



Permian Basin Freight and Energy Sector Transportation Plan

Steering Committee Meeting

Roll call at 8:30 AM.

Help make this is successful webinar:

- Ensure your phone and computer microphone are muted.
- Familiarize yourself with the chat box and participant list.
- If not speaking, periodically check your devices to ensure they are muted.

If you have unmuted your device and are trying to speak but no one is hearing you, touch *6 or send your message to the chat box. If you're still having difficulty, text Casey Wells at 512-423-8986.

We will be using www.menti.com to gather input. You can open this website in your internet browser, either on your mobile device on computer.



Meeting Overview



MEETING PURPOSE

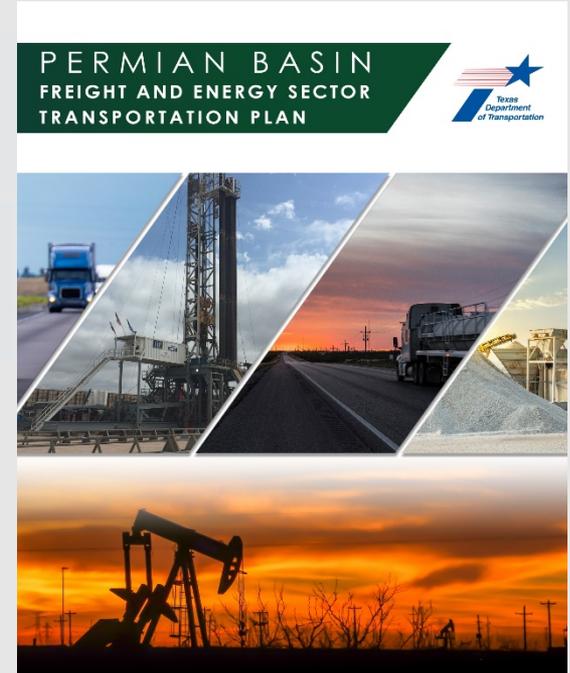
1. Present and gather feedback on the draft final Freight Plan.
2. Review short-term actions to implement Freight Plan.

Section 1: Planning for Permian Basin Energy Sector and Freight Transportation, Chapters 1 – 2

Section 2: Network Inventory Conditions and Opportunities, Chapters 3 – 5

Section 3: Addressing the Freight Needs and Challenges, Chapters 6 – 9

Finalizing the Freight Plan



Planning for Freight and Energy Sector Transportation in the Permian Basin

Section 1: Chapters 1-2





Chapter Purpose

- Establish purpose and goals of Plan
- Provide high level overview of approach to Plan development
- Summarize key data and stakeholder input

Key Messages

- Goals align with state freight goals and TxDOT's mission
- Data-driven, stakeholder-informed process used
- Final Plan is a summary of all the detailed technical documents

Support for Key Messages

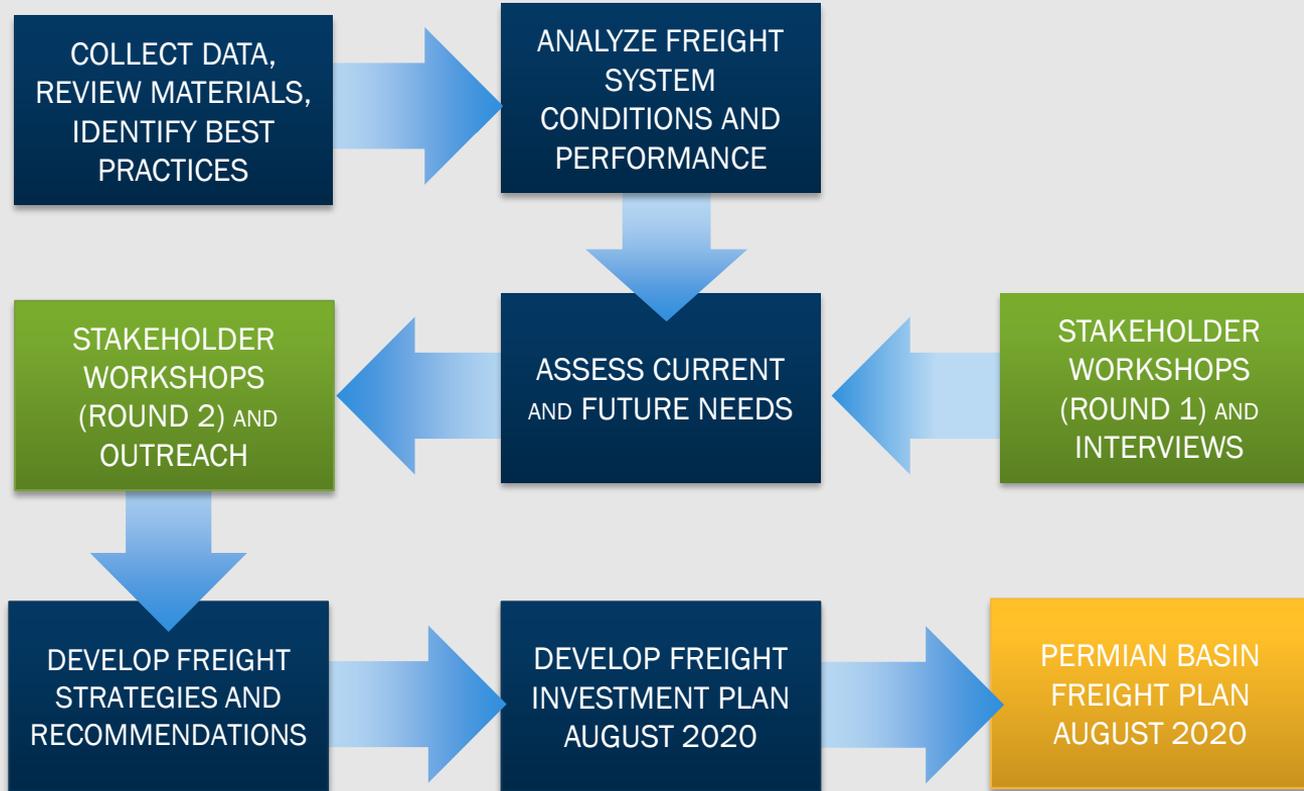
- Cross tabulation of study goals with other Plans
- Approach overview
- Summary exhibits for data and stakeholder events
- Links to technical reports

Alignment with State and National Freight Transportation Goals



PB Freight Plan	Enhance Safety	Asset Management	Reduce Congestion	Connection to Other Modes	Cost Effective Solutions	Energy Sector Needs	Partner with Private Sector	Economic Competitiveness	Leverage Technology
TFMP	Safety	Asset Management	Mobility and Reliability	Multimodal Connectivity	Stewardship	Customer Service	Sustainable Funding	Economic Competitiveness	Technology
MAP-21 and FAST Act	Safety, Security, Resiliency	Advanced Technology			Environmental	Performance and Accountability		Economic Competitiveness	Advanced Technology
		State of Good Repair						Economic Efficiency	Safety, Security, Resiliency
TTP 2050	Safety	Asset Management	Mobility and Reliability		Stewardship	Customer Service	Sustainable Funding		Technology
2019-2023 Strategic Plan	Promote Safety	Deliver the Right Projects and Preserve Our Assets			Foster Stewardship, Focus on the Customer and Value our Employees			Optimize System Performance	

Approach Overview



Data-Driven Approach



- TxDOT Open GIS Portal
- TxDOT Crash Records Information System
- TxDOT Statewide Analysis Model, Version 4
- TRANSEARCH Commodity Flow
- Enverus Drillinginfo Database
- FracFocus Database
- In Vehicle Monitoring System (IVMS) Data
- New Mexico Energy, Minerals, and Natural Resources Department
- Texas Water Development Board
- Texas Railroad Commission
- U.S. Energy Information Administration
- Moody's Economic Forecasts and TREDIS Economic Model
- MOTRAN
- Permian Basin Petroleum Association
- Texas Comptroller's Office
- Texas Department of Motor Vehicles

Over 40 data sources used

Not an exhaustive list

Stakeholder Outreach Approach



5 Steering Committee Meetings



25 Stakeholder Interviews



2 Industry Surveys



12 Industry and Community
Forums



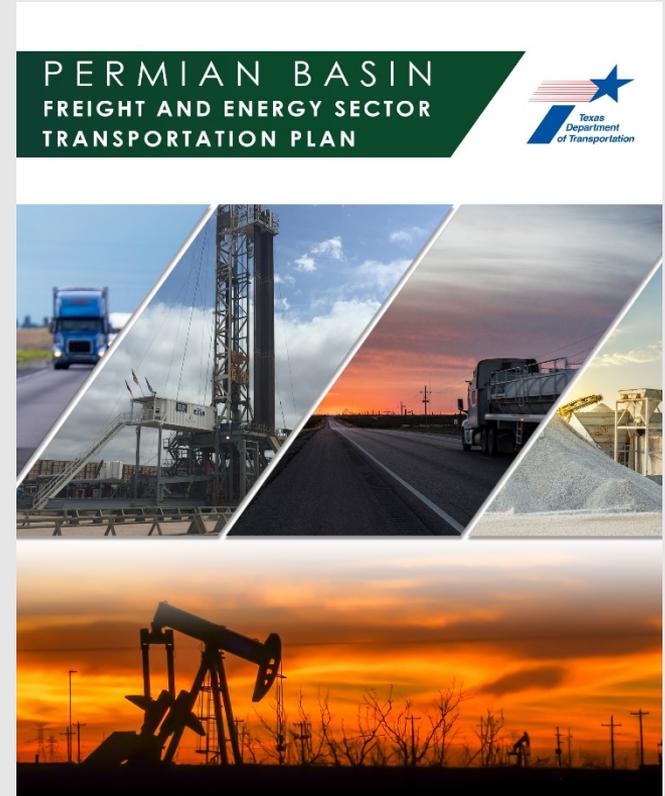
Multiple Meetings and Webinars



Technical Reports Supporting the Plan



- Goals and Objectives
- Permian Basin Multimodal Freight Network Designation
- Regional Freight Profile, Issues, Challenges, and Opportunities
- Land Use and Freight Assessment
- Trends, Forecasts, and Needs Assessments
- Economic Role of Permian Basin Energy Sector and Freight Transportation
- Recommendations, Strategies, and Implementation Plan





Chapter Purpose

- Demonstrate why freight transportation in the Permian Basin is an important state and national issue
- Increase public awareness about energy sector freight transportation

Key Messages

- The Permian Basin is vital to the state's economy
- What happens in the Permian Basin has national and global implications
- Freight activity in the Permian Basin will continue to increase

Support for Key Messages

- Overview of energy sector supply chain and key trends
- Definition of Spheres of Influence
- Summary of economic impact of Permian Basin



The Role of the Permian Basin



Produces more than **4 million** barrels of oil per day



Produces **50% of all natural gas** in Texas, **15%** in U.S.



