5

SYSTEMS-LEVEL ANALYSIS

5. SYSTEMS LEVEL ANALYSIS

Metropolitan transportation planning is not solely concerned with the best way to move people and goods. In addition to mobility concerns, the planning process also examines the interaction of proposed transportation improvements with the natural and human environment. For the purposes of the metropolitan transportation plan, potential impacts on environmental resources and quality of life in the region are evaluated at a system-wide level.

A more detailed analysis of the specific impacts associated with a project is typically performed later in the project development process to fulfill requirements under the National Environmental Protection Act (NEPA).

The primary goal of the systems-level analysis is to evaluate whether the proposed program of unconstrained potential transportation improvements may negatively impact the environment or result in disparate impacts to certain populations. It is intended to serve as a guide for implementing agencies and elected officials as projects progress through the development process.

While it is not always possible to avoid negative impacts to environmentally sensitive areas, the goal of the environmental mitigation analysis is to balance the need for transportation improvements with environmental protection and quality of life considerations and, where possible, to increase access to natural and cultural resources in the region. Mitigation activities should be considered during all phases of project planning, design, construction, and maintenance.

In addition to environmental and cultural resources, the systems-level analysis addresses environmental justice considerations to ensure both the benefits and the burdens of the transportation system are distributed equitably across the region. The term environmental justice first emerged in the metropolitan transportation planning discussion in 1994 with the issuance of Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The executive order was based upon Title VI of the Civil Rights Act and is meant to ensure that minority and low-income populations are not adversely affected by federal actions.

Identifying potential impacts on the environment, as well as low-income and minority populations, involves a three-step process that includes:

- Defining and developing an inventory of environmental resources/minority and low-income populations;
- Identifying and assessing the potential impacts of proposed transportation improvements on these resources; and
- Addressing possible mitigation activities system-wide.

ENVIRONMENTAL MITIGATION ANALYSIS

The El Paso Metropolitan Planning Area is located in the far western corner of Texas, and encompasses the entirety of El Paso County Texas, as well as portions or Doña Ana, and Otero Counties in New Mexico. The City of El Paso stands on the Rio Grande across the US-Mexico border from Ciudad Juárez.

The El Paso region has a transitional climate between cold and hot desert climates, usually with not much humidity and winters that are cool and dry. El Paso experiences rainfall on average of 9.7 inches per year, which can occur during severe thunderstorms, sometimes strong enough to produce flash flooding. The City of El Paso is home to Franklin Mountains State Park. The El Paso region sits atop the Hueco Bolson aquifer, which stretches north into New Mexico and southwest under the Rio Bravo in to Mexico. The location of the region's environmental and cultural resources, including rivers and streams, wetlands, floodplains, parks, open space, recreational areas, and historic sites, were first inventoried as part of the environmental analysis.

The data and information used to conduct the analysis included flood plain maps from the Federal Emergency Management Agency (FEMA), wetlands maps from the U.S. Fish and Wildlife Service, historic sites from the National Register of Historic Places, and state and federal wildlife and environmental protection resources. These inventoried resources are shown in **Figures 5-1 through 5-3.**

