaust and evaporative emissions and start emissions rates were calculated. (Process ID 1, 2, 11, 12, 13, 15)
- Considering the project area and the type of trips reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- Overall average speed in the seven roadways is assumed to be 30 mph (Speed bin 7).
- The analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. Use of the bicycle lanes can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime mode shift.
- The vehicle-miles traveled (VMT) reduced as a result of the mode shift to bicycle were distributed proportionally across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects. TTI staff determined a valid percentage mode shift from automobile to bicycle by participants in El Paso region. The characteristics of this new facility may provide impetus for significant mode shift, but planners should use available data.

The following assumptions were made for the project:

• Light-duty passenger vehicle and light-duty passenger truck AADT in the project area of 3,373 is estimated. This figure is based on 2012 and 2013 AADT and ADT traffic counts from TxDOT and the City of El Paso. AADT is estimated based on the data plus a professional estimate of traffic growth and an averaging of the counts. It then assumes 80%

of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It finally assumes 86% of the traffic is passenger vehicles.

- The current percent bicycle mode share for the El Paso region is estimated to be 2.0% and can serve as an optimistic mode share increase for the new bike facilities.
- The 0.02 increase in mode share represents new cyclists (vehicle trips replaced).
- Bike lane facility length of 0.76 miles is computed.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 11.1, Bicycle and Pedestrian Lanes or Paths

Daily Emission Reduction = AADT * PMS * $L * EF_B$

The average annual daily traffic of the corridor multiplied by the percentage of drivers shifting to bike/pedestrian multiplied by the average bicycle trip length multiplied by the speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program.

Final unit of measure: grams/day Source: Capitol Area MPO (CAMPO)

Variables: AADT: Average annual daily traffic in corridor (vehicles/day)

- **EF**_B: Speed-based running exhaust emission factor for participants' trip before participating in the bike/pedestrian program (NO_x, VOC, or CO) (grams/mile)
- **L:** Length of facility (miles)
- PMS: Percentage mode shift from driving to bike/pedestrian (decimal)

Analysis

Results

Daily Emission Reduction = AADT * PMS * $L * EF_B$

Note: Due to the large amount of data generated by the MOVES model and the required off-model computations, for presentation purposes the individual emissions rates are not provided in the results below.

For CO:

 $3,373 * 0.02 * 0.76 * EF_B = 804.469 \text{ grams/day}$

Daily emission reduction is equal to 0.804 kg/day

For NOx:

 $3,373 * 0.02 * 0.76 * EF_B = 45.026$ grams/day

Daily emission reduction is equal to 0.045 kg/day

For VOC:

 $3,373 * 0.02 * 0.76 * EF_B = 23.487 \text{ grams/day}$

Daily emission reduction is equal to 0.023 kg/day

For **PM-10**:

 $3,373 * 0.02 * 0.76 * EF_B = 33.965 \text{ grams/day}$

Daily emission reduction is equal to 0.034 kg/day

Summary of Results

The overall emissions analysis results for the project are shown in Table 1. The estimated emissions benefits from the two-way cycle track facility is modest and is dependent on increased use of bicycles as a travel mode in the city and region, however an emissions benefit in the El Paso region can be expected from this project.

Pollutant	Emissions Reduction (kg/day)
СО	0.804
NOx	0.045
VOC	0.023
PM_{10}	0.034

Table 1. Estimated Emissions Benefits from		
Stanton Two-Way Cycle Track Roadway Improvements		

Emission Reduction Analysis for City of El Paso Proposed CMAQ Project

Traffic Management Center Upgrade – Phase 1

February 2018

Prepared for



By



Task Summary

The Texas A&M Transportation Institute (ITTI) was tasked by the City of El Paso to perform a mobile source emissions analysis for a proposed project in the El Paso metropolitan region. The city is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ) for the design phase to help implement the project.

The project will design and implement a citywide traffic signalization improvement program.

Individual Project Analysis

The emissions analysis for the project is presented below. The project name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ applications, but more time and effort would increase the accuracy of the emissions benefits. As a result, this analysis should not be used for conformity purposes.

Traffic Management Center Upgrade - Phase 1

The City of El Paso proposes a citywide traffic signal improvement program. The project includes the upgrade of the City of El Paso Traffic Management Center and Traffic Signal controller equipment city wide. This first phase is the design of the traffic signal upgrades to include evaluating latest technology used to control and communicate with traffic signal lights, adaptive technology, emergency preemption and mass transit priority. Field investigations will be necessary to evaluate any new construction needs to accommodate the new equipment footprint.