Permian Basin number **1 wind energy** producing region in U.S.

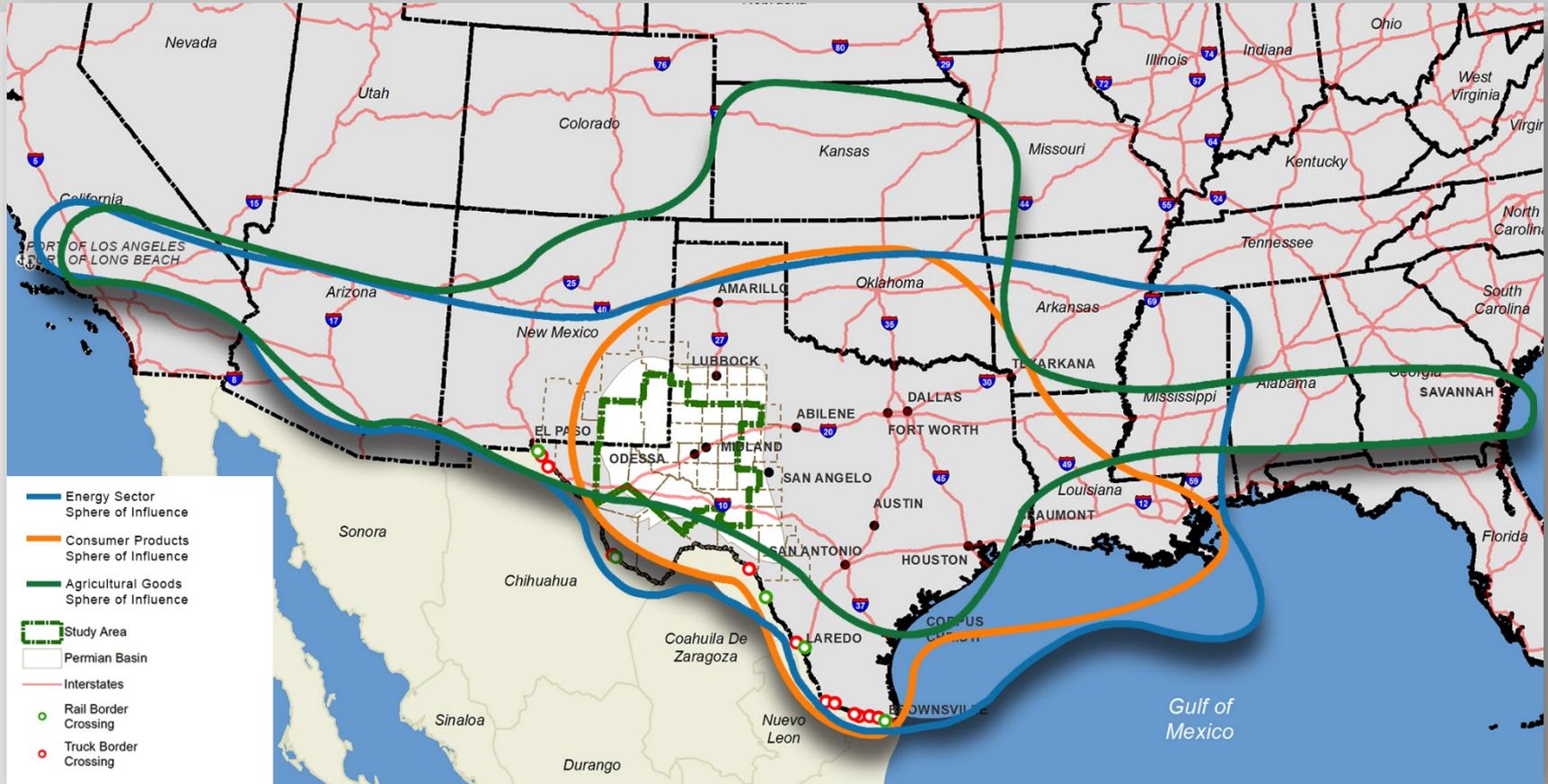
Source: U.S. Energy Information Administration, Federal Reserve Bank of Dallas

Permian Basin's Economic Impact is Larger than 12 State Economies



Source: U.S. Bureau of Economic Analysis, 2019

Permian Basin Spheres of Influence



Average per Capita Freight Tonnage, 2018



16 times more freight per capita in Permian Basin relative to statewide average

Source: Cambridge Systematics analysis of the TRANSEARCH dataset



Direct Freight Transportation/Handling Employment in the Permian Basin

Sector	2019
Truck Transportation	18,110
Pipeline Transportation	3,025
Couriers and Messengers	1,110
Support Activities	1,040
Warehousing and Storage	875
Postal Service	630
Wholesale Trade	250
Air Transportation	10
Total	25,050

Sources: Texas Labor Market Information, Quarterly Census of Employment and Wages (QCEW). <https://texaslmi.com/LMIbyCategory/QCEW>.

NOTE- Data shows no employment in 22 county study region for rail.

Direct Energy Sector and Freight Intensive Employment In the Permian Basin

Sector	2019
Mining, Quarrying, and Oil and Gas Extraction	113,700
Retail Trade	52,910
Manufacturing	42,955
Construction	30,855
Wholesale Trade	27,540
Distribution	22,380
Total	290,360

Sources: Texas Labor Market Information, Quarterly Census of Employment and Wages (QCEW).

<https://texaslmi.com/LMIbyCategory/QCEW>.

Total Annual Economic Impact, 2019



Total Impact of Freight Transportation/Handling Activity in the Permian Basin, 2019

Region	Employment	Labor Income (Millions of \$2019)	GSP (Millions of \$2019)
Permian Basin (Texas Counties)	43,235	\$3,604	\$3,181
Rest of Texas	28,230	\$3,386	\$4,465
Total	71,465	\$6,990	\$7,646

Total Impact of Energy Sector and Freight Intensive Activity in the Permian Basin, 2019

Region	Employment	Labor Income (Millions of \$2019)	GSP (Millions of \$2019)
Permian Basin (Texas Counties)	354,520	\$27,587	\$44,373
Rest of Texas	339,750	\$17,495	\$38,094
Total	694,270	\$45,082	\$82,467

Total Impacts



Source: CS analysis using IMPLAN and TREDIS

Tax Revenues Generated by Permian Basin Energy Sector and Freight Intensive Activity



Non-Severance Tax Revenues, 2019

	Federal Taxes (Millions of \$2019)	State /Local Taxes (Millions of \$2019)	Total (Millions of \$2019)
Permian Basin	\$4,746	\$5,618	\$10,364
Rest of the State	\$5,903	\$3,650	\$9,554
Total	\$10,649	\$9,268	\$19,919

Source: CS analysis using IMPLAN and TREDIS

Severance Tax and Royalties Revenues, 2019

	Millions of \$2019
State Severance Taxes	\$3,599
Royalties	\$945
Total	\$4,544

Source: The Permian Basin Enriching Texas, Permian Basin Petroleum Association (Spring 2020). Calculated by the Texas Taxpayers and Research Association; CS analysis

In 2019, nearly \$25 Billion in Federal, state, and local taxes were generated in the Permian Basin

Freight and Energy Sector Network Conditions, Challenges, Opportunities

Section 2: Chapters 3-5





Chapter Purpose

- Provide overview of freight activity in the Permian Basin
- Profile regional freight assets
- Present Permian Basin Multimodal Freight Network

Key Messages

- The Permian Basin is dominated by intraregional trucked flows of sand and water
- Rural roads are vital to the energy sector and represent some of the most important freight corridors

Support for Key Messages

- Commodity flow overview
- Inventory of regional freight assets
- Designation process for Permian Basin Multimodal Freight Network

Estimating Intraregional Sand and Water Truck Trips - 2018



- Estimate for sand is 36.8 million tons
- Estimate for fresh water is 243 million tons
- Estimate for produced water is 642 million tons

Commodity	Annual Total Truck Trips (Loaded) (millions)	Annual Total Truck Trips (Loaded + Empty) (millions)	Average Daily Truck Trips
Sand	1.60	3.20	8,770
Fresh Water	1.54	3.08	8,440
Produced Water	16.32	32.64	89,415
Total	19.46	38.92	106,625

Sources: Enverus Drillinginfo Database, 2020; FracFocus Database, 2020; New Mexico Energy, Minerals, and Natural Resources Department: Oil Conservation Division, County Production and Injection Summary by Month for Eddy and Lea Counties, 2020; Texas Water Development Board, Groundwater Database, 2020; Texas Water Development Board, Submitted Drillers Report Database, 2020; New Mexico Office of the State Engineer, Points of Diversion Geospatial File, 2020; Texas Railroad Commission, H-10 Reports, 2020; Cambridge Systematics, Inc. analysis.

Planning Level Fracking Truck Trip Generation



The process of site preparation, pad construction, rig assembly, drilling/casing, rig disassembly, follow-up site preparation/clean up, and fracturing can generate approximately

4,000 to 7,000
heavy truck trips



over **45 to 75**
days.

Once the site enters its production phase

30 to 50
heavy truck trips



over a **20- to 30-day**
period are generated.

