



Welcome to TxDOT webinar: Permian Basin Regional Freight Plan Steering Committee.

Roll call at 8:30 AM.

At this time, please ensure your phone and computer microphone are muted.

Please take a moment to visit the chat box and say hello to others who have joined.

To minimize background noise, please periodically check your devices when you are not speaking to ensure they are muted.

If you wish to share a comment or ask a question, please speak up or add it to the chat box on the right side of the screen. You can send messages to everyone or individuals by selecting the appropriate option from the drop-down menu in the chat box.

If you wish to share a comment or ask a question but are having audio issues, please add it to the chat box or text Casey Wells at 512-423-8986.

This morning there will be several opportunities for participant feedback, however, Steering Committee comments and questions will be prioritized.

We will be using [www.menti.com](https://www.menti.com) (code 59 44 33) to survey the Steering Committee. You can open this website in your internet browser, either on your mobile device on computer.



April 8, 2020



# Permian Basin Regional Freight and Energy Sector Transportation Plan

Steering Committee Meeting (Webinar)



April 8, 2020



## MEETING PURPOSE

Provide update on Permian Basin spheres of influence, land use analysis, and needs assessment, and solicit input on strategies and recommendations

*Permian Basin Spheres of Influence Update*

*Freight Intensive Land Use Update*

*Needs Assessment Update*

*Strategies and Recommendations*

*Statewide Weigh-in-Motion and Vehicle Count / Classification Plan*

*Wrap up and Discussion*



## February 21 Meeting

### Spheres of Influence

*Factors, Industries, or Commodities to Consider*

*Expanded list of commodities included in energy sector*

### Land Use

*Criteria for identifying freight intensive land uses*

*Refined criteria for developing freight land use hot spot map*

## Today's Meeting

### Needs Assessment

*Input on mobility, safety, asset management, rural roads, and truck parking needs*

### Strategies & Recommendations

*Input of recommendations and prioritization criteria*

*Short, medium, and long-term recommendations*

# Spheres of Influence





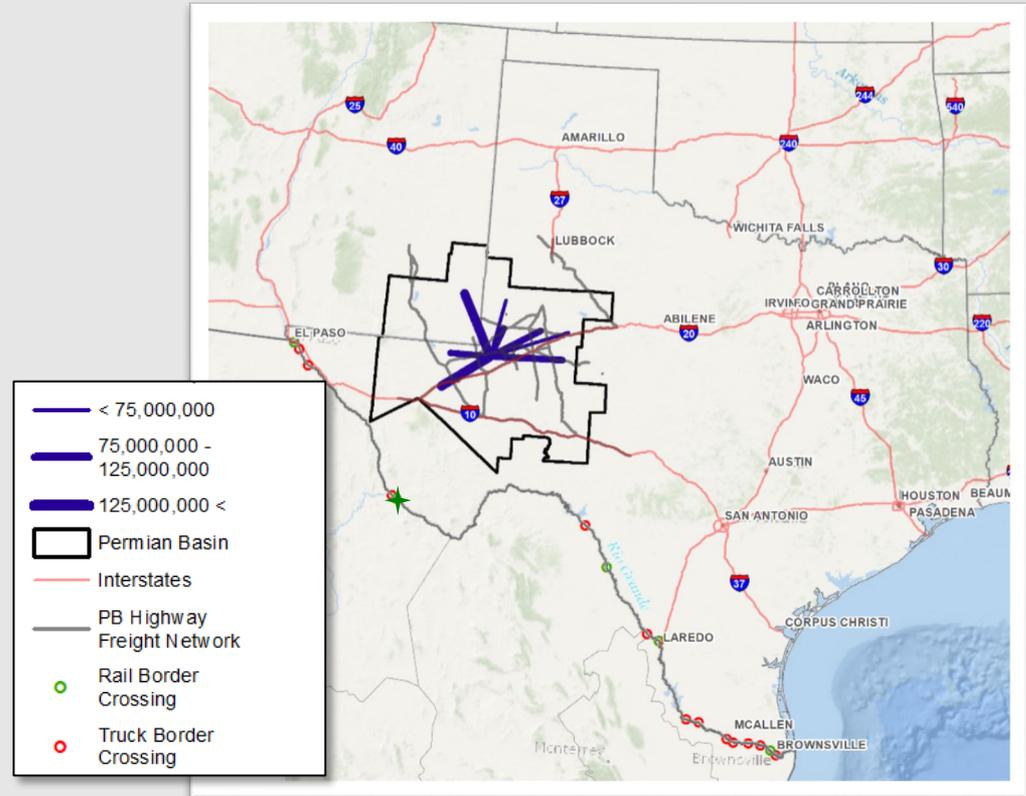




# Top 10 Origins and Destinations, All Commodities, 2018



- Heavily skewed by
  - Sand
  - Water
  - Intra-regional distribution
- Connections to key gateways are important but intra-regional connectivity is critical

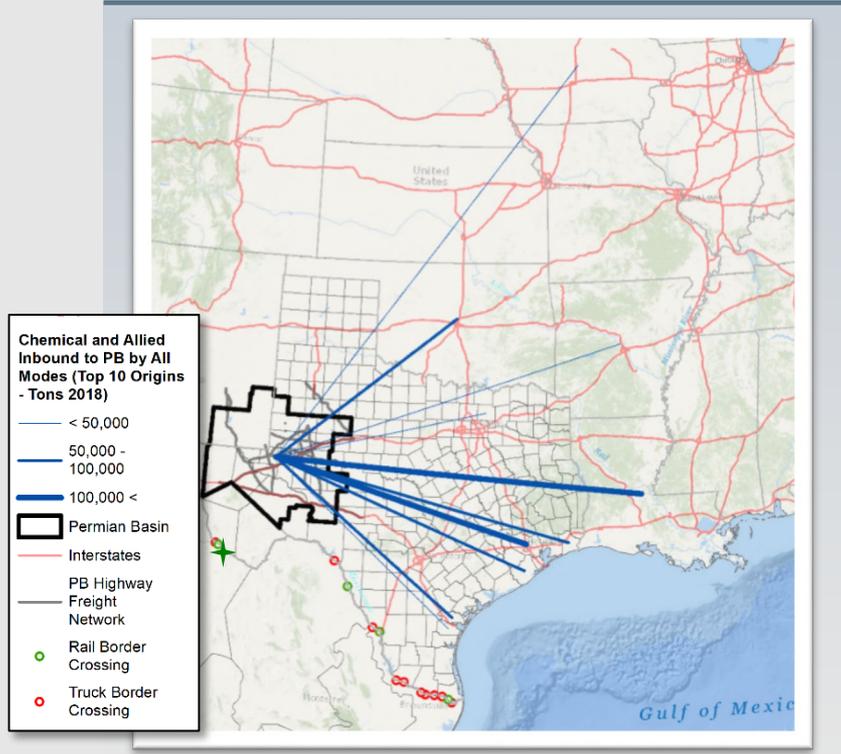


Source: Cambridge Systematics analysis of TRANSEARCH and Enverus data.  
★ Presidio Rail Crossing is currently closed

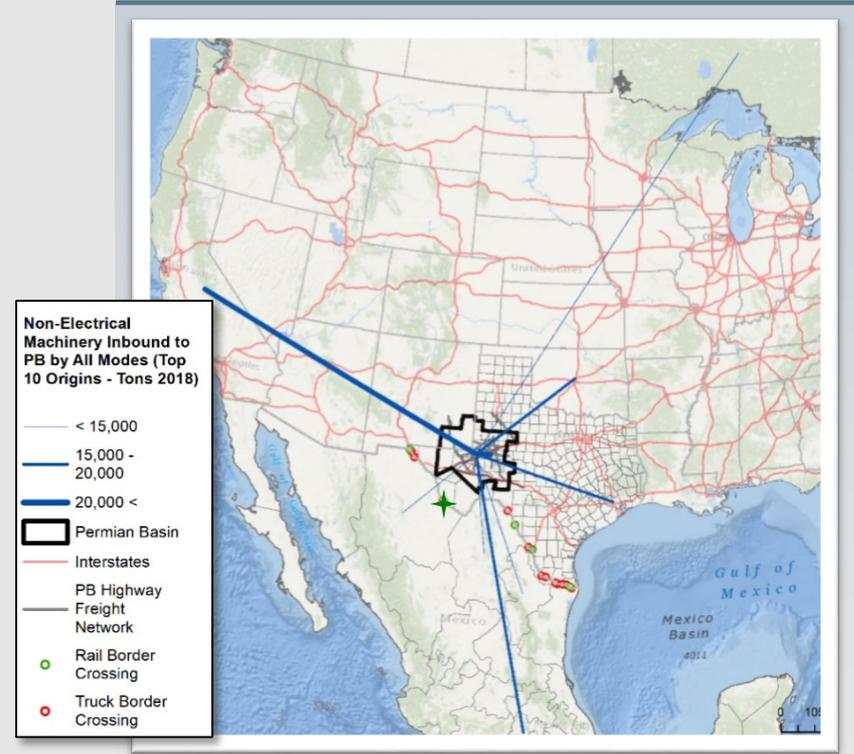
# Energy Sector Sphere of Influence – Inbound by Tonnage, 2018



## Chemicals and Allied Products



## Non-Electrical Machinery

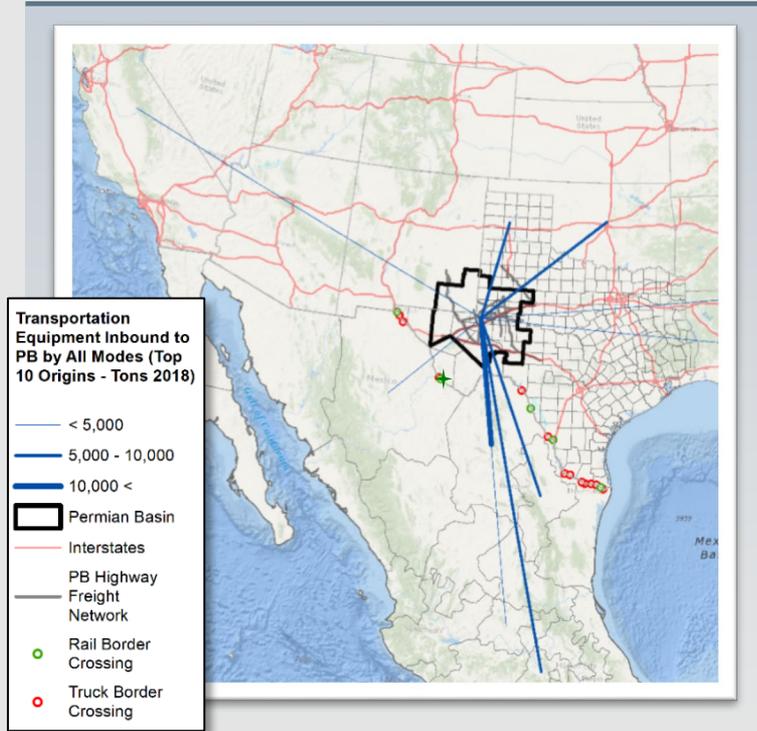


Source: Cambridge Systematics analysis of TRANSEARCH data. ★ Presidio Rail Crossing is currently closed.