FIGURE 5-1: PARKS AND CULTURAL RESOURCES

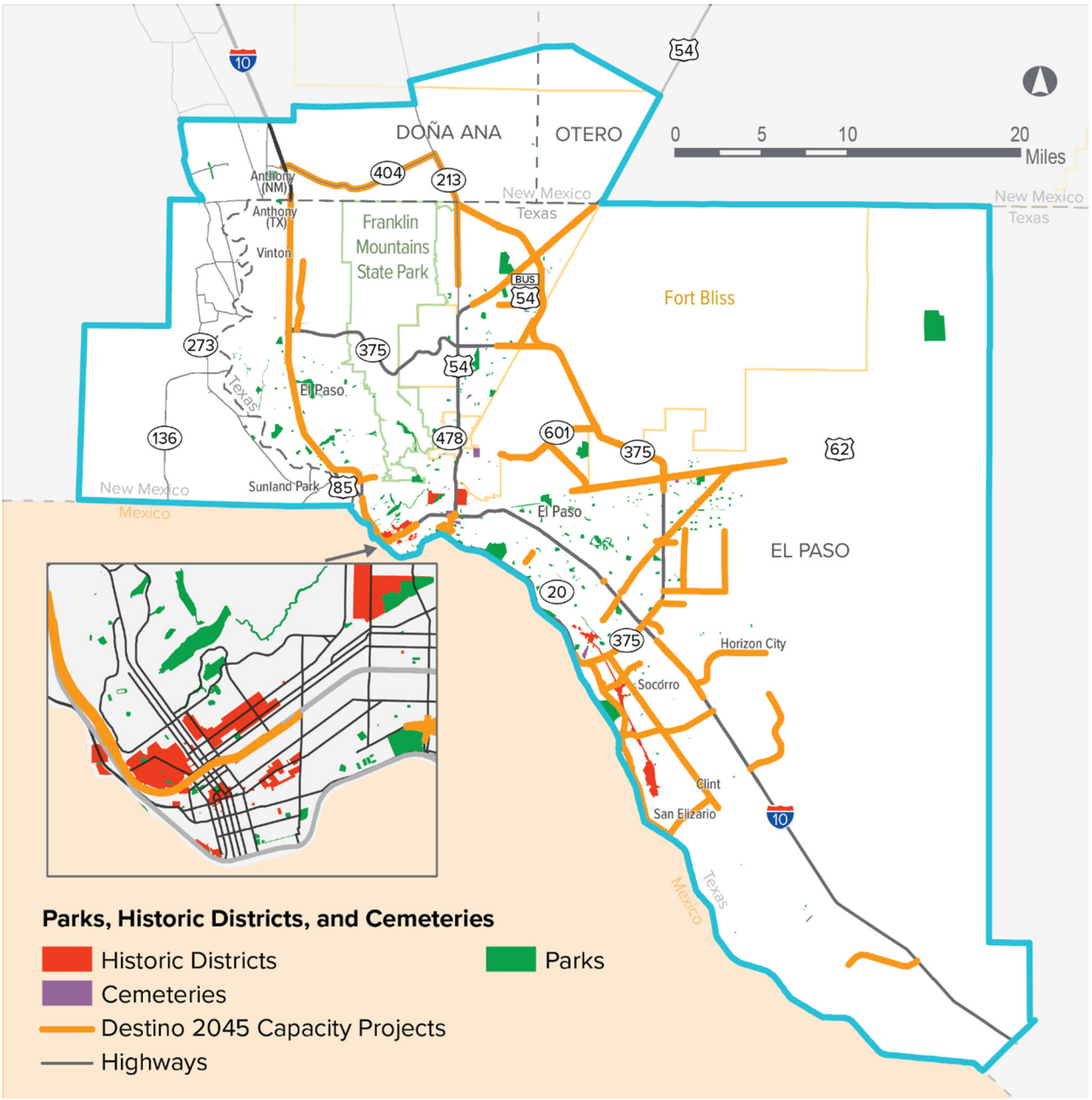


FIGURE 5-2: ENVIRONMENTAL POINTS OF INTEREST

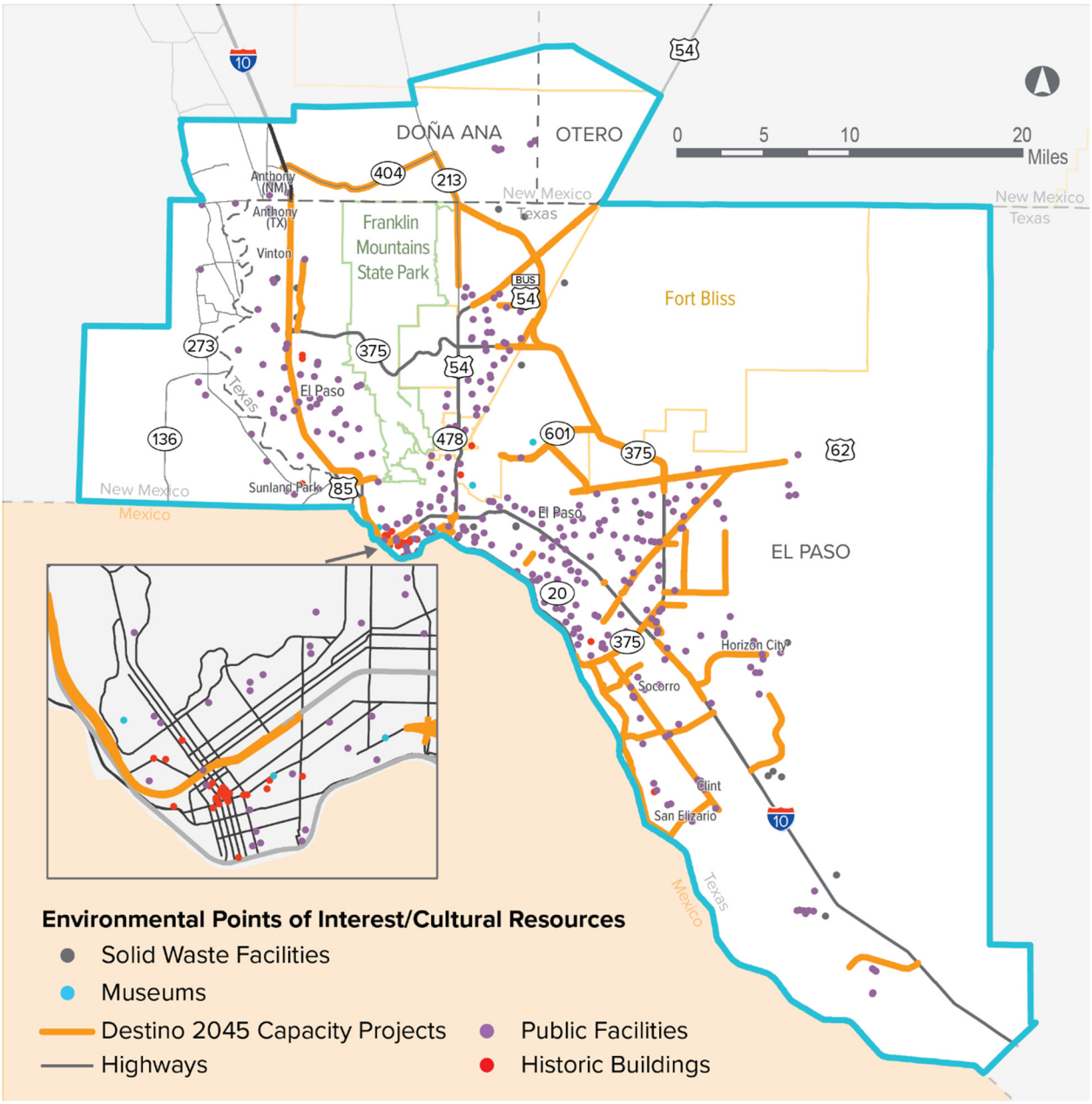
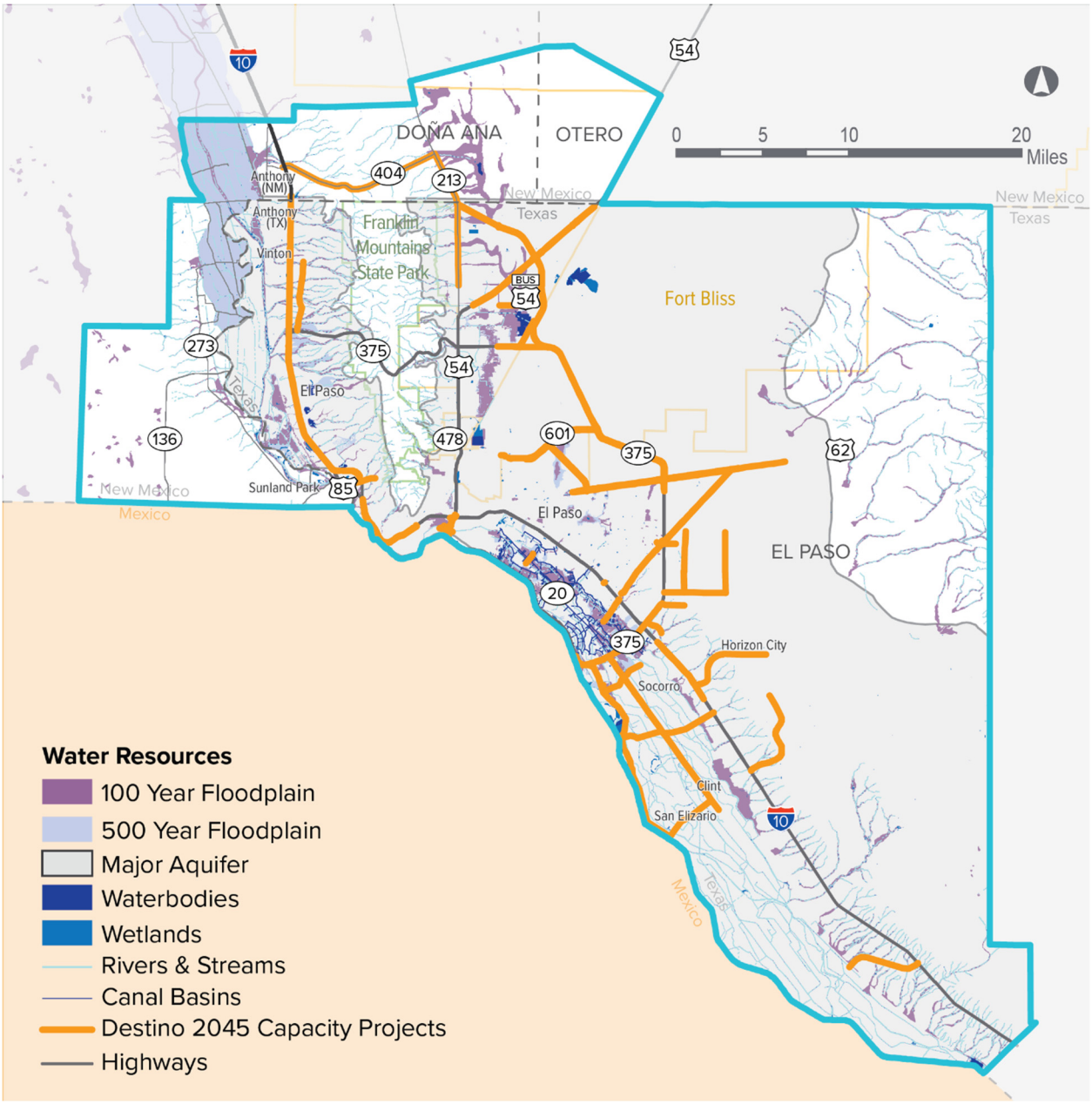


