



# Permian Basin Regional Freight and Energy Sector Transportation Plan

Stakeholder Forums, Round 2





## MEETING PURPOSE

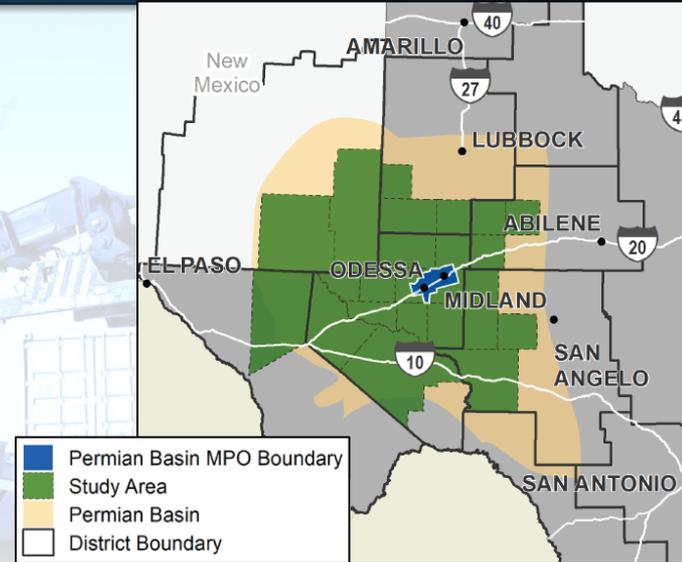
Gather insight, input and feedback directly from the users of the system on identifying strategies and recommendations for addressing the freight network infrastructure operations, issues and challenges

Why Are We Here?

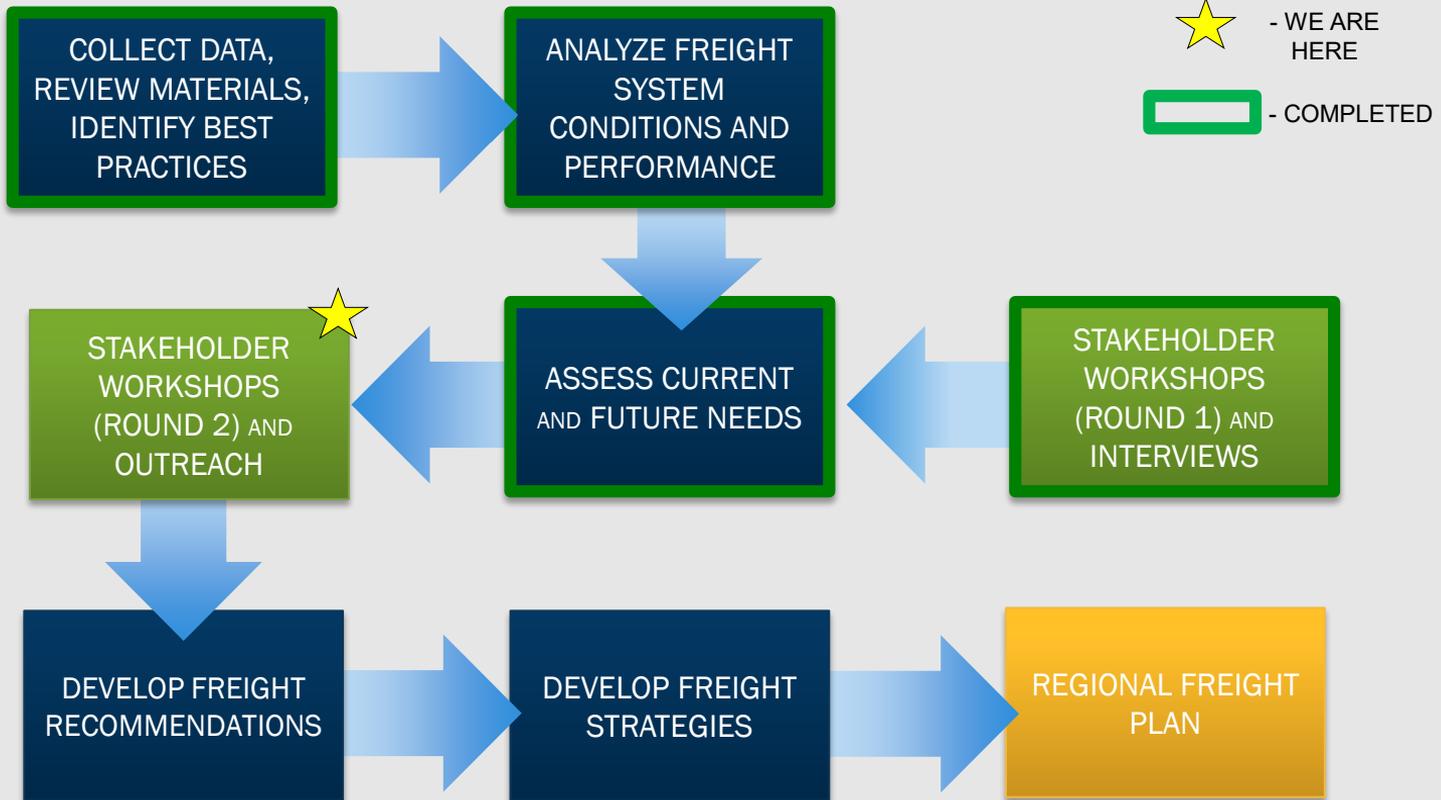
Key Findings to Date

Addressing Freight Transportation Needs

Schedule and Next Steps



# Plan Development Approach



# Forum Overview



## Round 2- Series of Five Meetings



1

*Energy Sector Perspective*

*Sand Perspective*

2

3

*Carriers and Haulers Perspective*

*Rural Community Perspective*

4

5

*Urban Area Perspective*



## Summer 2019 Meetings

### Regional Freight Network

*Identified roadways to be included on network*

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*Finalized Permian Basin Highway Freight Network*

### Needs Assessment

*Input on mobility, safety, truck parking and other needs*

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*Refined freight transportation needs assessment*

## Today's Meeting

### Strategies & Recommendations

*Input on short, medium, and long-term infrastructure, policies, programs and operational recommendations*

