TEXAS-MEXICO BORDER TRANSPORTATION MASTER PLAN 2021

PLAN MAESTRO DE TRANSPORTE FRONTERIZO DOS MIL VEINTIUNO

CHIHUAHUA COAHUILA NUEVO LEÓN TAMAULIPAS TEXAS

Texas Department of Transportation

REGIONAL SUMMARY:
Rio Grande Valley/Tamaulipas Region

May 24, 2021

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Chapter 1 Introduction to the Rio Grande Valley (RGV) 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.

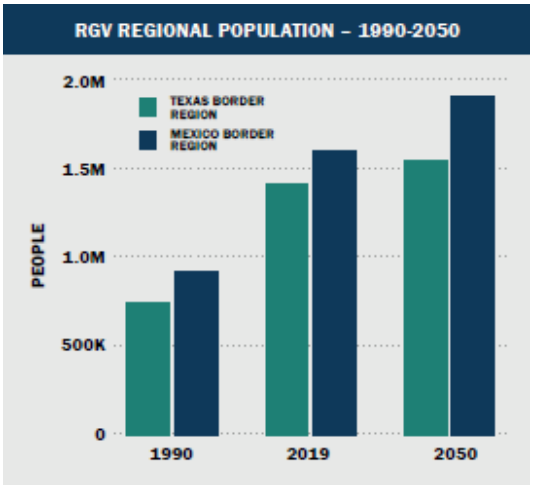
The BTMP Final Report takes a holistic approach to border planning, developing one plan for the entire Texas-Mexico border, with the understanding that the border is not a monolith and that each border region is distinct and has unique geographic, trade, economic, and population characteristics.

The purpose of this regional summary is to specifically discuss The Rio Grande Valley/Tamaulipas (RGV) Region.

1.1 Rio Grande Valley/Tamaulipas Regional Overview

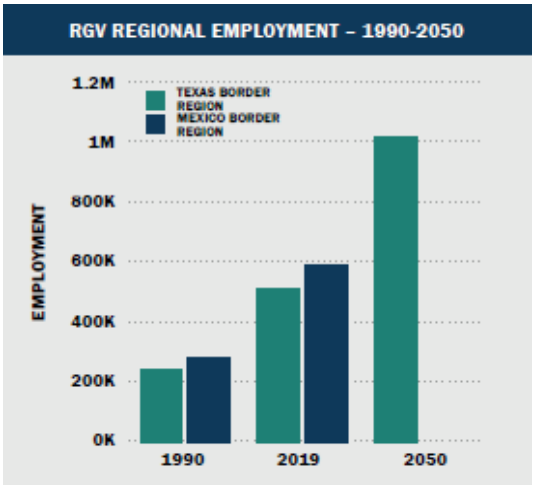
- **South Texas Location**: Located at the southernmost portion of Texas, the Rio Grande Valley region encompasses eight counties (Brooks, Cameron, Hidalgo, Jim Hogg, Kenedy, Starr, Willacy and Zapata), four of which are on the border with Mexico.
- **Highest Number of Border Crossings:** There are thirteen border crossings in the Rio Grande Valley/Tamaulipas region, and all accommodate the crossing of privately-owned vehicles. Nine of these border crossings also process pedestrians and six of the border crossings process commercial trucks.
- **Supply Chains:** The top supply chains moved through the border crossings in this region by value are High Tech, Fruits, Vegetables, and Grains, and Machinery.
- **Fruits, Vegetables, and Grains:** The Pharr-Reynosa International Bridge in Hidalgo County is the largest U.S. land port for processing fruits and vegetables. However long border delays occur at this crossing due in part to a shortage of agricultural inspectors and the need for advanced border inspection technologies.
- **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 $44.1B in 2019 and is expected to grow to $212.7B in 2050.

- **Connectivity:** Congestion occurs on east-west connections between land border crossings and seaports. With continued increases in commercial vehicle movements, the current corridors could require upgrading to higher standards to meet traffic demands. Greater connectivity is also needed between border crossings to increase the dynamism of traffic flows in the region.
- **Asset Conditions:** All border crossings are in good or fair conditions. However, 13% 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 concentrated in urban areas and near border crossings. Two bridge structures also have low vertical clearance in this region.
- **Freight Rail:** The West Rail Bridge in Cameron County is a single-track rail line that opened in 2015, the first new international rail border crossing on the border in over a century. This rail border crossing eliminated 14 highway-rail border crossings in Brownsville by diverting freight trains west of the city. However, this rail crossing may be overutilized due to continuous increases in rail traffic over time.
- **Resiliency:** The region has a number of emergency evacuation routes due to the prevalence of extreme weather events. However, there is a need for enhanced network redundancy and cross-border resiliency planning in light of increasing system disruptions that disrupt the efficient movement of people and goods across the border. For example, Rio Grande Valley flooding in 2010, Hurricane Harvey in 2017, the migrant crises in 2019, and Hurricane Hanna in 2020 all led to road and border crossing closures. Peaceful demonstrations in the region have also blocked vehicle and pedestrian traffic, causing diversions to other border crossings.

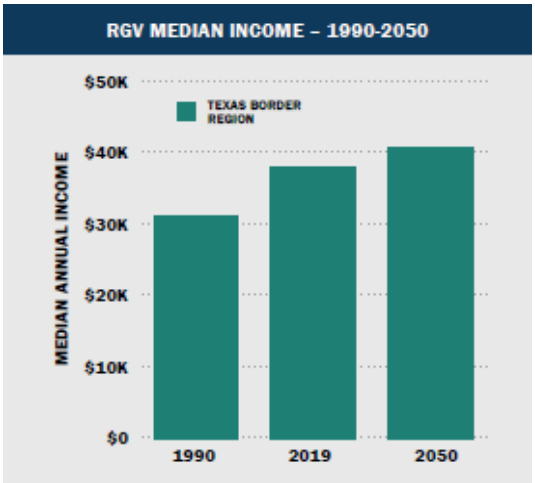


The RGV Region's population, employment and income has grown since 1990 and is expected to continue to increase through 2050.

POPULATION: The RGV Region's population increased 83 percent from 1.64 million in 1990 to 3.0 million in 2019 and is forecast to increase 15 percent to 3.46 million residents in 2050.



EMPLOYMENT: Employment on the Texas side of the RGV region grew by 111 percent from 244,000 in 1990 to 516,000 in 2019 and is forecast to increase by 99.6 percent to 1.03 million in 2050.



INCOME: Medium household income on the Texas side of the RGV region increased 21 percent from $31,000 in 1990 to $37,000 in 2018 and is projected to grow by 9 percent to $41,000 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 RGV Region's multimodal transportation network consists of the key routes and corridors used for the cross-border movement of people and goods.

The Rio Grande Valley/Tamaulipas region has 5 ports of entry ((POE)[1]:

- Roma POE
- Hidalgo POE
- Brownsville POE
- Rio Grande City POE
- Progresso POE

There are 11 roadway border crossings along the U.S.-Mexico border in the RGV region:

[1] 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.

- Roma-Ciudad Miguel Aleman Bridge (Roma, TX)
- Rio Grande City-Camargo Bridge (Rio Grande, TX)
- Anzalduas International Bridge (Mission, TX)
- McAllen-Hidalgo Bridge (Hidalgo, TX)
- Pharr-Reynosa International Bridge (Pharr, TX)
- Veterans International Bridge (Los Tomates)
- B&M International Bridge (Brownsville, TX)
- Gateway International Bridge (Brownsville, TX)
- Donna International Bridge
- Progreso International Bridge (Progreso, TX)
- Free Trade Bridge (Los Indios, TX)

There is 1 rail crossing: Brownsville West Rail Bridge. One vehicular dam crossing and one ferry are also located within this region, Lake Falcon Dam Crossing and Los Ebanos Ferry.

The Rio Grande Valley/Tamaulipas Region has 4 key corridors:

- 2 Texas-Mexico corridors with north-south movement, the I-35/FH85 and the I-69 (Brownsville) corridors primarily serve north-south movement across the Texas- Mexico border in the RGV region to connect with the wider U.S. and Mexico to Mexico.
- 2 Texas-Mexico corridors east-west movement, the I-10 and the I-37 Port of Corpus Christi corridors primarily serve east-west movement across the RGV region that do not physically cross the Texas-Mexico border, 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 RGV Region reaches the entire U.S. and Mexico.

In 2019, movements of people and goods through the RGV Region generated over 1.73M jobs and more than $44B GDP in both countries. By 2050, the economic impact of cross-border trade in the RGV region will increase to over 8.6M jobs and $208.3B in GDP.

The binational multimodal transportation serving the RGV 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 RGV region has played an important role in that growth. Over $53 billion or nearly 11% of trade between the U.S. and Mexico passed through the RGV 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.

Figure 1.1-1. Rio Grande Valley/Tamaulipas Regional Map

The following sections discusses the importance of the Rio Grande Valley/Tamaulipas Region and the transportation issues, needs, challenges, opportunities, and strategies for moving people and goods through this region.

Chapter 2 Rio Grande Valley 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.

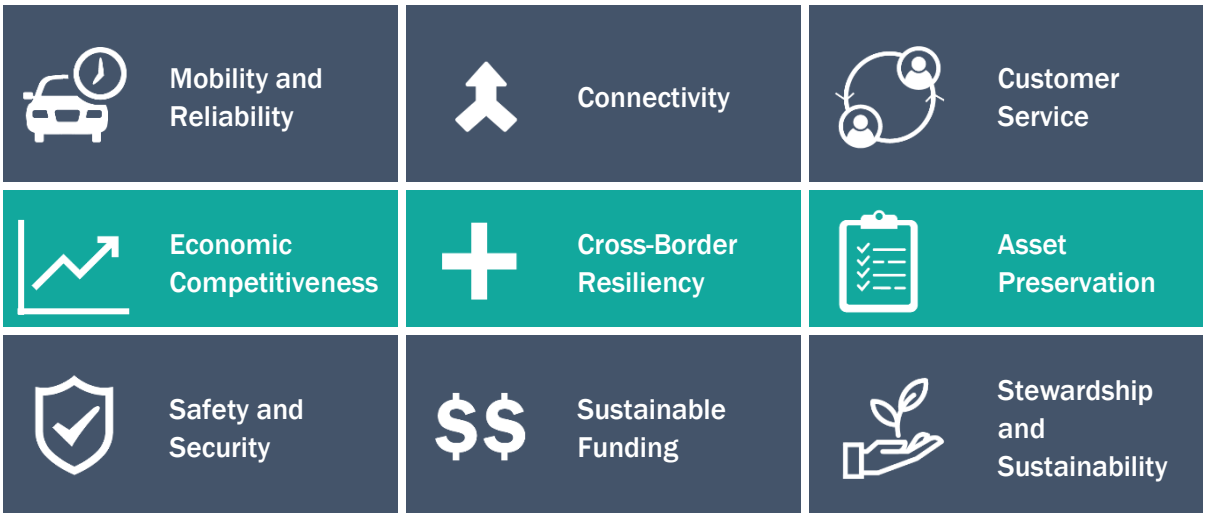
The BTMP goals and objectives serve as the foundation for identifying needs and for evaluating policies, programs, and projects.

The goals and objectives of the BTMP (**Figure 2.0-1.1-1**) 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 2.0-1.1-1. BTMP Goals



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.

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.

2.1 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 2 of the Final Report.

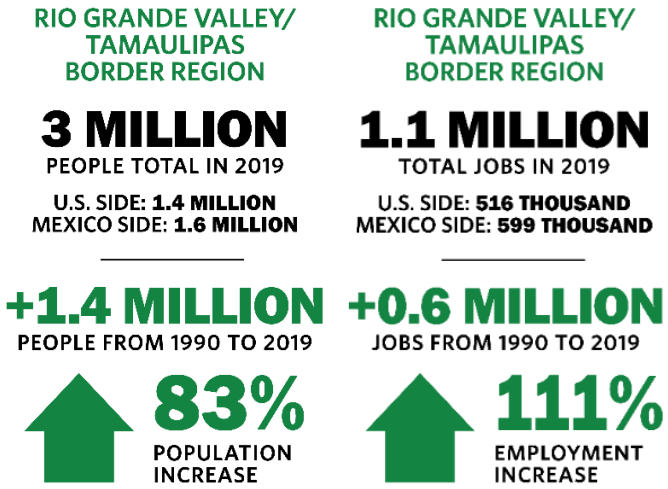
Chapter 3 Rio Grande Valley Region Past and Present Conditions

This chapter presents the history and current conditions of the Rio Grande Valley/Tamaulipas 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.

3.1 Socioeconomic Conditions

Rio Grande Valley/Tamaulipas Region experienced increases in population, employment, household income and educational attainment since 1990.



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

On the Texas side, they saw a rise in 25,627 Graduate or Professional degrees from 1990 to 2018. On the Mexico side, they saw an increase in Universidad by 118,543 from 1990 to 2015.

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. Owners/Operators of Border Crossings in Rio Grande Valley/Tamaulipas Region[2]

Border Crossing	Construction Year and Updates	Location (City)	Owner	Operator
Rio Grande City-Camargo	▪ 1956	▪ Rio Grande, TX ▪ Camargo, Tamps.	▪ U.S. – Starr-Camargo Bridge Company ▪ Mexico – Government of Mexico	▪ U.S. – Starr-Camargo Bridge Company ▪ Mexico – CAPUFE
Roma–Ciudad Miguel Alemán	▪ 1979	▪ Roma, TX ▪ Ciudad Miguel Alemán, Tamps.	▪ U.S. – Starr County ▪ Mexico – Government of Mexico	▪ U.S. – Starr County ▪ Mexico – CAPUFE
Los Ebanos Ferry	▪ 1979	▪ Los Ebanos, TX ▪ Gustavo Díaz Ordaz, Tamps.	▪ U.S. – Reyna Family ▪ Mexico – Armando De La Garza	▪ U.S. – CBP ▪ Mexico – Armando De La Garza
Lake Falcon Dam	▪ 1963	▪ Falcon Heights, TX ▪ Ciudad Guerrero, Tamps.	▪ U.S. – IBWC (U.S. Section) ▪ Mexico – IBWC (Mexico Section)	▪ U.S. – CBP ▪ Mexico – Aduanas de Mexico
Anzalduas International	▪ 2009	▪ Mission, TX ▪ Reynosa, Tamps.	▪ U.S. – Cities of Hidalgo, McAllen, and Mission ▪ Mexico – Government of Mexico	▪ U.S. – City of McAllen ▪ Mexico – Grupo Marhnos
Free Trade Bridge	▪ 1992	▪ Los Indios, TX ▪ Lucio Blanco, Tamps.	▪ U.S. – Cameron County, City of San Benito, and City of Harlingen ▪ Mexico – Government of Mexico	▪ U.S. – Cameron County International Bridge System ▪ Mexico – COPA
McAllen-Hidalgo	▪ 1965	▪ Hidalgo, TX ▪ Reynosa, Tamps.	▪ U.S. – City of McAllen ▪ Mexico – Government of Mexico	▪ U.S. – City of McAllen ▪ Mexico – CAPUFE
Pharr-Reynosa International Bridge on the Rise	▪ 1995	▪ Pharr, TX ▪ Reynosa, Tamps.	▪ U.S. – City of Pharr ▪ Mexico – Government of Mexico	▪ U.S. – City of Pharr ▪ Mexico – COCONAL

[2] TxDOT, "Texas-Mexico International Bridges Border Crossings," 2019.

Table 3.2-1. Owners/Operators of Border Crossings in Rio Grande Valley/Tamaulipas Region[2]

Border Crossing	Construction Year and Updates	Location (City)	Owner	Operator
Veterans International at Los Tomates	▪ 1999	▪ Brownsville, TX ▪ Matamoros, Tamps.	▪ U.S. – Cameron County and City of Brownsville ▪ Mexico – Government of Mexico	▪ U.S. – Cameron County International Bridge System ▪ Mexico –CAPUFE
B & M[3]	▪ 1997	▪ Brownsville, TX ▪ Matamoros, Tamps.	▪ U.S. and Mexico – Brownsville & Matamoros Bridge Company, a subsidiary of the Union Pacific Railroad and the Federal Government of Mexico	▪ Brownsville & Matamoros Bridge Company, a subsidiary of the Union Pacific Railroad and the Federal Government of Mexico
Gateway International	▪ 1970	▪ Brownsville, TX ▪ Matamoros, Tamps.	▪ U.S. – Cameron County ▪ Mexico – Government of Mexico	▪ U.S. – Cameron County International Bridge System ▪ Mexico –CAPUFE
Donna International	▪ 2010	▪ Donna, TX ▪ Río Bravo, Tamps.	▪ U.S. – City of Donna ▪ Mexico – Government of Mexico	▪ U.S. – CBP ▪ Mexico – COPA
Progreso International	▪ 1951	▪ Progreso, TX ▪ Nuevo Progreso, Tamps.	▪ U.S. – Progreso Bridge Company ▪ Mexico – Government of Mexico	▪ U.S. – Progreso Bridge Company ▪ Mexico –CAPUFE

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

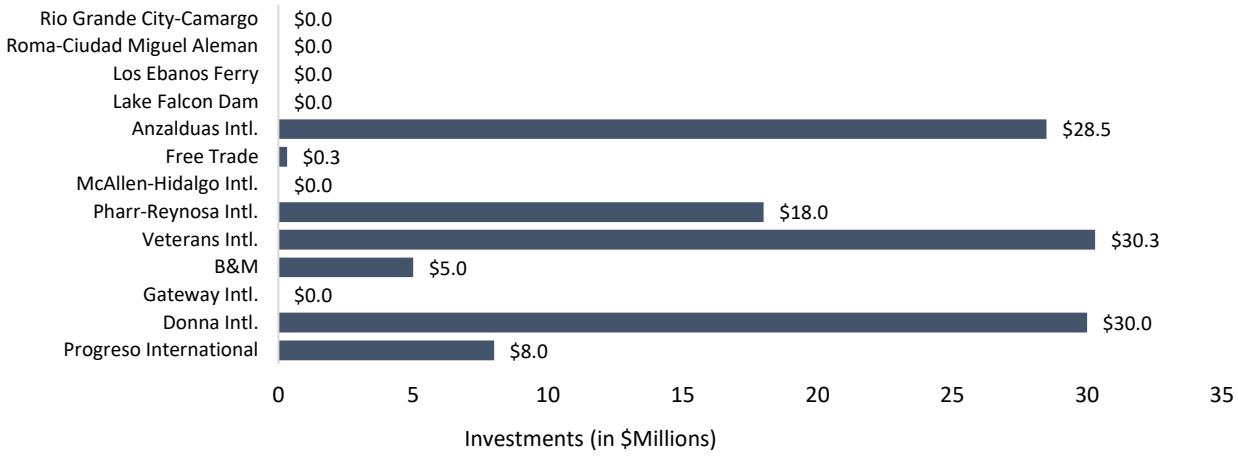
The Rio Grande Valley/Tamaulipas Region border crossings obtained $120.1 million investments for border crossing infrastructure from 1994 to 2019.

- **Anzalduas International** was built in 2009 for $28.5 million.
- **Free Trade Bridge** underwent an expansion project in 2009 for $320,000.
- **Pharr-Reynosa International Bridge** on the Rise was constructed in 1994 for $18 million.
- **Veterans International at Los Tomates** was constructed in 1999 for $19.3 million and expanded in 2014 for $11 million.

[3] B & M is currently not a railroad crossing. In 2015, the B & M Bridge was converted from serving rail cars and vehicles to vehicles only.

- **B & M** was expanded in 1997 for $5 million.
- **Donna International** was built in 2010 for $30 million.
- **Progreso International** underwent a bridge replacement for $8 million in 2003.

Figure 3.2-1. Rio Grande Valley/Tamaulipas Region Border Crossing Funding (1994–2019)[4]



3.3 Highway and Roadway Network

The highway system is the primary conduit for people and goods movement. In the Rio Grande Valley/Tamaulipas 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

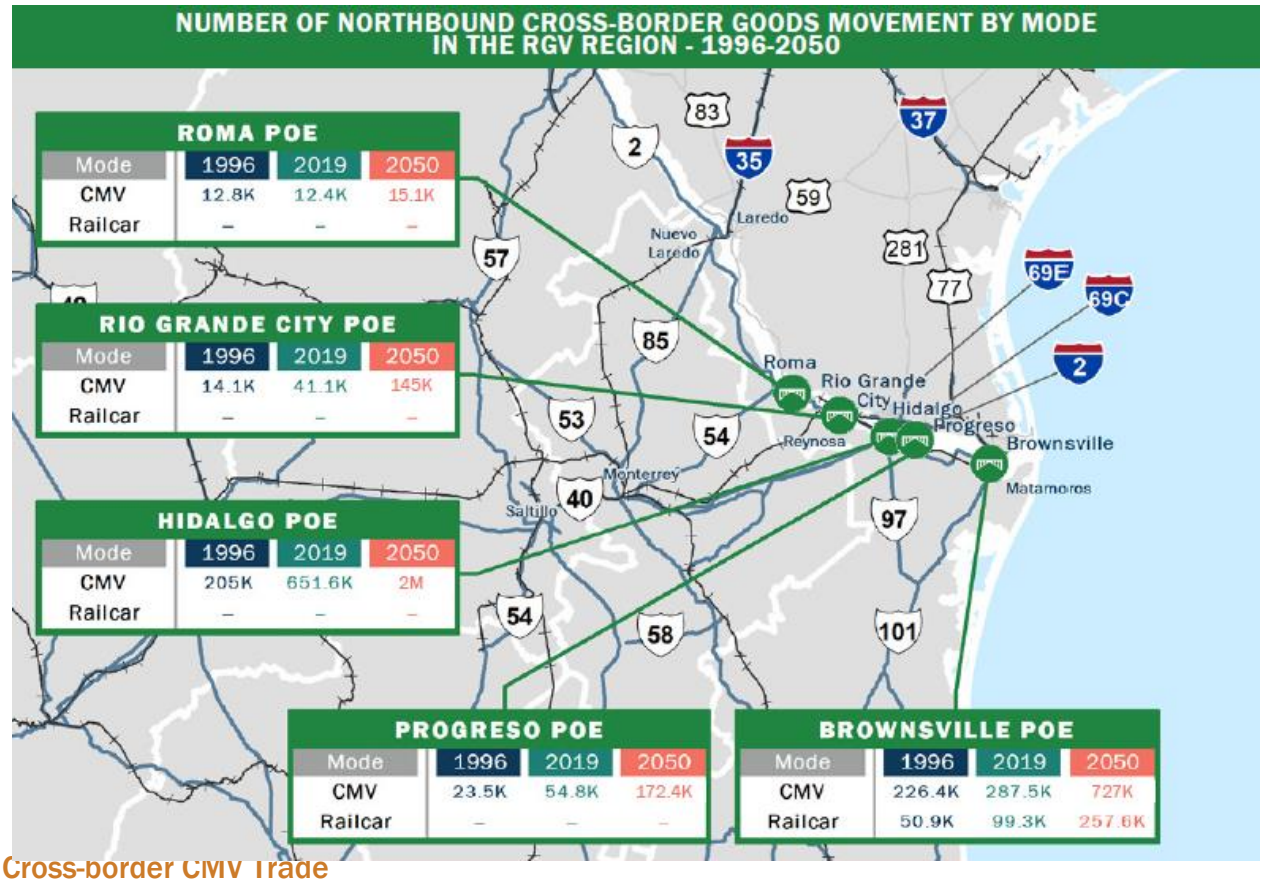
- The Texas side of the Rio Grande Valley/Tamaulipas Region, which has the highest number of lane miles, experienced a 31 percent increase, with 2,120 added lane miles.

3.3.2 Vehicle-miles Traveled

- Between 2005 and 2018, The Texas side of the Rio Grande Valley/Tamaulipas Region experienced steady growth in passenger vehicle-miles traveled (VMT) of 29 percent with the addition of 6 million VMT.
- The Rio Grande Valley/Tamaulipas Region's commercial VMT experienced an uptick starting in 2016. However, between 2005 and 2018, the region's VMT decreased by 383,613 VMT.

[4] TxDOT, "Texas-Mexico International Bridges Border Crossings," 2019; TxDOT, "Texas-Mexico International Bridges and Border Crossings: Existing and Proposed." 2001; TxDOT, "TxDOT International Bridges and Border Crossings: Existing and Proposed," 2005

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



Cross-border CMV Trade

- Between 2006 and 2019, trade increased by $8.7 billion, or 21 percent, in the Rio Grande Valley/Tamaulipas Region.
- In the Rio Grande Valley/Tamaulipas Region, the Hidalgo POE grew the most in value with an additional $7 billion, from $25.3 billion in 2006 and $32.3 billion in 2019 adjusted dollars. The Progreso POE grew the fastest, increasing by 33 percent from $277.3 million in 2006 to $368.9 million in 2019.

