



Texas House Bill 4422 Study

Executive Summary



November 2024



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“If implemented, the recommendations from this study will indeed result in more efficient, safe, and secure border trade.”

Texas A&M Transportation Institute

Texas House Bill 4422 Overview

Texas House Bill 4422 (HB 4422) directs the Texas Department of Transportation (TxDOT) to conduct this study on public safety, border security, and transportation infrastructure from Texas–Mexico border crossings onto the state highway system to ensure safe, efficient, and streamlined Commercial Motor Vehicle (CMV) connectivity that amplifies Operation Lone Star (OLS) efforts.

Key Requirements of HB 4422

Study Purposes



- Strengthen border security initiatives that support OLS
- Support law enforcement response efforts near border crossings



Maximize:

- Oversight of border crossings
- Inspection of CMVs using border crossings
- Use of public safety resources



- Maximize safety of border communities and traveling public
- Improve transportation efficiency and streamline CMV connectivity
- Reduce congestion while mitigating safety concerns

Study Elements



- Conduct study in consultation with 7 stakeholder groups (“Working Group”)
- Select multiple CMV border crossings
- Analyze current and possible future transportation routes from CMV crossings onto state highways



- Assess current technologies to promote border security and identify upgrades or alternatives
- Identify funding strategies and state money needed to improve:
 - CMV processing and flow at crossings
 - Transportation efficiency and CMV connectivity

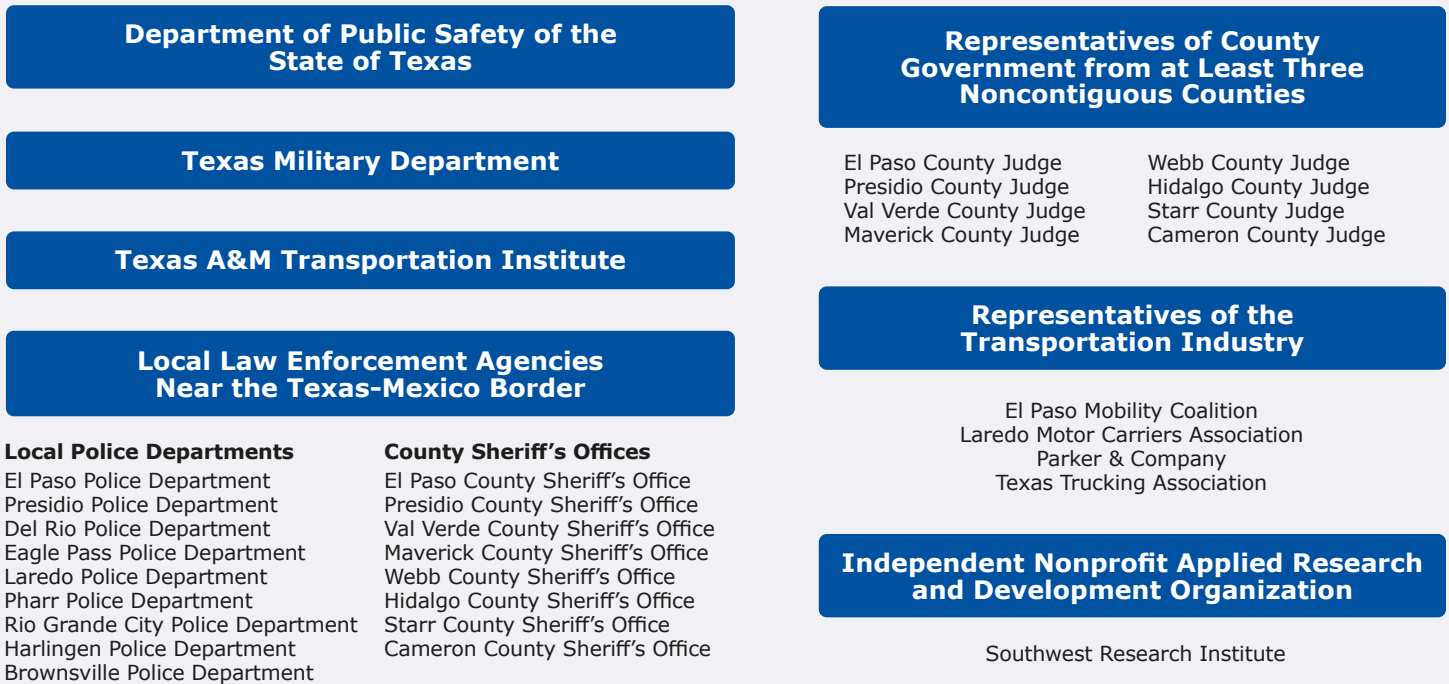
The HB 4422 study resulted in policy, program, and project recommendations that identified **\$29.4 billion** in funding needs. The final report and this executive summary are organized into three topics:

- 1 Transportation Efficiency**
- 2 Safety and Security**
- 3 Border Technology**

Development of the HB 4422 Study

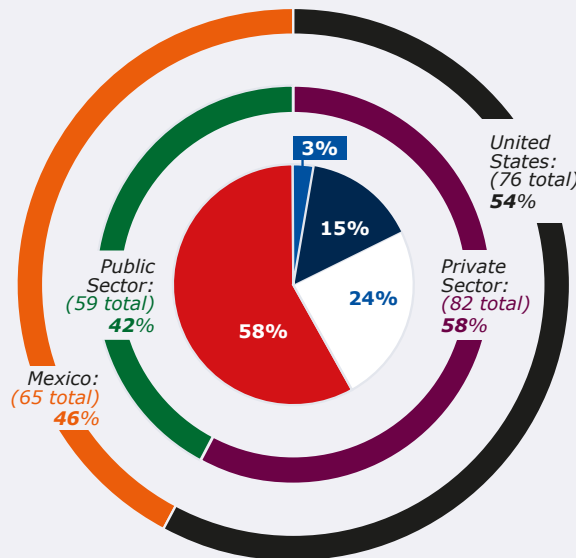
This study was done in consultation with a Working Group comprised of seven key stakeholder groups specified in HB 4422, shown in the graphic below. These stakeholders met bimonthly to ensure that the study’s recommendations address needs in transportation infrastructure, technology, safety, and security to enhance border security, commercial vehicle safety, and connectivity aligned with Operation Lone Star and state security initiatives.

House Bill 4422 – Working Group



Stakeholders Engaged during the HB 4422 Study

During the study process, 141 agencies and organizations were engaged, represented by 355 unique stakeholders.



- Transportation: 82**
- Government: 34**
- Law Enforcement: 21**
- Research/Academia/Non-profit: 4**

Development of the HB 4422 Study

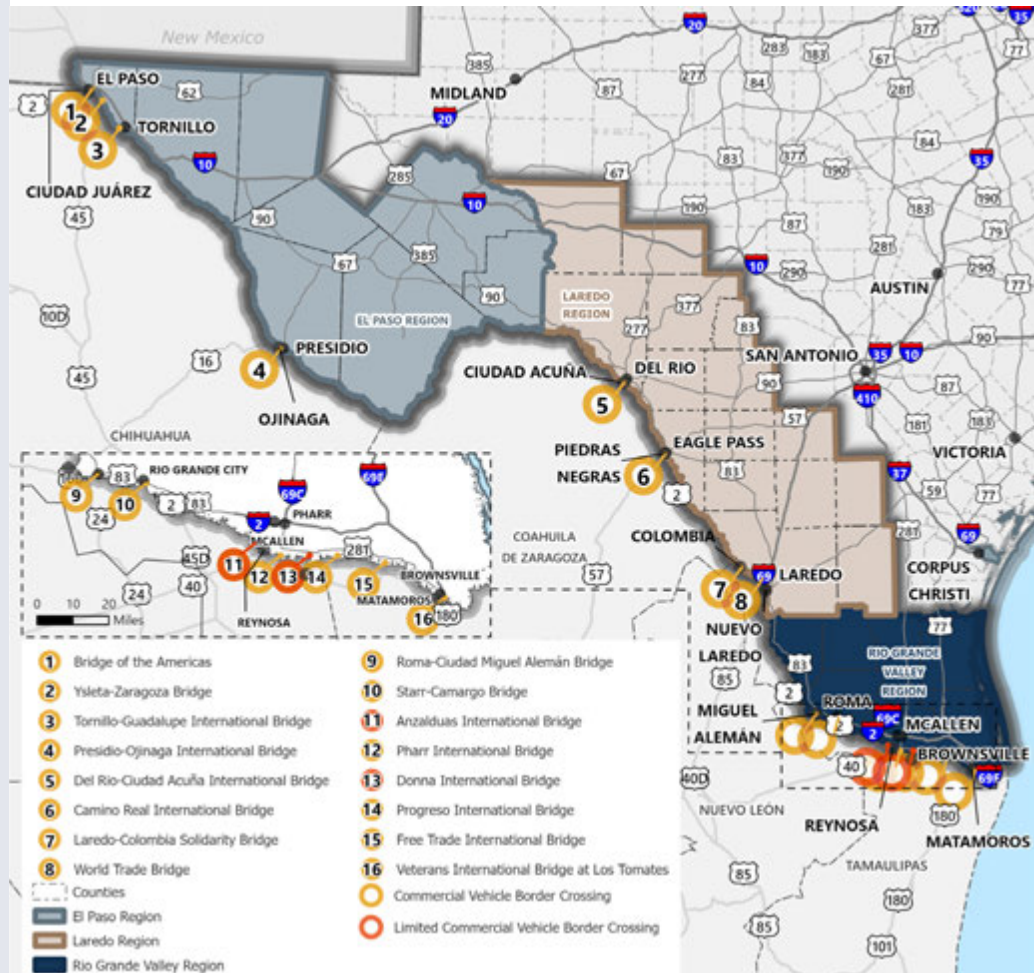
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The study area for HB 4422 was comprised of the area within 60 miles of the Texas-Mexico border and all 16 CMV border crossings in Texas. This area includes 31 counties, a vast network of over 27,000 miles of state, local, and federal transportation infrastructure, and state-owned CMV inspection facilities.



CMV Crossings at the Texas-Mexico Border



Trade, CMVs, and the Texas-Mexico Border

The Texas-Mexico border extends 1,254 miles, with 28 roadway border crossings for pedestrians and personally owned vehicles (POVs). 14 of 28 crossings handle loaded CMVs and 2 more handle empty CMVs. The World Trade Bridge at Laredo carries more than 40% of the 14,000 CMVs that cross northbound every day.