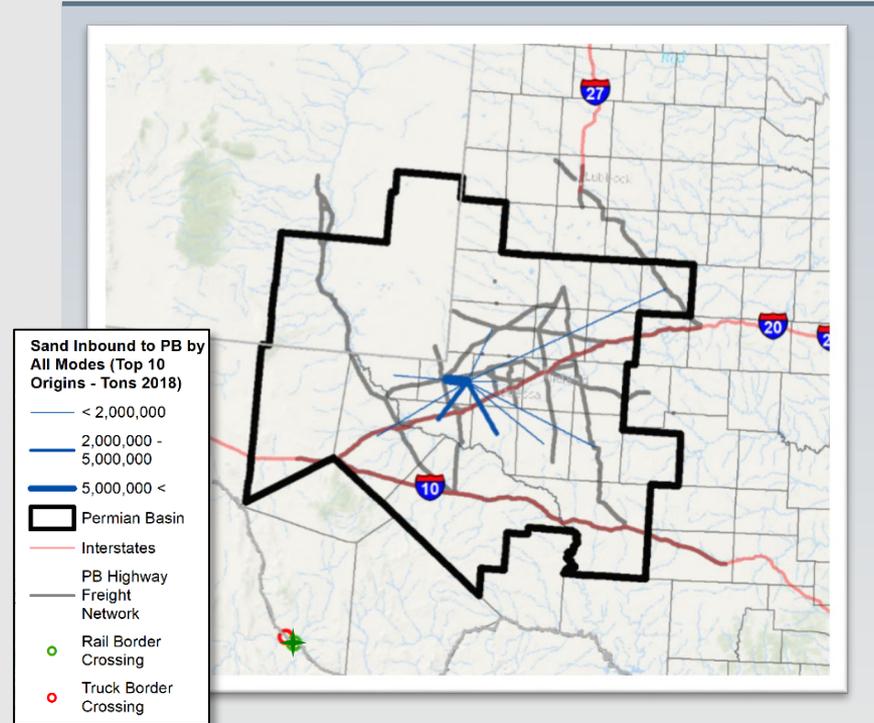
# Energy Sector Sphere of Influence – Inbound by Tonnage, 2018



## Transportation Equipment



## Sand



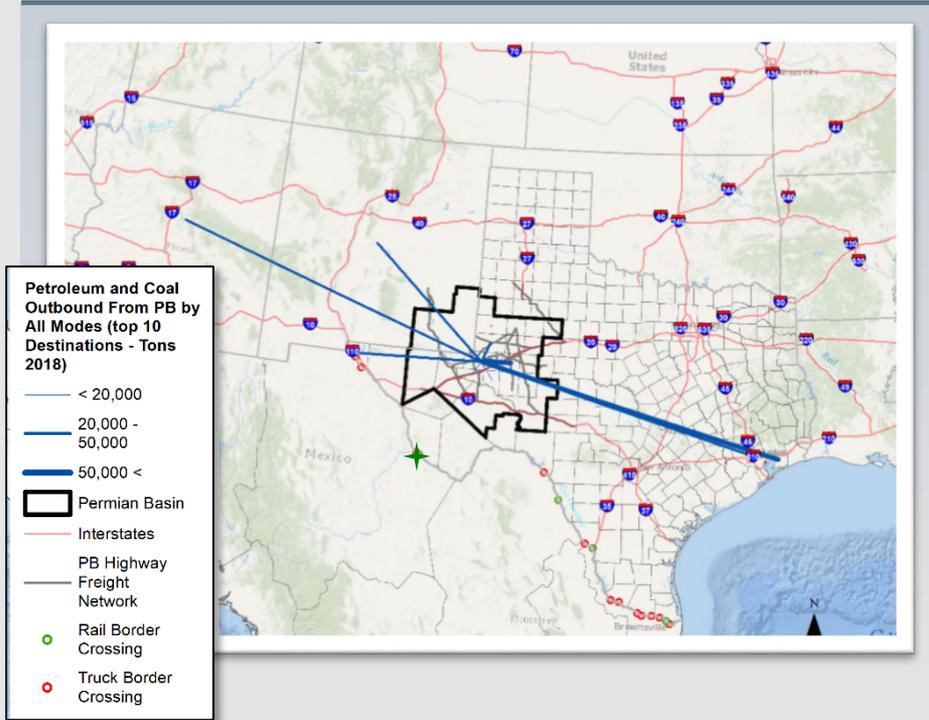
Source: Cambridge Systematics analysis of TRANSEARCH and Enverus data.

✦ Presidio Rail Crossing is currently closed

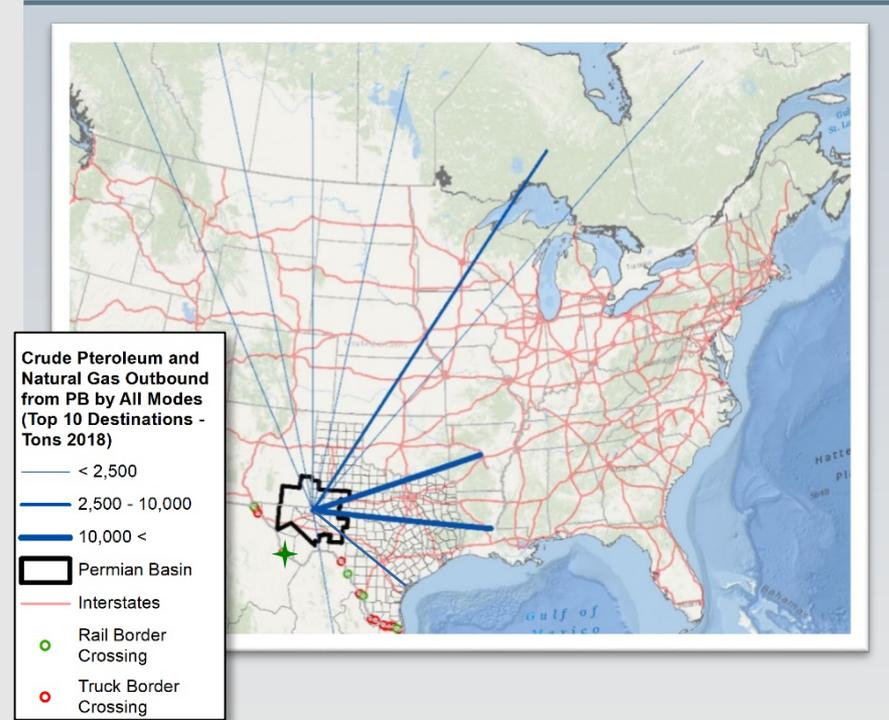
# Energy Sector Sphere of Influence – Outbound by Tonnage, 2018



## Petroleum



## Crude Petroleum and Natural Gas

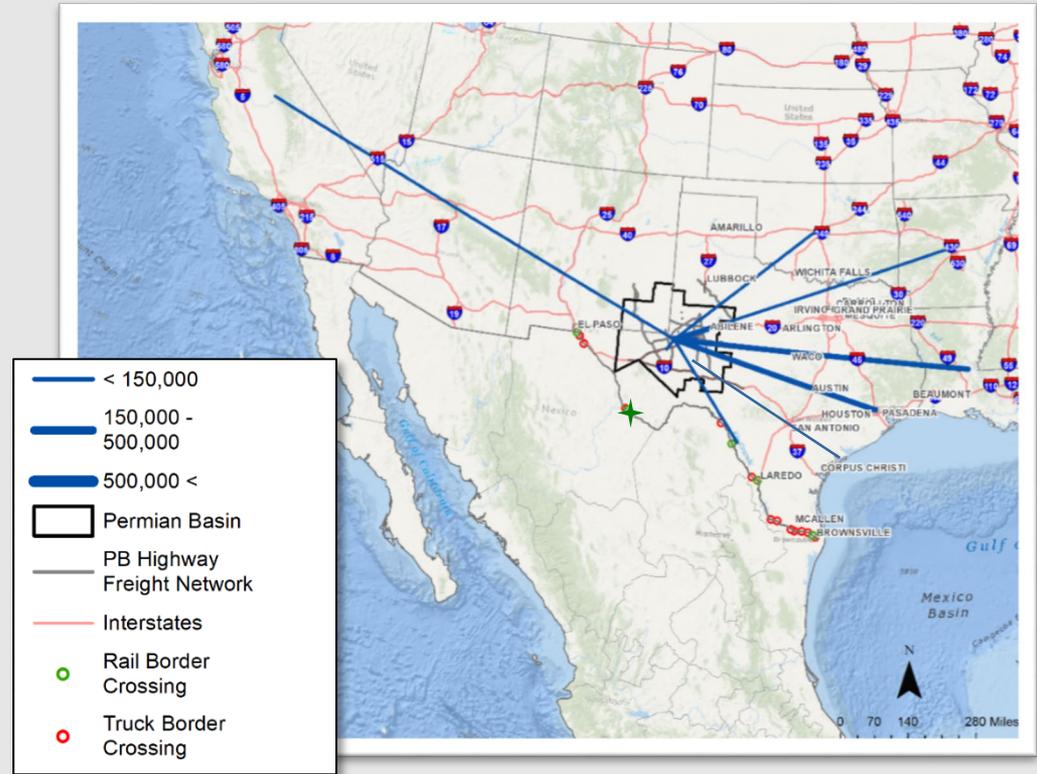


Source: Cambridge Systematics analysis of TRANSEARCH data. ★ Presidio Rail Crossing is currently closed.

