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Chapter 1 Introduction to the El Paso (ELP) Region

The Texas-Mexico Border Transportation Master Plan (BTMP) is a comprehensive, multimodal, long-range plan for the Texas-Mexico border region and identifies transportation issues, needs, challenges, opportunities, and strategies in the short-, medium-, and long-term for moving people and goods efficiently and safely across the Texas-Mexico border, the border regions, and beyond now and in the future. It outlines transportation policy, program, and project strategies that support Texas-Mexico, state, regional, and local economic competitiveness.

The development of the BTMP comprised of four phases: (1) data collection, (2) multimodal corridor designation and needs assessment, (3) forecast and economic analysis, and (4) identification of strategies and preliminary recommendations.

The BTMP covers the Texas-Mexico border that spans 1,254 miles following the Rio Grande River from El Paso to the Gulf of Mexico. The Texas-Mexico border is divided into three regions: El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas. The multimodal transportation network serving the border.

The BTMP Final Report takes a holistic approach to border planning, developing one plan for the entire Texas-Mexico border, with the understanding that the border is not a monolith and that each border region is distinct and has unique geographic, trade, economic, and population characteristics.

The purpose of this regional summary is to specifically discuss The El Paso/Santa Teresa/Chihuahua Region.

1.1 El Paso/Santa Teresa/Chihuahua Regional Overview

- **West Texas Location:** Located in the westernmost part of Texas, the El Paso region encompasses six counties: El Paso, Hudspeth, Culberson, Jeff Davis, Presidio, and Brewster.

- **Trade Gateway:** The El Paso region serves as a major U.S. gateway for the movement of people and goods between Texas and Mexico. Within the El Paso region, there are seven border crossings processing pedestrian and motorized vehicle traffic, including the Santa Teresa border crossing in NM, as well as three rail border crossings1. The Santa Teresa Port of Entry in New Mexico in this region is part of an overweight cargo zone for border crossings.

- **Largest Number of Pedestrian Crossers:** The El Paso/Santa Teresa/Chihuahua region features the largest number of pedestrian crossers. This includes college students from Cd. Juárez who regularly travel to the University of Texas at El Paso and back home again via multiple modes of transportation. There is a lack of connected pedestrian access at the Bridge of the Americas (BOTA) and Ysleta-Zaragoza Bridge, which prevents use of municipal bus lines in proximity.

- **Transmigrantes:** The Presidio Port of Entry opened to transmigrante traffic in March 2019 – Central Americans who move used goods and vehicles southbound through the border back to their home countries for resale. Presidio and Los Indios are the two ports of entry that permit transmigrante traffic.

---

1 The Presidio rail bridge is currently closed.
Supply Chains: The top supply chains moved through the border crossings in this region by value are High Tech, Machinery, and Motor Vehicles.

Economic Impact of Border Crossings: The annual contribution to the GDP in the U.S. and Mexico resulting from the movement of people and goods through the border crossings in this region was $91.0B in 2019 and is expected to grow to $356.6B in 2050.

Asset Conditions: All border crossings are in good or fair conditions except Fort Hancock-El Porvenir, which is rated in poor condition. However, 26% of regional roadways within one-mile of the border in this region have deteriorated to poor conditions and require rehabilitation and preventative maintenance. There are also domestic bridges on the Texas side of the border rated in poor conditions especially in the urban area of El Paso and near border crossings – four bridge structures also have low vertical clearance.

Freight Rail: The El Paso rail bridges are constrained by the single-track Ferromex rail line in Ciudad Juarez from the Ferromex rail yard to the border that connects to the BNSF and UP rail bridges. The municipality of Ciudad Juarez also restricts train crossings to 18-hours per day. Additionally, freight rail passes through the downtown area of Ciudad Juarez with four highway/rail crossings.

Quality of Life and Sustainability: El Paso County is in non-attainment for national air quality ambient standards, partially due to heavy infrastructure and border traffic. Improvements to sustainability are needed in the region, as well as additional bypass routes to manage existing congestion and divert border traffic from local traffic.

The El Paso Region’s population, employment and income has grown since 1990 and is expected to continue to increase through 2050.

POPULATION: Region increased 59% from 1.75M in 1990 to 2.78M in 2019 and is forecast to increase 20% to 3.34M residents in 2050.
EMPLOYMENT: Texas side of the region grew by 50% from 308K in 1990 to 462K in 2019 and is forecast to increase by 32% to 609K in 2050.

INCOME: Texas side of the region increased 16% from $37K in 1990 to $43K in 2018 and is projected to grow by 16% to $50K in 2050. Mexico wage distribution is reported for the years 2010 and 2015 as it is available once every five years beginning in 2010 and cannot be extrapolated to 2050 due to its dependency on minimum wage levels. Texas wages are measured based on median household income and thus were obtained for the BTMP baseline year of 2019 and can be forecast up through 2050.

The El Paso Region’s multimodal transportation network consists of the key routes and corridors used for the cross-border movement of people and goods.

The El Paso/Santa Teresa/Chihuahua region has four ports of entry (POE):
- Santa Teresa/San Jeronimo (New Mexico)
- Tornillo-Fabens
- El Paso
- Presidio

---

Note: the POE names reflect the U.S. Customs and Border Protection [CBP] classification and naming convention. A port of entry (POE) refers to any place designated by law at which a U.S. CBP officer is authorized to accept entries of merchandise to collect duties, and to enforce the various provisions of the customs and navigation laws. A POE is comprised of one or more border crossings, based on the aggregation made by U.S. CBP.
There are 8 roadway border crossings along the U.S.-Mexico border in the El Paso region:

- Santa Teresa Port of Entry (New Mexico)
- Paso Del Norte Bridge (El Paso, TX)
- Good Neighbor Bridge (El Paso, TX)
- Bridge of the Americas (El Paso, TX)
- Ysleta-Zaragoza Bridge (El Paso, TX)
- Tornillo-Guadalupe International Bridge (El Paso, TX)
- Fort Hancock Bridge-El Porvenir Bridge (Fabens, TX)
- Presidio Bridge (Presidio, TX)

There are 2 rail crossings: El Paso and Presidio rail bridges. No vehicular dam crossings or ferries are located within this region.

The El Paso/Santa Teresa/Chihuahua region has four key corridors:

- 2 Texas-Mexico corridors with north-south movement, the I-10/FH45 (El Paso) and the US67/FH67 (Presidio-Ojinaga) corridors which primarily serve north-south movement across the Texas-Mexico border in the El Paso region to connect the wider U.S. to Mexico.
- 2 Texas-Mexico corridors east-west movement, the I-10 and I-20 corridors, which primarily serve east-west movement across the El Paso region but provide vital connections to and from other Texas-Mexico corridors that primarily run north and south.

These corridors highlight the integration, connectivity, and accessibility of the different transportation modes, including corridors, airports, and rail facilities in the U.S. and Mexico, to the Texas-Mexico border. Identification of the corridors also serve as a starting point for developing strategies that will lead to the more efficient and safe movement of people and goods.

The economic impact of cross-border goods movement across the El Paso Region reaches the entire U.S. and Mexico.

In 2019, movements of people and goods through the El Paso Region generated over 1.45M jobs and more than $91B GDP in both countries. By 2050, the economic impact of cross-border trade in the ELP region will increase to over 5.3M jobs and $337.3B in GDP.

The daily student movements in the Ciudad Juárez–El Paso region depend on a network of bridges and bus services. For example, college students from Juárez regularly travel to the University of Texas at El Paso and back home again via multiple bus connections.

The binational multimodal transportation serving the El Paso region is essential to the safe and efficient flow of people and goods (as presented in Figure 1.1-1). As trade between Texas and Mexico has expanded, the El Paso region has played an important role in that growth. As trade between Texas and Mexico has expanded, the El Paso region has played an important role in that growth. Over $107 billion or nearly 24% of trade between the U.S. and Mexico passed through the El Paso region (in 2019).
Further discussed in Chapter 6, among various movements for rail, passenger and commercial vehicles, and bicycle and pedestrians, increased movement of people and goods is projected to 2050. The infrastructure to support the growth of all these movements is important to benefit the region’s communities and its economies.

The following sections discusses the importance of the El Paso/Santa Teresa/Chihuahua Region and the transportation issues, needs, challenges, opportunities, and strategies for moving people and goods through this region.
Chapter 2  El Paso Region Goals, Objectives & Institutions

This chapter provides a brief outline of the goals and objectives of the BTMP. It also provides an overview of the institutions and agencies that facilitate the safe and efficient movement of people and goods across the Texas-Mexico border. These institutions and agencies are responsible for setting policies and managing, operating, planning, implementing, and overseeing binational collaboration and cooperation across the Texas-Mexico border. They played a key role in the development of the BTMP. They are also integral in implementing and achieving the goals, objectives, and recommendations of the BTMP.

The BTMP goals and objectives serve as the foundation for identifying needs and for evaluating policies, programs, and projects.

The goals and objectives of the BTMP (Figure 2.0-1) provide strategic direction on how to identify and address the multimodal transportation system and infrastructure needs of the Texas-Mexico border region. Specifically:

- The goals represent aspirational areas on which the BTMP should focus.
- The objectives represent specific, measurable priorities for the BTMP.

More detailed discussion of the goals and objectives are included in the BTMP Final Report.

![Figure 2.0-1. BTMP Goals](image)

A key role in the development of the BTMP is the institutions and agencies that are integral in implementing and achieving the goals, objectives, and recommendations of the BTMP. These entities include local, state and federal agencies, binational groups, organizations and stakeholders to facilitate the movement of people and goods across the Texas-Mexico border through planning and collaboration across the border. Detailed discussion of the processes and activities to make the border work effectively is included in the BTMP Final Report. For each region, a Binational Regional Steering Committee was established to provide regional and local binational perspective and expertise. This stakeholder engagement and other public involvement activities are further discussed in Chapter 9.
2.1 Regional Efforts

Mechanisms are needed for local, state, and federal agencies and other border stakeholders to come together to discuss policies, strategies, procedures, and protocols to address the ever-changing issues that personnel at the border crossings face day to day. An example of cooperation and communication among the different border stakeholders that has been working effectively in this region is the El Paso Bridges Steering Committee.

This committee is dedicated to improving POEs in the El Paso/Santa Teresa/Chihuahua region and comprises more than 20 regulatory agencies, businesses, nonprofit organizations, and stakeholders from both sides of the border. The committee aims to streamline the border-crossing process for CMVs in a safe and secure manner. The border-crossing process for POVs and pedestrians will be addressed subsequently.

The committee focuses on achieving efficiency and consistency through identifying major obstacles and delivering consistent levels of quality to improve operations across projects. Participating agencies include, but are not limited to, the City of El Paso, El Paso County, El Paso MPO, CBP, TxDOT, the Consulate General of Mexico, the El Paso Community Foundation, the Borderplex Alliance, and more. The group meets regularly and has identified more than 50 projects that address challenges in the region’s POEs.

2.2 Institutions and Agencies Involved in the Movement of People and Goods across the Texas-Mexico Border

The planning, development, financing, management, and operation of transportation at and along the U.S. and Texas-Mexico border is a complex undertaking that involves close bilateral collaboration, cooperation, and communication among more than 50 binational public-sector agencies and numerous private-sector stakeholders.

The institutions and agencies that are key to the cross-border movement of people and goods between Texas and Mexico can be categorized in the following groups:

- Federal Agencies (19 in the U.S. and 22 in Mexico),
- State Agencies (28 in the U.S. and 18 in Mexico),
- Local Agencies (4 broad categories in the U.S. and 2 broad categories in Mexico),
- private sector (8 broad categories in the U.S. and 7 broad categories in Mexico) and
- Community Groups/Associations/Other Stakeholders (7 in the U.S. and 21 in Mexico).

The list of institutions and agencies is presented in Tables 2.3-3 through 2.3-7 in Chapter 10 of the Final Report.
Chapter 3  El Paso Region Past and Present Conditions

This chapter presents the history and current conditions of the El Paso/Santa Teresa/Chihuahua region – including socioeconomics, transportation infrastructure, and system performance as a basis for the development of the BTMP.

The data used in this chapter are 2019 values, unless otherwise noted. The BTMP analysis uses the baseline year of 2019 for technical analysis due to data availability for multiple metrics. Earlier years are used when 2019 data are unavailable. Historical data is provided back to 1990 or earliest year available, based on data source.

On the Texas side, they saw a rise in 21,265 Graduate or Professional degrees from 1990 to 2018. On the Mexico side, they saw an increase in Universidad by 148,797 from 1990 to 2015.

3.1  Socioeconomic Conditions

El Paso/Santa Teresa/Chihuahua Region experienced increases in population, employment, household income and educational attainment since 1990.

Between 1990 and 2018, the El Paso Region experienced the highest increases in higher education attainment.

3.2  History of the Regional Infrastructure and Investment

Although trade is growing, border crossing investments have not kept pace. Table 3.2-1 lists information on the border crossings within the region including owners and operators, construction year, and last year of improvements to the facility.
Table 3.2-1. Border Crossings in El Paso/Santa Teresa/Chihuahua Region

<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Construction Year and Updates</th>
<th>Location (City)</th>
<th>Owner</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>▪ San Jerónimo, Chih.</td>
<td>▪ Mexico – Government of Mexico</td>
<td>▪ Mexico – Aduanas de Mexico</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Ciudad Juárez, Chih.</td>
<td>▪ Mexico – Government of Mexico</td>
<td>▪ Mexico – Government of Chihuahua</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Ciudad Juárez, Chih.</td>
<td>▪ Mexico – Government of Mexico</td>
<td>▪ Mexico – Government of Chihuahua</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Ciudad Juárez, Chih.</td>
<td>▪ Mexico – IBWC (Mexican Section)</td>
<td>▪ Mexico – Aduanas de Mexico</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Ciudad Juárez, Chih.</td>
<td>▪ Mexico – Government of Mexico</td>
<td>▪ Mexico – Government of Chihuahua</td>
</tr>
<tr>
<td>International Bridge</td>
<td></td>
<td>▪ Caseta, Chih.</td>
<td>▪ Mexico – Government of Mexico</td>
<td>▪ Mexico – Government of Chihuahua</td>
</tr>
<tr>
<td>Fort Hancock-El Porvenir</td>
<td>▪ 1937</td>
<td>▪ Fabens, TX</td>
<td>▪ U.S. – IBWC (U.S. Section)</td>
<td>▪ U.S. – CBP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ El Porvenir, Chih.</td>
<td>▪ Mexico – Government of Mexico</td>
<td>▪ Mexico – Government of Mexico and IBWC</td>
</tr>
<tr>
<td>Presidio</td>
<td>▪ 1985, expansion in 2000s</td>
<td>▪ Presidio, TX</td>
<td>▪ U.S. – State of Texas</td>
<td>▪ U.S. – Texas Department of Transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Ojinaga, Chih.</td>
<td>▪ Mexico – Government of Mexico</td>
<td>▪ Mexico – CAPUFE</td>
</tr>
</tbody>
</table>

Funding for border crossing infrastructure has not kept pace with cross-border trade growth.

