



EXECUTIVE SUMMARY

TEXAS DELIVERS

2050

January 2023







Texas continues to lead the nation in economic growth and remains one of the strongest and most diverse economies in the nation and the globe. Along with a growing population comes a growing demand for goods and an increased need for a seamless multimodal transportation network.

Texas Economy and Goods Movement at a Glance, 2019



4 BILLION tons of freight worth \$2.9 TRILLION



29 MILLION people



12.6 MILLION jobs



\$1.9 TRILLION in Gross State Product

Integral to the state's robust economy is global trade and commerce which requires ensuring efficient, reliable supply chains. Without reliable transport and distribution of freight, including raw materials, intermediate, and final goods to, from, and within the state, the Texas economy would come to a stop.

- #1** in global exports in the United States
- #1** in cross border trade with Mexico
- #2** economy in the United States
- #9** economy in world (2021)
- 3rd** fastest growing state in the United States
- #1** port in the United States based on tonnage (Port Houston)

Texas Delivers 2050 Goals:



Safety | Improve the safety, efficiency, and performance of the Texas Multimodal Freight Network ("the Network")



Economic Competitiveness | Improve the performance of the Network to enhance the contribution of transportation infrastructure to economic competitiveness, productivity, and development throughout the state



Asset Preservation and Modernization | Maintain, preserve, and modernize assets on the Network to support multimodal movement of goods and people



Mobility and Reliability | Reduce congestion and improve system efficiency and performance on the Network



Connectivity | Improve urban and rural system connectivity between all freight modes and all industry sectors to regional, statewide, national, and international markets



Resiliency and Security | Develop and maintain a resilient and secure multimodal system that can withstand and respond to various sources of disruption



Equity | Encourage equitable distribution of the positive and negative impacts of freight movement across all Texans



Stewardship | Manage environmental and agency resources responsibly and foster accountability and transparency in decision-making



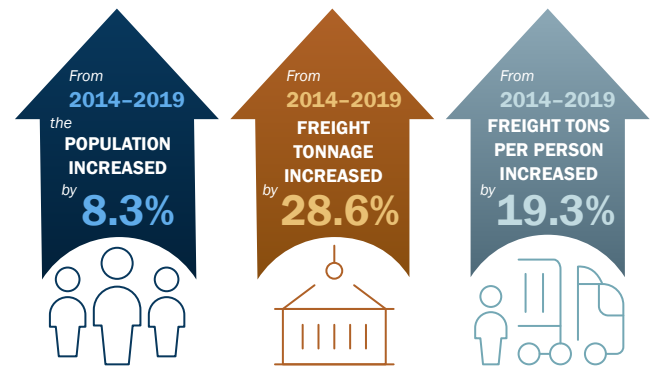
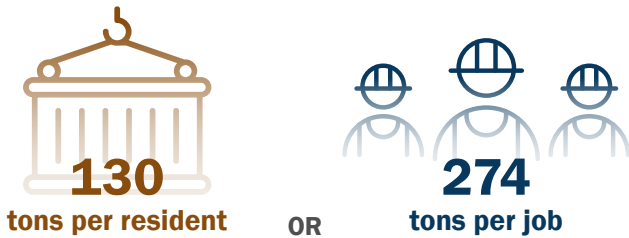
Sustainable Funding | Identify sustainable funding sources for all freight transportation modes

TxDOT's Mission is Connecting You with Texas

The Texas multimodal transportation network supports trade and supply chains throughout Texas by **CONNECTING...**

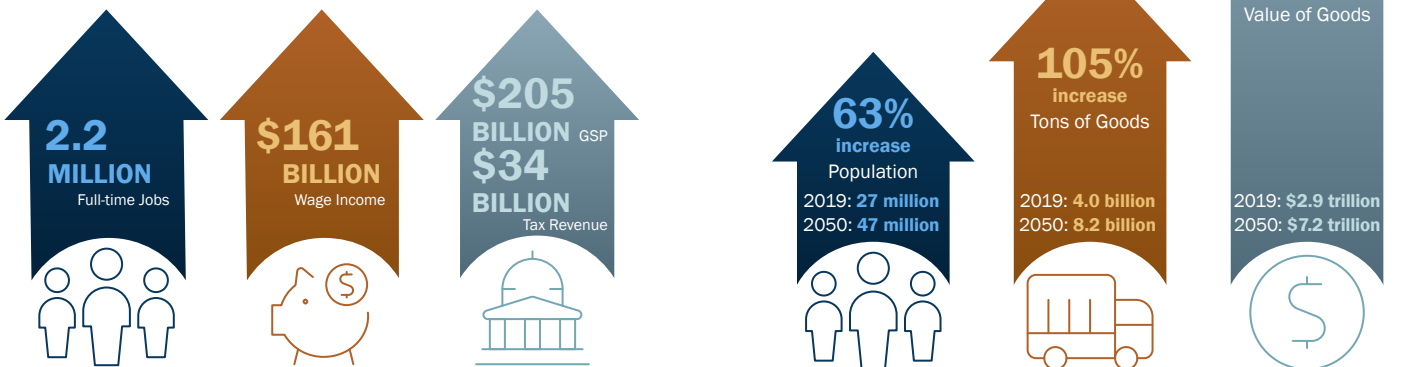


As the population and economy grow in Texas, so does the volume of goods being transported and consumed. Goods moving into, out of and within Texas already equated to 130 tons per resident or 274 tons per job in 2019, representing an almost 20% increase over the last five years. The increase in tons of goods moved has outpaced population growth and is anticipated to continue to do so in the coming decades with population increasing by 63% by 2050 and goods by 105%.



Projections to 2050

Total economic impact of moving and handling freight in Texas





A Growing Economy Means More Cargo and Goods

Nearly 4 billion tons of goods traveled across the Texas multimodal transportation network in 2019 consisting of shipments into Texas (inbound), out of Texas (outbound), within Texas (intrastate), and passing through Texas (through). These shipments are expected to more than double to over 8 billion tons by 2050. As Texas continues to grow both in population and industry, the demand across all modes for system capacity will increase.

INBOUND

2019: 673 MILLION TONS | \$738 BILLION
2050: 1.33 BILLION TONS | \$1.86 TRILLION

OUTBOUND

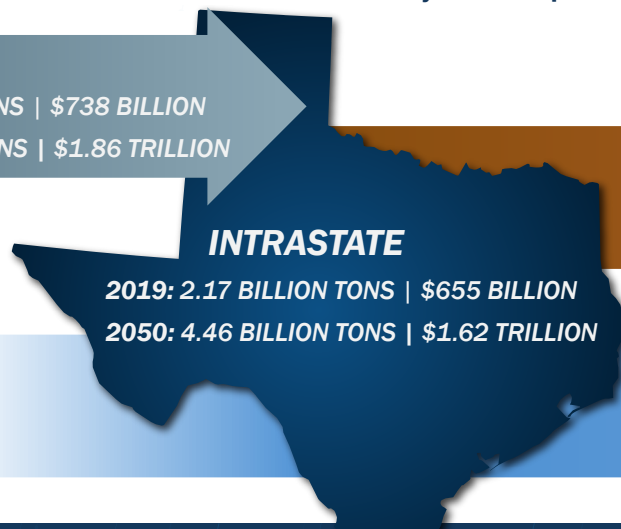
2019: 818 MILLION TONS | \$740 BILLION
2050: 1.62 BILLION TONS | \$1.72 TRILLION

INTRASTATE

2019: 2.17 BILLION TONS | \$655 BILLION
2050: 4.46 BILLION TONS | \$1.62 TRILLION

THROUGH

2019: 353 MILLION TONS | \$734 BILLION
2050: 834 MILLION TONS | \$1.99 TRILLION



TRENDS INFLUENCING FUTURE FREIGHT MOVEMENT IN TEXAS

While the economy, including population and employment growth, is the primary driver of freight demand, there are many factors that can impact freight flows in Texas.

Economic Growth

- Population and employment growth
- Industry diversification

730
MORE PEOPLE
in Texas every day
from 2019-2021

International Trade

- United States-Mexico-Canada Agreement
- Nearshoring

Texas is the nation's **top exporting state** for 20 years in a row with exports valued at **\$328 BILLION** in 2019

Consumer Practices

- E-commerce
- Sharing economy

Estimated **\$81.3 BILLION** in **E-COMMERCE** in Texas in 2021

Technology

- Additive manufacturing
- Connected and autonomous vehicles

Over **15 ACTIVE CONNECTED AND AUTONOMOUS VEHICLE PILOTS** in Texas as of 2022

Energy Policies

- Energy diversification
- Alternative fuel vehicles

In 2021, Texas produced **40%** of nation's crude oil
24% of nation's natural gas
20% of nation's solar and wind energy

Disruptions

- Natural
- Man-made

\$200-300 BILLION in economic loss in 2021 in Texas due to **WINTER STORM URI**

Texas Businesses and Consumers Depend on Safe and Reliable Multimodal Transportation Infrastructure and Supply Chains...