FIGURE 5-3: WATER RESOURCES



In order to determine how projects identified in this plan might affect these resources, an FHWA-endorsed GIS methodology originally developed by the Southeast Michigan Council of Governments was employed. The analysis assembles projects into types, and then buffer zones are generated and mapped for each type of project. For the sake of system level analysis, only capacity projects were considered to have potential impacts on mapped data. **Table 5-1** presents the number of proposed projects for each type included in Destino 2045 MTP. Some projects, such as overlays, were excluded from this analysis; therefore the total number of projects explored in this section does not reflect the total number of projects in the Destino 2045 MTP.

TABLE 5-1: PROJECT TYPES

PROJECT TYPE	TOTAL NUMBER OF PROPOSED PROJECTS
New/Expanded Roadway	56
Public Transit	14
Active Transportation (Bike/Ped)	13

Buffer sizes were determined based on the type of environmental resource being examined, meaning smaller "areas of influence" were computed depending on the environmental resource. Some resources, such as recreation areas and historic sites, may only be impacted by projects in close physical proximity, while others (such as water resources) may still be impacted by a project some distance away. **Table 5-2** summarizes the buffer sizes assigned to each resource being examined. Once buffer sizes were determined, buffers and environmental resources were mapped to identify areas of overlap, as these are areas where an impact is possible. **Figure 5-4** provides an example of the buffer analysis, showing proposed projects as well as areas of possible project impacts.

TABLE 5-2: ENVIRONMENTAL RESOURCE BUFFER SIZES

ENVIRONMENTAL RESOURCE	CAPACITY/EXPANSION
Floodways	.25 miles
Wetlands and Other Waters	.25 miles
Cemeteries	250 feet
Historic Sites	250 feet

FIGURE 5-4: EXAMPLE BUFFER ANALYSIS

Source: Wikimedia commons

Tables 5-3, and 5-4 quantify the number of possible impacts to the inventoried resources for capacity projects. The risk to a major aquifer, wetlands, and floodplains is the greatest with 52, 40, and 35 projects, respectively, potentially impacting those resources. The list of proposed potential improvements presents few concerns regarding cemeteries or historic resources with only one project within close proximity of a historic site and eleven potentially impacting government offices/points of interest, while fifteen projects are located within close proximity to a park. **Table 5-5** lists the historic sites and districts and parks that may be impacted by the proposed transportation improvements.