Cross-border CMV Movements

Figure 3.3-2. Rio Grande Valley/Tamaulipas Region Northbound CMV by Border Crossing (2008–2019)

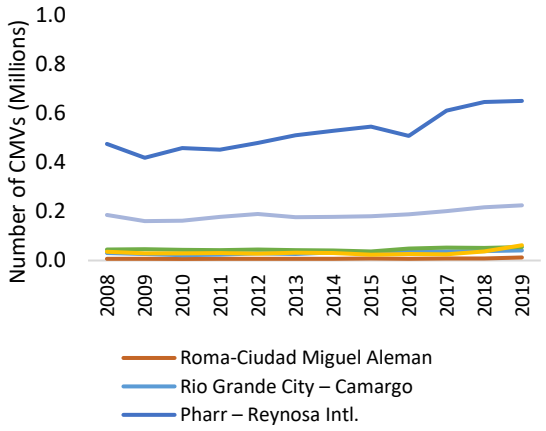
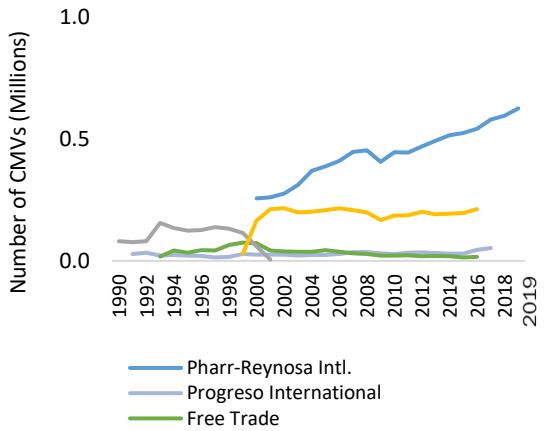


Figure 3.3-3. Rio Grande Valley/Tamaulipas Region Southbound CMV by Border Crossing (1990–2019)[5]



Northbound

- Between 1996 and 2019[6] the Rio Grande Valley/Tamaulipas Region experienced 117 percent growth in northbound CMV crossings, representing an increase of 565,686 crossings.
- In the Rio Grande Valley/Tamaulipas Region, northbound CMV crossings grew by 73 percent at Free Trade Bridge in Los Indios between 2008 and 2019, representing an increase of 26,215 crossings. Crossings at Pharr-Reynosa International Bridge in Pharr on the Rise increased by almost 176,000.

Southbound

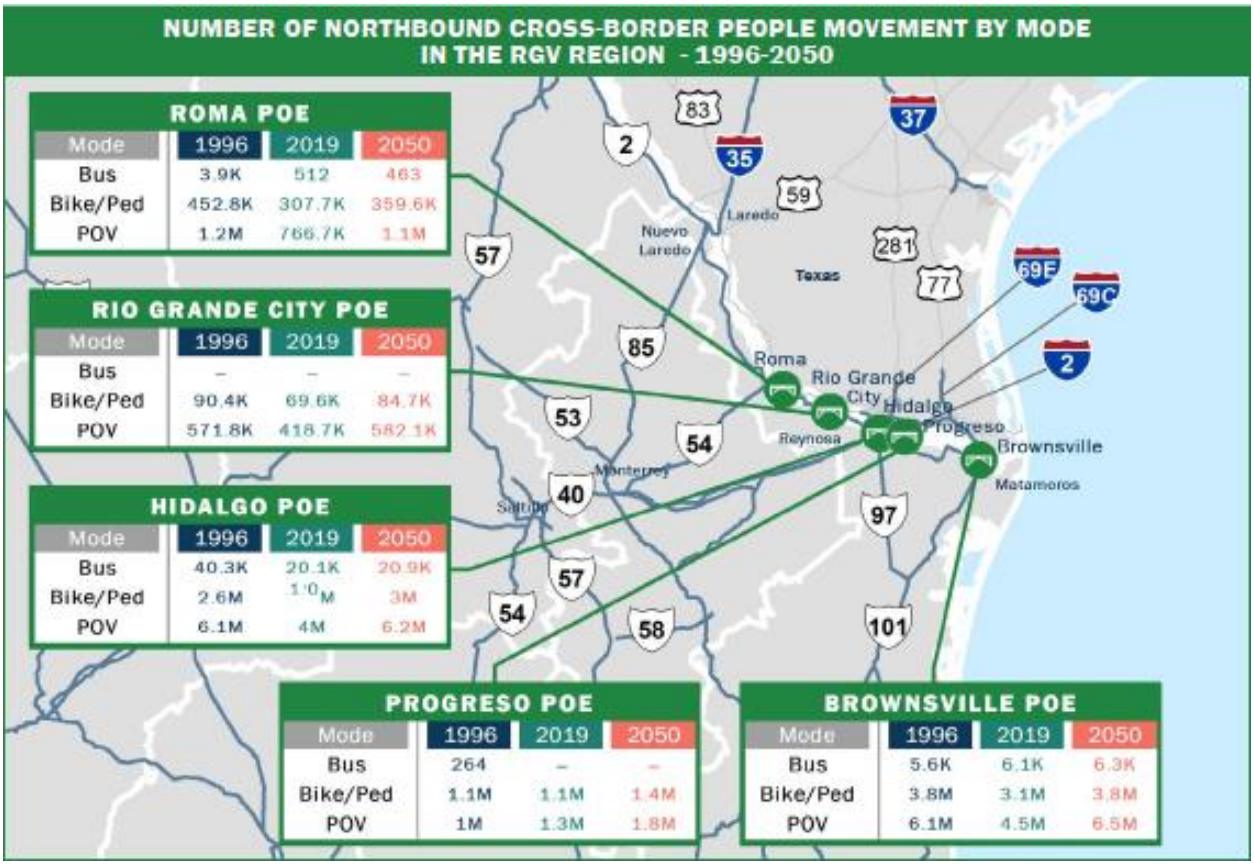
- Veterans International at Los Tomates grew by 631 percent, with an increase of 183,417 crossings, between 1999 and 2016. Meanwhile Pharr-Reynosa International Bridge on the Rise experienced a 144 percent increase in crossings between 2000 and 2019, with an additional 369,722 crossings.[7]

[5] Pharr International Bridge on the Rise, 2000–2019; Cameron County – Gateway Intl, 1990–2001; Cameron County – Free Trade Bridge, 1993–2016; Cameron County – Veterans Intl. at Los Tomates, 1999–2016; Progreso International Bridge, 1991–2017.

[6] BTS Border Entry Data, 1996–2019.

[7] 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.

Figure 3.3-4. Movement of People



Passenger Vehicles

Figure 3.3-5. Rio Grande Valley/Tamaulipas Region Northbound POV by Border Crossing (2008-2019)

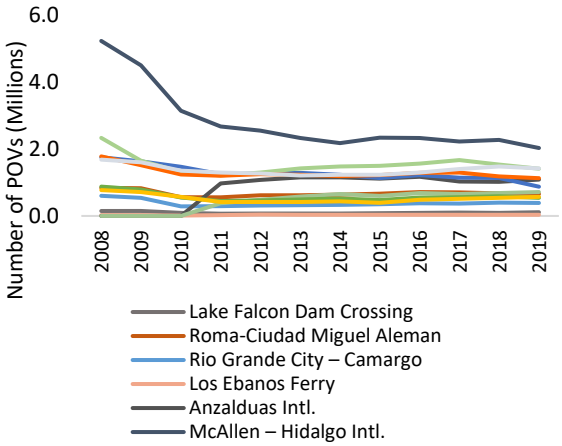
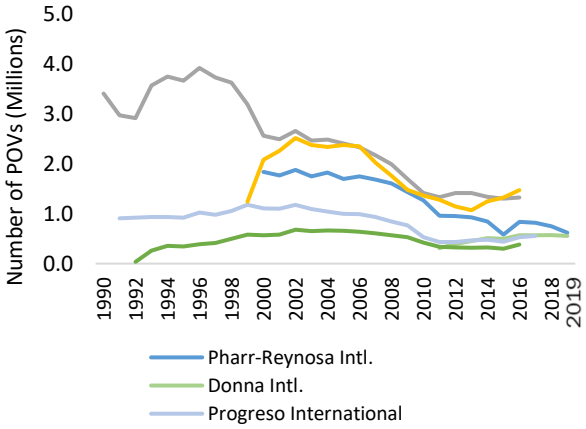


Figure 3.3-6. Rio Grande Valley/Tamaulipas Region Southbound POV by Border Crossing (1990–2019)[8]



[8] Pharr International Bridge on the Rise, 2000–2019; City of Donna, 2011–2019; Progreso International Bridge, 1991–2017; Cameron County – Veterans Intl. at Los Tomates, 1999–2016; Cameron County – Gateway Intl., 1990–2016; Cameron County – Free Trade Bridge, 1992–2016.

Northbound

- Between 1996 and 2019, northbound POVs in the Rio Grande Valley/Tamaulipas Region experienced a 27 percent decline, a decrease of 4 million POVs.
- Northbound POV crossings decreased at most border crossings in the Rio Grande Valley/ Tamaulipas Region between 2008 and 2019. McAllen-Hidalgo International crossings declined by 61 percent, from 5.2 million POV crossings in 2008 to 2 million crossings in 2019.

Southbound

- In the Rio Grande Valley/Tamaulipas Region, Free Trade Bridge experienced 47 percent growth between 1993 and 2016, with 349,644 additional crossings. Donna International grew 80 percent between 2011 and 2019, with 247,286 added crossings. However, southbound POV volumes declined by 2.1 million, or 61 percent, at Gateway International between 1990 and 2016, while volumes declined by 1.2 million, or 66 percent, at Pharr-Reynosa International Bridge on the Rise between 2000 and 2019.[9]

Bike and Pedestrians

Figure 3.3-7. Rio Grande Valley/Tamaulipas Region Northbound Pedestrians by Border Crossing (2008–2019)[10]

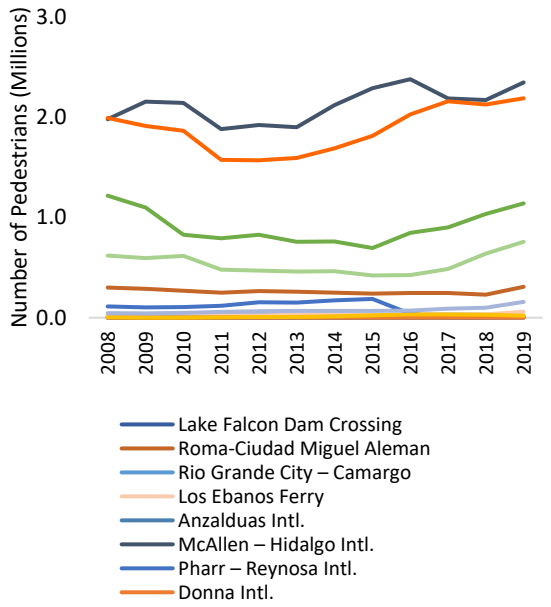
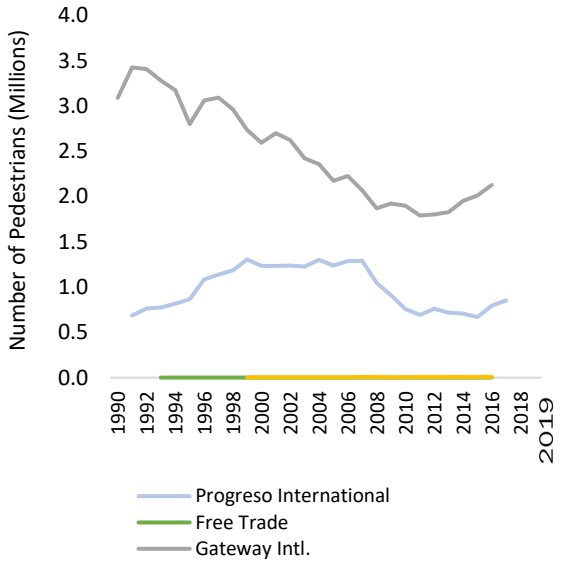


Figure 3.3-8. Rio Grande Valley/Tamaulipas Region Southbound Pedestrians by Border Crossing (1990–2019)[11]



[9] 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.

[10] U.S. CBP, 2008–2019.

[11] Progreso International Bridge, 1991–2017; Cameron County – Free Trade Bridge, 1993–2016; Cameron County – Veterans Intl. at Los Tomates, 199-2016; Cameron County – Gateway Intl., 1990–2016.

Northbound

- Between 1996 and 2019, northbound bike and pedestrian movements decreased in the Rio Grande Valley/Tamaulipas Region by 13 percent, or 1.1 million crossings.
- In the Rio Grande Valley/Tamaulipas Region, between 2008 and 2019, the largest absolute growth in northbound pedestrian crossings occurred at McAllen-Hidalgo International, with an added 366,957 crossings, or 19 percent growth. Free Trade Bridge grew the fastest, increasing by 721 percent, or 17,027 crossings.

Southbound

- Between 1991 and 2019, in the Rio Grande Valley/Tamaulipas Region, southbound pedestrian volumes increased at Free Trade Bridge by 1,240 crossings or 251 percent, Veterans International at Los Tomates by 6,514 crossings or 252 percent, and at Progreso International by 167,073 crossings or 24 percent. However, southbound pedestrian crossings decreased at Gateway International by 31 percent between 1990 and 2016, from 3.1 million crossings to 2.1 million crossings.[12]

Buses

Table 3.3-1 provides current transit services for the Rio Grande Valley/Tamaulipas region.

Table 3.3-1. Rio Grande Valley/Tamaulipas Region Transit Services[13]

Name	Type	Coverage
Valley Metro	Flex route, fixed route	Lower Rio Grande Valley region
Metro Express (Red Line)	Fixed route express	Brownsville and McAllen
Metro McAllen	Fixed route, paratransit	City of McAllen
Brownsville Metro	Fixed route, paratransit, previously intercity (2013–2018)	City of Brownsville
Vaquero Express	Campus shuttle	University of Texas Rio Grande Valley (Brownsville, Edinburg, and Harlingen campuses)
JagExpress	Commuter, shuttle	South Texas College region
Island Metro	Fixed route	City of South Padre Island, Port Isabel, Laguna Heights
Transporte Urbano de Reynosa Tamps	Fixed route	Municipio of Reynosa
Sistema de Transporte Urbano de Matamoros	Fixed route	Municipio of Matamoros
Greyhound (through Valley Transit and Americanos)	Private intercity, airport shuttle, charter services	Nonstop connections from lower RGV to Austin, San Antonio, Houston, and various Mexico destinations

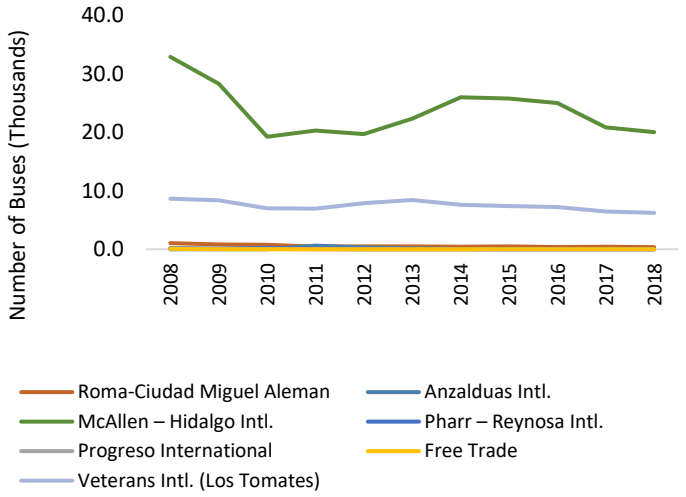
[12] Due to limited data reporting of southbound volumes, southbound POV volumes are only reported here by individual border crossing. Additionally, years of available southbound data vary by border crossing.

[13] RGV Metropolitan Transportation Plan 2045, Greyhound Mexico, Estrella Blanca, Grupo Senda, ODM, Transporte Urbano de Reynosa Tamps, Sistema de Transporte Urbano de Matamoros.

Table 3.3-1. Rio Grande Valley/Tamaulipas Region Transit Services[13]

Name	Type	Coverage
El Expreso Bus Company	Private intercity	Brownsville, Reynosa (MX), Roma, McAllen, and 9 states including Texas
Líneas Panamericanas	Private intercity, flex route	McAllen-Monterrey, Reynosa (MX), with connection to other areas in Mexico
Omnibus-Express	Private intercity	Brownsville, McAllen, and other points along the Rio Grande, in Mexico, Texas, and other states in the Southeast U.S.
Tornado Bus Co.	Private intercity	Various, Texas and Southeast U.S. destinations with daily connections to Mexico via Sistema Estrella Blanca Bus Lines

Figure 3.3-9. Rio Grande Valley/Tamaulipas Region Northbound Buses by Border Crossing (2008–2018)[14]



Northbound

- Northbound buses crossing the border declined by 22,466 crossings, or 45 percent, in the Rio Grande Valley/Tamaulipas Region.
- Between 2008 and 2018, northbound bus volumes declined at all border crossings in the Rio Grande Valley/Tamaulipas Region. Mc-Allen-Hidalgo International experienced the largest decline with 12,906 fewer crossings – a 39 percent decrease. Meanwhile Roma–Ciudad Miguel Aleman experienced the fastest decline with 680 fewer crossings – a 65 percent decrease.

Southbound

- Between 1998 and 2016, Free Trade Bridge experienced 807 fewer crossings – a 97 percent decline, while Gateway International experienced an additional 4,316 crossings – a 141 percent increase.

[14] U.S. CBP, 2008–2018. CBP bus crossing volumes by border crossing are only available through 2018.

- Veterans International at Los Tomates experienced an 8 percent decline in southbound bus volumes between 1999 and 2016, with 232 fewer crossings.

3.4 Freight Rail Network

There is one rail crossing in the RGV region – West Rail Bridge in Brownsville. This bridge opened in 2015 and was the first new international rail bridge on the U.S.-Mexico border in over a century. The project relocated the rail line in Brownsville and Matamoros, eliminating 14 at-grade rail crossings and reduced traffic delays. West Rail Bridge connects the Kansas City Southern Mexico network in Mexico with the Union Pacific network in the U.S.. The region experienced an increase of 95% or 48,423 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

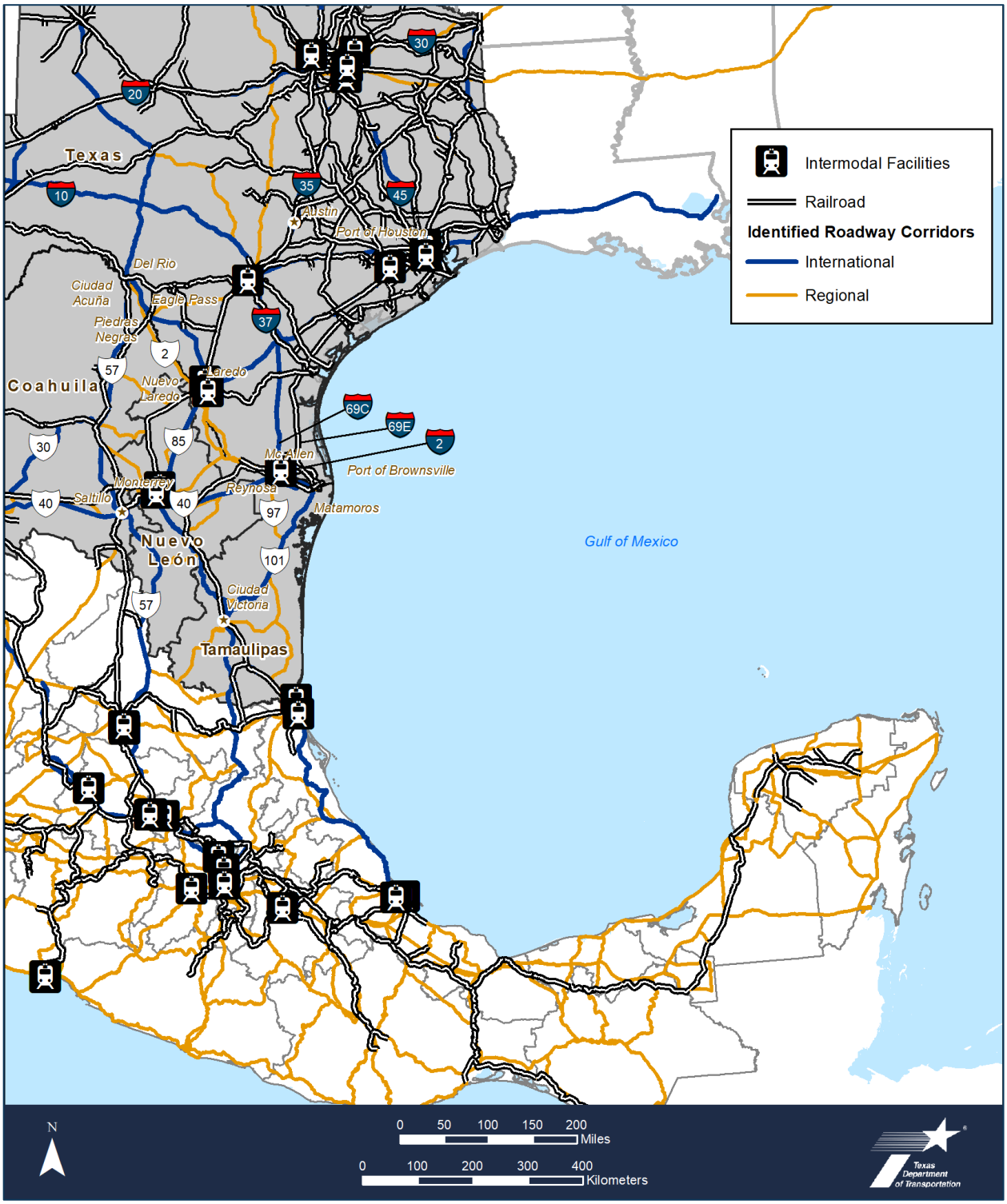
The Brownsville POE experienced a 39 percent decrease in the value of cross-border rail trade between 2006 and 2019 – a decline of $587 million.

Northbound Rail Cars

Northbound railcars increased by 95 percent, or 48,423 railcars, in the Rio Grande Valley/Tamaulipas Region between 1996 and 2019.

The Rio Grande Valley/Tamaulipas Region has 524 rail track miles.[15]

Figure 3.4-1. Texas-Mexico Rail Network in the LRD and RGV Regions



[15] 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 McAllen, Valley (Harlingen), Brownsville-South Padre Island, Reynosa and Matamoros 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 seaports16 that support maritime trade between Mexico and Texas. The Port of Brownsville is located within the Rio Grande Valley/Tamaulipas Region.

3.8 Free Trade Zones

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

Two of the eight U.S. free trade zones also known in the U.S as foreign trade zones are located in McAllen and Brownsville. 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.

Two of the six strategic fiscal areas, an equivalent area to foreign trade zones in Mexico, are in Reynosa and Matamoros that allow 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 municipios in Tamaulipas 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

[16] 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[17] and three POV crossings[18] 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 Rio Grande Valley/Tamaulipas 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 Pharr-Reynosa International Bridge on the Rise and Veterans International at Los Tomates northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/LBS data to illustrate border crossing times. Some key findings are:

- At most border crossings in the Rio Grande Valley/Tamaulipas Region, northbound CMV crossing times remain below 30 minutes at least 70 percent of the time.
- At Rio Grande City–Camargo, Progreso International, and Free Trade, northbound CMV total crossing times could exceed 90 minutes, but remain under 120 minutes.
- Total northbound CMV crossing times remain below half an hour at Pharr-Reynosa International Bridge on the Rise 63 percent of the time. Thirteen percent of crossings exceed 90 minutes, over half of which may exceed 120 minutes.
- Southbound CMV crossing times remain low in the Rio Grande Valley/Tamaulipas Region, with Free Trade Bridge and Rio Grande City–Camargo as the only border crossings where crossing times may exceed half an hour.

[17] Santa Teresa, Bridge of the Americas, Ysleta-Zaragoza, Camino Real International, Laredo-Colombia Solidarity, World Trade Bridge, Pharr-Reynosa International Bridge on the Rise, Veterans International at Los Tomates.

[18] Paso del Norte (northbound only), Good Neighbor (northbound only), Ysleta-Zaragoza (northbound and southbound).