The Texas multimodal transportation network provides Texas with a competitive advantage for attracting, retaining, and growing business throughout the state. The multimodal transportation network provides Texas' businesses access to domestic and global markets for raw materials, supplies and finished goods.



Texas Grows

247,000 farms and ranches covering **126.5 MILLION ACRES**

Texas Crop Production totaled **\$6.3 BILLION** in 2019

Texas Animal Production totaled **\$14.3 BILLION** in 2019

Top producer of: Cattle, Cotton, Hay, Silage Sorghum

Texas agricultural exports totaled **\$6.3 BILLION** in 2019



Texas Extracts and Refines

1.9 BILLION BARRELS of crude oil in 2019

8.2 TRILLION CUBIC FEET of natural gas in 2019

OVER 30 PERCENT of the nation's refinery and gas processing capacity

OVER 40 PERCENT of U.S. petrochemical production capacity in Houston alone

\$1.38 BILLION in severance taxes going to the State Highway Fund in 2019



Texas Manufactures

460,000 JOBS in advanced manufacturing statewide

\$243 BILLION in total manufacturing exports

Transportation equipment: **\$34 BILLION IN TX EXPORTS** and **\$62 BILLION** in imports

Electrical equipment: Texas export value totaled **\$61.6 BILLION**

Activity is concentrated in the Texas Triangle and along the border with Mexico



Texas Protects

Corpus Christi Army Depot and Red River Depot support military logistics

Texas has over **220,000 ACTIVE-DUTY AND CIVILIAN PERSONNEL**

Nearly **ONE IN EVERY TWELVE PEOPLE** employed by the United States Military is based in Texas

Ports of Beaumont and Port Arthur play critical role in military transportation

Relies on all modes



Texas Builds

641 MILLION TONS are shipped to, from, within Texas

Construction industry is **5 PERCENT OF THE STATE'S GROSS STATE PRODUCT**

Texas is **12 PERCENT** of U.S. construction material imports

Over **75 PERCENT** of the construction materials consumed in Texas originate in Texas



Texas Distributes

Retail distribution commodity value was in excess of **\$632 BILLION** in 2019

Over **235 MILLION TONS** distributed in 2019

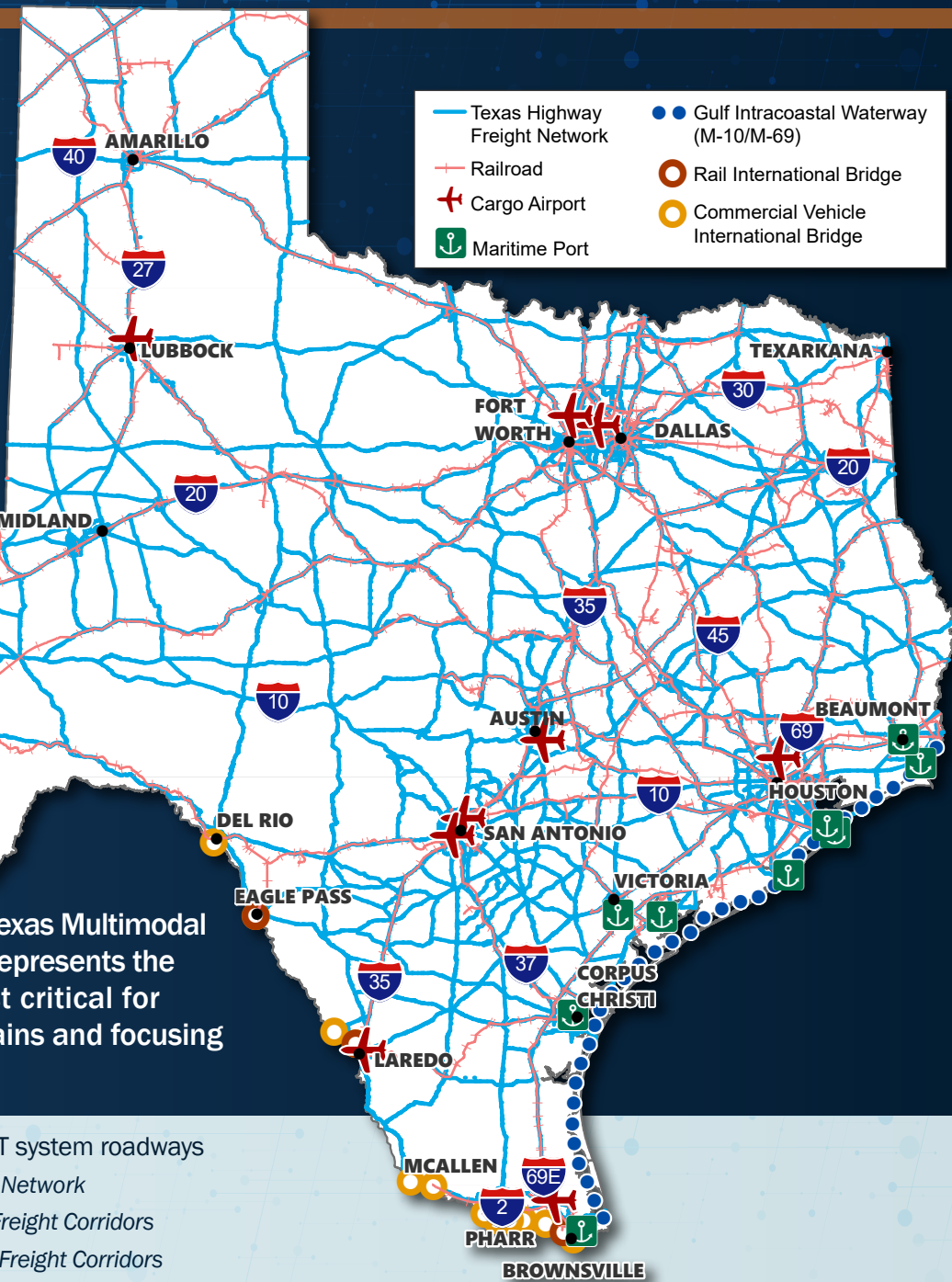
Includes over **15,000 FIRMS** with **685,000 EMPLOYEES**

General retail imports were valued at **\$26.3 BILLION**, nearly twice the value of grocery imports

34.8 PERCENT of retail goods by value are moved by air

...and a World Class Multimodal Transportation Network that Supports Texas' Supply Chains

Texas is home to a vast and well-maintained multimodal freight network. The Texas Multimodal Freight Network ("the Network") represents the key corridors and facilities most critical for supporting the state's supply chains and focusing TxDOT's investment.



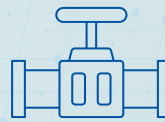
Over **80,000 MILES** of TxDOT system roadways

- Over **23,000 MILES** on the Network
- **745 MILES** of Critical Rural Freight Corridors
- **372 MILES** of Critical Urban Freight Corridors



20 PORTS and the Gulf Intracoastal Waterway system

- **11 DEEP WATER PORTS** | 9 on the Network
- **9 SHALLOW DRAFT PORTS** | 1 on the Network
- **379 MILES** of Gulf Intracoastal Waterway | All on the Network



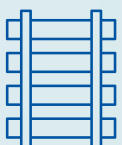
426,000 MILES of pipeline on the Network

- **59%** intrastate
- **41%** interstate



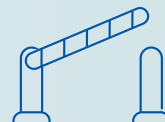
24 COMMERCIAL AIRPORTS

- **10 CARGO AIRPORTS** on the Network



14,771 MILES of railroad operated on the Network

- **3 CLASS I** railroads | **12,221 miles**
- **55 CLASS III** or short line railroads | **2,550 miles**