TABLE 5-3: NUMBER OF POSSIBLE IMPACTS TO INVENTORIED WATER RESOURCES

WATER RESOURCE	NEW/ EXPANDED ROADWAY (56 PROJECTS)
Canal Basin	4
Flood Hazard Structure/levees	6
Area Water	2
Flood Hazard Areas	35
Major Aquifer	52
Wetlands	40
Water Bodies	6
Rivers/ Streams	32*

**Many areas classified as rivers and streams are also classified as wetlands and may have produced duplicate results.*

TABLE 5-4: NUMBER OF POSSIBLE IMPACTS TO PARKS AND CULTURAL RESOURCES

PARK/CULTURAL RESOURCE	NEW/ EXPANDED ROADWAY (56 PROJECTS)
Parks	7
Office of Stormwater Management (OSM) Parks	8**
Point of Interest	11
Solid Waste Facility	1
Landmarks	6
Historic Sites	1
Cemeteries	3
Historic Districts	4

***Some parks are also classified as OSM parks and may have produced duplicate results*

TABLE 5-5: RESOURCE SPECIFIC IMPACTS OF SPECIFIC PROJECTS

PROPOSED PROJECT	RESOURCE
I-10 Widening at Downtown	Old Fort Bliss
	Old San Francisco District
	Sunset Heights District
	Independent District
	Grace Chope Park
Loop 375 (Americas/Joe Battle) Widening	Mission Trail Historic District
Eastlake/Old Hueco Tanks Extension	Mission Trail Historic District
Arterial 1 (1682 Blvd.)	Neighborhood Baseball Pitch
I-10 Connect	Chamizal National Memorial
	Lincoln Park
Tierra Este (Arterial 1)	Frank "Francis" T. Hourigan Park
	Mesquite Trails Park #6
Pellicano Dr. Widening/Build	West Texas Estates Park
FM 659 (Zaragoza Rd) Widening, Segment 3	Blackie Chesher Park
Hawkins Blvd Overpass	Stiles Park
Borderland Expressway	Northern Lights (South Park)
	Northern Lights (North Park)
	Mesquite Hills Park #5

The systems-level analysis of potential environmental impacts is intended to function as a resource for agencies and elected officials that will ultimately implement any of the potential projects. Detailed, project-level analysis is required in order to definitively identify adverse impacts from specific projects. The buffer analysis is a useful method for narrowing the focus of such studies, but it should be noted that proximity or overlap of a project buffer and environmental resource alone does not mean an impact is present (nor does the lack of an overlap indicate that an impact won't occur).

POTENTIAL MITIGATION ACTIVITIES

Federal regulations require the metropolitan planning process to include "a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan." FHWA recommends an ordered approach to mitigation known as "sequencing" that involves understanding the affected environment and assessing transportation effects through project development. This ordered approach involves:

- Avoiding the impact altogether;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
- Compensating for the impact by replacing or providing substitute resources.

Recognizing that the type and the level of mitigation activities will vary depending on the scope of the project, the project team proposes a toolbox of mitigation measures and general areas where these activities can be implemented.

These measures, listed in **Table 5-6**, are intended to be regional in scope and may not necessarily address potential project-level impacts. As proposed projects progress through the project development process, mitigation should be an integral part of alternatives development and the analysis process from the start in order to maximize effectiveness.

TABLE 5-6: POTENTIAL MITIGATION ACTIVITIES

RESOURCE	MITIGATION MEASURES
Wetlands or water resources	Avoidance, minimization, compensation
	→ Preservation
	→ Creation
	→ Restoration
	→ In-lieu fees
	→ Riparian buffers
	→ Design exceptions and variances
	Environmental compliance monitoring
Forested and other natural areas	Avoidance, minimization
	Replacement property for open space easements to be of equal fair market value and of equivalent usefulness
	Design exceptions and variances
	Environmental compliance monitoring
Agricultural areas	Avoidance, minimization
	Design exceptions and variances
	Environmental compliance monitoring
Endangered and threatened species	Avoidance, minimization
	Time-of-year restrictions
	Construction sequencing
	Design exceptions and variances
	Species research/fact sheets
	Memoranda of Agreements for species management
	Environmental compliance monitoring
Ambient air quality	Transportation control measures
	Transportation emission reduction measures
Cultural resources	Avoidance, minimization
	Landscaping for historic properties
	Preservation in place or excavation for archeological sites
	Design exceptions and variances
	Environmental compliance monitoring
Parks and recreation areas	Avoidance, minimization, mitigation
	Design exceptions and variances
	Environmental compliance monitoring

AIR QUALITY

Improving regional air quality and maintaining compliance with federal air quality standards is a fundamental consideration in the metropolitan transportation planning process. The construction of new transportation infrastructure increases the capacity for vehicles on regional roadways, which has the potential to increase traffic-related air pollutants in the MPO study area.

In 1963, in response to increasing air pollution, the U.S. Congress passed the original Clean Air Act which established a federal program for researching techniques to monitor and control air pollution. The Clean Air Act of 1970 increased federal enforcement authority and authorized the development of national ambient air quality standards to limit common and widespread pollutants. These standards, known as the National Ambient Air Quality Standards (NAAQS), define the allowable concentration of pollution in the air for six "criteria" pollutants, including carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide.