Figure 3.9-1. Rio Grande Valley/Tamaulipas Region Northbound Crossing Time Distribution by Border Crossing – CMV (2019)[19]

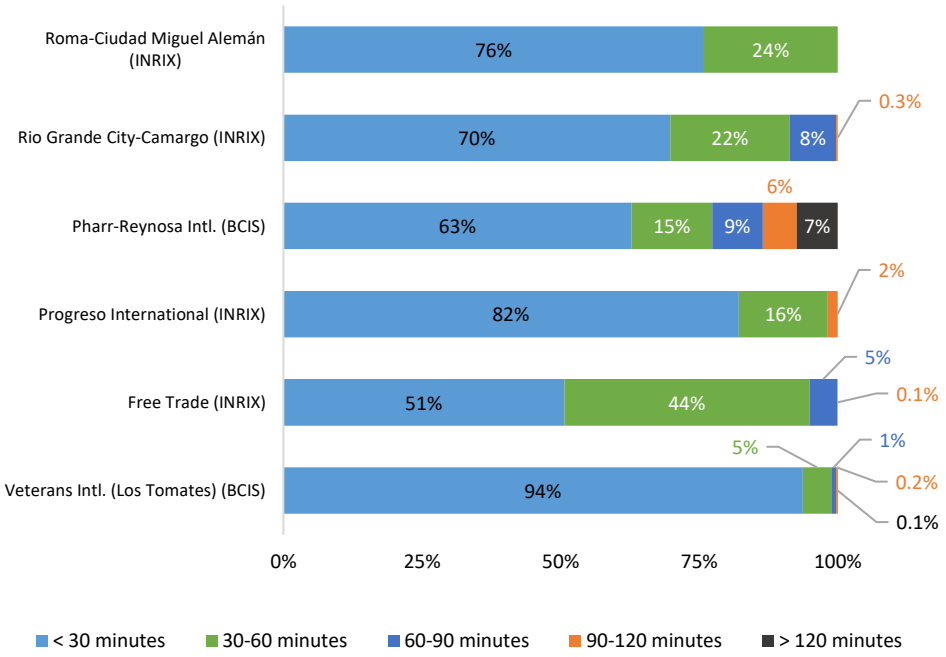
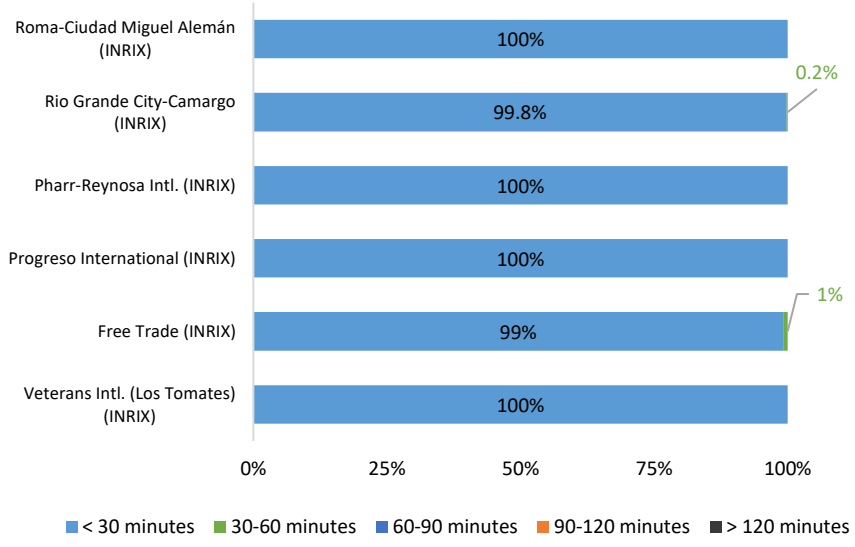


Figure 3.9-2. Rio Grande Valley/Tamaulipas Region Southbound Crossing Time Distribution by Border Crossing – CMV (2019)[20]



[19] INRIX 2019, TTI BCIS 2019.

[20] 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 116 minutes in the Rio Grande Valley/Tamaulipas 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 Rio Grande Valley/Tamaulipas Region, the BCIS data source tracks total border crossing times for Pharr-Reynosa International Bridge on the Rise and Veterans International at Los Tomates northbound movements. For southbound movements at all border crossings, and the remaining northbound movements where there are data gaps, the BTMP uses GPS/LBS data to illustrate border crossing times.

- At Rio Grande City–Camargo, typical northbound CMV crossing times can exceed an hour at night, with highest expected crossing times reaching up to 82 minutes.
- Highest expected northbound CMV crossing times at Pharr-Reynosa International Bridge on the Rise exceed 1 hour at most times of the day, with crossing times reaching 168 minutes in the evening.
- Typical northbound CMV crossing times remain below half an hour at Roma–Ciudad Miguel Alemán, Progreso International, and Veterans International at Los Tomates. However, 90th percentile times can reach up to 46 minutes, 91 minutes, and 43 minutes, respectively.
- Typical and highest expected northbound CMV crossing times can exceed an hour at Free Trade Bridge in the evening.
- Across all border crossings in the Rio Grande Valley/Tamaulipas Region, typical and highest expected northbound CMV crossing times exceed southbound crossing times.

Figure 3.9-3. Rio Grande Valley/Tamaulipas Region Northbound 50th Percentile Border Crossing Times by Border Crossing – CMV (2019)[21]

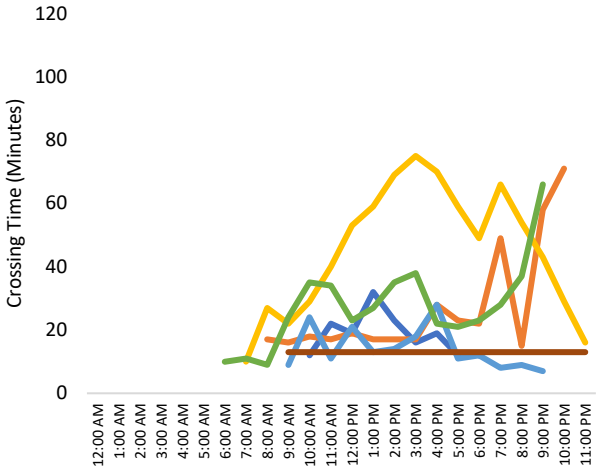


Figure 3.9-4. Rio Grande Valley/Tamaulipas Region Northbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)[22]

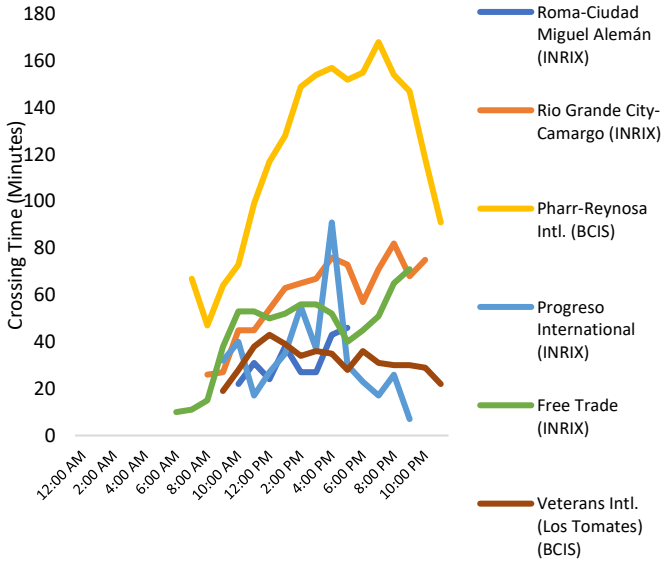


Figure 3.9-5. Rio Grande Valley/Tamaulipas Region Southbound 50th Percentile Border Crossing Times by Border Crossing– CMV (2019)[23]

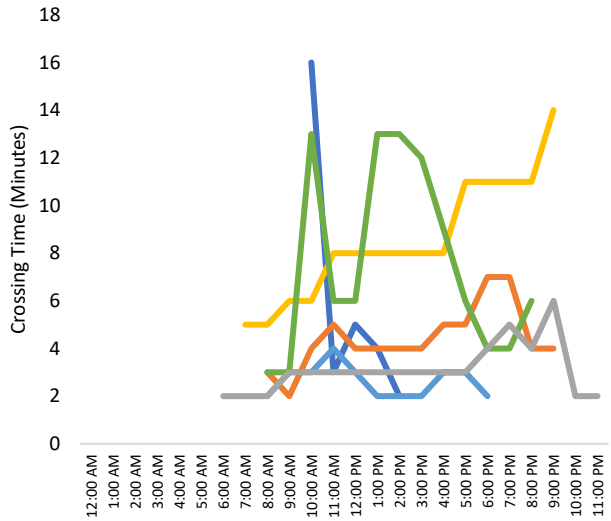
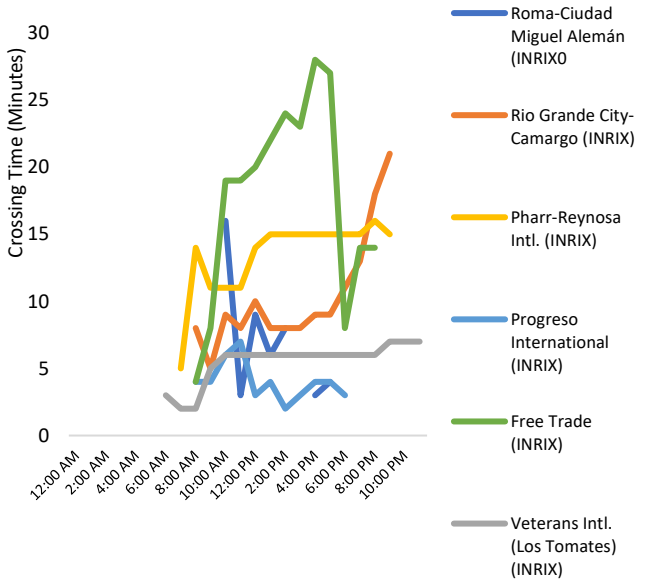


Figure 3.9-6. Rio Grande Valley/Tamaulipas Region Southbound 90th Percentile Border Crossing Times by Border Crossing – CMV (2019)[24]



[21] INRIX 2019, TTI BCIS 2019.

[22] INRIX 2019, TTI BCIS 2019.

[23] INRIX 2019, TTI BCIS 2019.

[24] INRIX 2019, TTI BCIS 2019.

POV Crossing Times

POV Crossing Times – Distributions

- In the Rio Grande Valley/Tamaulipas Region, almost all northbound crossing times remain under an hour, but approximately 5 percent exceed 60 minutes.
- Southbound crossing times for POVs rarely exceed 30 minutes.

In the Rio Grande Valley/Tamaulipas Region, the BCIS data source is unavailable for all POV movements. Instead, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Northbound POV border crossing times typically remain under one hour at Rio Grande Valley/ Tamaulipas Region border crossings, with most crossing times falling below 30 minutes.
- Northbound POV crossing times can reach up to 90 minutes at eight border crossings, particularly at Anzalduas International, McAllen-Hidalgo, and Gateway International.
- Though for less than 1 percent of crossings, northbound POV crossing times can reach up to 120 minutes at two border crossings: Anzalduas International and McAllen-Hidalgo International.
- Northbound POV border crossing times at Veterans International at Los Tomates do not exceed 30 minutes.
- Most northbound POV crossing times fall between 30 and 60 minutes at Los Ebanos Ferry and Gateway International.
- Southbound POV crossing times do not exceed 30 minutes in the Rio Grande Valley/Tamaulipas Region.

Figure 3.9-7. Rio Grande Valley/Tamaulipas Region Northbound Crossing Time Distribution by Border Crossing – POV (2019)[25]

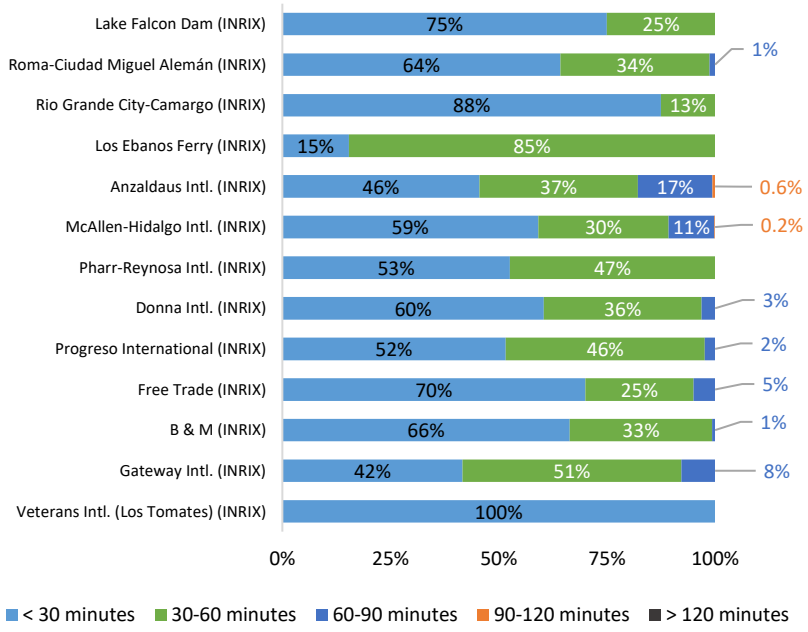
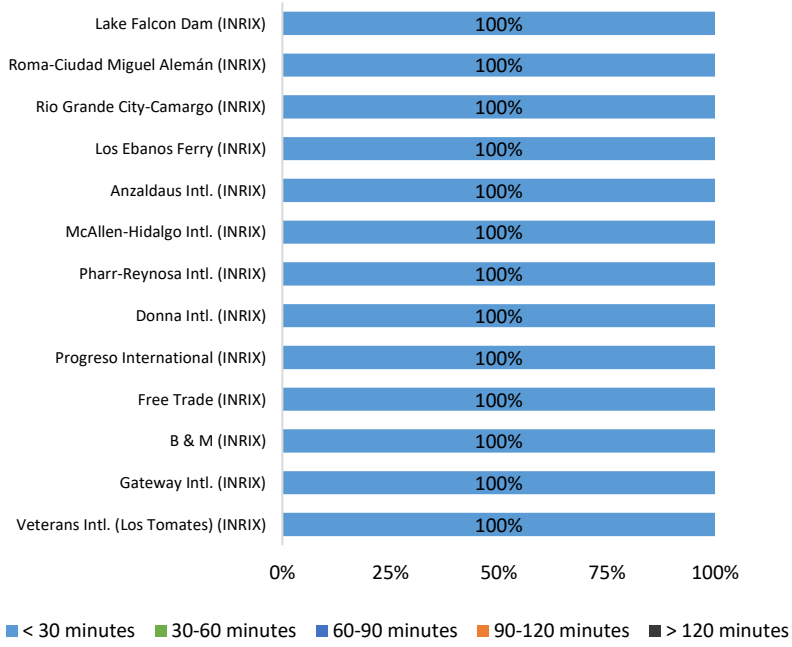


Figure 3.9-8. Rio Grande Valley/Tamaulipas Region Southbound Crossing Time Distribution by Border Crossing – POV (2019)[26]



[25] INRIX 2019.

[26] INRIX 2019.

POV Crossing Times – by Time of Day

- For northbound POVs, 90th percentile crossing times 57 minutes in the Rio Grande Valley/Tamaulipas Region.
- For southbound POVs, 90th percentile crossing times remained under 28 minutes.

In the Rio Grande Valley/Tamaulipas Region, the BCIS data source is unavailable for all POV movements. Instead, the BTMP uses GPS/LBS data to illustrate border crossing times.

- Free Trade Bridge sees northbound POV crossing times reach an hour and Pharr-Reynosa International Bridge on the Rise sees northbound crossing times reach 44 minutes.
- Typical northbound POV crossing times remain under 36 minutes at McAllen-Hidalgo International. However, 90th percentile crossing times near or exceed 50 minutes between 8 a.m. and 2 a.m., with crossing times reaching 75 minutes at 1 a.m.
- Highest typical POV crossing times occur at 4 p.m. at Donna International, reaching 43 minutes, and at Progreso International, reaching 46 minutes. In the evening, 90th percentile crossing times exceed an hour at these two border crossings.
- At Gateway to the Americas, typical northbound POV crossing times can reach 56 minutes at 2 p.m., with highest expected crossing times reaching 65 minutes.
- Typical northbound POV crossing times generally remain under half an hour at B&M, but can reach 36 minutes in the early morning. Meanwhile, highest expected crossing times exceed 40 minutes in the afternoon and evening.
- At Roma–Ciudad Miguel Alemán, typical northbound POV crossing times exceed half an hour between 1 and 7 p.m. Meanwhile, highest expected crossing times exceed 40 minutes from 9 a.m. to 9 p.m.
- Lake Falcon Dam sees typical northbound POV crossing times between 17 and 27 minutes. However, 90th percentile crossing times can exceed 40 minutes at 2 p.m.
- At Los Ebanos Ferry, 90th percentile northbound POV crossing times reach 58 minutes at 3 p.m.
- Typical northbound POV crossing times reach up 46 minutes in the evening at Anzalduas International, during which the 90th percentile POV crossing time reaches 74 minutes. However, the crossing's highest expected crossing time reaches 82 minutes at 9 a.m.
- Northbound POV crossing times at Rio Grande City–Camargo remain under 34 minutes, while crossing times at Veterans International at Los Tomates remain below 20 minutes.

Figure 3.9-9. Rio Grande Valley/Tamaulipas Region Northbound 50th Percentile Border Crossing Times by Border Crossing – POV (2019)[27]

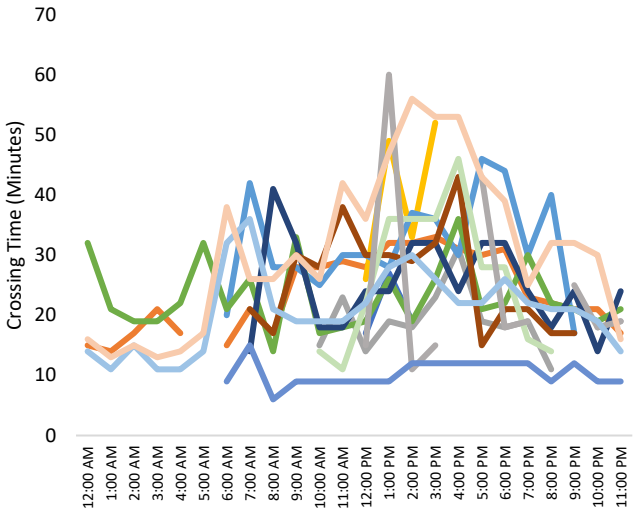


Figure 3.9-10. Rio Grande Valley/Tamaulipas Region Northbound 90th Percentile Border Crossing Times by Border Crossing – POV (2019)[28]

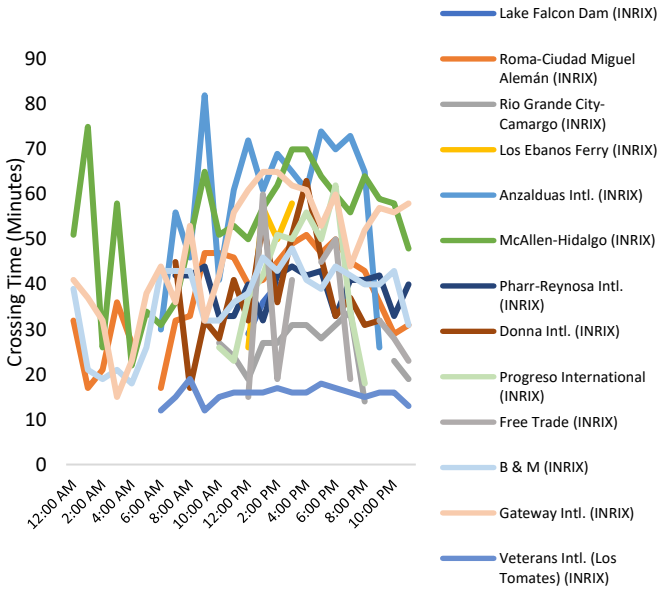


Figure 3.9-11. Rio Grande Valley/Tamaulipas Region Southbound 50th Percentile Border Crossing Times by Border Crossing– POV (2019)[29]

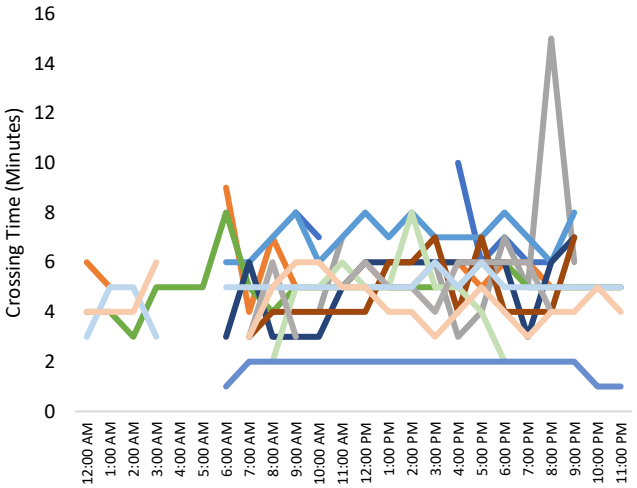
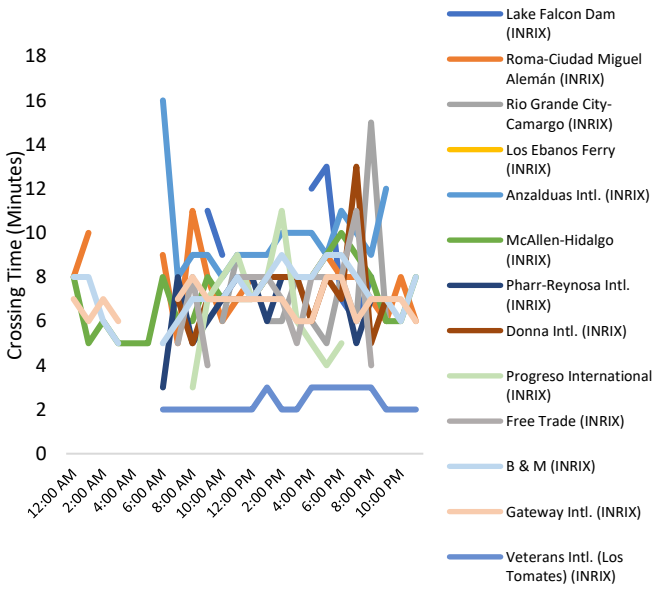


Figure 3.9-12. Rio Grande Valley/Tamaulipas Region Southbound 90th Percentile Border Crossing Times by Border Crossing – POV (2019)[30]



[27] INRIX 2019.

[28] INRIX 2019.

[29] INRIX 2019.

[30] INRIX 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.[31]

Roadway Delay (Congestion)

- The Rio Grande Valley/Tamaulipas Region's most significant congestion occurs on I-69C and I-69E and on I-2.

Detailed congestion information and maps is provided and further discussed in **Chapter 5**.

[31] BTS Border Entry Data, 1996–2019; Stakeholder Consultation, Progreso International Bridge, March 11, 2020; Stakeholder Consultation, Acuña, March 10, 2020; Stakeholder Consultation, U.S. Customs and Border Protection; Stakeholder Consultation, Del Rio Economic Development Corporation Board, March 3, 2020.

Chapter 4 Rio Grande Valley 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.[32] The small (S), medium (M), and large (L)designations[33] 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.

[32] 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.