Once the site enters its maintenance

3 to 5
heavy truck trips



are generated **per week.**

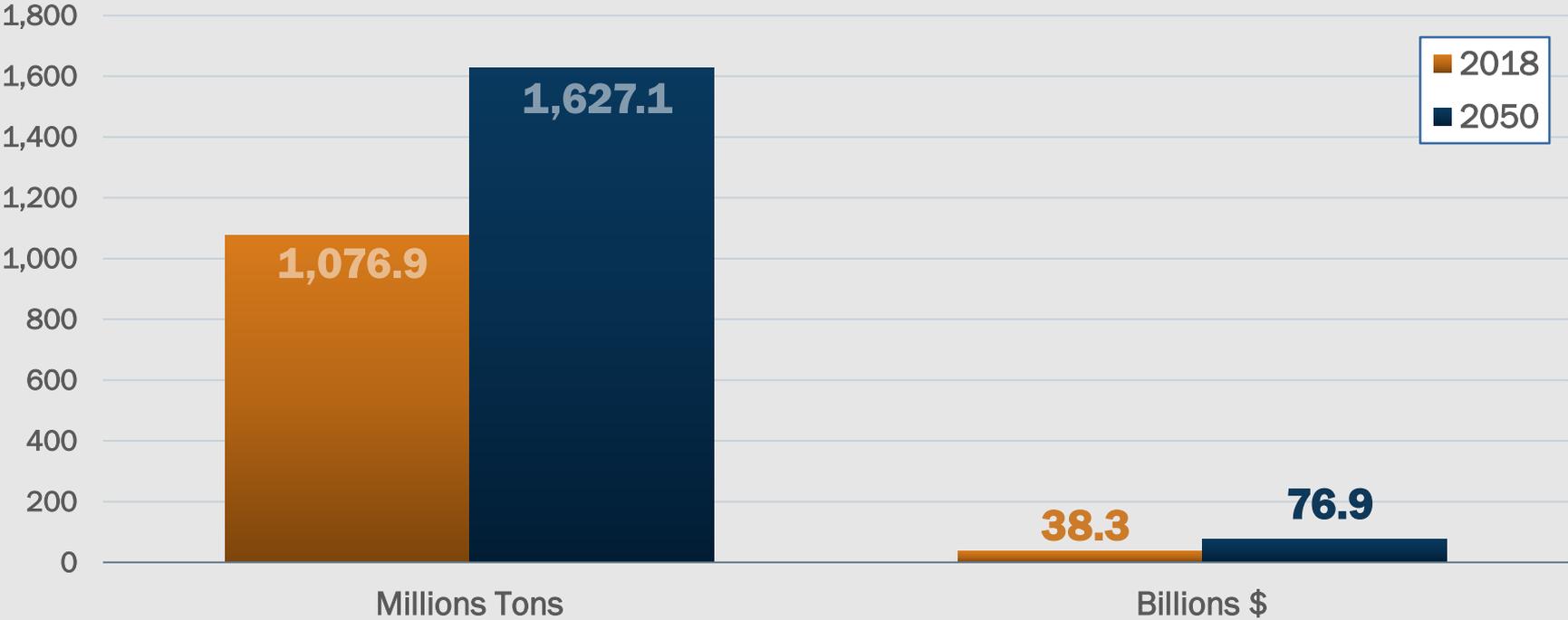
For Comparison

- MOTRAN estimate of 1,677 truckloads for on-site water to 4,677 for off-site water
- PLG estimate of 1,700 truckloads
- Estimates do not include empty truck trips

Overview of Commodity Flows in the Permian Basin: Tonnage and Value

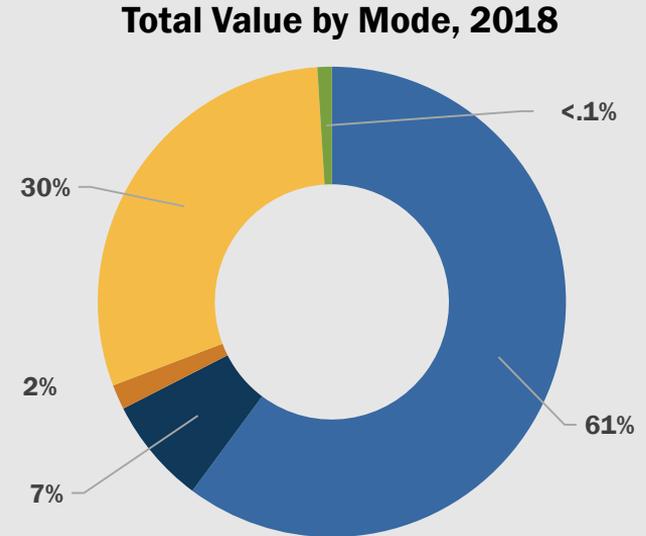
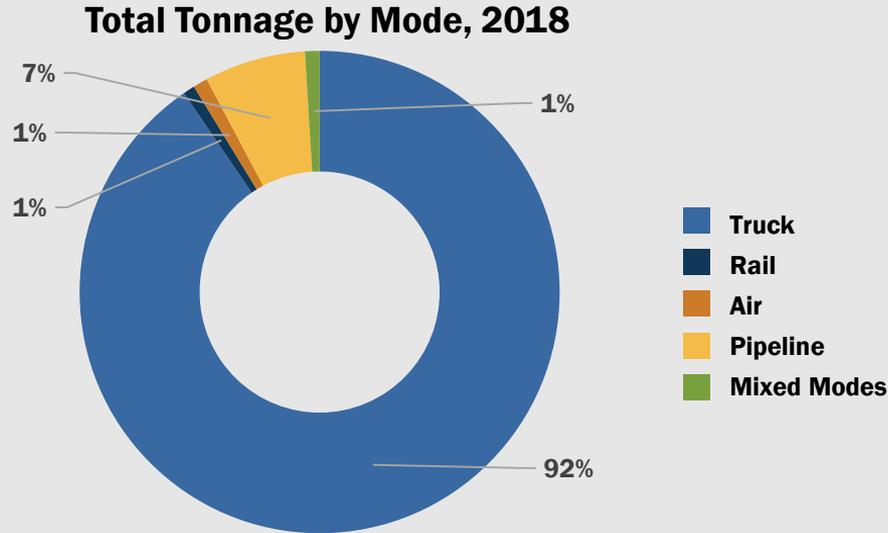


Tonnage and Value, 2018 & 2050



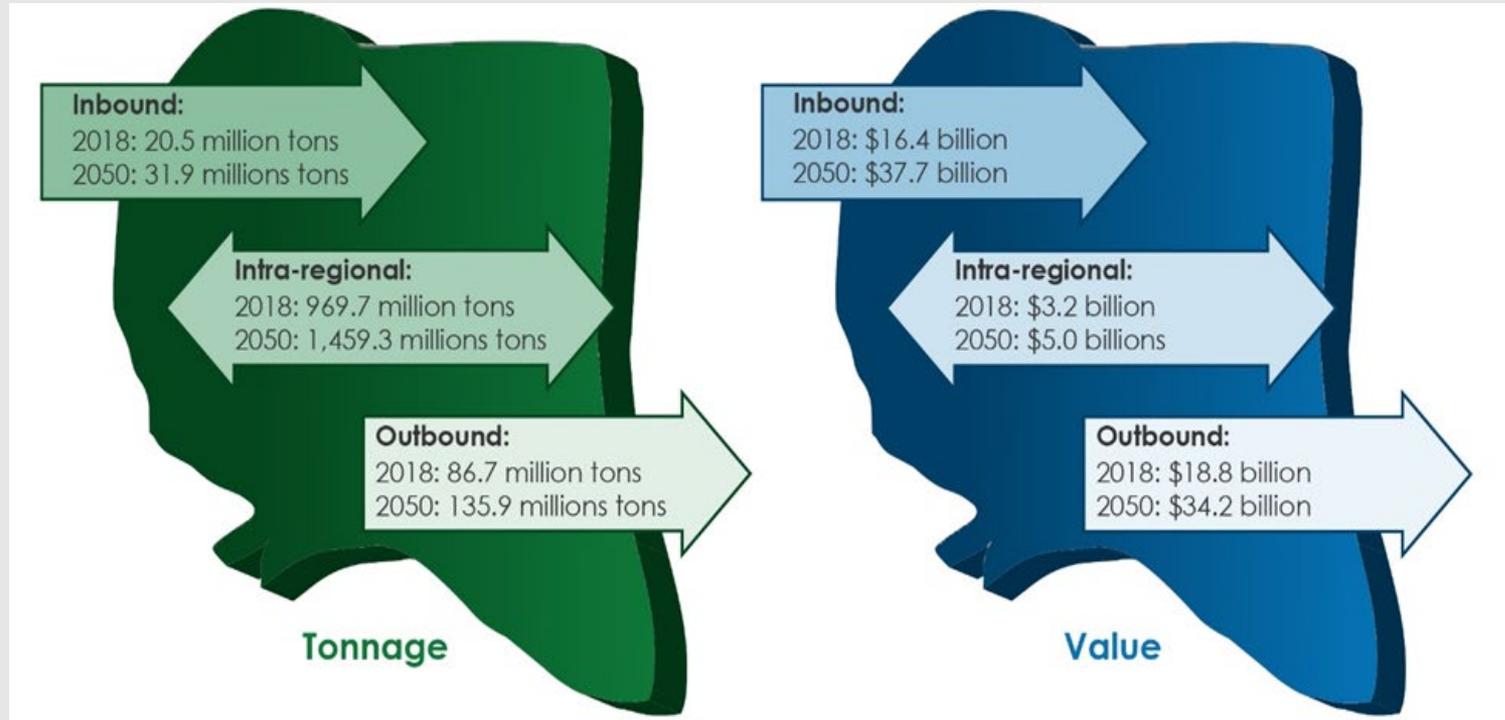
Source: CS analysis based on Transearch, Enverus, and stakeholder input