The Clean Air Act identifies two types of national ambient air quality standards:

- Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.
- Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Source: tceq.texas.gov

The existing standards for each of the six criteria pollutants are listed in **Table 5-7**. The units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air (µg/m3). The existing standard for Ozone was established by a 2008 Final Rule. In November 2014, the EPA proposed to revise the primary and secondary standards to somewhere within the range of 0.065 and 0.070 ppm. After the proposed rule was published in December 2014, the EPA accepted written comments on the proposed rule until March 17, 2015. The EPA issued its final rule strengthening the ozone standards to 0.070 ppm on October 1, 2015.

EPA has delayed issuing guidance on conformity requirements for transportation planning in relation to the 2015 Ozone rule. Until then, the Destino 2045 MTP is only required to maintain compliance with the 2008 standard definition.

TABLE 5-7: EXISTING STANDARDS FOR CRITERIA POLLUTANTS

POLLUTANT		PRIMARY/ SECONDARY	AVERAGING TIME	LEVEL	FORM
Carbon Monoxide (CO)		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead		Primary and Secondary	Rolling 3-month average	0.15 µg/m3	Not to be exceeded
Nitrogen Dioxide (NOX)		Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		Primary and Secondary	Annual	53 ppb	Annual mean
Ozone		Primary and Secondary	8-hour	0.075 ppm	Annual fourth-highest maximum daily 8-hour concentration, averaged over 3 years
Particle Pollution	PM2.5	Primary	Annual	12 µg/m3	Annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m3	Annual mean, averaged over 3 years
	PM10	Primary and Secondary	24-hour	35 µg/m3	98th percentile, averaged over 3 years
		Primary and Secondary	24-hour	150 µg/m3	Not to be exceeded more than once per year, averaged over 3 years
Sulfur Dioxide		Primary	1-hour	75 ppb	9th percentile of daily 1-hour maximum, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Regions are designated by the EPA as either in attainment or nonattainment for NAAQS. Attainment means the concentration of each pollutant does not exceed NAAQS. Non-attainment means the concentration of at least one pollutant exceeds the maximum defined threshold. If an area is designated as non-attainment, the State must develop and submit a State Implementation Plan (SIP). The SIP addresses each pollutant that exceeds NAAQS and establishes an overall regional plan to reduce air pollution emission levels, designed to return the area to, and maintain, attainment status. Once a nonattainment area meets the standards, EPA will designate the area to attainment as a "maintenance area." Maintenance areas are required to have a Maintenance Plan in place to ensure continued attainment of the respective air quality standard. The Clean Air Act defines specific timetables to attain air quality standards and requires non-attainment areas to demonstrate reasonable progress in reducing air pollutants until the area achieves attainment.

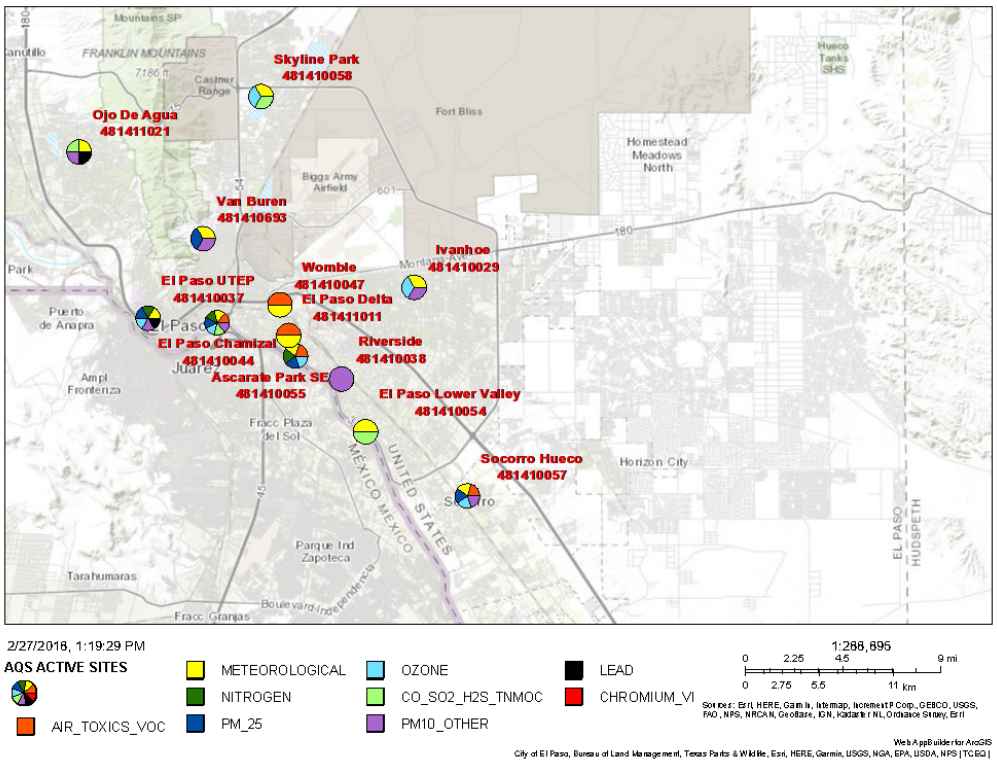
AIR QUALITY IN THE EPMPO AREA

There are twelve air quality monitoring sites in the El Paso region that form part of Texas' monitoring network. The Ojo De Agua site monitors CO, PM10 using the sequential Federal Reference Method (FRM), TSP (Lead) and wind. The Skyline Park location monitors Ozone, SO2, temperature, and wind. The Van Buren Site monitors PM10 using FRM, PM2.5 using a continuous tapered element oscillating microbalance (TEOM), relative humidity, temperature, and wind. The El Paso UTEP site monitors CO, Dew Point, NOX, Ozone, PM10 (TEOM), PM2.5 (FRM), PM2.5 (TEOM), TSP (lead), UV radiation, solar radiation, precipitation, relative humidity, temperature, and wind.