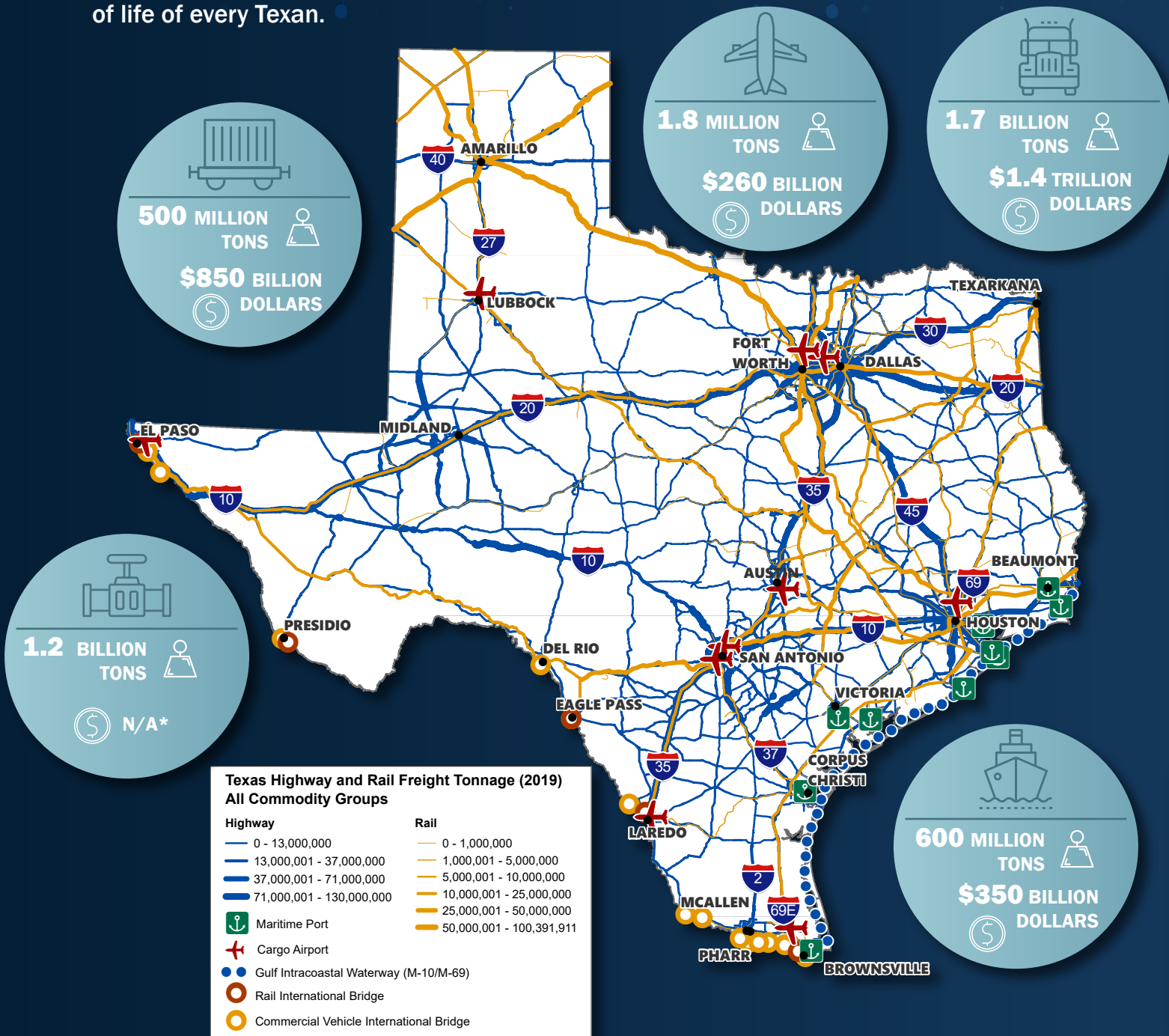


20 COMMERCIAL INTERNATIONAL BORDER CROSSINGS, all on the Network

- **15** commercial vehicle crossings
- **5** rail crossings

The Role of the Texas Multimodal Transportation Network in Supporting Supply Chains in Texas

The state's key industries depend on safe, reliable multimodal transportation to keep business moving. Texans depend on efficient movement for food, clothing, shelter, and everything else they consume. Therefore, it is undeniable that a well performing multimodal transportation network is vital to goods mobility and economic prosperity and the quality of life of every Texan.



* Value information is not available for a large percentage of pipeline movements.



Advanced Manufacturing Relies on a Multimodal Global Supply Chain

Texas' advanced manufacturing industry is largely clustered around the Texas Triangle and depends on international land border, seaport and airport gateways in Texas to move parts and finished products to and from international markets. It also relies on truck, air and rail service providers for movements throughout North America as well as to access non-Texas seaport and airport international gateways.

Texas' Agriculture Supply Chains Depend on Multimodal Farm to Market Corridors

The agriculture industry depends on highways and rail to transport commodities from farms and ranches to food processing facilities. These agriculture products ultimately make their way to grocery stores in Texas and the rest of the country. Texas' trade gateways send agriculture exports abroad that feeds people around the world.



Texas' Petroleum Supply Chains are Interconnected with Global Energy Markets

The petroleum industry touches nearly every facet of the freight network. Texas' energy exports reach domestic markets and the rest of North America and abroad through pipelines, land border crossings, and seaports.

Construction Supply Chains Require Multiple Modes to Transport Heavy, Bulk Commodities

Texas' construction industry depends on materials sourced from the mining and forestry sectors within the state and around the country. Trucks and trains deliver wood, gravel, and steel rebar to construction sites in metropolitan areas. Texas ports are gateways to materials from global suppliers.



Warehouse & Distribution Supply Chains Rely Heavily on Trucking and Intermodal Rail

The speed and efficiency of retail supply chains and e-commerce depend on an expansive multimodal network that brings goods from around the world to Texas households and businesses. Imports arrive from the West Coast by truck and rail or directly to Texas markets through its land ports of entry, seaports, and airports.

Texas Goods Movement and Supply Chain Needs and Opportunities

Nine critical need and opportunity areas impact goods movement and the strength of supply chains in Texas. These areas are essential for TxDOT and its partners to address in Texas Delivers 2050 and its implementation.

Congestion

\$1.7 billion in truck congestion cost in 2019

Houston and Dallas-Fort Worth were in the Top 10 U.S. metro areas for trucking congestion costs in 2019

Congestion impacts reliability for just-in-time supply chains of advanced manufacturing and warehousing and distribution

Technology and System Operations

Lack of Intelligent Transportation System infrastructure on rural corridors essential to freight

Need increased preparedness for Connected and Automated Vehicles

Approximately 150 occupied rail crossings per month in 2020-2021

Supply chains increasingly depend on technology-enhanced mobility solutions

Safety

Nearly 28,000 truck-involved crashes in 2019

Rural truck-involved crashes are three times as likely to be fatal as urban truck-involved crashes

233 at-grade highway-rail crashes per year from 2016 to 2020

Asset Management and Design

On the Texas Highway Freight Network:

218 bridges with vertical clearance under 15 feet

50 bridges with load restrictions

Inconsistent dredging constrains barge loading on the Gulf Intracoastal Waterway

Connectivity

Lack of alternative routes reduces reliability and access

Many intermodal facilities are in urban areas

Many regional connectors to rural freight generators have obsolete design

All of Texas' supply chains depend on multimodal connectivity

International Border Crossings

Lack of coordinated border crossing management

Nearly half of northbound border crossing times exceeded 30 minutes

Traffic volumes and queuing strain first- and last-mile connections

Cross border trade is essential for agricultural, manufacturing and petrochemical supply chains

Community Impacts and Benefits

1 million jobs in freight and logistics

There is a need to ensure that the benefits, opportunities, and challenges of freight movement impact every community in Texas equally

Resiliency and Security

Need better understanding of systemwide vulnerability for all modes

Urban areas, coast, and border have highest risk and exposure to man-made and natural disruptions (e.g., hurricanes, flooding, cyberattacks)

Cyber security of infrastructure increasingly critical for resilient supply chains

Funding

Over \$47 billion in highway freight project cost

\$11 billion in funding gap

Lack of flexibility to fund non-highway projects



Texas Multimodal Goods Movement and Supply Chain Vision

A leader in delivering first-in-class multimodal goods movement to support Texas' growing population, economy, and quality of life through supporting resilient supply chains and connecting Texas to the global trade market.



Texas Delivers 2050 Recommendations



POLICIES

Specific courses of action that, if adopted, will shape the way Texas approaches freight mobility



PROGRAMS

Collection of initiatives or activities to achieve desired outcomes



TECHNOLOGY AND OPERATIONS

Investments that improve safety and efficiency of existing systems and prepare Texas for the future of freight mobility



PROJECTS

Capital investments under development, proposed, and strategic

Three broad approaches:

1. SUPPORTIVE

Maintaining and sustaining the existing Texas Multimodal Freight Network ("the Network") to meet acceptable conditions and performance targets is necessary for Texas to serve its existing businesses and residents and maintain competitiveness.

2. STIMULATIVE

Enhancing the Network to improve conditions and performance above current levels while ensuring equitable freight mobility solutions positions Texas to continue to retain and attract people, businesses, and jobs and to preserve the quality of life for all Texans.