---

The El Paso/Santa Teresa/Chihuahua Region border crossings obtained $44.6 million in investments for border crossing infrastructure from 1994–2019, as shown in Figure 3.2-1.

- **Good Neighbor** invested $8.9 million for a bridge rehabilitation project in 2004.
- **Bridge of the Americas** utilized $2.7 million for a replacement project in 1998.
- **Tornillo-Guadalupe International Bridge** was constructed in 2016 for $23.8 million, replacing the Fabens-Caseta Bridge.
- **Presidio Bridge** began a bridge expansion for $9.2 million in 2019, which is currently ongoing.

![Figure 3.2-1. El Paso/Santa Teresa/Chihuahua Region Border Crossing Funding, 1994–2019](image)

### 3.3 Highway and Roadway Network

The highway system is the primary conduit for people and goods movement. In the El Paso/Santa Teresa/Chihuahua Region of the Texas-Mexico border, the highway network facilitates daily life for millions of residents and sustains local and global trade. The highway and roadway network and the vehicle border crossings are critical to facilitating the safe, efficient, and reliable movement of people and goods.

#### 3.3.1 Roadway Capacity

On the Texas side, the region’s borderwide lane miles grew by 5 percent between 2006 and 2018, adding 474 lane miles.

#### 3.3.2 Vehicle-miles Traveled

- Between 2005 and 2018, the region’s Texas side passenger VMT grew by 38 percent, an increase of 5.9 million VMT.

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• Between 2005 and 2018, the region’s Texas side commercial VMT grew 18 percent, or 570,137 additional VMT.

Figure 3.3-1. Movement of Goods by Commercial Motor Vehicle (CMV)

Cross-border CMV Trade

• Between 2006 and 2019, trade increased by $39.9 billion, or 72 percent, in the region.
• The trade value at the Santa Teresa POE grew 20-fold, by $28.3 billion, from $1.48 billion to $29.82 billion in 2019 adjusted dollars.
Cross-border CMV Movements

**Northbound**

- Between 1996 and 2019, the El Paso/Santa Teresa/Chihuahua Region’s northbound CMV crossings rose by 62 percent, or 358,731 crossings.

- Northbound CMV crossings at Ysleta-Zaragoza in El Paso increased by 237,468, or 69 percent, between 2008 and 2019. Santa Teresa, located in New Mexico, experienced an increase of 86 percent between 2011 and 2019, representing an increase of 61,761 crossings.

**Southbound**

- Between 1991 and 2019, southbound CMV volumes at Ysleta-Zaragoza have increased by 575 percent, or 474,814 crossings.

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8 Due to limited data reporting of southbound volumes, southbound CMV volumes are only reported here by individual border crossing. Additionally, years of available southbound data vary by border crossing.
Passenger Vehicles

Northbound

- Northbound POV crossings between 2008 and 2019 increased at most border crossings in the El Paso/Santa Teresa/Chihuahua Region.\(^9\)

- In the El Paso/Santa Teresa/Chihuahua Region, northbound POV crossings declined at Bridge of the Americas by 3 million, or 49 percent, between 2008 and 2019. Crossings also declined by 14 percent at Fort Hancock–El Porvenir, with 17,772 fewer crossings. POV volumes increased at the region’s remaining border crossings.

Southbound

- Between 1991 and 2019, southbound POV volumes increased by 28 percent at Ysleta-Zaragoza, from 1.9 million crossings to 2.4 million crossings. Meanwhile, Good Neighbor experienced a 56 percent decline, with 1.2 million fewer crossings.\(^{10}\)

---


\(^{10}\) Due to limited data reporting of southbound volumes, southbound POV volumes are only reported here by individual border crossing. Additionally, years of available southbound data vary by border crossing.
Bike and Pedestrians

### Northbound

- Between 1996 and 2019, northbound bike and pedestrian movements increased in the El Paso/Santa Teresa/Chihuahua Region by 83 percent with 3.7 million additional crossings.

- In the El Paso/Santa Teresa/Chihuahua Region, Paso del Norte experienced a decline of 1.8 million crossings, representing a 29 percent decrease. However, northbound pedestrian crossings increased at Bridge of the Americas by 83 percent, or 672,904 crossings, and at Ysleta-Zaragoza by 76 percent, or 742,546 crossings. Pedestrian crossings at Presidio also grew by 825 percent between 2008 and 2019, with an additional 275,374 crossings.

### 3.3.3 Southbound

- Between 1991 and 2019, southbound pedestrian volumes increased 322 percent at Ysleta-Zaragoza, with 640,087 additional crossings. Meanwhile, southbound crossings at Good Neighbor experienced a decline of 66 percent, or 1.3 million fewer crossings.\(^{13}\)

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\(^{13}\) Due to limited data reporting of southbound volumes, southbound POV volumes are only reported here by individual border crossing. Additionally, years of available southbound data vary by border crossing.
Buses

Table 3.3-1 provides current transit services for the El Paso/Santa Teresa/Chihuahua region.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Paso County Transit</td>
<td>Fixed route rural transit service and commuter service</td>
<td>Various rural connections, along with commuter service such as Las Cruces-El Paso</td>
</tr>
<tr>
<td>South Central Regional Transit District</td>
<td>Fixed route rural transit service including small unincorporated communities and municipalities</td>
<td>Primarily Doña Ana County, some service in Sierra County, with connections to Otero and El Paso Counties</td>
</tr>
<tr>
<td>Sun Metro</td>
<td>Fixed line route, circulator, express</td>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
</tr>
<tr>
<td>Vivabus Juárez</td>
<td>Fixed route</td>
<td>Ciudad Juárez</td>
</tr>
<tr>
<td>Amtrak</td>
<td>Public intercity</td>
<td>Sunset Limited and Texas Eagle routes</td>
</tr>
<tr>
<td>Greyhound</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
<tr>
<td>Tornado Bus Co.</td>
<td>Private intercity</td>
<td>Various, Texas and Southeast U.S. destinations with daily connections to Mexico via Sistema Estrella Blanca Bus Lines</td>
</tr>
<tr>
<td>El Paso–Los Angeles Limousine Express</td>
<td>Private intercity</td>
<td>Various</td>
</tr>
<tr>
<td>Ómnibus de México/Noreste</td>
<td>Private intercity</td>
<td>Various throughout Mexico to Ciudad Juárez, Ojinaga, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
<tr>
<td>Senda/Del Norte</td>
<td>Private intercity</td>
<td>Various throughout Northern Mexico and Southeast U.S. including Ciudad Juárez, Ciudad Acuña, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
<tr>
<td>Grupo Estrella Blanca/ Transportes Frontera</td>
<td>Private intercity</td>
<td>Various throughout Mexico including Ciudad Juárez, Ojinaga, Ciudad Acuña, Piedras Negras, Nuevo Laredo, Reynosa, Matamoros</td>
</tr>
</tbody>
</table>

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14 El Paso Destino MTP 2045, Greyhound Mexico, Estrella Blanca, Grupo Senda, Ómnibus de México (ODM), Vivabus Juárez
Northbound buses crossing the border increased by 15,087 crossings, or 259 percent, in the El Paso/Santa Teresa/Chihuahua Region.

All but one border crossing in the El Paso/Santa Teresa/Chihuahua Region experienced declines in northbound bus movements between 2008 and 2018. Presidio, the single border crossing that experienced increases, grew by 753 percent, with an additional 1,100 crossings. (Due to limited data reporting of southbound volumes, southbound bus volumes were not available for the border crossings in this region.)

3.4 Freight Rail Network

There are three rail crossings in the El Paso region – two in El Paso and one in Presidio. The El Paso rail bridges are owned by Union Pacific and BNSF respectively. These rail bridges connect Ferromex’s network in Mexico with Union Pacific and BNSF networks in the U.S. The Presidio rail crossing connects Ferromex’s network in Mexico and the South Orient Rail Line (Texas Pacific Transportation Limited) in the U.S. – Presidio rail crossing went out of service in 2008 after fire damage and went through reconstruction between 2018-2021. The region experienced an increase of 415% or 97,282 northbound rail car crossings between 1996 and 2019.

Texas-Mexico border trade by rail rose 59 percent, or $27.9 billion, between 2006 and 2019, driven mainly by northbound increases, which grew by 81 percent, or $22 billion. Southbound cargo movements increased by 30 percent, or $5.8 billion, in the same time period.

Cross-border Rail Trade

- The value of trade at the El Paso POE increased by 63 percent, or $3.2 billion.
- The Presidio POE processed $11.4 million in trade in 2007, prior to being destroyed by a fire in 2008.

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Northbound Rail Cars

- The El Paso/Santa Teresa/Chihuahua Region’s northbound rail car crossings rose by 415 percent, or 97,282 crossings.

The El Paso/Santa Teresa/Chihuahua Region has 1,844 rail track miles.\(^{16}\)

\(^{16}\) BTS 2020 GIS layers.
3.5 **Aviation Systems**

Aviation networks are important to the overall Texas-Mexico border system for imports and exports. Airports in this region include the El Paso and Chihuahua International Airports that have direct connections from Texas and Mexico. The aviation system enables business and personal travel and cargo movement on numerous U.S. and Mexican carriers.

3.6 **Pipeline Networks**

Pipeline networks are important to the overall Texas-Mexico border system for imports and exports. Import and export pipeline terminals along the border are most concentrated along the Gulf of Mexico near seaports.

3.7 **Maritime Systems**

Maritime trade between Texas and Mexico seaports rose 111 percent southbound and declined 63 percent northbound. The maritime system includes thirteen Mexico seaports and eight Texas seaports17 that support maritime trade between Mexico and Texas. None are located within the El Paso/Santa Teresa/Chihuahua Region.

3.8 **Free Trade Zones**

Free Trade Zones and programs facilitate international trade by streamlining foreign trade processes and payments.

One of the eight U.S. free trade zones also known in the U.S as foreign trade zones is located in El Paso. These trade zones exempt foreign merchandise from the usual formal CBP entry procedures and payments of duties until it enters CBP territory for domestic consumption.

One of the six strategic fiscal areas, an equivalent area to foreign trade zones in Mexico, is in Ciudad Juarez that allows the introduction of goods into the premise without taxes or compensatory fees.

Strategic fiscal areas allow the introduction of goods into the premise without taxes or compensatory fees and are subject to different custom regulations than U.S. foreign trade zones. Mexico has also designated a “Northern Border Free Zone” spanning the U.S.-Mexico border which offers reduced income tax and value added tax, reduced gasoline, natural gas, and electricity prices, and increased minimum wages. The Free Zone currently includes municipios in Chihuahua and has extended through 2024.

3.9 **System Performance**

This section assesses system performance for roadway and rail from past to present through the three BTMP performance goals: Mobility and Reliability, Safety and Security, and Asset Preservation.

3.9.1 **Mobility and Reliability**

The Mobility and Reliability goal of the BTMP is to reduce congestion and improve system efficiency and performance on the Texas-Mexico transportation system. This

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17 Based on Transearch analysis 2015 and supplemented by stakeholder comments.
can be accomplished by improving cross-border travel time reliability and improving the capacity of the system to accommodate future growth. Mobility and reliability are measured based on border and roadway delays.

**Border Delay – Total Crossing Times**

Total crossing times are used to measure border delays for POV and CMV lanes across all 28 Texas-Mexico vehicle crossings and the Santa Teresa crossing in 2019. Total crossing times were developed using a combination of Texas A&M Transportation Institute (TTI) Border Crossing Information System (BCIS) data and INRIX 2019 Global Positioning System (GPS) probe data from vehicles.

Texas A&M Transportation Institute’s (TTI) Border Crossing Information System (BCIS) automatically collects crossing time data at eight northbound CMV crossings and three POV crossings between Mexico and the U.S. INRIX 2019 data was developed to estimate crossing times for the remaining (non-BCIS) crossings.

**CMV Crossing Times**

**CMV Crossing Time Distributions**

In the El Paso/Santa Teresa/Chihuahua Region, 75 percent of crossing times remain under an hour, while 25 percent of crossings can reach up to 90 minutes. Southbound crossing times for CMVs rarely exceed 30 minutes.

The BCIS data source tracks total border crossing times for Santa Teresa, Bridge of the Americas, and Ysleta-Zaragoza northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/location-based service (LBS) data to illustrate border crossing times. Some key findings are:

- Over 92 percent of the time, northbound CMV border crossing times remain under an hour at Santa Teresa and Presidio border crossings. In worst cases, crossing times may exceed 90 minutes.
- At Bridge of the Americas and Ysleta-Zaragoza, northbound CMV crossing times remain under 90 minutes over 99 percent of the time, with most crossings falling under 30 minutes. However, crossing times may exceed 120 minutes.
- With the exception of Presidio, southbound CMV crossing times do not exceed 30 minutes in the El Paso/Santa Teresa/Chihuahua Region.

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19 Paso del Norte (northbound only), Good Neighbor (northbound only), Ysleta-Zaragoza (northbound and southbound).
Figure 3.9-1. El Paso/Santa Teresa/Chihuahua Region Northbound Crossing Time Distribution by Border Crossing – CMV (2019)\textsuperscript{20}

- Santa Teresa (BCIS): 87% < 30 minutes, 2% 30-60 minutes, 10% 90-120 minutes, 0.2% > 120 minutes
- Bridge of the Americas (BCIS): 41% < 30 minutes, 38% 30-60 minutes, 14% 90-120 minutes, 4% > 120 minutes
- Yselta-Zaragoza (BCIS): 61% < 30 minutes, 15% 30-60 minutes, 13% 90-120 minutes, 9% > 120 minutes
- Presidio (INRIX): 58% < 30 minutes, 35% 30-60 minutes, 6% > 120 minutes

Figure 3.9-2. El Paso/Santa Teresa/Chihuahua Region Southbound Crossing Time Distribution by Border Crossing – CMV (2019)\textsuperscript{21}

- Santa Teresa (INRIX): 100% < 30 minutes
- Bridge of the Americas (INRIX): 100% < 30 minutes
- Ysleta-Zaragoza (INRIX): 100% < 30 minutes
- Presidio (INRIX): 99.4% < 30 minutes, 0.6% > 120 minutes

\textsuperscript{20} INRIX 2019, TTI BCIS 2019.
\textsuperscript{21} INRIX 2019.
CMV Crossing Times – by Time of Day

- CMV crossing times are highest during the early afternoon in 2019.
- The 90th percentile crossing times for northbound CMVs reached approximately 107 minutes in the El Paso/Santa Teresa/Chihuahua Region.
- For southbound CMVs, 90th percentile crossing times remained under 16 minutes.

