



# 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](http://www.menti.com) to gather input. You can open this website in your internet browser, either on your mobile device on computer.





## MEETING PURPOSE

1. Present results of and gather feedback on our analysis of the Permian Basin's economic impact and commodity flows.
2. Gather input and feedback on draft recommendations and strategies for addressing the freight mobility challenges in the region.

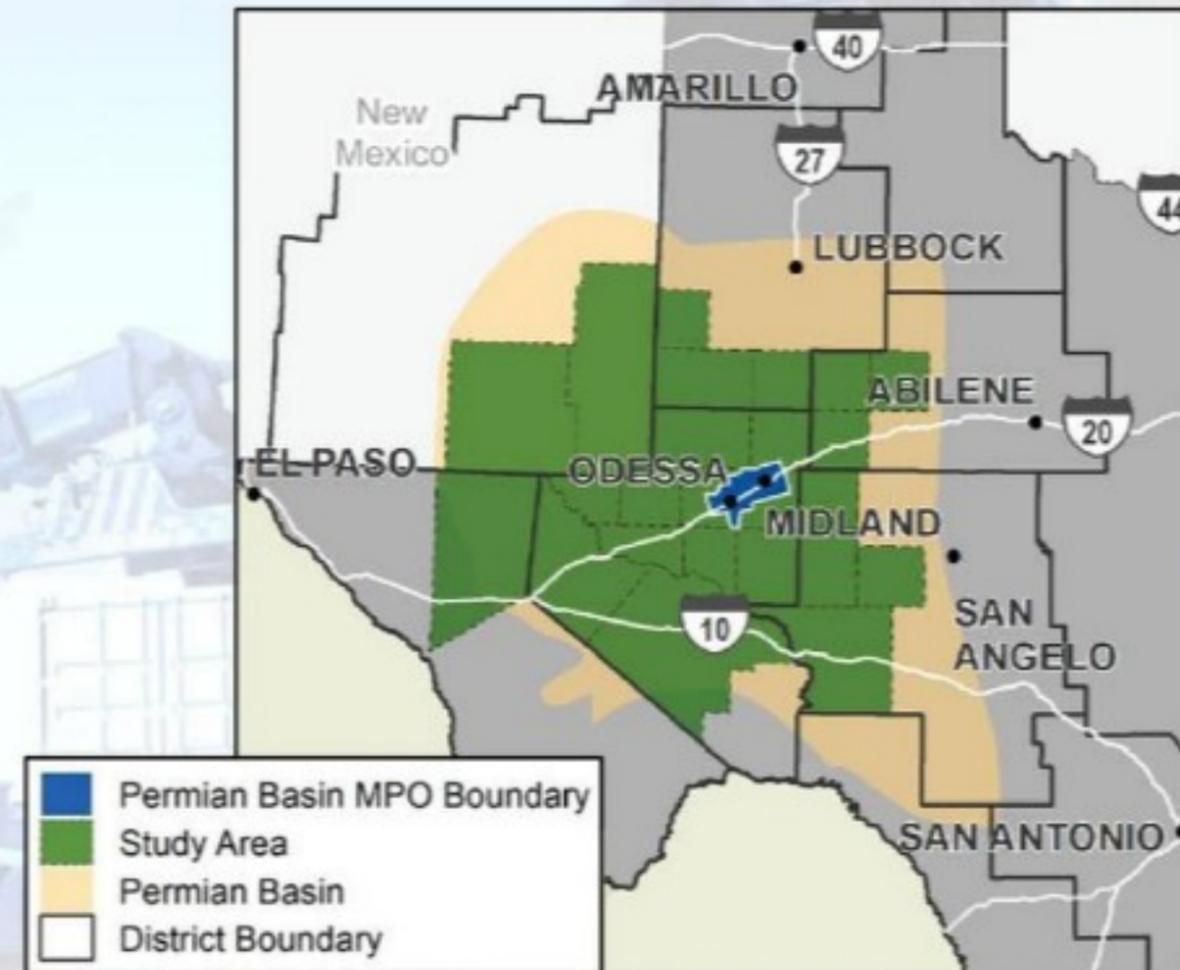
Economic Impact of Permian Basin

Commodity Flow Analysis

Developing Recommendations and Strategies

Recap of June 22-25 Stakeholder Forums

Next Steps and Closing Remarks





## April 8, 2020 Meeting

### Needs Assessment

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

*— ~~Refined freight~~ transportation needs assessment*

### Strategies

*Input on developing strategies and prioritization factors*

*Developed draft strategies and recommendations*

*Developed prioritization criteria and weights*

## Today's Meeting

### Economic Impact and Commodity Flow

*Input on draft economic impact findings and commodity flow forecasts*

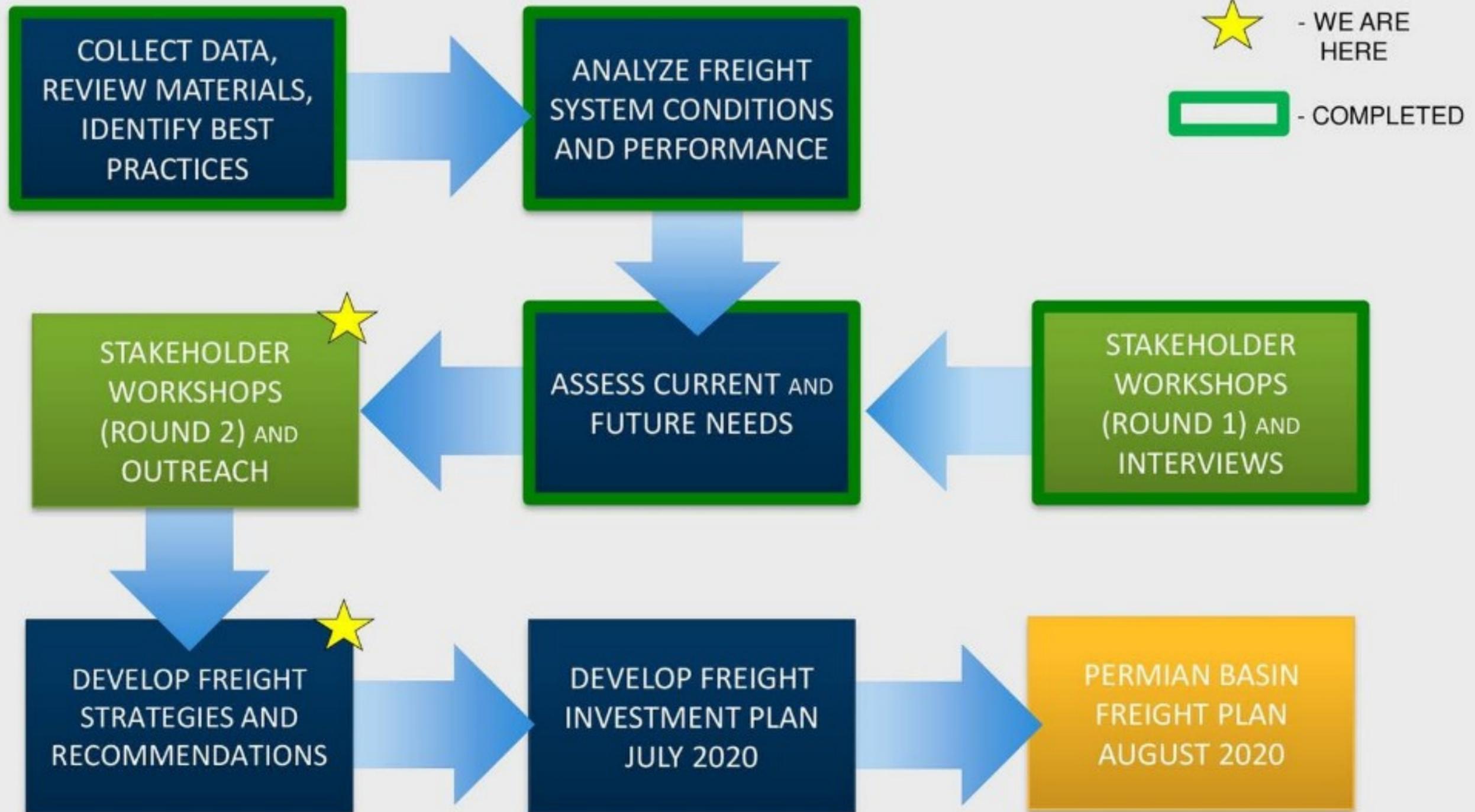
*Finalize economic impact analysis and commodity flow*