Phases 2-5 is the construction and implementation of the design for the upgraded signalized intersections throughout the City of El Paso.

Data Sources

The City of El Paso provided the project description and scope project information and data for the analysis. These resources provided the research team with a better understanding of the proposed project and potential emissions benefits.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

Traffic data for the city roadways was garnered from 2012 and 2016 TxDOT traffic count data for the El Paso District available online, along with El Paso MPO data. A growth rate was estimated and applied to the numbers.

Analysis Methods

TTI staff used the analysis method provided in the August 2008 version of the MOSERs Guide, Equation 7.4 – *Intelligent Transportation Systems (ITS)*. The equation estimates the sum of each ITS link's change in running exhaust emissions resulting from improved traffic flow due to the ITS improvements. In this case, a link is an individual intersection. As the projects are inter-connected with each other and, in some cases, are installed on the same roadways, it is more conducive to analyzed them as one large project then apportion the any emissions benefit to each component. The equation is provided below in Strategy Equation.

The equation is valid for CMAQ purposes but a more robust analysis that models the hundreds of individual intersections would provide a more accurate estimate of the emissions benefits derived from the improvements.

Since the requested finding is for the design phase, no direct emissions benefit will derive from the planning, testing, and design of the program. Phases 2 through 5 will provide the actual reductions. The Maricopa Association of Governments, with TTI, developed a method to allocate a small portion of the estimated total emissions reduction from the program to the planning phase of projects that qualify for CMAQ funding. The CMAQ program does allow for funding of plans, but funding applications should still provide and estimated benefit. This method is used for the analysis below.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10.
- The analysis year is 2030.
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs), motorcycles, light commercial trucks, single unit short and long-haul trucks, and combination short and long-haul trucks, gasoline and diesel-fueled, are included according to a projected regional VMT' fleet mix (Source Type ID 11, 21, 31, 32, 41, 42, 43, 51, 52, 53, 54, 61, 62).
- Running exhaust and evaporative emissions, break wear and tire wear emissions rates were calculated.
- Considering the project area and the type of emissions reduced through the strategy, emissions on Road Type 5, urban unrestricted access were analyzed.
- An average city network speed improvement from 30 mph to 35 mph is assumed (speed bin 7 to speed bin 8) as a result of implementation.
- The analysis period is from 7:00 a.m. to 7:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10. The effects of the signalization program can occur throughout the day, but the greatest impact on emissions will occur with any peak hour or daytime activity.
- The emissions reduced as a result of project were distributed across the 12 hours and by vehicle types and fuel types in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

The following assumptions were made for the project:

• A 2030 average daily VMT of 21,500,000 is estimated for the roadway segments affected by installation of the equipment. Factoring in the disparate AADT and ADT numbers throughout the City, along with El Paso MPO regional VMT numbers, the estimate seems reasonable enough to capture the benefit from the project. Future VMT is estimated based on the estimated current number plus application of a 1.105 percent annual growth factor.

- Assumes 80% of the daily traffic along the roadways occurs in the 12-hour daytime period under analysis. It is also assumed that the traffic will be affected by 80% of the intersections in the City. Thus, projected 2030 citywide daily VMT affected by the program is 14,077,700.
- Total project length of 600 miles is computed.
- Five (5) percent of total estimate of emissions reduction applied to Phase 1.

The emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Equation 7.4, Intelligent Transportation Systems (ITS)

Daily Emission Reduction =	$\sum_{i=1}^{n} [\mathbf{L}_{i} * \mathbf{ADT}_{i} * (\mathbf{EF}_{B} - \mathbf{EF}_{A})_{i}]$
The sum of each ITS link's change in	running exhaust emissions resulting from improved traffic flow.

Variables:	ADT;:	Average daily traffic for each affected roadway
	EF ₄ :	Speed-based running exhaust emission factor after implementation (NO _x and VOC) (grams/mile)
	EF _B :	Speed-based running exhaust emission factor before implementation (NO _x and VOC) (grams/mile)
	L _i .	Length of each freeway affected by signalization program (miles)
	N:	Number of affected corridors

For this analysis, the **L** and **ADT** are essentially the estimated VMT (14,077,770) affected by the project. The VMT was distributed through the 12-hour analysis period and multiplied by the result of the emission rate differences. This created a total estimated emissions reduction for the 2030 analysis year for the final, implemented project shown in the table below.