[33] There is no very large crossing in the Rio Grande Valley/Tamaulipas 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

Border Crossing	Location (City)	People Movement			Goods Movement: CMV
		POV	Pedestrian and Bicycle	Bus	
Rio Grande Valley/Tamaulipas Region					
Lake Falcon Dam Crossing	Falcon Heights, TX Ciudad Guerrero, Tamps.	S	n/a	S	n/a
Roma-Ciudad Miguel Alemán	Roma, TX Ciudad Miguel Alemán, Tamps.	M	M	S	S
Rio Grande City–Camargo	Rio Grande, TX Camargo, Tamps.	S	S	n/a	S
Los Ebanos Ferry	Los Ebanos, TX Gustavo Díaz Ordaz, Tamps.	S	S	n/a	n/a
Anzalduas International	Mission, TX Reynosa, Tamps.	M	n/a	n/a	n/a
McAllen-Hidalgo	Hidalgo, TX Reynosa, Tamps.	L	L	L	n/a
Pharr-Reynosa International Bridge on the Rise	Pharr, TX Reynosa, Tamps.	M	n/a	n/a	L
Donna International	Donna, TX Río Bravo, Tamps.	M	n/a	n/a	n/a
Progreso International	Progreso, TX Nuevo Progreso, Tamps.	M	L	n/a	S
Free Trade Bridge	Los Indios, TX Lucio Blanco, Tamps.	M	S	n/a	S
B & M	Brownsville, TX Matamoros, Tamps.	M	M	n/a	n/a
Gateway International	Brownsville, TX Matamoros, Tamps.	M	L	n/a	n/a
Veterans International at Los Tomates	Brownsville, TX Matamoros, Tamps.	M	S	M	M

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

Figure 4.1-1. Designation of Border Crossings for POV

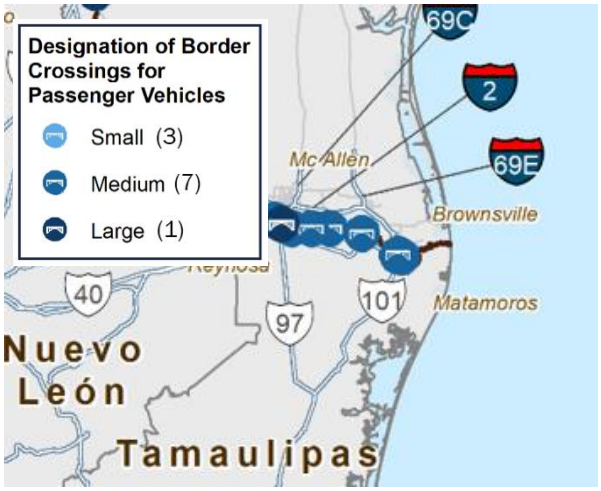
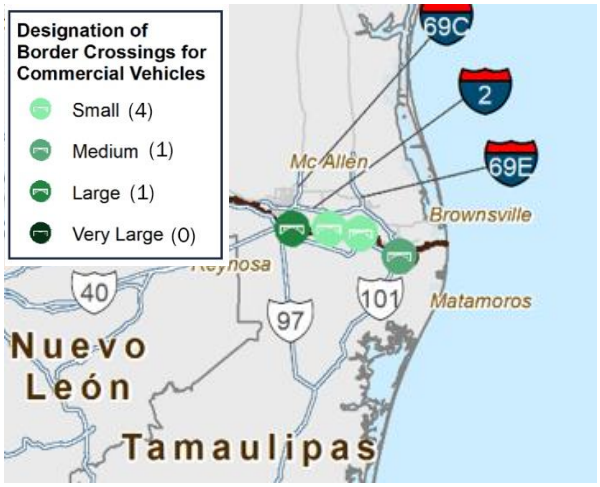


Figure 4.1-2. Designation of Border Crossings for CMV



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** shows the designated Texas-Mexico multimodal transportation network for Sphere 1[34] for the Rio Grande Valley/Tamaulipas region.

[34] 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: Rio Grande Valley/Tamaulipas Region

Chapter 5 Needs Assessment in the Rio Grande Valley 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 25 percent 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

	Rio Grande Valley/Tamaulipas Region												
Type	Lake Falcon Dam Crossing	Roma-Ciudad Miguel Alemán	Rio Grande City-Camargo	Los Ebanos Ferry	Anzalduas Intl.	McAllen-Hidalgo Intl.	Pharr-Reynosa International Bridge.	Donna Intl.	Progreso International	Free Trade Bridge	B&M	Gateway Intl.	Veterans International Brige at Los Tomates
POV		X				X					X	X	
CMV													

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[35] 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.[36] Many border crossings of all sizes need operational improvements or more physical capacity to meet POV needs.

PASSENGER VEHICLES (POV)

Border Crossing Sizes	Annual Northbound Volumes
SMALL	Under 500,000
MEDIUM	500,000 - 2,000,000
LARGE	2,000,000+

Note: The chart shows POV criteria applied to all crossings borderwide.

Small crossings: Rio Grande City—Camargo is overutilized at 144 percent. It may require operational improvements and is expected to increase to 227 percent by 2050.

Medium crossings: Five crossings are currently overutilized – over 80 percent – and require operational improvements: Roma–Ciudad Miguel Alemán – 99 percent, Anzalduas International – 100 percent, Pharr-Reynosa International Bridge – 102 percent, Free Trade Bridge – 218 percent, and B&M – 169 percent. Two of these crossings also require additional physical capacity. The Free Trade Bridge is currently at 80 percent utilization based on total physical capacity available with a forecast of 139 percent utilization by 2050 based on total physical capacity. B&M is also currently at 88 percent utilization based on total capacity and is expected to increase to 105 percent by 2050.

Large crossings: The large crossing, McAllen-Hidalgo is overutilized – over 80 percent volume-to-operational capacity – and require operational improvements at 103 percent.

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.

BIKE/PEDESTRIAN

Border Crossing Sizes	Annual Northbound Volumes
SMALL	Under 100,000
MEDIUM	100,000 - 1,000,000
LARGE	1,000,000+

[35] 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.

[36] Stakeholder Consultation, Progreso International Bridge, March 11, 2020; Stakeholder Consultation, Acuña, March 10, 2020; Stakeholder Consultation, U.S. Customs and Border Protection; Stakeholder Consultation, Del Rio Economic Development Corporation Board, March 3, 2020.

To meet the needs of the growing border population, bike/pedestrian crossings will require operational improvements, and many also require additional physical capacity.[37]

Medium crossings (Roma-Ciudad Miguel Aleman, B&M): B&M is overutilized by 119 percent and might require both operational improvements and additional physical capacity to accommodate future growth.

Note: The chart shows bike/pedestrian criteria applied to all crossings borderwide.

Large crossings (McAllen-Hidalgo, Progreso, Gateway International): Three large crossings are overutilized with over 80 percent volume-to-operational capacity and require operational improvements: McAllen-Hidalgo International has 121 percent, Progreso International has 94 percent, and Gateway International with 127 percent.

Movement of Goods—CMVs:

Under NAFTA, cross-border U.S.-Mexico trade between 1994 and 2019 tripled from $173 billion to $615 billion,[38] 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.

COMMERCIAL VEHICLES (CMV)

Border Crossing Sizes	Annual Northbound Volumes
SMALL	Under 75,000
MEDIUM	75,000 - 500,000
LARGE	500,000 - 1,500,000
VERY LARGE	1,500,000+

Note: The chart shows CMV criteria applied to all crossings borderwide.

Small crossings (Roma-Ciudad Miguel Aleman, Rio Grande City-Camargo, Progreso International, Free Trade) are generally underutilized. Progreso International currently operates at a utilization rate of 76 percent and might require both operational and physical capacity improvements to meet forecast demand. Rio Grande City–Camargo is currently operating at a utilization rate of 38 percent but is forecast to grow to 156 percent. This crossing could require operational improvements.

Medium crossings (Veterans International at Los Tomates) are fully or close to fully utilized, based on inspection staffing levels and the number of lanes open, and require operational improvements. Veterans International is currently operating at 106 percent utilization and is forecast to increase to 279 percent by 2050.

Large crossings (Pharr-Reynosa International Bridge on the Rise) similarly are overutilized, based on current inspection staffing levels and the number of lanes open, and require operational improvements. Pharr-Reynosa International Bridge on the Rise is currently operating at 114 percent utilization and is forecast to increase to 356 percent by 2050. In addition to planned operational improvements, Pharr-Reynosa International Bridge on the Rise might also require additional physical capacity to accommodate continued trade growth.

[37] Some data for small crossings are unavailable.

[38] Adjusted to 2019 dollars.

5.1.2 Roadway Delays (Congestion)

The Rio Grande Valley/Tamaulipas Region encounters significant congestion in Brownsville on I-69, I-2, US 281, and Loop 499. This is due to congestion at both the land border crossings in the region, as well as the Port of Brownsville which affects the connecting corridors.

Figure 5.1-2. Rio Grande Valley/Tamaulipas – Congestion (2018)[39]

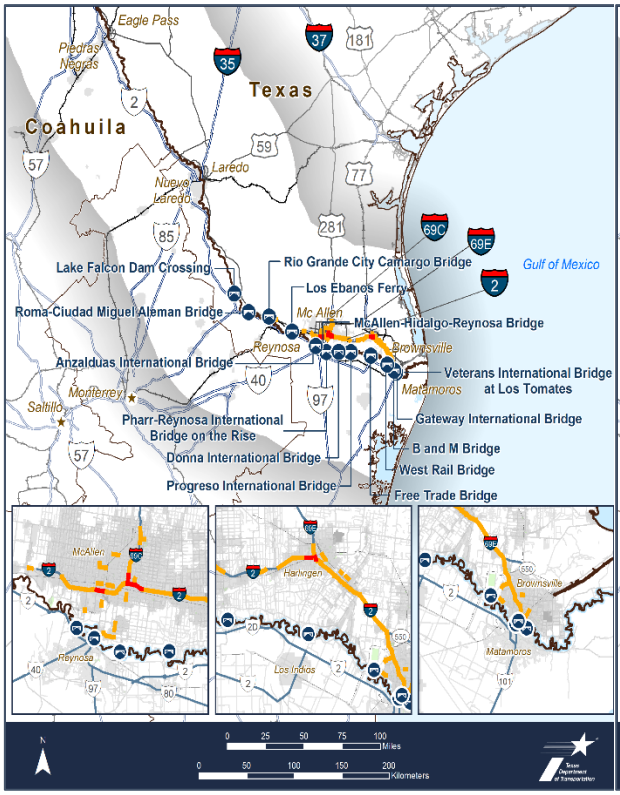
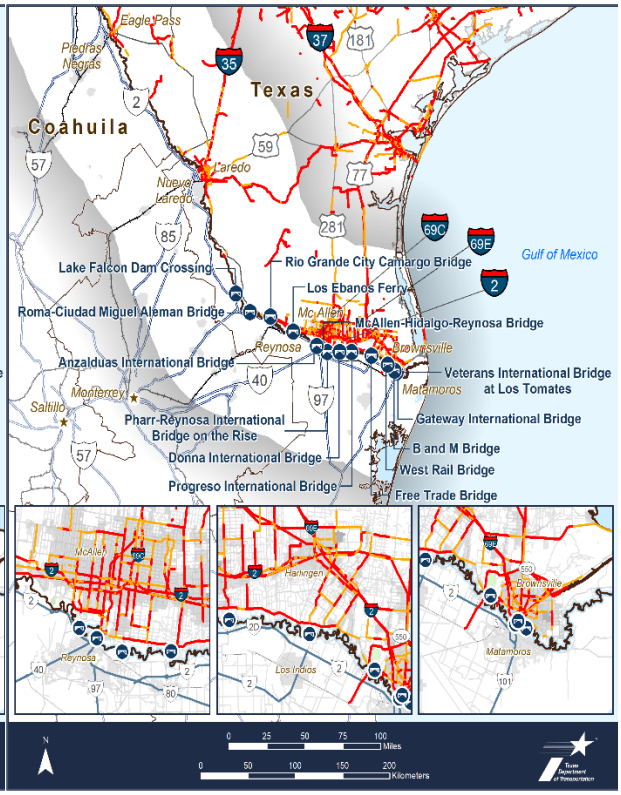


Figure 5.1-3. Rio Grande Valley/Tamaulipas – Congestion (2050)[40]



Rapid urbanization in the Rio Grande Valley/Tamaulipas Region over the last few decades has led to increased congestion in its urbanized areas of Brownsville, Mission, and Edinburg. Congestion on the top congested segments in the region is due to border delays, increased traffic in urban areas, and design and operational issues on these segments.

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

[39] TxDOT Congestion Data (2018).

[40] TxDOT SAM 2050 congestion.

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 Rio Grande Valley/Tamaulipas Region this includes the Port of Brownsville. The RGV region is also connected to the rail intermodal facilities in Texas and Mexico. Rail connections in the RGV Region include the Brownsville West Rail Bridge (UP).

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[41]. However, freight rail movement across the border is constrained by the border crossing rail bridges. These crossings are all single tracked, meaning that two-way (north-south) simultaneous operations are not possible.

Active freight rail bridge in the RGV Region that connect Texas and Mexico is 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.

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.

[41] BTMP mid-case forecast, 163 percent.

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

Table 5.1-1. Operational and Physical Capacity Issues by Rail Border Crossing

Border Crossing	Operational and Physical Capacity Issues
Brownsville West Rail Bridge (Union Pacific Railroad [UP])	▪ Congestion and overutilization of single-track rail line at the West Rail border crossing.

5.1.5 Occupied Highway/Rail Crossings

Highway/rail crossings are an issue 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.[42]

- Brownsville's new West Rail bridge, built in 2015, was the first rail bridge built in a century. This project relocated rail traffic away from downtown areas and eliminated 14 highway/rail crossings downtown, with only one highway/rail crossing remaining.

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 Rio Grande Valley/Tamaulipas Region has the following border crossing safety issues:

- Pharr-Reynosa International Bridge processes hazardous materials but needs separation between CMV and POV lanes.
- There are conflicts between CMVs, POVs, and bike/pedestrian activity focused on hot-spot locations, particularly at border crossings and at connecting roads that require site-specific design improvements.

5.2.2 Roadway Safety

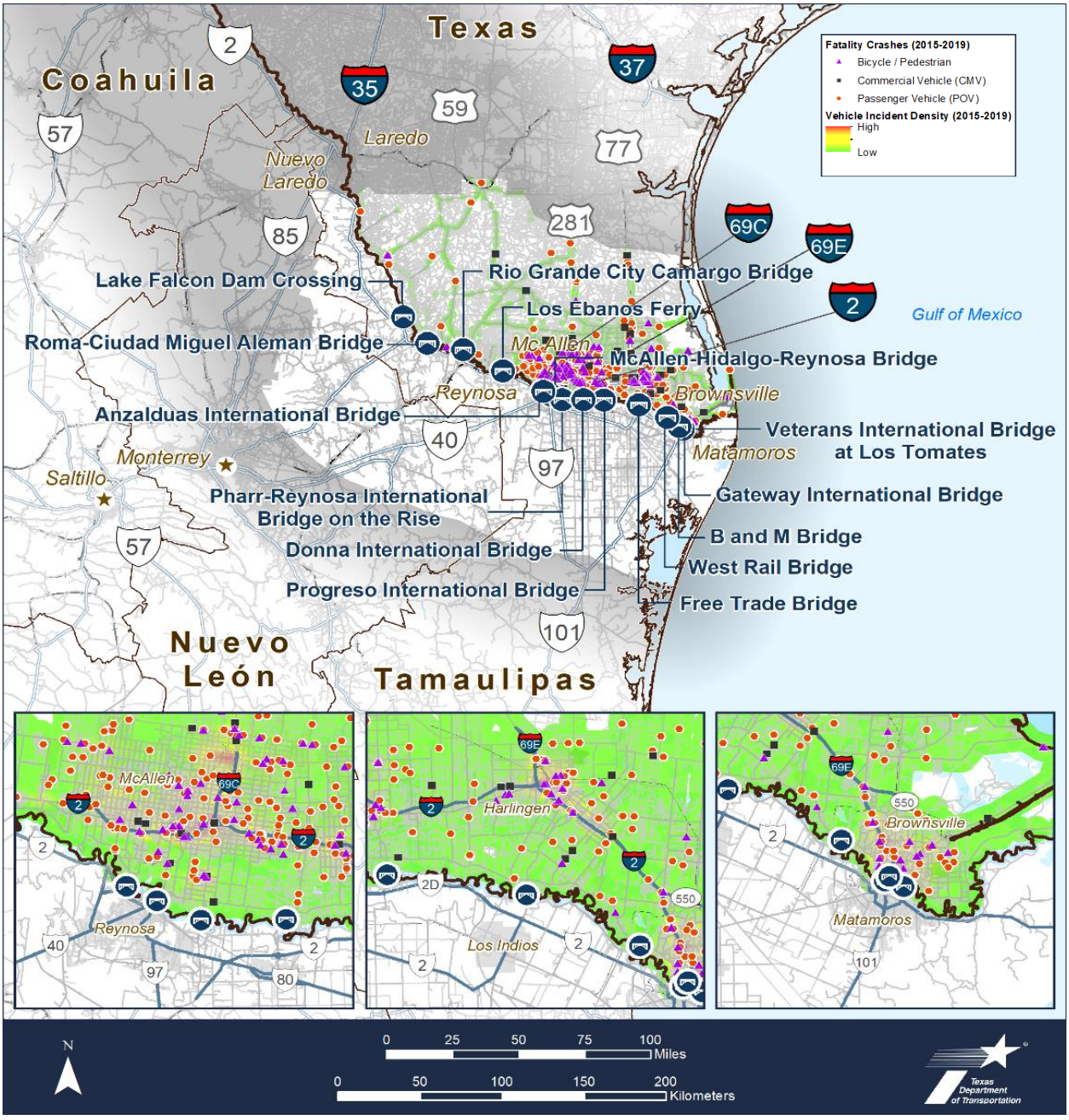
Regional corridors (I-2, I-69C, I-69E, and connecting roads) have hot-spot locations in the McAllen, Harlingen, and Brownsville downtowns.

- **Active highway/arterial** harmonization on regional roads is needed to reduce CMV/POV conflicts.
- **Higher POV crash rate:** the POV crash rate in the region is higher than the statewide crash rate at 325 crashes per 100 million VMT, compared to the statewide crash rate of 258 crashes per 100 million VMT between 2015 and 2019.

[42] GAO Report to Congress, "U.S. Border Communities Ongoing DOT Efforts Could Help Address Impacts of International Freight Rail," January 2016.

- **Higher CMV crash rate:** the region experienced 155 CMV crashes per 100 million VMT between 2015 and 2019. This is higher than the statewide crash rate of 145 crashes per 100 million VMT.
- **Bike/pedestrian crash percentages:** bike/pedestrian crash percentages are higher than statewide percentages at 2.6 percent of total crashes, compared to 1.5 percent statewide between 2015 and 2019.

Figure 5.2-1. Roadway Crash Density, Rio Grande Valley/Tamaulipas Region (2015–2019)[43]



[43] Automated Crash Data Extract Files, TxDOT (2015–2019).

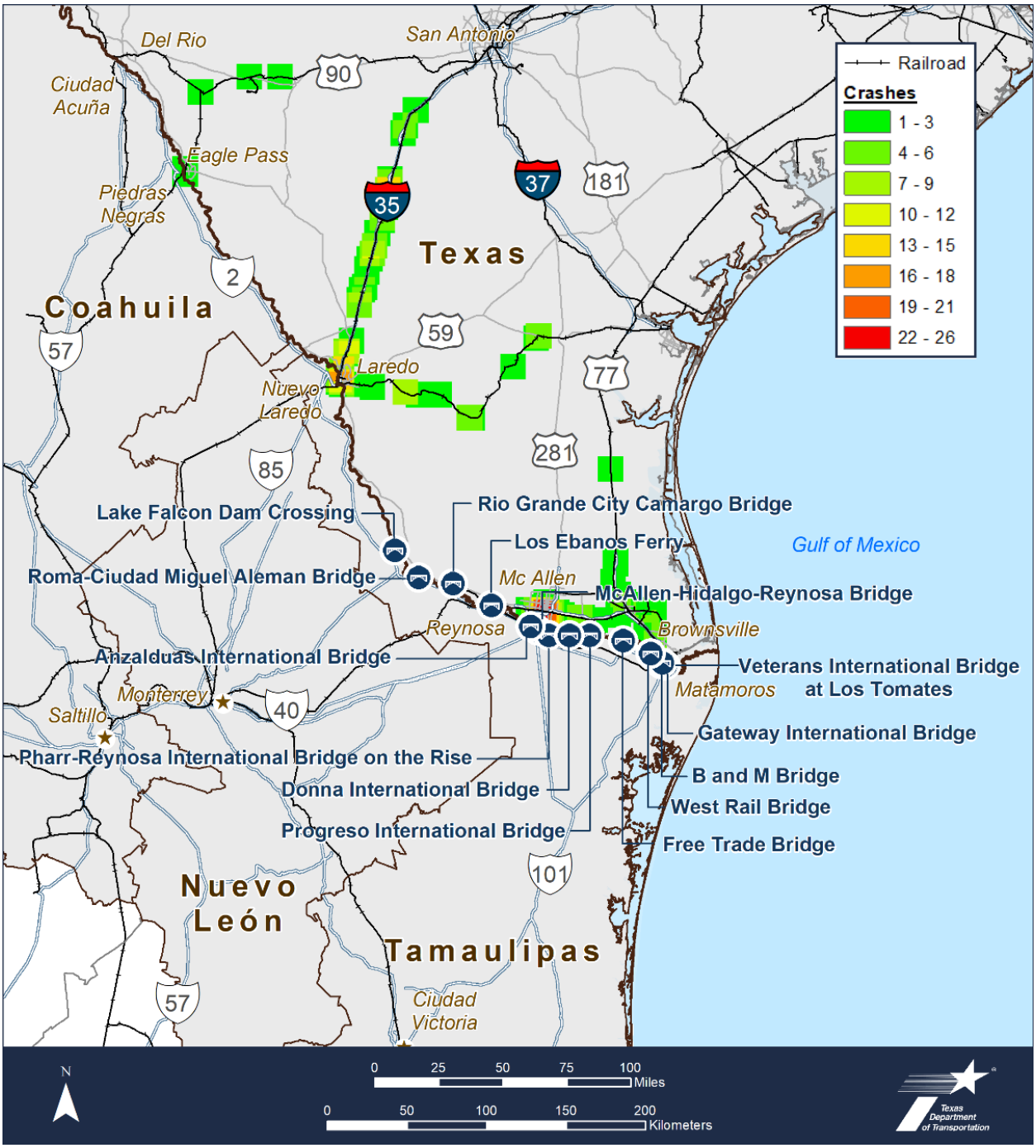
5.2.3 Rail Safety

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

The Rio Grande Valley/Tamaulipas Region has the following rail safety issues:

- A significant number of at-grade rail crossings are in the dense urban street network surrounding the McAllen International Airport.

Figure 5.2-2. Rio Grande Valley Region At-grade Rail Crossing Incidents in Texas (2007–2017)[44]



[44] FRA Rail Grade Crossing Data (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,[45] systematic preventive maintenance is needed to prevent deterioration.

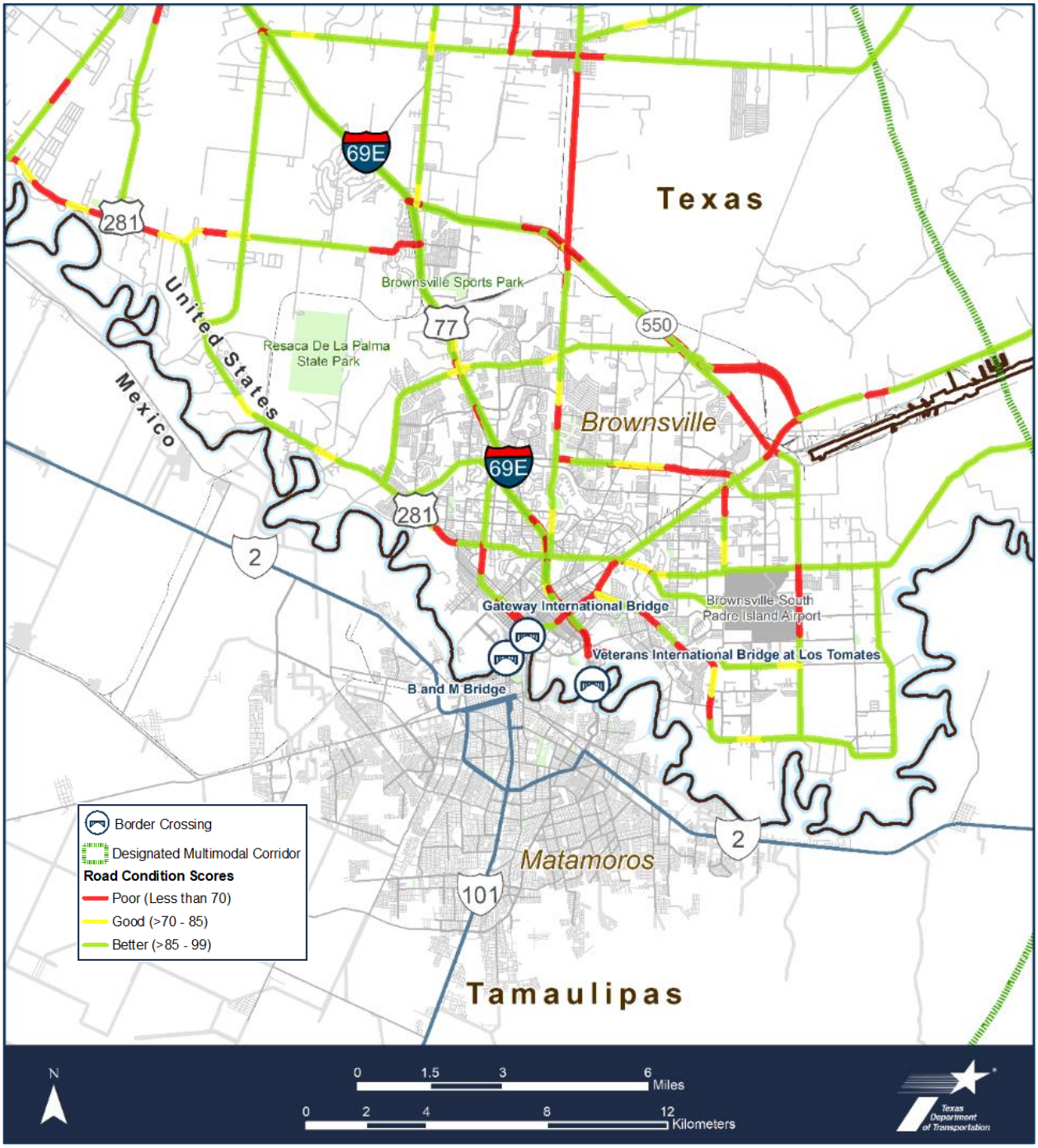
5.3.1 Pavement Conditions

Poor pavement conditions as a percent of road length within the region are summarized below:

- 3 percent of Brownsville I-69
- 10 percent of regional roads
- 13 percent of regional roads 1 mile from the border

[45] 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. Rio Grande Valley/Tamaulipas Region Pavement Conditions (2018)[46]



[46] TxDOT Pavement Conditions Data (2018).