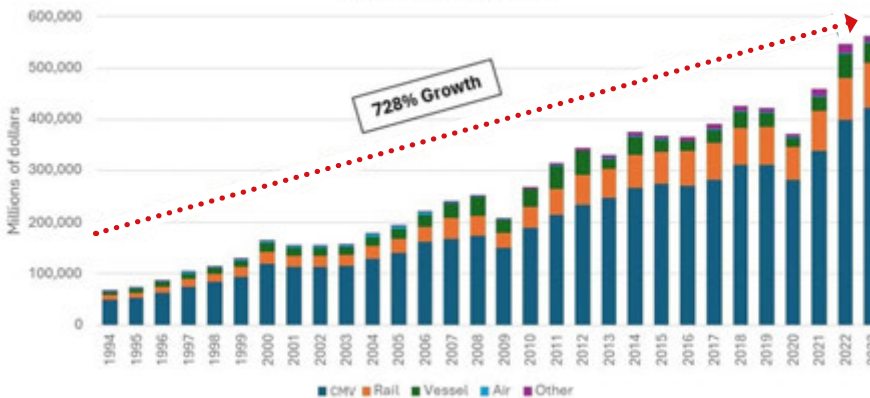
Texas-Mexico cross-border trade grew 728% in the nearly 3 decades since the North American Free Trade Agreement (NAFTA), reaching \$562 billion in 2023 with Texas processing 70% of United States trade with Mexico – now the nation’s largest trading partner. Border region employment grew 114% and added 560,000 jobs since NAFTA.

14,000 CMVs
94,000 POVs
44,000 Pedestrians

...cross the border northbound every day

Texas-Mexico trade is **over half a trillion dollars**

Texas-Mexico Cross-Border Trade Since NAFTA



Trade crossing the Texas-Mexico border by CMVs and rail brought \$67.3 billion to Texas Gross Domestic Product (GDP) in 2019 and is projected to more than quadruple to almost \$300 billion in GDP by 2050. Mexico is widely expected to be the chief beneficiary of the nearshoring trend, which locates production closer to consumption (in Mexico instead of Asia) and has implications for further growth in Texas-Mexico trade.

Texas GDP from **border trade** is expected to more than **quadruple by 2050.**

Source: TxDOT 2024 International Trade Corridor Plan

Average Daily Northbound Truck Crossings (2023)

World Trade Bridge	5,960
Laredo-Colombia Solidarity Bridge	2,085
Pharr International Bridge	1,942
Ysleta-Zaragoza Bridge	1,755
Veterans International Bridge	637
Camino Real International Bridge	577
Free Trade International Bridge	254
Bridge of the Americas	246
Del Rio-Ciudad Acuña International Bridge	215
Progreso International Bridge	127
Starr-Camargo Bridge	119
Roma-Ciudad Miguel Alemán Bridge	116
Presidio-Ojinaga International Bridge	31
Tornillo-Guadalupe International Bridge	20

Key Transportation Efficiency Findings & Needs

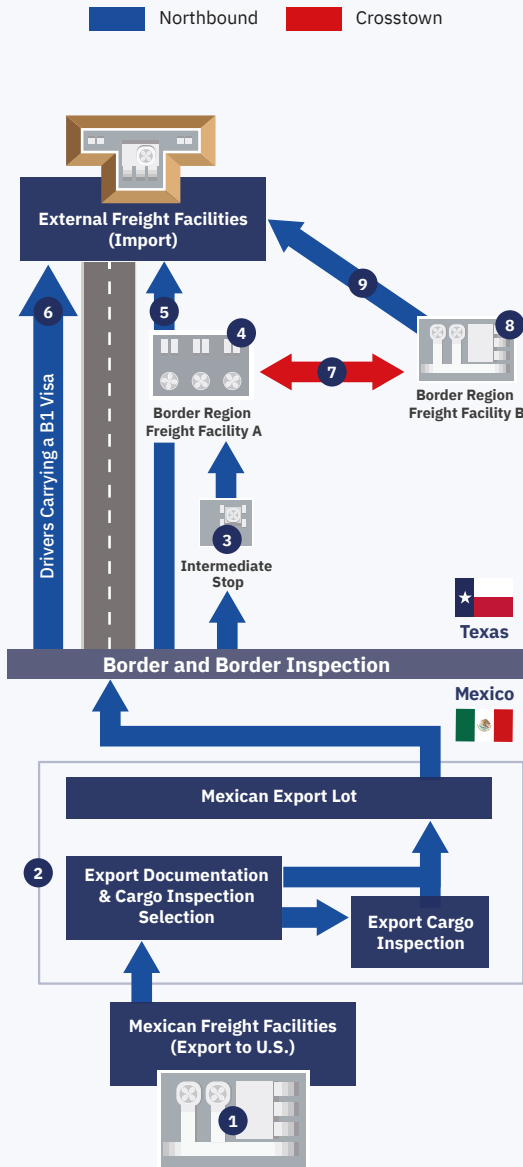
Transportation efficiency at the Texas-Mexico border is essential to the strong and growing economy of Texas, to law enforcement patrolling Texas roadways, and to the general public traveling alongside CMVs. Investment in state and local assets is needed to respond to continued growth of CMV traffic at the Texas-Mexico border.

- 1** The presence of many owners and operators of infrastructure impedes the ability of border logistics to function as an efficient and secure binational system.
- 2** CMV drivers have limited flexibility to adjust when unexpected conditions arise due to customs paperwork and route restrictions.
- 3** Congestion and a lack of alternate routes can hamper emergency response and CMV travel efficiency.
- 4** New routes and new CMV crossings are proposed throughout the border region, but funding availability slows delivery.
- 5** Local roadways play a significant role in connecting border crossings to freight facilities. Investment at every level of government is needed.
- 6** County and municipal budgets are inadequate to meet the growing demands of national gateways.
- 7** Managing expected growth from nearshoring is a looming concern for stakeholders, affecting efficient movement of goods, inspecting vehicles, and accommodating them safely.
- 8** Routing for Oversize / Overweight (OS/OW) or Hazardous Material (HAZMAT) shipment in the border region varies in connectivity, and permit coordination should be improved to facilitate enforcement.

Below: Six Axle Fuel Unit in the Rio Grande Valley



Stages of CMV Border Crossing - Northbound



1. CMVs carrying exports to the U.S. arrive at Mexican border freight facilities, where the driver may be changed and the trailer transloaded before proceeding to the Mexican export lot. A minority using drivers with B-1 visas skip this stop and move directly to the export lot.
2. Export cargo documentation is verified at the export lot, and a minority of CMVs undergo cargo inspection before continuing across the border to the U.S.
3. Following U.S. border inspection, CMVs may make an intermediate stop between the border and U.S. logistics facilities, such as when drivers park to await their delivery time.
4. Most northbound cargo stops at a U.S. freight facility before continuing north, where U.S.-based tractors and drivers take over.
5. Cargo may or may not be transloaded to a different trailer at the freight facility, before proceeding north to an external facility handling U.S. imports.
6. A minority of traffic moves without stopping, using Mexican drivers with B-1 visas.
7. Cross-town traffic occurs between U.S. facilities for logistical purposes. Obtaining the right trailer and balancing trailer pools are among the reasons. Tractors moving “bobtail” without a trailer are signs of cross-town activity.
8. Freight facilities handling cross-town traffic also can supply U.S. tractors, trailers, and drivers.
9. Cargo then proceeds north to an external facility handling U.S. imports.



Key Border Crossing Logistics Characteristics



Most CMVs crossing the border use locally based Mexican drivers crossing 2-3 times daily.



Delays in either direction affect the return trip.

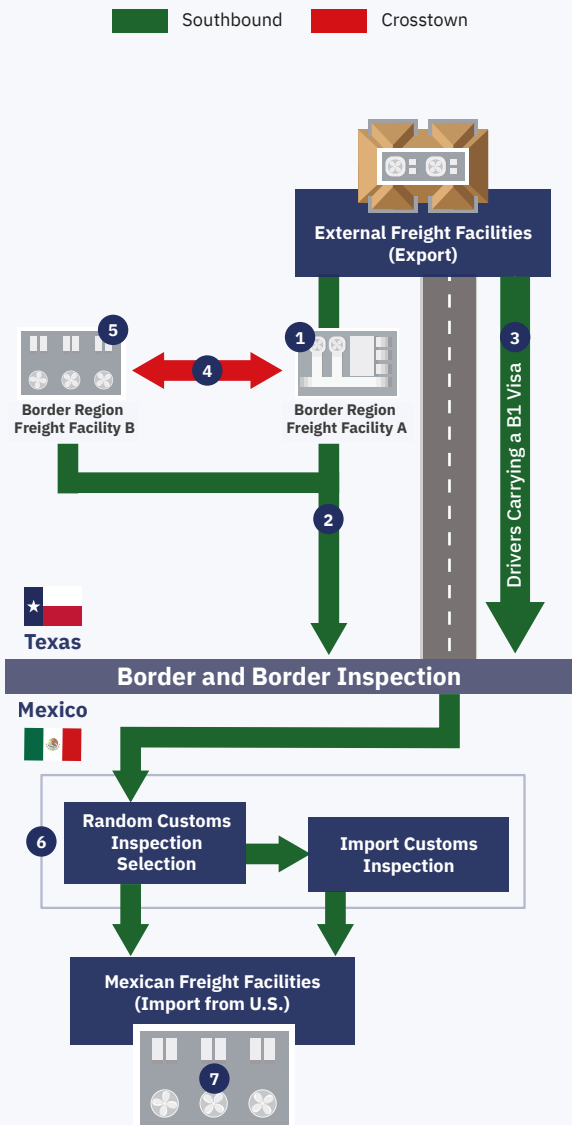


Same tractors and drivers pass through crossing stations repeatedly, but with different trailers.



Trailers are less likely than tractors to have monitoring technology.

Stages of CMV Border Crossing - Southbound



1. Tractors and drivers bearing U.S. exports hand off to locally based tractors and drivers at border freight facilities. Cargo may or may not be transloaded to a different trailer.
 2. Cargo proceeds to the border.
 3. Non-stop movement may occur with drivers under B-1 visas.
 4. Cross-town traffic occurs between U.S. facilities for logistical purposes. Obtaining the right trailer and balancing trailer pools are among the reasons. Tractors moving "bobtail" without a trailer are signs of cross-town activity.
-
5. Freight facilities handling cross-town traffic also can supply U.S. tractors, trailers and drivers, and CMVs can continue southbound to the border from there.
 6. Mexican Customs perform inspections of randomly selected CMVs before they move onward.
 7. Most CMVs carrying imports from the U.S. arrive at Mexican border freight facilities, where the driver may be changed and the trailer transloaded before proceeding into the Mexican interior. A minority using drivers with B-1 visas skip this stop and continue directly southbound.