Pollutant	Emissions Reduction (kg/day)
СО	1,360.54
NOx	178.15
VOC	70.04
PM_{10}	203.03

Five percent of this total estimate was applied to Phase 1. The other 95 percent will be available for Phases 2-5 CMAQ applications.

Summary of Results

The emissions analysis results for the planning and design phase of the signalization project are shown in Table 1. As a reminder, for CMAQ application purposes, an emissions benefit should be shown for a project. Planning phases of projects create a dilemma for planners. The overall program is often built through implementation of individual phases. Planning and design phases do not create an emissions reduction in and of themselves. Only when constructed and operating do they begin to fulfill their role in emissions reductions. Five percent of the total estimated reductions for the traffic management center upgrade was applied to Phase 1. Nevertheless, the analysis shows a significant emissions benefit in the El Paso region can be expected from this project.

Table 1. Estimated Emissions Benefits from Traffic Management Center Upgrade – Phase 1

Pollutant	Emissions Reduction (kg/day)
CO	68.03
NOx	8.91
VOC	3.50
PM_{10}	10.15

Emission Reduction Analysis for Sun Metro Proposed CMAQ Project

Montana RTS Operations Assistance Phase 3

December 2017

Prepared for



Ву



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Task Summary

The Texas A&M Transportation Institute (TTI) El Paso office was tasked by Sun Metro to perform a mobile source emissions analysis for a proposed project in the El Paso nonattainment area. The transit agency is seeking funding from the Congestion Mitigation/Air Quality Improvement Program (CMAQ).

The project is operational assistance for the third phase of the Rapid Transit Service, BRIO, in the Montana corridor in east-central El Paso region.

Individual Project Analysis

The emissions analysis for the project is presented below. The strategy name is given along with a brief description of the project. Data sources and analysis assumptions are provided. The equation used from the *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (MOSERs Guide) is given for the strategy along with the variables of the equation and the equation itself. The results are then computed for the strategy equation.

It is recommended that the agency conduct a more detailed emissions study of the project as it develops further. The results presented below are valid for CMAQ program submission, but *this analysis should not be used for conformity purposes*.

Montana RTS Operations Assistance - Phase 3

Sun Metro transit agency is proposing operations assistance for the third phase of the 16.8-mile BRIO line in the Montana corridor in east El Paso region. The RTS line begins at the Five Points Terminal and ends at the future Far East Transfer Center. Twelve buses will operate along the route with 26 stations.

Data Sources

Sun Metro provided several data sources to the TTI team for the original analysis: a map of the proposed route, previous emissions analysis for the route, the mileage, hours of operation, and operating costs for the route.

The technical report 2014 On-Road Mobile Source Annual, Summer Weekday and Winter Workday Emissions Inventories: El Paso Area, TTI, August 2015 describes development of 2014 analysis year El Paso MOVES2014-based actual on-road inventories, which were the basis for these MOVES runs, with respect to MOVES modeling procedures and MOVES input data. MOVES modeling set-ups and input data combinations are described starting on Page 29 of the report, in the section "Estimation of Summer and Winter Weekday Emissions Factors". Tables 19 through 22 and surrounding text contain the details. The MOVES modeling part of the process and the local/default input data combinations as described (Table 22) was used, updated where appropriate for model version (MOVES2014a versus MOVES2014) and for analysis year (CMAQ years 2021 versus 2014).

In particular, the actual fuel formulation sulfur values were adjusted to reflect "expected" future year values in place of 2014 actual average sulfur level values (i.e., to maintain consistency with the Tier 3 gasoline standard implemented in January 2017 and for consistency with Ultra Low Sulfur Diesel). It is also noteworthy that the age distributions and AVFT input data from the 2014 analysis were used, since these are based on the mid-year 2014 TxDMV vehicle registrations data, which is currently still "latest available".

Transit passenger characteristics were derived from the American Public Transportation Association report *A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys* published in May 2007.

Analysis Methods

TTI staff used an analysis method provided in the August 2008 version of the MOSERs Guide, equation 3.2 - *System/Service Operational Improvements*. The detailed equation is provided below in Strategy Equation.

Stated in words, the equation measures the reduction in start emissions and running exhaust emissions from a change in mode during the operating period and subtracting any additional emissions from the transit vehicles. The benefit is derived through attracting single occupant passenger vehicle drivers to utilize transit as their mode of travel. The analysis year used is 2022. For planning purposes, the emissions benefit of a static program will decline over time.