The 90th percentile border crossing measure highlights the typical maximum border crossing time, in which 90% of border crossings are lower than this value. This measure filters out the highest 10% outlier border crossing times.

In the El Paso/Santa Teresa/Chihuahua Region, the BCIS data source tracks total border crossing times for Santa Teresa, Bridge of the Americas, and Ysleta-Zaragoza northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/ location-based service (LBS) data to illustrate border crossing times.

- At Santa Teresa, 90th percentile northbound crossing times are highest in the afternoon, reaching 43 minutes around noon.
- While typical northbound crossing times reach up to 53 minutes at Bridge of the Americas, highest expected crossing times can exceed 100 minutes.
- Ysleta-Zaragoza sees typical northbound crossing times of up to 73 minutes in the afternoon and early evening. However, highest expected crossing times can reach almost two hours at 115 minutes.
- Northbound crossing times at Presidio can reach up to 90 minutes between 10 and 11 p.m.
- Across all border crossings in the El Paso/Santa Teresa/Chihuahua Region, typical and highest expected northbound crossing times exceed southbound crossing times.
Figure 3.9-3. El Paso/Santa Teresa/Chihuahua Region Northbound 50th Percentile Border Crossing Times by Border Crossing – CMV (2019)\textsuperscript{22}

Figure 3.9-4. El Paso/Santa Teresa/Chihuahua Region Northbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)\textsuperscript{23}

Figure 3.9-5. El Paso/Santa Teresa/Chihuahua Region Southbound 50th Percentile Border Crossing Times by Border Crossing – CMV (2019)\textsuperscript{24}

Figure 3.9-6. El Paso/Santa Teresa/Chihuahua Region Southbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)\textsuperscript{25}

\textsuperscript{22} INRIX 2019, TTI BCIS 2019.
\textsuperscript{23} INRIX 2019, TTI BCIS 2019.
\textsuperscript{24} INRIX 2019, TTI BCIS 2019.
\textsuperscript{25} INRIX 2019, TTI BCIS 2019.
POV Crossing Times

**POV Crossing Times – Distributions**

- In the El Paso/Santa Teresa/Chihuahua Region, 78 percent of crossing times remain under an hour, while 21 percent of crossings can reach up to 90 minutes.
- Southbound crossing times for POVs rarely exceed 30 minutes.

In the El Paso/Santa Teresa/Chihuahua Region, the BCIS data source tracks total border crossing times for Paso del Norte and Good Neighbor northbound POV movements and Ysleta-Zaragoza northbound and southbound POV movements. For all other POV border crossings, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Northbound POV crossing times can exceed one hour at five border crossings—Presidio, Santa Teresa, Paso del Norte, Ysleta-Zaragoza, and Good Neighbor.
- Northbound POV crossing times typically do not exceed 30 minutes at Good Neighbor.
- At Santa Teresa and Bridge of the Americas, northbound POV crossing times remain below half an hour over seven out of ten times.
- At Tornillo-Guadalupe International Bridge,\(^{26}\) northbound POV border crossings do not exceed an hour, with one third of crossing times remaining under half an hour.
- Over 96 percent of northbound POV crossing times at Ysleta-Zaragoza and Paso del Norte remain under an hour. In worst cases, crossing times may exceed 90 minutes, a small share of which may exceed 120 minutes.
- Except for Ysleta-Zaragoza, southbound POV crossing times do not exceed 30 minutes in the El Paso/Santa Teresa/Chihuahua Region.

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\(^{26}\) Note: Tornillo-Guadalupe International Bridge is currently closed.
Figure 3.9-7. El Paso/Santa Teresa/Chihuahua Region Northbound Crossing Time Distribution by Border Crossing – POV (2019)\textsuperscript{27}

![Northbound Crossing Time Distribution](image)

Figure 3.9-8. El Paso/Santa Teresa/Chihuahua Region Southbound Crossing Time Distribution by Border Crossing – POV (2019)\textsuperscript{28}

![Southbound Crossing Time Distribution](image)

\textsuperscript{27} INRIX 2019; TTI BCIS 2019.

\textsuperscript{28} INRIX 2019; TTI BCIS 2019.
POV Crossing Times – by Time of Day

- For northbound POVs, 90th percentile crossing times reached 46 minutes in the El Paso/Santa Teresa/Chihuahua Region.
- For southbound POVs, 90th percentile crossing times remained under 28 minutes.

In the El Paso/Santa Teresa/Chihuahua Region, the BCIS data source tracks total border crossing times for Paso del Norte and Good Neighbor northbound POV movements and Ysleta-Zaragoza northbound and southbound POV movements. For all other POV border crossings, the BTMP uses GPS/LBS data to illustrate border crossing times. Due to limited data reporting, some border crossing times are shown as points on the following graphs.

- Typical northbound crossing times exceed 40 minutes at Ysleta-Zaragoza, Tornillo-Guadalupe International Bridge, and Presidio border crossings. Meanwhile, highest expected crossing times can reach up to 47 minutes at Tornillo-Guadalupe International Bridge, 64 minutes at Presidio, and 77 minutes at Ysleta-Zaragoza.

- Paso del Norte sees typical northbound crossing times exceed 30 minutes and highest expected crossing times exceed 50 minutes between 7 a.m. and 10 p.m.

- Typical northbound crossing times remain below half an hour at Santa Teresa, Good Neighbor and Bridge of the Americas. However, 90th percentile crossing times can reach 66 minutes, 28 minutes, and 39 minutes, respectively.

- Highest expected southbound crossing times remain under 16 minutes at all but one border crossing in the El Paso/Santa Teresa/Chihuahua Region. Ysleta-Zaragoza sees typical southbound crossing times reach 19 minutes between 6 and 7 p.m., during which 90th percentile crossing times can exceed 30 minutes. However, highest expected southbound crossing times are the longest between 3 to 5 a.m., during which crossing times can reach 44 minutes.

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29 Note: Tornillo-Guadalupe International Bridge is currently closed.
Figure 3.9-9. El Paso/Santa Teresa/Chihuahua Region Northbound 50th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{30}

Figure 3.9-10. El Paso/Santa Teresa/Chihuahua Region Northbound 90th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{31}

Figure 3.9-11. El Paso/Santa Teresa/Chihuahua Region Southbound 50th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{32}

Figure 3.9-12. El Paso/Santa Teresa/Chihuahua Region Southbound 90th Percentile Border Crossing Times by Border Crossing – POV (2019)\textsuperscript{33}

\textsuperscript{30} INRIX 2019, TTI BCIS 2019.

\textsuperscript{31} INRIX 2019, TTI BCIS 2019.

\textsuperscript{32} INRIX 2019, TTI BCIS 2019.

\textsuperscript{33} INRIX 2019, TTI BCIS 2019.
Bike/Pedestrian Crossing Times

Total border crossing times are unavailable for bikes/pedestrians. However, border crossing volumes indicate bike/pedestrian crossing times are lower than POV crossing times. This has led to increased share of people crossing on foot rather than through POVs.34

Roadway Delay (Congestion)

- The El Paso/Santa Teresa/Chihuahua Region experiences highest congestion on the I-10 corridor (in El Paso) and Federal Highway (FH) 45 (in Ciudad Juárez).

Detailed congestion information and maps is provided and further discussed in Chapter 5.
Chapter 4  El Paso Region Multimodal Transportation Network

The purpose of this chapter is to present the designation of the Texas-Mexico multimodal transportation network serving the Texas-Mexico border. This designation is created as a foundation to identify the multimodal transportation network needs (Chapter 5), develop the process to identify and evaluate strategies to address the current and future needs (Chapter 8), and identify the potential recommended solutions to address those needs (Chapter 10 and Chapter 11).

4.1  Designate Border Crossings by Movement of People and Goods

The process of designating the Texas-Mexico multimodal transportation network started by identifying each of the vehicular border crossings by size. The process also differentiates the type of movement—people or goods. People movements represented passenger vehicles (POVs), pedestrians and bicyclists, and bus riders, and goods movement represented commercial vehicles (CMVs). Stakeholder inputs were used to categorize, refine, and finalize the border crossing designations.

Table 4.1-1 shows the people and goods movement border crossing designations.\(^{35}\) The small (S), medium (M), and large (L) designations\(^{36}\) by border crossing, type of movement (people movement and goods movement), and mode and systems (CMV, POV, pedestrian, and bus rider movements) were presented to stakeholders for refinement and finalization.

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\(^{35}\) The border crossing designations were created using data on movements for the year 2017 and were presented to binational stakeholders for validation. A similar designation of border crossings results when crossing volumes for the year 2019 are used.

\(^{36}\) There is no very large crossing in the El Paso/Santa Teresa/Chihuahua region. The only very large crossing, World Trade Bridge, is located in the Laredo/Coahuila/Nuevo León/Tamaulipas region.
### Table 4.1-1. People Movement Border Crossing Designations

<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Location (City)</th>
<th>POV</th>
<th>People Movement</th>
<th>Bus</th>
<th>Goods Movement: CMV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pedestrian and Bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Teresa</td>
<td>Santa Teresa, NM San Jerónimo, Chih.</td>
<td>M</td>
<td>M</td>
<td>S</td>
<td>M</td>
</tr>
<tr>
<td>Paso del Norte</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>n/a</td>
</tr>
<tr>
<td>Good Neighbor</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>M</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Bridge of the Americas</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Ysleta-Zaragoza</td>
<td>El Paso, TX Ciudad Juárez, Chih.</td>
<td>L</td>
<td>L</td>
<td>n/a</td>
<td>L</td>
</tr>
<tr>
<td>Tornillo-Guadalupe</td>
<td>Fabens, TX Caseta, Chih.</td>
<td>S</td>
<td>S</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>International Bridge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Hancock-El Porvenir</td>
<td>Fabens, TX El Porvenir, Chih.</td>
<td>S</td>
<td>S</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Presidio Bridge</td>
<td>Presidio, TX Ojinaga, Chih.</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>S</td>
</tr>
</tbody>
</table>

The border crossing designations for POV movements are shown in Figure 4.1-2 along with the designation of small, medium or large border crossings for CMV movements shown in Table 4.1-1.
4.2 Designate Multimodal Corridors

U.S. and Mexican national and state sources were used to designate multimodal corridors in Texas and Mexico. Stakeholder inputs were used to identify, refine, and finalize this roadway corridor designation process. The Texas-Mexico multimodal transportation network designation includes the integration of the vehicle border crossings with the corridor designations and the multimodal transportation networks. Figure 4.2-1 and Figure 4.2-2 show the designated Texas-Mexico multimodal transportation network for Sphere 1 for the El Paso/Santa Teresa/Chihuahua region.

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37 Spheres are planning analysis areas identified to assess different levels of geographic detail and characteristics. Sphere 1 is 60 miles north and south of the border. More detailed description of the spheres is included in the BTMP Final Report.
Figure 4.2-1. Sphere 1 Texas-Mexico Multimodal Transportation Network Linked with Corridor Designations: El Paso/Santa Teresa/Chihuahua Region (Near El Paso)
Figure 4.2-2. Sphere 1 Texas-Mexico Multimodal Transportation Network Linked with Corridor Designations: El Paso/Santa Teresa/Chihuahua Region (near Presidio)
Chapter 5  Needs Assessment in the El Paso Region

This chapter summarizes current and future issues and needs of the Texas-Mexico multimodal transportation network designated in Chapter 4 and sets the stage for identifying the strategies and recommendations of the Texas-Mexico Border Transportation Master Plan (BTMP).

5.1  Mobility and Reliability Needs

Border crossing delays, roadway congestion, single-track rail infrastructure, and occupied rail crossings hinder the mobility and reliability of the borderwide transportation system.

These issues result from the growth in population, trade, and people movement that has outpaced the rate of infrastructure investment. This section outlines mobility and reliability issues impacting the border, highways, rail, and the multimodal transportation system. For each category, both operational efficiency and system capacity issues and needs are presented.

5.1.1  Border Crossing Delays

Many CMV border crossings need longer hours of operation, as limited hours of operation increase delays by concentrating cross-border travel demand during certain hours of the day. More than half of the POV crossings—but no CMV crossings—operate more than 20 hours per day.

![Figure 5.1-1. Border Crossings Open More Than 20 Hours per Day](image)

Existing capacity can also be unevenly distributed between POV and CMV uses. This exacerbates border delays at certain crossings.

Most border crossings cannot operate at full capacity due to current staffing levels and the number of lanes that can be open at any given time.
Northbound highway border crossing utilization rates\textsuperscript{38} for the movement of goods (CMV) and the movement of people (POVs and bicyclists/pedestrians) are shown in the following sections.

- Utilization rates under 30 percent are considered underutilized and over 80 percent are considered overutilized, while 100 percent indicates that demand is higher than capacity.
- Average utilization rates over the last 5 years and the hypothetical 2050 utilization rates are illustrated in the following sections.
- 2050 forecast utilization rates are based on mid-level forecasts and do not incorporate any border crossing projects that are currently not funded.

Movement of People—POVs:

Northbound POVs declined 23 percent between 1996 and 2019 due in part to long wait times.\textsuperscript{39}
Many border crossings of all sizes need operational improvements or more physical capacity to meet POV needs.

**Small crossings:** Tornillo-Guadalupe and Fort Hancock are underutilized at 41 and 45 percent, respectively. Both may require operational improvements and are expected to increase to 56 and 61 percent by 2050, respectively.

**Medium crossings:** Three crossings are currently overutilized and require operational improvements: Santa Teresa - 116 percent, Good Neighbor - 133 percent, Presidio - 114 percent. Two crossings are projected to increase by 2050, Santa Teresa - 164 percent and Presidio - 131 percent, but Good Neighbor is projected to decrease to 110 percent by 2050.