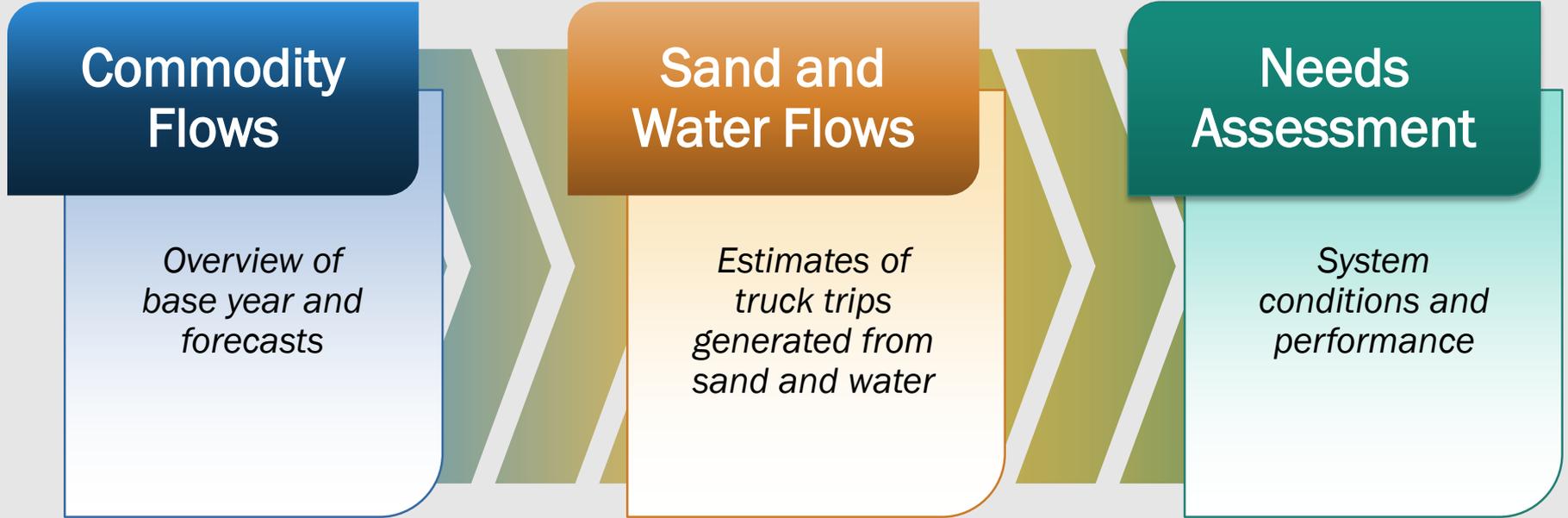
*Input on prioritization criteria*

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*Develop prioritized recommendations for the final plan*

# Key Findings to Date





# Key Data in Commodity Flow Analysis

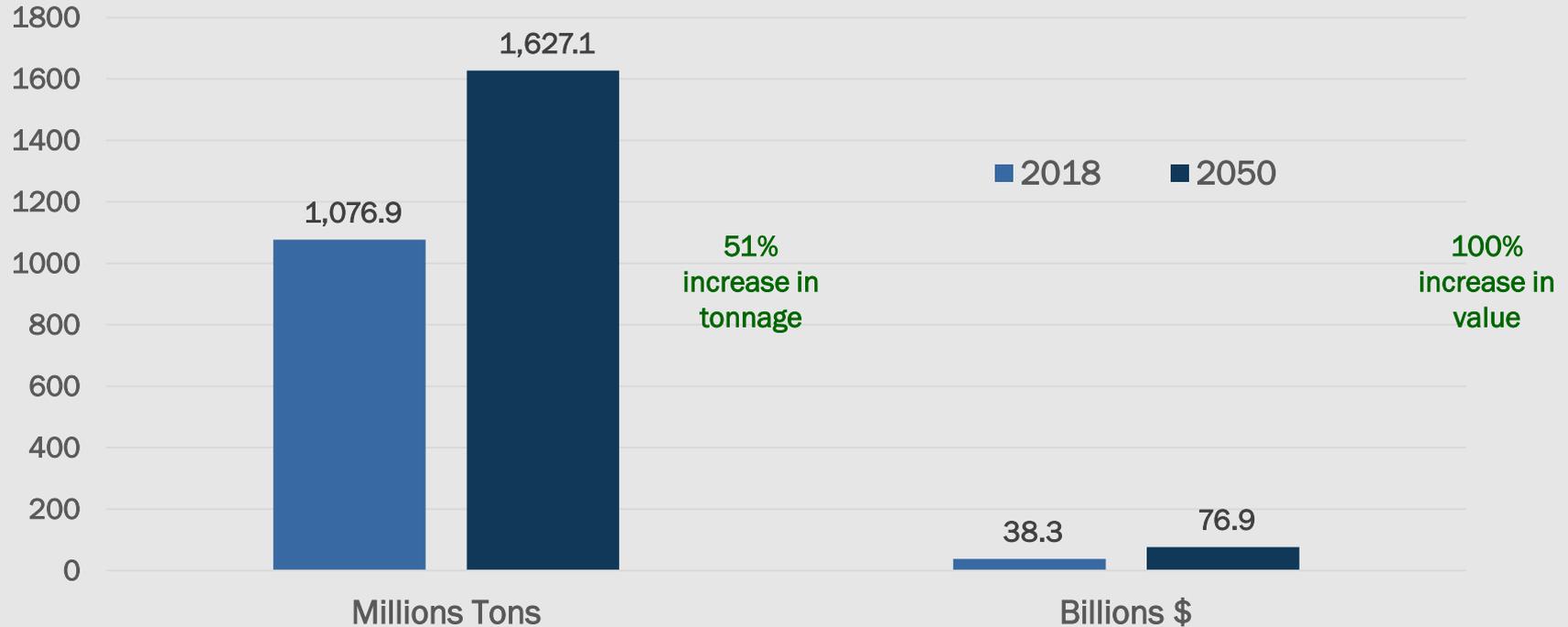


- IHS Markit TRANSEARCH
  - 2015 base year projected out to 2018
  - 2045 forecast year projected out to 2050
- Modeled based on US Census Commodity Flow data, private bill of lading data, and economic modeling
- Includes tonnage and value
- Supplemented with water and sand estimates
  - Enverus
  - MOTRAN
  - Stakeholder input

# Overview of Total Commodity Flows in the Permian Basin



## Total Tonnage and Value

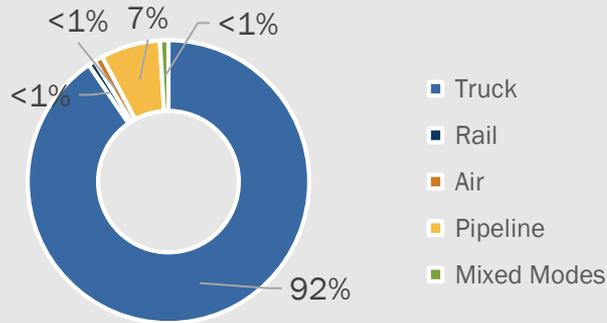


Source: CS analysis based on Transearch, Enverus and stakeholder input

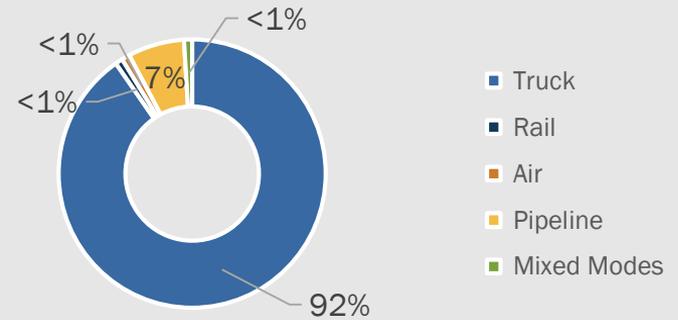
# Overview of Commodity Flows by Mode in Permian Basin