Three Factors for CMV Crossing Demand at the Texas-Mexico Border



Logistics Facilities:

Factories, warehouses, and carrier terminals create CMV traffic. U.S. and Mexican facilities are tied together in an interactive, interdependent binational supply chain logistics system.



Routing:

Shippers and forwarders select CMV crossings and routes – not carriers. Decision factors include cost, productivity ("truck turns"), bridge ownership, inspection, enforcement, and conditions in Mexico.



Nearshoring:

Mexico is benefiting from post-pandemic business strategies to reduce supply chain risk by moving manufacturing closer to U.S. markets, accelerating cross-border traffic growth and aided by the United States-Mexico-Canada Agreement (USMCA).

Transportation Efficiency Policy Recommendations

Fifteen policy recommendations were identified to support transportation efficiency. Policy action systematically improves operations by increasing uniformity and adopting best practices. More information on each policy recommendation is included in Chapter 3 and Appendix E of the HB 4422 Report.

Policy Recommendation	State of Texas	Localities	TxDOT	CBP	TxDPS	US Dept. of Homeland Security
Address Disproportionate Burdens: Pursue at every level sources for obligated funds that reduce the adverse burdens border communities bear.	●	●	●	●	●	●
Strengthen Binational Coalitions Border-wide: Strengthen or form coalitions to pursue funding with a unified voice. Inclusion of law enforcement supports safety and security.		●				
Asset Management: Establish a border-wide asset management program to keep an inventory of existing State assets and their condition.			●			
BCC-TxDPS Coordination: Establish coordination between Border Communication Centers (BCCs) and TxDPS to ensure efficient and effective enforcement and response strategies.		●	●		●	
Facility Access: Ensure that industrial clusters are provided with multiple access routes to prevent bottlenecks and ensure smooth traffic flow.		●				
HAZMAT Signage: Incorporate HAZMAT considerations to existing signage programs to develop clear and effective signage, guide drivers, and improve safety on designated routes.		●	●			
Effective Crossing Capacity: Explore methods to increase effective crossing capacity, such as by adding staff, extending operational hours, and/or providing off-peak access to businesses.		●	●	●	●	
Right-of-Way Acquisition: Acquire new rights-of-way (ROW) to facilitate the creation of new connections and routes.		●	●			
Directional Connectivity: Continue to develop new interstates and connecting routes that balance east-west and north-south connectivity to improve the overall transportation network and enhance CMV movement.		●	●			
BCC Communications: Ensure that BCCs communicate with each other in real time and maintain open lines of communication with law enforcement agencies, cross-border commercial operators, and the shipping community.		●	●		●	
Routing Flexibility: Enable flexibility in border crossing assignments by shippers and customs brokers, allowing drivers to choose alternative crossings in the event of closures or significant congestion.		●				●
Monitor HAZMAT Trends: Monitor trends to identify and enforce designated HAZMAT corridors.			●			
Study Toll Policy: Study effect of tolling policies at individual crossings on network performance and supply chain impacts.		●	●			
HAZMAT Route Redundancy: Provide redundant routing options in areas prone to congestion and where the presence of HAZMAT is prevalent to enhance safety and reliability.		●	●			
CMVs & General Mobility: Recognize that initiatives improving passenger and pedestrian mobility can provide benefits for CMV operations.		●				

Transportation Efficiency Program Recommendations

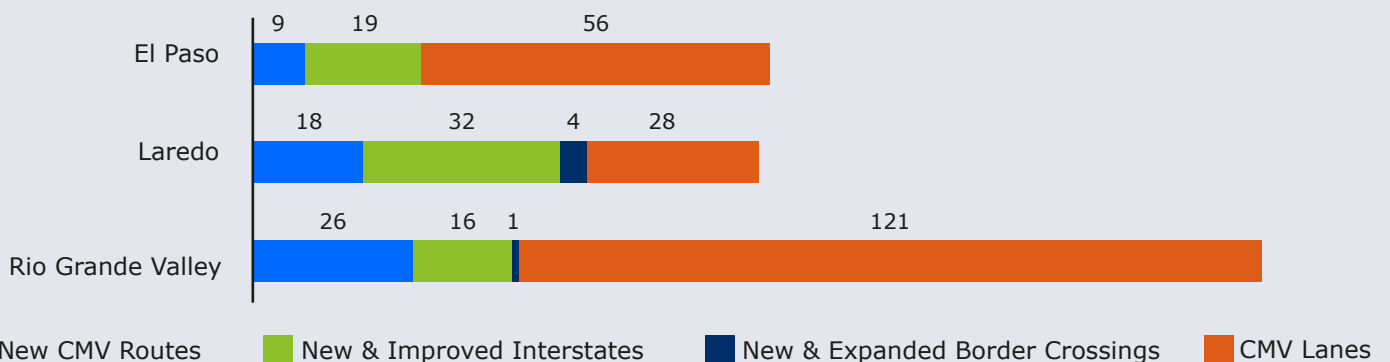
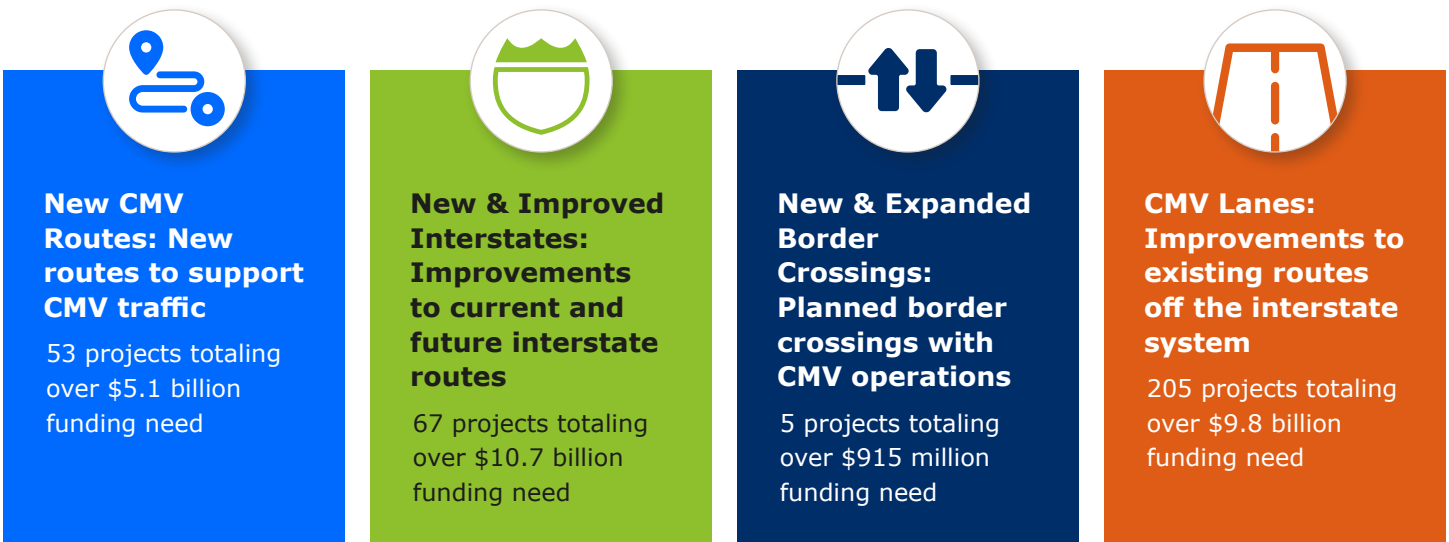
Eight program recommendations were identified to support transportation efficiency. New and enhanced programs focus effort and funding on tangible improvements to the transportation system.

Program Recommendation	Localities	TxDOT	TxDPS	TxDMV	Funding Need (\$mil.)
New CMV Routes: Develop new routes for CMVs crossing the border that avoid densely populated areas, improve east-west connectivity, and reduce congestion and risk to residents.	●	●			\$5,070.2
New & Improved Interstates: Prioritize the development and completion of key interstate projects such as I-10, I-35, I-27, I-2, and I-69 to improve regional connectivity and support economic growth.		●			\$10,743.6
CMV Lanes: Design and construct CMV-friendly lanes that feature wider shoulders, provide separation from passenger activity, and facilitate cross-town CMV traffic.	●	●			\$9,832.1
Border-Wide BCCs: Expand border communication centers to cover the entirety of the border and include dedicated monitoring of CMV traffic for better oversight and control.	●	●	●		\$191.0
New & Expanded CMV Crossings: Expand or establish new CMV border crossings that facilitate the separation of commercial and passenger traffic, promoting smoother cross-border transport and encouraging/reflecting commercial development in new areas on both sides of the border.	●	●			\$915.2
HAZMAT Routing: Develop a study to identify needs and expand authorized routing for HAZMAT and OS/OW cargo to ensure safe and efficient transport of these types of goods.		●			\$1.5
Permits Clearinghouse: Create a centralized electronic clearing house for OS/OW border permits accessible to law enforcement.	●			●	\$0.6
Study Permit Harmonization: Develop a planning study to harmonize the permitting systems for OS/OW cargo across different issuing agencies at the border to streamline processes and reduce delays.	●			●	\$0.5
Total Funding Need					\$26,754.7

Transportation Efficiency Project Recommendations

Project recommendations are well-defined infrastructure improvements with cost estimates. The HB 4422 study identified **330 transportation projects** that support CMV operations near the Texas-Mexico border. Chapter 3 and Appendix F of the HB 4422 Report show the locations of projects and list the elements included in each.

Transportation projects were identified from TxDOT, metropolitan planning organization, and county government plans. Project lists were vetted by stakeholders during in-person workshops in each county with a CMV border crossing.