# Combined Energy Sector Key Commodity Flows by Tonnage, 2018

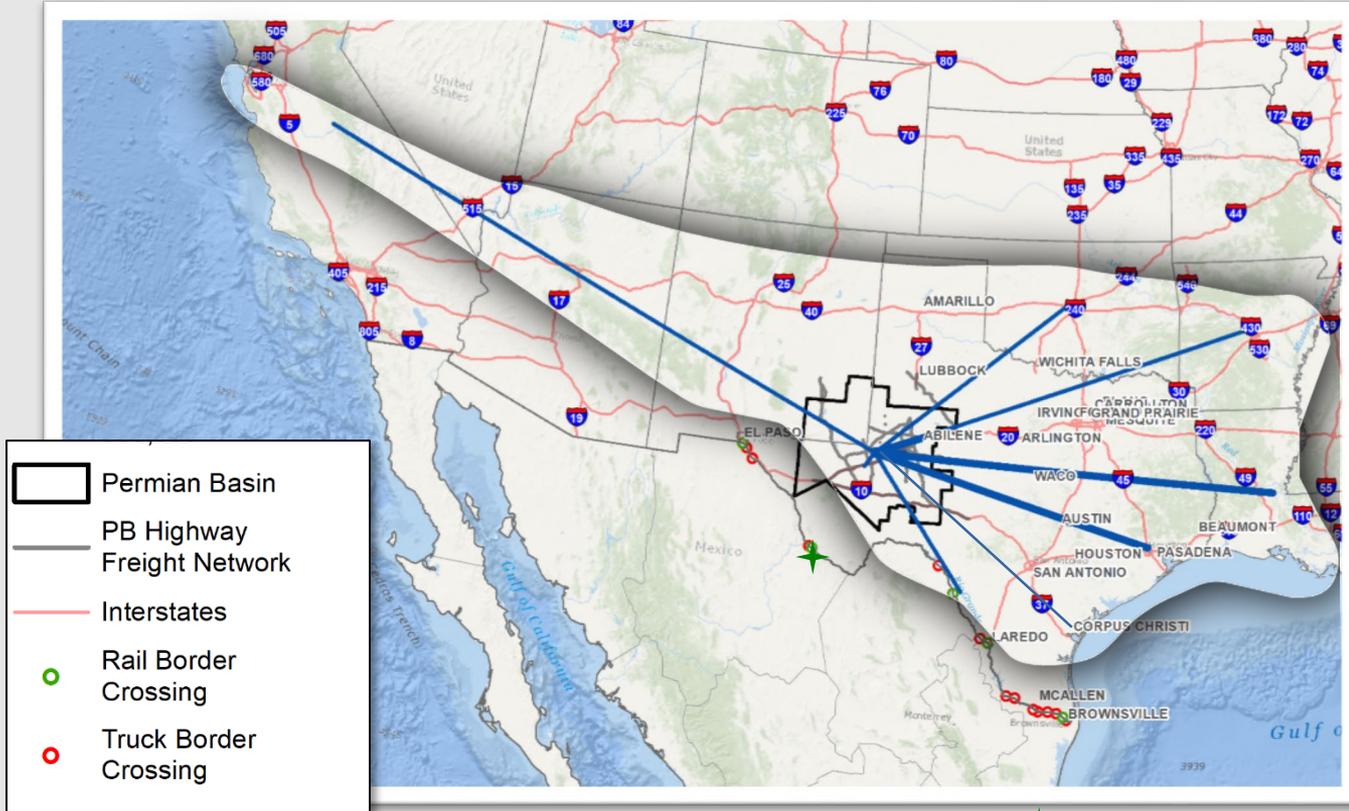


- Top 10 Origins and Destinations
  - Petroleum
  - Crude petroleum and natural gas
  - Chemical and allied product
  - Non-electrical machinery
  - Fabricated metal products



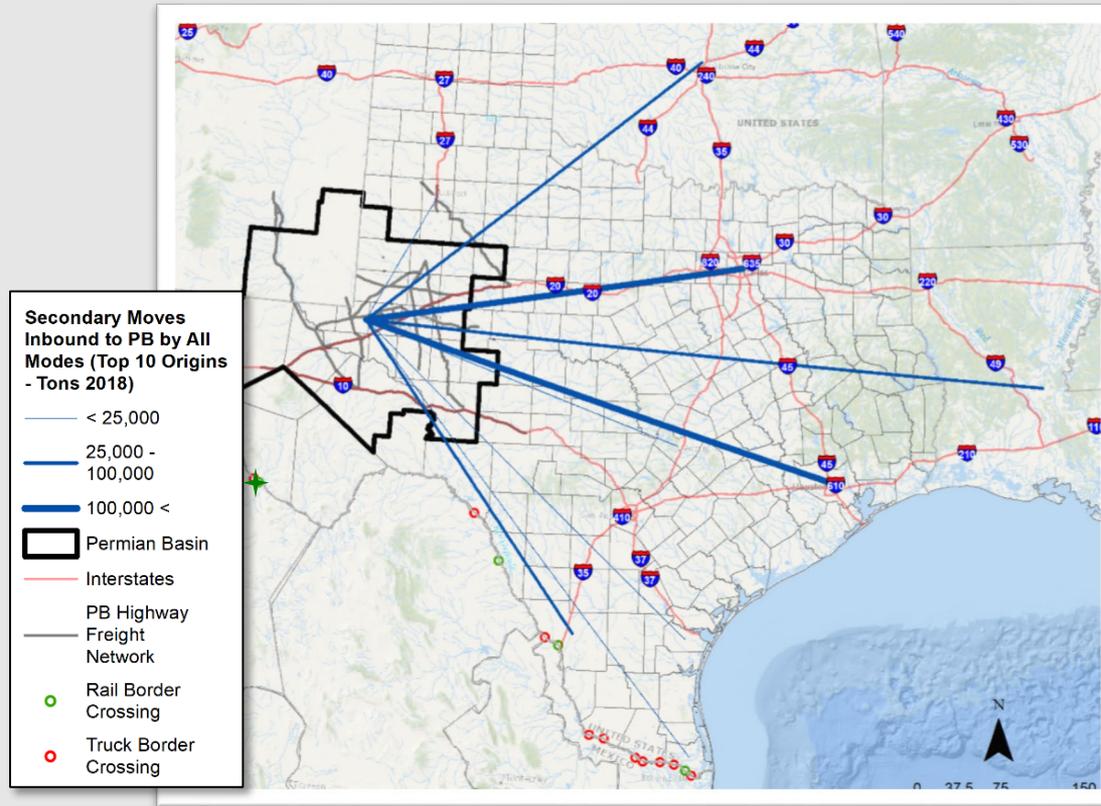
Source: Cambridge Systematics analysis of TRANSEARCH data. ★ Presidio Rail Crossing is currently closed.

# Proposed Energy Sector Sphere of Influence



Source: Cambridge Systematics analysis of TRANSEARCH and Enverus data. ★ Presidio Rail Crossing is currently closed

# Consumer Products – Inbound Flows by Tonnage, 2018

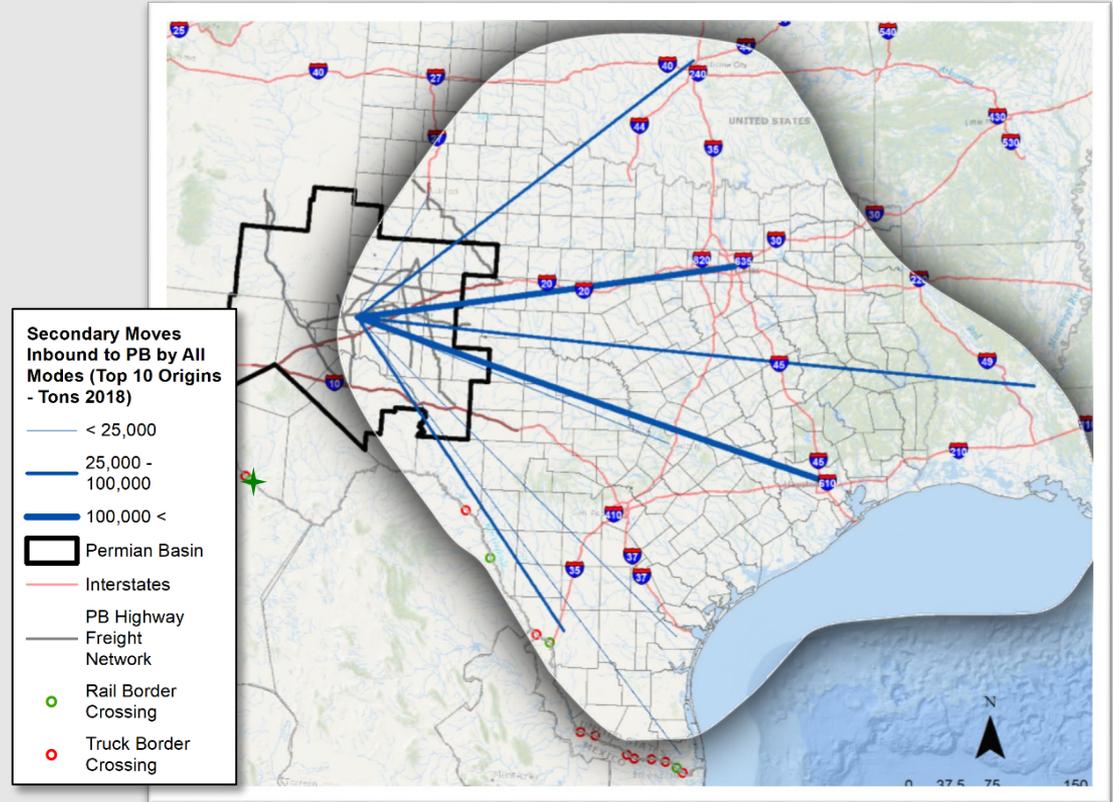


Source: Cambridge Systematics analysis of TRANSEARCH data. + Presidio Rail Crossing is currently closed.