**Large crossings:** All the large crossings are overutilized - over 80 percent volume-to-operational capacity - and require operational improvements: Paso del Norte - 93 percent, Bridge of the Americas - 114 percent, and Ysleta-Zaragoza - 145 percent. Two crossings are projected to increase by 2050, Bridge of the Americas - 117 percent and Ysleta-Zaragoza - 158 percent, but Paso del Norte is projected to decrease to 87 percent by 2050.

Movement of People—Bike/Pedestrian Crossings:

Between 1996 and 2019, northbound bike/pedestrian movements increased by 18 percent from 16.9 million to 20 million.

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\textsuperscript{38} Utilization rates are reported as (1) volume-to-total capacity based on physical infrastructure, throughput assumptions from the CBP Business Transformation Initiatives report, and commercial throughput assumptions based on analysis of wait times; and (2) volumes-to-operational capacity based on the annual average number of lanes open during normal hours of operation for each border crossing from CBP’s border crossing volumes dataset 2014–2018.

To meet the needs of the growing border population, bike/pedestrian crossings will require operational improvements, and many also require additional physical capacity.\textsuperscript{40}

**Small crossings:** Tornillo-Guadalupe International Bridge is underutilized for bike/pedestrian crossings at a 7 percent current operational utilization rate and is expected increase to 9 percent by 2050.

**Medium crossings:** Santa Teresa is underutilized by 58 percent and might require both operational improvements and is expected to increase to 64 percent by 2050.

**Large crossings:** Three large crossings are overutilized with over 80 percent volume-to-operational capacity, and require operational improvements: Paso del Norte with 111 percent, Bridge of the Americas with 96 percent, and Ysleta-Zaragoza with 112 percent. All three crossings are anticipated to increase by 2050: Paso del Norte with 127 percent, Bridge of the Americas with 149 percent, and Ysleta-Zaragoza with 168 percent.

**Movement of Goods—CMVs:**

Under NAFTA, cross-border U.S.-Mexico trade between 1994 and 2019 tripled from $173 billion to $615 billion,\textsuperscript{41} yet only a third of border crossings have received any investments during this time. This has led to overutilization of border crossings—especially medium and large CMV crossings.

The operational and physical capacity needs vary by crossing type and size.

**Small crossings** are generally underutilized. Presidio is currently operating at a utilization rate of 47 percent. By 2050, Presidio is expected to grow to a 171 percent utilization and could require operational improvements.

**Medium crossings** are fully or close to fully utilized, based on inspection staffing levels and the number of lanes open, and require operational improvements. Bridge of the Americas is currently operating at 97 percent utilization and is forecast to increase to 135 percent by 2050. Santa Teresa is currently operating at 100 percent utilization and is projected to triple to 359 percent in 2050 which would require operational improvements.

**Large crossings** similarly are overutilized, based on current inspection staffing levels and the number of lanes open, and require operational improvements. Ysleta-Zaragoza is currently operating at 97 percent utilization and is forecast to increase to 243 percent by 2050.

\textsuperscript{40} Some data for small crossings are unavailable.

\textsuperscript{41} Adjusted to 2019 dollars.
5.1.2 Roadway Delays (Congestion)

The top congested corridors and regional roads are Interstate-10/Federal Highway (FH) 45 El Paso, Business Route (BU) 54, Loop 375, and I-110, due in part to population growth in the urban areas connected by these corridors and increased border crossings. The Presidio-Ojinaga emerging corridor by contrast does not encounter system wide congestion.

The current top congested segments in the El Paso/Santa Teresa/Chihuahua Region are all near the border crossings; congested segments include N. Mesa St., Gateway Blvd., N. Zaragoza Rd., and more. Congestion issues occur in and around the border crossings due in part to cross-border traffic conflicts with local urban traffic.

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42 TxDOT Congestion Data (2018).
43 TxDOT SAM 2050 congestion.
Although Mexico congestion data is limited, information is available on daily traffic volumes in Ciudad Juárez as of 2015. This information is shown in Figure 5.1-4 for CMVs and POVs combined.
CMV parking is needed near and at the border to accommodate unexpected delays from congestion or construction, as well as staging needs.

Unlike the automated process to enter the U.S., drivers wishing to re-enter Mexico must wait for paperwork to be processed, which can take several hours. This holding pattern requires drivers to find CMV staging near the border. In some cases, a driver might need long-term CMV parking if the required paperwork is not received before a POE facility closes or if the driver arrives after it has closed.

5.1.3 Connectivity

Like the roadway system, the demand on the Texas-Mexico multimodal transportation network has outpaced capacity, and in many cases, needs improved connection to the roadway system and other modes.

The border region provides direct access to Texas and Mexico seaports. In the El Paso/Santa Teresa/Chihuahua region this includes the emerging international corridor connection to Topolobampo. The El Paso region is also connected to the rail intermodal facilities in Texas and Mexico. Rail connections in the El Paso Region include the El Paso Rail Bridge (UP and BNSF) and
the Presidio-Ojinaga International Rail Bridge; however, the Presidio-Ojinaga International Rail Bridge is currently closed for rehabilitation.

5.1.4 Rail Border Crossings

Cross-border rail demand continues to increase. The number of northbound railcars increased by 305 percent from approximately 252,000 to 1 million between 1996 and 2019, and this number is expected to more than double to 2.6 million in 2050. However, freight rail movement across the border is constrained by the border crossing rail bridges. These crossings are all singletracked, meaning that two-way (north-south) simultaneous operations are not possible.

Both active freight rail bridges in the El Paso Region that connect Texas and Mexico are single-tracked, preventing simultaneous two-way operations and creating bottlenecks as trains queue in both directions. The following operational and system capacity needs are identified:

- **Operational Efficiency Needs**: need for improved efficiencies that could be gained by conducting unified (joint) rail inspections through the Unified Cargo Processing (UCP) program, U.S.-Mexico rail policy harmonization such as binational crew certification and binational Class I mechanical inspections, standardization and electronic transmittal of paperwork across ports of entry, improved screening technology for faster adjudication, and expanded train crossing hours of operation borderwide to allow for cross-border operation 24 hours per day.

- **System Capacity Needs**: need for expansions of single-track rail lines to double-track rail lines to improve operations, reductions in at-grade crossing traffic delays, accommodations for future growth, and additional opportunities to shift truck traffic onto rail.

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44 BTMP mid-case forecast, 163 percent.
Additionally, U.S.-Mexico policies on maintenance inspections are different. Mechanical and brake inspections of railcars performed in Mexico currently do not satisfy U.S. rail safety regulations.

Table 5.1-1 lists operational and physical capacity issues by rail border crossing.

<table>
<thead>
<tr>
<th>Border Crossing</th>
<th>Operational and Physical Capacity Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Paso Rail Bridges (UP and BNSF)</td>
<td>▪ Congestion and overutilization of single-track Ferromex rail line in Ciudad Juárez from the Ferromex rail yard to the border that connects to the BNSF and UP rail bridges.</td>
</tr>
<tr>
<td></td>
<td>▪ Need for expanded rail capacity from the BNSF and UP rail lines crossing the border via Paso del Norte to the Ferromex rail line in Ciudad Juárez.</td>
</tr>
<tr>
<td></td>
<td>▪ Need for a rail link from the UP rail yard in El Paso to Mexico in alignment with Route 136, Route 2, and Route 45D.</td>
</tr>
<tr>
<td></td>
<td>▪ Need for expanded train crossing hours of operation to allow for cross-border operation 24 hours per day.</td>
</tr>
<tr>
<td>Presidio-Ojinaga International Rail Bridge (currently closed and being rehabilitated)</td>
<td>▪ Regional rail capacity limited by the currently closed Presidio-Ojinaga International Rail Bridge.</td>
</tr>
<tr>
<td></td>
<td>▪ Need for expanded train weight/speed allowances with improved infrastructure in addition to the recent upgrading of track sections leading to the rail bridge.</td>
</tr>
</tbody>
</table>

5.1.5 Occupied Highway/Rail Crossings

Highway/rail crossings are an issue particularly in El Paso/Ciudad Juárez where high-volume rail lines traverse dense urban areas, resulting in congestion and safety issues.

A single stopped train can occupy all highway/rail crossings from the border to 2 miles north of the border. The El Paso Rail Bridges (UP and BNSF) have the following issues:

- El Paso/Ciudad Juárez rail crossing through the downtown area of Ciudad Juárez with four highway/rail crossings.
- Congestion in the El Paso/Ciudad Juárez area, including due to restrictions of train crossings to 18 hours per day in Ciudad Juárez.

5.2 Safety and Security Issues and Needs

Borderwide safety and security issues contribute to higher rates of roadway and rail crashes, incidents, injuries, and fatalities, especially near the border where the frequency and severity of crashes and incidents are higher.

5.2.1 Border Crossing Safety

Physical separation between people and goods movement is needed at several border crossings that handle multiple modes.

The El Paso/Santa Teresa and Chihuahua Region has the following border crossing safety issues:

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Border crossings need enhanced capacity to handle hazardous materials in the El Paso/Santa Teresa/Chihuahua Region.

Border crossings need enhanced pedestrian and bike infrastructure, particularly at border crossings and connecting roads.

Need for Complete Streets, streets designed and operated to enable safe use and support mobility for all users\(^{46}\), which would better connect surrounding streets with heavily used bike and pedestrian border crossings in El Paso to improve user experience and reduce crashes.

### 5.2.2 Roadway Safety

**Regional roads such as I-10 and Loop 375** have hot-spot locations at connections where southbound traffic merges onto I-10 heading to the border.

- **Highest POV crash rate:** the POV crash rate for the region is higher than statewide at 340 crashes per 100 million vehicle miles traveled (VMT) compared to 258 crashes per 100 million VMT between 2015 and 2019.

- **Lower CMV crash rate:** the CMV crash rate is 147 crashes compared to 258 crashes per 100 million VMT, lower than the statewide crash rate of 258 crashes per 100 million VMT between 2015 and 2019.

- **Bike/pedestrian crash percentages** are lower than statewide percentages at 1.3 percent of total crashes, compared to 1.5 percent statewide between 2015 and 2019.

El Paso/Santa Teresa and/Chihuahua Region roadway crash data is shown in (Figure 5.2-1). Roadway crash density in Ciudad Juarez is concentrated in the urban centers, as shown in Figure 5.2-2.

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\(^{46}\) U.S. DOT, Complete Streets, [https://www.transportation.gov/mission/health/complete-streets](https://www.transportation.gov/mission/health/complete-streets)
Figure 5.2-1. Roadway Crash Density, El Paso/Santa Teresa/Chihuahua Region (2015–2019)\textsuperscript{47}

\begin{quote}
\textsuperscript{47} Automated Crash Data Extract Files, TxDOT (2015–2019).
\end{quote}
Figure 5.2-2. Roadway Crash Density, Ciudad Juárez (2012)\textsuperscript{48}

\textsuperscript{48} Ciudad Juárez Freight Regulatory Plan (2015)
5.2.3 Rail Safety

Rail incidents occur at areas of highway/rail conflicts often due to at-grade crossings, particularly in urban areas.

The El Paso/Santa Teresa/Chihuahua Region has the following rail safety issues:

- **Outside Pecos**, clusters of hot spots occur at intersections where at-grade rail crossings run closely parallel to (less than 100 feet from) intersections with major I-20 frontage roads.

- **Highway/rail infrastructure and operational issues** lead to increased incidents, particularly in hot-spot locations.
Figure 5.2.3. El Paso/Santa Teresa/Chihuahua Region At-grade Rail Crossing Incidents in Texas (2007–2017)

5.3 Asset Preservation Issues and Needs

Asset preservation issues include pavement conditions, bridge conditions, border crossing conditions, and border inspection facility conditions. Although these assets are, on average, in fair condition, systematic preventive maintenance is needed to prevent deterioration.

5.3.1 Pavement Conditions

Poor pavement conditions as a percent of road length within the El Paso/Santa Teresa and Chihuahua Region are summarized below:

- 7 percent of I-10
- 4 percent of I-10/FH 45 El Paso
- 8 percent of Presidio-Ojinaga corridor
- 8 percent of regional roadways
- 26 percent of regional roads 1 mile from the border

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50 TxDOT Pavement Conditions Data (2018); TxDOT 2018 Report on Texas Bridges; TxDOT Bridge Conditions Data (June 2020); National Bridge Inventory, FHWA, TxDOT; GAO Report to Congressional Requesters, “Border Infrastructure: Actions Needed to Improve Information on Facilities and Capital Planning at Land Border Crossings,” July 2019; Class I railroad interviews.
Figure 5.3-1. El Paso/Santa Teresa/Chihuahua Region Pavement Conditions (2018)\textsuperscript{51}

\textsuperscript{51} TxDOT Pavement Conditions Data (2018).
5.3.2 Bridge Conditions

On average, 90 percent of the bridges in the El Paso/Santa Teresa and Chihuahua Region are in good or better condition. For the region, 93 bridges are functionally obsolete, 3 are structurally deficient and 931 bridges are in good or better condition.

- Poorer conditions such as structurally deficient or functionally obsolete, are concentrated in El Paso downtown area and near border crossings.
- The four bridge structures with low vertical clearance in the ELP region (US side) are:
  - US67/US90 – 13’6” bridge under railroad 0.25 west of FM1703 in Brewster County.
  - US90 14” bridge under railroad, 7.5 miles south of I-10 in Culberson County.
  - SH20 (Mesa Street) EB under I-10 14’ EB under I-10 in El Paso County.
  - EBI10 in Sierra Blanca 13’ under a railroad .75 miles west of EI-10 in Hudspeth County.

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52 Good or better structure: A good or better structure meets current federal and Texas requirements. It is not structurally deficient, functionally obsolete, or substandard for load only. Desirable change in good or better structures from year to year is reflected by positive numbers, showing an increase in sufficient structures (from TxDOT, Report on Texas Bridges, 2018).
Figure 5.3-2. El Paso/Santa Teresa/Chihuahua Region Bridge Conditions (2020)\textsuperscript{53}

TxDOT Bridge Conditions Data (June 2020).

Needs Assessment in the El Paso Region

\footnotetext{53}{TxDOT Bridge Conditions Data (June 2020).}
5.3.3 Border Crossing Conditions

In contrast to Texas pavements and bridges, border crossings have no consistent asset management funding sources to ensure adequate maintenance over time.

- More than two-thirds of border crossings are in fair condition and could deteriorate to poor conditions without a formalized asset maintenance funding program to systematically repair and rehabilitate crossings over time.
- Fort Hancock–El Porvenir is the sole border crossing currently in poor condition.