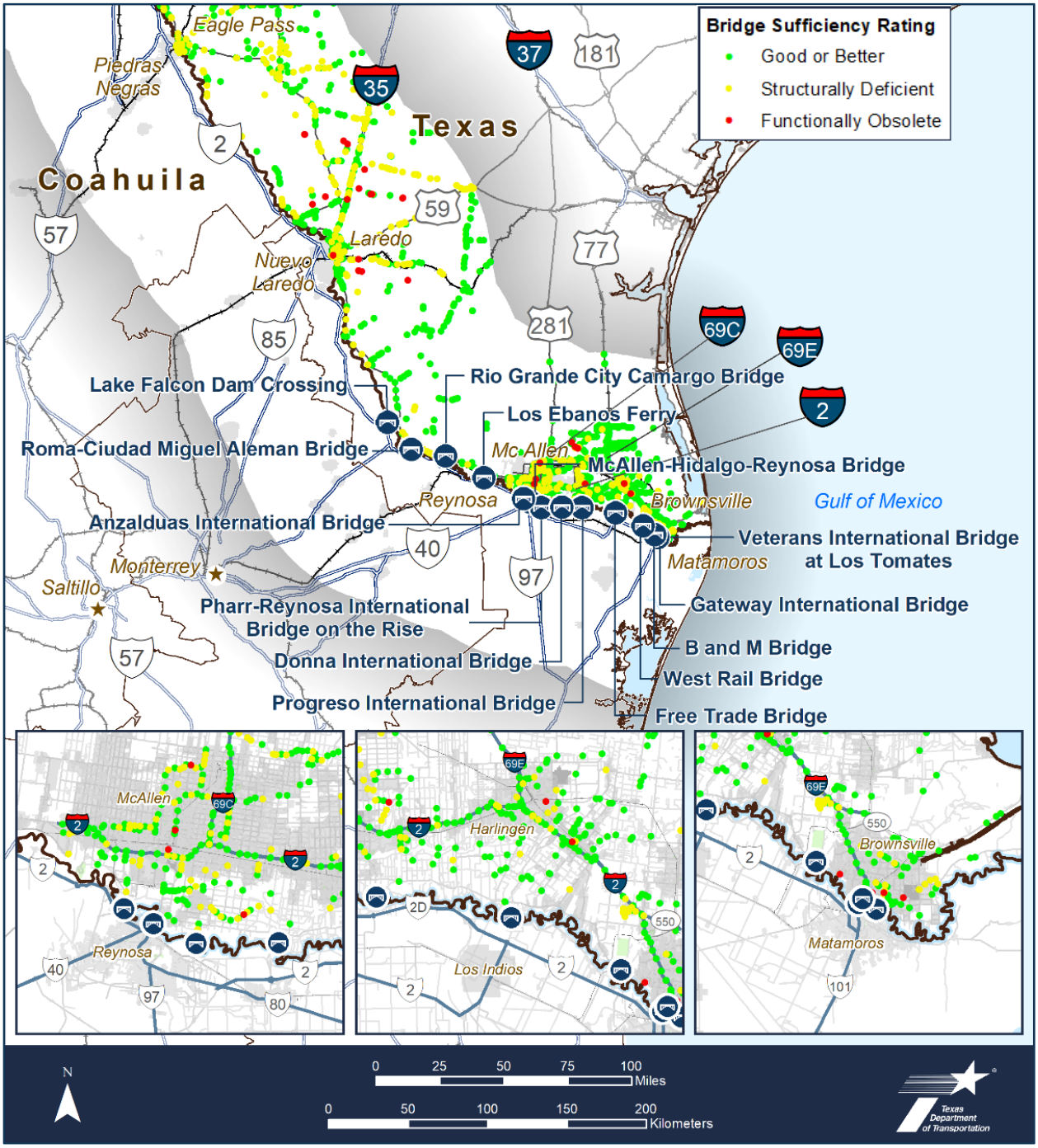
5.3.2 Bridge Conditions

On average, 93 percent of the bridges in the Rio Grande Valley/Tamaulipas Region are in good or better condition.[47] For the region, no bridges are functionally obsolete, 52 are structurally deficient and 670 bridges are in good or better condition.

- Poorer conditions such as structurally deficient or functionally obsolete are concentrated in urban areas and near border crossings.
- The two bridge structures with low vertical clearance in the RGV region are:
  - S.BU77 SB in San Benito - 13'6" under IH69E
  - SH336 - 14' under IH2 in downtown McAllen

[47] 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. Rio Grande Valley/Tamaulipas Region Bridge Conditions (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.
- None of the bridges in the region are currently in poor condition.

Most U.S. Customs and Border Protection (CBP) border inspection facilities are in good or fair condition.[48]

- Three CBP border inspection facilities[49] in the RGV Region have not had facility condition assessments conducted by CBP and the U.S. Government Accountability Office (GAO).
- Border inspection facilities at the Lake Falcon Dam Crossing and McAllen-Hidalgo International border crossings currently rate in poor condition[50] and require infrastructure improvements.

5.3.4 Rail Crossings

All rail crossings are currently in good serviceable condition.[51]

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.

- Vehicle-miles traveled in the Texas border region is forecast to grow by 95 percent from 69.1 million vehicle miles traveled (VMT) in 2018 to 134.6 million VMT in 2050. The fastest growth is forecast to occur on the Texas side of the Rio Grande Valley/Tamaulipas Region with an increase of 124 percent.

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[48] 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)

[49] Veterans International Bridge at Los Tomates, Donna Intl., and Anzalduas Intl (from GAO Report to Congressional Requesters, "Border Infrastructure: Actions Needed to Improve Information on Facilities and Capital Planning at Land Border Crossings," July 2019.)

[50] GAO Report to Congressional Requesters, "Border Infrastructure: Actions Needed to Improve Information on Facilities and Capital Planning at Land Border Crossings," July 2019.

[51] Class I railroad interviews.

- Average POV crossing times was 25 minutes at the large crossing, McAllen-Hidalgo International, in 2019. 90th percentile crossing times were much higher, with the highest being 60 minutes at McAllen-Hidalgo International Bridge in 2019 among the all the large border crossings. In 2050, McAllen-Hidalgo International Bridge is the highest of all large border crossings with a projected 375 minutes (over 6 hours) for 90th percentile crossing time.
- The average crossing times in 2050 are forecast to reach over 14 hours for the Pharr-Reynosa International Bridge on the Rise, with the 90th percentile crossing times reaching more than 18 hours.

Chapter 6 Future Forecasts for the Rio Grande Valley 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 Rio Grande Valley/Tamaulipas Region is expected to experience income growth from approximately $38,100 in 2019 to $40,800 in 2050.

6.2 Forecasts of Northbound Border Crossing Movements

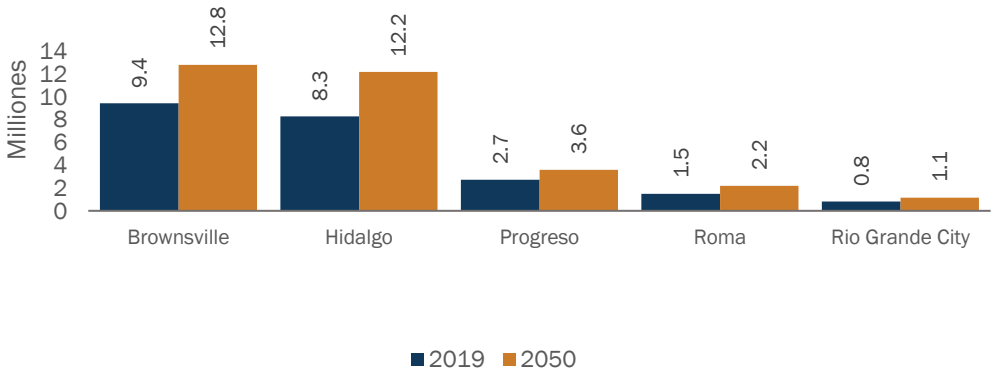
6.2.1 Forecasts of Northbound Texas-Mexico Cross-border Movement of People, 2019–2050

Forecasts of Northbound Texas-Mexico Cross-border Movement of People by POVs in the Rio Grande Valley/Tamaulipas Region

The greatest increase, which is 48 percent, is forecast to happen in the Rio Grande Valley/Tamaulipas Region.

The Brownsville POE is forecast to have the greatest number of northbound POV movements among the POEs in the region at 12.8 million in 2050, a 36 percent increase from 2019 POV movements of 9.4 million.

Figure 6.2-1. Northbound POV Movements by POE (2019 and 2050)



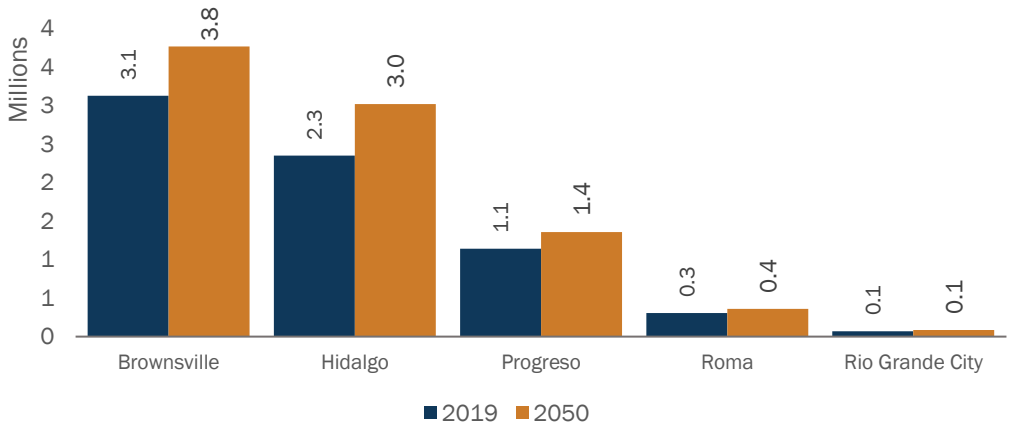
The region overall is anticipated to increase from 11.0 million to 16.2 million in northbound POV movements from 2019 to 2050, a 47 percent increase. The other POEs, Hidalgo, Progreso, Roma and Rio Grande City, are all projected to have more than 1 million POV movements in 2050.

The McAllen-Hidalgo International leads the border crossings in the region with 2.0 million in 2019 and projected to increase to 3.1 million POV movements in 2050. Both the Veterans International Bridge at Los Tomates and the B&M Bridge are also projected to increase in 2050 to 2 million northbound POV movements.

Forecasts of Northbound Texas-Mexico Cross-border Movement of Bicycles and Pedestrians

The Rio Grande Valley/Tamaulipas Region is forecast to be the fastest-growing region for the bicycle and pedestrian movements.

Figure 6.2-2. Northbound Bicycle and Pedestrian Movements by POE (2019 and 2050)

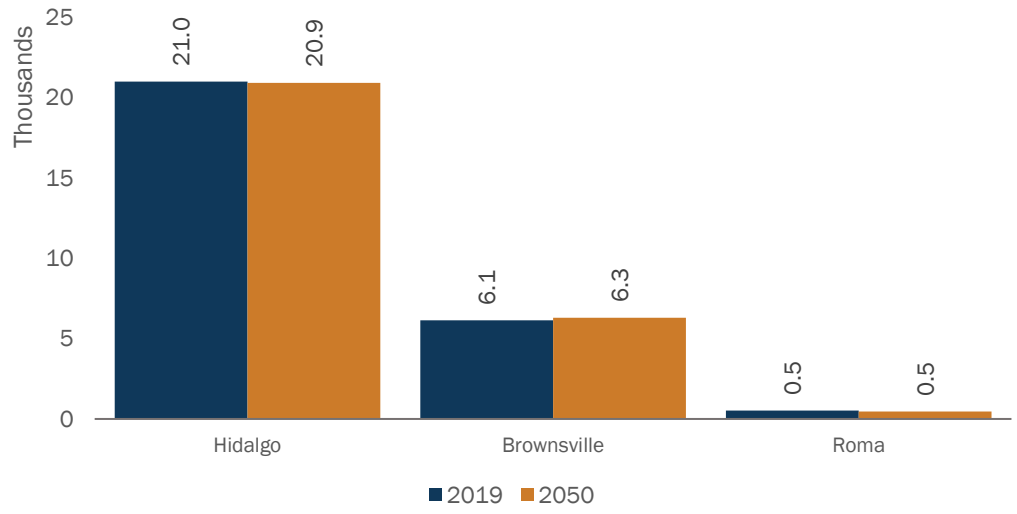


Bicycle and pedestrian movements in the Rio Grande Valley/Tamaulipas Region will increase 23 percent from 6.9 million in 2019 to 8.5 million in 2050. Bicycle and pedestrian movements are projected to be at least 3 million at both Brownsville and Hidalgo POEs by 2050.

By 2050, two border crossings will have more than 2 million bicycle and pedestrian crossings: McAllen-Hidalgo International and Gateway International.

Forecasts of Northbound Texas-Mexico Cross-border Movement of People by Buses, 2019–2050.

Figure 6.2-3. Northbound Bus Movements by POE (2019 and 2050)



Bus movements are forecast to remain stable out to 2050 with the Rio Grande Valley/Tamaulipas Region projected to have a slight increase from 27.6 thousand in 2019 to 27.7 thousand in 2050. Bus movements include both local cross-border and longer haul cross-border movements. The Hidalgo POE is projected to decline slightly, 0.5 percent from 21,000 in 2019 to 20,900 in 2050; whereas, Brownsville POE is projected to increase slightly from 2019 to 2050, 3 percent from 6,100 in 2019 to 6,300 in 2050.

6.2.2 Forecasts of Goods Movement by Mode, 2019–2050

Cross-border CMV Trade

The Rio Grande Valley/Tamaulipas Region is projected to increase CMV tonnage from 13.9 million in 2019 to 57.7 million in 2050. The CMV trade value for the region is also projected to increase from $49.2 billion in 2019 to $234.9 billion in 2050, an **increase of 377 percent.**

The total CMV tonnage is anticipated to increase by 363 percent from 2019 to 2050 at the Hidalgo POE, from 8 million in 2019 to 37 million in 2050.

One POE in the region is forecast to surpass $100 billion in annual trade by CMV by 2050: Hidalgo.

Figure 6.2-4. Total CMV Tonnage by POE (2019 and 2050)

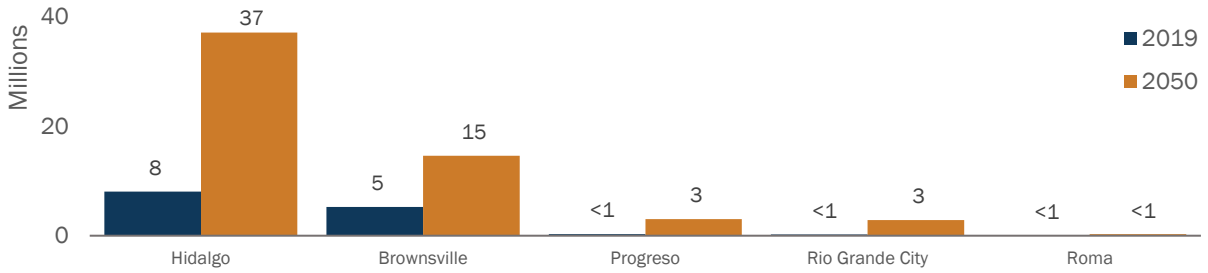
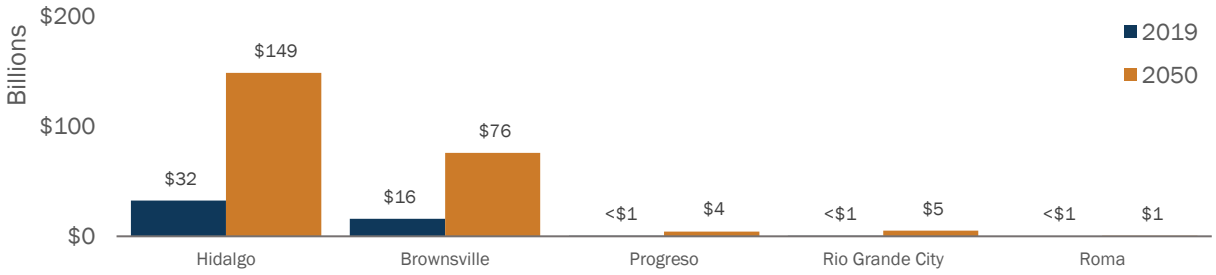


Figure 6.2-5. Total CMV Trade Value by POE (2019 and 2050)



Forecasts of Cross-border CMV Movements

The Rio Grande Valley/Tamaulipas Region experiences the fastest growth in CMV movements.

The CMV movement in the RGV Region is projected to increase from 1.0 million in 2019 to 3.0 million in 2050; this is a 200 percent increase.

The Hidalgo POE is forecast to increase from 0.7 million in 2019 to 2.0 million in 2050, a 185 percent increase and the Pharr–Reynosa International Bridge on the Rise border crossing is forecast to have at least 1 million annual movements in 2050

Figure 6.2-6. CMV Movements by POE (2019 and 2050)

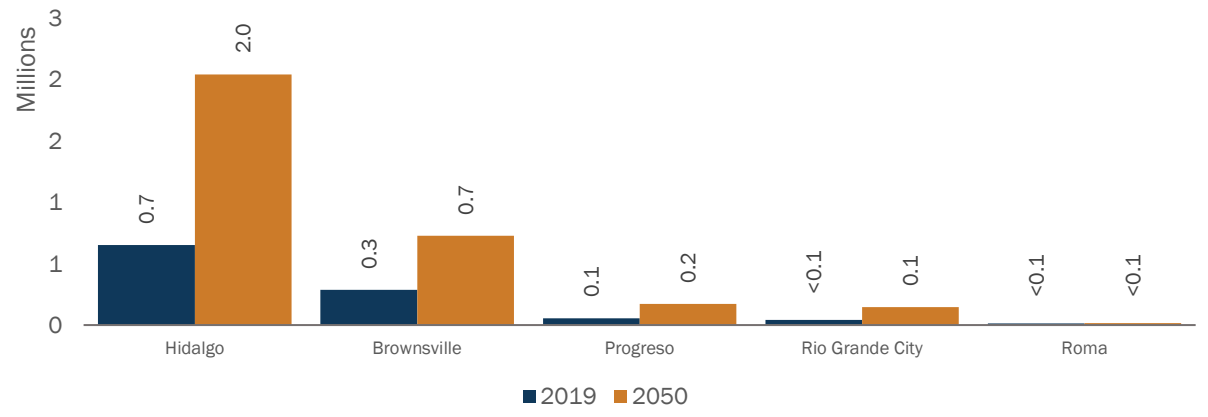
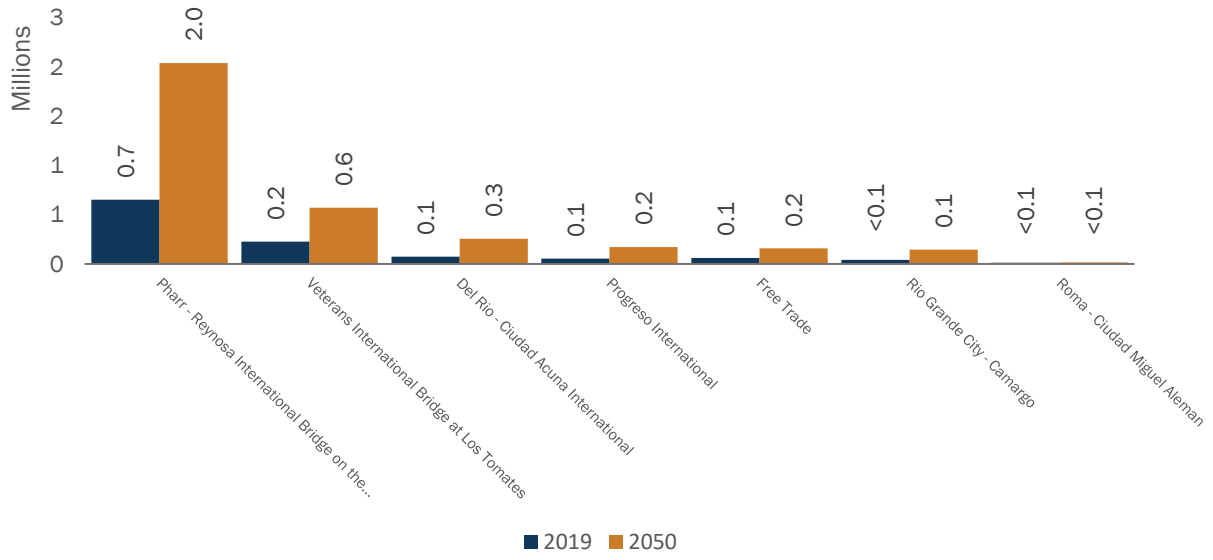


Figure 6.2-7. CMV Movements by Border Crossing (2019 and 2050)



Forecasts of Cross-border Rail Movements, 2019–2050

The Brownsville POE (Brownsville West Rail Bridge) is forecast to increase movement of goods by tonnage by rail from 2019 to 2050, from 1.8 million to 18.9 million, a 950 percent increase.

The total rail trade value for the region is also projected to have a 10 percent increase from $0.9 billion in 2019 to $10.1 billion in 2050.