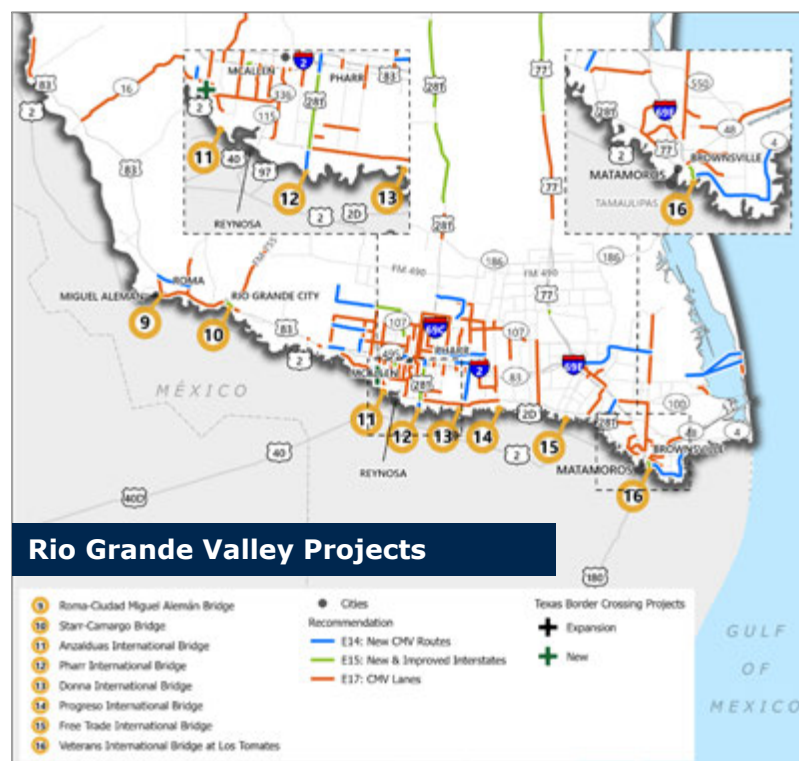
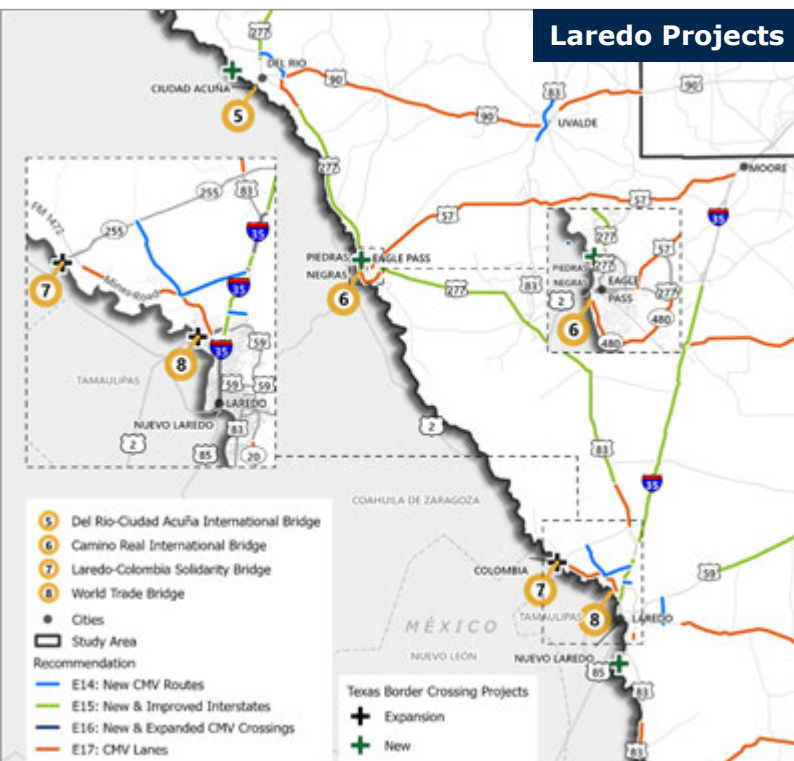
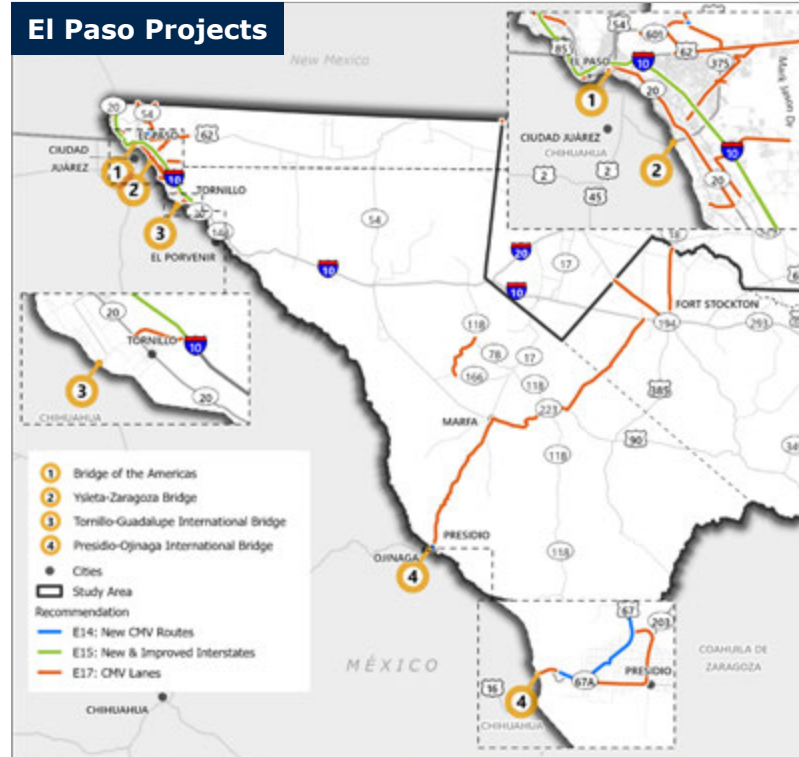
While the state and localities invest heavily in transportation projects,

\$26B+
OF FUNDING

is needed to advance these projects. Existing funding streams are inadequate for timely response to current and future needs at the Texas-Mexico border.

Transportation Efficiency Project Recommendations

- **New CMV Routes**
 Develop new routes for CMVs crossing the border that avoid densely populated areas, improve east-west connectivity, and reduce congestion and risk to residents.
- **New & Improved Interstates**
 Prioritize the development and completion of key interstate projects such as I-10, I-35, I-27, I-2, and I-69 to improve regional connectivity and support economic growth.
- **New & Expanded CMV Crossings**
 Expand or establish new CMV border crossings that facilitate the separation of commercial and passenger traffic, promoting smoother cross-border transport and encouraging/reflecting commercial development in new areas on both sides of the border.
- **CMV Lanes**
 Design and construct CMV-friendly lanes that feature wider shoulders, provide separation from passenger activity, and facilitate cross-town CMV traffic.



Key Safety and Security Findings and Needs

Law enforcement at the local, state, and federal levels work in tandem to enhance safety and security at the Texas-Mexico border. The HB 4422 study aims to amplify Operation Lone Star by identifying needs and recommendations to bolster state and local resources.

Criminal activity involving commercial motor vehicles (CMVs) in Texas includes human smuggling, drug trafficking, and currency smuggling. However, during interviews with local law enforcement, discussions in Working Group meetings, and visits to CMV border crossing sites, stakeholders highlighted key concerns such as staffing shortages, facility maintenance issues, and the need for improved technology deployment.

322 Individuals were arrested for CMV-related crimes between 2018-2023



Human Smuggling and **Controlled Substance Smuggling** were the **two most common crimes** reported by TxDPS.

TOP 5 VIOLATIONS



- 1 Braking Systems
- 2 Lighting Systems
- 3 Miscellaneous Vehicle Violations
- 4 Tires, Wheels, Rims, and Hubs
- 5 Windshield Violations

CMV CROSSINGS WITH THE MOST VIOLATIONS



- 1 Pharr International Bridge
- 2 Ysleta-Zaragoza Bridge
- 3 Bridge of the Americas
- 4 Free Trade International Bridge
- 5 Camino Real International Bridge

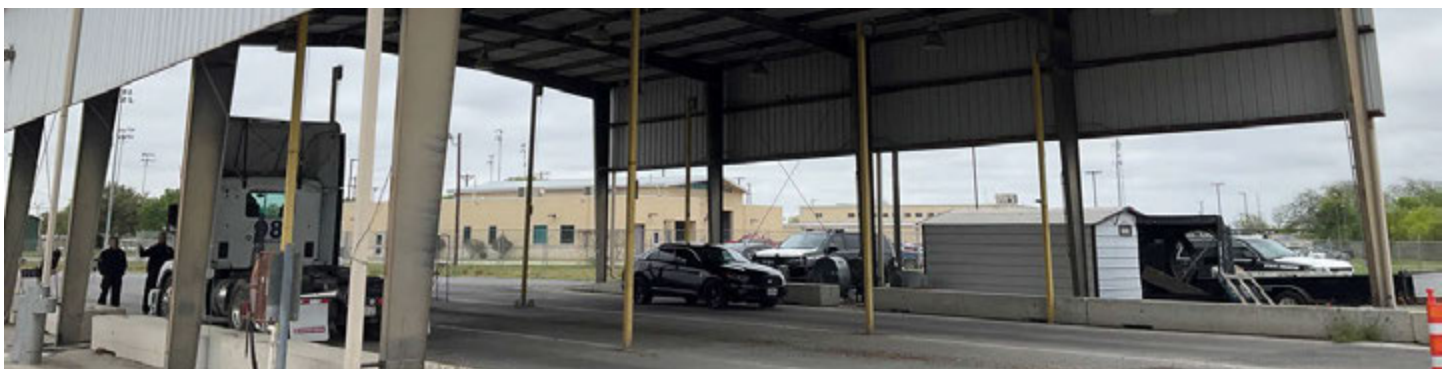
Source: TxDPS

Safety and Security Policy Recommendations

Eight policy recommendations were identified to support CMV safety and security near the Texas-Mexico border. Policy action systematically improves operations by increasing uniformity and adopting best practices. More information on each policy recommendation is included in Chapter 4 and Appendix E of the HB 4422 Report.