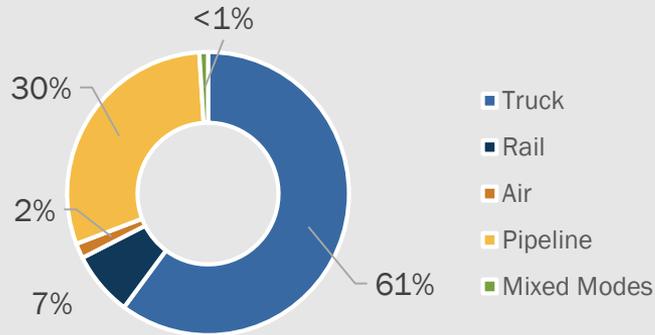
Total Tonnage by Mode, 2018



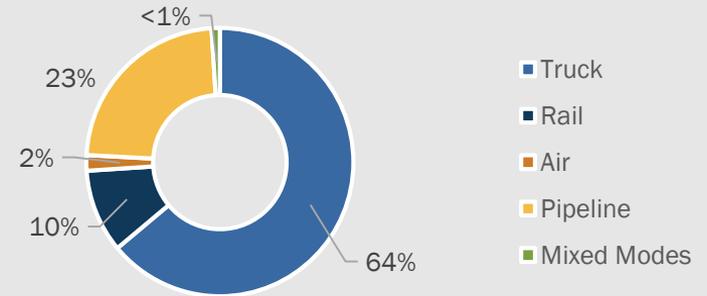
Total Tonnage by Mode, 2050



Total Value by Mode, 2018



Total Value by Mode, 2050

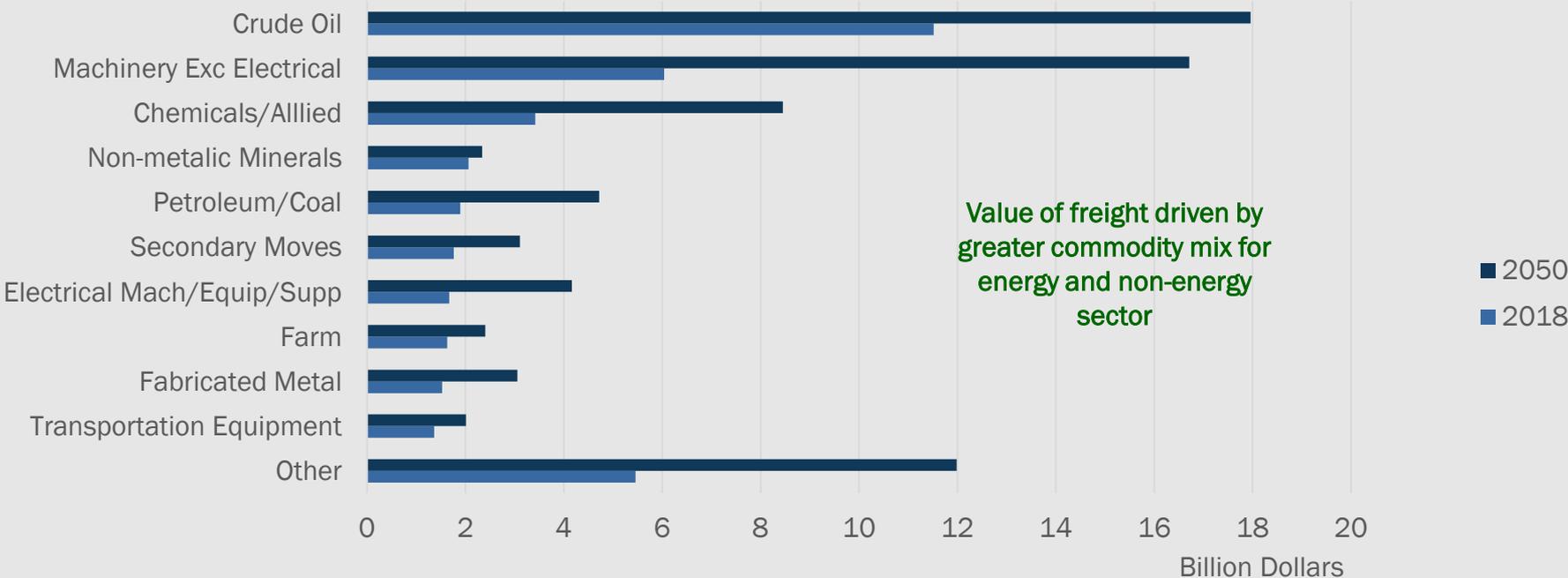


Source: CS analysis based on Transearch, Enverus and stakeholder input

# Permian Basin Top Commodities by Value



Top Commodities by Value, 2018 and 2050

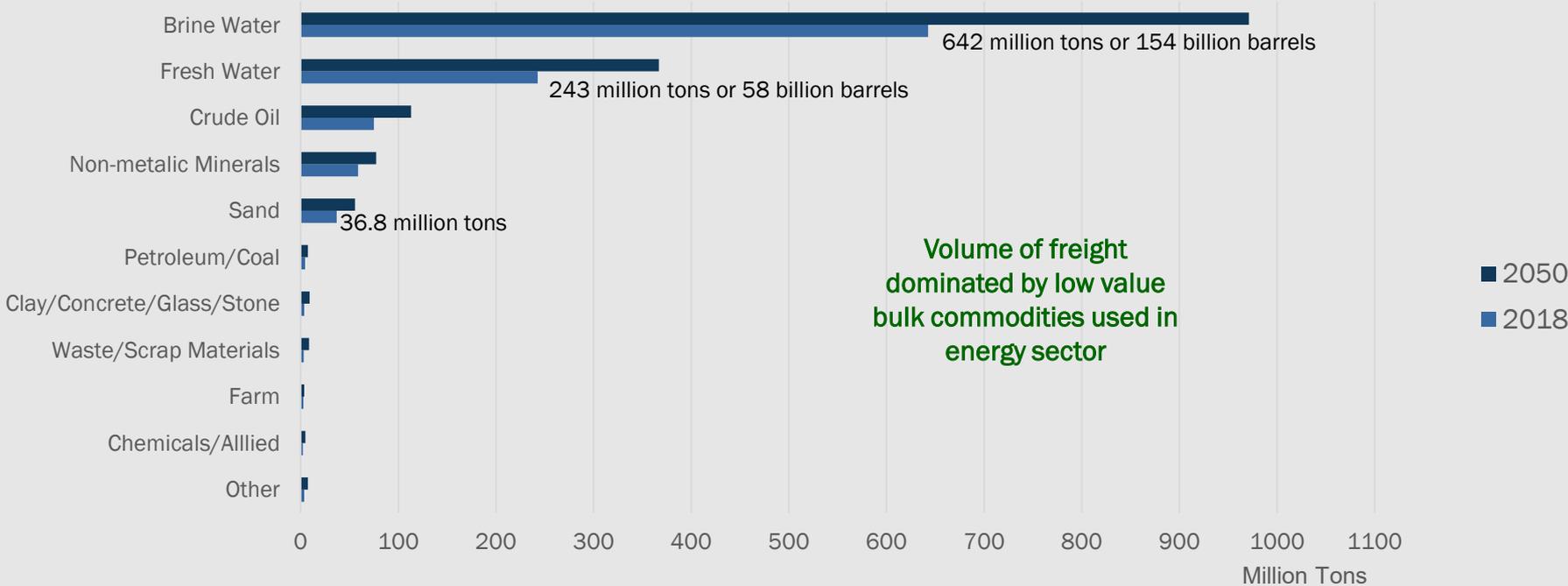


Source: CS analysis based on Transearch, Enverus and stakeholder input

# Permian Basin Top Commodities by Tonnage



### Top Commodities by Tonnage, 2018 and 2050



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



## Estimate Total Sand Consumed (Attracted) by County

*Total sand and fresh water consumed and produced water in 2018 is estimated from the Enverus data on total proppant for each well*