### Strategies & Recommendations

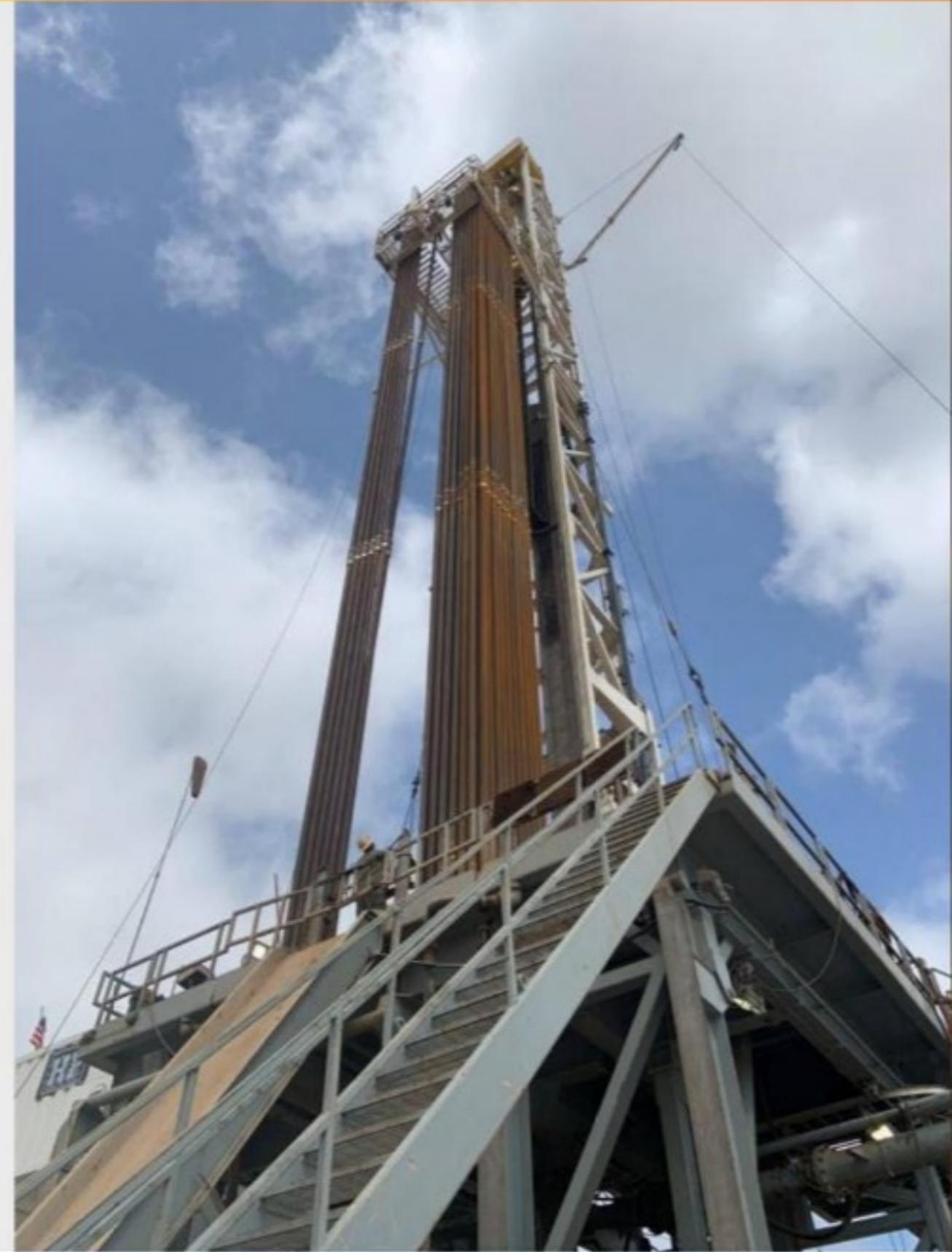
*Input on draft infrastructure, policies, programs and operational recommendations*