# Proposed Consumer Products Sphere of Influence



- Inclusive of Texas maritime, inland, and border ports
- Louisiana
- Oklahoma

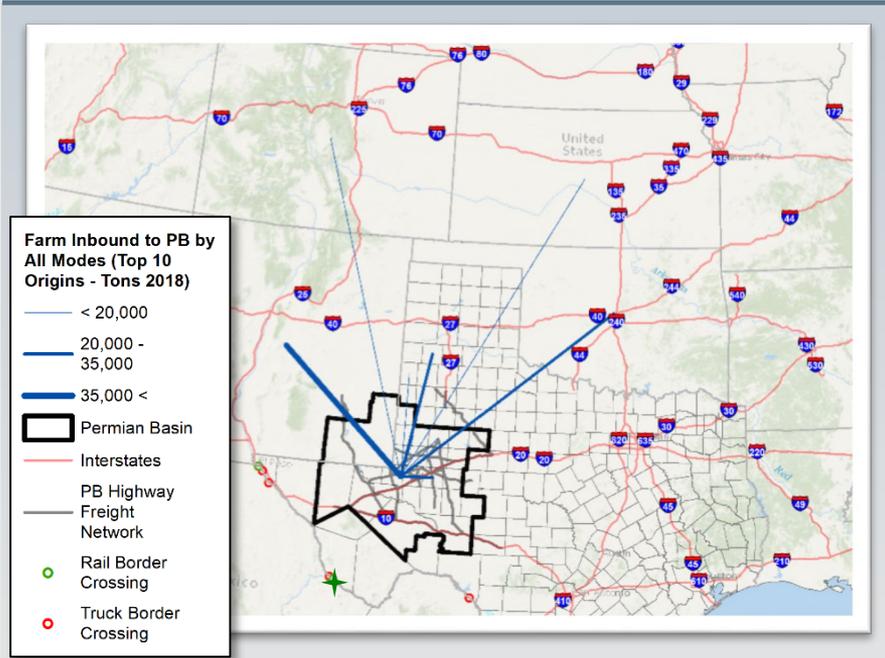


Source: Cambridge Systematics analysis of TRANSEARCH data. ★ Presidio Rail Crossing is currently closed.

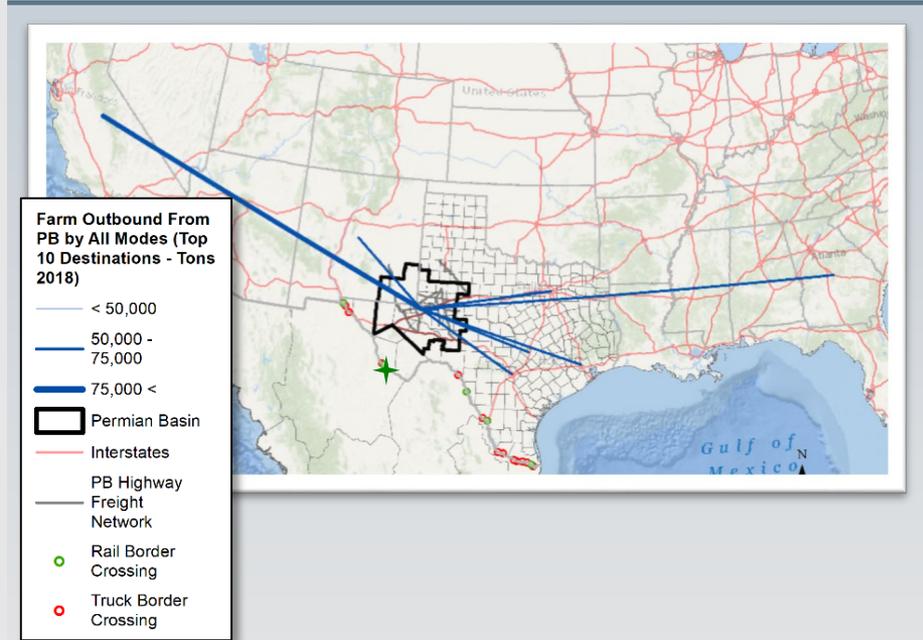
# Agricultural Goods Sphere of Influence – Inbound and Outbound by Tonnage, 2018



*Inbound*

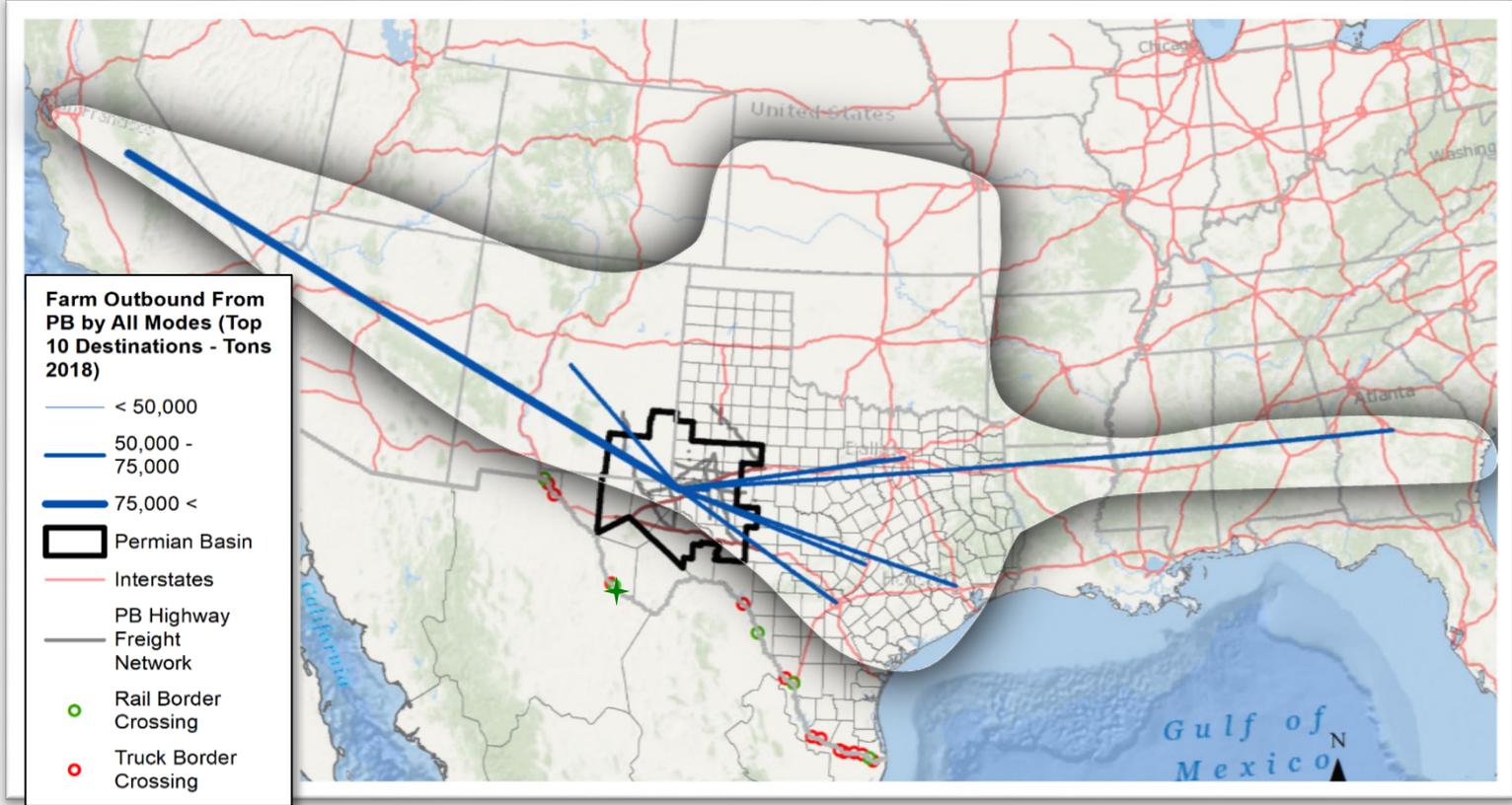


*Outbound*



Source: Cambridge Systematics analysis of TRANSEARCH data. ⚡ Presidio Rail Crossing is currently closed.

# Proposed Agricultural Goods Sphere of Influence



Source: Cambridge Systematics analysis of TRANSEARCH data. + Presidio Rail Crossing is currently closed.

# Freight Intensive Land Uses





1

*Growth patterns*

*Distribution of industrial activity*

2

3

*Land use patterns*

*Interaction with transportation network*

4

5

*Issues and trends related to freight intensive land use*



Designate freight intensive land use (existing and future)

Overlay Permian Basin Regional Freight Network

Identify current and future land use  
impacts on freight network



## Oil & Gas Wells

*Density of active  
oil wells*

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*Density of  
drilling permits*

## Sand Mines

*Density of active  
sand mines*

## Employment

*Density of  
employment in retail,  
transportation and  
warehousing,  
agriculture, mining/oil  
and gas, construction,  
and manufacturing*