Overview of Commodity Flows in the Permian Basin: Modal Split



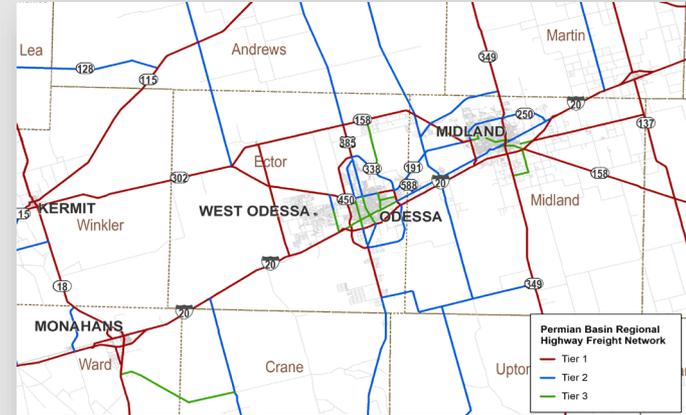
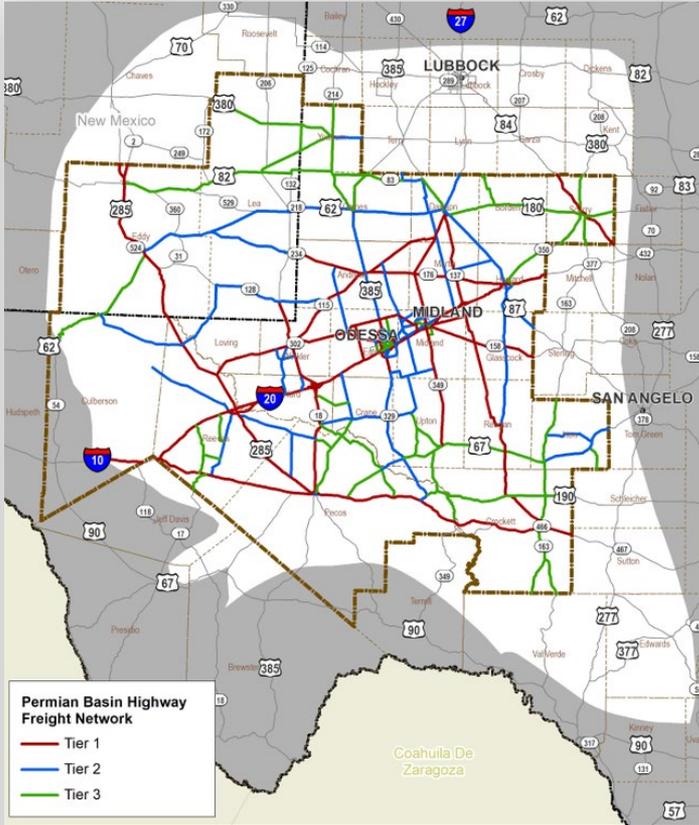
Source: CS analysis based on Transearch, Enverus, and stakeholder input

Overview of Commodity Flows in the Permian Basin: Directional Flows



Source: CS analysis based on Transearch, Enverus, and stakeholder input

Permian Basin Highway Freight Network (PBHFN)

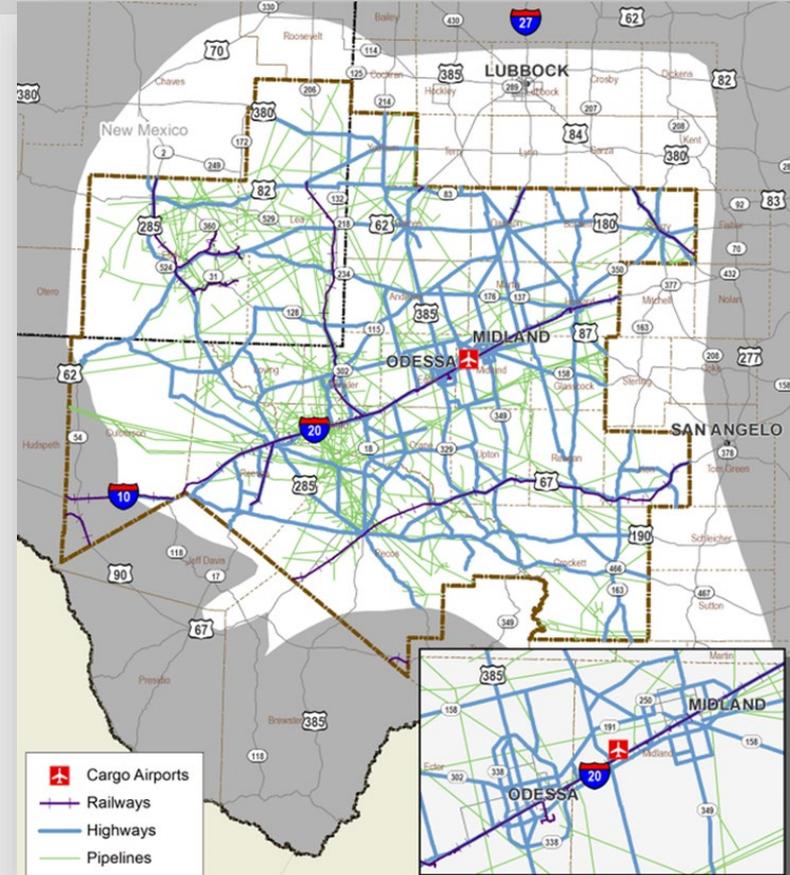


- 4,284 centerline miles
- 1,363 Tier 1 miles
- 1,367 Tier 2 miles
- 1,554 Tier 3 miles

Permian Basin Multimodal Freight Network



- PBHFN
- Railroads
 - Union Pacific
 - Texas Pacifico
 - Texas- New Mexico
 - Pecos Valley Southern
- Pipelines
 - Crude oil and refined petroleum
 - Natural gas and natural gas liquids (NGLs)
- Midland International Air and Space Port





Chapter Purpose

- Provide overview of conditions and performance of the PBHFN
- Provide overview of freight land use

Key Messages

- The conditions and performance of the system are negatively impacting safety and mobility for all motorists
- Significant land use conflicts exist throughout the region

Support for Key Messages

- Evaluation of mobility, safety, state of repair, and rural road conditions
- Land use analysis findings



Safety

- Truck involved crashes
- Rest areas and truck parking

Mobility and Reliability

- Truck counts
- Truck travel time reliability
- Buffer time index
- Sand and water truck trip generation

Asset Utilization and Preservation

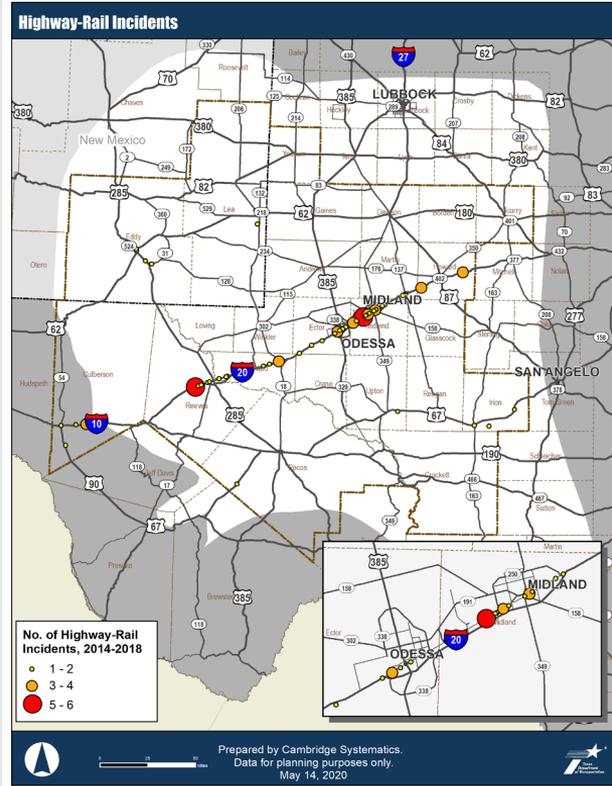
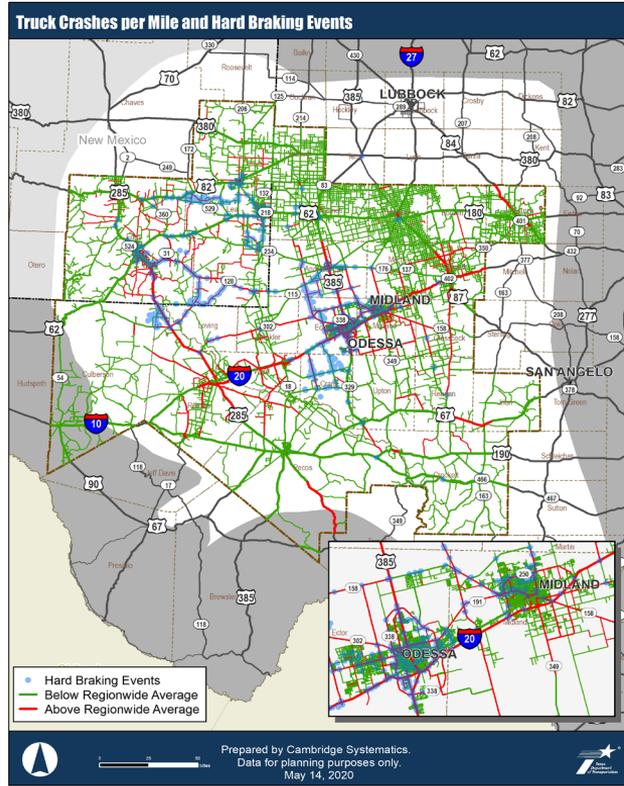
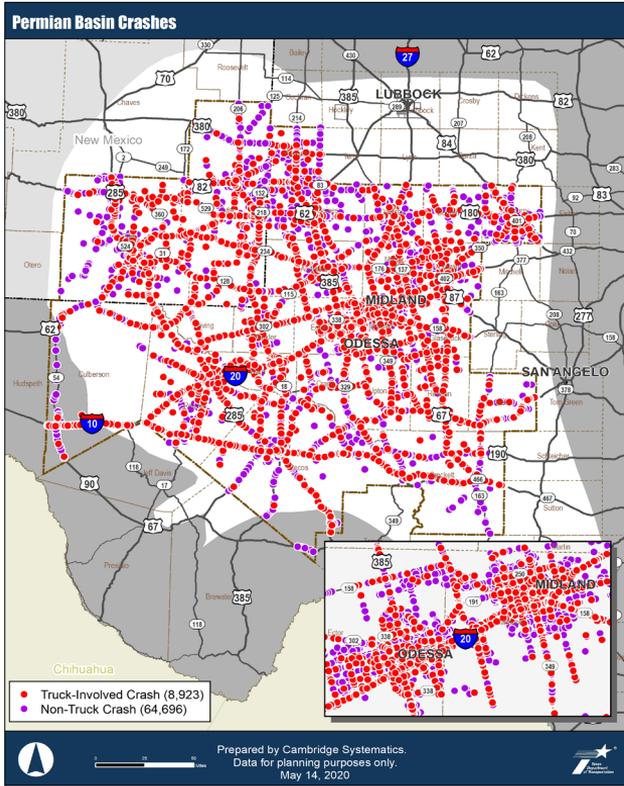
- Pavement conditions
- Bridge load restrictions and conditions
- Bridge vertical clearance
- Oversize Overweight permits