3. TRANSFORMATIVE

Evolving the Network to position for emerging technology that will revolutionize freight mobility ensures a resilient, equitable, and efficient freight network necessary for Texas to lead in innovation and economic growth.

Achieving Texas' freight mobility vision requires recommendations across these three approaches be advanced simultaneously.

Texas Delivers 2050 was stakeholder informed and vetted at every stage of development



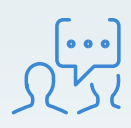
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Regional Workshops



4

Supply Chain Working Group Meetings



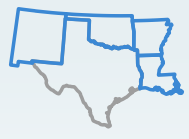
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Texas Freight Advisory Committee Meetings



23

E-Blasts reaching an audience of **111,542**



4

Peer Exchange Meetings with Adjacent State Departments of Transportation



34

Social Media Posts reaching an audience of **417,035**

Freight Policy Recommendations

There are 22 freight policy recommendations that cover:

- TxDOT Freight Planning Capacity and Activities
- Freight Network Designation and Investment
- Texas Highway Freight Network Design Guidelines and Implementation
- Multimodal Freight Planning, Programming and Implementation
- Multimodal Connectivity
- Urban Freight Movement
- Rural Connectivity
- Economic Development and Economic Competitiveness
- Texas as a Global Trade and Logistics Hub and Gateway
- Safety, Security and Resiliency of the Freight Transportation System
- Freight Transportation Asset Preservation
- Freight-Based Technology Solutions and Innovation
- Stewardship and Project Delivery
- International Border Crossings
- Energy Sector Development Transportation
- Rail Freight Transportation
- Port and Waterway Freight Transportation
- Air Cargo Transportation
- Pipeline Infrastructure
- Funding and Financing
- Institutional Coordination and Collaboration
- Public Awareness and Engagement

There are eight freight program recommendations that support the freight policies and cover:

- TxDOT Multimodal Freight Planning
- Freight Movement Education and Public Awareness
- Freight-Based Technology and Operations
- Texas Border-Crossing Transportation and Trade
- Highway Development and Improvement
- Rail Development and Improvement
- Port and Waterway Development and Improvement
- Aviation-Air Cargo Development and Improvement

Developing a Foundation to Enhance Goods Movement and Supply Chains in Texas:

Policy and Program Actions

SUMMARY OF POLICY RECOMMENDATIONS

Short-term <i>TxDOT should...</i>	Medium-term <i>TxDOT should...</i>
SUPPORTIVE	
Continue to expand and administer a comprehensive and multimodal freight-planning program that integrates freight considerations into project selection process.	Evaluate feasibility of incorporating freight infrastructure design standards with respect to commercial vehicle movement on the Network.
Ensure effective implementation of the Plan through a commitment to appropriate staffing and resources.	Continue implementing the new vertical clearance standard of 18 feet 6 inches on the Network.
Comply with federal requirements for freight planning and future project funding eligibility.	Encourage public- and private-sector partnerships that target the various modes and users of the Network.
Integrate freight considerations into TxDOT district and Metropolitan Planning Organization planning, project development, and implementation.	Identify multimodal opportunities, in coordination with private sector, to address current and future freight flows.



Short-term TxDOT should...	Medium-term TxDOT should...
SUPPORTIVE	
Include freight considerations in the Unified Transportation Program project development and prioritization process.	Partner with local planning agencies on strategies to address urban freight congestion and bottlenecks.
Identify, preserve, protect, and invest in the Network across the state.	Continue to invest in the Texas Trunk system to enable the transport of energy, food, and other critical raw materials.
Support strategic initiatives of the Governor’s Office of Economic Development and Tourism.	Support industry efforts to enhance workforce training, recruitment and retention in transportation and logistics.
Address freight movement safety “hot spots” in coordination with planning partners.	Improve binational coordination and planning to expedite the delivery of border crossing projects.
Monitor and support policies that encourage technology deployment while ensuring public interests are protected.	Expand the development of advanced real-time information systems and dissemination of information.
Explore funding for existing freight programs, such as the Texas Rail Relocation Fund, Port Access Account Fund, and the Ship Channel Improvement Fund.	Support strategies that reduce the number of at-grade highway/rail crossings in partnership with the railroads.
STIMULATIVE	
Further the understanding of the role of the Network in supporting the state’s key supply chains.	Target investment in the Network as a critical component of the state’s economy and to enhance supply chain fluidity.
Identify opportunities to advance high priority multimodal projects based on the increased availability of National Highway Freight Program funds for intermodal projects	In coordination with the railroads, support rail connections to the international border to alleviate congestion at key freight gateways, freight generators and ports of entry.
In coordination with planning partners and the private sector, support growing e-commerce and urban freight deliveries such as drones and delivery robots.	Develop and incorporate resiliency performance measures in transportation planning, policy, and infrastructure investment decisions.
In coordination with planning partners, advance a Third Coast Global Gateway concept of a one-stop, unified, coordinated, and comprehensive information portal for all transportation modes.	In coordination with planning partners, advance recommendations from the Statewide Truck Parking Study.
Pursue federally available funds through discretionary grants for multimodal freight projects.	Coordinate on a statewide traffic management system by integrating data provided by existing traffic management centers to provide comprehensive traveler information.
Improve communication between public agencies to streamline project delivery and build consistency among jurisdictions in regulating and preserving the freight network.	Advance the highest priority projects on the Network by ensuring they are fully funded.
Expand stakeholder outreach for freight planning efforts to include community and public outreach using high- and low-tech techniques, especially in vulnerable communities.	
TRANSFORMATIVE	
Designate an Automated Freight Vehicle Network in coordination with the private sector to prepare for the future of freight mobility by identifying and investing in the most promising facilities on the Network.	Partner with emerging technology leaders and the private sector to ensure Texas is a leader for freight mobility technology.
Develop guidance for Metropolitan Planning Organization and local planners on how to update complete streets policies to include freight modes.	Advance the Weigh-in-Motion and Vehicle Classification strategic plan.
In coordination with planning partners, establish a Third Coast Global Gateway task force.	Encourage development of advanced air mobility options in Texas.
Support establishment of a statewide Supply Chain Council consisting of industry representatives to advise state agencies on a variety of supply chain challenges and opportunities.	Develop digital infrastructure and integration policies necessary to enable the development of digital twins and implementation of emerging freight mobility technologies.
Monitor the development of the policies, programs, and infrastructure necessary to accommodate fuel diversification.	Support technology and operational strategies and deploy integrated border-crossing management solutions.
Encourage a robust community impact assessment and outreach program related to freight movement that includes examining community impacts and evaluating and communicating the equity considerations of those impacts.	Examine alternative public funding sources that provide adequate, stable, and equitable revenue streams given the trends impacting future freight transportation demand and operations.

SUMMARY OF PROGRAM ACTIONS

Short-term TxDOT should...	Medium-term TxDOT should...
SUPPORTIVE	
Develop a Texas Delivers 2050 roll-out plan to include TxDOT Divisions and Districts, Metropolitan Planning Organizations and other planning partners, and the private sector.	Develop a statewide supply chain and multimodal freight network resiliency enhancement plan to address implications of disruptions on the Network.
Partner with stakeholders to support the economic role of freight.	Implement a Weigh-in-Motion and Vehicle Classification program to oversee the implementation of the strategic plan.
Advance the Texas-Mexico Border Transportation Master Plan implementation program.	Initiate a Truck Parking Availability System program with the goal of expanding Truck Parking Availability System to all interstates in Texas.
Continue to facilitate binational collaboration through the Border Trade Advisory Committee, binational regional advisory councils, and dialogue with the Mexican entities.	Develop a first and last mile connectivity program to identify and address the current needs and to enhance the technology readiness of these corridors.
Create a rural freight connectivity program focused on development and implementation of corridor master plans.	
Create a Network Safety Program to improve safety and mobility on the Network.	
STIMULATIVE	
Deliver freight planning training on incorporating freight into planning and operations for TxDOT Divisions, Districts, Metropolitan Planning Organizations, and other planning staff.	Develop industrial access and freight supportive land use and development guidance in coordination with private sector industrial developers.
In coordination with planning partners, develop a Network grant program targeting federal discretionary grants for high priority multimodal freight projects.	Support integration of workforce development opportunities into existing public outreach programs, especially along the Network.
Implement the safety warning detection program.	Explore “bypass” routes, usage incentives, technology enhancements, and the role of land use in freight bottlenecks relief.
Continue coordination with private sector rail partners to identify funding programs to implement railroad improvements and technology advancements.	Partner with airports, and the business and host communities to help implement recommendations developed by the Texas Aviation System Plan.
Partner with Texas ports and other private sector stakeholders to identify and implement technology solutions to improve mobility and reliability at ports.	
TRANSFORMATIVE	
Develop an Automated Freight Vehicle Network program to assess and ensure the technology readiness of the state’s key trade and commerce routes.	Explore demand management strategies aimed at freight trips and logistics service providers as well as consumers and shippers who generate the demand.
In coordination with planning partners, elevate the “3 rd Coast” concept as a key gateway of North America.	