*Estimate is 36.8 million tons of sand in 2018*

*Estimate is 243 tons of fresh water and 642 tons of produced water*

## Estimate Total Sand and Water Moves by County

*County-level production is proportional to the total annual operating capacity of mines located in the county*

*Total annual operating capacity is estimated to be 62.9 million tons  
- Winkler County is estimated to contain about 73% of capacity*

*Water generation and disposal is based on location of wells and deposal sites and assumptions on mode*

## Distribute Productions to Attractions at the County Level

*Total tonnage is distributed using a gravity model derived from the Statewide Analysis Model version 4*

*County-to-county flows are balanced using iterative proportional fitting*

# Estimating Sand and Water Truck Trips



- Assumes 23 tons per truck for sand, 21 tons per truck for fresh and produced water and one empty trip for every loaded
- 90 percent **fresh water** transported by pipeline, 10% by truck
- 60 percent **produced water** transported by pipeline, 40% by truck

Commodity	Annual Loaded Truck Trips (thousands)	Annual Total Truck Trips (Loaded + Empty) (thousands)	Avg. Daily Truck Trips
Sand	1,600	3,200	8,770
Fresh Water	1,540	3,080	8,440
Produced Water	16,320	32,640	89,415
<b>Total</b>	<b>19,460</b>	<b>38,920</b>	<b>106,625</b>

Source: 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.



## *MOBILITY AND RELIABILITY*

Congestion  
Truck travel time reliability  
Freight bottlenecks

## *SAFETY*

Truck involved crashes  
Lane conditions  
Rest areas and truck parking

## *FREIGHT ASSET UTILIZATION AND PRESERVATION*

Pavement conditions  
Bridge load restrictions and conditions  
Vertical bridge clearance

## *RURAL ROADS*

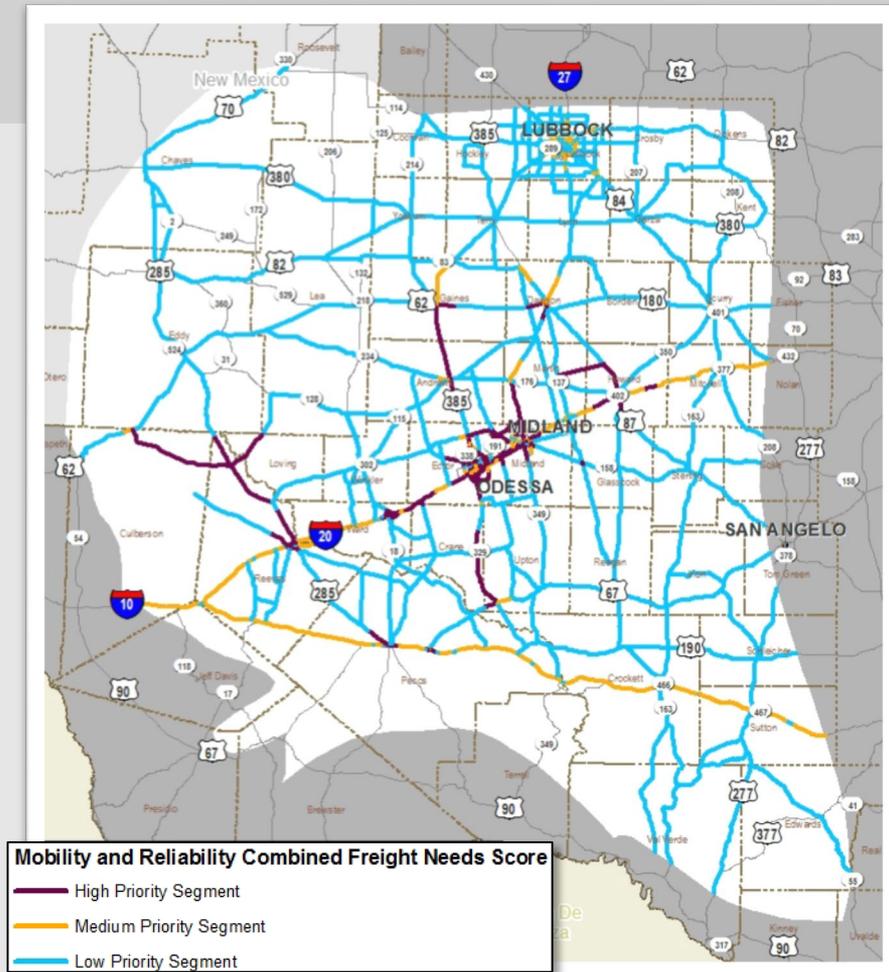
Frontage roads  
Number of Lanes

*Overlay factors on Freight System Designation score*

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

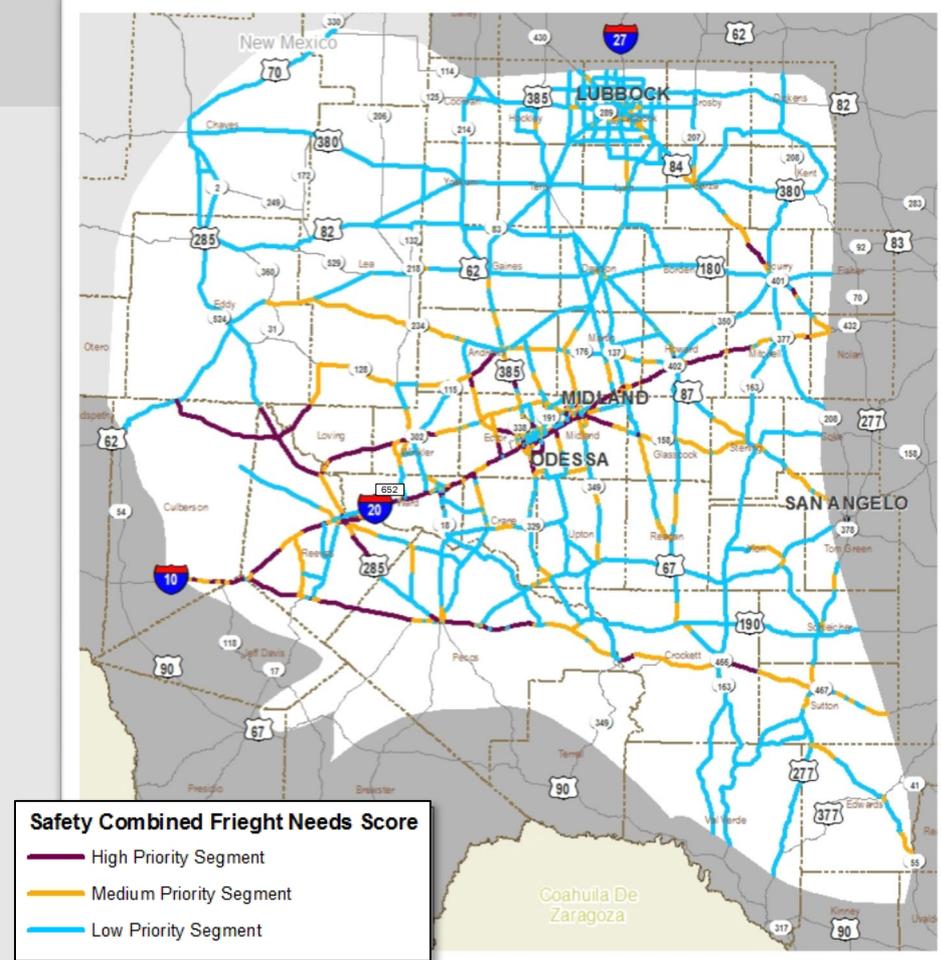
# Mobility and Congestion Needs

- Urban areas, especially I-20 between Midland and Odessa
- Rural areas, especially:
  - U.S. 285 in Reeves County
  - U.S. 87 in Howard County
  - U.S. 385 south of Odessa
  - FM 652 from 62 into New Mexico