Figure 6.2-8. Total Rail Tonnage by POE (2019 and 2050)

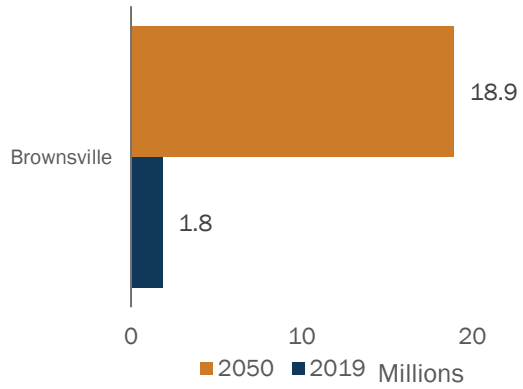
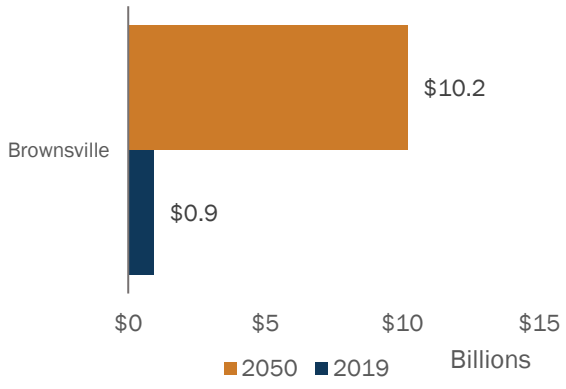


Figure 6.2-9. Total Rail Trade Value by POE (2019 and 2050)[52]

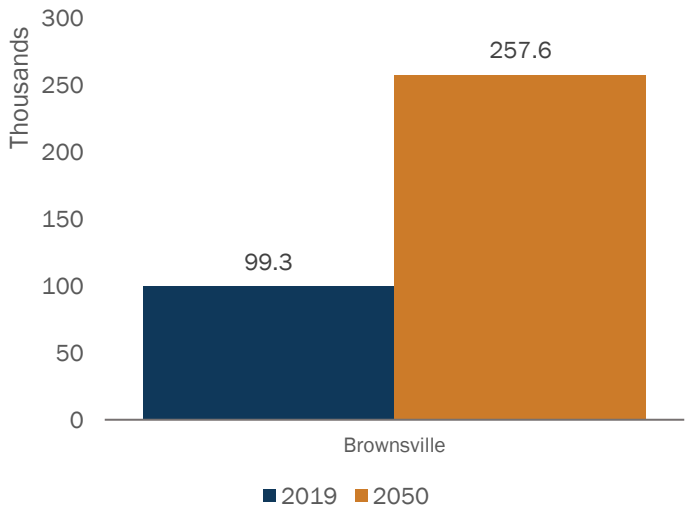


[52] The Presidio-Ojinaga International Rail Bridge is currently closed and is scheduled to reopen in 2021.

Forecast of Cross-border Rail Car Movements

Rail car movements in the RGV region are forecast to triple from 100,000 in 2019 to 300,000 in 2050, an increase of 200 percent. The Brownsville POE (Brownsville West Rail Bridges) rail car movements are projected to increase 159 percent from 99,300 in 2019 to 257,600 in 2050.

Figure 6.2-10. Rail Car Movements by POE (2019 and 2050)



6.3 Forecasts of Roadway Corridor Movements

6.3.1 Roadway Vehicle-miles Traveled

Vehicle-miles traveled in the Texas border region is forecast to grow by 95 percent from 69.1 million VMT in 2018 to 134.6 million VMT in 2050. The fastest growth is forecast to occur on the Texas side of the Rio Grande Valley/Tamaulipas Region with an increase of 124 percent, from 28.5 million in 2019 to 63.9 million in 2050.

6.4 Forecasts for Other Modes

Pipeline tonnage will increase by 341 percent from 11.8 million in 2019 to 52.0 million in 2050. Most of these movements will continue to be southbound shipments of natural gas and other petroleum products from Texas, mainly from the Rio Grande Valley/Tamaulipas Region.

6.5 Forecasts of System Performance

6.5.1 Border Crossings

Forecasts of POV Crossing Times[53]

The crossing times at most of the border crossings in the region are forecast to increase, highlighting the need for future improvements.[54]

Large Crossings (McAllen-Hidalgo)

- 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 60 minutes at the McAllen-Hidalgo International Bridge.
- By 2050, McAllen-Hidalgo International Bridge, the large crossing in the region is forecast to experience an increase in average crossing times, with an average of 157 minutes, or over 2 hours.
- The McAllen-Hidalgo International Bridge is forecast to have the biggest percent change in 90th percentile crossing times, with increase of 315 minutes, or over 5 hours. This is equivalent to 525 percent growth.

Medium Crossings (Roma-Ciudad Miguel Aleman, Anzalduas International, Pharr-Reynosa International Bridge on the Rise, Donna International, Progreso International, Free Trade, B&M, Gateway International, Veterans International at Los Tomates)

- The average crossing time was 34 minutes at the Presidio Bridge and 18 minutes for the Good Neighbor Bridge in 2019. The 90th percentile crossing times in 2019 were similar, with the Presidio Bridge taking twice as long with 61 minutes as the Good Neighbor Bridge with 26 minutes.
- Of the 9 medium crossings, average crossing times were 36 minutes or less in 2019. 90th percentile crossing times in 2019 were as high as 69 minutes at the Anzalduas International Bridge.
- All the medium crossings are forecast to experience large increases in crossing times by 2050.
- B&M Bridge, Gateway International Bridge, and Veterans International Bridge at Los Tomates are forecast to be the top three border crossings that will experience the highest crossing times in 2050. Average crossing times are forecast to range from 6 to 8 hours, and the 90th percentile crossing times range from 9 to 13 hours in 2050.

[53] 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.

[54] Note that these forecasts are unconstrained. The forecasted 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.

Small Crossings (Rio Grande City-Camargo)

- Rio Grande City–Camargo Bridge is the only border crossing that shows significant increases in average and 90th percentile crossing times, with increase of 105 minutes and 150 minutes (485 percent cumulative growth) respectively.

Forecasts of CMV Crossing Times[55]

The almost tripling of CMV movements by 2050 will strain the border processing capabilities at border crossings. CMV crossing times[56], both average and 90th percentile[57], are forecast to increase dramatically by 2050.[58] For many of the larger crossings[59], the average crossing times will be 3 to 9 hours in 2050. At one of the large crossings, the Pharr-Reynosa International Bridge on the Rise, the average crossing time will exceed 14 hours in 2050.

Large Crossings (Pharr-Reynosa International Bridge on the Rise)

- The 2019 average crossing times were 60 minutes at the Pharr–Reynosa International Bridge on the Rise.
- The Pharr–Reynosa International Bridge on the Rise is forecast to experience significant increase in the average crossing time between 2019 and 2050, 789 minutes, a 1,315 percent cumulative growth.
- The average crossing times in 2050 are forecast to reach over 14 hours for the Pharr-Reynosa International Bridge on the Rise, with the 90th percentile crossing times reaching more than 18 hours.

Medium Crossings (Veterans International at Los Tomates)

- 2019 crossing times for Veterans International at Los Tomates averaged 19 minutes, and 90th percentile crossing times were 32 minutes.
- The crossing time is expected to dramatically increase by 2050 with over 3 hours (231 minutes) average crossing times and over 6 hours (390 minutes) 90th percentile crossing times.

Small Crossings (Roma-Ciudad Miguel Aleman, Rio Grande City-Camargo, Progreso International, Free Trade)

- Three border crossings are forecast to experience significant changes in crossing times between 2019 and 2050: Rio Grande City–Camargo Bridge, Progreso International Bridge, and Free Trade

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[55] 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.

[56] 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.

[57] 90th percentile crossing times reflect a crossing time that is met or exceeded 10 percent of the time.

[58] The forecasted 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.

[59] There is no very large crossing in the Rio Grande Valley/Tamaulipas region. The only very large crossing, World Trade Bridge, is located in the Laredo/Coahuila/ Nuevo León/Tamaulipas region.

Bridge, with over 2 hours in average crossing time, and over 6 hours in 90th percentile crossing time in 2050.

- Free Trade Bridge is forecast to experience the greatest increase in average crossing times, 184 minutes, or over 3 hours, between 2019 and 2050.

6.5.2 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.

The Rio Grande Valley/Tamaulipas Region encounters significant congestion in Brownsville on I-69, I-2, US 281, and Loop 499. This is due to congestion at both the land border crossings in the region, as well as the Port of Brownsville which affects the connecting corridors.

Chapter 7 Economic Importance of the Rio Grande Valley Region

This chapter describes the economic importance of the Rio Grande Valley/Tamaulipas 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

Approximately 14 percent of $285 billion GDP impacts in 2019 flow through the Rio Grande Valley Region.

The impact of the border on U.S. and Mexico GDP is expected to grow by approximately 4 percent per year from $285 billion ($170 billion in the U.S. and $115 billion in Mexico) in 2019 to $1 trillion ($688 billion in the U.S. and $337 billion in Mexico) in 2050.

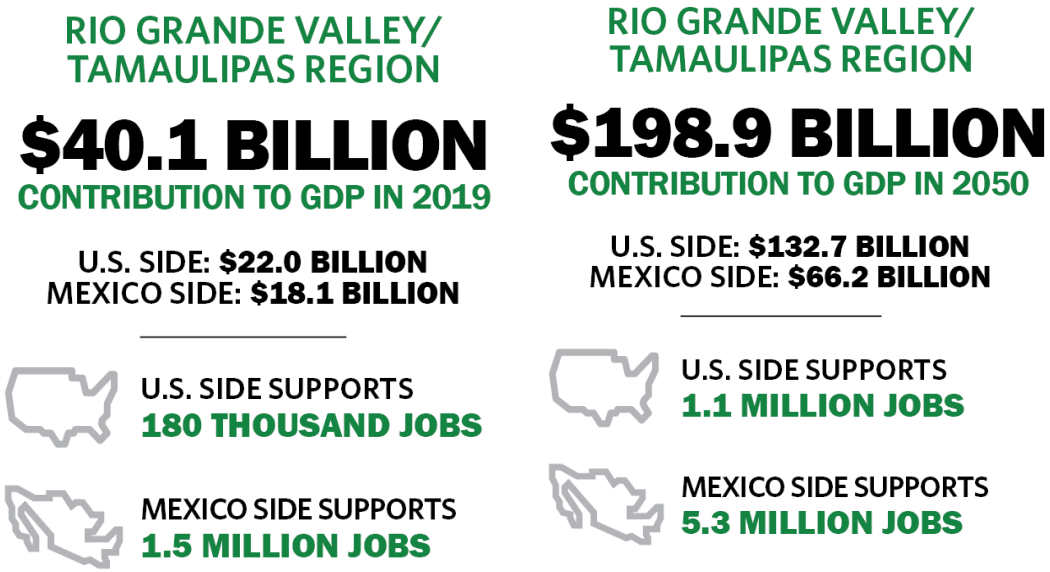
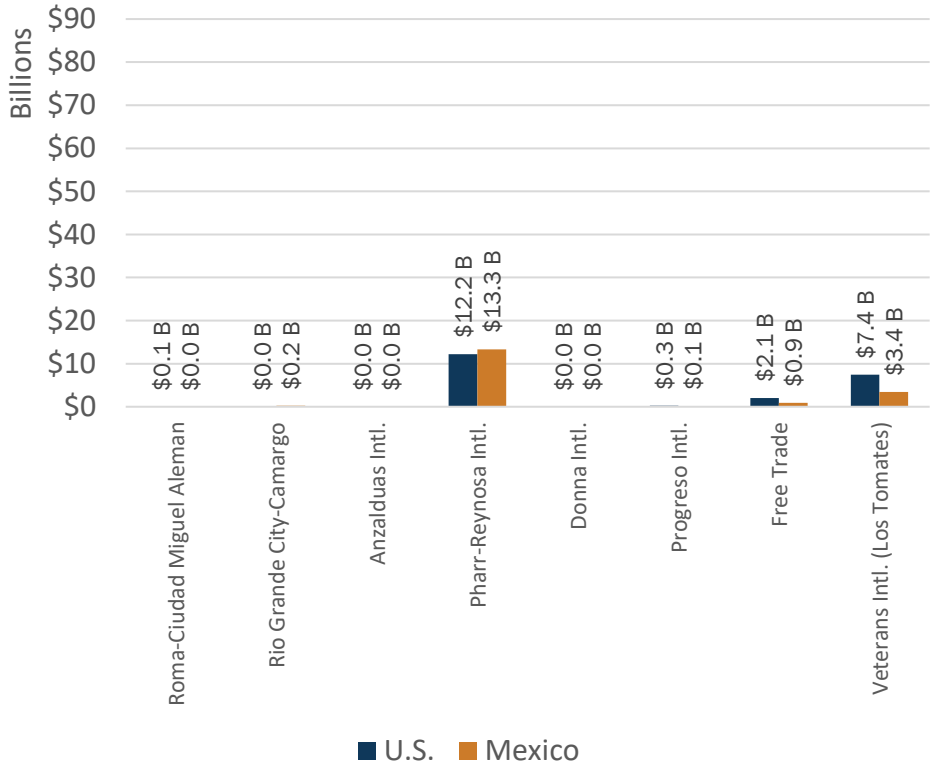
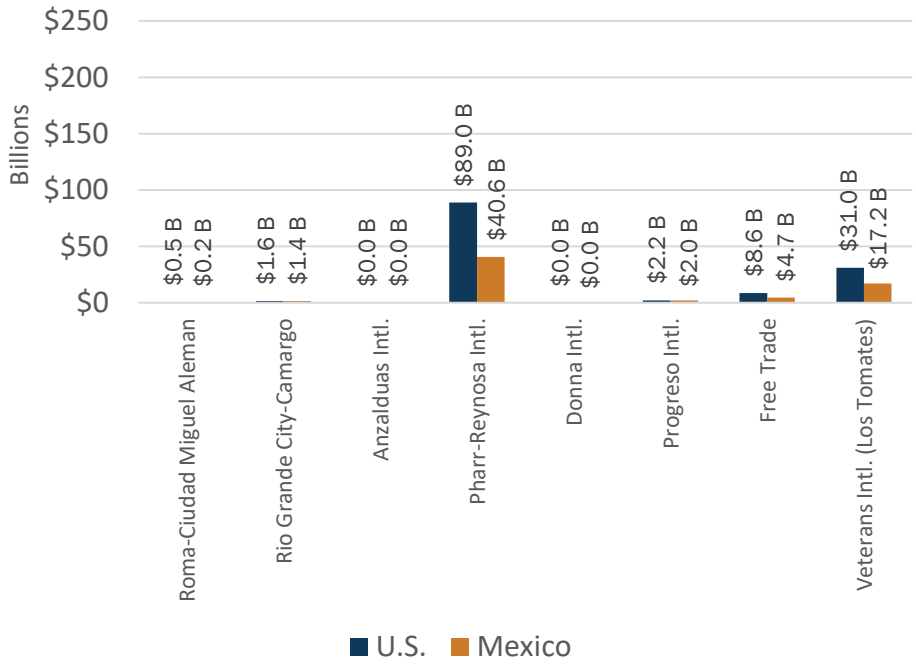


Figure 7.1-1. Impact of Movement of Goods on GDP by CMV Border Crossing (2019 and 2050)





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.

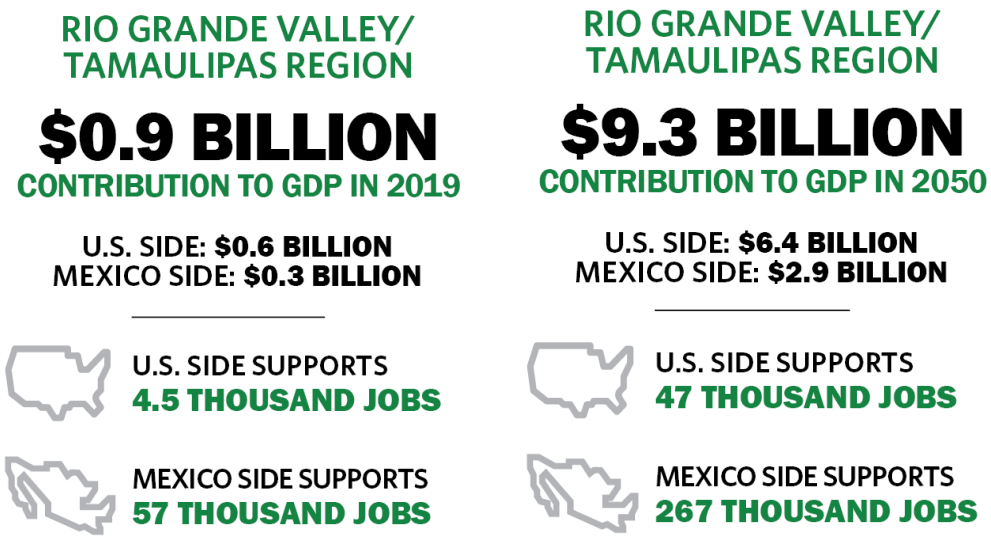
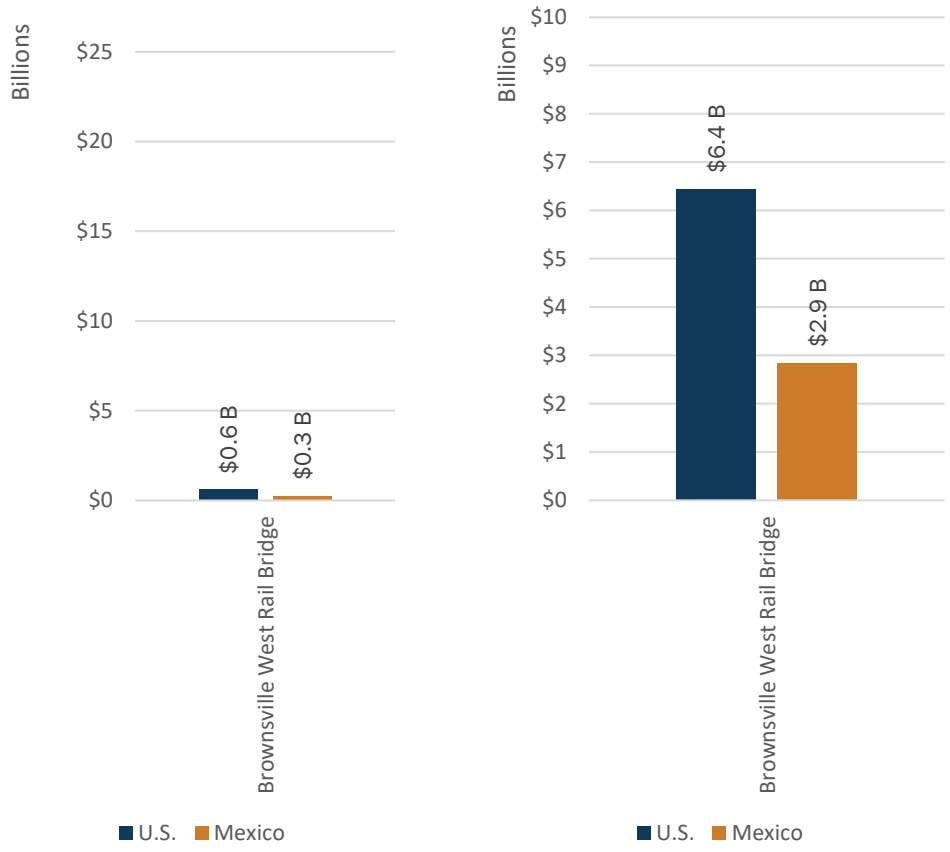


Figure 7.1-2. Impact of Movement of Goods on GDP by Rail Crossing (2019 and 2050)



7.2 Economic Impacts from Movement of People across the Border

- The GDP impacts of the movement of people are greatest in the Rio Grande Valley/Tamaulipas Region ($3.1 billion) in 2019.
- The binational GDP impacts are forecast to be the greatest in the Rio Grande Valley/Tamaulipas Region ($4.5 billion) in 2050.

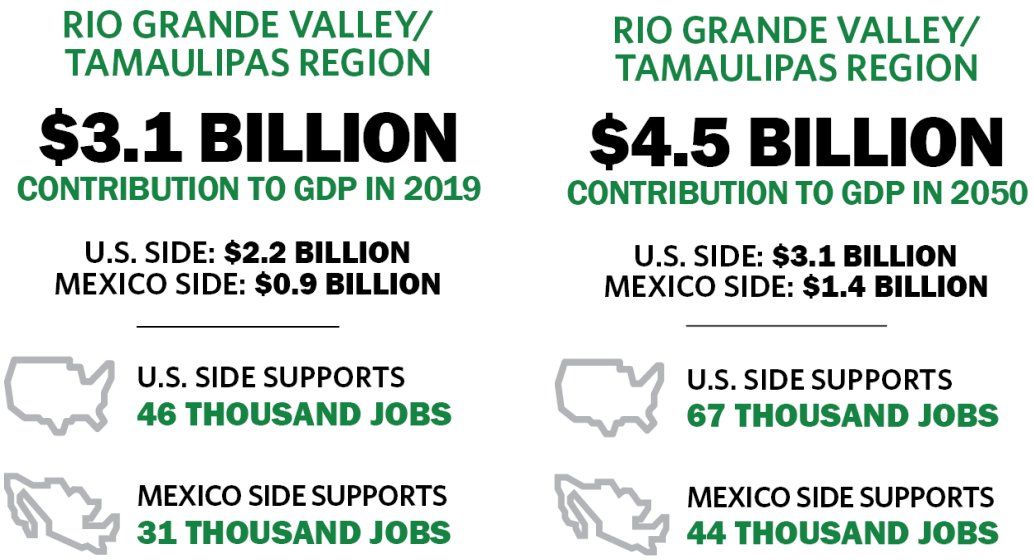
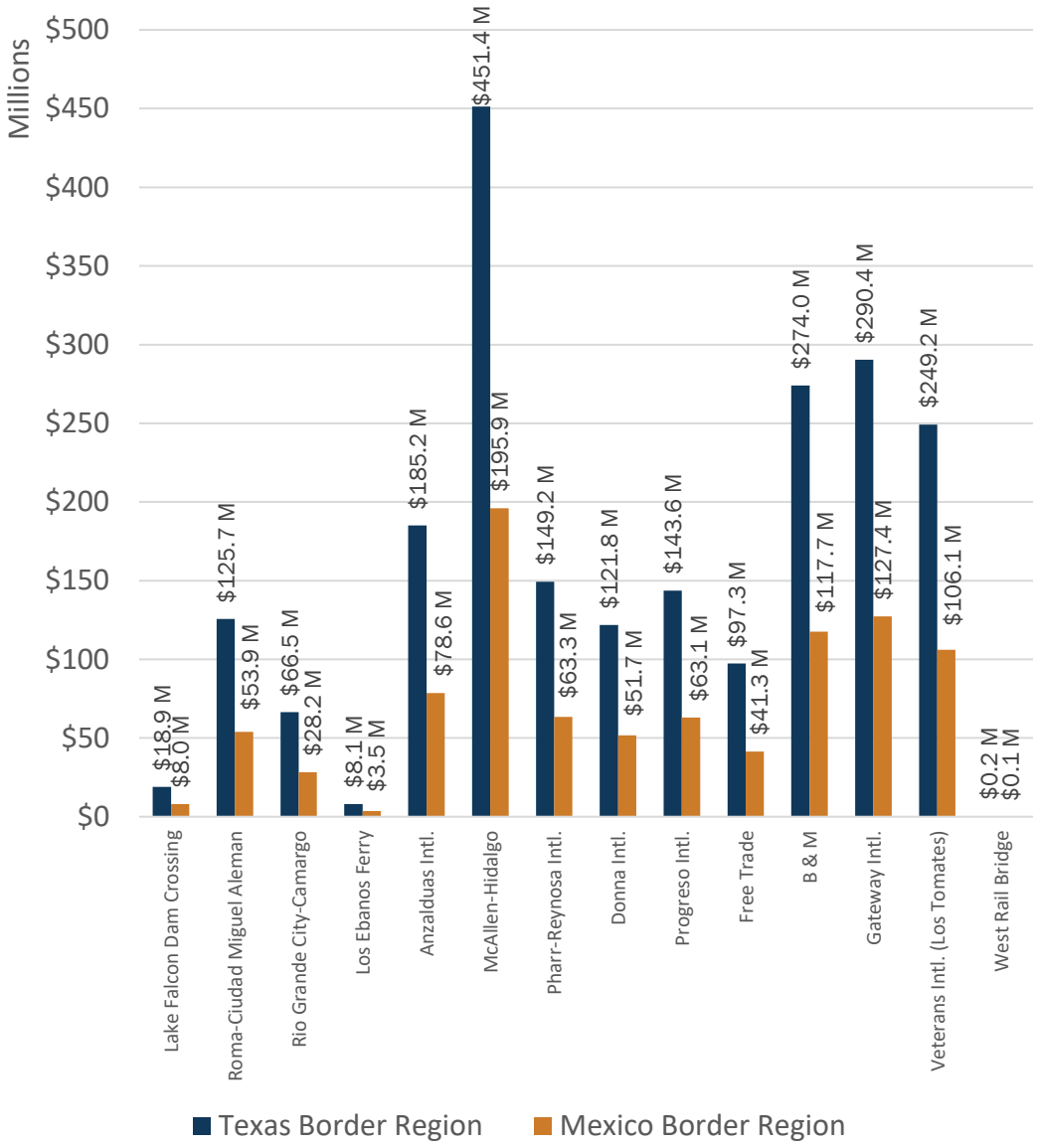
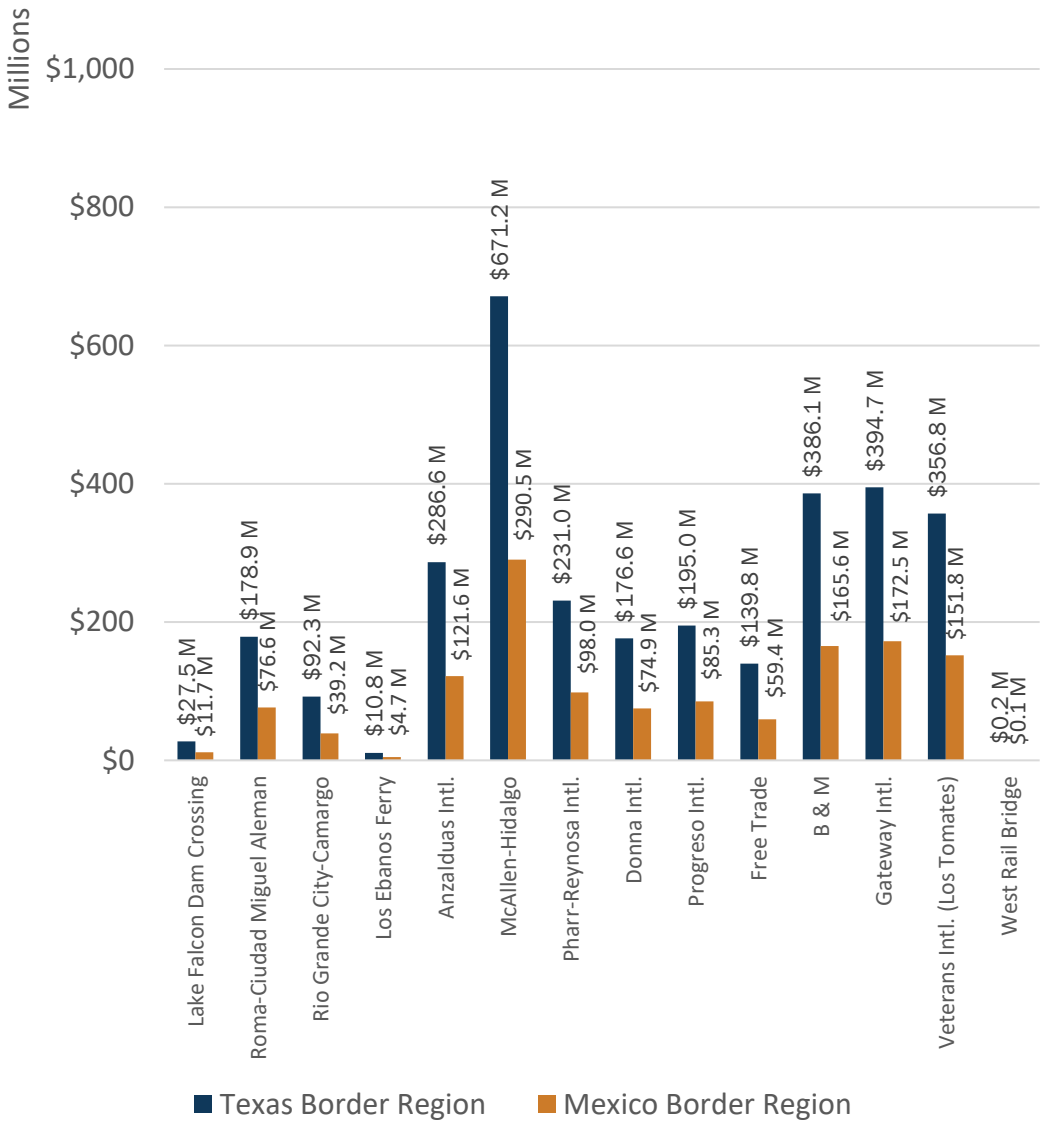