Spotlight Program Recommendation

Create a rural freight connectivity program

Maintaining and sustaining the existing Network to meet acceptable conditions and performance targets is necessary for Texas to serve its existing businesses and residents and maintain competitiveness.



Modernizing the Texas Multimodal Goods Movement and Supply Chain Network:

Technology and Operations Actions

Transportation infrastructure investments alone will not be able to fully meet the goods movement needs related to safety, economic competitiveness, asset preservation and utilization, mobility and reliability, and multimodal connectivity. New technology and operation applications have the ability to improve goods movement and supply chains efficiency, improve supply chain reliability, reduce freight industry costs, and improve safety.

SUMMARY OF TECHNOLOGY AND OPERATIONS ACTIONS

Short-term TxDOT should...	Medium-term TxDOT should...
SUPPORTIVE	
Implement Weigh-in-Motion/Vehicle Classification Strategic Plan.	In coordination with the railroads, develop rail crossing management system.
Expand Truck Parking Availability System system to interstates.	Integrate freight considerations into the Transportation System Management and Operations Plan.
Expand the safety warning detection system.	Deploy safety warning detection system.
STIMULATIVE	
Assess feasibility of integrating statewide traffic management information into existing Transportation Management Centers.	Support the expansion of broadband and 5G capabilities along the Network.
Develop integrated traffic management and operations data exchange platforms.	Deploy smart freight connector technology for select Network facilities.
TRANSFORMATIVE	
Continue to test and deploy the Texas Connected Freight Corridors System.	Develop a binational freight traffic operations system.
Support private sector development of innovative freight mobility hubs.	Incorporate machine learning and predictive analysis into its technology solutions.
In partnership with the private sector, develop a freight automation program to invest in the Automated Freight Vehicle Network.	

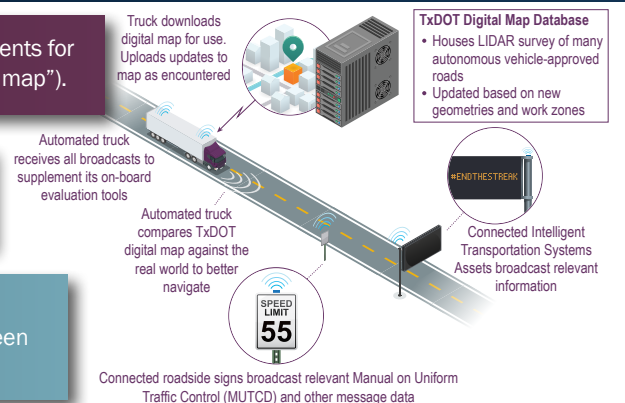
Spotlight Technology Recommendation

Develop a Freight Automation Program to invest in the Automated Freight Vehicle Network

OVERVIEW: Implement autonomous vehicle-specific infrastructure requirements for “smart” roadside signs and repository for digitized infrastructure data (“digital map”).

NEEDS: Need to offer better information on the roadway environment to improve efficiency and safety of automated freight vehicles.

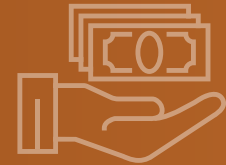
CHALLENGES: Achieving a consolidated and consistent basemap of the roadway environment will require a strong public-private-partnership between TxDOT and its private sector partners.



Investing in Texas Supply Chains:

The Goods Movement and Supply Chain Investment Plan

The Texas Freight Investment Plan presents key priority freight projects for highways, railroads, ports and waterways, airports, and border crossings. It provides fiscally constrained and unconstrained funding priorities for the Texas Multimodal Freight Network.



The **unconstrained Freight Investment Plan** along the Texas Highway Freight Network represents a **total investment need of over \$47 billion through 2,200 projects** of varying types including asset management, connectivity, mobility, safety and other project types.



FUNDING STATUS AND PROJECT CATEGORY



FUNDING STATUS AND PRIORITY

Freight Priority	Fully Funded		Partially or Unfunded		
	Number of Projects	Cost (Millions)	Number of Projects	Funded (Millions)	Funding Gap (Millions)
High	654	\$15,725	87	\$2,448	\$3,468
Medium	604	\$11,306	136	\$2,025	\$5,659
Low	609	\$4,349	134	\$425	\$1,921
TOTAL	1,867	\$31,380	357	\$4,898	\$11,048

The \$47 billion unconstrained Freight Investment Plan has an

\$11 BILLION FUNDING GAP.





Multimodal Goods Movement and Supply Chain Investment Plans

TxDOT's modal partners own, operate and maintain a significant portion of the Texas multimodal transportation network and represent a key component of the Freight Investment Plan. Port and waterway, railroad, airport, and pipeline projects help provide a complete picture of investments needed to maintain and expand the network.



The Port Mission Plan documents **141 port connectivity projects** across 18 ports representing an **investment need of \$4.3 billion.**



PORT CONNECTIVITY REPORT PROJECT SUMMARY

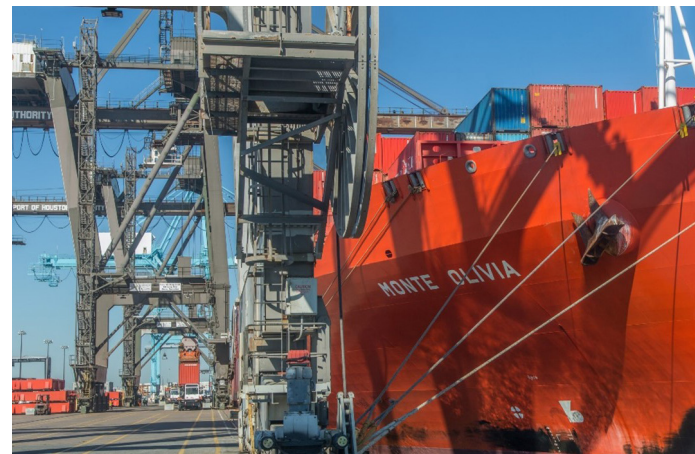
PORT	NUMBER OF PROJECTS	COST (\$MILLIONS)
Port of Orange	9	\$27.3
Port of Beaumont	9	\$13.6
Port of Port Arthur	15	\$72.2
Sabine Pass Authority	3	\$0.6
Port Houston	30	\$2,912.0
Cedar Bayou Navigation District	2	\$96.5
Port of Galveston	13	\$104.2
Port Freeport	8	\$27.8
Port of Bay City	4	\$36.2
Port of Palacios	4	\$10.1
Calhoun Port Authority	5	\$117.8
Port of West Calhoun	5	\$14.6
Port of Victoria	6	\$123.3
Port of Corpus Christi	12	\$384.9
Port of Port Mansfield	4	\$236.5
Port of Harlingen	4	\$22.1
Port of Isabel	1	\$8.8
Port of Brownsville	7	\$132.2
Total	141	\$4,340.7

KEY GULF INTRACOASTAL WATERWAY PROJECTS

Modify the Brazos River floodgates | approximately **\$320 million**

Modify the Colorado River locks | approximately **\$252 million**

Maintain authorized depth and width of the Gulf Intracoastal Waterway | **\$54 million annually**

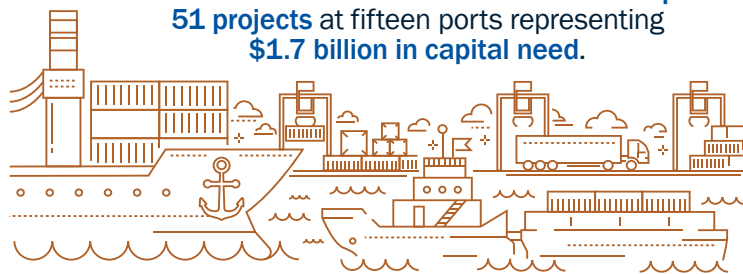


ON-PORT INFRASTRUCTURE PROJECTS

On-port capital improvements include:

- Terminal expansion
- Berth maintenance and expansion
- Truck staging
- Rail terminal expansion
- and more...