Most U.S. Customs and Border Protection (CBP) border inspection facilities are in good or fair condition.\(^{54}\)

- Two CBP border inspection facilities\(^ {55}\) in El Paso Region have not had facility condition assessments conducted by CBP and the U.S. Government Accountability Office (GAO).

5.3.4 Rail Crossings

All rail crossings are currently in good serviceable condition.\(^ {56}\)

Annual inspections and reports indicate whether a rail crossing is safe for current traffic and can safely support the loadings in both weight and mass.

Rail intermodal facility conditions are unavailable. However, these facilities also require maintenance over time to ensure they can sufficiently facilitate CMV/rail movements.

5.4 Summary of Findings

Border crossings serve a confluence of pedestrians, bikes, buses, POVs, CMVs, and trains that support everyday life in the border region, across the state, and throughout the North American tri-national economy. In this environment of activity, there is an opportunity for improvement.

- The three largest crossings for POVs in the region (Paso del Norte, Bridge of the Americas and Ysleta-Zaragoza) are currently overutilized. Similarly, all commercial vehicle crossings in this region are currently fully utilized or overutilized, with the exception of the crossing in Presidio. This means that operational improvements will be needed to meet future demand of POVs and commercial vehicles.
- Seventy-eight percent of POV crossing times in the region remain under an hour, while 21 percent of crossings can reach up to 90 minutes. Southbound crossing times for POVs rarely exceed 30 minutes.

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\(^{54}\) Condition based on facility condition index (0-10% good, 10-20% fair, 20-30% poor, and 30-100% critical). The facility condition index is a ratio of the costs to correct the facility deficiencies divided by the total replacement cost of the facility (from GAO Report to Congressional Requesters, “Border Infrastructure: Actions Needed to Improve Information on Facilities and Capital Planning at Land Border Crossings,” July 2019, p.30).


\(^{56}\) Class I railroad interviews.
CMV crossing times in the El Paso/Santa Teresa/Chihuahua Region are highest during the early afternoon. Seventy-five percent of commercial vehicle crossing times remain under an hour, while 25 percent of crossings can reach up to 90 minutes. Southbound crossing times for CMVs rarely exceed 30 minutes.
Chapter 6  Future Forecasts for the El Paso Region

This chapter discusses forecasts of future conditions in 2050, including the movement of people and goods, border crossings and multimodal transportation infrastructure, and system performance. These forecasts are inputs to assessing the economic impacts of future conditions along the border (Chapter 7), identifying and evaluating strategies to address current and future needs along the Texas-Mexico border region (Chapter 8), developing recommendations (Chapter 10), and creating an implementation plan (Chapter 11).

6.1  Income

The El Paso/Santa Teresa/Chihuahua Region is expected to experience average household income growth from approximately $44,000 in 2019 to $50,000 per year in 2050.

6.2  Forecasts of Northbound Border Crossing Movements

6.2.1  Forecasts of Northbound Texas-Mexico Cross-border Movement of People, 2019–2050

Forecasts of Northbound Texas-Mexico Cross-border Movement of People by POVs in the El Paso/Santa Teresa/Chihuahua Region

The El Paso POE is forecast to have the greatest number of northbound POV movements at 27.6 million in 2050, a 48 percent increase from 2019 POV movements of 18.7 million.

![Figure 6.2-1. Northbound POV Movements by POE (2019 and 2050)](image)

The region overall is anticipated to increase from 12.3 million to 16 million in northbound POV movements from 2019 to 2050, a 30 percent increase. Other POEs in the region include the Presidio and Santa Teresa POEs which are projected to increase 100,000 POV movements from 2019 to 2050 at each location, whereas the Tornillo-Fabens POE is not expected to change in POV movements of 900,000 from 2019 to 2050.

Out of the 28 border crossings, the two with the highest POV border crossings forecast, at over 4 million movements each in 2050 are in this region: Ysleta-Zaragoza and Bridge of the Americas.
Forecasts of Northbound Texas-Mexico Cross-border Movement of Bicycles and Pedestrians

The El Paso POE has the highest projected bicycle and pedestrian movements among POEs in 2050 with 8.5 million.

The El Paso/Santa Teresa/Chihuahua Region is forecast to increase 10 percent from 2019 to 2050 for bicycle and pedestrian movements.

At the border crossings, the Paso del Norte border crossing is projected to have the highest bicycle and pedestrian movements with 4.9 million in 2050.
Forecasts of Northbound Texas-Mexico Cross-border Movement of People by Buses, 2019–2050.

![Northbound Bus Movements by POE (2019 and 2050)](image)

Bus movements are forecast to remain stable out to 2050, but the El Paso/Santa Teresa/Chihuahua Region is projected to have a slight decline of 10 percent from 20,800 in 2019 to 18,800 in 2050. Bus movements include both local cross-border and longer haul cross-border movements. The El Paso POE is projected to decline approximately 8 percent from 19,000 in 2019 to 17,500 in 2050.

6.2.2 Forecasts of Goods Movement by Mode, 2019–2050

Cross-border CMV Trade

The El Paso Region is projected to increase CMV tonnage from 11.8 million in 2019 to 37.8 million in 2050. The CMV trade value for the region is also projected to increase from $97.2 billion in 2019 to $387.7 billion in 2050, an increase of nearly 300 percent.

The total CMV tonnage is anticipated to increase by 200 percent from 2019 to 2050 at the El Paso POE, from 10 million in 2019 to 30 million in 2050.

Two POEs are forecast to surpass $100 billion in annual trade by CMV by 2050: El Paso and Santa Teresa.
Forecasts of Cross-border CMV Movements

The CMV movement in the El Paso Region is projected to increase from 1.0 million in 2019 to 2.2 million in 2050; this is a 120 percent increase.

The El Paso POE is forecast to increase from 0.8 million in 2019 to 1.7 million in 2050, a 113 percent increase.

The Ysleta-Zaragoza Bridge is anticipated to process the largest number of CMVs among the region’s border crossings doubling from 0.6 million in 2019 to 1.2 million movements in 2050.
Forecasts of Cross-border Rail Movements, 2019–2050

The El Paso POE (El Paso Rail Bridges) leads the region’s POEs and is forecast to nearly double movement of goods by tonnage by rail from 2019 to 2050, from 7.7 million to 15.3 million.

Overall, the El Paso Region’s total rail tonnage is forecast to double from 7.6 million in 2019 to 15.4 million in 2050.

The total rail trade value for the region is also projected to have a 266 percent increase from $8.2 billion in 2019 to $30 billion in 2050.
Forecast of Cross-border Rail Car Movements

Rail car movements in the El Paso region are forecast to double from 100,000 in 2019 to 200,000 in 2050, an increase of 100 percent. The El Paso POE (El Paso Rail Bridges) rail car movements are projected to increase 67 percent from 120,700 in 2019 to 202,000 in 2050. The Presidio POE (Presidio-Ojinaga International Rail Bridge) is currently closed but is projected to have 2,800 rail car movements by 2050.

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57 The Presidio-Ojinaga International Rail Bridge is currently closed and is scheduled to reopen in 2021.
6.3 Forecasts of Roadway Corridor Movements

6.3.1 Roadway Vehicle-miles Traveled

Vehicle-miles traveled (VMT) is forecast to grow in all the border regions from 2018 to 2050. The El Paso/Santa Teresa/Chihuahua Region will experience an increase of 58 percent of VMT in the region on the Texas side.

6.4 Forecasts of System Performance

6.4.1 Border Crossings

Forecasts of POV Crossing Times

The crossing times at most of the border crossings in the region are forecast to increase, highlighting the need for future improvements.

Large Crossings (Paso del Norte, Bridge of the Americas, and Ysleta-Zaragoza)

- Average crossing times were 34 minutes or less for each of the three large crossings in 2019. 90th percentile crossing times were much higher, with the highest being 54 minutes at the Paso del Norte bridge.

- By 2050, all three of the large crossings in the region (Paso del Norte, Bridge of the Americas, and Ysleta-Zaragoza) are forecast to experience increases in average crossing times, with an average of 135 minutes, or over 2 hours.

- The Ysleta–Zaragoza Bridge is forecast to have the biggest percent change in average and 90th percentile crossing times, with increases of 144 minutes, or over 2 hours, and 236 minutes, or reaching 4 hours, respectively. This is equivalent to 576 percent cumulative growth.

Medium Crossings (Santa Teresa, Good Neighbor, Presidio)

- The average crossing time was 34 minutes at the Presidio Bridge, 18 minutes for the Good Neighbor Bridge and 22 minutes for the Santa Teresa crossing in 2019. The 90th percentile crossing times in 2019 were 26 minutes for the Good Neighbor Bridge, 46 minutes for Santa Teresa, and 61 minutes for the Presidio Bridge.

- All the medium crossings are forecast to experience large increases in crossing times by 2050.

- Santa Teresa, Good Neighbor Bridge and Presidio are forecast to exceed an hour for crossing times in 2050. Average crossing times are forecast to be 44 minutes for Santa Teresa, 46

58 Personal vehicle border crossings leveraged 2019 crossing times from INRIX. Fort Hancock–El Porvenir Bridge used 2019 CBP wait times due to unavailable data from INRIX.

59 Note that these forecasts are unconstrained. The forecast border crossing times in 2050 assume current (2019) processing levels observed at the individual border crossings, with no operational or capacity improvements between now and the year of the forecast. These future forecasts would change if improvements are implemented at border crossings between now and 2050.
minutes for the Good Neighbor Bridge and 51 minutes for the Presidio Bridge and the 90th percentile crossing times are forecast to be 93, 73 and 82 minutes in 2050, respectively.

Small Crossings (Tornillo-Guadalupe International, Fort Hancock-El Porvenir)

- The two small crossings in the region are the Tornillo-Guadalupe International Bridge and Fort Hancock-El Porvenir Bridge. Both crossings are not forecast to experience crossing time increases from 2019 to 2050. In 2019, the average crossing time is 38 minutes and 47 minutes for the 90th percentile crossing time Tornillo-Guadalupe International Bridge. In 2019, the average crossing time is 5 minutes and 10 minutes for the 90th percentile crossing time Fort Hancock-El Porvenir Bridge.

Forecasts of CMV Crossing Times

The almost tripling of CMV movements by 2050 will strain the border processing capabilities at border crossings. CMV crossing times both average and 90th percentile, are forecast to increase dramatically by 2050. For many of the larger crossings, the average crossing times will be 3 to 9 hours in 2050.

Large Crossings (Ysleta–Zaragoza)

- The 2019 average crossing times were 56 minutes at the Ysleta–Zaragoza Bridge.
- The Ysleta–Zaragoza Bridge is forecast to experience significant increase in the average crossing time between 2019 and 2050, by 395 minutes, a 706 percent cumulative growth.
- The average crossing times in 2050 are forecast to reach almost 8 hours for the Ysleta–Zaragoza Bridge with the 90th percentile crossing times reaching more than 13 hours.

Medium Crossings (Bridge of the Americas, Santa Teresa)

- 2019 crossing times for each of the six medium crossings averaged 44 minutes or less, and 90th percentile crossing time were 81 minutes or less.

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60 The following commercial border crossings leveraged 2019 crossing times from BCIS: Bridge of the Americas; Ysleta – Zaragoza Bridge and Santa Teresa/San Jerónimo. The remaining commercial border crossings used 2019 crossing times from INRIX.

61 The analysis of commercial crossing times is organized by the size of border crossing. Future crossing times are forecast using a queuing model and the unconstrained demand forecast. The queuing model determines how crossing times might change as a result of higher future traffic volumes without any improvements at each crossing. That is to say, the forecast 2050 crossing times assume that operating hours, staffing levels, traffic patterns, and the number of lanes remain at 2019 levels.

62 90th percentile crossing times reflect a crossing time that is met or exceeded 10 percent of the time.

63 The forecast border crossing times in 2050 assume current (2019) processing levels observed at the individual border crossings, with no operational or capacity improvements between now and the year of the forecast. These future forecasts would change if improvements are implemented at border crossings between now and 2050.

64 There is no very large crossing in the El Paso/Santa Teresa/Chihuahua region. The only very large crossing, World Trade Bridge, is located in the Laredo/Coahuila/Nuevo León/Tamaulipas region.
All the medium crossings are forecast to experience high average and 90th percentile crossing times in 2050.

Santa Teresa is 23 minutes for average crossing time and 36 minutes at 90th percentile crossing times in 2019. The crossing times are expected to exponentially increase by 2050 averaging over 7 hours (444 minutes) and over 11 hours (694 minutes) at 90th percentile crossing times.

The Bridge of the Americas is 44 minutes for average crossing time and 81 minutes at 90th percentile crossing times in 2019. The crossing times are expected to also dramatically increase by 2050 with over 4 hours (284 minutes) average crossing times and over 8 hours (522 minutes) 90th percentile crossing times.

Small Crossings (Presidio)

There is no change in crossing times between 2019 and 2050 for Presidio Bridge. The average crossing time is 26 minutes and 51 minutes for the 90th percentile crossing time for the border crossing.

6.4.2 Forecast Highway Corridor Congestion

Highway congestion is summarized in Chapter 5. The BTMP has 11 designated international multimodal corridors—six provide north-south connectivity and five provide east-west connectivity. Among these corridors, east-west corridors have the highest percentage of congestion. Currently, congestion occurs mainly near border crossings and urbanized areas.

In the El Paso/Santa Teresa/Chihuahua Region, top congested corridors and regional roads are Interstate (I) 10/Federal Highway (FH) 45 El Paso, Business Route (BU) 54, Loop 375, and I-110, due in part to population growth in the urban areas connected by these corridors and increased border crossings.
Chapter 7 Economic Importance of the El Paso Region

This chapter describes the economic importance of the El Paso/Santa Teresa/Chihuahua region now and in the future by identifying the impacts to the regional economy from the movement of people and goods through the Texas-Mexico border and costs of congestion and delays at the border. The chapter builds on the past and present of the border in the region as presented in Chapter 3 and the unconstrained mid-case forecasts of the movement of people and goods presented in Chapter 6. The information presented provides the economic context for policymakers to make informed decisions about transportation investments, policies, and programs for meeting objectives and promoting future growth and prosperity. All monetary values (present and future) are shown in 2019 dollars.

7.1 Economic Impacts from Movement of Goods across the Border

7.1.1 Current and Future Movement of Goods by CMV Border Crossings

A significant portion of the total GDP impact in the U.S. and Mexico due to goods movement by CMV across the border, or $122 billion ($73 billion to the U.S., $49 billion to Mexico), comes through one very large crossing: the World Trade Bridge. The Ysleta-Zaragoza crossing has the second largest impact, contributing $34 billion in GDP ($20 billion to the U.S., $14 billion to Mexico).