Rural Roads

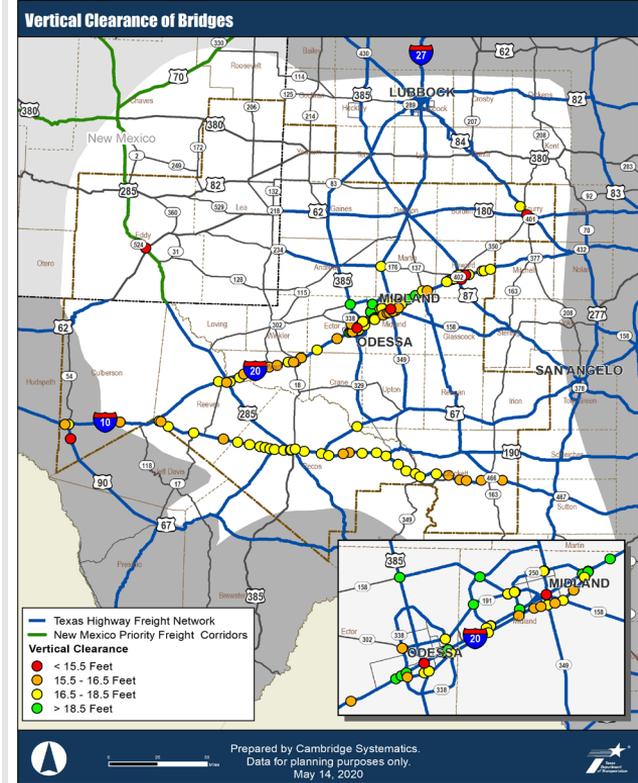
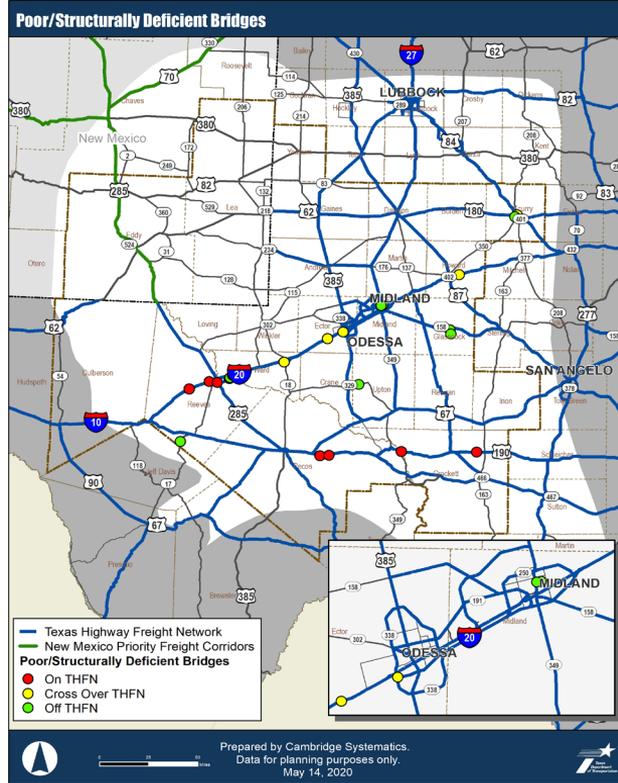
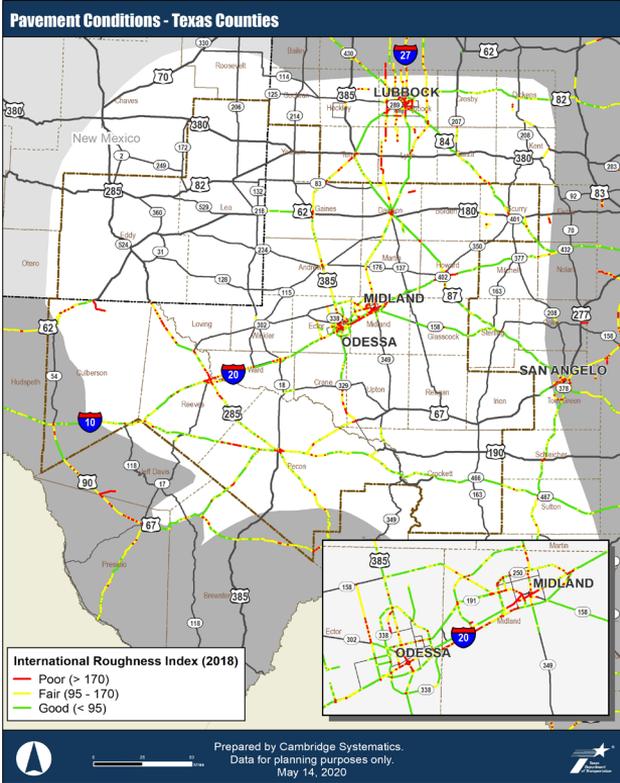
- Frontage roads
- Number of lanes

Photo: Permian Road Safety Coalition

Network Performance: Safety Analysis



Network Conditions: Asset Preservation



Freight and Land Use: Ordinances Impacting Freight

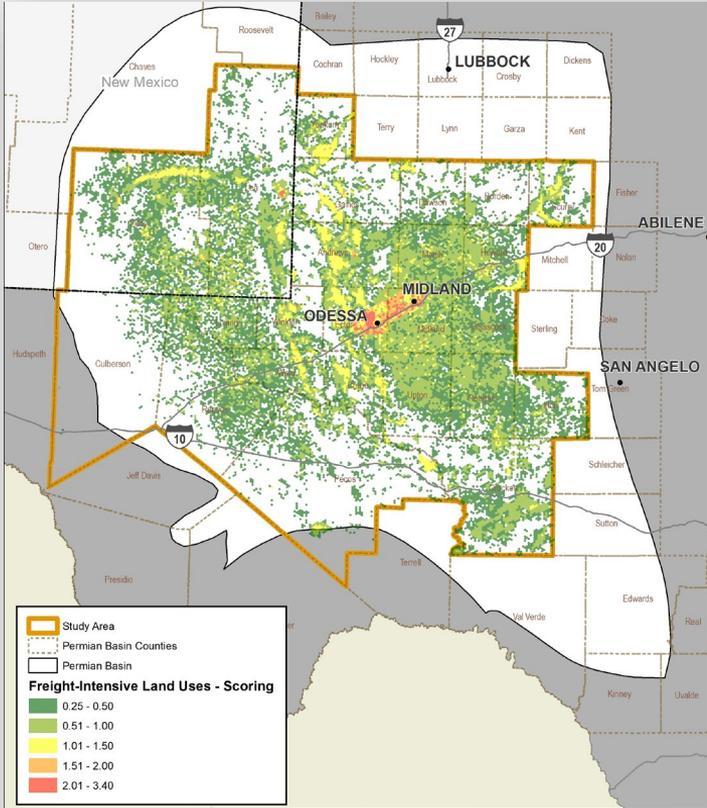


City/Town	Restrictions / prohibition on truck parking on public ROW	Trucks must drive on designated truck routes	Trucks with hazardous cargo must drive on designated hazardous cargo routes	Engine/jake brake prohibited
Andrews, TX	X	X		X
Artesia, NM				
Big Spring, TX				X
Carlsbad, NM				X
Fort Stockton, TX	X	X		
Hobbs, NM				
Kermit, TX		X	X	
Lamesa, TX				
Lovington, NM	X			
Midland, TX	X	X	X	X
Monahans, TX	X	X		
Odessa, TX	X	X	X	
Pecos City, TX	X	X		
Seminole, TX				
Snyder, TX		X		X

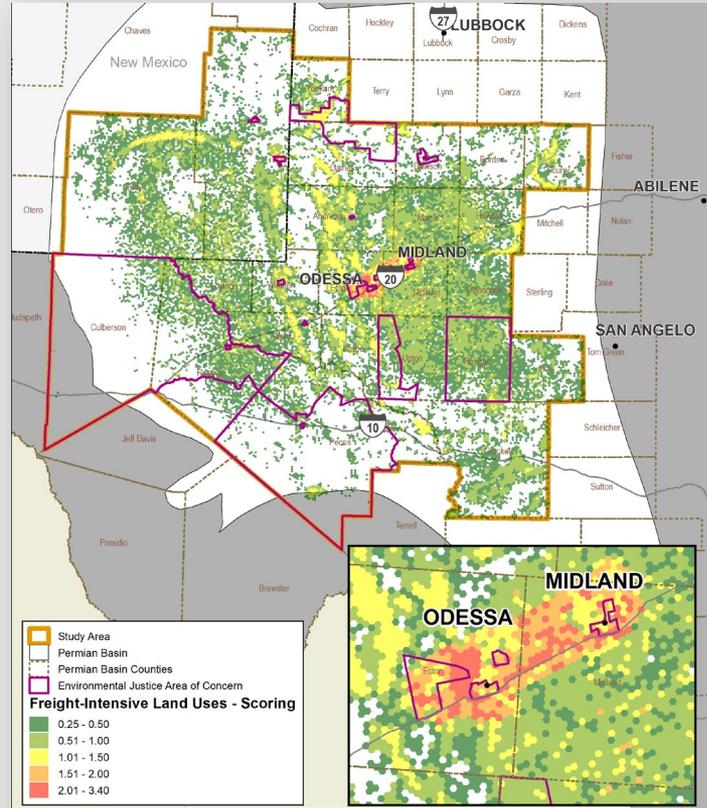
Freight Intensive Land Uses and Community Impacts