These projects address on-port capacity and operational efficiency. The Port Mission Plan summarizes the **top 51 projects** at fifteen ports representing **\$1.7 billion in capital need.**



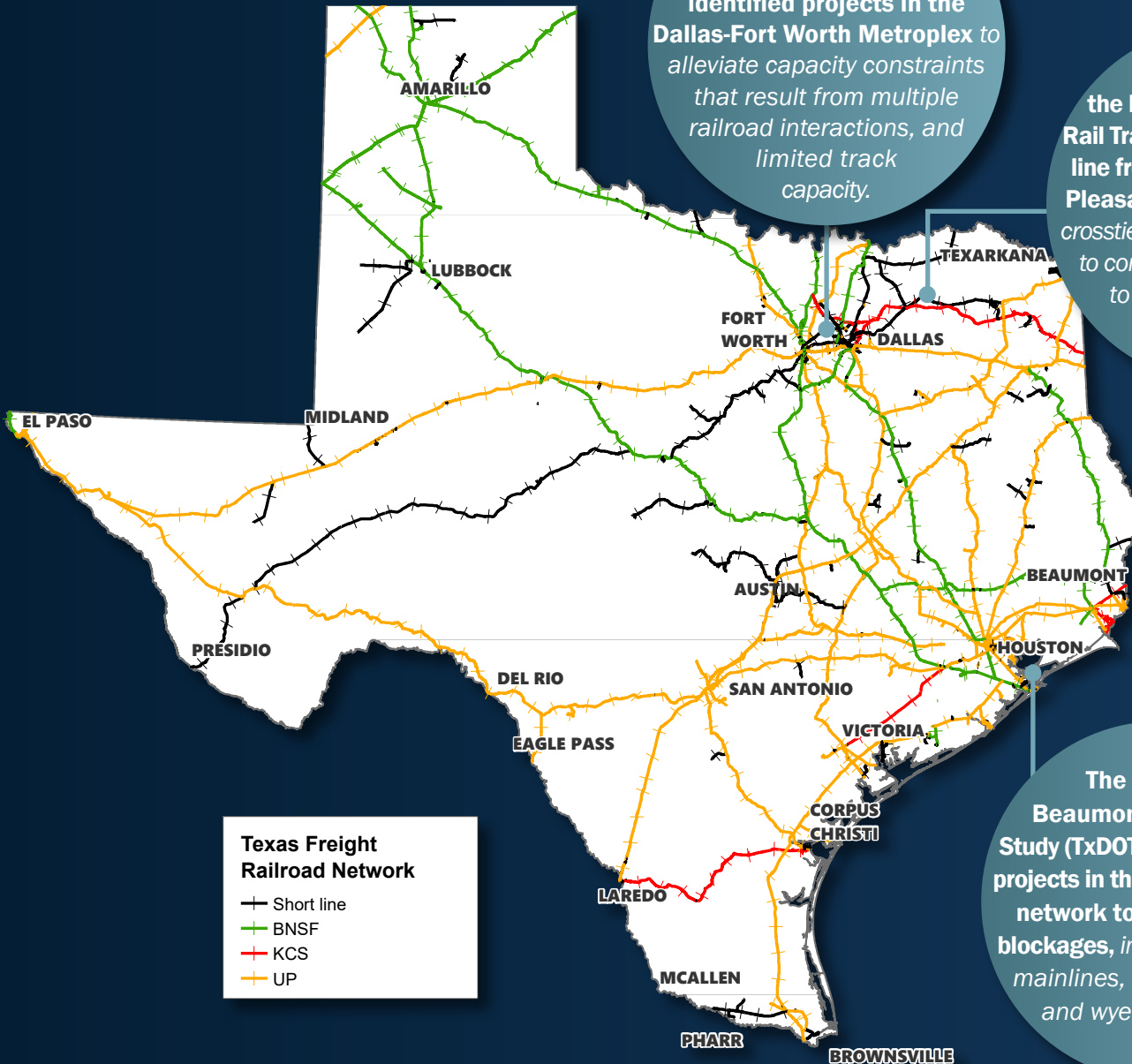


Rail service is critical to the success of key industries and to the efficiency of the Texas Multimodal Freight Network. Railroad project needs were identified based on input from railroads operating in Texas as well as from the TxDOT Rail Division. These needs reflect **56 projects and include corridor track improvements, at grade crossing improvements, and grade separations representing almost \$1.4 billion in investments.**

RAIL PROJECT SUMMARY

SOURCE/SPONSOR	NUMBER OF PROJECTS	ESTIMATED COST (\$MILLIONS)**
Class I Railroads	34	\$1,164.5
Short Line Railroads	21	\$192.9
Rail Freight/Port Projects	1	\$30.0
Total	56	\$1,387.4

** Cost estimates were provided for 31 of the 56 projects.



The Metroplex Freight Mobility Study Phase I & II (TxDOT, 2021) identified projects in the Dallas-Fort Worth Metroplex to alleviate capacity constraints that result from multiple railroad interactions, and limited track capacity.

Rehabilitation of the Northeast Texas Rural Rail Transportation District rail line from Greenville to Mount Pleasant to address defective crossties and bridge deficiencies to continue providing service to existing customers and attract new business.

The Houston-Beaumont Freight Rail Study (TxDOT, 2021) identified projects in the Houston railroad network to mitigate track blockages, including additional mainlines, switching leads, and wye connections.



Eight Texas airports have 39 proposed air cargo projects – 2 of which are off-airport connector projects – representing \$754 million in investments.

AIRPORT CARGO PROJECT SUMMARY

AIRPORT	INSIDE THE GATE PROJECTS	CONNECTOR PROJECTS	COST (\$MILLIONS)
Fort Worth Alliance Airport	14	0	\$108.7
Austin-Bergstrom International Airport	1	0	\$11.4
Dallas/Fort Worth International Airport	2	0	\$151.0
El Paso International Airport	11	2	\$128.9
Valley International Airport	1	0	\$25.0
George Bush Intercontinental Airport	2	0	\$237.0
Lubbock Preston Smith International Airport	2	0	\$29.0
Laredo International Airport	4	0	\$63.0
Total	37	2	\$754.0

EXAMPLE AIR CARGO PROJECT NEEDS

Dallas/Fort Worth International Airport / Relocation/Updating the Fumigation Facility / \$11 MILLION

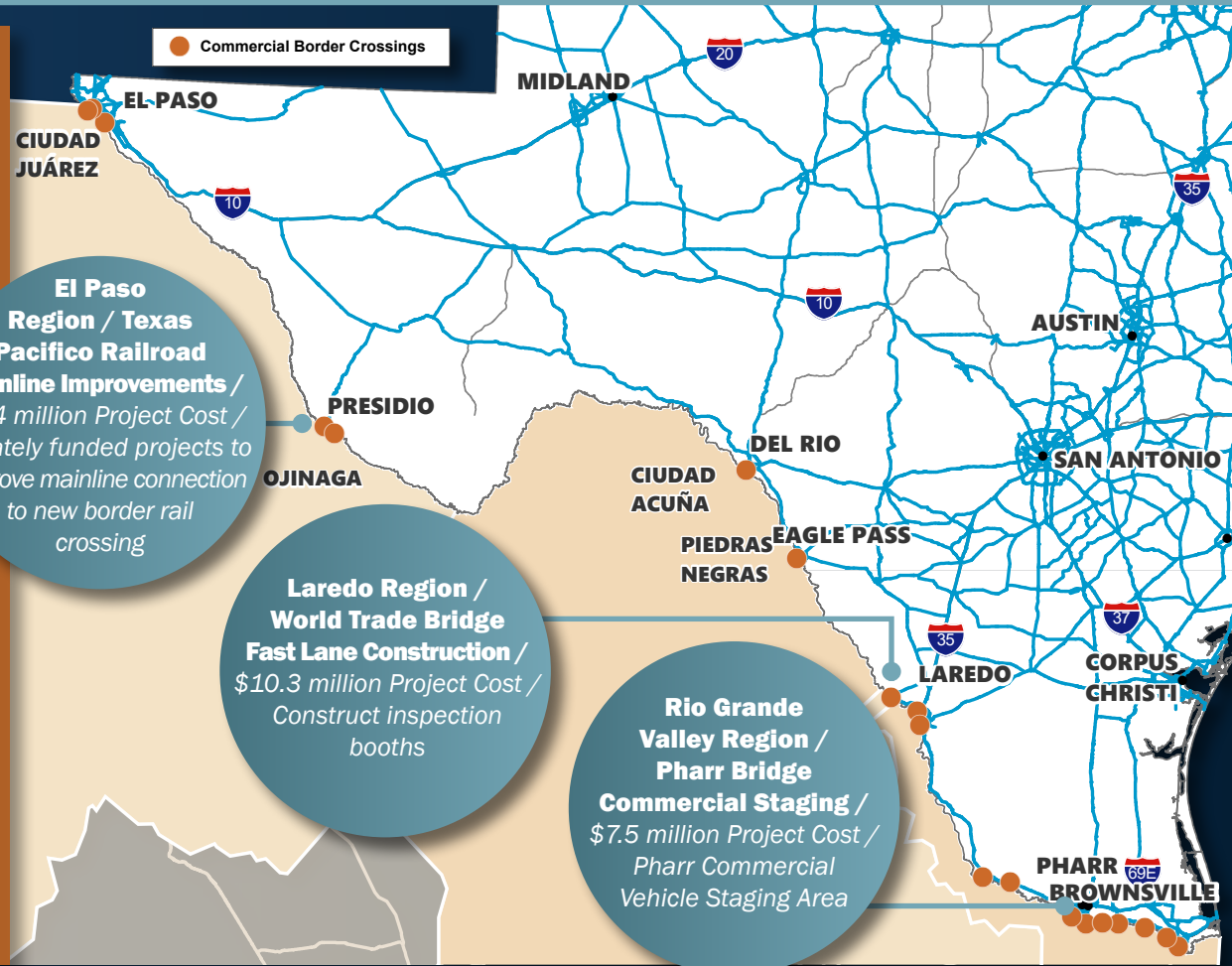
Laredo International Airport / Rehabilitate Northeast Cargo Apron / \$12 MILLION