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<table>
<thead>
<tr>
<th>EL PASO/SANTA TERESA/CHIHUAHUA REGION</th>
<th>EL PASO/SANTA TERESA/CHIHUAHUA REGION</th>
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<tr>
<td><strong>$81.3 BILLION</strong></td>
<td><strong>$332.9 BILLION</strong></td>
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<td><strong>CONTRIBUTION TO GDP IN 2019</strong></td>
<td><strong>CONTRIBUTION TO GDP IN 2050</strong></td>
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</tbody>
</table>
7.1.2 Current and Future Movement of Goods by Rail

- Goods movement by rail across the border annually contributes $7.6 billion to Texas GDP and $7.3 billion to the Mexican border states of Chihuahua, Coahuila, Nuevo León, and Tamaulipas in 2019.
Most of the trade by rail will pass through three rail crossings in 2019, one of which is the El Paso Rail Bridges, which contribute to $6.2 billion in GDP ($3.2 billion in U.S. and $3.0 billion in Mexico).

**Figure 7.1-2. Impact of Movement of Goods on GDP by Rail Crossing (2019 and 2050)**

Note: Presidio-Ojinaga International Rail Bridge is currently closed.
7.2 Economic Impacts from Movement of People across the Border

- The GDP impacts of the movement of people are greatest in the El Paso/Santa Teresa/Chihuahua Region ($3.5 billion) in 2019.

- The movement of people through the Paso Del Norte crossing has the largest impact in the region, contributing $1.0 billion in GDP ($0.7 billion to the U.S., $0.3 billion to Mexico) in 2019.

- The binational GDP impacts are forecast to be the greatest in the El Paso/Santa Teresa/Chihuahua ($4.4 billion) Region in 2050.

- In 2050, the movement of people through the Paso del Norte crossing is forecast to still have the largest effect, contributing $1.3 billion in GDP ($0.9 billion to the U.S., $0.4 billion to Mexico) compared to $1.0 billion in GDP a 26 percent cumulative increase (0.8 percent annual increase).

<table>
<thead>
<tr>
<th>EL PASO/SANTA TERESA/CHIHUAHUA REGION</th>
<th>EL PASO/SANTA TERESA/CHIHUAHUA REGION</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3.5 BILLION</td>
<td>$4.4 BILLION</td>
</tr>
<tr>
<td>CONTRIBUTION TO GDP IN 2019</td>
<td>CONTRIBUTION TO GDP IN 2050</td>
</tr>
<tr>
<td>U.S. SIDE: $2.5 BILLION</td>
<td>U.S. SIDE: $3.1 BILLION</td>
</tr>
<tr>
<td>MEXICO SIDE: $1.0 BILLION</td>
<td>MEXICO SIDE: $1.3 BILLION</td>
</tr>
<tr>
<td>U.S. SIDE SUPPORTS 52 THOUSAND JOBS</td>
<td>U.S. SIDE SUPPORTS 66 THOUSAND JOBS</td>
</tr>
<tr>
<td>MEXICO SIDE SUPPORTS 35 THOUSAND JOBS</td>
<td>MEXICO SIDE SUPPORTS 44 THOUSAND JOBS</td>
</tr>
</tbody>
</table>
7.3 Economic Costs of Border Crossing Times on Movement of Goods

Between 2003 and 2019, there was a significant increase on CMV wait times at the Texas-Mexico border. There was an 84 percent increase (over 16 minutes) in the El Paso/Santa Teresa/Chihuahua Region.
7.3.1 Border Delays to the Movement of Goods in 2019 and 2050

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

**$1.1 BILLION IMPACT ON GDP IN 2019**

U.S. SIDE: **$0.6 BILLION**  
MEXICO SIDE: **$0.5 BILLION**

**U.S. SIDE REPRESENTS 4 THOUSAND JOBS**

**MEXICO SIDE REPRESENTS 26 THOUSAND JOBS**

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

**$41.9 BILLION IMPACT ON GDP IN 2050**

U.S. SIDE: **$28.3 BILLION**  
MEXICO SIDE: **$13.6 BILLION**

**U.S. SIDE REPRESENTS 232 THOUSAND JOBS**

**MEXICO SIDE REPRESENTS 892 THOUSAND JOBS**
Delay estimated as the difference between the total crossing time and the minimum crossing time (10th percentile crossing time in 2019).

Productivity losses estimated at $42.46 per hour, which takes into account driver wages, benefits, fuel costs, CMV lease or purchase payments, repair and maintenance, CMV insurance premiums, permits, and licenses. The value reflects a weighted average of U.S. and Mexican values based on income and population. Estimate does not include other productivity losses such as spoilage and goods safety stock. Based on American Transportation Research Institute, An Analysis of the Operational Costs of Trucking: 2019 Update.
7.4 Economic Costs of Border Crossing Times on Movement of People

7.4.1 Current and Future Delays to People

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

**$215.8 MILLION IMPACT ON GDP IN 2019**

U.S. SIDE: **$152.9 MILLION**  
MEXICO SIDE: **$62.9 MILLION**

U.S. SIDE REPRESENTS 3 THOUSAND JOBS  
MEXICO SIDE REPRESENTS 2 THOUSAND JOBS

**EL PASO/SANTA TERESA/CHIHUAHUA REGION**

**$1.2 BILLION IMPACT ON GDP IN 2050**

U.S. SIDE: **$802.7 MILLION**  
MEXICO SIDE: **$363.5 MILLION**

U.S. SIDE REPRESENTS 17 THOUSAND JOBS  
MEXICO SIDE REPRESENTS 12 THOUSAND JOBS
In 2050, the border crossing forecast to have the largest economic impact from delays is the Ysleta-Zaragoza crossing with an estimated loss of $381.6 million in GDP ($263.6 million to the U.S., $118.0 million to Mexico), a cumulative increase of 528.6 percent (6.1 percent annual increase) from $60.8 million in 2019.
7.5 Economic Costs of Highway Congestion

7.5.1 Current and Future Economic Costs of Highway Congestion

The largest east-west corridor CMV delays were on I-10 in the El Paso region. As with CMVs, POV delays on east-west corridors were highest along I-10. I-10 is significantly more congested than the other four main east-west corridors, with more than half of all CMV vehicle-hour delays and almost two-thirds of all POV delays.

I-10 is forecast to remain the most congested east-west corridor for both CMVs and POVs in 2050.
Chapter 8  Process to Identify and Evaluate Strategies to Address Current and Future Needs in the El Paso Region

The purpose of this chapter is to outline the framework and the process to identify and evaluate strategies to address the current and future needs of moving people and goods across the Texas-Mexico border and the border region. The needs assessment presented in Chapter 5, combined with the 2050 forecasts presented in Chapter 6 and the economic analysis presented in Chapter 7, form the foundation for the Texas-Mexico Border Transportation Master Plan (BTMP) strategies identification.

8.1  Review of Existing Plans

Over 200 documents related to mobility, transportation, and economic development were collected and analyzed from across all three border regions as well as the U.S. and Mexico. The documents were reviewed to inform the identification of policy, program, and project elements related to the BTMP goals and objectives, as well as to the issues and needs identified in Chapter 5.

8.2  Stakeholder Input to Strategy Identification

As presented in Chapter 1, the development of the BTMP comprised of four phases: (1) data collection, (2) multimodal corridor designation and needs assessment, (3) forecast and economic analysis, and (4) identification of strategies and preliminary recommendations. Stakeholder input was a key element throughout.

The BTMP process included multiple opportunities for binational stakeholders to provide input on all types of strategies to address current and future needs that include: policies, programs, and projects. To develop a comprehensive borderwide projects list, projects and project timeframes were collected from project sponsors and stakeholders and refined through workshops, meetings and presentations described further in Chapter 9. Finally, to provide additional input into their priorities, stakeholders were also asked to weigh the BTMP goals to indicate which they believed were most important to supporting the movement of people and goods in the border region.

Stakeholders, BTAC and BNRSC members were asked to rank goals. BTAC members were asked to weight those goals borderwide, while BNRSC members were asked to weight the goals by importance for their own region. Members were asked to weight the goals in July and August 2020 to determine whether priorities had changed. The weights from the borderwide stakeholders plus the three regions were then averaged for a total border average weight and shown in Table 8.2-1. The average weights in the table were used as one factor in the process of evaluating both programs and policies. The El Paso Region stakeholders weighted the mobility and reliability category the highest among the BTMP Goals at 22 percent followed by economic competitiveness at 18 percent. Cross-border resiliency was not ranked as high (7 percent) for the El Paso region compared to the overall border average weight of 10.6 percent.
<table>
<thead>
<tr>
<th>BTMP Goals</th>
<th>BTAC Weights</th>
<th>El Paso/Santa Teresa/Chihuahua BNRSC Weight</th>
<th>Total Border Average Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility and Reliability</td>
<td>26.7%</td>
<td>22.0%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Economic Competitiveness</td>
<td>18.8%</td>
<td>18.0%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Safety and Security</td>
<td>10.9%</td>
<td>13.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Connectivity</td>
<td>10.9%</td>
<td>11.0%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Cross-border Resiliency</td>
<td>8.9%</td>
<td>7.0%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Asset Preservation</td>
<td>5.0%</td>
<td>7.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Sustainable Funding</td>
<td>6.9%</td>
<td>10.0%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Customer Service</td>
<td>7.9%</td>
<td>7.0%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Stewardship and Sustainability</td>
<td>3.0%</td>
<td>5.0%</td>
<td>3.5%</td>
</tr>
</tbody>
</table>
Chapter 9  El Paso Region Stakeholder Engagement

This chapter outlines the extensive binational stakeholder engagement, public outreach, and activities that supported and guided the development of the Texas-Mexico Border Transportation Master Plan (BTMP). A robust binational and bilingual engagement and outreach was performed in many different formats to provide opportunities for input and feedback for all stakeholders in the three Texas-Mexico border regions—El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas.

- Binational stakeholder input shaped every aspect of the BTMP.
- The BTMP stakeholder engagement strategies facilitated binational coordination and collaboration between Texas and Mexico to identify transportation issues, needs, challenges, opportunities, and strategies of moving people and goods across the border, the border region, and beyond.
- A robust stakeholder engagement framework allowed an opportunity for a broad range of stakeholders to contribute to the plan.

To meet these goals, TxDOT created new stakeholder committees, as well as leveraged several stakeholder bodies that were already in existence including:

- Border Trade Advisory Committee (BTAC)
- United States–Mexico Joint Working Committee on Transportation Planning (JWC)
- Binational Bridges and Border Crossings Group (BBBXG)
- Three Binational Regional Steering Committees (BNRSCs) including one for the El Paso/Santa Teresa/Chihuahua Region

Nearly 2,800 individuals from the U.S. and Mexico were involved in the stakeholder engagement process.

9.1 Stakeholder Engagement and Public Involvement Framework

A comprehensive Texas-Mexico stakeholder engagement framework provided a far-reaching opportunity for both nations to participate in the BTMP development process.
Figure 9.1-1. Stakeholder and Public Engagement Framework

TEXAS-MEXICO BORDER TRANSPORTATION MASTER PLAN

- U.S. & Mexico Binational Federal & State Agencies and Committees (Including JWC and BBBXG)
- TxDOT Internal Border Task Force
- PUBLIC MEETINGS
- STAKEHOLDER LISTENING SESSIONS
- INDUSTRY & LARGE EMPLOYER FOCUS GROUPS
- STAKEHOLDER INTERVIEWS
- EL PASO-SANTA TERESA-CHIHUAHUA Binational Regional Steering Committee
- LAREDO-COAHUILA-NUEVO LEÓN-TAMAULIPAS Binational Regional Steering Committee
- RIO GRANDE VALLEY-TAMAULIPAS Binational Regional Steering Committee
The organization and overarching framework show how TxDOT worked together with various committees and groups in a collaborative way to get input and to develop binational consensus during each phase of BTMP development. This engagement network allowed for a complex, inclusive, and transparent system of interaction, input, and decision-making. All groups, including the El Paso/Santa Teresa/Chihuahua BNRSC, were engaged in a collaborative way to get their input and to develop Texas-Mexico consensus during each phase of the BTMP, as further explained below.

9.2 Stakeholder Engagement Outreach

The development of the BTMP was data-driven and relied on extensive consultation, engagement, and consensus-building with binational public and private stakeholders.

TxDOT served as a facilitator between all entities and leveraged an internal Border Task Force to help deploy the stakeholder engagement program, incorporate local priorities and planning initiatives, and support the overall development of the BTMP. This group is made up of leadership from each of the three TxDOT border districts—El Paso, Laredo, and Pharr—and other TxDOT divisions, including Rail, Maritime, and State Legislative Affairs. The TxDOT internal Border Task Force was in place prior to the BTMP and will contribute to the implementation of the plan recommendations.

TxDOT also collaborated with U.S. and Mexico federal and state agencies and committees on the BTMP, including the JWC and BBBXG. These two binational groups provide an ongoing framework for the U.S.-Mexico border transportation planning process and guide border transportation management and investment decisions.

9.2.1 Binational Regional Steering Committees

The meetings of the El Paso/Santa Teresa/Chihuahua BNRSC are shown in the table below.

<table>
<thead>
<tr>
<th>El Paso/Santa Teresa/Chihuahua BNRSC Meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2018</strong></td>
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<tr>
<td>D</td>
</tr>
</tbody>
</table>

Three Binational Regional Steering Committees (BNRSCs) were established to provide input and guide the development of the BTMP.

An El Paso/Santa Teresa/Chihuahua Region BNRSC was established to provide input and guide the development of the BTMP. The BNRSC group for the El Paso/Santa Teresa/Chihuahua Region included a total of 105 members including 46 U.S. members and 59 Mexico members.
Table 9.2-1 provides a summary of dates and locations of BNRSC meetings.