The El Paso Chamizal site operates an automated gas chromatograph. Gas chromatography (GC) is a common type of chromatography used in analytical chemistry for separating and analyzing compounds that can be vaporized without decomposition. Typical uses of GC include testing the purity of a particular substance, or separating the different components of a mixture (the relative amounts of such components can also be determined). This site monitors CO (high sensitivity), dew point, NOX, NOY (high sensitivity), Ozone, PM Coarse, PM2.5 (FRM), PM2.5 (speciation) SO2 (high sensitivity), relative humidity, solar radiation, temperature, and wind. The Womble site operates a single canister and monitors temperature and wind.

The El Paso Delta site similarly monitors temperature and wind but operates an Automated Gas Chromatograph. The Ascarate Park SE site monitors barometric pressure, Carbonyl, Dew Point, NOX, Ozone, PM2.5(TEOM), relative humidity, solare radiation, temperature, visibility, and wind. The Ivanhoe site monitors Ozone, PM10 (FRM), relative humidity, temperature, and wind. The Riverside Site monitors PM10 (FRM). The El Paso Lower Valley site monitors H2S, temperature, and wind. The Socorro Hueco site monitors Ozone, PM10 (FRM), PM10 (TEOM), PM2.5 (TEOM), SVOC, temperature, and wind. The locations of all El Paso air monitoring sites overseen by the Texas Commission on Environmental Quality (TCEQ) are shown in **Figure 5-5**.

FIGURE 5-5: TEXAS AIR QUALITY MONITORING SITES



TRANSPORTATION CONFORMITY ANALYSIS

The cities of El Paso and Anthony, NM have been designated as moderate non-attainment areas for Particulate Matter, 10 microns or less (PM10) since 1991, although there is no emissions budget established for Anthony. A small portion of the City of El Paso has been operating under an EPA-approved 10-year maintenance plan for Carbon Monoxide (CO) since 2008. The limited maintenance plan covering CO for the next 10 years was approved by the EPA in September 2017.

The Transportation Conformity Analysis performed for the Destino 2045 MTP demonstrates that the projected emissions of CO and PM 10 conform to the Motor Vehicle Emissions Budget (MVEB) enacted by TCEQ and approved by the EPA.

Conformity for CO must be demonstrated for 2020, as this is the last year of the maintenance plan. This transportation conformity analysis was obtained by projecting vehicle miles and hours traveled from the Travel Demand Model, calculating emissions of these vehicles using the MOtor Vehicle Emission Simulator (MOVES2014a) (released December 2015 and updated November 2016) and AP-42 section 13.2.1 models (EPA, January 2011), and comparing the results to the MVEB for El Paso County.

It should be noted that the CO maintenance plan budget covers a portion of the City of El Paso and although the PM10 nonattainment area is the City of El Paso, the PM10 budget includes all of El Paso County.

The TDM has a validated 2012 base year with forecast network years of 2020, 2030, 2040 and 2045. The forecast years incorporate projects proposed in the MTP and TIP. The model outputs were sent to the Texas A&M Transportation Institute (TTI) for emissions analysis.

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TABLE 5-8: MOTOR VEHICLE EMISSIONS BUDGETS FOR EL PASO CO MAINTENANCE AND PM10 NON-ATTAINMENT AREAS

	CO[3]	PM10
Classification	Attainment/ Maintenance	Moderate Non- Attainment
MVEB tons/day	29.66[1]	12.10[2]

[1] Approval and Promulgation of Implementation Plans; Texas; El Paso County Carbon Monoxide Redesignation to Attainment, and Approval of Maintenance Plan https://www.gpo.gov/fdsys/pkg/FR-2008-08-04/pdf/E8-17700.pdf

[2] Transportation Conformity: Motor Vehicle Emissions Budgets (MVEB) (Appendix A: El Paso PM-10 page 4)

[3] For the purpose of this conformity determination per guidance from the consultative partners, demonstration for CO has to be performed for year 2020, as this is the last year of the maintenance plan.

TABLE 5-9: EL PASO CONFORMITY ANALYSIS SUMMARY (EMISSIONS EXPRESSED IN TONS PER DAY)

POLLUTANT	BUDGET	2020[6]	2030	2040	2045
CO[1]	29.66[4]	5.08	-----	-----	-----
PM10[2]	12.1[5]	6.36/ 6.90	6.80/ 7.34	7.41/ 7.98	7.68/ 8.28

[1] The CO Analysis is only for zones in the maintenance areas. The MVEB of 29.66 tons per day (tpd) applies to the network years 2020, 2030 and 2040. Emissions estimates indicate winter weekday figures.

[2] PM10 emissions include summer/winter figures. The PM10 budget is based on the 1994 PM10 Mobile Emissions Inventory.

[4] Approval and Promulgation of Implementation Plans; Texas; El Paso County Carbon Monoxide Re-designation to Attainment, and Approval of Maintenance Plan (https://www.gpo.gov/fdsys/pkg/FR-2008-08-04/pdf/E8-17700.pdf)

[5] Transportation Conformity: Motor Vehicle Emissions Budgets (MVEB) (Appendix A: El Paso PM-10)

[6] For the purpose of this conformity determination per guidance from the consultative partners, demonstration for CO has to be performed for year 2020, as this is the last year of the maintenance plan.