## Population Growth

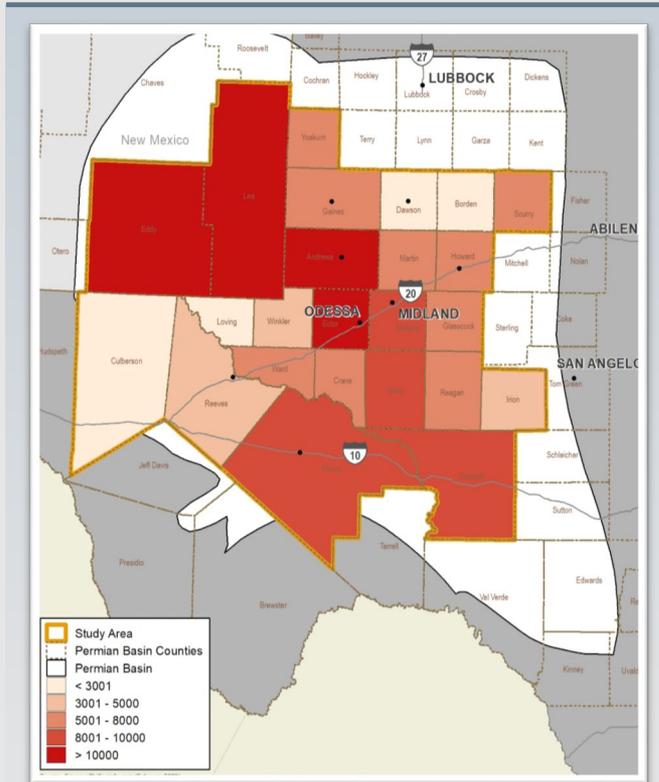
*Population  
projections*

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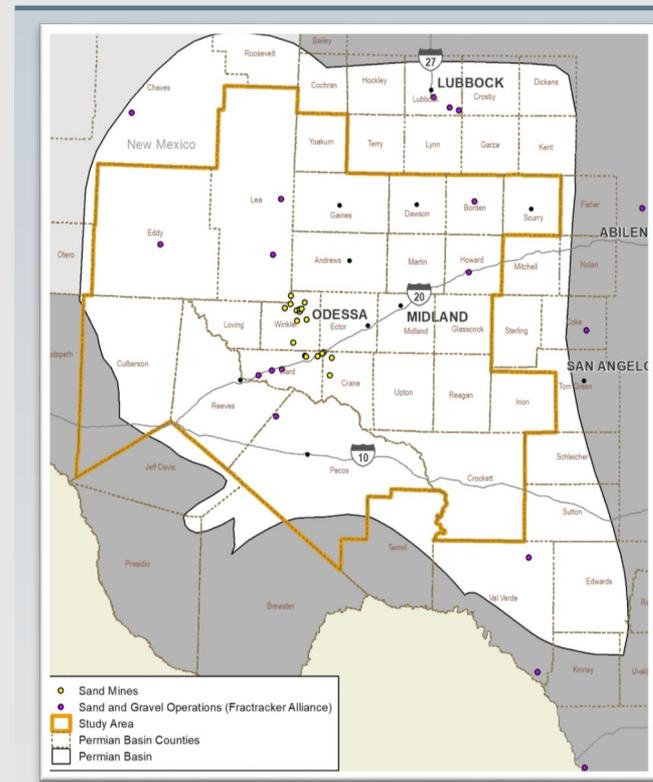
*Number of  
building permits*



## Active Well Permits



## Sand Mines



Source: Atkins analysis of Enverus, Fractracker Alliance, Atlas Sand and Texas GLO data, February 2020



Electric Power  
and Utility  
Development

OS/OW loads

Not proximate  
to schools and  
neighborhoods

Driveway  
permits

Water disposal  
sites



## How important are these criteria in identifying freight intensive land uses?



# Final Criteria for Identifying Freight Land Use Hotspots

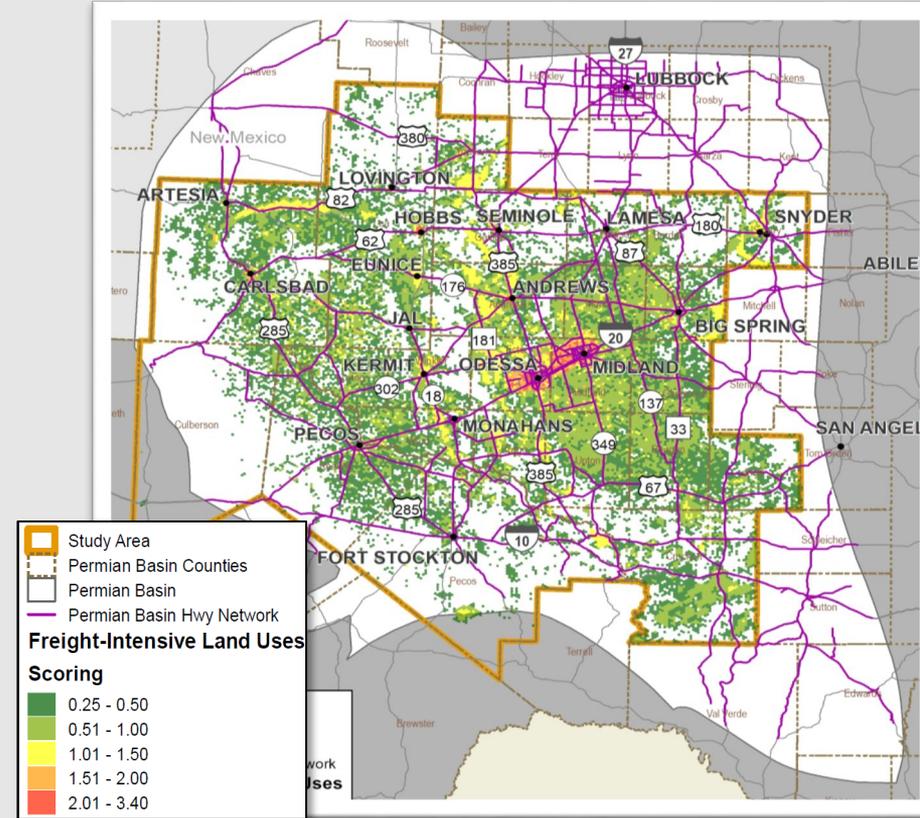


CRITERIA	Weight	Score				
		1	0.75	0.5	0.25	0
<b>Projected Population - Total citizens within populated areas and immediate surroundings</b>	19.25%	51,000+	25,000 – 50,099	10,000 – 24,999	5,000 – 9,999	< 5,000
<b>Key industry employment - Number of employees</b>	19.25%	500+	100 - 499	50 - 99	10 - 49	< 10
<b>Active oil / gas wells</b>	23%	26+	11 - 25	6 - 10	1 - 5	0
<b>Approved permits</b>	19.25%	15+	10 - 14	5-9	1 - 4	0
<b>Sand mines</b>	19.25%	1+				0

# Draft Freight Land Use Hot Spots in the Permian Basin



- Bands of activity are associated with existing transportation linkages:
  - North/south follows SH 18 through Monahans, Kermit, and up to Hobbs, NM
  - Northeast Eddy County follows US 82
  - Between Odessa and Andrews Counties organized around US 385 and FM 181
- Connectivity is lacking on the western side of this activity cluster between US 62 and I-20

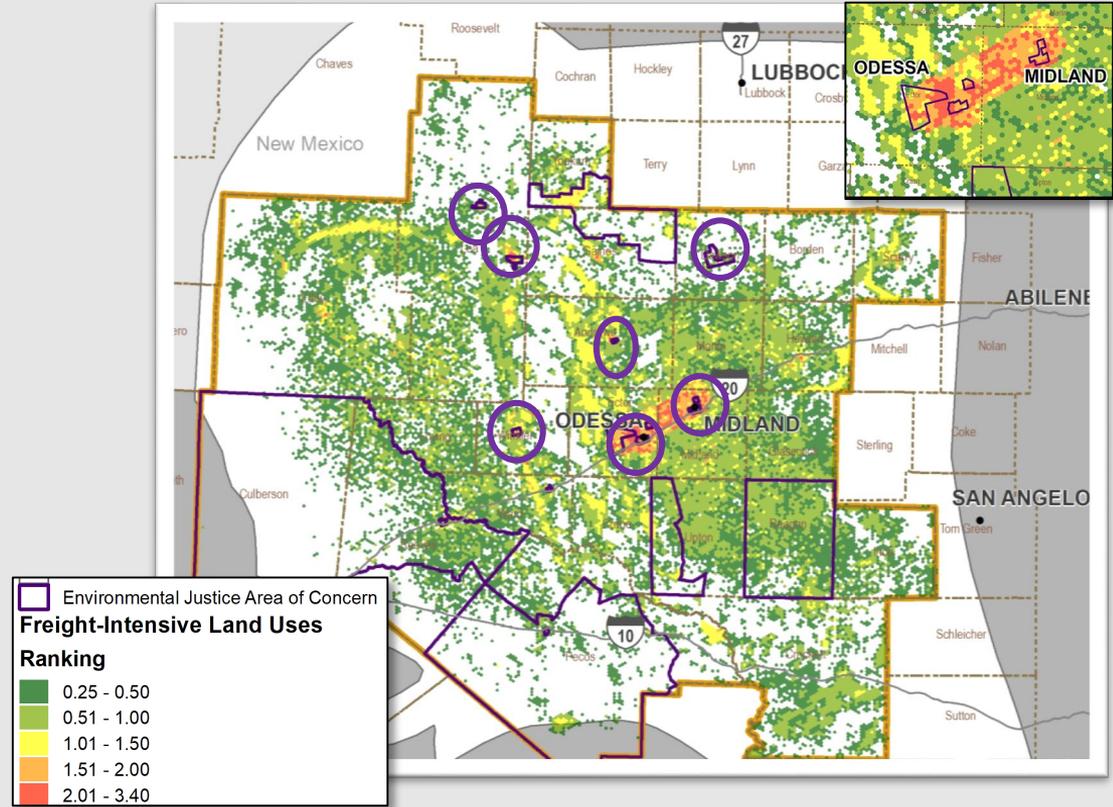


Source: Atkins

# Freight Land Use and Environmental Justice (EJ) Populations



- EJ Factors
  - Low income
  - English proficiency
  - Minority populations
- High-freight intensity land uses and concentrated areas of EJ populations
  - Midland-Odessa
  - Andrews County
  - Winkler County
  - Lea County, NM



Source: US Census Bureau, American Community Survey, 2017

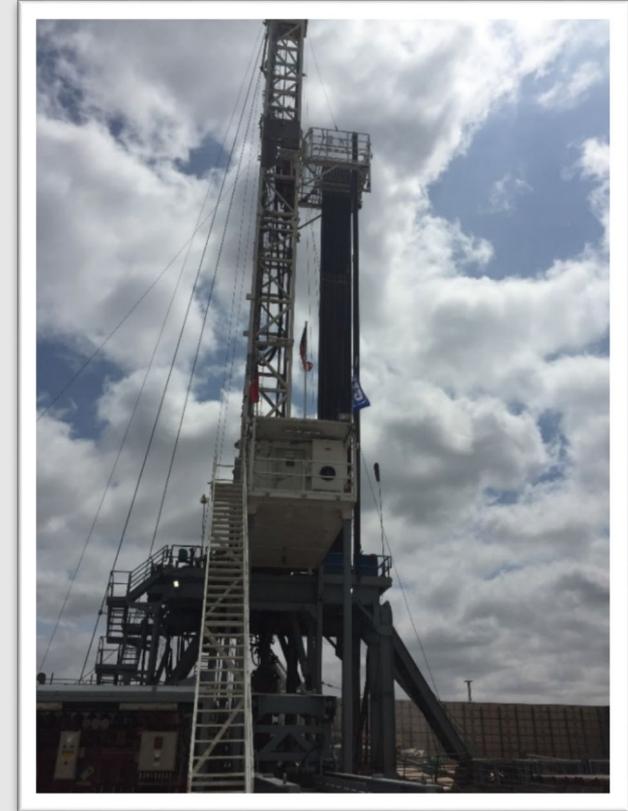
# Needs Assessment



# Needs Assessment: Enhancing the Study using Enverus Data



- Formally known as DrillingInfo.com
- Collects, digitizes, and analyzes latest oil and gas permitting data (updated monthly)
- Primary uses for current effort
  - Land use analysis
  - Traffic analysis
    - Sand
    - Water
    - Chemicals
  - Economic analysis
    - Current employment
    - Forecasts of future growth