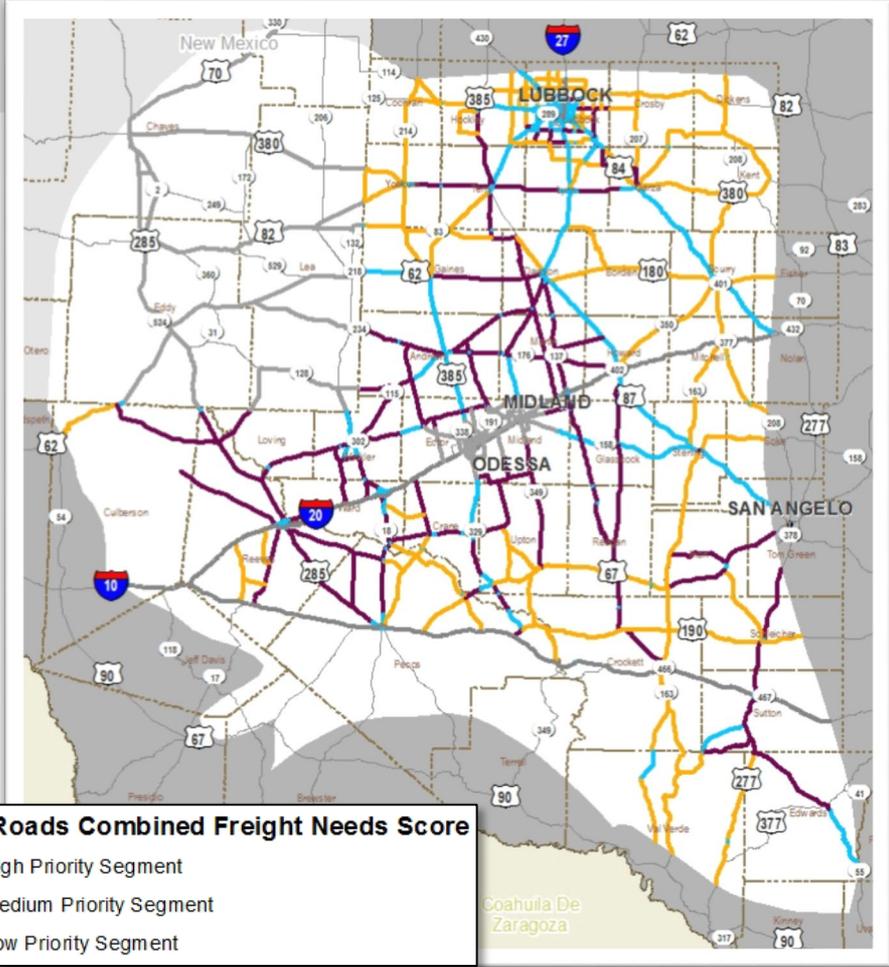
# Safety Needs

- I-10 and I-20 and throughout the PB
- US Highways
  - 285 and 385
- State Highways
  - 128, 158, 285 and 302
- FM 652



# Rural Highway Improvement Needs

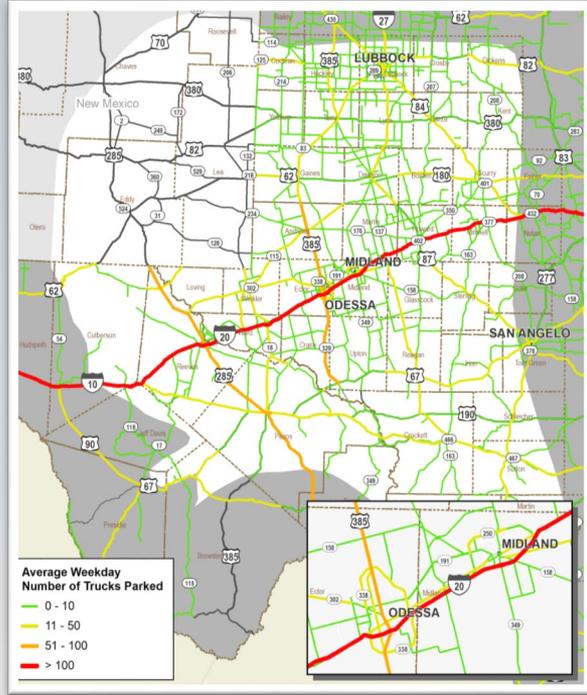
- Frontage Roads
  - No frontage roads
  - Two-way frontage road
- Two-lane roads
  - Tier 1 PBHFN
  - Tier 2 PBHFN
- Stakeholder input



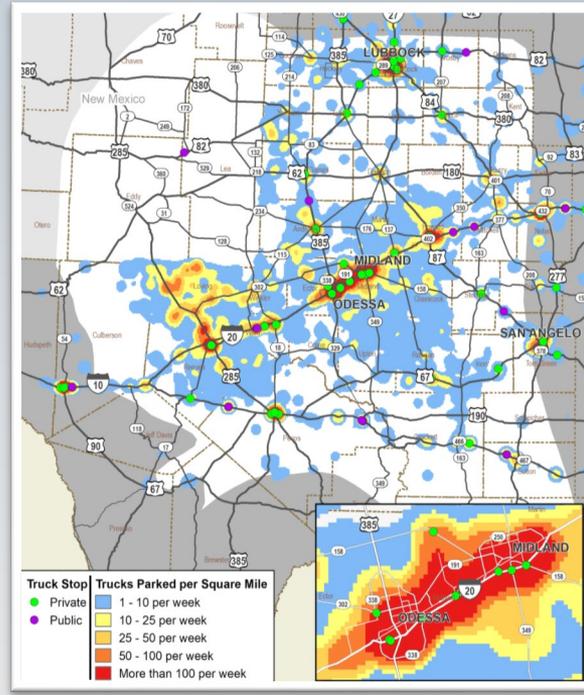
# Needs: Truck Parking



*Trucks Parked on Shoulders/Ramps, per mile*



*Trucks Parked, per square mile*



*Priority of Need, per route*



2020 Statewide Truck Parking Study  
available at:  
<https://www.dot.state.tx.us/move-texas-freight/studies/>

Source: Cambridge Systematics analysis of American Transportation Research Institute (ATRI) truck GPS data

# Developing Strategies and Recommendations





Develop comprehensive list of strategies

Screen strategies based on selected criteria to develop recommendations

Prioritize recommendations and develop implementation framework



## Operations

*Technology*

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*Transportation system management and operations (TSM&O)*

## Programs

*TxDOT led*

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*TxDOT supported*

## Policies/Outreach/Coordination

*TxDOT led*

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*TxDOT supported*

## Infrastructure

*Expansion projects*

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*Modernization projects*

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*Safety projects*



## Operational Strategies

*Establish an Incident Management Program with a focus on commercial vehicles*

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*Conduct traffic signal timing study for urban arterials on the Permian Basin Highway Freight Network (PBHFN) to assess feasibility of truck signal priority*