Freight Intensive Land Use



Freight Intensive Land Use and Environmental Justice Concerns



- EJ Factors
- Low income
 - English language proficiency
 - Minority



Chapter Purpose

- Provide overview of needs and challenges on the PBHFN
- Prioritize the needs and challenges

Key Messages

- Significant medium and high priority needs across multiple goal areas exist throughout the Permian Basin

Support for Key Messages

- Identification of safety, mobility, asset preservation, and rural roads needs
- Identification of combined network needs



MOBILITY AND RELIABILITY

Truck counts
Truck travel time reliability
Buffer time index

SAFETY

Truck involved crashes
Rest areas and truck parking

FREIGHT ASSET UTILIZATION AND PRESERVATION

Pavement conditions
Bridge load restrictions and conditions
Vertical bridge clearance
Oversize/Overweight Permits

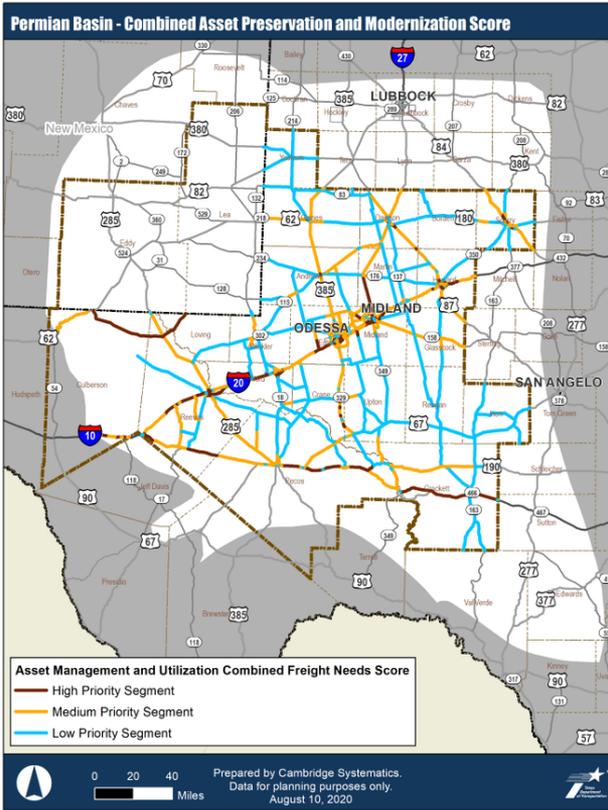
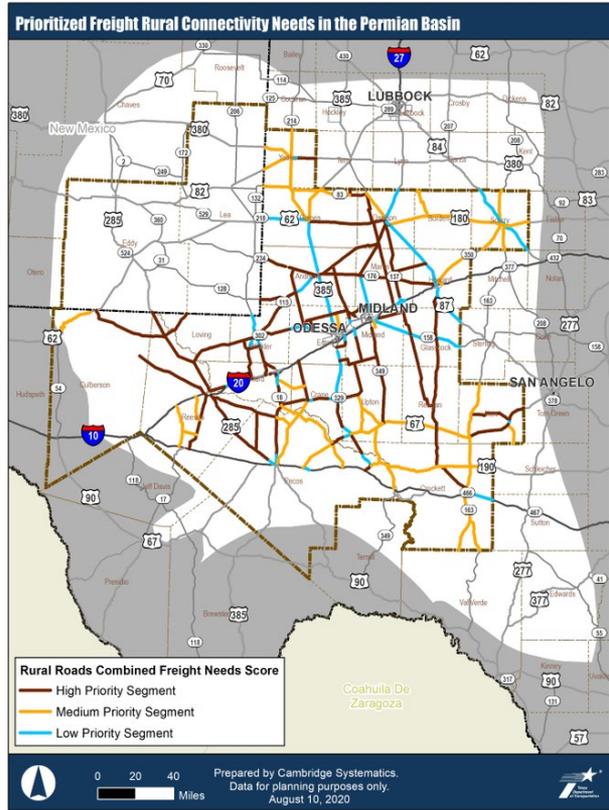
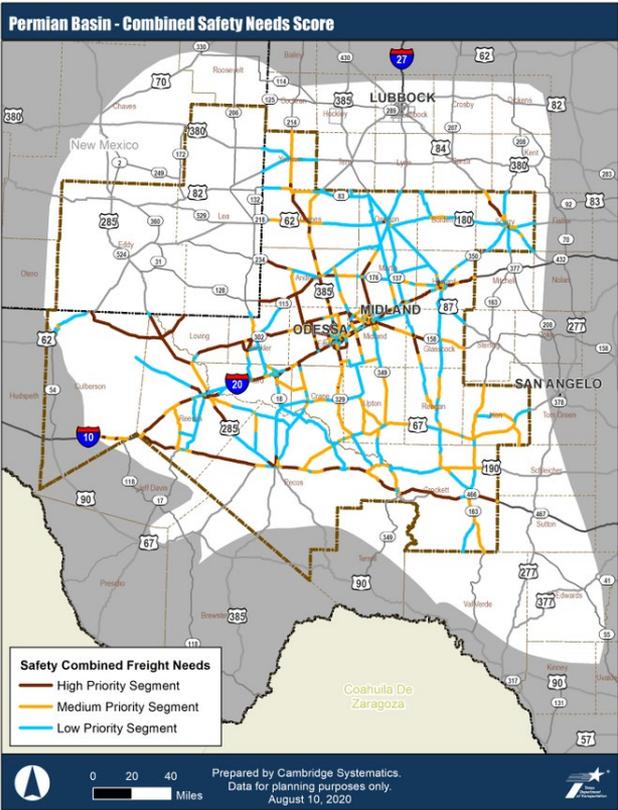
RURAL ROADS

Frontage roads
Number of Lanes

Overlay factors on Freight Network Designation score

Combined score of factors and relative freight importance to get high, medium, and low needs score

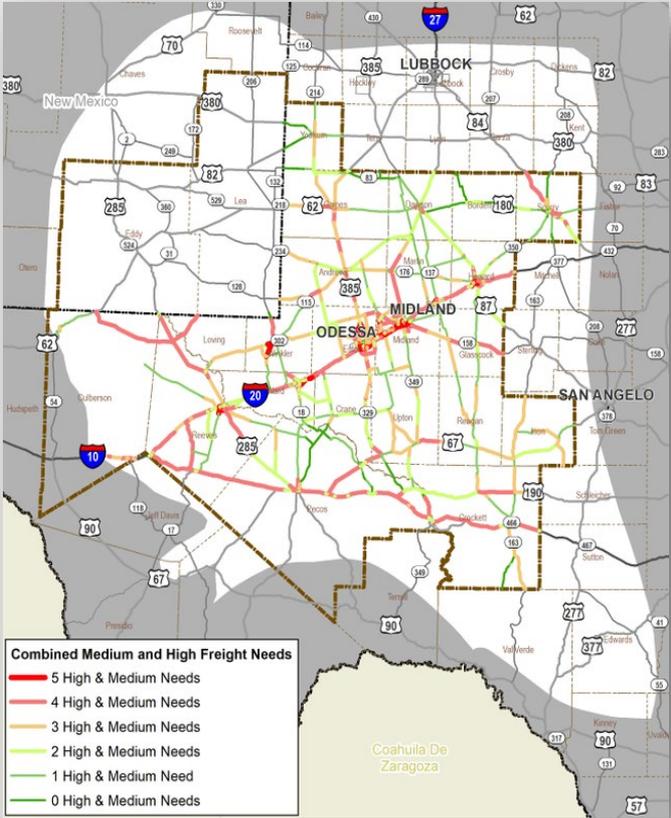
Permian Basin Highway Freight Network Needs



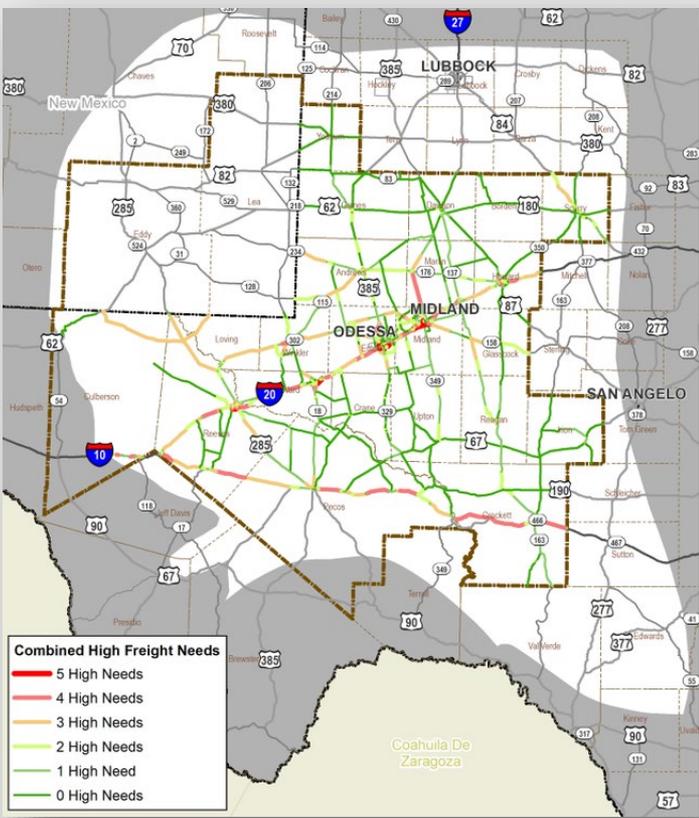
Combined Needs – Mobility, Safety, Asset Preservation, Rural Roads, and Truck Parking



High and Medium Needs



High Needs



Addressing Freight Transportation Needs

Section 3: Chapters 6-9





Operations

Technology

*Transportation
System Management
and Operations
(TSM&O)*

Programs

TxDOT led

TxDOT supported

*Freight Data
Collection*

Policies/Outreach/ Coordination

TxDOT led

TxDOT supported

*Regional Freight
Advisory
Committee*

Infrastructure

*Expansion
projects*

*Modernization
projects*

Safety projects

Needs Assessment – Stakeholder Identified Strategies – Steering Committee Review – Final Recommendations