Policy Recommendation	Localities	TxDOT	TxDPS	State of Texas
Complete CMV Driver Training Program: Complete the development and implementation of the CMV driver training program for cross border drivers, by TxDOT and TxDPS.		●	●	
Enhance Law Enforcement Training: Provide additional training to 900 Commercial Vehicle Enforcement (CVE) officers relating to interdiction and communication regarding trending criminal activity.			●	
Incorporate Emergency Protocols: Incorporate protocols within BCC operations to ensure preparedness and effective response to any emergencies that may arise on CMV routes.	●	●	●	
Adopt a Standard for TxDPS Facility Design: Adopt a preferred model design for buildings, layouts, and traffic design at TxDPS facilities.		●	●	
Allocate OLS Funds to Local Agencies: Explore making Operation Lone Star funds available to local law enforcement for CMV enforcement.				●
Share CMV Related Data Across Agencies: Establish a policy within the border region to share CMV criminal activity among law enforcement and enforcement partners at the border aimed at strengthening consistency in uniform crime reporting and data reporting.	●		●	
Require Crime Reporting: Require state and local law enforcement to report all CMV crime-related data to a consolidated source.				●
Redirect CMV Citation Revenues: Redirect a portion of revenue from CMV citations to a trust fund dedicated to maintenance and implementation of safety and security measures and technology.				●

TxDPS Inspection Facility in Eagle Pass, TX. (Source: HNTB)



Safety and Security Program Recommendations

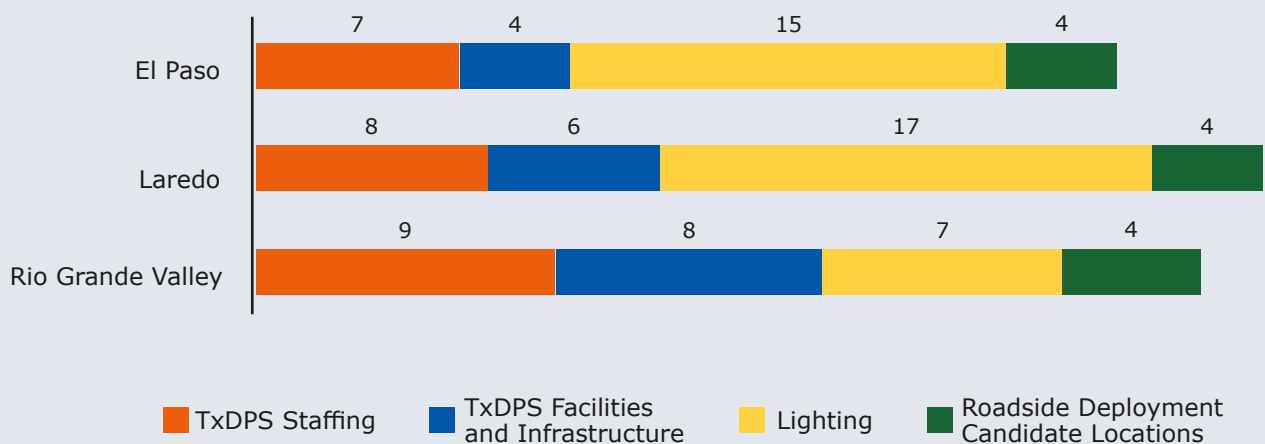
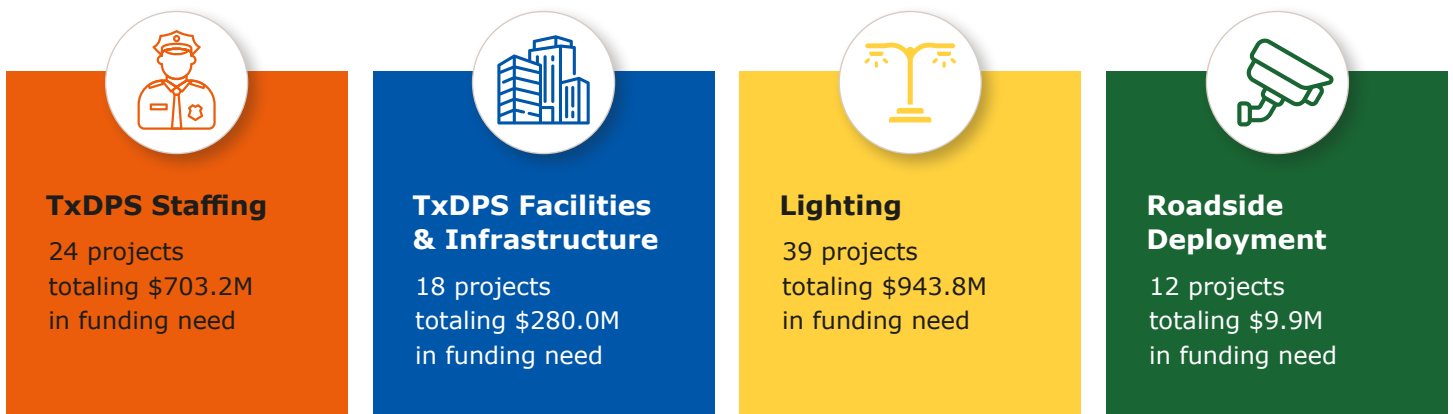
Twelve program recommendations were identified to support CMV safety and security. New and enhanced programs focus effort and funding on specific needs identified by law enforcement and county officials.

Program Recommendation	Localities	TxDOT	TxDPS	Funding Need (\$mil.)
Enhance Highway Lighting: Provide safety lighting roadway improvements in areas where crashes occurred in unlit conditions and to enhance safety for officers performing inspection on roadways.	●	●		\$943.8
Increase TxDPS Staffing within Border Zone: Increase TxDPS presence through the addition of troopers and supervisors to screen for drugs, smuggling, and criminal activity.			●	\$196.1
Increase TxDPS Staffing at Border Crossings: Add additional TxDPS inspectors, troopers, sergeants, and administrative staff at border crossing facilities where they are understaffed.			●	\$159.9
Establish Inland TxDPS Facilities: Increase TxDPS presence through the addition of inland facilities within the 60-mile border zone based on crime hotspots to screen CMVs for security-related issues.			●	\$120.0
Staff Inland TxDPS Facilities: Add TxDPS inspectors, troopers, sergeants, and administrative staff at newly constructed inland facilities to screen for safety and security-related issues.			●	\$168.2
Deploy Virtual Weigh-in-Motion (VWIM) and Pull Over Areas: Deploy VWIMs throughout border region and construct pull-over areas for CMV inspectors to perform roadside inspections on heavily utilized CMV routes.		●	●	\$5.4
Create a Local Agency Grant Program: Create a grant proposal opportunity for local agencies with an Memorandum of Understanding with TxDPS to fund a Commercial Vehicle Enforcement unit.			●	\$15.0
Radiological Nuclear Detection: Provide staffing and equipment for radiological nuclear detection.			●	\$4.8
Update TxDPS Infrastructure: Update TxDPS facilities to include permanent, fixed buildings with inspection pits at locations where they have a presence.		●	●	\$80.0
Establish Static Scale Sites: Set up static sites for mobile patrols along CMV routes to enhance the efficiency and effectiveness of commercial vehicle inspections.		●	●	\$4.5
Construct Fixed TxDPS Facilities: Add TxDPS facilities at CMV border crossings where they do not exist.		●	●	\$160.0
Expand Staffing at Future Border Crossing Facilities: Add additional TxDPS inspectors, troopers, sergeants, and administrative staff at border crossing facilities at sites where TxDPS does not currently have a presence.			●	\$174.2
Total Funding Need				\$2,031.8

Safety and Security Project Recommendations

Safety and Security project recommendations are well-defined investments with locations and cost estimates. The HB 4422 study identified **93 safety and security projects** that support public safety and border security near the Texas-Mexico border. Chapter 4 and Appendix F of the HB 4422 Report show the locations of projects and list the elements included in each.

Safety and security projects were identified by stakeholders including TxDPS, local law enforcement, and county officials. Project lists were then vetted by the Working Group.



All Safety & Security projects are unfunded, and

\$2B+
OF FUNDING

is needed to advance these facility, roadway, and staffing projects to promote public safety and border security.

Safety & Security Project Recommendations

TxDPS Staffing

Increase staffing at current TxDPS facilities to ensure that TxDPS is fully staffed at current border crossing facilities. Also, expand staffing at future TxDPS border crossing and inland facilities to ensure that these facilities are fully staffed upon construction.