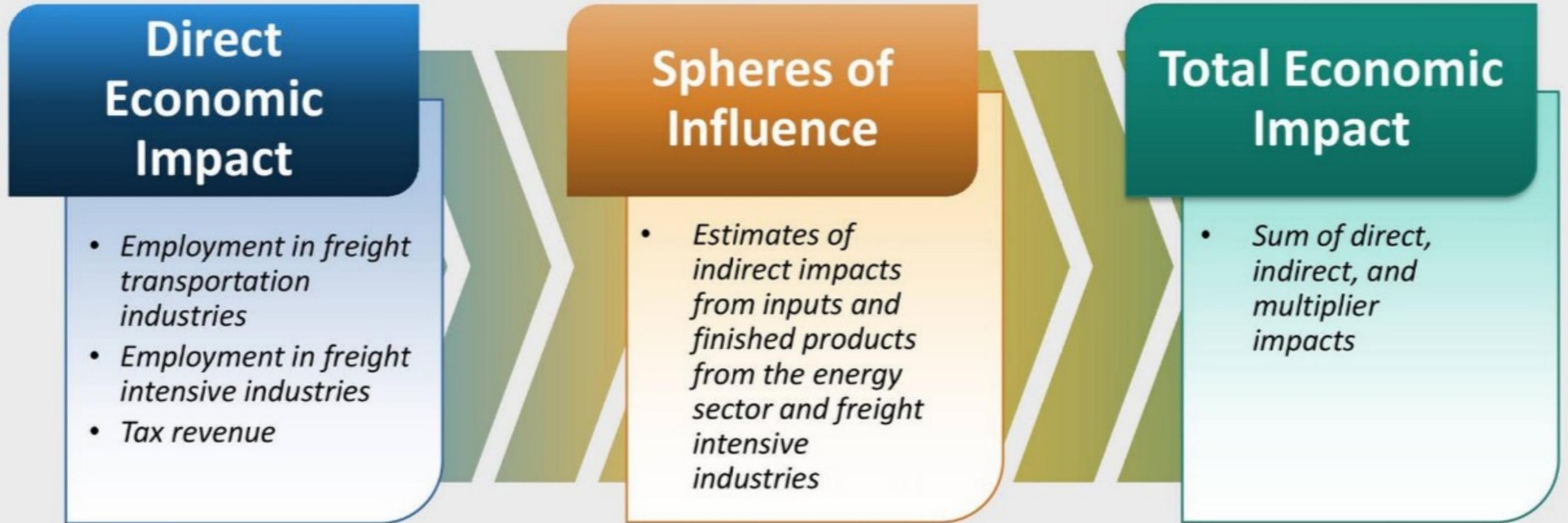
*Develop prioritized recommendations for the final plan*

# Plan Development Approach



# Economic Impact of the Permian Basin







- U.S. Census
- Bureau of Labor Statistics
- County Business Patterns
- InfoGroup Establishment Data
- Texas Demographer's Office
- Texas Comptroller's Office
- Moody's Economic Forecasts
- TREDIS Economic Impact Model
- IMPLAN Economic Model
- Permian Basin Petroleum Association
- MOTRAN

**Are we missing key data?**

**Are there other sources we should consider?**

# Direct Economic Impacts – Preliminary Findings



Direct Freight Transportation/Handling Employment  
in the Permian Basin

Sector	2018
Truck Transportation	10,080
Pipeline Transportation	1,380
Couriers and Messengers	1,060
Support Activities	920
Warehousing and Storage	870
Postal Service	630
Wholesale Trade	570
Air Transportation	170
Rail Transportation	90
<b>Total</b>	<b>15,770</b>

Source: TREDIS Baseline data

Direct Energy Sector and Freight Intensive Employment  
In the Permian Basin

Sector	2018
Mining, Quarrying, and Oil and Gas Extraction	53,900
Retail Trade	26,000
Manufacturing	22,700
Construction	19,800
Wholesale Trade	16,050
Distribution	10,500
<b>Total</b>	<b>148,950</b>

Source: IMPLAN Baseline data

**Are these numbers reasonable?**

# Economic Impact – Preliminary Findings



Total Impact of Freight Transportation/Handling Activity in the Permian Basin, 2018

Region	Employment (thousands)	Labor Income (Billions of \$2018)	Output (Billions of \$2018)
Permian Basin (Texas Counties)	27	\$2.1	\$4.3
Rest of Texas	15	\$1.6	\$3.2
<b>Total</b>	<b>42</b>	<b>\$3.7</b>	<b>\$7.5</b>

Texas total



447,000 Jobs

Total Impact of Energy Sector and Freight Intensive Activity in the Permian Basin, 2018

Region	Employment (thousands)	Labor Income (Billions of \$2018)	Output (Billions of \$2018)
Permian Basin (Texas Counties)	179	\$13.6	\$47.6
Rest of Texas	226	\$14.8	\$62.8
<b>Total</b>	<b>405</b>	<b>\$28.4</b>	<b>\$110.4</b>

\$32.1 Billion in Income



\$117.8 Billion in Output

Source: CS analysis using IMPLAN and TREDIS

Do these results look reasonable? Are they what you expected?

# Tax Revenues – Preliminary Findings



## Non-Severance Tax Revenues Generated by Energy Sector and Freight Intensive Activity in the Permian Basin, 2018

Tax Revenue	Federal Taxes (Millions of \$2018)	State / Local Taxes (Millions of \$2018)	Total (Millions of \$2018)
Permian Basin (Texas Counties)	\$3,219	\$2,875	\$6,094
Rest of Texas	\$3,367	\$3,055	\$6,422
<b>Total</b>	<b>\$6,586</b>	<b>\$5,929</b>	<b>\$12,515</b>

Source: CS analysis using IMPLAN and TREDIS

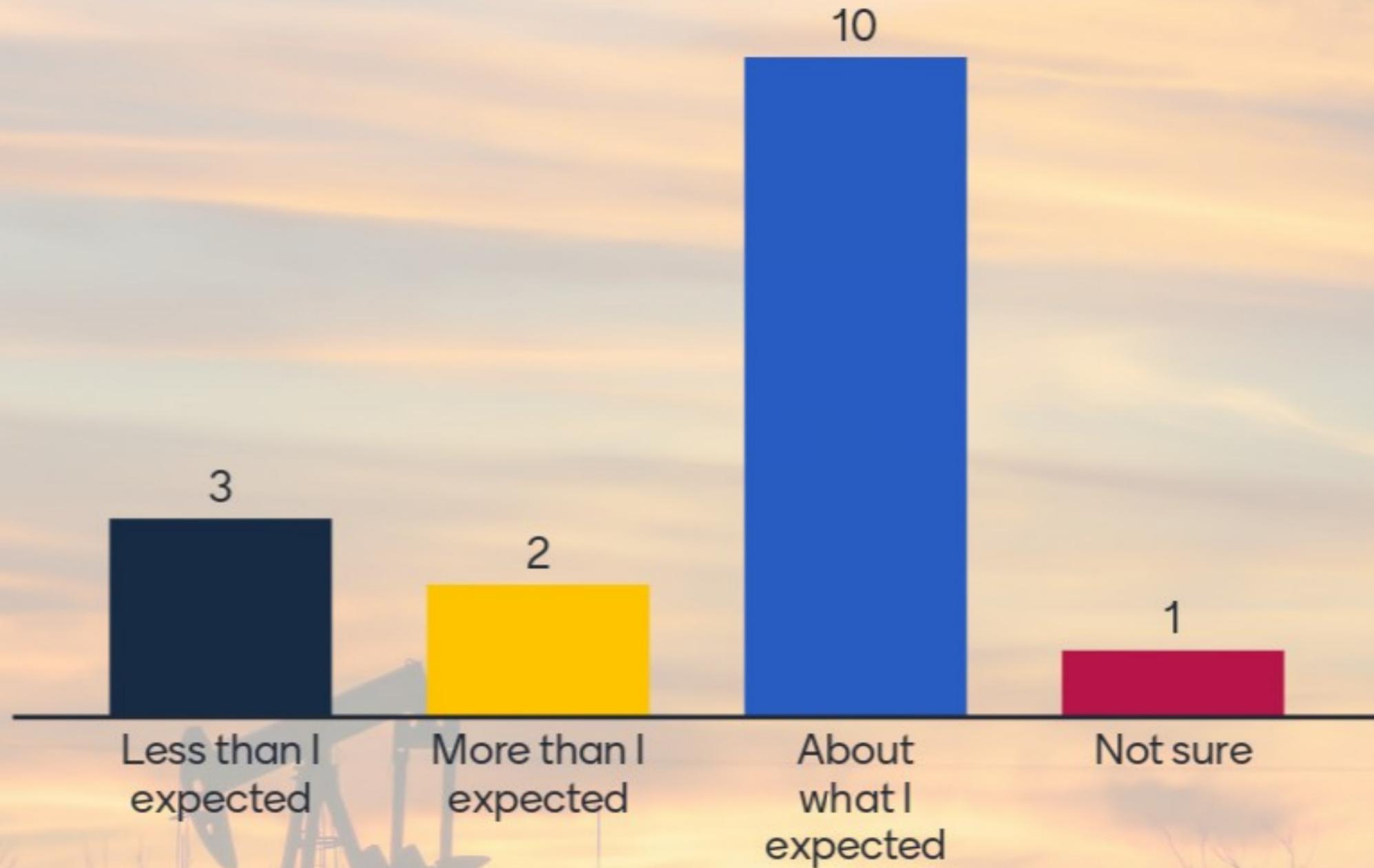
## Severance Tax Revenues Generated in the Permian Basin (Millions \$)