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*Increase and standardize signage and wayfinding including required signage for lease roads and mile markers on TxDOT routes*

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

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*Install static signs and use existing ITS signs indicating upcoming locations for truck parking*

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*Increased driveway separation and driveway consolidation on the PBHFN*



## Technology Strategies

*Establish a regional Traffic Management Center with focus on trucking*

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*Install advance warning systems (over-height, over-weight, over-speed, turning vehicle, etc.) on PBHFN routes, OS/OW routes, and at safety hotspots*

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*Install blocked rail crossing detection systems and other advanced notification systems*

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*Deploy freight-specific Intelligent Transportation Systems (ITS) technology (e.g., real-time traffic conditions, truck signal priority, truck parking availability systems) on freight routes*

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*Deploy Truck Parking Availability System along Tier 1 PBHFN*

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*Expand regional Weigh-in-Motion and Automated Vehicle Classification/Count systems*



## TxDOT Led Strategies

*Develop a freight movement public education and public awareness program*

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*Develop a regional technology-based freight safety and operations program (TSM&O)*

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*Develop the PBHFN using freight centric design guidelines to include pavement strength, bridge height and width, accel/decel lanes, interchanges and intersections, etc.*

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*Establish a freight data collection program to include weigh-in-motion, vehicle classification counts, and truck parking utilization*

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*Implement freight transportation planning training program for local and regional planners*



## TxDOT Supported Strategies

*Implement a comprehensive and multimodal regional freight planning program*

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*Develop regional comprehensive transportation plans*

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

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*Collaborate with truck stop operators to develop new or expand existing truck parking*

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

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*Implement an OS/OW load reporting program that includes annual permit usage information*



## TxDOT Led Strategies

*Develop access management guidelines for urban and rural areas to include private lease roads*

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*Develop guidelines for conducting Truck Traffic Impact Analysis to include truck parking impact and inspection locations in urban and rural areas*

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*Integrate truck accommodations into the project development process to include planning, feasibility analysis, design and construction*

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*Establish sustainable funding for transportation investments in the Permian Basin*

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*Develop regional wayfinding and signage guidelines for leased lands and major freight generators*

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*Explore opportunities for public-private partnerships for infrastructure improvements*

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*Collaborate with Texas Railroad Commission on adding transportation information to permit applications*



## TxDOT Supported Strategies

*Establish a Regional Freight Advisory Committee with public and private sector stakeholders*

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*Convene annual regional freight and energy sector transportation summit*

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*Implement fleet and truck driver training and reporting requirements for drivers operating in the region*

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*Expand collection and utilization of truck probe data for transportation planning purposes including safety hotspot analysis or improved accuracy of vehicle counts and movement data*

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*Develop a community awareness share the road campaign*

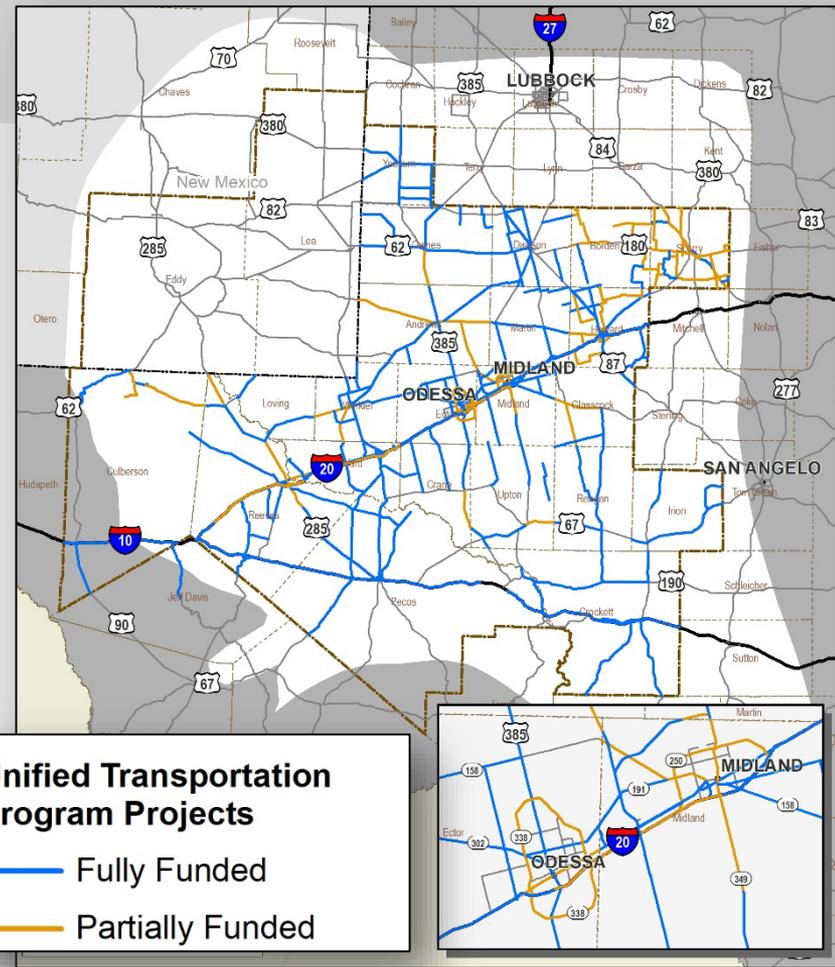
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*Develop incentives for off-peak operations*

# Infrastructure – TxDOT Highway Projects

- 2020-2030 TxDOT Unified Transportation Program

Project Category	Fully Funded		Partially Funded		
	No. of Projects	Authorized Funding (Millions \$)	No. of Projects	Authorized Funding (Millions \$)	Funding Gap (Millions \$)
Alternate Routes	2	\$ 38.5	24	\$ 137.9	\$ 535.4
Asset Preservation	250	\$ 1,142.1	84	\$ 239.8	\$ 236.5
Mobility and Reliability	32	\$ 544.6	64	\$ 478.6	\$1,291.1
Safety	83	\$ 98.2	30	\$ 2.5	\$ 9.1
Other	6	\$ 12.6			
<b>Total</b>	<b>373</b>	<b>\$ 1,836.0</b>	<b>202</b>	<b>\$ 858.8</b>	<b>\$ 2,072.1</b>