ENVIRONMENTAL JUSTICE ANALYSIS

Environmental Justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, educational level, or income with respect to the development, implementation, and enforcement of environmental laws. Environmental Justice seeks to ensure that minority and low-income communities have access to public information for human health, environmental planning, regulations, and enforcement. It ensures that no population, especially the elderly and children, are forced to shoulder a disproportionate burden of the negative human health and environmental impacts of pollution or other environmental hazards. Title VI of the Civil Rights Act (42 US Code 2000 and Executive Order 12898) requires an environmental justice review, which entails a thorough evaluation of project effects to persons belonging to low-income populations and minority groups.

Using the guidance contained in the metropolitan planning regulations, the study team incorporated environmental justice considerations into the development of the Destino 2045 MTP through the following steps:

ENVIRONMENTAL JUSTICE AND THE MTP

1. The study team identified and mapped the locations of minority and low-income populations and performed a GIS-based analysis of the proximity of proposed transportation improvements to environmental justice communities;
2. Using the MPO's adopted public participation plan as a guide, the study team designed and implemented an early and meaningful public participation program that provided an opportunity for the public to be partners in the planning process;
3. In the development of the Destino 2045 MTP, at least one public involvement meeting per round was held in an area defined by the 2010 census as being of low to moderate income or having a predominantly minority population;
4. The study team ensured that public transportation providers, upon which the environmental justice community is most dependent, were strong partners in the planning process; and
5. The study team focused on developing a multimodal transportation system that served diverse travel markets and supported the trip purposes of various transportation consumers, including the identified environmental justice population.

Identifying potential impacts on environmental justice communities involves a three-step process like the one used for the environmental mitigation analysis:

- Define and develop an inventory of minority and low-income populations;
- Identify and assess the potential impacts of proposed transportation improvements on these communities; and
- Address possible mitigation activities at a system-wide level

The project team identified the locations of minority and low-income environmental justice population concentrations using appropriate U.S. Census data. ACS household poverty status data originates at the census block group level and was aggregated to the region's traffic analysis zones (TAZ) to highlight low-income areas in relation to the El Paso MPO's transportation system. The analysis identifies EJZs as any TAZ where 35% or more of households are considered to be in poverty (i.e. household income is below a certain poverty threshold determined by the ACS).

2015 American Community Survey (ACS) data displays the El Paso MPO Region's median household income to be roughly $36,800 and contains an average household size of 2.92. The region's median household income is lower in comparison to those of Texas ($53,207) and New Mexico ($44,963), with concentrations of low-income households along the United States-Mexico border, downtown El Paso, the Mission Valley, and in Dona Ana and Otero Counties just north of the Texas state line. **Figure 5-6** (next page) shows the location of minority and low-income populations in the El Paso Metropolitan Planning region in relation to Destino 2045 capacity expansion transportation projects.

As stated earlier, project-scale studies should be conducted in the planning and environmental phases of each project to determine actual impacts to these communities. **Table 5-10** summarizes the number of capacity projects that may impact identified environmental justice areas.

TABLE 5-10: NUMBER OF POSSIBLE IMPACTS TO EJ ZONES

	EJ ZONES
New/ Expanded Roadway (56 projects)	18

Just under 33 percent of capacity expansion projects may impact identified environmental justice areas.

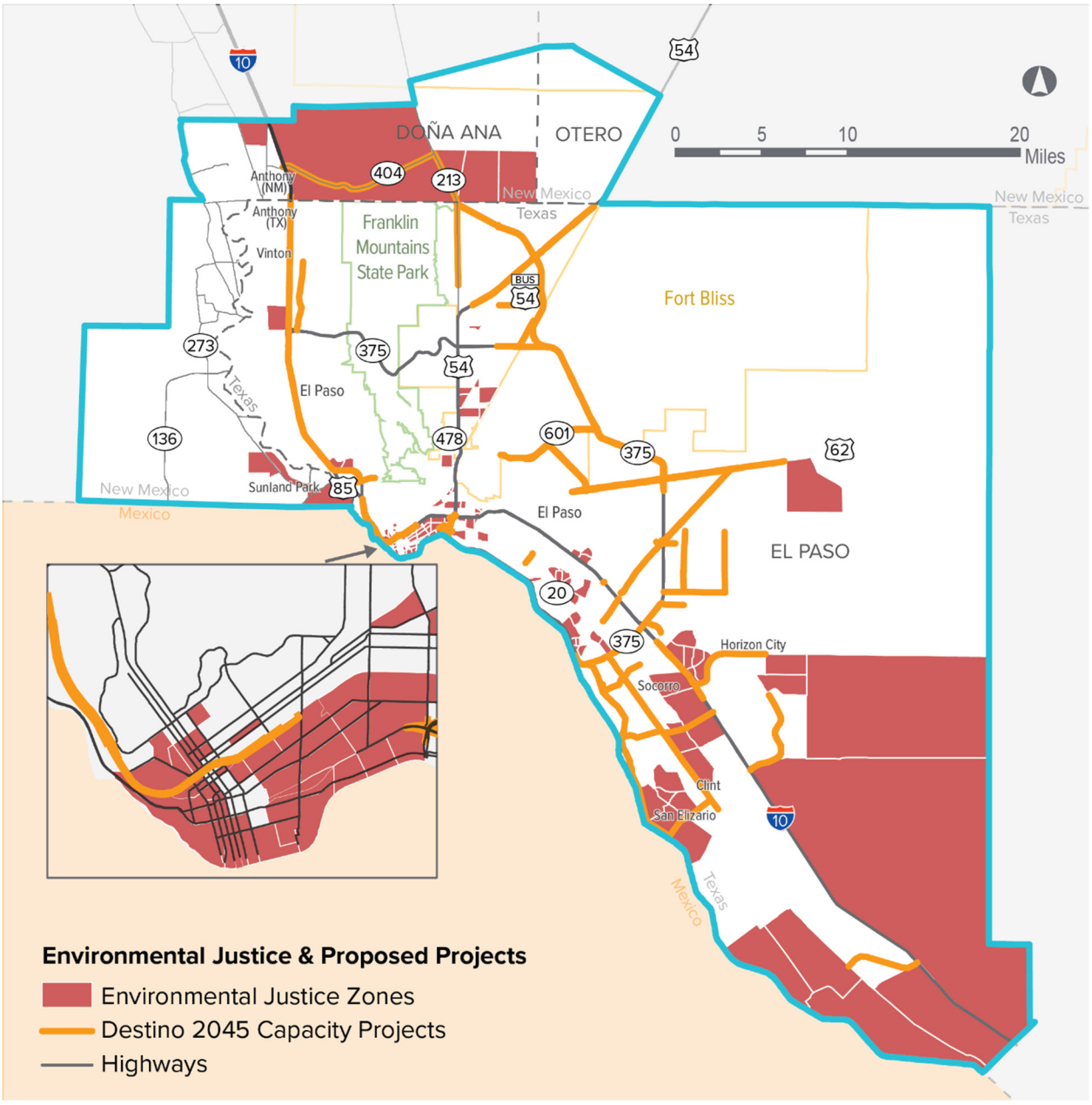
Like the environmental mitigation analysis, a more detailed, project-level analysis will need to be performed to better understand the likely impacts of transportation improvements on environmental justice populations. The proximity of projects to environmental justice populations may have both positive and negative impacts. For example, it is assumed that the mobility, access, and safety benefits of most projects accrue most strongly to those areas in close proximity to the project. Therefore, if the project objectives are consistent with the travel market needs of adjacent communities, the project is viewed as having a positive impact.