TxDPS Facilities & Infrastructure

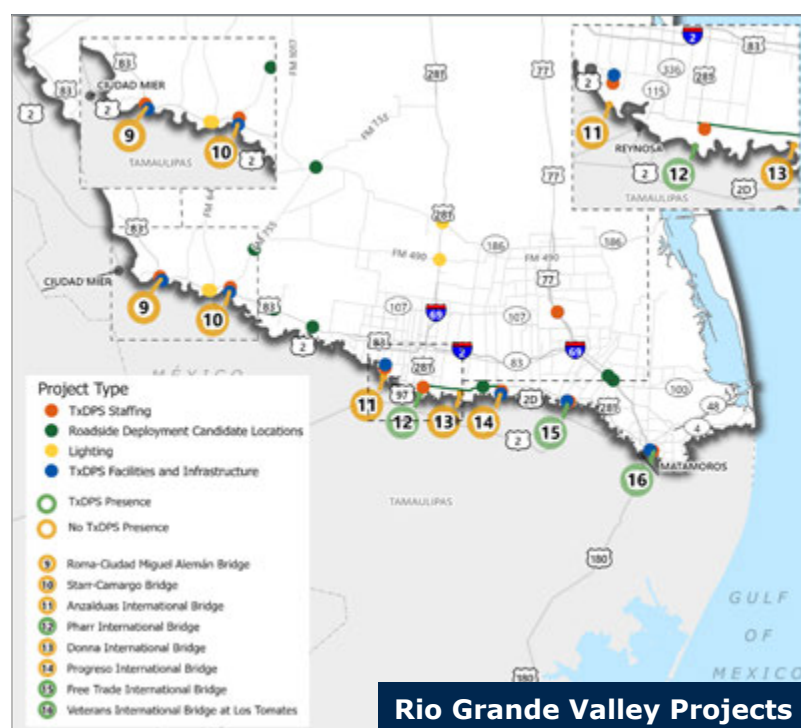
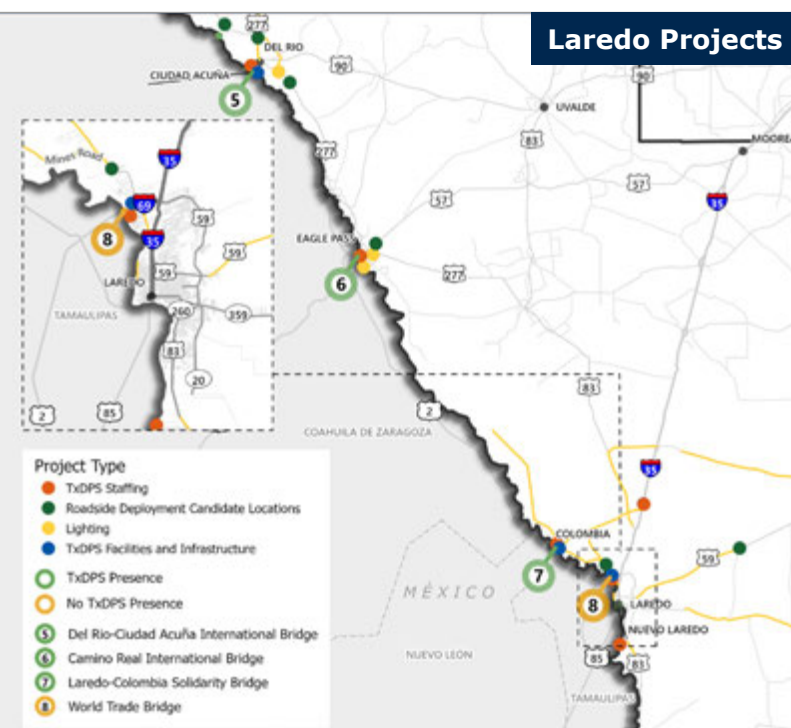
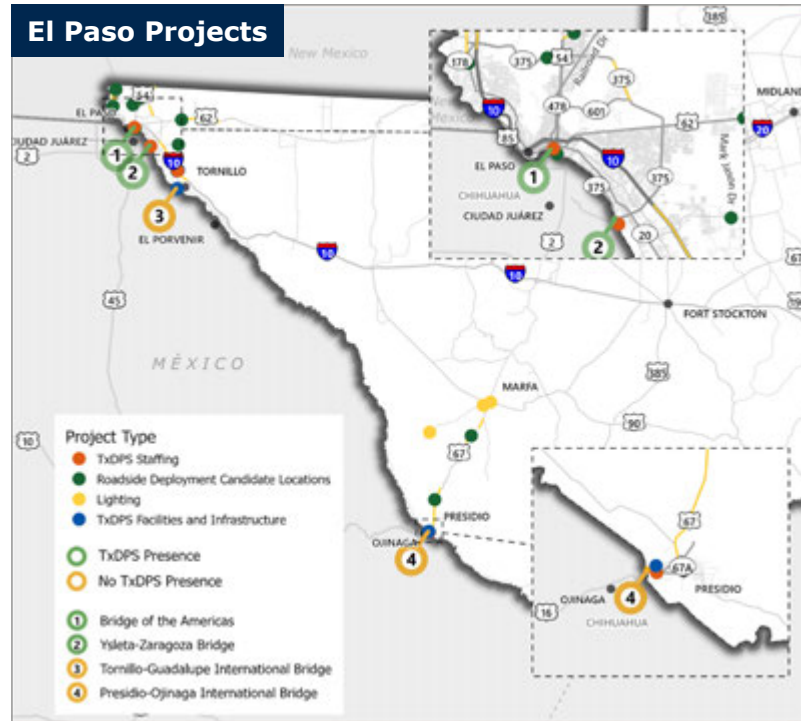
Construct fixed TxDPS facilities at border crossings where TxDPS does not currently have a fixed inspection facility and establish inland TxDPS inspection facilities within the 60-mile border zone. Where TxDPS currently has a fixed presence, update facilities to include permanent buildings and inspection pits.

Lighting

Provide safety lighting roadway improvements in areas to improve roadway safety for users of the roadway network, aiming to minimize crashes due to lack of lighting, and to enhance safety for law enforcement officers to conduct roadside inspections.

Roadside Deployment Candidate Locations

Locations of candidate locations for safety and security roadside deployments. These deployments include the establishment of static scale sites for the deployment of Virtual Weigh In Motions (VWIMs) and construction of pull over sites to enhance the efficiency of roadside inspections on heavily utilized CMV routes.



Key Border Technology Findings and Needs

TxDPS inspected less than one percent of CMVs entering the United States in 2023 for compliance with safety criteria at the border crossings. The lack of inspections can be attributed to limited staff resources and technological limitations, such as non-operational technology, lack of technological maintenance, and the need for investment in cutting-edge equipment and systems. All of the eight CMV border crossings with a TxDPS presence have missing or non-operational technology to enhance inspection capabilities.

Technology Availability at CMV Border Crossings with TxDPS Facilities

Border Crossing	Technology Available										Total Costs (\$M)
	Weigh-in-Motion	Static Scales	Height Indicators	Tire Pressure Anomaly	Thermal Brake Cameras	USDOT Readers	LPRs	DMS	RFID Readers	Hazmat Placard Readers	
Bridge of the Americas	●	◊	●	+	+	+	+	●	●	+	\$1.03
Ysleta-Zaragoza Bridge	●	◊	●	+	+	+	●	●	●	+	\$1.03
Del Rio-Ciudad Acuña International Bridge	+	●	+	+	+	+	+	+	+	+	\$1.73
Camino Real International Bridge	+	+	+	+	+	+	+	+	+	+	\$1.73
Laredo Colombia Solidarity Bridge	●	●◊	+	+	+	+	●	●	●	+	\$1.73
Pharr International Bridge	●	◊	+	+	+	+	●	+	+	+	\$1.03
Free Trade International Bridge	●	+	+	+	+	+	+	+	+	+	\$1.73
Veterans International Bridge at Los Tomates	◊	+	+	+	+	+	+	+	+	+	\$1.21

Legend ◊ Operational Technology ● Repair/Replace Non-Operational Technology + Add Safety Technology

Cameras, License Plate Readers (LPRs), traffic detectors, and Dynamic Messaging Signs (DMS) are less common in the border region than other Texas metropolitan areas and major interstates. These devices, broadband connectivity, and traffic management centers are needed to manage, monitor, and respond to transportation, safety, and security issues throughout the border. The HB 4422 study proposes a series of recommendations related to Border Communications Centers (BCCs): integrated traffic management centers where operators of the roadway network, law enforcement, and emergency response personnel can share data and coordinate incident response.

Border Technology Policy Recommendations

Nine policy recommendations were identified to support border technology near the Texas-Mexico border. Policy action systematically improves operations by increasing uniformity and adopting best practices. More information on each policy recommendation is included in Chapter 5 and Appendix E of the HB 4422 Report.

Policy Recommendation	Localities	TxDOT	TxDPS	State of Texas
Establish Data Sharing System: Establish data sharing protocols that allow for CMVs to be monitored within the border region.	●	●	●	
Adopt a Standard for TxDPS Equipment and Systems: Adopt a standard for TxDPS equipment and systems and a best-practice model approach at border crossing facilities.			●	
Connect BCCs and TxDPS Communications: Require BCCs and the TxDPS Communications Center to be connected upon implementation to facilitate rapid information sharing and coordinated responses to incidents.	●	●	●	
Enable Active Management with Technology: Enable the active management of the border-wide CMV system by employing advanced technology to provide real-time visibility to all stakeholders involved.	●	●	●	
Employ Smart Work Zone Technology: Employ smart work zone safety technology to guide CMV drivers and streamline CMV operations at construction sites.	●	●		
Enhance BCCs: Enhance existing TxDPS regional communication centers to include local law enforcement in real-time.	●		●	
Standardize BCC Technology: Standardize the technology used across all BCCs to ensure compatibility and seamless integration of data and communication systems.	●	●	●	
Provide Safety and Security Equipment: Provide local law enforcement with equipment and systems to identify safety and security concerns in CMVs.				●
Incentivize Telematic Systems Installation: Incentivize carriers for the installation of telematic systems for in-cab notifications.				●

Trooper Using Portable Scales During a CMV Inspection.

Source: HNTB

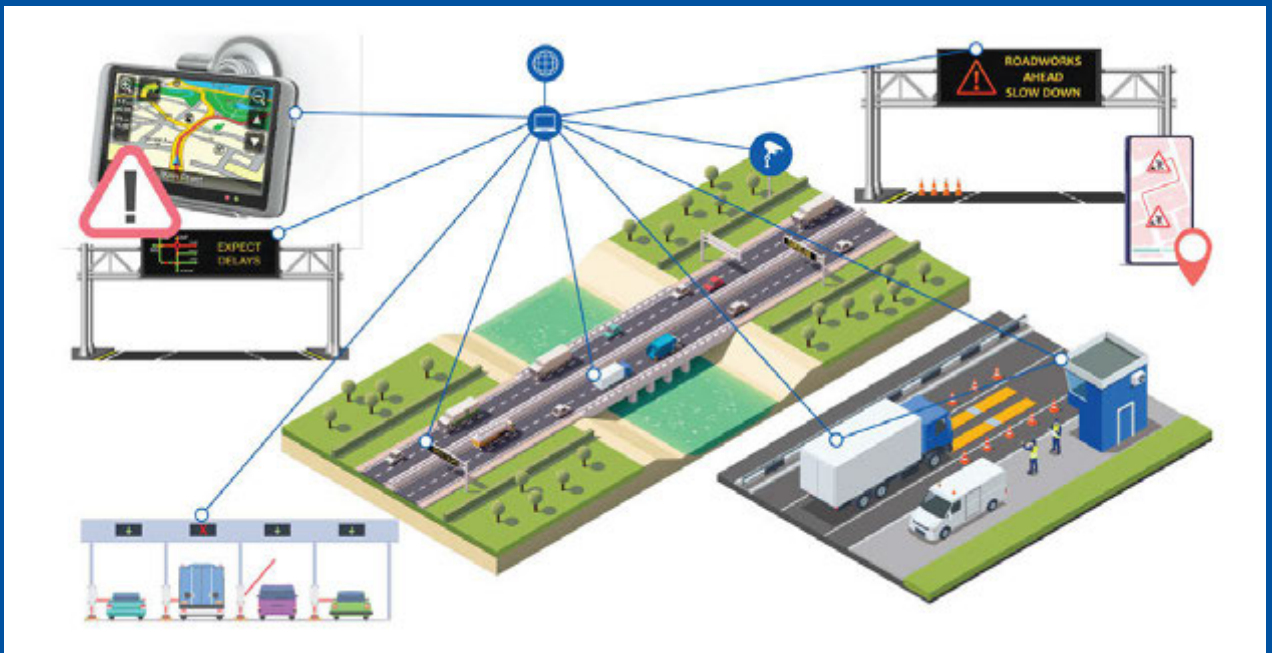


Border Technology Program Recommendations

Four program recommendations were identified to support border technology. New and enhanced programs focus effort and funding on technology needs at CMV border crossings and throughout the transportation network.