## Estimate Total Sand Consumed (Attracted) by County

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

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*The current estimate is 36.8 million tons*

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## Estimate Total Sand Produced (Production) by County

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

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

## Distribute Productions to Attractions at the County Level

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

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*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 and 60 percent produced water transported by pipeline
- 10 percent fresh and 40 percent produced water transported 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>

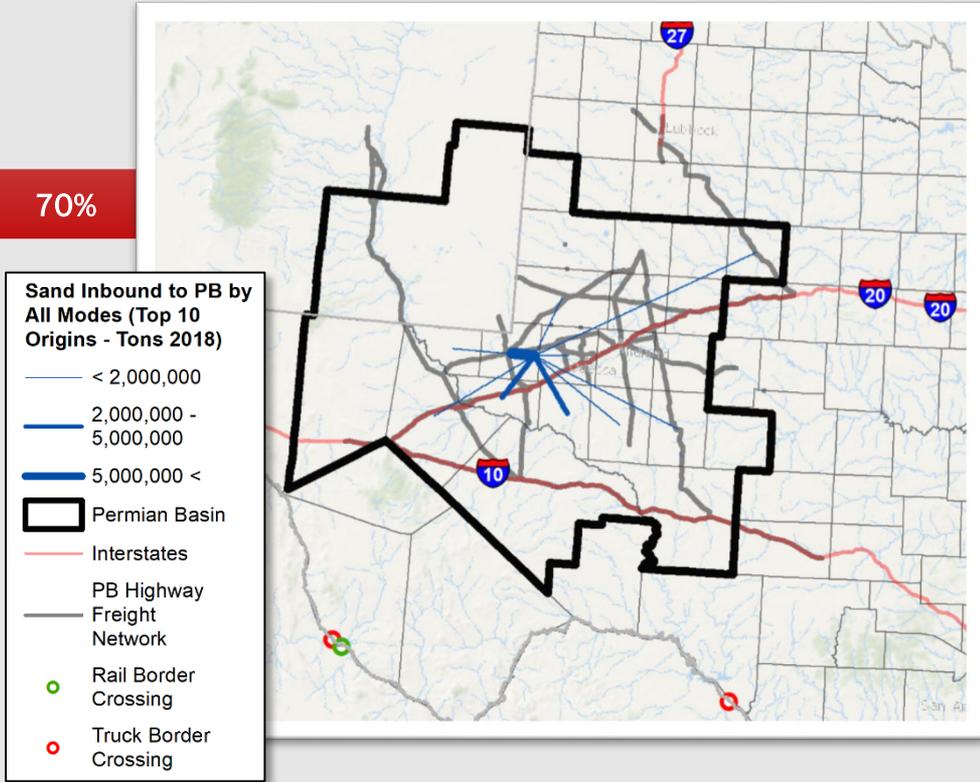
Source: Enverus Drillinginfo Database, 2020; FracFocus Database, 2020; New Mexico Energy, Minerals, and Natural Resources Department: Oil Conservation Division, County Production and Injection Summary by Month for Eddy and Lea Counties, 2020; Texas Water Development Board, Groundwater Database, 2020; 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.

# Needs Assessment: Summary of Sand Flows



Distance Category	Tons	Percent of Total
50 miles or less	14,351,082	15.7%
50 - 75 miles	12,760,187	30.1%
75 - 100 miles	4,939,940	16.7%
100 - 125 miles	3,165,992	24.1%
125 - 150 miles	1,587,582	9.6%
150 - 175 miles	203	3.0%
175 miles or more	2	0.7%
<b>Total</b>	<b>36,804,988</b>	<b>100.0%</b>