TxDOT Led Strategies

Develop **driveway separation and consolidation guidelines** for improved access management

Integrate freight considerations into the Project Development process

Collaborate with Texas Railroad Commission on adding transportation information, such as truck volume estimates, to permit applications

Develop truck traffic impact analysis guidelines to include freight considerations in urban and rural areas

Track TX RRC permits for scheduling/location conflicts with planned projects or projects under construction

Convene a biennial regional freight and energy sector transportation summit **in partnership with regional stakeholders**



TxDOT Supported Strategies

Conduct research on human factors impacting safety in the Permian Basin to aid in developing training for drivers operating in the region

Assess the feasibility of off-peak truck operations

Develop regional land use guidelines for mitigating freight and energy sector conflicts with residential and commercial land uses

Collaborate with truck stop operators and local stakeholders to develop new or expand existing truck parking

Collaborate with **regional and local stakeholders** to encourage truck parking at non-TxDOT public facilities and private commercial and industrial sites

Collaborate with TxDMV to **investigate the feasibility of an OS/OW load reporting program** that includes annual permit usage information

Seek sustainable funding for transportation investments in the Permian Basin (moved from TxDOT led to supported)

Explore opportunities for public-private partnerships for projects and programs



TxDOT Led Strategies

- Develop an on-going freight data **collection and repository program** to address the Permian Basin freight data gap
- Develop a freight transportation public education and awareness program
- Develop a regional technology-based freight safety and operations (TSM&O) Program
- Develop and implement Permian Basin freight-centric design guidelines
- Develop multimodal freight planning, programing and implementation guidelines for integrating freight into the investment decision-making process
- Integrate private lease roads and major freight generators into existing access management guidelines
- Develop wayfinding and signage guidelines for urban and rural areas to include private leased roads and major freight generators
- Develop a regional Incident Management Program with a focus on commercial vehicles



TxDOT Supported Strategies

Establish an on-going Permian Basin Freight Advisory Committee with public and private sector stakeholders

Implement comprehensive, ongoing multimodal **regional freight planning**

Develop regional multimodal thoroughfare plan

Explore opportunities, regulations, and policies for **intraregional mass transit or van-pool program** servicing major freight employment sites





Operations and Technology Strategies

Ensure all roadways on the PBHFN have adequate road markings, and lighting

Increase signage and wayfinding on the PBHFN including signage for lease roads and mile markers on TxDOT routes

Increase signage and **ITS** on freight routes for locations of truck parking, safety hotspots, queuing, blocked rail crossings, etc.

Deploy additional regional Weigh-in-Motion and Automated Vehicle Classification/Count systems

Conduct **traffic signal timing study** for urban arterials on the PBHFN

Establish a regional Traffic Management Center with a focus on improving truck safety and mobility

Deploy advance warning systems on **mission critical PBHFN routes** and at safety hotspots

Deploy incident management system

Deploy Truck Parking Availability System along Tier 1 PBHFN





- Planned projects
 - Unified Transportation Program (UTP)
 - District Projects
- Freight plan stakeholder proposed projects
- Strategic projects



Infrastructure: TxDOT Highway Projects



2020-2030 TxDOT Unified Transportation Program

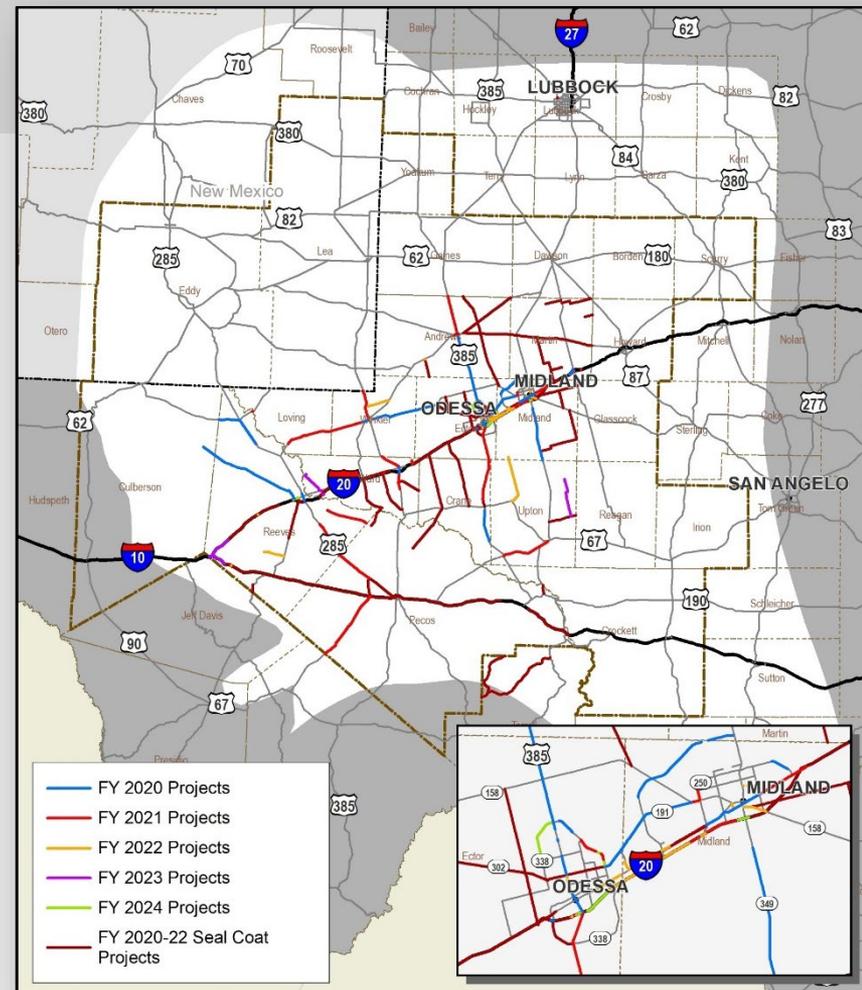
- Type/Count of Projects and Funding Status

Project Category	Fully Funded		Partially Funded			Total Combined	
	No. of Projects	Authorized Funding (Millions \$)	No. of Projects	Authorized Funding (Millions \$)	Funding Gap (Millions \$)	Total No. of Projects	Total Authorized Funding (Millions \$)
Alternate Routes	2	\$ 38.5	24	\$ 137.9	\$ 535.4	26	\$ 711.8
Asset Preservation	250	\$ 1,142.1	84	\$ 239.8	\$ 236.5	334	\$ 1,618.4
Mobility / Reliability	32	\$ 544.6	64	\$ 478.6	\$1,291.1	96	\$ 2,314.3
Safety	83	\$ 98.2	30	\$ 2.5	\$ 9.1	113	\$ 109.8
Other	6	\$ 12.6				6	\$12.6
Total	373	\$ 1,836.0	202	\$ 858.8	\$ 2,072.1	575	\$ 4,766.9

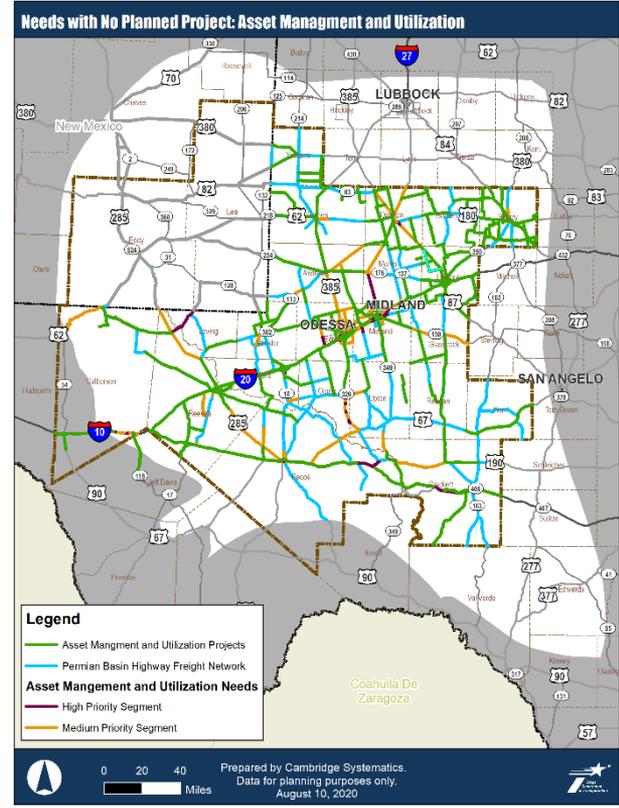
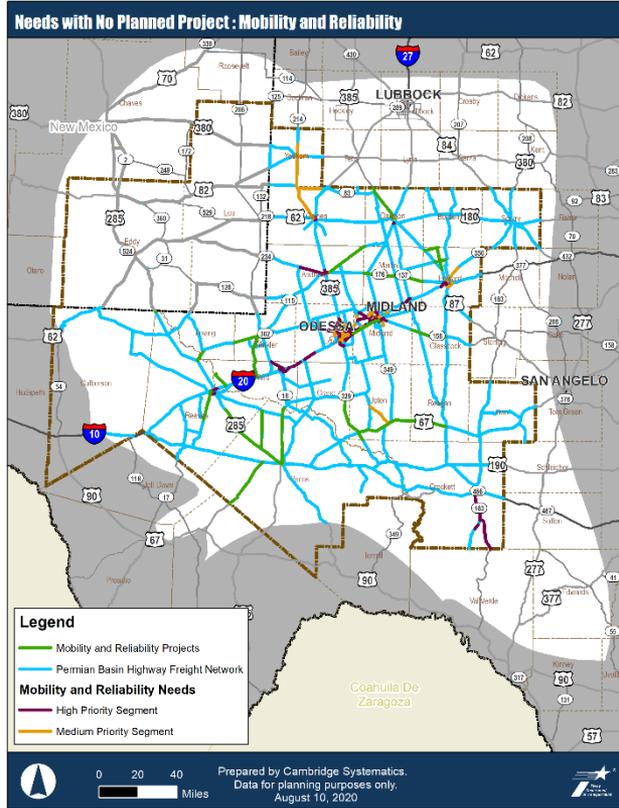
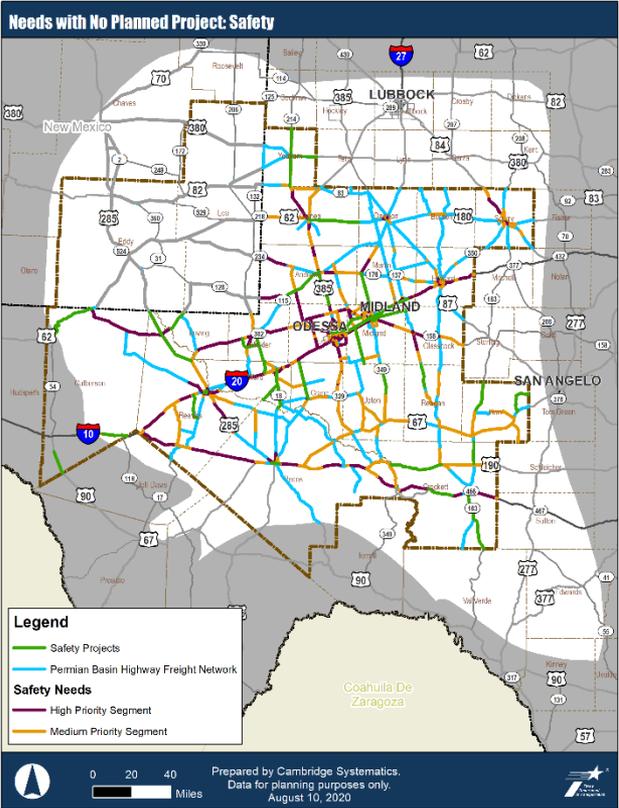
Infrastructure: TxDOT Highway Projects