Figure 7.2-1. Impact of Movement of People on GDP by Border Crossing (2019)





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 186 percent increase (over 29 minutes) in Rio Grande Valley/Tamaulipas Region.

Several bridges in the Rio Grande Valley/Tamaulipas Region experienced large increases in 90th percentile wait times from 2003 to 2019, including Pharr-Reynosa International (five times increase), Progreso (four times increase), and Free Trade Bridge (four times increase).

7.3.1 Border Delays to the Movement of Goods in 2019 and 2050

Delays to goods movement through the Pharr-Reynosa International Bridge on the Rise have an even larger impact, reducing GDP by an estimated $594.1 million ($209.4 million to the U.S., $384.7 million to Mexico).

Impacts from the delays on Pharr-Reynosa International crossing will experience an estimated $25.7 billion impact on GDP ($16.6 billion to the U.S., $9.1 billion to Mexico) in 2050 compared to $594.1 million on GDP in 2019, a cumulative increase of 4,225 percent (12.9 percent annually).

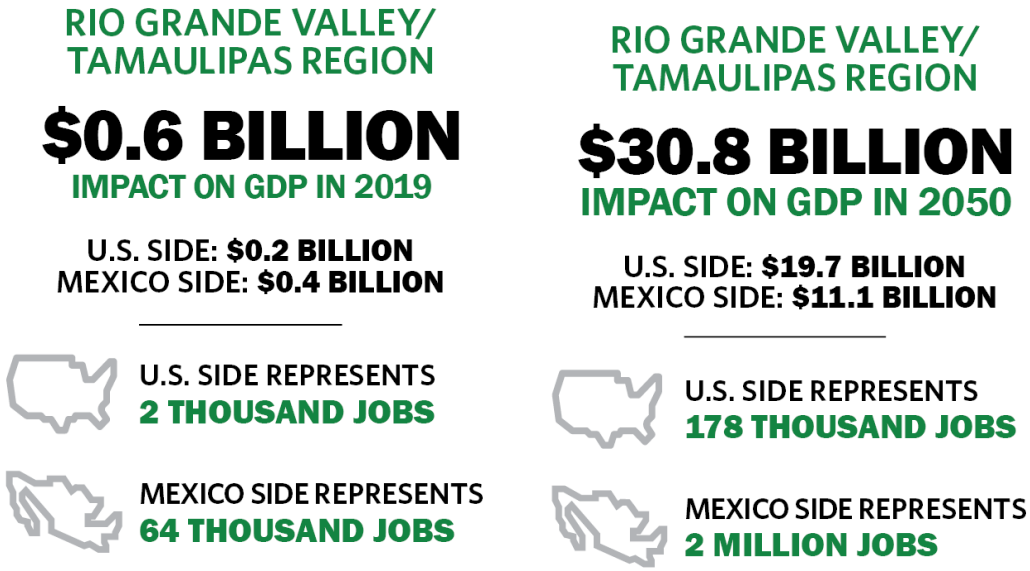
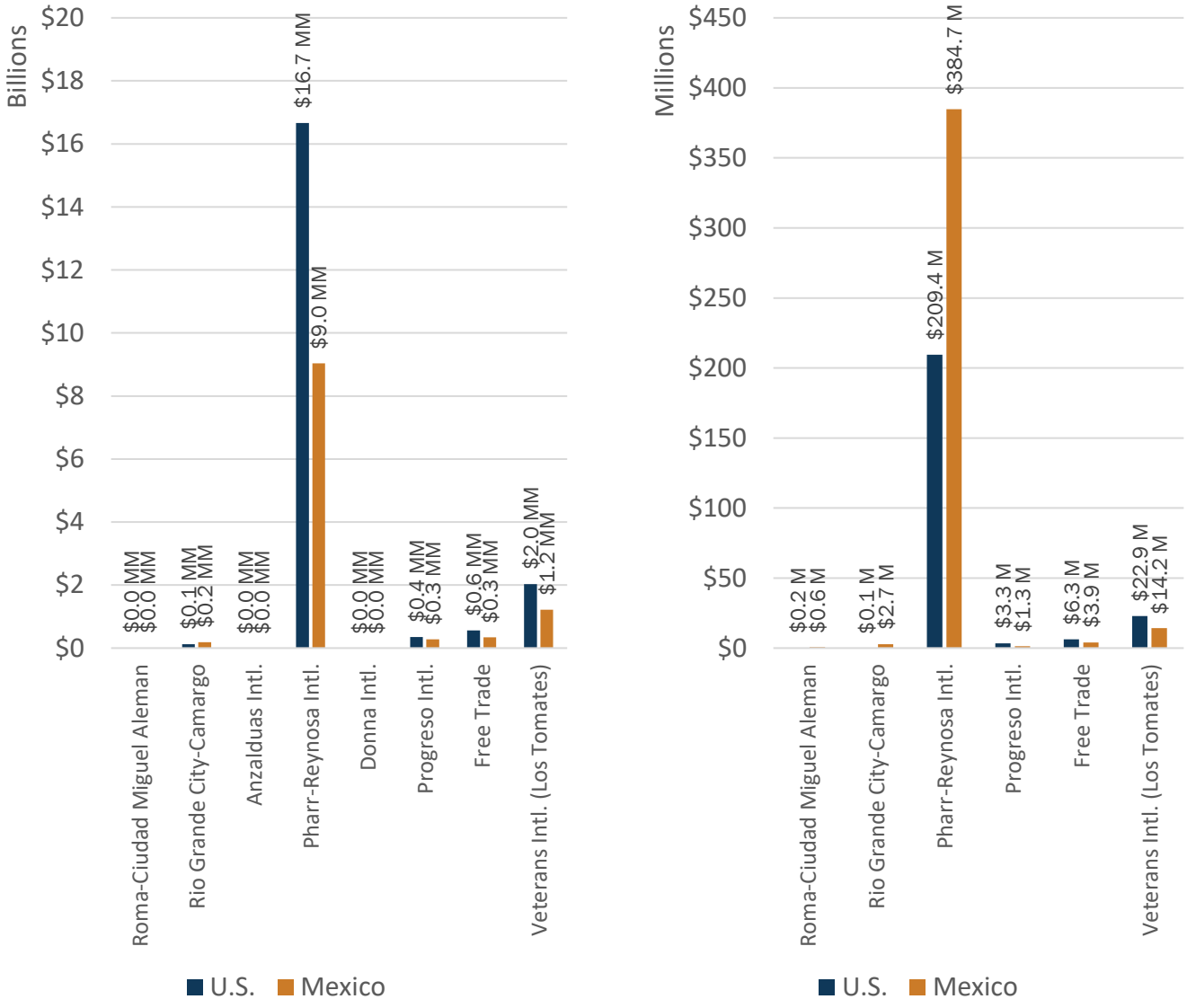


Figure 7.3-1. Impact of Delays to Movement of Goods on GDP by Border Crossing (2019 and 2050)



[60] Delay estimated as the difference between the total crossing time and the minimum crossing time (10th percentile crossing time in 2019).

[61] 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

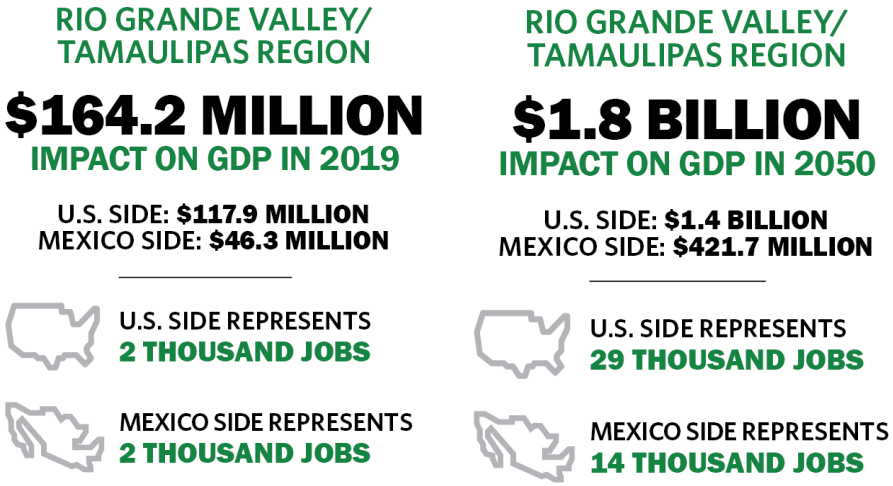
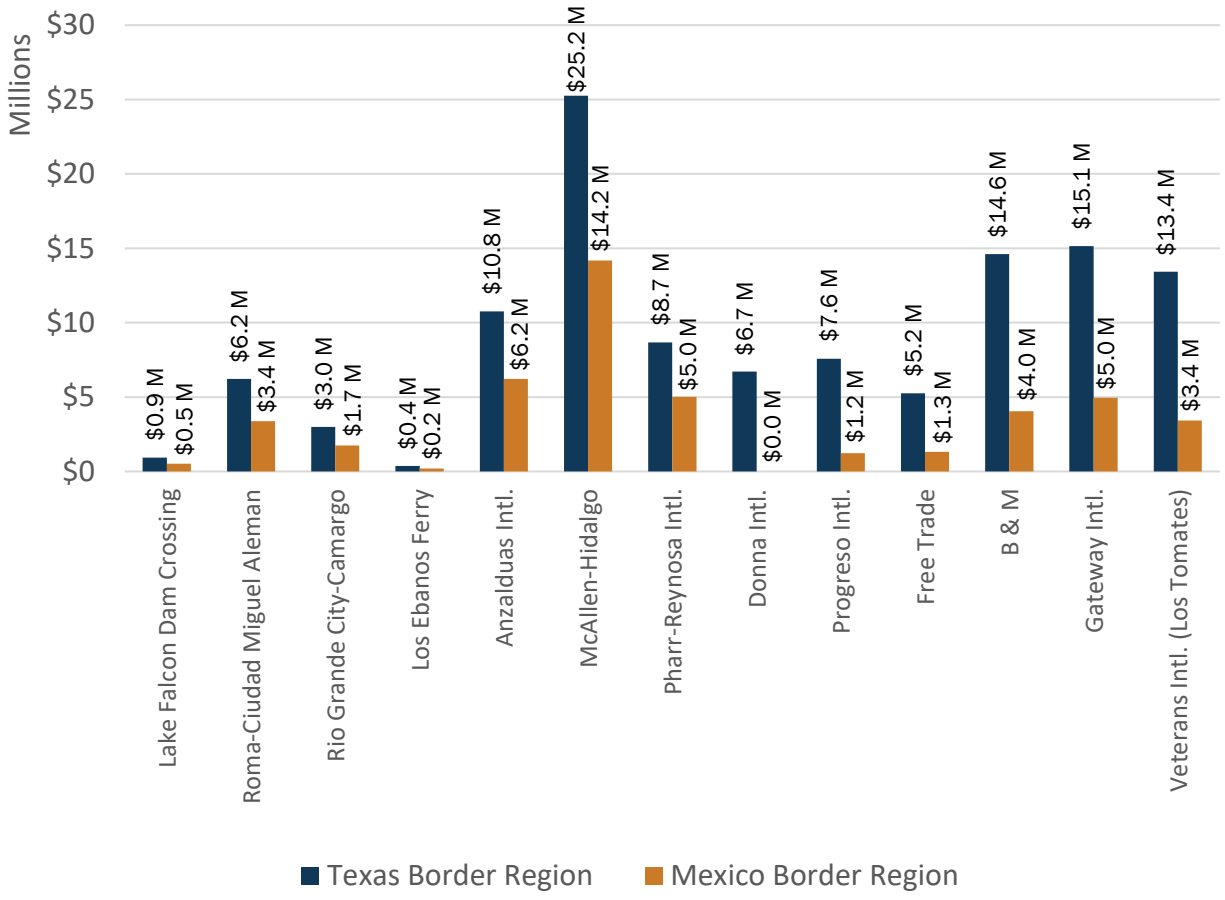
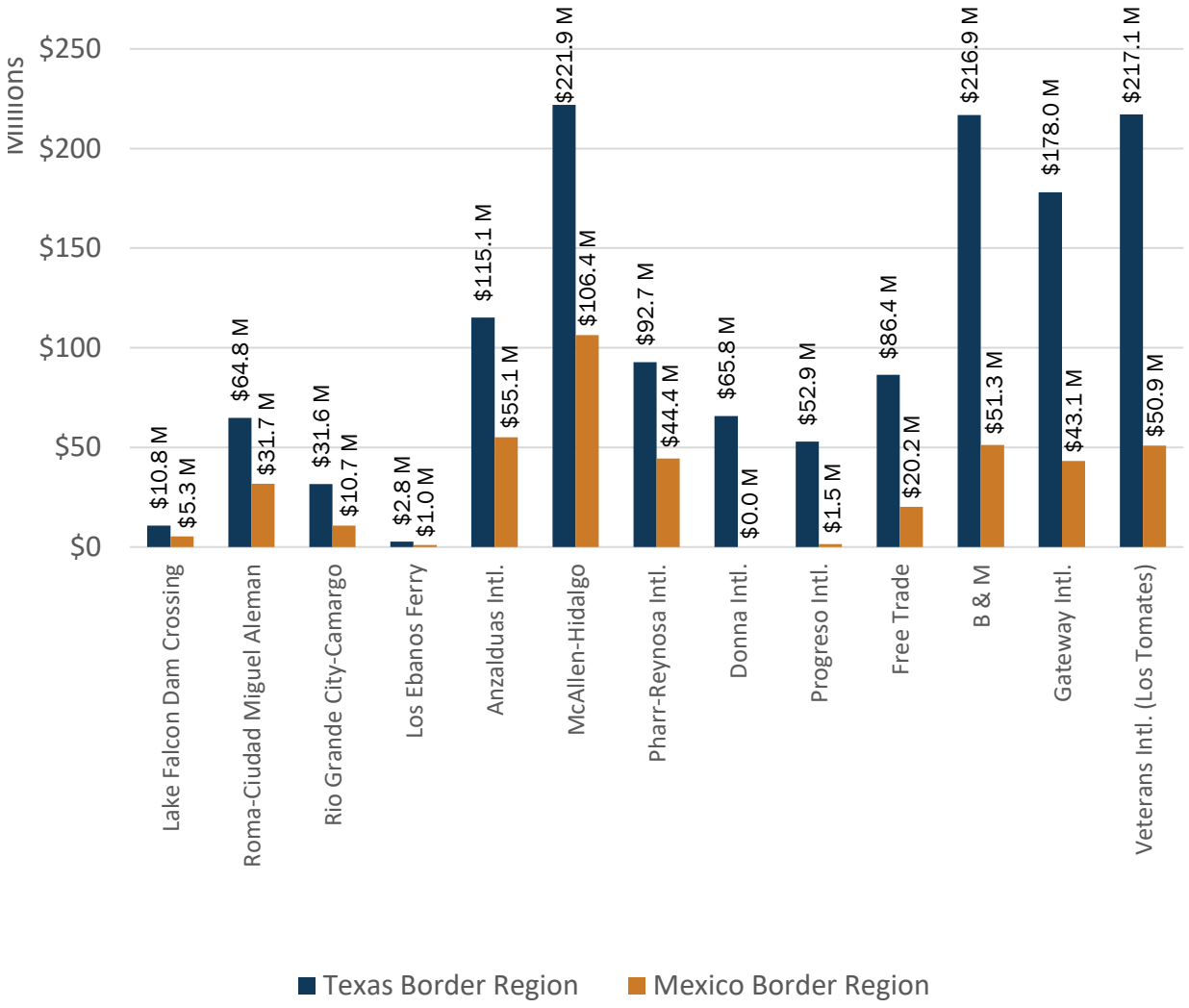


Figure 7.4-1. Impact of Delays to Movement of People on GDP by Border Crossing, 2019 and 2050





7.5 Economic Costs of Highway Congestion

7.5.1 Current and Future Economic Costs of Highway Congestion

For CMVs, north-south POV delays were highest along I-69E near Brownsville.

Congestion along I-69E near Brownsville is forecast to worsen significantly by 2050, so that these corridors are forecast to have the highest CMV delays. The delays on I-69E is forecast to account for more than 90 percent of all POV delays in 2050.

Chapter 8 Process to Identify and Evaluate Strategies to Address Current and Future Needs in the Rio Grande Valley 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 RGV Region stakeholders weighted the mobility and reliability category the highest among the BTMP Goals at 18.2 percent followed by economic competitiveness and cross-border resiliency at 17.2 percent. Cross-border resiliency was ranked higher in this region compared to the other border regions.

Table 8.2-1. Stakeholder Input on Weights for the BTMP Goals

BTMP Goals	BTAC Weights	Rio Grande Valley/Tamaulipas	Total Border Average Weight
Mobility and Reliability	26.7%	18.2%	**23.0%**
Economic Competitiveness	18.8%	17.2%	**17.8%**
Safety and Security	10.9%	11.1%	**13.0%**
Connectivity	10.9%	12.1%	**11.3%**
Cross-border Resiliency	8.9%	17.2%	**10.6%**
Asset Preservation	5.0%	6.1%	**6.0%**
Sustainable Funding	6.9%	8.1%	**7.8%**
Customer Service	7.9%	6.1%	**7.0%**
Stewardship and Sustainability	3.0%	4.0%	**3.5%**

Chapter 9 Rio Grande Valley 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.

Stakeholder meeting in Brownsville, Texas. December 2019.

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

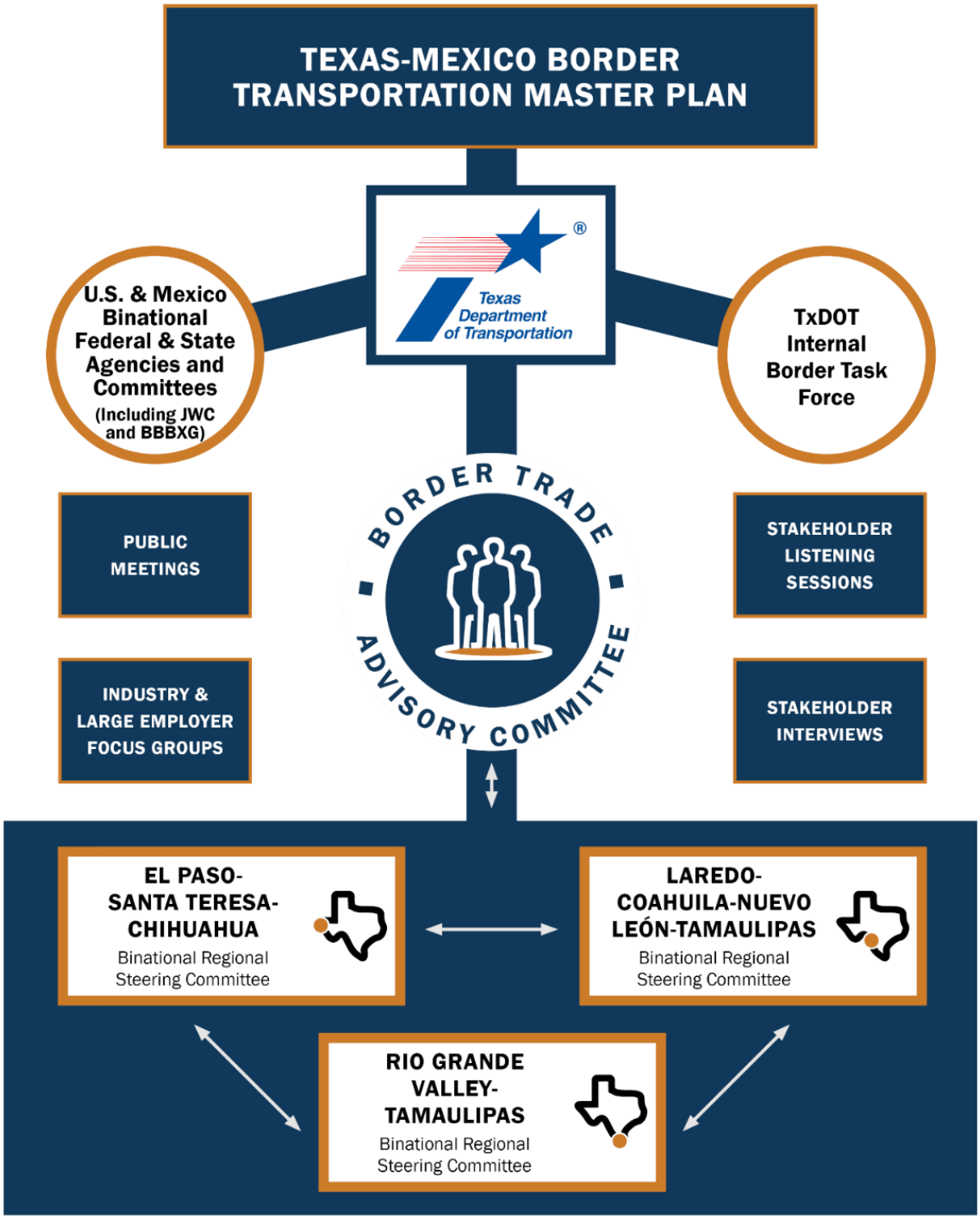
- Border Trade Advisory Committee (BTAC)
- United States–Mexico Joint Working Committee on Transportation Planning (JWC)
- Binational Bridges and Border Crossings Group (BBBXG)
- Three Binational Regional Steering Committees (BNRSCs) including one for the Rio Grande Valley/Tamaulipas Region

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



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

Rio Grande Valley/Tamaulipas 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

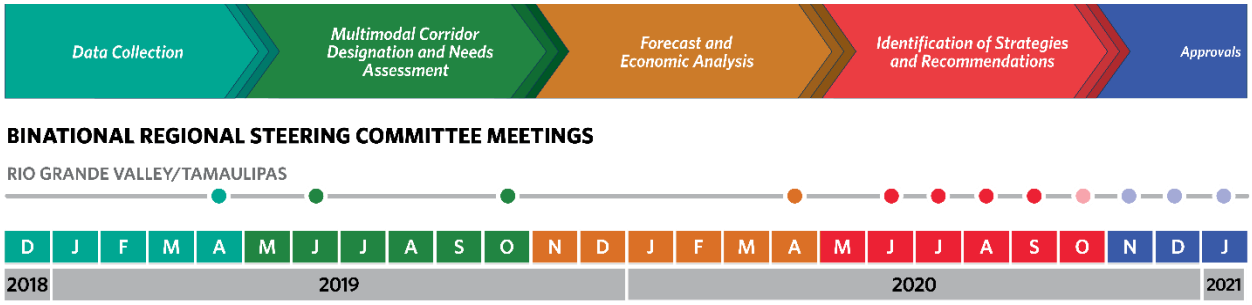
The development of the BTMP was data-driven and relied on extensive consultation, engagement, and consensus-building with binational public and private stakeholders.