Program Recommendation	Localities	TxDOT	TxDPS	State of Texas	Funding Need (\$mil.)
Repair or Replace Non-operational Technologies at Border Crossings: Repair or replace non-operational technologies and equipment at border crossings.		●			\$4.4
Expand Deployment of Technology and Information Connectivity: Expand deployment of roadside technologies (traffic devices, cameras) and high-speed connectivity in support of BCC operations and border crossing facilities. Explore expansion of cellular service.	●	●	●	●	\$556.5
Invest in Advanced Security Systems: Invest in advanced X-ray, non-intrusive inspection technology systems along the Texas-Mexico border to advance CMV safety, security, and efficiency that amplify OLS.			●		\$64.0
Add Safety Inspection Technologies: Add technologies at border crossings where they do not exist.			●		\$6.8
Total Funding Need					\$631.7

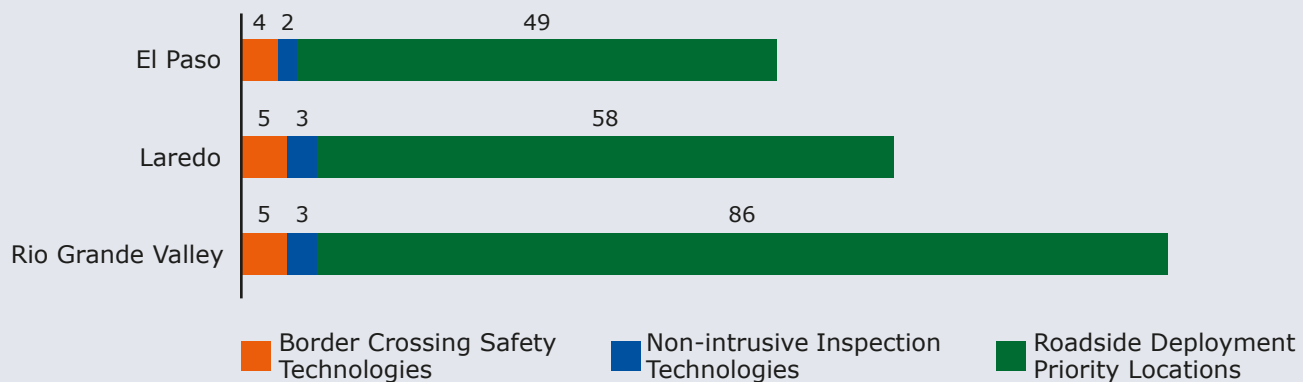
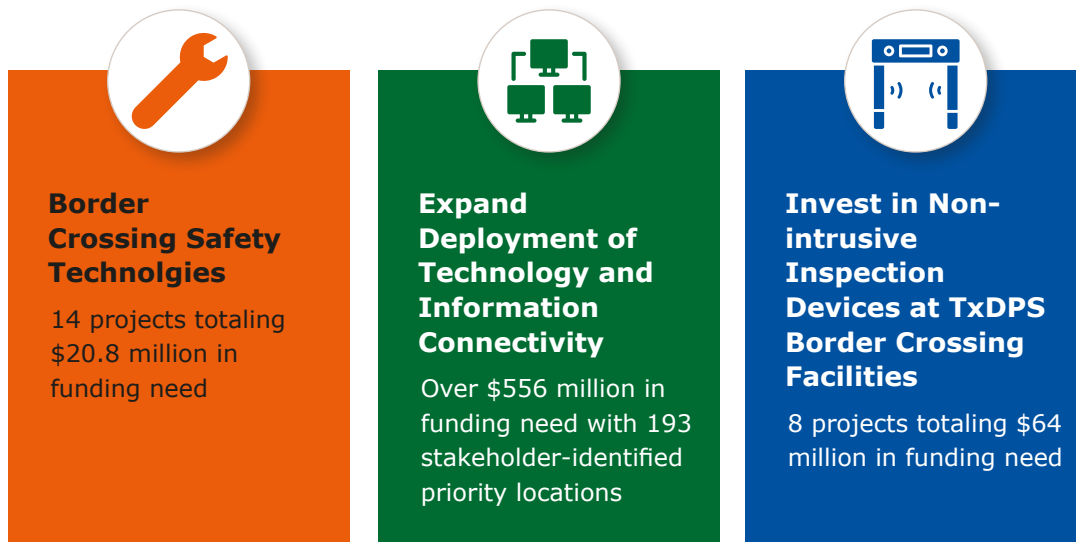
Roadway Technology in the Texas Border Region



Border Technology Project Recommendations

Border Technology project recommendations are well-defined investments with locations and cost estimates. The HB 4422 study identified **215 technology projects** that facilitate data collection, enforcement, and incident response near the Texas-Mexico border. Chapter 5 and Appendix F of the HB 4422 Report show the locations of projects and list the elements included in each.

Priority locations for technology deployment were identified by stakeholders. The overall program-level costs of some recommendations include a wider deployment.



All Technology projects are unfunded, and

\$630M+
OF FUNDING

is needed to advance these technology projects to improve the ability of law enforcement and local transportation system operators to coordinate, monitor, and respond to events.

Border Technology Project Recommendations

Border Crossing Safety Technologies

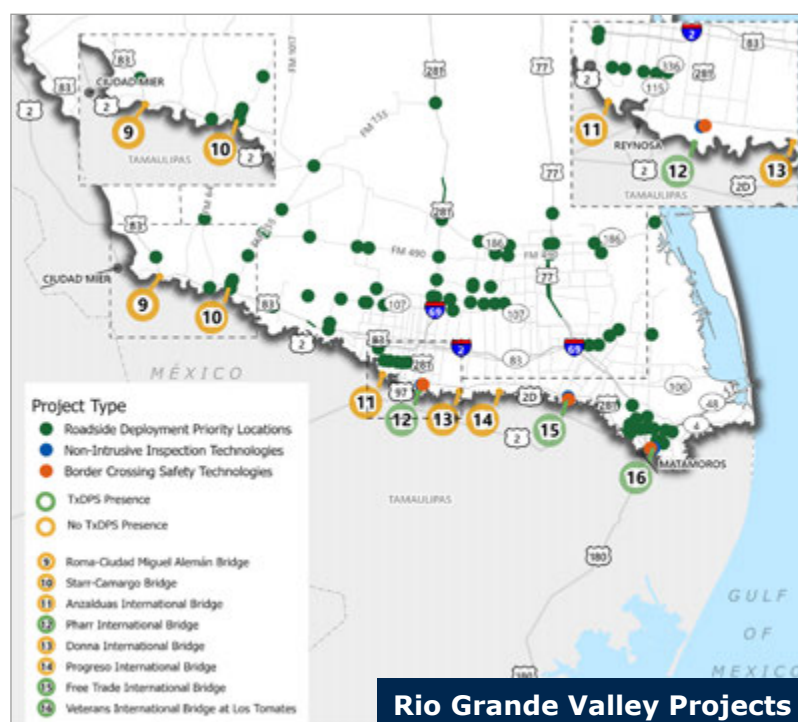
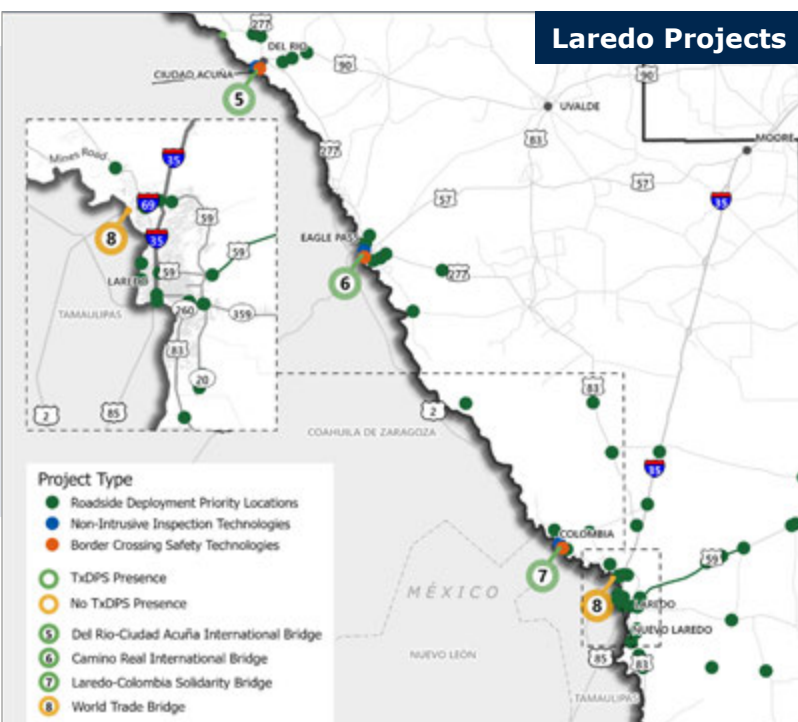
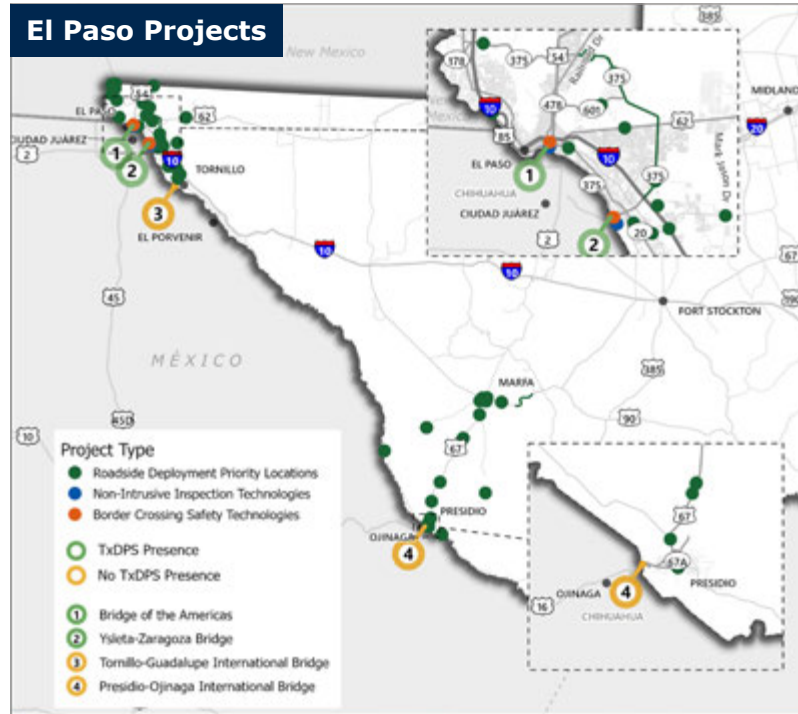
Repair, replace, and add safety inspection technologies at current TxDPS facilities to ensure consistency in technological screening equipment at the Texas-Mexico border. Technologies addressed include: Weigh in Motions (WIMs), static scales, height indicators, tire pressure anomaly systems, thermal brake cameras, USDOT readers, License Plate Readers (LPRs), Dynamic Messaging Signs (DMS), RFID readers, and hazmat placard readers.