Tax	2014	2015	2016	2017	2018	2019
Oil Production Tax	\$1,834.6	\$1,333.0	\$891.1	\$1,237.4	\$2,170.5	\$2,638
Natural Gas Production Tax	\$318.2	\$246.2	\$129.1	\$267.4	\$479.5	\$660
Well Servicing Tax	\$65.8	\$67.4	\$38.8	\$54.8	\$134.4	\$140
<b>Total</b>	<b>\$2,218.6</b>	<b>\$1,646.6</b>	<b>\$1059.0</b>	<b>1,559.6</b>	<b>\$2,784.4</b>	<b>\$3,438.0</b>

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

**In 2018, nearly \$16 Billion in Federal, state, and local taxes were generated in the Permian Basin**

# The economic impact findings are:





**Incorporate feedback**

**Finalize analysis and findings**

**Develop technical report and communication materials**

# 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
  - Steering Committee and stakeholder input
  - RBN Energy
  - Energy Information Administration



## Estimate Total Sand and Water Consumed (Attracted) by County

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

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*Estimate for sand is 36.8 million tons*

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*Estimate for fresh water is 243 million tons*

---

*Estimate for produced water is 642 million tons*

## Estimate Total Sand and Water Produced (Production) by County

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

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

---

*Water is based on fracking activity and location of disposal sites*

## 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



- Fresh/produced water: 21 tons per truck
  - 90% of **fresh water** transported by pipeline, 10% by truck
  - 60% of **produced water** transported by pipeline, 40% by truck
- Sand: 23 tons per truck
- One empty (return) trip for every loaded trip

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
<b>Total</b>	<b>19.46</b>	<b>38.92</b>	<b>106,625</b>

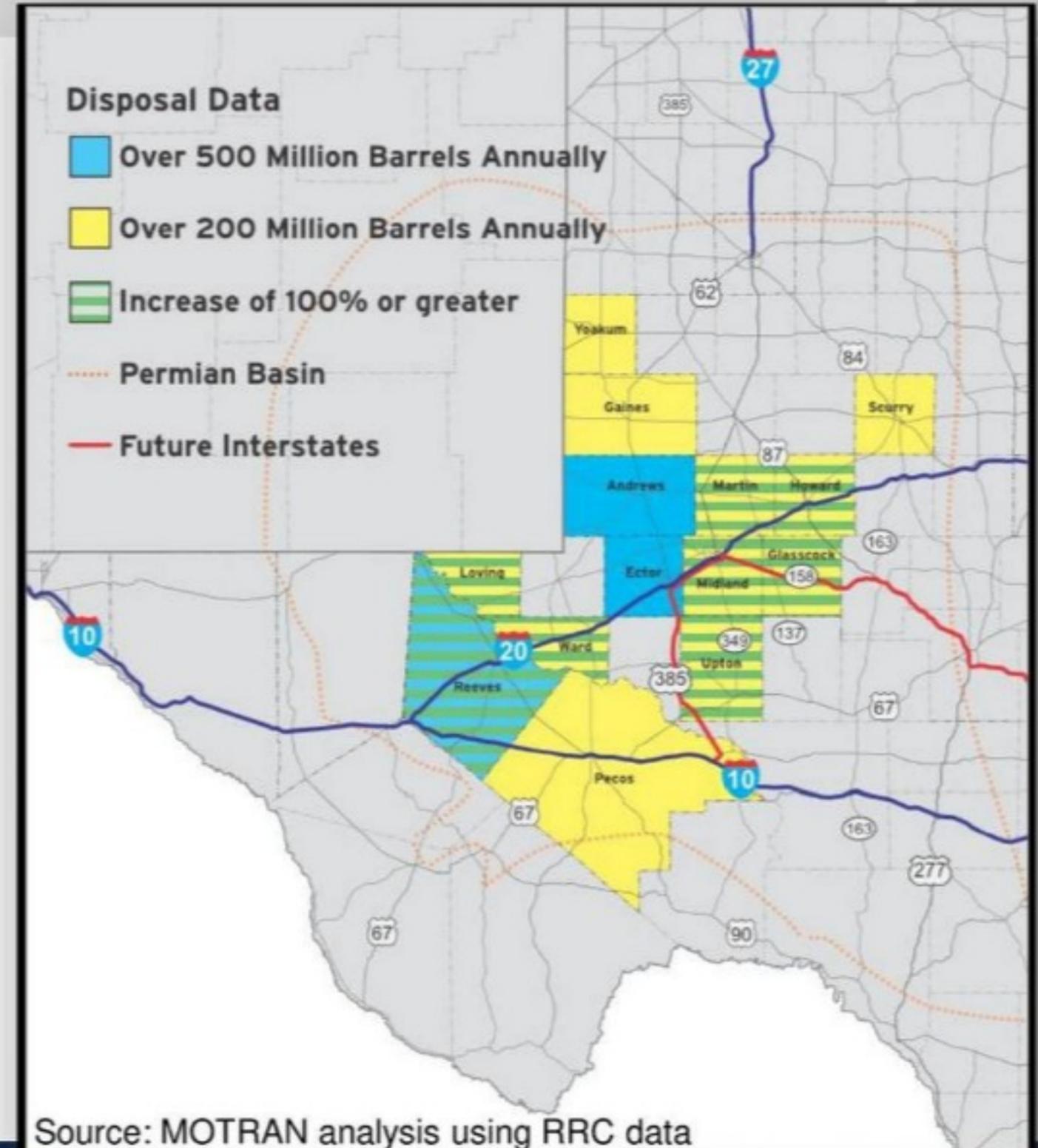
Sources: Enverus Drillinginfo Database, 2020; FracFocus Database, 2020; New Mexico Energy, Minerals, and Natural Resources Department: Oil Conservation Division, County Production and Injection Summary by Month for Eddy and Lea Counties, 2020; Texas Water Development Board, Groundwater Database, 2020;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