<table>
<thead>
<tr>
<th>BTMP Development Phase</th>
<th>BNRSC Meeting Dates, Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Collection</td>
<td>April 30, 2019 – El Paso</td>
</tr>
<tr>
<td>Multimodal Corridor Designation and Needs Assessment</td>
<td>June 5, 2019 – El Paso</td>
</tr>
<tr>
<td></td>
<td>November 12, 2019 – Ciudad Juárez, Chihuahua</td>
</tr>
<tr>
<td>Forecast and Economic Analysis</td>
<td>April 21, 2020 – Virtual meeting</td>
</tr>
<tr>
<td>Identification of Strategies and Recommendations</td>
<td>July 2, 2020 – Virtual meeting</td>
</tr>
<tr>
<td></td>
<td>July 28, 2020 – Virtual meeting</td>
</tr>
<tr>
<td></td>
<td>August 17, 2020 – Virtual meeting</td>
</tr>
<tr>
<td></td>
<td>September 23, 2020 – Virtual meeting</td>
</tr>
<tr>
<td>Approvals</td>
<td>November 4, 2020 – Virtual meeting</td>
</tr>
<tr>
<td></td>
<td>November 30-December 2, 2020 – Virtual meeting</td>
</tr>
<tr>
<td></td>
<td>March 17, 2021 – Virtual meeting</td>
</tr>
</tbody>
</table>

The number of U.S. and Mexico stakeholders who attended a BTMP meeting in the El Paso/Santa Teresas/Chihuahua Region is presented in Figure 9.4-1.

9.2.2 Private Sector Stakeholder Workshops/Interviews

Two stakeholder workshops were held in the El Paso/Santa Teresa/Chihuahua Region to allow for opportunities to participate in addition to several virtual workshops. The workshops were held on April 30 and November 13, 2019.

9.2.3 Public Meetings

Two public meetings were held in El Paso and one public meeting was held virtually for the region to present the final draft BTMP with the public so they could share their feedback on April 29, 2019, November 12, 2019 and February 10, 2021.

9.2.4 U.S. & Mexico Binational Coordination

U.S. and Mexico coordination focused on building and strengthening relationships and allowed for the exchange of information and data relevant to the BTMP. A series of monthly conference calls hosted by TxDOT with SCT and FHWA effectively facilitated the BTMP planning process and provide cross-border consistency in planning between both countries.

Regular engagement with Mexican officials—such as SRE, SCT, SAT, and local officials in the four border states—was performed to keep them updated on the status of the BTMP, as well as meeting with other binational stakeholders. Engagement with officials on the U.S. side included the Texas
Secretary of State who chaired the BTAC, New Mexico Department of Transportation, GSA and the CBP.

9.3 Outreach, Education, and Communication Materials

Stakeholders were kept informed on the BTMP development process with easily accessible, meaningful, and accurate information made available through email updates, flyers, website postings, phone calls, and presentations. All materials were provided in both English and Spanish. The project team coordinated with TxDOT leaders at district and division levels, as well as Public Information Officers (PIOs), to disseminate information. Activities include online tools, speaking engagements, fact sheets, newsletters, media outreach such as social media, Twitter regional PIO accounts (@TxDOTELP) and Facebook updates posted on TxDOT’s main page (www.facebook.com/TxDOT).

9.4 Participation Results

The final count of stakeholder participation and attendance at BTMP meetings and events throughout the development of the BTMP exceeded that experienced on the previous regional border master plans, amassing 5,675 total meeting participants—1,543 individuals from Mexico and 4,132 individuals from the U.S. Many of the regional meetings were attended by the same stakeholders, proving their dedication and commitment to the BTMP planning process. The final database included 2,779 individuals. Figure 9.4-1 shows the number of people who attended a BTMP meeting in the El Paso Region.
Total Number of U.S. and Mexico Stakeholders who Attended a BTMP Meeting: El Paso/Santa Teresa/Chihuahua Region

- **621 PARTICIPANTS**
- **155 PARTICIPANTS**
- **206 PARTICIPANTS**
- **28 PARTICIPANTS**
- **57 PARTICIPANTS**

*Stakeholder meeting attendance through round 10.*
Chapter 10   El Paso Region Recommendations

The purpose of this chapter is to provide the results of the identification and evaluation of strategies that address the current and future needs of the Texas-Mexico border region.

The strategies outlined in this chapter fall into three distinct categories: policies, programs, and projects. Together they form the recommendations of the BTMP.

- Policies are broad recommendations that set the direction of agencies involved in border planning and provide the foundation for decisions. The BTMP recommends 22 policies to advance borderwide transportation goals.
- Programs are a collection of implementable initiatives to achieve a policy objective and consist of actions that are repeatable across multiple platforms or locations. The BTMP recommends 153 programs to address Texas-Mexico transportation infrastructure needs.
- Projects are targeted, regionally-specific actions undertaken to achieve a policy objective. The BTMP recommends 661 projects at a cost of $37.4 billion.

The three types of strategies are interdependent and work holistically to address issues and needs.

10.1   Policy Recommendations

Policies are broad recommendations that set the direction of agencies and provide the foundation for decisions. Policies provide the foundation for programs and projects, can be applied borderwide and not specific to any particular border region, and are critical for border crossings and corridors.

This section presents 22 policy recommendations that support the development of comprehensive strategies that align with BTMP goals and objectives. Policies are organized as they relate to border crossings and corridors in the Texas-Mexico multimodal transportation network, or as being applicable to both, systemwide. Of the 22 recommended policies, five are specific to border crossings, eight are specific to corridors, and nine apply systemwide.

A critical component of each policy strategy is that, to be successful, it must be undertaken by federal, state, regional, and local public and private stakeholders on a binational level. Entities at all levels, and on both sides of the border, must actively engage to maximize the effectiveness of each policy.

The policy recommendations are related to broad categories of needs including Texas-Mexico coordination, collaboration and cooperation, safety and security, economic competitiveness, data collection, harmonization, sharing and analysis, operational efficiency, system capacity and first and last-mile connections. The full list of policies and their alignment with the BTMP goals is provided on sections 10.2.1 through 10.2.10 in Chapter 10 of the Final Report.
10.2 Program Recommendations

The BTMP recommends 153 programs to address Texas-Mexico transportation infrastructure needs in support of the recommended policies described in the previous section. In order to show the breadth and variety of recommended programs, this section provides a brief description of an illustrative group of programs not specific to any particular border region. An entire list of the recommended programs appears in Appendix 10A.

The appendix contains the following information:

- A brief description of the program
- Links between the specific program, BTMP goals, and a policy
- Information on the impact of the program in achieving the connected goals (high, medium, or low)
- The timeframe in which it can be accomplished (short-term, mid-term, or long-term)

Programs are a collection of initiatives to achieve a policy objective and consist of actions that are repeatable across multiple platforms or locations.

Programs include those specific to border crossings and those specific to corridors, or as being applicable to both, systemwide. Programs apply to multiple locations and, therefore, are not identified by specific border crossing or corridor. Programs in the context of the border region involve undertakings such as:

- The study or methodical consideration of new concepts or actions in a region heavily impacted by cross-border traffic.
- New or enhanced processes or procedures within border crossings or on nearby corridors, such as enhanced inspections or credential checks.
- Operational improvements, such as increased staffing levels and hours of operation at border crossings, and traffic management in connecting corridors.
- The development, maintenance and sharing of data within various levels of government in the border region.
- Ongoing responsiveness to policy recommendations that result in sustainable improvements in the border region as policies or priorities change in one or both countries.
- A higher and more sustained level of collaborative binational discussion and decision-making, and joint implementation whenever possible.

A high-level summary of the 153 programs identified during this process is presented below. This summary organized programs as they relate to border crossings and corridors in the Texas-Mexico multimodal transportation network, or as being applicable to both, systemwide. The full list of
programs in Appendix 10A, include the alignment with goals and a recommended tier – high, medium or low – that indicates the magnitude of impact that successful implementation of the program would have on addressing the goal(s).

The evaluation criteria for determining the impact of programs are described in detail in Chapter 8. Criteria include the program’s effectiveness in addressing the needs of the region, the number of goals the program addresses, whether a similar program has been successful elsewhere, and the number of factors that might complicate implementation, such as legal impediments.

10.3 Regional Projects

Recommended projects are targeted actions that complement the recommended programs and are often location-specific, compared to the broader applicability of programs. Together, recommended programs and projects support the directional objectives set forth by the recommended policies.

Table 10.3-1 shows the breakdown of these projects between border crossing projects and corridor projects. The following sections summarize recommended projects and overall costs for the region.

The El Paso/Santa Teresa/Chihuahua border region has a total of 292 projects with an estimated cost of $11.6 billion, or 31 percent of the total border region projects. This region’s projects include the following:

- 238 projects on the Texas (U.S.) side of the border with an estimated cost of $10.2 billion.
- 54 projects on the Mexico side of the border with an estimated cost of $1.4 billion.

<table>
<thead>
<tr>
<th>Projects</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border Crossing</td>
<td>97</td>
</tr>
<tr>
<td>Corridor</td>
<td>195</td>
</tr>
<tr>
<td>TOTAL</td>
<td>292</td>
</tr>
</tbody>
</table>
On the Texas (U.S.) side, these projects include large highway capital projects such as the Interstate (I) 10 expansion, State Highway (SH) 178 (Artcraft Road) improvements, and the Borderland Expressway project. The Mexico side includes projects such as the San Jerónimo Border Port and the Juárez Beltway.

Of the 292 projects included in this region:

- 97 are border crossing-related projects with an estimated cost of $2.7 billion.
- 195 are corridor-related projects with an estimated cost of $8.9 billion.

Because the El Paso/Santa Teresa/Chihuahua region has unique needs and issues, the overall project makeup results in a portfolio of projects that addresses the unique issues and priorities for the region. The number of projects by category is shown in Table 10.3-2.

The El Paso/Santa Teresa/Chihuahua Region has the highest number of projects in the mobility and reliability category followed by safety projects as the second highest category for projects which account for 61 and 17 percent of the project costs respectively.

The number of projects in the El Paso/Santa Teresa/Chihuahua Region include:

- 238 Texas (U.S.) projects
- 54 Mexico projects

**System Modes**

The TxDOT–On System Roadways category had the highest number of project and costs in the region. The El Paso/Santa Teresa/Chihuahua Region’s second highest system/mode category for projects and costs is the Border Crossing-General. The following is a breakdown of the top three system/modes.

The El Paso/Santa Teresa/Chihuahua Region has:

- TxDOT on-system roadways (82 projects at $6.4 billion)
- Border Crossing – General (66 projects at $2.1 billion)
- Mexico on-system roadways (26 projects at $1.2 billion)

**Projects by Impact**

Table 10.3-3 summarizes projects by impact category. This information highlights the distribution of projects and cost by country.

- 146 High Impact projects resulting in $8.1 billion or 69 percent of the region’s project cost.
- 120 Medium Impact projects resulting in $3.3 billion or 28 percent of the region’s project cost.
- 26 Low Impact projects resulting in $0.3 billion or 3 percent of the region’s project cost.

<table>
<thead>
<tr>
<th>Total Projects by Impact and Country</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEXAS (U.S.)</strong></td>
</tr>
<tr>
<td>Impact</td>
</tr>
<tr>
<td>High Impact</td>
</tr>
<tr>
<td>Medium Impact</td>
</tr>
<tr>
<td>Low Impact</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

**Project Funding Status**

The project funding status is summarized below and shown in Table 10.3-4.

- The El Paso/Santa Teresa/Chihuahua Region has the largest number of unfunded projects among the border regions with 219, representing a cost of $8.9 billion.

<table>
<thead>
<tr>
<th>Table 10.3-4. Projects by Funding Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUNDING STATUS</strong></td>
</tr>
<tr>
<td>Fully Funded</td>
</tr>
<tr>
<td>Partially Funded</td>
</tr>
<tr>
<td>Unfunded</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>
Chapter 11 El Paso Region Implementation Plan

The BTMP is a comprehensive, multimodal, long-range plan with a 2050-time horizon that identifies transportation issues, needs, challenges, opportunities, and strategies. To deliver a blueprint for strategies that can be used now and in the future, this chapter provides a comprehensive Implementation Plan for strategies in the short, medium, and long terms for the El Paso Region.

In response to the BTMP’s long-term horizon, identifying issues and needs, both now and in the future, the Implementation Plan provides the timeframe for implementing policy, program, and project strategies. The plan gives decision-makers a path forward, laying out short-term actions in 1 to 4 years—2021 through 2024, as well as enabling preparation for future medium-term actions in 5 to 10 years—2025-2030, and long-term improvements in 11+ years—2031-2050.

The Implementation Plan comprises the policy, program, and project priorities developed throughout the BTMP process and evaluated in Chapter 10. Policy, program, and project strategies are not exclusive, but complement one another and work holistically to support the goals of the BTMP.

11.1 Implementation Plan for Policies

As stated in Chapter 8, all 22 recommended policies are strategic in nature and provide the underlying foundation for the programs and projects, regardless of timeframe. Policies, therefore, were not placed into the short-, medium-, and long-term timeframes. Policies can be implemented immediately and throughout the implementation timeframe, as decision-makers and responsible parties come to an agreement.

Policies are linked to BTMP goals and where goals were further defined by specific solutions. Policies are

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67 Policy and program recommendations are not specific to any particular border region; however project recommendations are regionally specific.
categorized by those applicable to border crossings, corridors, or systemwide—both border crossings and corridors. The policies briefly described are discussed in more detail in Chapter 10.

11.2 Implementation Plan for Programs

Programs are a collection of implementable initiatives to achieve a policy direction and consist of actions that are repeatable across multiple platforms or locations. Programs are organized by those applicable to border crossings, by those applicable to corridors, or as being applicable to both (systemwide). Programs are not identified by specific border crossing or corridor location, as they apply to multiple locations.

The suggested programs, across all timeframes, categories and goals, represent a broad variety of approaches: process improvements, studies and research, expanding use of technologies, creating new Texas-Mexico working groups, and developing new educational programs, among others.

Chapter 10 recommended 153 programs for the BTMP. Figure 11.2-1 summarizes the programs by implementation timeframe. The criteria used to determine the timeframe for each program is described in Chapter 8.

About 60 percent of the programs will be underway in the medium term, and most of the remaining programs are expected in the short term. Only a handful are considered long-term programs. About 42 percent of the programs (65 programs) are applicable systemwide, and the remainder is divided between those applicable to border crossings and those that apply to corridors.

Programs are connected to the BTMP goals and represent one of the primary means of achieving the goals. Table 11.2-1 summarizes the programs by timeframe and goal. More than one-third of all the programs (57 programs) are in the Mobility and Reliability goal, and, of these, over half (34 programs), are expected in the medium term, while 20 are expected in the short term, and only 3 in the long term. For most of the goals, a small majority of programs are in the medium term. For two goals, Funding and Customer Service, a majority of goals are in the short term. A complete list of
recommended programs categorized by short-, medium-, and long-term timeframes is provided in Appendix 10A.