70%

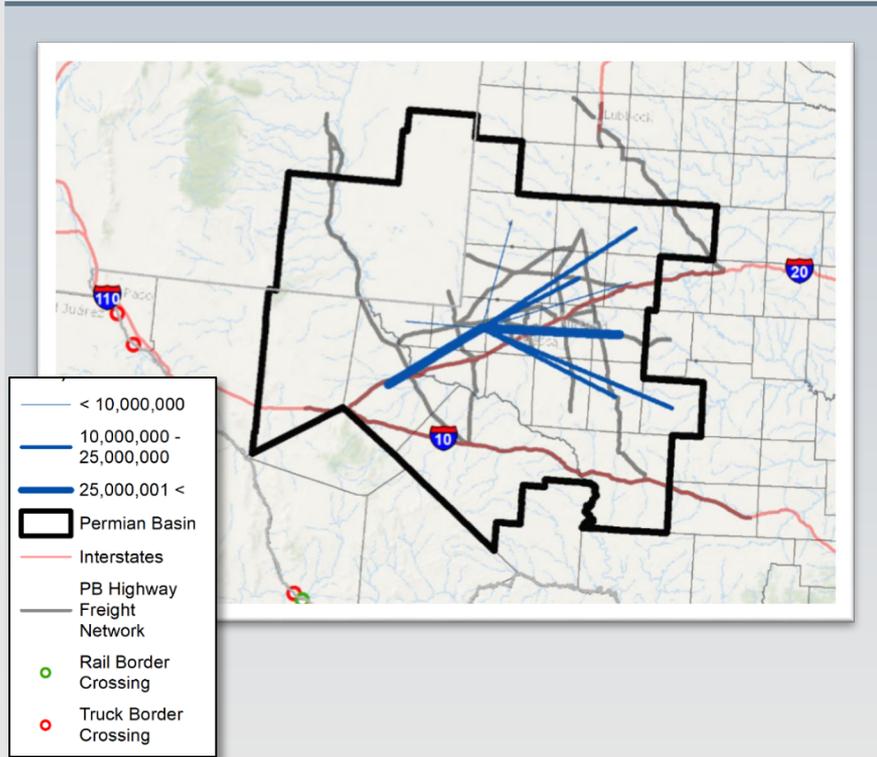


Source: Cambridge Systematics analysis of Enverus data

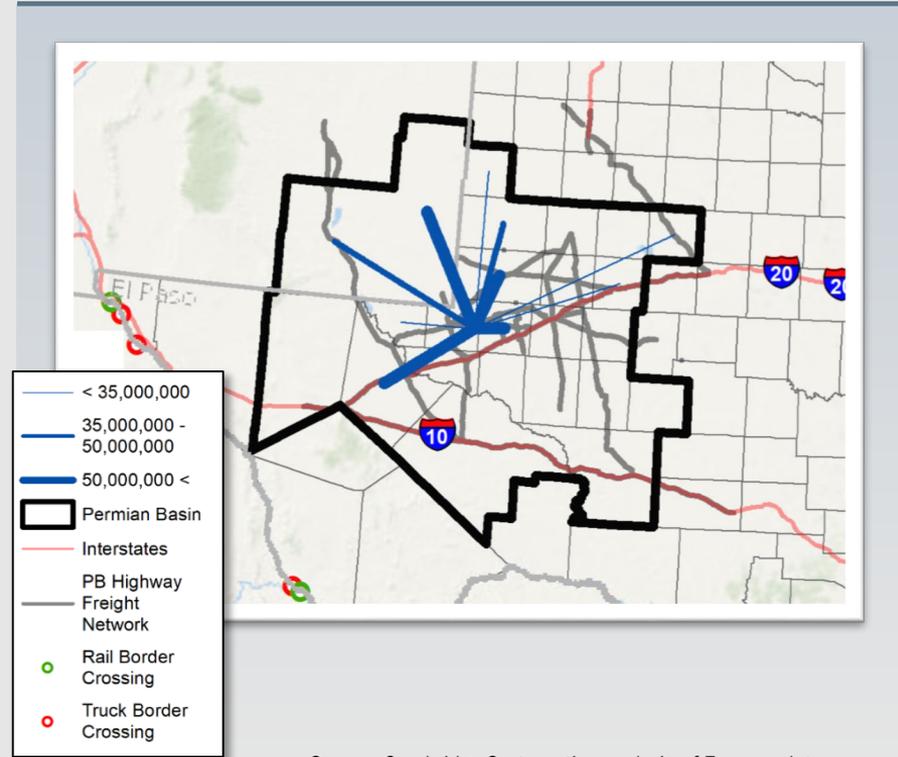
# Summary of Water Flows



## Fresh Water



## Produced Water

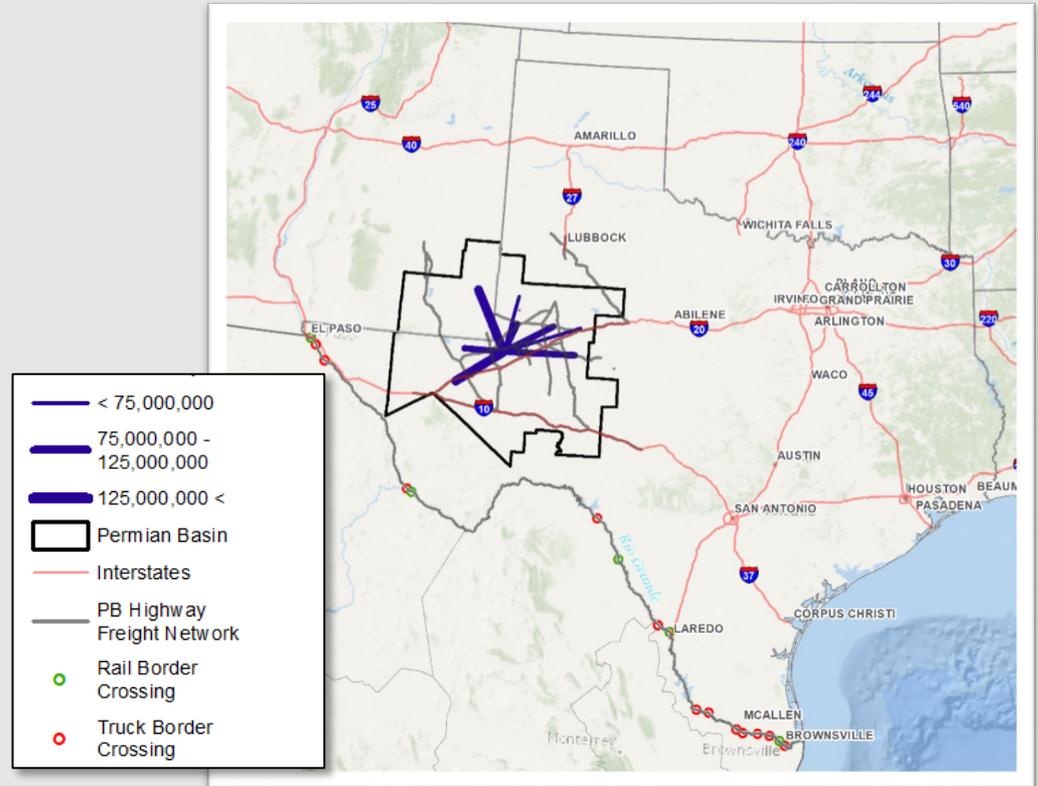


Source: Cambridge Systematics analysis of Enverus data

# Top 10 Origins and Destinations, All Commodities, 2018



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Source: Cambridge Systematics analysis of TRANSEARCH and Enverus data



## **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*

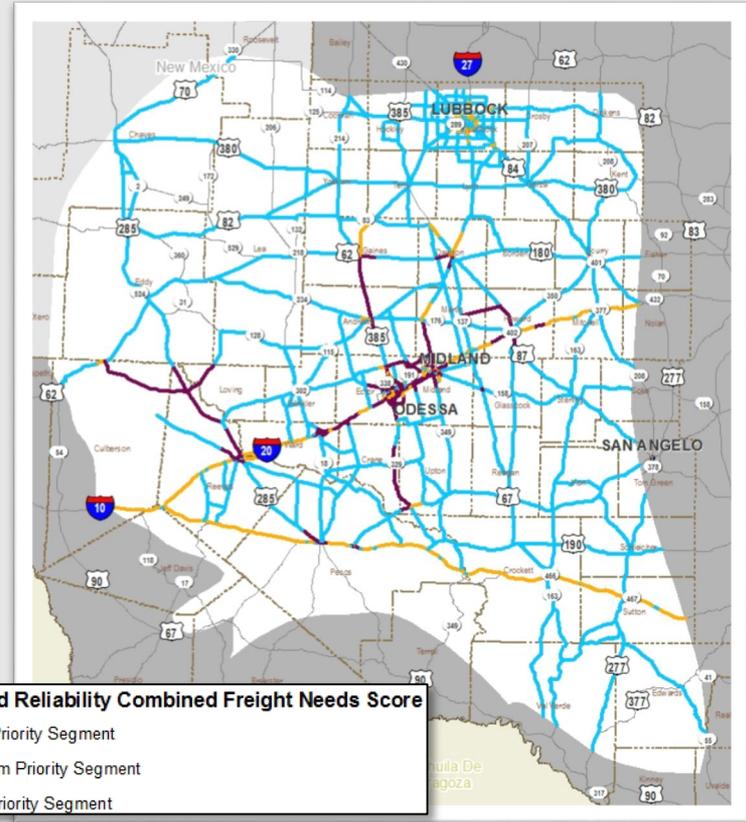
# Needs: Mobility and Congestion Needs



- 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
- Next step - update with sand and water flows



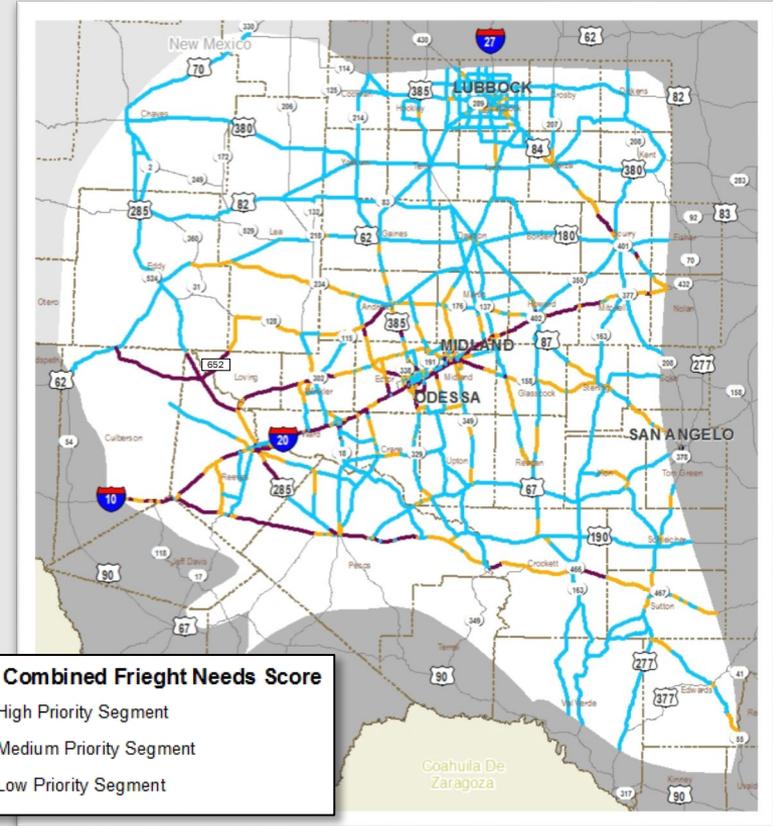
Any surprises?



# Needs: 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



Any surprises?

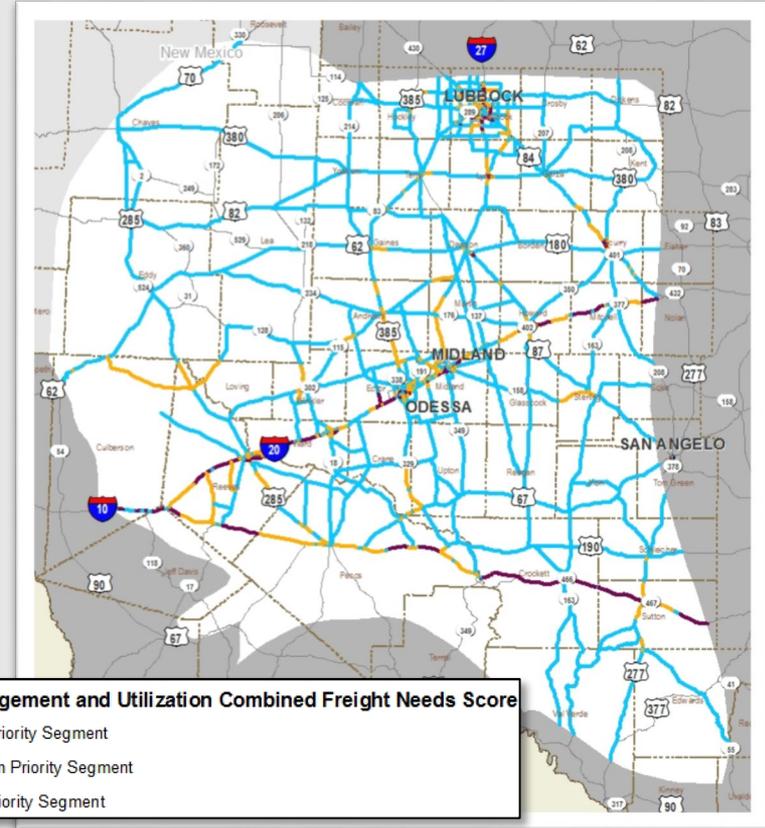


# Needs: Asset Utilization and Preservation

- Bridge conditions
  - Obsolete
  - Deficient
  - Height
  - Load restrictions
- Pavement conditions
- Will compare to OS/OW activity



Any surprises?



# Needs: Oversize/Overweight (OS/OW)

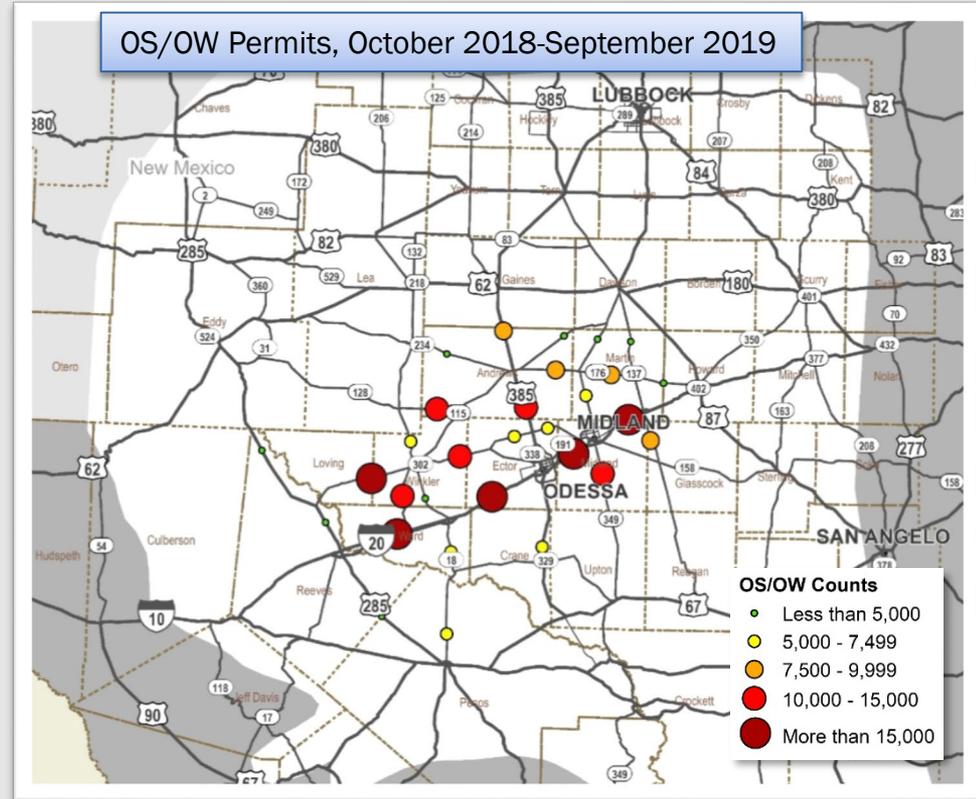


- I-20 between FM 1788 and Loop 250: 35,000 routed OS/OW loads
- SH 302 between SH 115 and U.S. 285: over 17,000 routed OS/OW loads
- Other routes frequently used by OS/OW vehicles include SH 115, SH 349, and U.S. 385



## Beyond the data...

1. What locations is OS/OW activity presenting infrastructure / safety challenges?
2. What locations is infrastructure presenting challenges to OS/OW mobility?