# Assigning Truck Trips to the Network

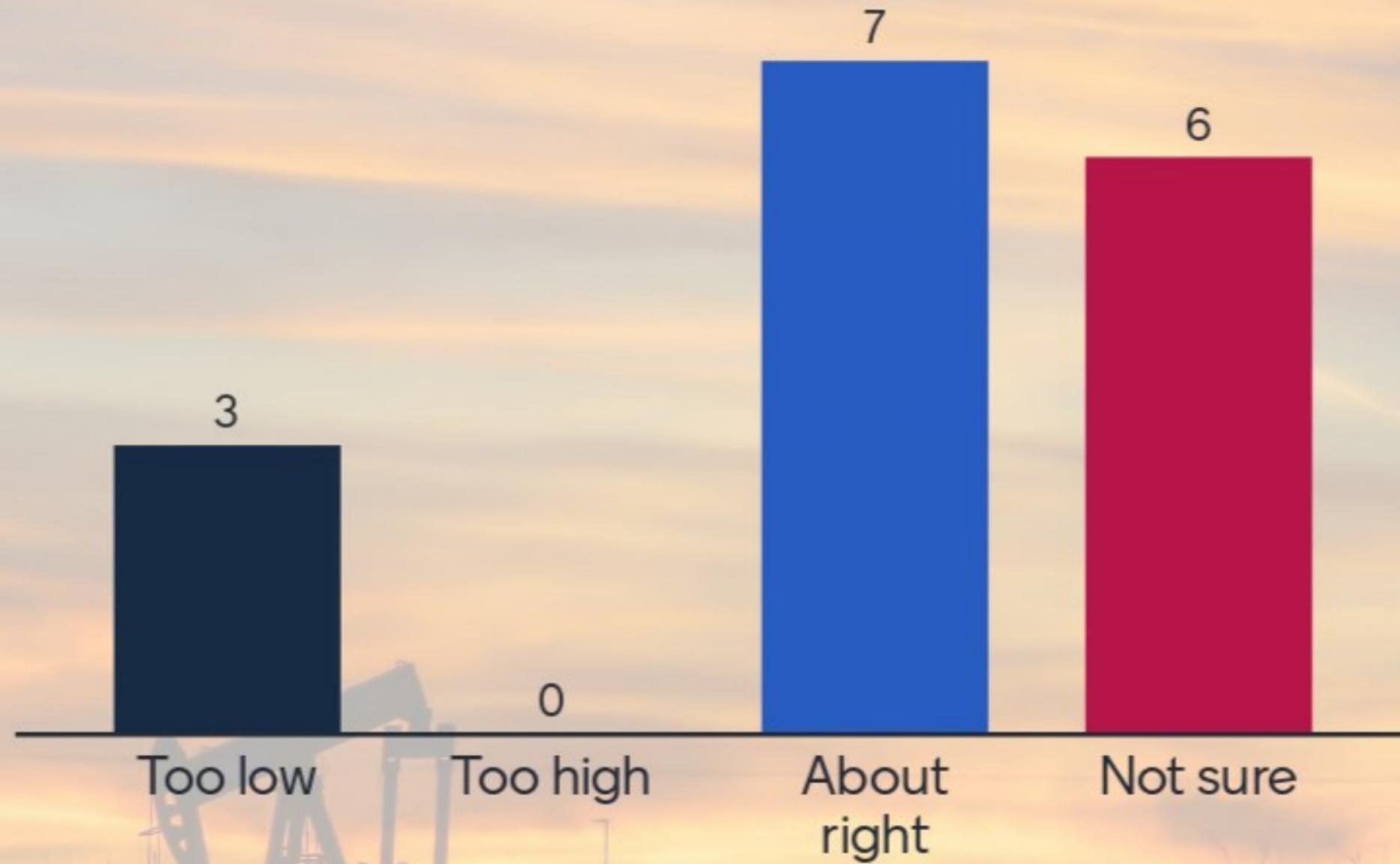
Match mines and disposal sites to fracking activity

Develop a truck trip table

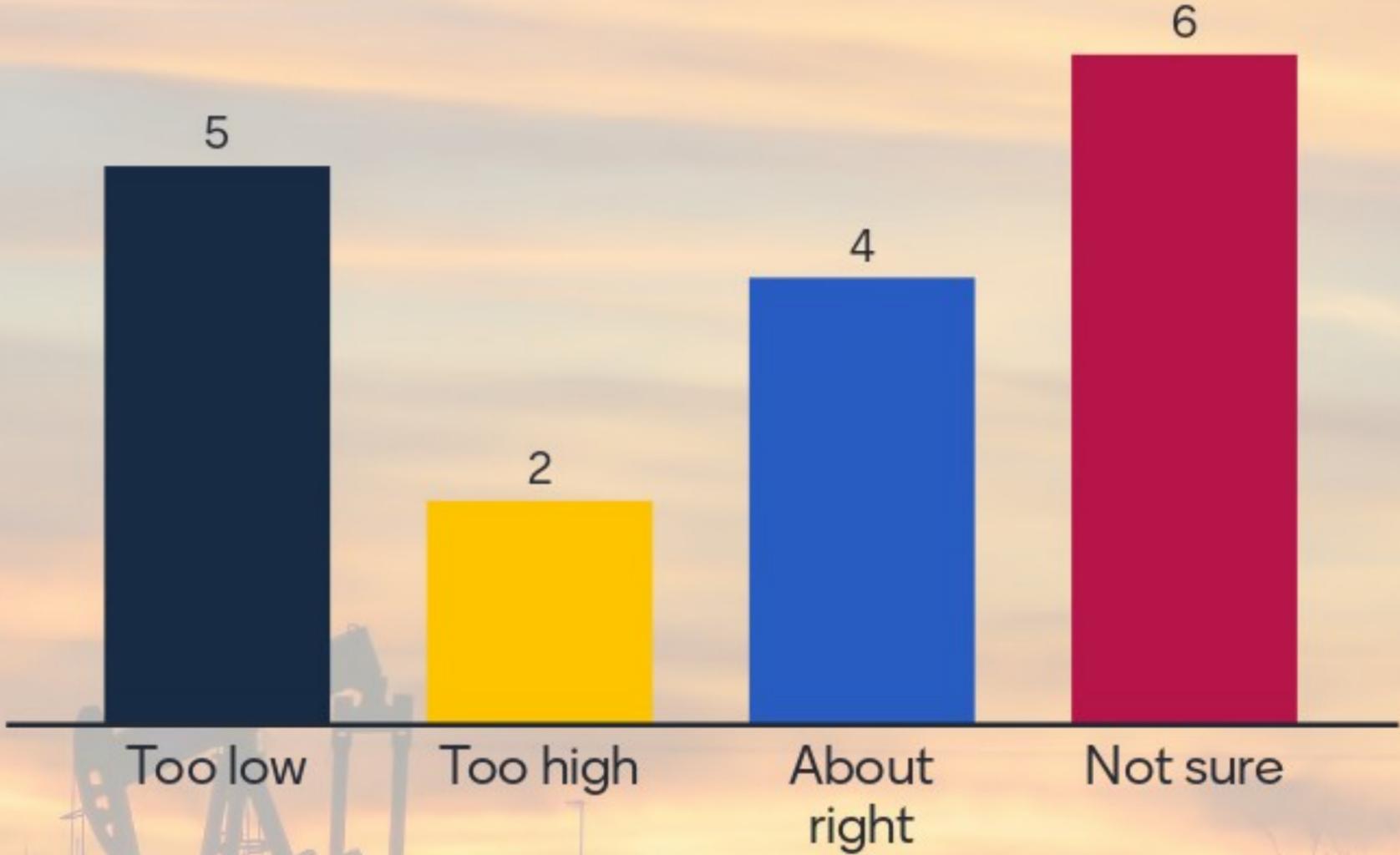
Use travel demand model to flow trucks on network