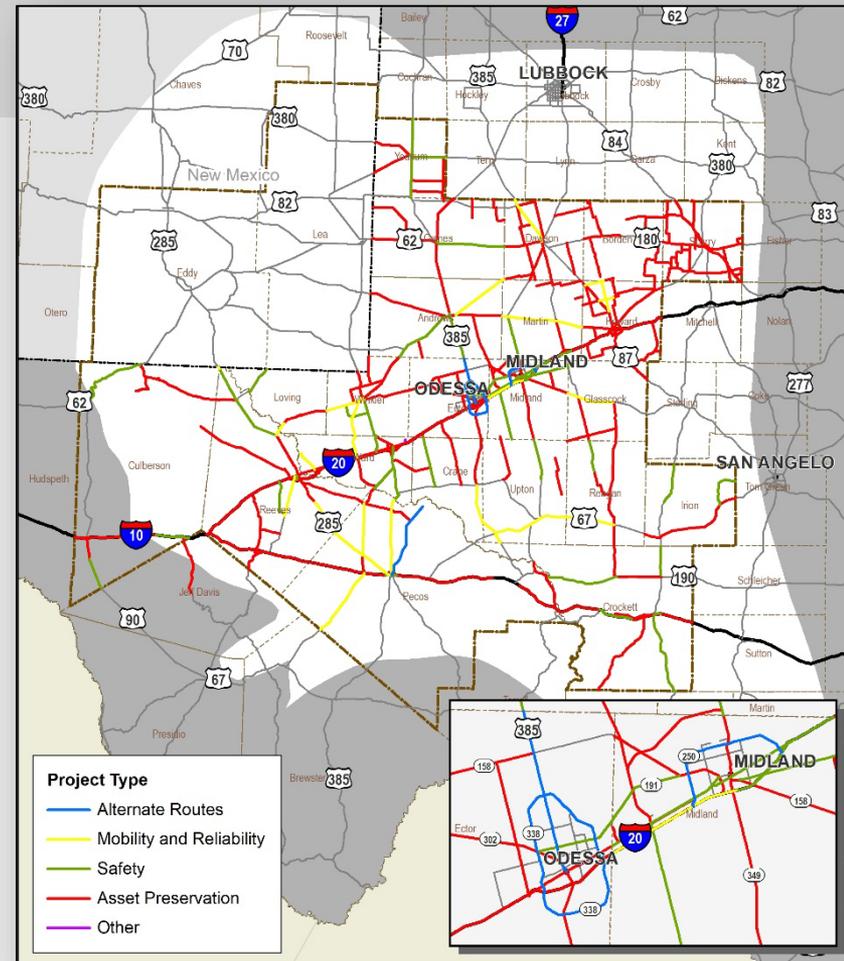


Source: TxDOT

# Infrastructure – TxDOT Highway Projects

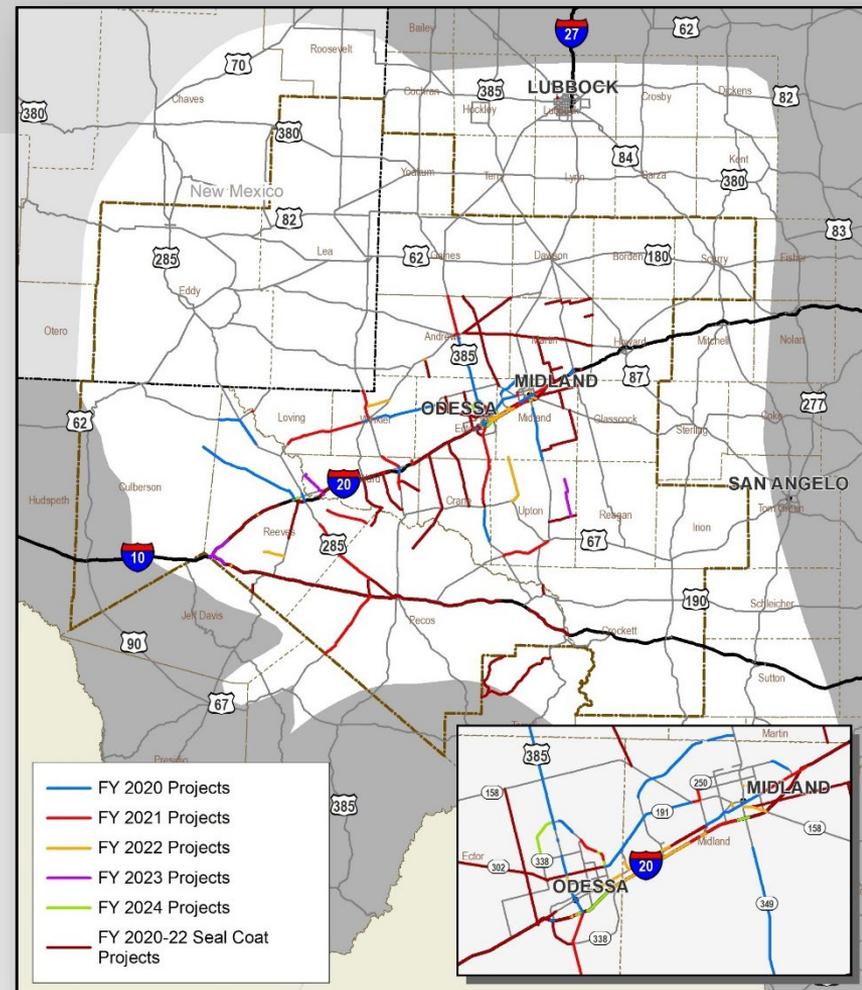
## 2020-2030 TxDOT Unified Transportation Program

Project Category	No. of Projects	Total Cost
Alternate Routes	26	\$ 115,194,447
Asset Preservation	334	\$ 734,830,877
Mobility and Reliability	96	\$ 724,415,060
Safety	113	\$ 17,221,612
Other	6	
<b>Total</b>	<b>575</b>	<b>\$ 1,591,661,996</b>



# Additional TxDOT Odessa District Highway Projects

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





## Ports-to-Plains Corridor

*Interstate feasibility study underway*

*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*

# Providing Input on Recommendations

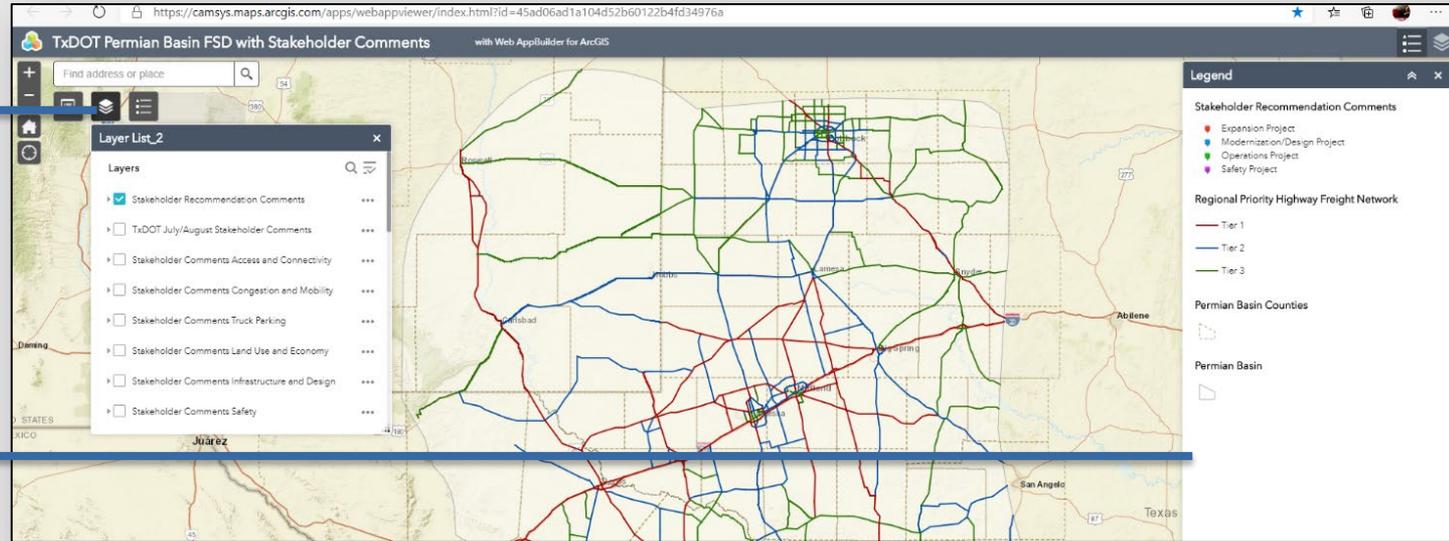


Following today's meeting, if you have additional operational, program, or policy type recommendations, please email them to [Casey.Wells@TxDOT.gov](mailto:Casey.Wells@TxDOT.gov).