Table 11.2-1. Programs by Timeframe and BTMP Goal

<table>
<thead>
<tr>
<th>Programs by Timeframe and BTMP Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOBILITY AND RELIABILITY</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Short</td>
</tr>
<tr>
<td>Medium</td>
</tr>
<tr>
<td>Long</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

11.3 Implementation Plan for Projects

In the El Paso/Santa Teresa/Chihuahua Region, $1.9 billion of Texas (U.S.) improvements of $2.4 billion was identified as long term. In Mexico, most investments are the short and medium terms—$0.18 billion of $0.2 billion.

Table 11.3-1 details the number of border crossing projects by funding status and implementation timeframe for the El Paso/Santa Teresa/Chihuahua Region. For the entire region, approximately $2.4 billion of border crossing project costs are unfunded. Of that, more than $2.2 billion are in Texas (U.S.) and $0.2 billion are in Mexico.

On the Texas (U.S.) side, there are five short-term, high impact projects. There are 14 high impact, medium-term, and 15 high impact, long-term projects that are unfunded.

A summary of impact tiers for Texas (U.S.) projects includes:

- Short term (19 projects): 13 high impact and 6 medium impact projects.
- Medium term (24 projects): 19 high impact and five medium impact projects.
- Long term (30 projects): 15 high impact, 11 medium impact and four low impact projects.
All 54 projects on the Mexico side were identified as high impact estimated at $1.4 billion.

Table 11.3-1. Border Crossing Projects in the El Paso/Santa Teresa/Chihuahua Region by Implementation Timeframe, Funding Status and Country

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TEXAS (U.S.)</td>
</tr>
<tr>
<td>Short</td>
<td>2</td>
</tr>
<tr>
<td>Medium</td>
<td>5</td>
</tr>
<tr>
<td>Long</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9</td>
</tr>
</tbody>
</table>

On the Texas (U.S.) side, there are 91 unfunded high and medium impact projects with an estimated cost of $5.0 billion. In Mexico, there are 30 unfunded high impact projects, 29 of which are long term, totaling $1.2 billion.

There are $6.5 billion of corridor project costs in the region that are unfunded, as shown in Table 11.3-2. On the Texas (U.S.) side, $1.3 billion of funded projects are high impact projects and $0.9 billion are in the short and medium term. In Mexico, funded projects ($9.2 million) are short term and high impact.

In Texas (U.S.), most unfunded projects are high or medium impact ($5.0 billion), while a minority is low impact projects ($0.3 billion). Of the fully or partially funded projects, $2.0 billion are slated for high impact projects (across 23 projects) and $0.4 billion for medium impact projects (across 29 projects). There are only four fully or partially funded projects in the long term.

On the Texas (U.S.) side, there are no short-term, high impact projects that are unfunded.

The impact tier and timeframe for Texas (U.S.) projects includes:

- Short term (49 projects): 11 high impact, 30 medium impact, and eight low impact projects.
- Medium term (71 projects): 24 high impact, 40 medium impact, and seven low impact projects.
- Long term (45 projects): 10 high impact, 28 medium impact, and 7 low impact projects.

On the Mexico side, 29 out of the total 30 projects are high impact and unfunded, two short term and 27 long term.
Table 11.3-2. Corridor Projects by Implementation Timeframe, Funding Status and Country

<table>
<thead>
<tr>
<th>TIMEFRAME</th>
<th>FULLY FUNDED</th>
<th>PARTIALLY FUNDED</th>
<th>UNFUNDED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TEXAS (U.S.)</td>
<td>MEXICO</td>
<td>TEXAS (U.S.)</td>
<td>MEXICO</td>
</tr>
<tr>
<td>Short</td>
<td>34</td>
<td>$30.1B</td>
<td>1</td>
<td>&lt;$0.1B</td>
</tr>
<tr>
<td>Medium</td>
<td>18</td>
<td>$0.5B</td>
<td>2</td>
<td>$0.8B</td>
</tr>
<tr>
<td>Long</td>
<td>1</td>
<td>$0.5B</td>
<td>0</td>
<td>$0.0B</td>
</tr>
<tr>
<td>TOTAL</td>
<td>54</td>
<td>$1.7B</td>
<td>1</td>
<td>&lt;$0.1B</td>
</tr>
</tbody>
</table>

11.3.1 Impact of Implementing Recommended Border Crossing Projects

Fully implementing all the border crossing projects identified in the BTMP would reduce future northbound crossing times compared to a “do nothing” scenario. These reductions in northbound crossing times would reduce delays in the future and therefore impact the future cost of missed opportunities to the economies of Texas, U.S., and Mexico. The BTMP defined two alternative future scenarios for the implementation of project recommendations:

- the first scenario corresponds to the implementation of projects at existing border crossings
- the second scenario corresponds to the implementation of projects at existing border crossings plus the construction of new border crossings.

The BTMP produced a high-level estimation of the impacts that these implementation scenarios would have on 2050 border northbound crossing times and quantified the corresponding cost of missed opportunities for the economies of Texas, U.S. and Mexico compared to a “do nothing” scenario.

11.3.2 Future Border Forecasts by Scenario

The two scenarios described and analyzed are defined based on border crossing projects identified by stakeholders as BTMP project recommendations within the El Paso/Santa Teresa/Chihuahua Region. Scenario 1 considers improvements to existing border crossings, including investments to expand capacity and improve efficiency. Scenario 2 includes the improvements in Scenario 1, plus the construction of new border crossings in the region.

11.3.3 Future Border Crossing Forecasts for Scenario 1

There are 97 border crossing projects within the El Paso region with a total cost of $2.7 billion. **Table 11.3-3** show the historical and future total crossing times.
Table 11.3-3. Northbound Border Crossing Times by Year, Scenario and Crossing Type – El Paso Region

<table>
<thead>
<tr>
<th>Crossing Type</th>
<th>2019 Crossing Times (hours)</th>
<th>2050 Crossing Times</th>
<th>Total Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Do Nothing” Scenario (hours)</td>
<td>Scenario 1 (hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POV</td>
<td>5,352,065</td>
<td>32,608,099</td>
<td>-26,082,198</td>
<td>-80</td>
</tr>
<tr>
<td>CMV</td>
<td>753,308</td>
<td>14,801,229</td>
<td>-4,198,195</td>
<td>-28</td>
</tr>
<tr>
<td>Total</td>
<td>6,105,373</td>
<td>47,409,328</td>
<td>-30,280,393</td>
<td>-64</td>
</tr>
</tbody>
</table>

11.3.4 Future Border Crossing Forecasts for Scenario 2

Table 11.3-4 presents future border crossing times in the El Paso Region under Scenario 2. Future border crossing times in the El Paso Region are reduced by 7 percent under Scenario 2 compared to Scenario 1.

Table 11.3-4. Northbound Border Crossing Times by Year, Scenario and Crossing Type – El Paso Region

<table>
<thead>
<tr>
<th>Crossing Type</th>
<th>2019 Crossing Times (hours)</th>
<th>2050 Crossing Times</th>
<th>Total Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Do Nothing” Scenario (hours)</td>
<td>Scenario 2 (hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POV</td>
<td>5,352,065</td>
<td>32,608,099</td>
<td>-26,083,301</td>
<td>-80</td>
</tr>
<tr>
<td>CMV</td>
<td>753,308</td>
<td>14,801,229</td>
<td>-5,417,160</td>
<td>-37</td>
</tr>
<tr>
<td>Total</td>
<td>6,105,373</td>
<td>47,409,328</td>
<td>-31,500,462</td>
<td>-66</td>
</tr>
</tbody>
</table>

11.3.5 Infrastructure Improvements at Existing Border Crossings

Based on information provided by stakeholders, the following border crossings have future planned infrastructure investments in the El Paso/Santa Teresa/Chihuahua Region. This list includes a combination of expanded lanes and new bridge spans to process additional vehicle types at existing crossings which include the following modeled capacity changes:

**Passenger Vehicles**
- Presidio Bridge (assuming two additional lanes in the future, one of which is northbound);
- Santa Teresa/San Jeronimo (assuming two additional lanes in the future, one of which is northbound);
- Bridge of the Americas (assuming two additional northbound lanes in the future);
- Ysleta-Zaragoza Bridge (assuming two additional northbound lanes in the future).

**Commercial Vehicles**
- Bridge of the Americas (assuming one additional northbound lane in the future);
- Tornillo – Fabens POE is expected to handle commercial traffic in the future. There are no current commercial crossings at Tornillo Fabens. Assuming equivalent effect as adding lanes
at Ysleta – Zaragoza Bridge (assuming two additional lanes in the future, one of which is northbound).

**Stacked Booths**

Based on information provided by stakeholders, all northbound built lanes in 2050 at the following POV crossings will implement such improvement by 2050:

- Paso del Norte Bridge
- Bridge of the Americas
- Ysleta-Zaragoza Bridge

**Reversible Lanes During Peak Hours**

Based on information provided by stakeholders, the following POV crossings will implement such improvement by 2050:

- 1 northbound lane at Good Neighbor Bridge

**11.3.6 New Border Crossings**

Based on information provided by stakeholders, the following presents new border crossings considered under Scenario 2 Improvements to Existing Crossings Plus New Border Crossings within the El Paso/Santa Teresa/Chihuahua Region:

**Passenger Vehicles**

- Sunland Park Border Crossing. Assuming equivalent effect as adding lanes at Santa Teresa/San Jeronimo (assuming six additional lanes in the future, three of which is northbound).

**Commercial Vehicles**

- Sunland Park Border Crossing. Assuming equivalent effect as adding lanes at Santa Teresa/San Jeronimo (assuming four additional lanes in the future, two of which is northbound)

**11.3.7 Economic Impacts at the Regional Level**

Overall, the improvements associated with both implementation scenarios contribute to a reduction in border crossing times and a reduction in the cost of missed opportunities for the regional economy. Additional economic impact results at the regional level are presented in the following tables.
Table 11.3-5. Regional Impact of Employment Impacts in Job-Years, 2050 (Scenario 1)

<table>
<thead>
<tr>
<th>Region</th>
<th>U.S. Movement of</th>
<th>Mexico Movement of</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Goods</td>
<td>People</td>
<td>Total</td>
</tr>
<tr>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
<td>40,572</td>
<td>12,364</td>
<td>52,936</td>
</tr>
</tbody>
</table>

Table 11.3-6. Regional Impact of Labor Income in Billions of 2019 $, 2050 (Scenario 1)

<table>
<thead>
<tr>
<th>Region</th>
<th>U.S. Movement of</th>
<th>Mexico Movement of</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Goods</td>
<td>People</td>
<td>Total</td>
</tr>
<tr>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
<td>$2.9</td>
<td>$0.4</td>
<td>$3.3</td>
</tr>
</tbody>
</table>

Table 11.3-7. Regional Impact of Employment Impacts in Job-Years, 2050 (Scenario 2)

<table>
<thead>
<tr>
<th>Region</th>
<th>U.S. Movement of</th>
<th>Mexico Movement of</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Goods</td>
<td>People</td>
<td>Total</td>
</tr>
<tr>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
<td>75,876</td>
<td>12,364</td>
<td>88,240</td>
</tr>
</tbody>
</table>

Table 11.3-8. Regional Impact of Labor Income in Billions of 2019 $, 2050 (Scenario 2)

<table>
<thead>
<tr>
<th>Region</th>
<th>U.S. Movement of</th>
<th>Mexico Movement of</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Goods</td>
<td>People</td>
<td>Total</td>
</tr>
<tr>
<td>El Paso/Santa Teresa/Chihuahua Region</td>
<td>$5.7</td>
<td>$0.4</td>
<td>$6.0</td>
</tr>
</tbody>
</table>

11.4 Summary and Call for Action

The BTMP was an ambitious undertaking to plan for the future of the 1,254-mile Texas-Mexico region including the El Paso/Santa Teresa/Chihuahua Region. This region along with the entire Texas-Mexico border is an increasingly critical gateway for the economies of U.S. and Mexico.

The vision of the BTMP, as presented in Chapter 2, was to collaboratively foster integrated and efficient transportation mobility of people and goods across the Texas-Mexico border and to promote economic development that benefits the Texas-Mexico border region, the U.S., and Mexico.

The nine goals, also introduced in Chapter 2, provide strategic direction regarding how to identify and address the multimodal transportation system and infrastructure needs of the border region.

The BTMP uses a data-driven approach to explore the economics of the border region, to look at the region’s past and projections for the future, and to identify issues and needs today and tomorrow.
In the most-likely future scenario, the combination of strong economic growth and the U.S.-Mexico-Canada Agreement results in a tripling of the value of trade between the U.S. and Mexico by 2050. Without a coordinated effort to address this growth, the region will see increased congestion as the growth strains the transportation system. Left unaddressed, the rapid development could ultimately result in a loss of economic opportunity due to congestion and delays.

To address these needs, the BTMP identifies strategic solutions that work holistically to address the identified issues. Together, they comprise the plan’s recommendations. The strategies are linked to the BTMP goals and examined by their geographic reach (country and region), by category of infrastructure they impact (border crossing, corridor, or both), and by the availability and timing of funding.

Finally, the strategies were sorted by their level of impact on the needs—high, medium, or low—in Chapter 10, and by their implementation timeframe—short, medium, and long—in Chapter 11.

The BTMP serves as a blueprint for binational partnerships and decision-making regarding investment strategies to address cross-border multimodal transportation system challenges and to facilitate cross-border movement of people and goods.

Ideas for future actions as part of the BTMP implementation include an annual plan to map out the coming year’s priorities, an annual report to share progress and suggest improvements for the future, and a regional planning summit in the El Paso/Santa Teresa/Chihuahua Region to provide accountability for future projects. Finally, an advocacy plan to keep the border at the forefront for local, state, and federal decision-makers in both the U.S. and Mexico is a critical part of the region’s future success.

It is suggested that policies be reviewed at least every 5 years, or during updates of the BTMP, to determine ongoing relevance.

The Texas-Mexico Border Transportation Master Plan has produced an unprecedented level of information and ideas. 68 Regional stakeholders in both countries now have an opportunity to exercise that collaborative spirit with renewed energy and purpose.

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68 The BTMP builds upon the three previous border master plans (BMPs) developed between 2012 and 2013 for El Paso/Santa Teresa/Chihuahua, Laredo/Coahuila/Nuevo León/Tamaulipas, and Rio Grande Valley/Tamaulipas. As such, these BMPs laid the groundwork for the BTMP.
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