Sand volumes in the PB were estimated to be 36.8 million tons in 2018, resulting in 8,440 daily truck trips. Are these number:

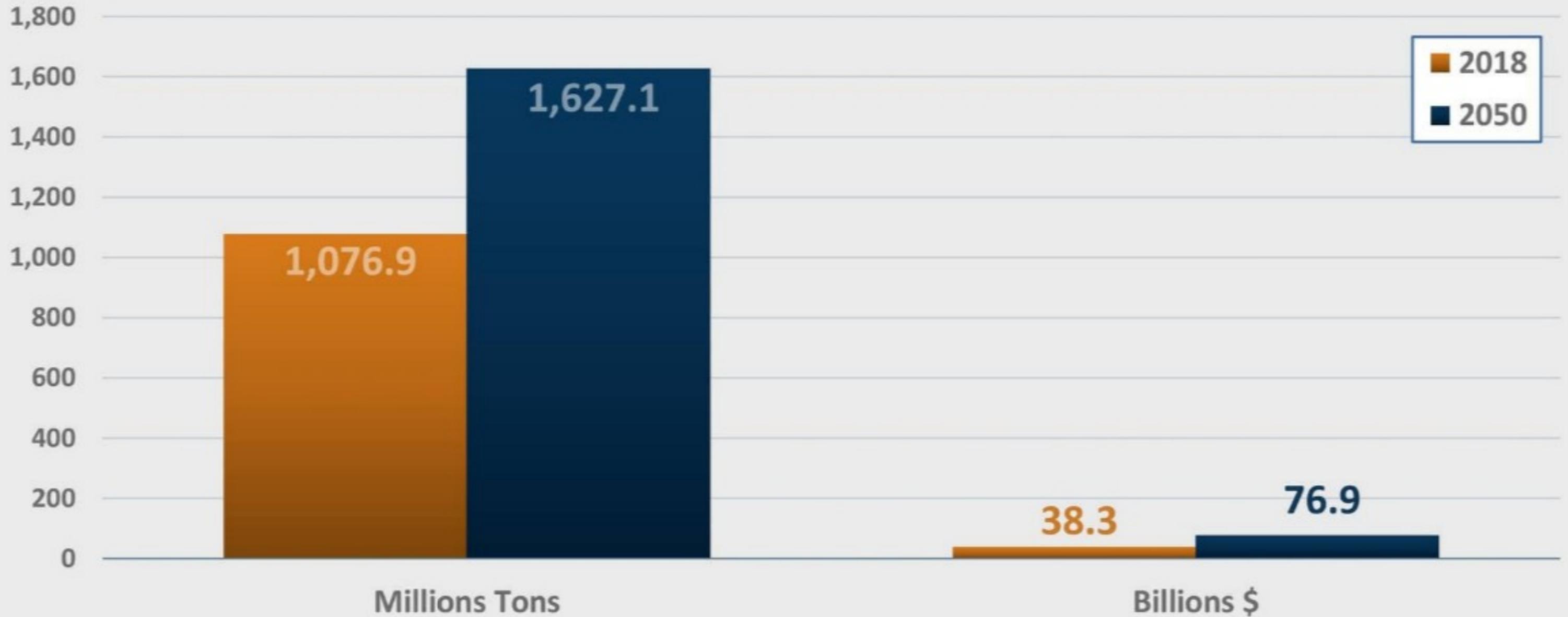


We estimated 243 million tons of fresh water and 642 million tons of produced water resulting in 98,000 trucks daily in 2018. Are these numbers:



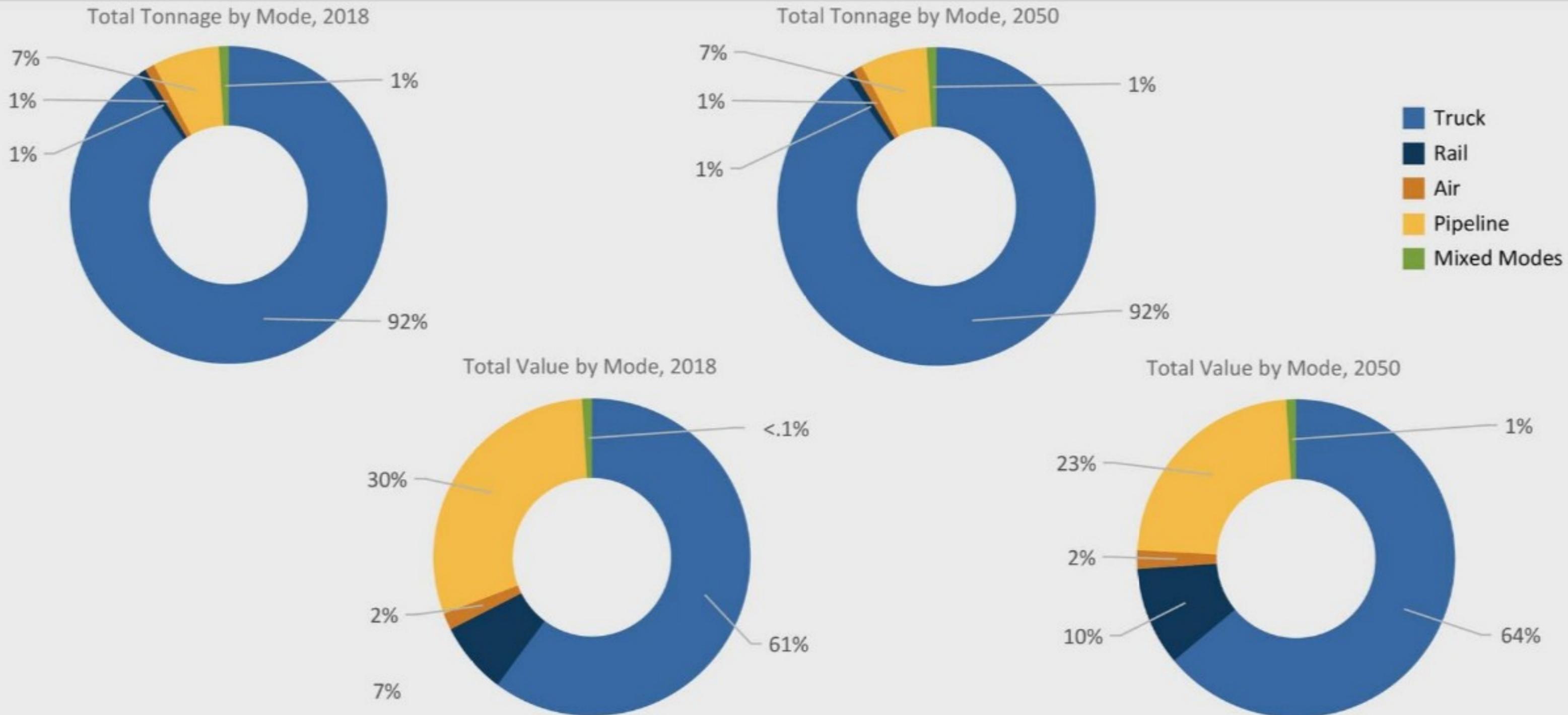


## Total Tonnage and Value



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

# Overview of Commodity Flows by Mode in Permian Basin

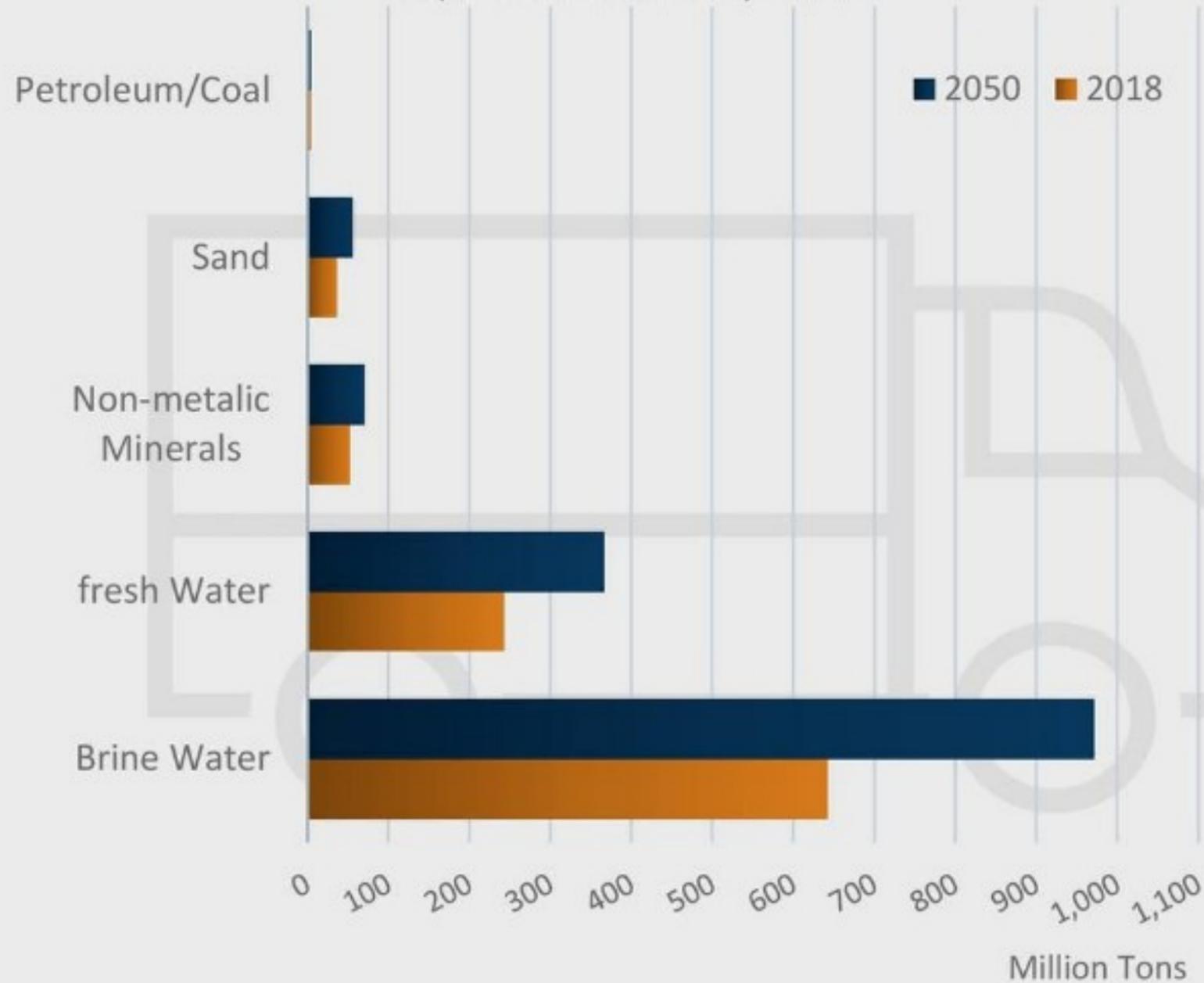


Source: CS analysis based on Transearch, Enverus and stakeholder input

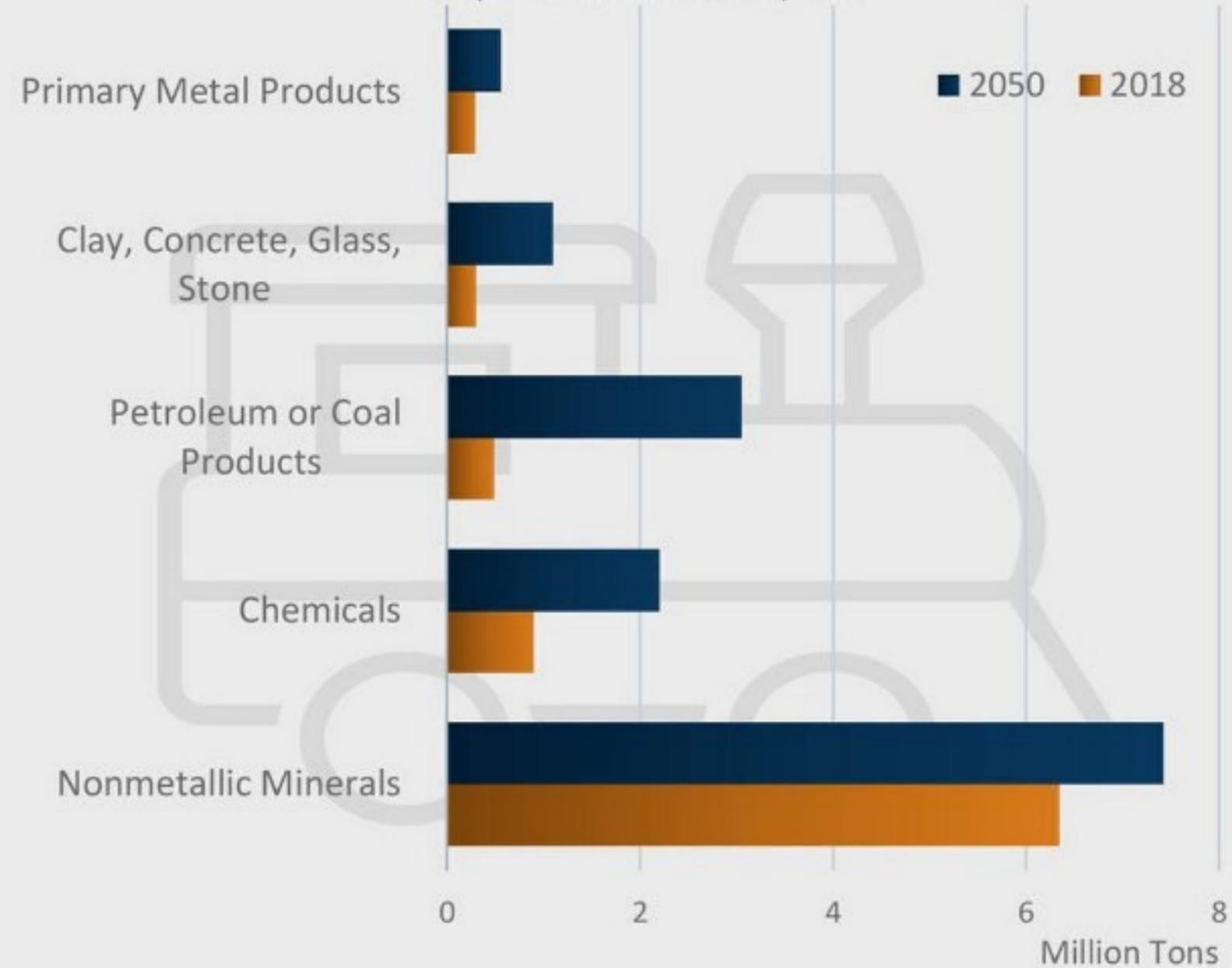
# Permian Basin Top Commodities by Mode by Tonnage



### Top 5 Commodities by Truck



### Top 5 Commodities by Rail



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

# Overview of Commodity Flows in Permian Basin, Directional Flows



## Tonnage

**Inbound:**  
2018: 20.5 million tons  