For infrastructure or location based recommendations, please access the online Permian Basin Freight Plan Stakeholder map at: <https://camsys.maps.arcgis.com/apps/webappviewer/index.html?id=45ad06ad1a104d52b60122b4fd34976a> (link will be emailed)

1. Click on layer you wish to view- for adding comments, toggle on the Stakeholder Recommendations layer

Legend will display information included in the layer



# How to Provide Input on Recommendations



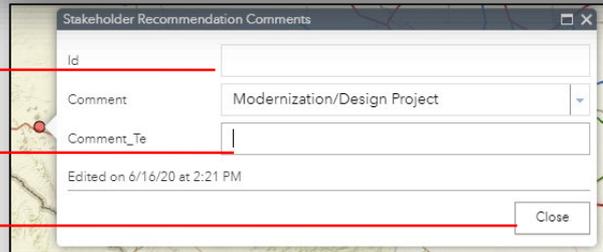
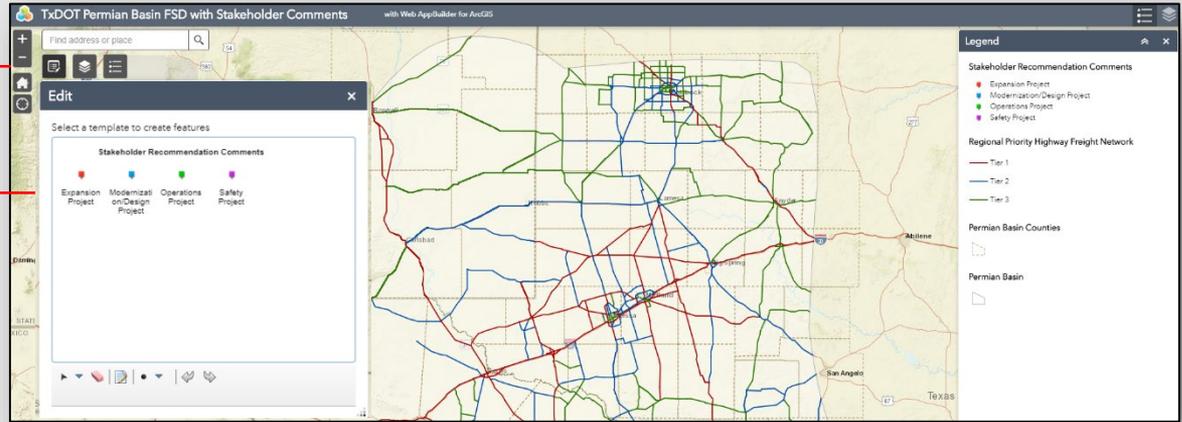
2. Zoom or search to find a location as you would on Google Maps

3. Click the type of comment you want to leave

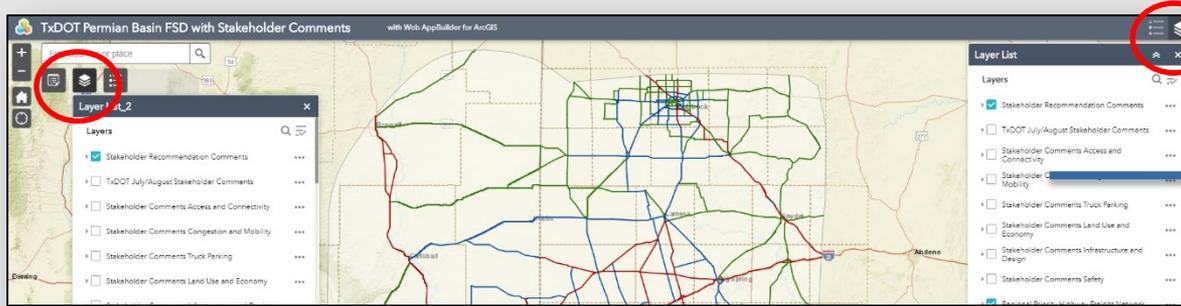
4. Click on the map wherever you would like to leave a recommendation

5. Add identifying information in ID box  
Add additional details in comment box

6. Click "Close"  
Comments save automatically



# How to View Previous Comments on Needs: More Tips



■ Panels can be re-opened using the circled buttons

■ Additional information can be turned on or off using the Layers panel

■ More detail is visible as you zoom





Develop criteria based on goals

Weight criteria based on priorities

Screen projects using weighted criteria

# Next Steps for Recommendations and Strategies



## *Industry Forum and Steering Committee*



# Next Steps





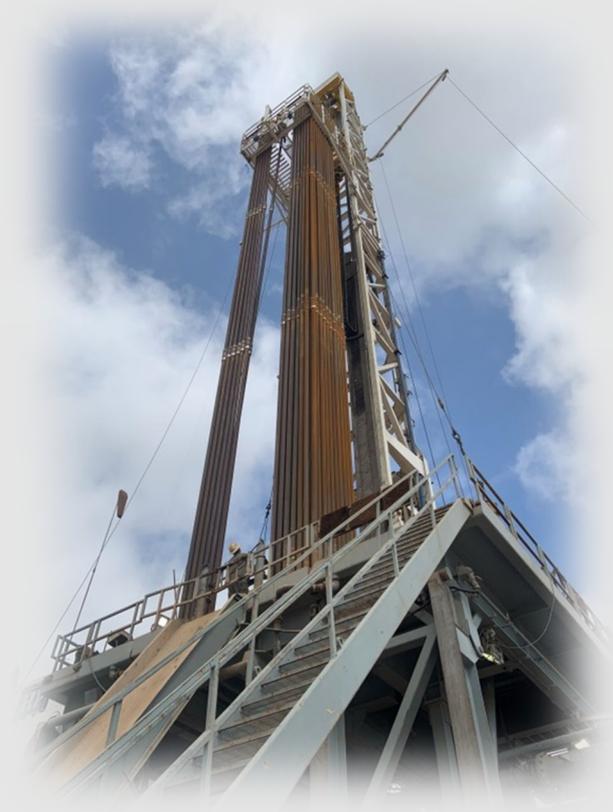
## Technical Analysis

*Regional Freight Needs Assessment*

*Economic Profile and Commodity Flow Forecasts*

*Economic Impact of Permian Basin Freight Activity*

*Draft Recommendations and Strategies*





Deliverables	Schedule
Multimodal Regional Freight and Energy Sector Transportation Network	Complete
Permian Basin Freight Profile	Complete
Land Use and Needs Assessment	June 2020
Energy Sector / Freight Strategies and Recommendations	July 2020
Economic Importance and Impact of Energy Sector	July 2020
Investment Plan and Implementation Program	July 2020
Draft Final Plan and Executive Summary (for committee review)	August 2020
Final Plan and Executive Summary	August 2020

# Thank you!

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

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