Additional TxDOT Odessa District Projects

Project Category	No. of Projects	Estimated Cost
Alternate Routes	5	\$ 115,194,447
Asset Preservation	76	\$ 734,830,877
Mobility / Reliability	41	\$ 724,415,060
Safety	4	\$ 17,221,612
Total	126	\$ 1,591,661,996

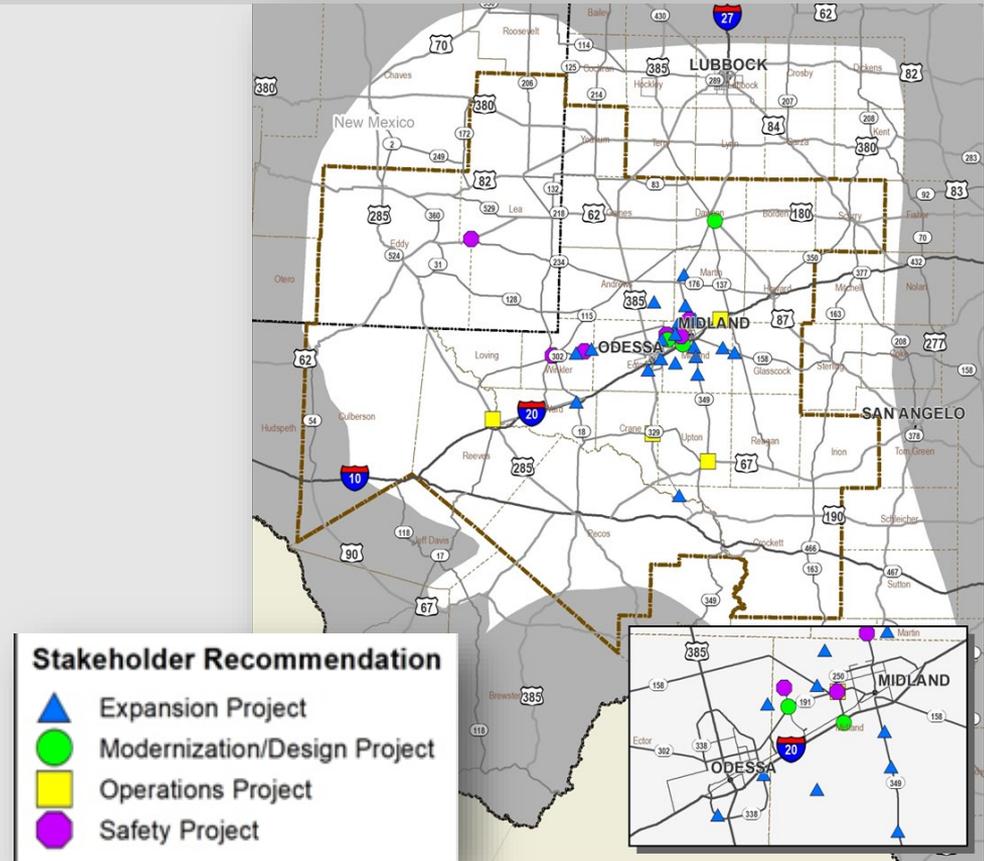


Identifying Gaps



Stakeholder Proposed Projects

- 33 projects
 - 19 expansion
 - 6 modernization or design
 - 5 operational
 - 3 safety





Ports-to-Plains Corridor

Interstate feasibility study completed June 2020

Upgrade to interstate standard portions of US 87, US 277, SH 349, and SH 158

Reeves County Truck Reliever Route

Alternate route to bypass the Pecos central business district

Proposed loop bisector that aligns with FM 2119 on the north side of Pecos to SH 17 on the south side

I-20 Corridor

40+ miles from FM 1936 to FM 1208

Convert frontage roads to one-way, add traffic lanes, and reconstruct interchanges

Permian Promise

Upgrades to key energy sector corridors

Add traffic lanes, reconstruct interchanges, relief routes, loops, and passing lanes



Chapter Purpose

- Present short and medium-term actions for advancing strategies

Key Messages

- Some are TxDOT led while others are TxDOT supported
- All require coordination with partners and many require private sector or partners taking the lead
- Strategies can be advanced in short terms

Support for Key Messages

- Action plan for short- and medium-term strategies for TxDOT led and TxDOT supported strategies



Policy Strategy

Collaborate with Texas Railroad Commission on adding transportation information, such as truck volume estimates, to permit applications and coordinating construction and work zones with permits

Short-term Actions

Meet with the RRC to discuss:

- Incorporating additional data reporting requirements
- Obtaining drilling data to inform construction work zones

Develop action plan for next steps

Medium-term Actions

Implement actions items arising from RRC meeting



Policy, Outreach, and Coordination Short-term Actions

Develop access management guidelines design for new driveways and driveway consolidation for existing driveways

Integrate the updated freight design considerations for future infrastructure improvements

Meet with the RRC to discuss incorporating additional data reporting requirements and obtaining drilling data to inform construction work zones

Undertake research on the human factors associated with the safety challenges

Develop and share freight land use considerations and mitigation factors

Meet with TX DMV and users of OS/OW permits to exchange ideas on collecting, submitting, and sharing additional data

Program Short-term Actions

Repair or replace malfunctioning equipment and deploy additional equipment in locations identified in the TxDOT WIM and VC Strategic Plan

Develop public outreach materials for use at regional, statewide and national levels

Develop a standardized signage program for the Permian Basin

Incorporate private lease roads and other major energy sector freight generators into access management guidelines for the PBHFN

Develop a concept of operations for incident management program for the PBHFN



Technology Short-term Actions

Develop a concept of operations for a Permian Basin regional traffic management center (TMC)

Assess and identify the highest priority routes on the PBHFN for deploying advance warning systems

Assess the feasibility and effectiveness of a truck parking availability system (TPAS) on I-20 and other Tier 1 PBHFN corridors

Program Short-term Actions

Develop a plan for ensuring adequate road markings, lighting, and signage on all PBHFN corridors

Develop a policy for adding increased signage including mile markers and private lease road signing on the PBHFN

Develop a concept of operation for deploying Intelligent Transportation Systems to address common freight needs on Tier 1 PBHFN corridors

Develop guidelines for transportation agencies to identify corridors where signal timing synchronization is feasible and processes for measuring its effectiveness



- Opportunity to use the freight plan prioritization to refocus existing funds into future funding decisions to ensure that all high priority freight projects are fully funded
- 61 high priority projects partially funded
- 31 low priority and 37 medium priority projects that are fully funded
- Continued support for strategic projects
- Identify new projects to address unmet needs

Project Type	High		Medium		Low		Total	
	# Projects	Funding Gap						
Safety	17	\$5.28	10	\$2.91	3	\$0.91	30	\$9.10
Mobility	10	\$193.67	14	\$284.04	40	\$813.39	64	\$1,291.10
Asset Preservation	34	\$96.97	29	80.41	21	\$59.125	84	\$236.50
Alternative Routes			240	535.4			24	\$535.40
TOTAL	61	\$295.50	52	\$367.40	64	\$873.40	202	\$2,072.10

Discussion and Next Steps





Technical Analysis

Finalize Technical Reports

Finalize Final Plan Document

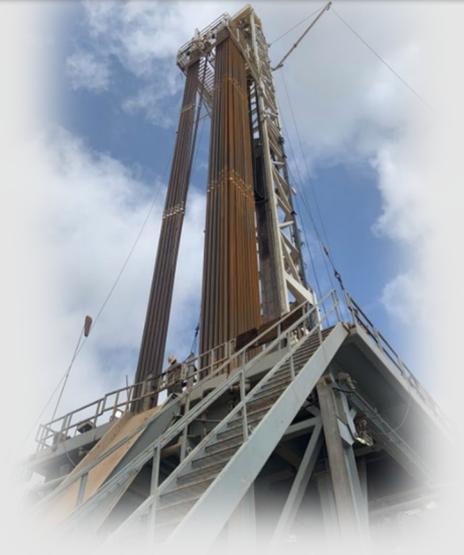
Finalize Executive Summary

Implementation Plan

Stakeholder Outreach

Transition to Regional Freight Advisory Committee

Steering Committee
comments on draft
Freight Plan due
August 24, 2020



Thank you!

Contact us for more information about the Permian Basin
Regional Freight and Energy Sector Transportation Plan

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