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.

BNRSC meeting in Mission, Texas. June 2019.

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



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

A Rio Grande Valley/Tamaulipas Region BNRSC was established to provide input and guide the development of the BTMP. The BNRSC group for the Rio Grande Valley/Tamaulipas Region included a total of 111 members including 68 U.S. members and 43 Mexico members.

Table 9.2-1 provides a summary of dates and locations of BNRSC meetings.

Table 9.2-1. BNRSC Meeting Outreach Summary

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

The number of U.S. and Mexico stakeholders who attended a BTMP meeting in the Rio Grande Valley/Tamaulipas Region is presented in **Figure 9.4-1**.

9.2.2 Private Sector Stakeholder Workshops/Interviews

Two stakeholder workshops were held in the RGV Region to allow for opportunities to participate in addition to several virtual workshops. The workshops were held on April 2 and December 9, 2019.

Binational news conference in Reynosa, Tamaulipas. October 2019.

9.2.3 Public Meetings

Two public meetings were held in the RGV Region (Pharr and Brownsville) 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 9, 2019, December 9, 2019 and February 9, 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.

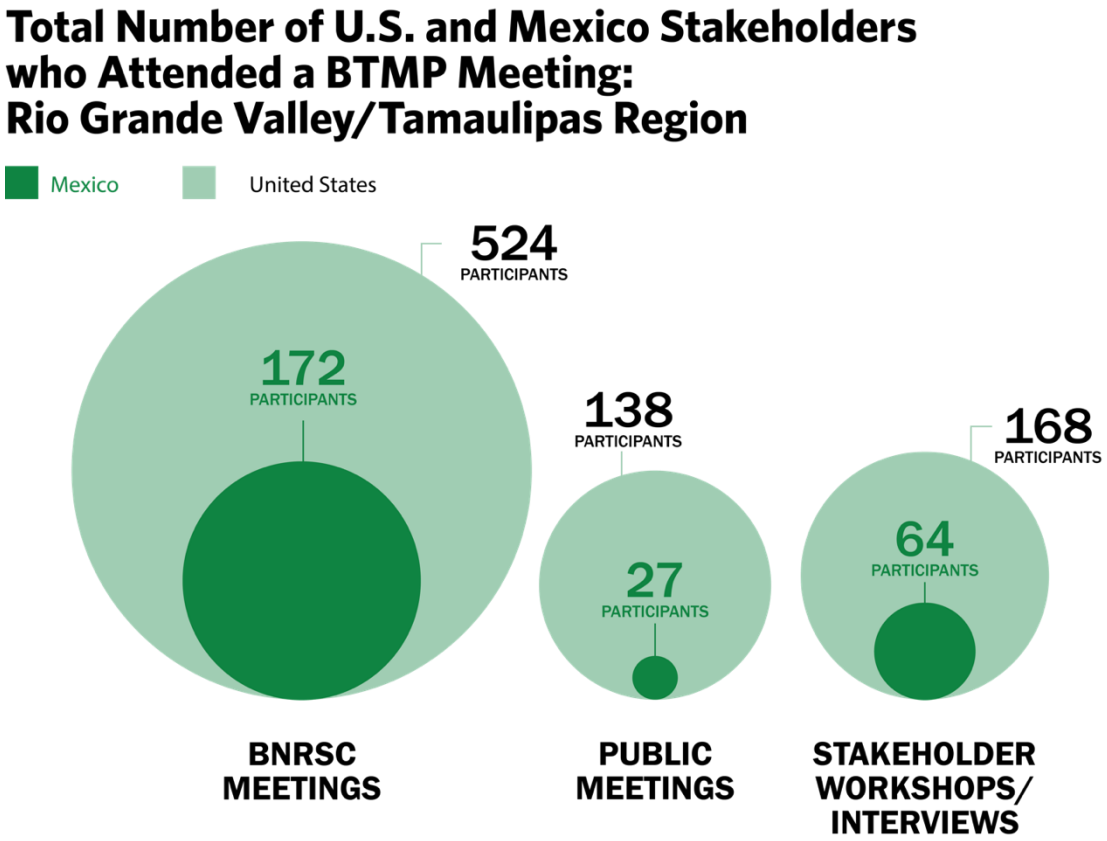
9.3 Outreach, Education, and Communication Materials

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 (@TxDOTPharr) 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 RGV Region.

Figure 9.4-1. Total Number of U.S. and Mexico Stakeholders who Attended a BTMP Meeting in the RGV Region



**Stakeholder meeting attendance through round 10.*

Chapter 10 Rio Grande Valley 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.

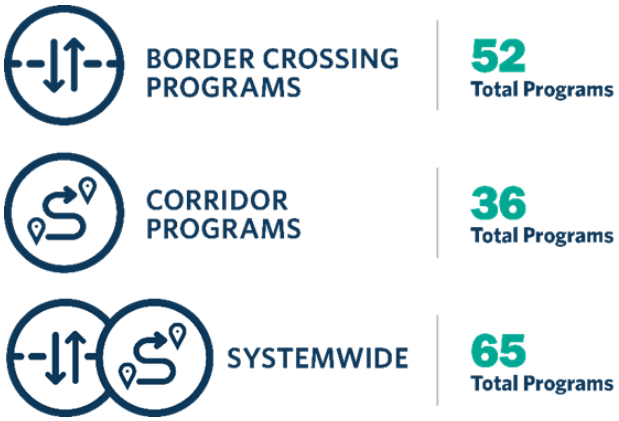
This section presents 22 policy recommendations that support the development of comprehensive strategies that align with BTMP goals and objectives. Policies are organized as they relate to border crossings and corridors in the Texas-Mexico multimodal transportation network, or as being applicable to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

Table 10.3-1. Recommended Projects for Border Crossings and Corridors

	RIO GRANDE VALLEY/ TAMAULIPAS REGION	
	PROJECTS	COST
Border Crossing	72	$2.0B
Corridor	154	$11.0B
TOTAL	226	$13.0B

This border region has a total of **226 projects** with an estimated cost of **$13.0 billion,** or **35 percent** of the total borderwide projects. This region's projects include the following:

- 208 projects on the Texas (U.S.) side of the border with an estimated cost of **$11.7 billion**.
- 18 projects on the Mexico side of the border with an estimated cost of **$1.3 billion**.

On the Texas (U.S.) side, these projects include large capital projects such as improvements to I-69, US 281, and the Progreso International Bridge. The Mexico side includes projects such as the Garcia-Monterrey Airport Railway and the Matehuala-Saltillo Highway.

Of the 226 projects included in this region:

- 72 are border crossing-related projects with an estimated cost of **$2.0 billion**.
- 154 are corridor-related projects with an estimated cost of **$11.0 billion**.

Because the Rio Grande Valley/Tamaulipas 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 Rio Grande Valley/Tamaulipas Region has the highest number of projects in the connectivity category followed by mobility and reliability projects as the second highest category for projects which account for 34 and 35 percent of the project costs respectively.

The number of projects in the Rio Grande Valley/Tamaulipas Region include:

- **208 Texas (U.S.) projects**
- **18 Mexico projects**

Table 10.3-2. Total Number of Projects and Costs by Category

	RIO GRANDE VALLEY/ TAMAULIPAS REGION	
BTMP CATEGORY	PROJECTS	COST
Asset Preservation	**15**	**$0.2B**
Connectivity	**94**	**$4.4B**
Mobility and Reliability	**69**	**$4.6B**
Safety	**17**	**$0.3B**
Multimodal	**31**	**$3.5B**
TOTAL	**226**	**$13.0B**

System Modes

The TxDOT- On System Roadways category had the highest number of project and costs in the region. The Rio Grande Valley/Tamaulipas 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 **Rio Grande Valley/Tamaulipas Region** has:

- TxDOT on-system roadways (93 projects at $6.1 billion)
- Pipeline (1 project at $2.2 billion)
- Border Crossing- General (39 projects at $1.0 billion)

Projects by Impact

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

- **95 High Impact projects** resulting in **$4.6 billion or 35 percent** of the region's project cost.
- **124 Medium Impact projects** resulting in **$7.9 billion or 61 percent** of the region's project cost.
- **7 Low Impact projects** resulting in **$0.5 billion or 4 percent** of the region's project cost.

Table 10.3-3. Rio Grande Valley/Tamaulipas Region Projects by Impact and Country

RIO GRANDE VALLEY/TAMAULIPAS

Total Projects by Impact and Country

	TEXAS (U.S.)		MEXICO		TOTAL	
Impact	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST
High Impact	77	$3.3B	18	$1.3B	95	$4.6B
Medium Impact	124	$7.9B	–	–	124	$7.9B
Low Impact	7	$0.5B	–	–	7	$0.5B
TOTAL	208	$11.7B	18	$1.3B	226	$13.0B

Project Funding Status

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

- The Rio Grande Valley/Tamaulipas Region has the largest amount of fully funded projects, with $2.9 billion over 90 projects.

Table 10.3-4. Projects by Funding Status

	RIO GRANDE VALLEY/ TAMAULIPAS REGION	
FUNDING STATUS	PROJECTS	COST
Fully Funded	90	$2.9B
Partially Funded	10	$0.5B
Unfunded	126	$9.6B
TOTAL	226	$13.0B

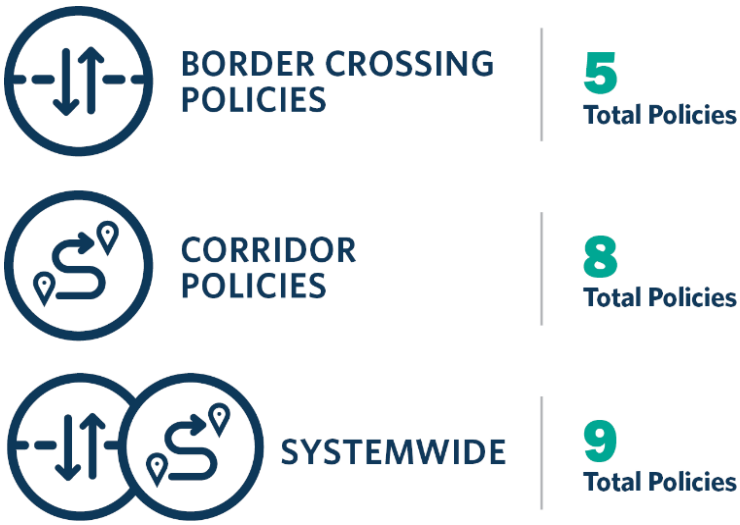
Chapter 11 Rio Grande Valley Region Implementation Plan

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 RGV 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[62] 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

[62] 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 implementation plan for policies is discussed in more detail in Chapter 11 of the Final Report.

11.2 Implementation Plan for Programs

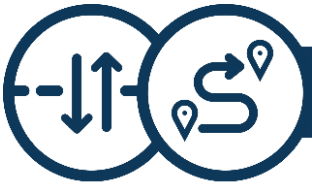
Programs are a collection of implementable initiatives to achieve a policy direction and consist of actions that are repeatable across multiple platforms or locations. Programs are organized by those applicable to border crossings, by those applicable to corridors, or as being applicable to both (systemwide). 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.

Figure 11.2-1. Total Programs by Implementation Timeframe



Total Programs by Timeframe

	SHORT TERM	MEDIUM TERM	LONG TERM	TOTAL
Border Crossing	18	30	4	52
Corridor	14	20	2	36
Systemwide	23	42	0	65
TOTAL	55	92	6	153

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

Programs by Timeframe and BTMP Goal											
	MOBILITY AND RELIABILITY	ECONOMIC COMPETITIVENESS	SAFETY	CONNECTIVITY	RESILIENCY	FUNDING	ASSET PRESERVATION	CUSTOMER SERVICE	DATA COLLECTION, SHARING, HARMONIZATION, AND ANALYSIS	STEWARDSHIP	TOTAL
Short	20	5	1	3	4	6	4	7	1	4	55
Medium	34	14	5	12	4	4	4	1	2	12	92
Long	3	0	3	0	0	0	0	0	0	0	6
TOTAL	57	19	9	15	8	10	8	8	3	16	153

11.3 Implementation Plan for Projects

BORDER CROSSING PROJECTS

The Rio Grande Valley/Tamaulipas Region has 72 border crossing projects, with an unfunded need of $1.4 billion. There are ten unfunded short-term, high impact projects ($0.2 billion).

Table 11.3-1 summarizes the number of projects by funding status and implementation timeframe for the Rio Grande Valley/Tamaulipas Region. The unfunded border crossing project costs in the region is $1.4 billion. On the Texas (U.S.) side, there are 37 (of 60) unfunded projects in the region with an estimated cost of $1.0 billion.

On the Texas (U.S.) side, four high impact, short-term projects are unfunded ($66 million).

BORDER CROSSING PROJECTS
RIO GRANDE VALLEY/TAMAULIPAS REGION

TEXAS (U.S.)		MEXICO	
$1.5B	Total Project Cost	$0.5B	Total Project Cost
$1.0B	Unfunded	$0.4B	Unfunded

A summary of Texas (U.S.), projects by impact tier and timeframe includes:

- Short term (16 projects): Seven high impact and nine medium impact projects.
- Medium term (16 projects): 14 high impact and two medium impact projects.
- Long term (28 projects): 12 high impact and 16 medium impact projects.

In Mexico, all twelve projects were identified as high impact, with eight projects in the short term, three projects in the medium term and one in the long term.

Nine of twelve Mexico projects are unfunded with an estimated cost of $390 million. There are eight high impact, short term projects in Mexico, two of which are funded.

Table 11.3-1. Border Crossing Projects in the Rio Grande Valley/Tamaulipas Region by Implementation Timeframe, Funding Status, and Country

RIO GRANDE VALLEY/TAMAULIPAS REGION

Border Crossing Projects by Implementation Timeframe, Funding Status and Country

	FULLY FUNDED				PARTIALLY FUNDED				UNFUNDED				TOTAL			
	TEXAS (U.S.)		MEXICO		TEXAS (U.S.)		MEXICO		TEXAS (U.S.)		MEXICO		TEXAS (U.S.)		MEXICO	
TIMEFRAME	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST
Short	8	$0.2B	2	<$0.1B	1	<$0.1B	–	–	7	$0.1B	6	$0.1B	16	$0.3B	8	$0.1B
Medium	5	<$0.1B	–	–	–	–	1	<$0.1B	11	$0.4B	2	$0.3B	16	$0.5B	3	$0.3B
Long	8	<$0.1B	–	–	1	$0.2B	–	–	19	$0.5B	1	<$0.1B	28	$0.8B	1	<$0.1B
TOTAL	21	$0.2B	2	<$0.1B	2	$0.2B	1	<$0.1B	37	$1.0B	9	$0.4B	60	$1.5B	12	$0.5B

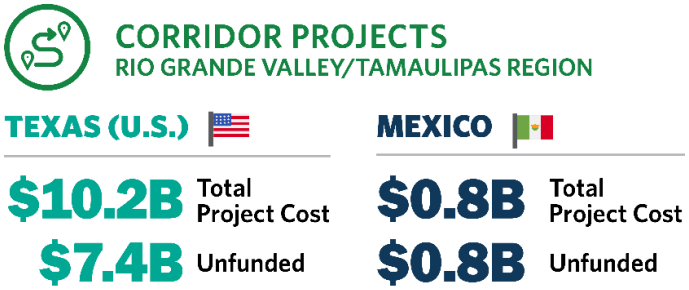
CORRIDOR PROJECTS

On the Texas (U.S.) side of the RGV Region, $2.4 billion of medium impact, short-term projects are unfunded against the total project cost of $10.2 billion. In Mexico, six unfunded high impact projects are also in the short term ($0.8 billion).

Table 11.3-2 shows $8.2 billion of corridor projects in the region are unfunded.

On the Texas (U.S.) side of the region, there are 74 unfunded projects with an estimated cost of $7.4 billion. Of that, $2.4 billion of unfunded projects are medium impact, short-term projects.

Also in the short term, there are two low impact, unfunded projects with an estimated cost of $21 million, as well as 44 medium impact, short-term projects with an estimated cost of $3.7 billion. In the medium- and long-term timeframes, projects are high and medium impact, with the exception of four low impact projects ($0.4 billion).



On the Texas (U.S.) side, no short-term, high impact projects remain unfunded. The summary of impact tier by timeframe includes:

- Short term (70 projects): 23 high impact, 44 medium impact, and three low impact projects.
- Medium term (33 projects): 11 high impact, 21 medium impact, and one low impact projects.
- Long term (45 projects): 10 high impact, 32 medium impact, and three low impact projects.

All Mexico projects are unfunded (six in total). There are three high impact, short-term projects with an estimated cost of $0.8 billion.

At this time, two of the three long-term projects are unfunded and do not have cost estimates. In the long term, all three projects are high impact.

Table 11.3-2. Corridor Projects in the Rio Grande Valley/Tamaulipas Region by Implementation Timeframe, Funding Status and Country

RIO GRANDE VALLEY/TAMAULIPAS REGION

Corridor Projects by Implementation Timeframe, Funding Status and Country

	FULLY FUNDED				PARTIALLY FUNDED				UNFUNDED				TOTAL			
	TEXAS (U.S.)		MEXICO		TEXAS (U.S.)		MEXICO		TEXAS (U.S.)		MEXICO		TEXAS (U.S.)		MEXICO	
TIMEFRAME	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST	PROJECTS	COST
Short	54	$2.4B	–	–	1	<$0.1B	–	–	15	$2.4B	3	$0.8B	70	$4.8B	3	$0.8B
Medium	12	$0.2B	–	–	6	$0.2B	–	–	15	$0.7B	–	–	33	$1.2B	–	–
Long	1	<$0.1B	–	–	–	–	–	–	44	$4.3B	3	<$0.1B	45	$4.3B	3	<$0.1B
TOTAL	67	$2.6B	0	$0.0 B	7	$0.2B	0	$0.0B	74	$7.4B	6	$0.8B	148	$10.2B	6	$0.8B

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 Rio Grande Valley/Tamaulipas 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 72 border crossing projects within the RGV region with a total cost of $2.0 billion. **Table 11.3-3** shows the historical and future total crossing times.

Table 11.3-3. Northbound Border Crossing Times by Year, Scenario and Crossing Type – RGV Region

Crossing Type	2019	2050			
	Crossing Times (hours)	Crossing Times		Total Change	% Change
		"Do Nothing" Scenario (hours)	Scenario 1 (hours)		
POV	4,685,658	67,702,262	42,895,618	-24,806,644	-37
CMV	789,942	32,446,466	12,836,764	-19,609,702	-60
Total	**5,475,600**	**100,148,728**	**55,732,381**	**-44,416,346**	**-44**

11.3.4 Future Border Crossing Forecasts for Scenario 2

Table 11.3-4 presents future border crossing times in the RGV Region under Scenario 2. Future border crossing times in the RGV Region are reduced by 25 percent under Scenario 2 compared to Scenario 1.

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

Crossing Type	2019	2050			
	Crossing Times (hours)	Crossing Times		Total Change	% Change
		"Do Nothing" Scenario (hours)	Scenario 2 (hours)		
POV	4,685,658	67,702,262	29,920,505	-37,781,757	-56
CMV	789,942	32,446,466	12,059,323	-20,387,143	-63
Total	**5,475,600**	**100,148,728**	**41,979,827**	**-58,168,900**	**-58**

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 Rio Grande Valley 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

- Veterans International Bridge at Los Tomates (assuming two additional northbound lanes in the future);
- B&M Bridge (assuming one additional northbound lane in the future);
- Anzalduas International Bridge (assuming four additional lanes in the future, two of which are northbound).

Commercial Vehicles

- Pharr – Reynosa International Bridge on the Rise (assuming four additional lanes in the future, two of which are northbound);
- New commercial lane at Anzalduas International Bridge. There are no current commercial crossings at Anzalduas. Assuming equivalent effect as adding lanes at Pharr – Reynosa International Bridge on the Rise (assuming one additional northbound lane in the future);
- New commercial lanes at McAllen – Hidalgo International Bridge. There are no current commercial crossings at Hidalgo. Assuming equivalent effect as adding lanes at Pharr – Reynosa International Bridge on the Rise (assuming four additional lanes in the future, two of which are northbound);
- New commercial lanes at Donna International Bridge. There are no current commercial crossings at Donna. Assuming equivalent effect as adding lanes at Progreso International Bridge (assuming three additional lanes in the future, two of which are northbound).

Efficiency Improvements in Processing Time

Based on information provided by stakeholders, the following Border Crossings will implement efficiency improvements in processing time at existing border crossings.

POV

- Gateway International 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 Rio Grande Valley/Tamaulipas Region:

Passenger Vehicles

- Flor de Mayo. Assuming equivalent effect as adding lanes at Gateway International Bridge (assuming six additional lanes in the future, three of which is northbound)
- Mission Madero International Bridge. Assuming equivalent effect as adding lanes at McAllen – Hidalgo International Bridge (assuming four additional northbound lanes in the future, two of which is northbound)
- Crossing at Sullivan City, TX coupled with Gustavo Diaz Ordaz, TM. Assuming equivalent effect as adding lanes at Rio Grande City – Camargo Bridge (assuming two additional lanes in the future, one of which is northbound)

Commercial Vehicles

- New border crossing at Sullivan City, TX coupled with Gustavo Diaz Ordaz, TM. Assuming equivalent effect as adding lanes at Rio Grande City – Camargo Bridge (assuming two additional lanes in the future, one 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)

Region	U.S.			Mexico		
	Movement of		Total	Movement of		Total
	Goods	People		Goods	People	
Rio Grande Valley/Tamaulipas Region	72,486	6,936	79,422	740,836	3,910	744,745

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

Region	U.S.			Mexico		
	Movement of		Total	Movement of		Total
	Goods	People		Goods	People	
Rio Grande Valley/Tamaulipas Region	$4.6	$0.2	$4.8	$2.6	$0.0	$2.6

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

Region	U.S.			Mexico		
	Movement of		Total	Movement of		Total
	Goods	People		Goods	People	
Rio Grande Valley/Tamaulipas Region	76,783	11,166	87,948	784,841	6,182	791,023

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

Region	U.S.			Mexico		
	Movement of		Total	Movement of		Total
	Goods	People		Goods	People	
Rio Grande Valley/Tamaulipas Region	$4.9	$0.3	$5.2	$2.8	$0.1	$2.9

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 Rio Grande Valley/Tamaulipas 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 Rio Grande Valley/Tamaulipas 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.[63] Regional stakeholders in both countries now have an opportunity to exercise that collaborative spirit with renewed energy and purpose.

[63] 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.

For more information:
Caroline A. Mays, AICP
Director, Freight, International Trade, and Connectivity Section
Texas Department of Transportation
(512) 936-0904
caroline.mays@txdot.gov

Texas Department of Transportation