Roadside Deployment Priority Locations

Locations of priority deployments of roadside technologies to allow for roadside screening of CMVs through technology. These initial deployments include CCTV cameras, connectivity through cellular service, Dynamic Messaging Signs (DMS), License Plate Readers (LPRs), and Virtual Weigh in Motions (VWIMs).

Non-intrusive Inspection Technologies

Add non-intrusive inspection devices at current TxDPS facilities that allow for the advancement of CMV safety, security, and efficiency along the Texas-Mexico border through increased screening efficiency.



Funding Options

Recurring revenue streams that could be directed toward HB 4422 recommendations are listed below. However, existing programs already rely on these funds. Without additional funding commitments, existing funding from these sources cannot advance the HB 4422 recommendations rapidly or in a dedicated manner.

Additional one-time sources of funding include grants and loans that could be used to expedite project development beyond what could be achieved by relying strictly on incremental state and local taxes and fee revenue. Federal assistance programs such as discretionary grant or credit assistance programs allow leverage of non-federal resources, such as state and local contributions, through federal funding of 80% of projects costs against a state or local match of 20%.

<p>Motor Fuels Tax \$190.0 M in annual revenue per \$0.01 increase in tax per gallon</p>	<p>Sales & Use Tax (Proposition 7) \$46.6 M in annual revenue per 0.1% increase in sales & use tax</p>
<p>Motor Vehicle Registration Fee \$260.0 M in annual revenue per \$10 increase in all motor vehicle registration fees</p>	<p>Commercial Vehicle Citations \$0.8 M increase in annual revenue per \$25 increase in commercial vehicle citations fines</p>
<p>Electric Vehicle Registration Fees \$8.4 M in annual revenue per \$40 increase in all EV registration fees</p>	<p>Transportation Reinvestment Zones (TRZ) Potential revenue driven by enhanced property values resulting from nearby infrastructure investment</p>
<p>CMV Border Crossing Toll Revenue \$18.4 M in annual revenue per \$3 increase to all CMV tolls</p>	<p>MPO Funding Three border region MPOs (El Paso, Laredo, and Rio Grande Valley) with the potential to provide local match support for project development</p>
<p>Oil & Gas Revenue (Proposition 1) \$120.0 M in annual revenue per 1% increase in share of Proposition 1 fund</p>	
<p>State Infrastructure Bank (SIB) Loans ranging from \$4.0 M to \$27.0 M</p>	<p>Strengthening Mobility and Revolutionizing Transportation (SMART) Federal grant program with awards ranging from \$0.8 M to \$15.0 M</p>
<p>Local Border Security Grant Program: Grants ranging from \$0.3 M - \$0.5 M</p>	<p>Operation Stonegarden (OPSG) Federal grant program with awards ranging from \$1.4 M to \$37.0 M</p>
<p>Infrastructure for Rebuilding America (INFRA) Federal grant program with awards ranging from \$8.0 M to \$1,058.4 M</p>	<p>Transportation Infrastructure Finance Innovation Act (TIFIA) Federal transit and transportation loan programs with issues ranging from \$215.0 M to \$1,600 M</p>
<p>National Infrastructure Project Assistance Program (MEGA) Federal grant program with awards ranging from \$32.0 M to \$600.0 M</p>	<p>North American Development Bank (NADB) Loans Binational organization issuing loans supporting border-region infrastructure ranging from \$4.0 M to \$150.1 M</p>
<p>Rebuilding America Infrastructure Sustainably and Equitably (RAISE) Federal grant program with awards ranging from \$0.2 M to \$25.0 M</p>	<p>North American Development Bank Grants Binational organization awards grants supporting border-region infrastructure ranging from \$0.3 M to \$0.5 M</p>
<p>Private Equity and Private Debt Upfront capital project funding dependent on the revenue from tolling or availability payments</p>	

Summary of HB 4422 Study Recommendations

The recommendations identified in the HB 4422 study cover many uses, summarized below:

 <p>1. Transportation Efficiency Recommendations</p> <p>15 policies</p>	<p>POLICIES <u>High Priority</u></p> <ul style="list-style-type: none"> • Address Disproportionate Burdens • Strengthen Binational Coalitions Border-wide • Asset Management • BCC-TxDPS Coordination • Facility Access • HAZMAT Signage • Effective Crossing Capacity • Right-of-Way Acquisition 	<p><u>Medium Priority</u></p> <ul style="list-style-type: none"> • Directional Connectivity • BCC Communications • Routing Flexibility • Monitor HAZMAT Trends • Study Toll Policy • HAZMAT Route Redundancy • CMVs & General Mobility <p>PROGRAMS <u>High Priority</u></p> <ul style="list-style-type: none"> • New CMV Routes 	<ul style="list-style-type: none"> • New & Improved Interstates • CMV Lanes • Border-Wide BCCs <p><u>Medium Priority</u></p> <ul style="list-style-type: none"> • New & Expanded CMV Crossings • HAZMAT Routing • Permits Clearinghouse • Study Permit Harmonization <p>\$26.8B funding need</p>
 <p>2. Safety & Security Recommendations</p> <p>8 policies</p>	<p>POLICIES <u>High Priority</u></p> <ul style="list-style-type: none"> • Complete CMV Driver Training Program • Enhance Law Enforcement Training • Incorporate Emergency Protocols • Adopt a Standard for TxDPS Facility Design • Allocate OLS Funds to Local Agencies • Share CMV Related Data 	<p><u>Across Agencies</u></p> <ul style="list-style-type: none"> • Require Crime Reporting • Redirect CMV Citation Revenues <p>PROGRAMS <u>High Priority</u></p> <ul style="list-style-type: none"> • Enhance Highway Lighting • Increase TxDPS Staffing at Border Crossings • Increase TxDPS Staffing within Border Zone • Establish Inland TxDPS Facilities 	<ul style="list-style-type: none"> • Staff Inland TxDPS Facilities • Deploy VWIMs and Pull Over Areas • Create a Local Agency Grant Program • Radiological Nuclear Detection • Update TxDPS Infrastructure • Establish Static Scale Sites • Construct Fixed TxDPS Facilities • Expand Staffing at Future Border Crossing Facilities <p>\$2.0B funding need</p>
 <p>3. Technology Recommendations</p> <p>9 policies</p>	<p>POLICIES <u>High Priority</u></p> <ul style="list-style-type: none"> • Establish Data Sharing System • Adopt a Standard for TxDPS Equipment and Systems • Connect BCCs and TxDPS Communications • Enable Active Management with Technology • Employ Smart Work Zone Technology 	<p><u>Medium Priority</u></p> <ul style="list-style-type: none"> • Enhance Border Communication Centers • Standardize BCC Technology • Provide Safety and Security Equipment • Incentivize Telematic Systems Installation <p>PROGRAMS <u>High Priority</u></p> <ul style="list-style-type: none"> • Repair or Replace Non-operational Technologies at 	<p><u>Border Crossings</u></p> <ul style="list-style-type: none"> • Expand Deployment of Technology and Information Connectivity • Invest in Non-intrusive Inspection Devices at TxDPS Border Crossing Facilities • Add Safety Inspection Technologies <p>\$631.7M funding need</p>

Total

 32 POLICIES	 24 PROGRAMS	 638 PROJECTS	 \$29.4B FUNDING NEED
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Anticipated Effects of Recommended Security and Public Safety Improvements on International Trade Efforts with Mexico

HB 4422 study recommendations increase the safety and security of Texas-Mexico trade by leveraging infrastructure and technology to deliver border-wide improvements with higher efficiency and lower cost. Safety, security and cost are critical logistics performance factors that influence business location and supplier selection, which trade efforts seek to attract. HB 4422 recommendations support these factors, which are all in play in the commercial nearshoring strategies that are bringing investment to Mexico and aiding its emergence as the number one trading partner of the United States.

Border communities recognize trade as vital to their economies, yet rapid growth and development challenge community safety. Recommendations that route CMVs away from town centers and design traffic lanes for CMVs increase public safety and can be mirrored by projects in Mexico. Improvements to CMV inspection and monitoring bring multiple benefits to industry and communities, such as safer vehicles and drivers, fewer breakdowns, and faster reaction to unsafe or congested conditions.

Security is a concern to all parties in trade. Motor carriers keep CMVs on the move and use in-vehicle technology to track whether trucks are inappropriately stopped or traveling out of route. Private systems can interact with recommended public systems to clear reliable CMVs quickly at the border and flag questionable ones. Operation Lone Star is assisted by such measures, and BCCs can help to implement them. Information and communications technologies enhance the collaboration of all parties involved in law enforcement and make it more effective.

The recommendations of this study assist international trade efforts by ensuring the integrity of cross-border shipping and supporting the organizations responsible for it. This is in the common interest of Texas and Mexico because it guards communities on both sides of the border, and because the businesses that will drive growth in binational trade are protective of their reputations, their cargo, and their personnel.

“The Texas-Mexico border really shows how important our relationship with Mexico is—not just for Texas, but for the entire United States. The growing trade along our border underscores the importance of this study and its vision for success. Texas Trucking Association is proud to be a proactive partner and help enhance public safety and transportation infrastructure in the state. This report effectively achieves the law’s intent, and we’re ready to collaborate with our many colleagues to implement its findings in the years to come.”

John D. Esparza, President & CEO - Texas Trucking Association

Next Steps

Next steps for this study are at the discretion of the governor, lieutenant governor, and the Texas legislature. Important considerations for any action include:

- 1 Funds to be made available** by the state, in the forms it determines 
- 2 Additional sources of funds** to pursue, such as through binational initiatives
- 3 Timing and uses of funds**
- 4 Policies to be adopted,** and whether funds would be tied to their implementation
- 5 The parties responsible** for acting on recommendations

Stakeholders in border regions also may choose to adopt policies within their jurisdiction, undertake programs for which they obtain resources, and come together on joint initiatives.



House Bill 4422: Executive Summary