Assumptions in the MOVES2014a output for the project included:

- Output created for VOC, CO, NOx, and PM-10
- Light-duty passenger vehicles and light-duty passenger trucks (SUVs) vehicle types, gasoline and diesel-fueled, are included according to a projected regional VMT fleet mix (Source Type ID 21, 31)
- The project is assumed to be implemented in the analysis; therefore, no transit vehicle emissions are included in the analysis.
- Considering the project area and the type of trips reduced through the strategy, primarily, freeway commuting, emissions on Road Type 4, urban restricted access was used.
- Average speed on IH-10 during RTS operating hours (peak and off-peak) is assumed 30 mph.
- The analysis period is AM peak hours of 6:00-9:00 a.m., off-peak daytime hours from 9:00 a.m.-3:00 p.m. and PM peak hours of 3:00-8:00 p.m. on a winter weekday for CO; the same periods on a summer weekday for NOx, VOC, and PM-10.
- The vehicle trips reduced (VT_R) and vehicle-miles travelled reduced (VMT_R) were distributed proportionally across the 14 hours of model analysis and by vehicle type and fuel type in line with the vehicle fleet mix in the El Paso region.

TTI staff reviewed the project information to determine values for the individual variables in the MOSERs equation. The MOSERS Guide encourages planners to make conservative, justifiable assumptions about projects.

- Based on ridership data provided by Sun Metro and factoring in ridership growth, an average daily ridership of 3,700 was assumed.
- APTA ridership survey reports show 52% of transit passengers to be commuting. The RTS project focuses on capturing new commute traffic, so 75% of riders are assumed to be traveling to work and back totaling 2,775 per day.
- The analysis assumes 35% of these commute passengers are former single occupant vehicle (SOV) drivers. This translates to 26.25% of all passengers. This should be considered optimistic. The APTA survey report showed 14.3% of transit roadway passengers would drive alone as an alternative if no transit service was available. However, this new service actively seeks SOV commuters.
- An average trip length of 12.6 miles was computed based on data provided by Sun Metro. The trip lengths were distributed evenly in the reduced VMT.

The final estimated emission reductions are presented in kilograms per day (kg/day) in accordance to CMAQ project reporting requirements.

Strategy Equation

Note: Due to the extensiveness of the MOVES model output data and to help presentation of results, the individual start rates and emission rates per distance (\mathbf{TEF}_{AUTO} and \mathbf{EF}_{B}) per vehicle type computed are not presented but are available for review if needed. Also, the project is assumed implemented by phase 3 thus transit vehicle emissions (parts C and D) are not included in this analysis.

3.2 System/Service Operational Improvements

Daily Emission Reduction (for each pollutant) = A + B

$A = VT_R * TEF_{AUTO}$

Reduction in auto start emissions from trips reduced

$B = VMT_R * EF_B$

Reduction in auto running exhaust emissions from VMT reductions

Where

 $VT_R = N_{TR} * F_{T, SOV}$

Number of new transit riders multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = VT_R * TL_W$

Number of vehicle trips reduced multiplied by the average auto trip length

Final unit of measure: grams/day Source: Texas A&M Transportation Institute

Variables:	EF _B :	Speed-based running exhaust emission factor for affected roadway before implementation (NO _x , VOC, or CO) (grams/mile)
	F _T , sov:	Percentage of people using a transit vehicle that previously were vehicle drivers (decimal)
	N _{TR} :	New transit ridership
	TEF _{AUTO} :	Auto trip-end emission factor (NO _x , VOC, or CO) (grams/trip)
	TL _w :	Average auto trip length (miles)

VMT _R :	Reduction in daily automobile VMT
VT <i>_R</i> :	Reduction in number of daily automobile vehicle trips

Analysis

 $VT_R = (3,700 * 2) * 0.52 = 3,848 \text{ trips/day}$

Number of transit riders multiplied by 2 multiplied by the percentage of riders shifting from single-occupant auto use

 $VMT_R = 3,848 * 12.6 = 48,485$ vehicle-miles/day

Number of vehicle trips reduced multiplied by the average auto trip length

Summary of Results

The emissions analysis result for the project is shown in Table 1. There are significant, continued daily emissions benefits for all four pollutants. The results indicate an estimated air quality benefit from the Montana RTS Phase 3 operational assistance project.

Pollutant	Emissions Reduction (kg/day)
СО	108.402
NOx	7.719
VOC	5.191
PM_{10}	2.588