Source: Texas Department of Motor Vehicles, Oversize/Overweight Permits Database, October 2018-September 2019; Cambridge Systematics, Inc. analysis.

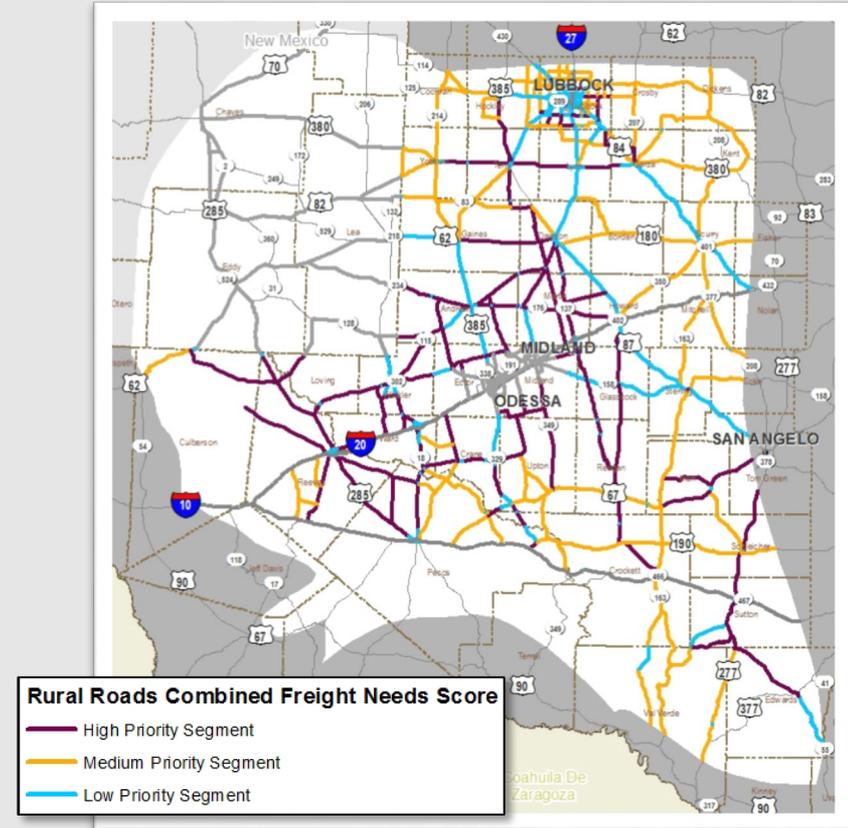
# Needs: Rural Highway Expansion Needs



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



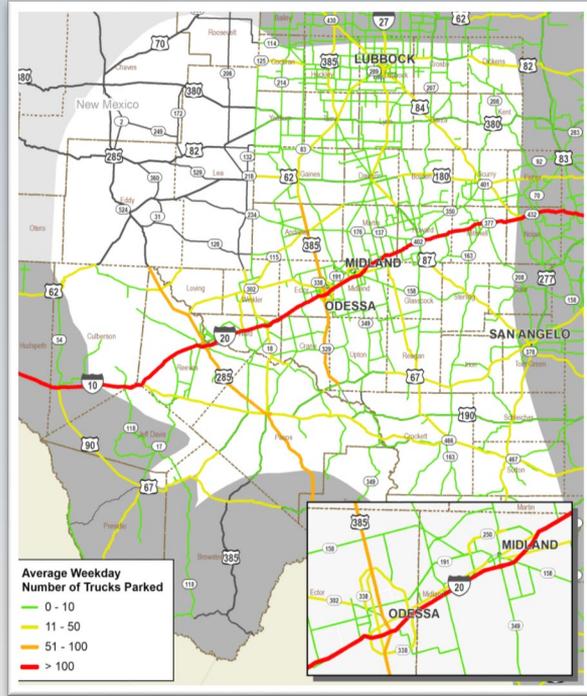
Any surprises?



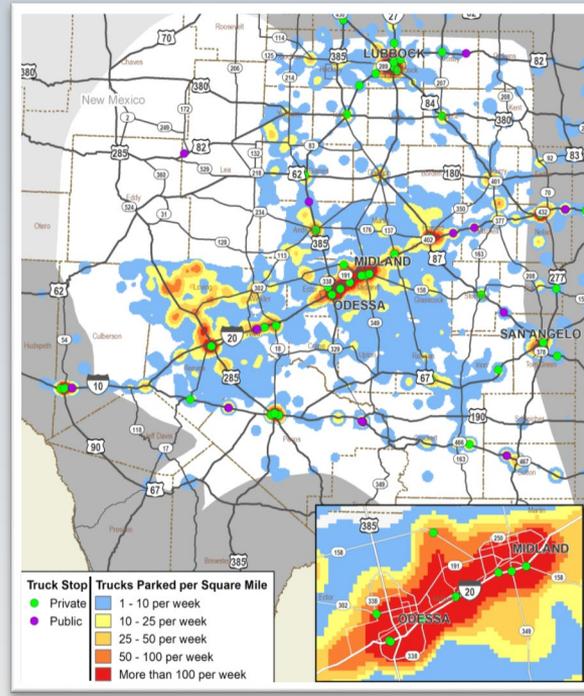
# Needs: Truck Parking



*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



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- How significant are the following freight transportation needs?
  - Congestion
  - Safety
  - Asset preservation
  - Rural roads
  - Truck parking
  - OSOW routes

# Developing Strategies and Recommendations





## Infrastructure

*Expansion projects*

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*Modernization projects*

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*Safety projects*

## 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*



## Steering Committee Input

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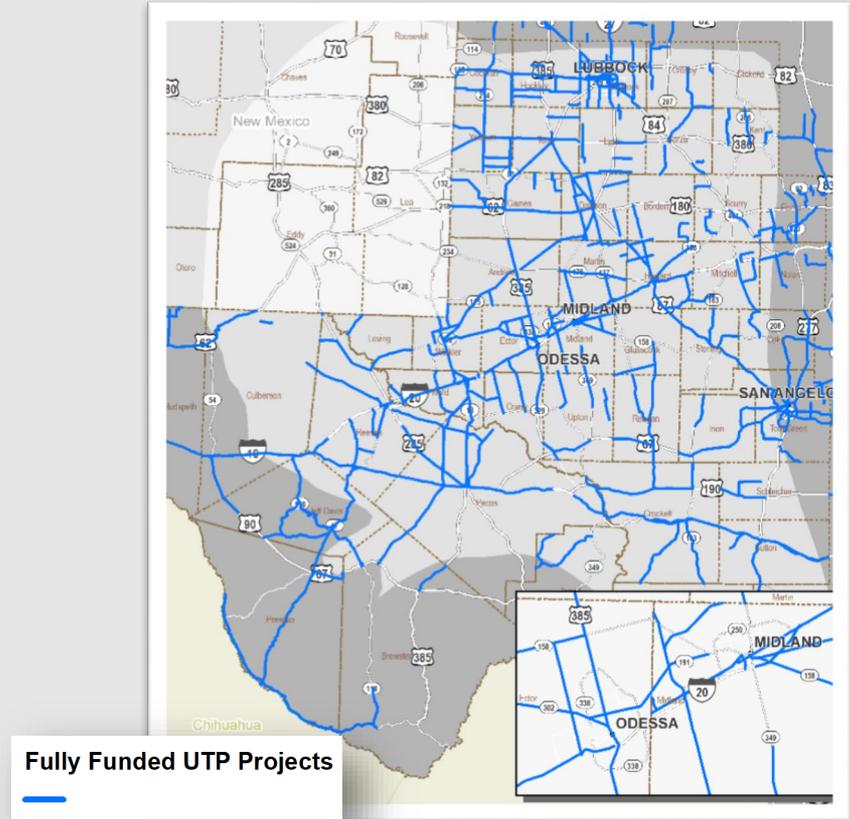


- Please provide suggestions on recommendations in the following categories:
  - Projects – infrastructure
  - Operations – signage, technology, signals, etc.
  - Programs – safety, planning, education and outreach, etc.
  - Policies and Coordination – funding, regulations, institutional recommendations, etc.

# Infrastructure Projects



- TxDOT Unified Transportation Program
  - 2020 -2030
  - Fully funded
  - Partially funded
- Local projects on PBHFN
- Proposed projects from stakeholders



Source: TxDOT



Develop criteria based on goals

Weight criteria based on priorities

Screen projects using weighted criteria



Steering Committee Input

[www.menti.com](https://www.menti.com)

59 44 33



- How important are the following goal areas in prioritizing recommendations?
  - Asset preservation and modernization (improving existing infrastructure)
  - Congestion relief
  - Economic competitiveness
  - Safety enhancement
  - Cost effectiveness
  - Rural connectivity
  - Other

# Next Steps for Recommendations and Strategies



## *Next Steering Committee Meeting*



# Next Steps





## Technical Analysis

*Regional Freight Needs Assessment*

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*Land Use Analysis*

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*Economic Profile and Commodity Flow Forecasts*

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*Draft Recommendations and Strategies*

## Stakeholder Outreach

*Round 2 listening sessions (June 2020)*

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*Steering Committee meeting (June 2020)*





Deliverables	Schedule
Multimodal Regional Freight and Energy Sector Transportation Network	Complete
Economic and Commodity Flow Profile and Forecast	April 2020
Land Use and Needs Assessment	April 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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