On the other hand, the physical impacts of project construction and footprint also have the greatest negative impacts on adjacent communities. Large infrastructure projects whose objectives are not consistent with community needs represent potential negative impacts. Examples include the construction of a new railway line that may create safety and noise pollution concerns, the construction of a new roadway that divides an existing community or creates barriers to other resources and/or activities, or improvements that may increase freight traffic or the movement of hazardous materials through low-income areas.

The key consideration in determining unintended consequences or disparate impacts to environmental justice populations is how the project objectives match the community's transportation needs.

The EPMPO is committed to working with project sponsors to mitigate negative impacts on environmental justice communities using measures such as impact avoidance or minimization and context sensitive solutions (appropriate functional and/or aesthetic design features).

FIGURE 5-6: ENVIRONMENTAL JUSTICE AND PROPOSED PROJECTS



SYTEM LEVEL PERFORMANCE EVALUATION

As described in Chapters 2 and 3, the El Paso MPO has adopted a series of performance measures that allow the MPO to quantify the potential impacts that the Destino 2045 plan will have towards achieving the region's mobility and quality of life goals. The final evaluation performed as part of the systems level evaluation of the proposed projects compared the performance measures calculated for the 2012-2015 Base Year and 2045 "No Build" Scenarios to the performance of the 2045 "Build" Scenario. In general, the Build Scenario improves on almost every performance measure when compared to the No-Build scenario, although there is a moderate increase in the total and per-capita VMT (and subsequently a modest increase in the estimated average trip cost).

The results of the scenario analysis comparisons for performance measures is shown in **Table 5-11**. **Table 5-12** shows the performance of the build scenario in addressing Safety, Operations & Maintenance, and Ports of Entry.

TABLE 5-11: SCENARIO PERFORMANCE MEASURE COMPARISON

	2012-2015 BASE	2045 NO-BUILD	2045 BUILD	NO-BUILD VS. BASE	BUILD VS. BASE	BUILD VS. NO-BUILD
Travel Time Index	1.14	1.21	1.17	+ 6%	+ 2%	- 3.31%
Annual hours of delay (million hours)	14.74	31.3	28.3	+ 112%	+ 92%	- 9.58%
Average peak-period commuter minutes in EJ zones	20.17	22.67	21.59	+ 12%	+ 7%	- 4.76%
% of population within 1/2 mile of high-quality rapid transit	4.0%	14.8%	16.0%	+ 11%	+ 12%	+ 1.23%
% of jobs within 1/2 mile of high-quality rapid transit	14.0%	31.0%	31.0%	+ 17%	+ 17%	+ 0.00%
% of non-SOV trips	10.1%	11.3%	11.4%	+ 12%	+ 13%	+ 0.10%
Average trip costs	$2.14	$2.21	$2.25	+ 3%	+ 5%	+ 1.81%
Max daily CO emissions in delimited area [Ton/day]	8.16	2.12	2.22	- 73%	- 72%	+4.96%
Max daily PM10 emissions [Ton/day]	8.39	9.63	8.28	+ 15%	- 1%	- 13.97%
Daily VMT Total (million miles)	16.0	22.8	25.7	+ 43%	+ 60%	+ 12.41%
Daily VMT per capita	18.3	16.6	18.7	- 9%	+ 2%	+ 12.47%

TABLE 5-12: QUALITATIVE SYSTEM PERFORMANCE MEASURES

GOAL CATEGORY	ELEMENT ADDRESSED	NUMBER OF PROJECTS
Safety	High Crash Intersections	5
	High Crash Roadway Segments	9
	Crash Modification Factors	35
Ports of Entry	Border Crossing Improvements	8
Operations & Maintenance	Very Poor Pavement Condition	10
	Poor Pavement Condition	3
	Fair Pavement Condition	11
	Deficient Bridges	4

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