Austin-Bergstrom International Airport/ Cargo Development East / \$11 MILLION



BORDER PROJECT SUMMARY

The Texas-Mexico Border Transportation Master Plan was developed by TxDOT to help identify border crossing needs. This plan identifies 53 projects that are on the Network and included in the Unified Transportation Program, with **42 fully funded (\$1.6 billion), 4 partially funded (\$819 million), and 7 unfunded (\$315 million).**

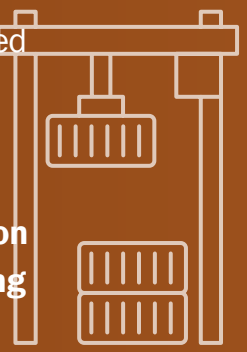


The 8-Year Fully-Funded Highway Freight Investment Plan

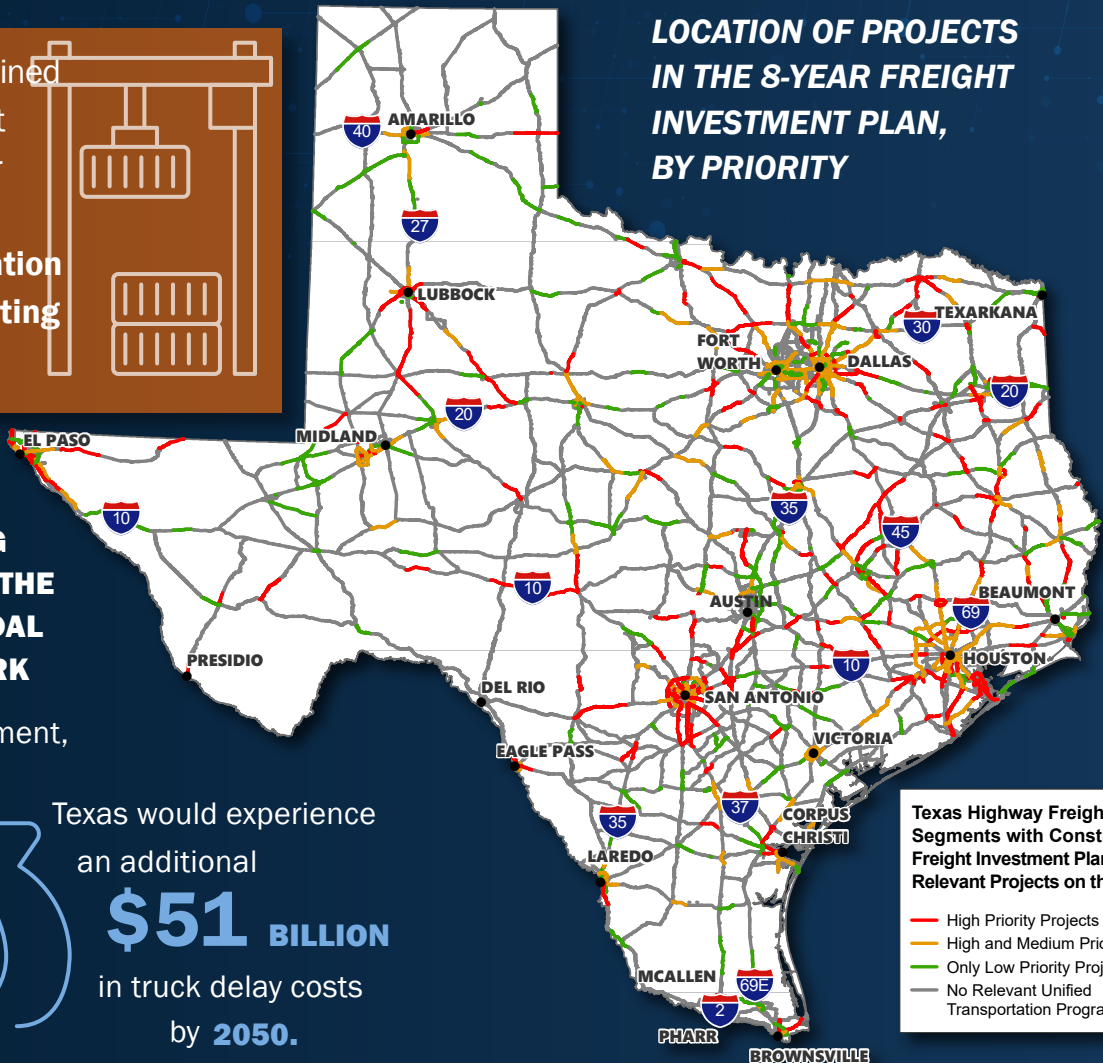
The 8-year fiscally-constrained Freight Investment Plan projects include fully funded projects programmed over the next 8 years along the Texas Highway Freight Network. The 8-year the Plan represents a **\$29.3 billion investment of 1,800 projects**.

	PROJECT CATEGORY	NUMBER OF PROJECTS	PERCENT OF PROJECTS	COST (MILLIONS)	PERCENT OF COST
SUPPORTIVE	Safety	750	41%	\$1,360	5%
	Asset Management	597	32%	\$3,627	12%
STIMULATIVE	Mobility	472	26%	\$23,867	80%
	Connectivity	25	1%	\$837	3%
TOTAL		1,844	100%	\$29,691	100%

The fiscally-constrained Freight Investment Plan contains over **640 high priority freight transportation projects** representing **\$14.7 billion**.



LOCATION OF PROJECTS IN THE 8-YEAR FREIGHT INVESTMENT PLAN, BY PRIORITY



THE COST OF NOT ADDRESSING CONGESTION ON THE TEXAS MULTIMODAL FREIGHT NETWORK

Without investment,



Texas would experience an additional **\$51 BILLION** in truck delay costs by **2050**.

Texas Highway Freight Network Segments with Constrained Freight Investment Plan Projects Relevant Projects on the Network

- High Priority Projects
- High and Medium Priority Projects
- Only Low Priority Projects
- No Relevant Unified Transportation Program Projects



Unmet Needs on the Network Impact the State's Key Supply Chains

There are over 5,000 miles on the Texas Highway Freight Network with high priority infrastructure needs and no related project in the 8-year Freight Investment Plan. Some of these needs have projects in the unconstrained Freight Investment Plan that could be accelerated to address high priority freight needs sooner, while others have no projects in the TxDOT's 10-year Unified Transportation Program. The unmet needs have implications for the safety, efficiency, and competitiveness of the state's supply chains.

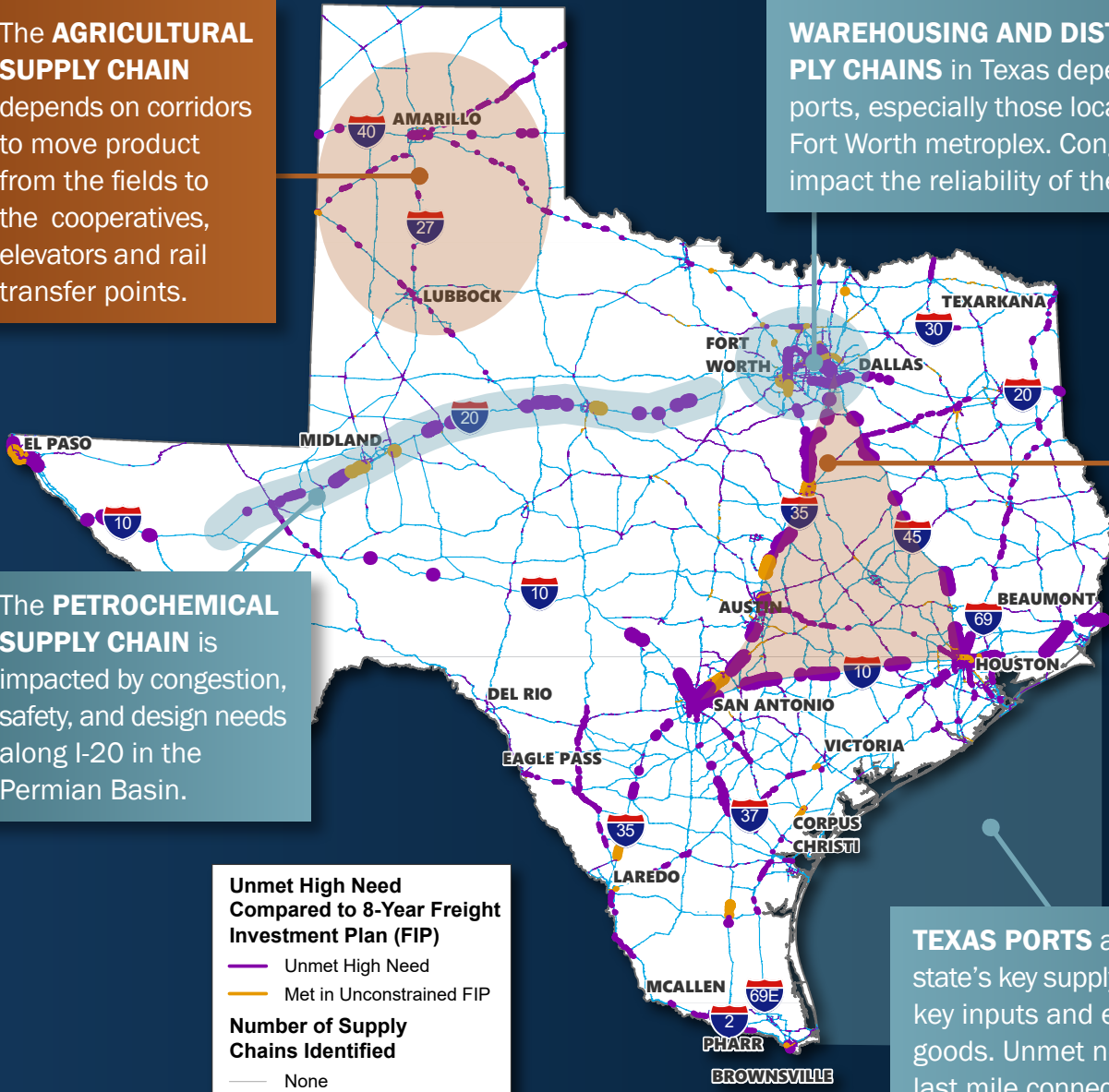
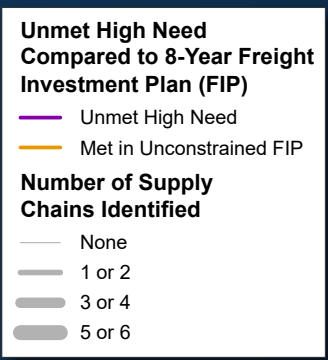
The **AGRICULTURAL SUPPLY CHAIN** depends on corridors to move product from the fields to the cooperatives, elevators and rail transfer points.

WAREHOUSING AND DISTRIBUTION SUPPLY CHAINS in Texas depend on inland ports, especially those located in the Dallas-Fort Worth metroplex. Congestion and safety impact the reliability of the supply chain.

The **PETROCHEMICAL SUPPLY CHAIN** is impacted by congestion, safety, and design needs along I-20 in the Permian Basin.

ADVANCED MANUFACTURING SUPPLY CHAINS are concentrated along the I-35 corridor and are impacted by congestion and safety needs in the urban and border crossing regions.

TEXAS PORTS are vital to the state's key supply chains for importing key inputs and exporting final goods. Unmet needs on first and last mile connectors to the ports impact safety, reliability and drayage costs for all supply chains.



Summary of Unfunded Projects for Each Mode

MARITIME PORT PROJECTS

The port connectivity (**\$4.3 BILLION**) and on-port infrastructure (**\$1.7 BILLION**) projects are unfunded or partially funded projects that are ready to advance over the next two years.

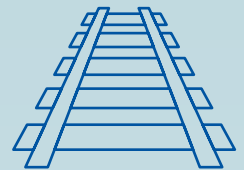


WATERWAY PROJECTS

The Brazos River and Colorado River projects are approved unfunded projects in excess of **\$572 MILLION** and the Gulf Intracoastal Waterway's annual dredging program is under funded by **\$24 MILLION**.

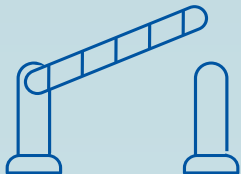
FREIGHT RAIL PROJECTS

The 56 rail projects (e.g., safety, congestion, economic development) (**almost \$1.4 BILLION**) are unfunded or partially funded.



INTERNATIONAL BORDER CROSSING PROJECTS

11 of the border crossing projects on the Texas Highway Freight Network (**more than \$1.1 BILLION**) are partially funded or unfunded.



AIR CARGO PROJECTS

Texas' commercial airports have masterplans that document longer term unfunded cargo improvement projects such as the relocation of the belly freight facility at Austin-Bergstrom International Airport and widening of Glade Road between Highway 360 and West Airfield Drive at Dallas/Fort Worth International Airport.



PIPELINE PROJECTS

The pipeline industry invests in new pipelines to connect to new oil and gas mines as needed and for competitive reasons no information is available on unfunded projects.





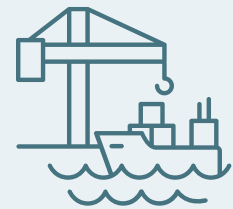
Call to Action: Fueling Texas Economic Growth through Goods Movement and Efficient Supply Chains

Trade, commerce, and the movement of goods have been a cornerstone of the Texas economy for generations, and Texas Delivers 2050 identifies three game-changing initiatives critical for the **state's continued economic prosperity that hinges on preparing for and leveraging the future in freight mobility** – 1) Third Coast Gateway, 2) Texas Automated Freight Vehicle Network, and 3) Freight Mobility Innovation Hubs. These three initiatives combine numerous policies, programs, technologies, and project recommendations into a focused framework that provides **a vision of the future that sees Texas build on and expand the dominance and reach of its global supply chains.**

STRATEGIC FREIGHT MOBILITY INITIATIVES DRIVING THE FUTURE OF TEXAS

Third Coast Gateway

- Create a connected logistics complex within Texas that strengthens Texas' position as a key global gateway serving North America.
- Connect the United States with the world economy, providing supply chain and industrial expansions within Texas and enhance the connections Texas' ports have with Texas, North America, and the world.
- This gateway should have a significant impact on national freight movement trends, changing and strengthening domestic and global supply chains.



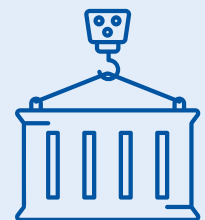
Texas Automated Freight Vehicle Network

- Identify, designate, and invest in a statewide automated freight vehicle network to drive the future of Texas as an innovator, leveraging the open regulatory environment the state has created and supporting ongoing private sector investments in Texas.
- Automated driving systems and connected driving systems are two of the most potentially transformative technologies being developed, tested, and deployed today, and Texas is serving as an incubator and key testing site.
- Automated driving systems and connected driving systems technologies have made significant advancements on the transportation systems in Texas, the United States, and throughout the world and are seen as future solutions to key transportation system challenges.



Freight Mobility Innovation Hubs

- Create a network of freight mobility innovation hubs to serve as incubators to accelerate the deployment and integration of innovative freight technologies into daily supply chain activities, further establishing Texas' position as a leader in innovation.
- The freight mobility innovation hubs would be part of a statewide initiative designed to encourage modernization and advancement of Texas' key industries in rural and urban settings.
- These hubs would help serve as testing grounds for alternative freight delivery concepts such as the freight shuttle, drone/urban air mobility, freight mobility zones, and automated and connected commercial vehicle operations.



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