2050: 31.9 million tons

**Intra-regional**  
2018: 969.7 million tons  
2050: 1,459.3 million tons

**Outbound:**  
2018: 86.7 million tons  
2050: 135.9 million tons

## Value

**Inbound:**  
2018: \$16.4 billion  
2050: \$37.7 billion

**Intra-regional**  
2018: \$3.2 billion  
2050: \$5.0 billion

**Outbound:**  
2018: \$18.8 billion  
2050: \$34.2 billion

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

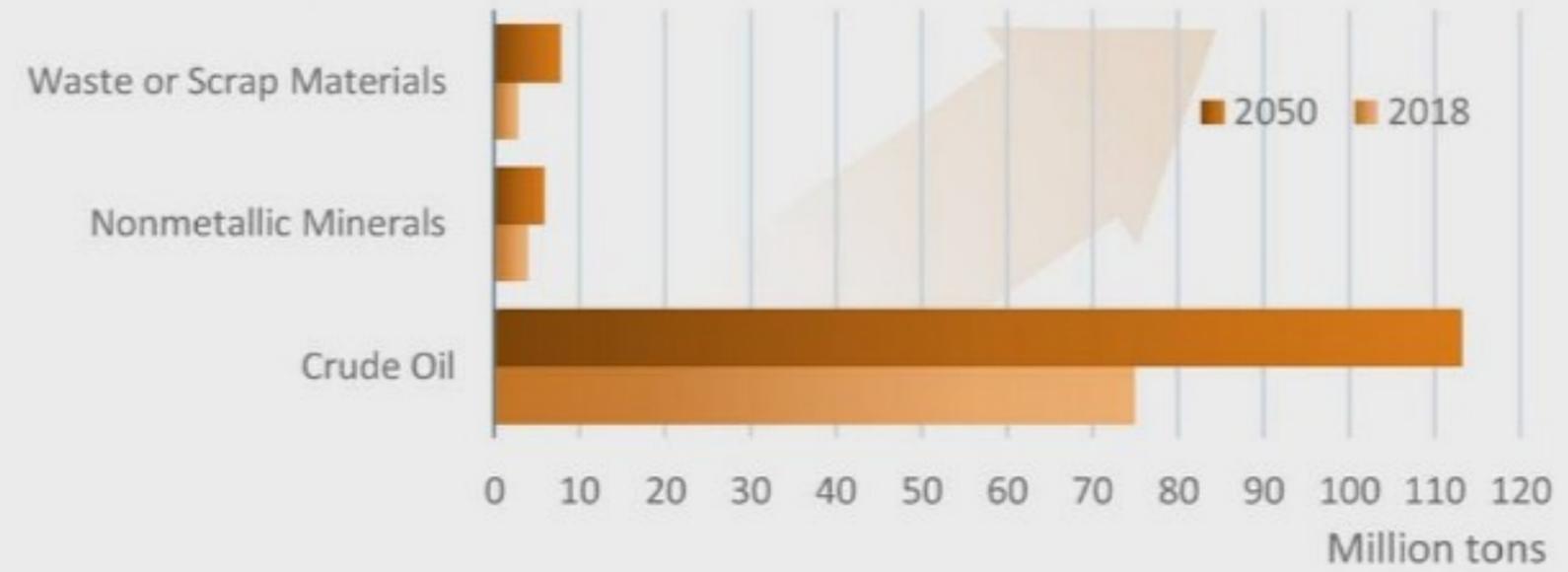
# Top Commodities in the Permian Basin by Direction by Tonnage



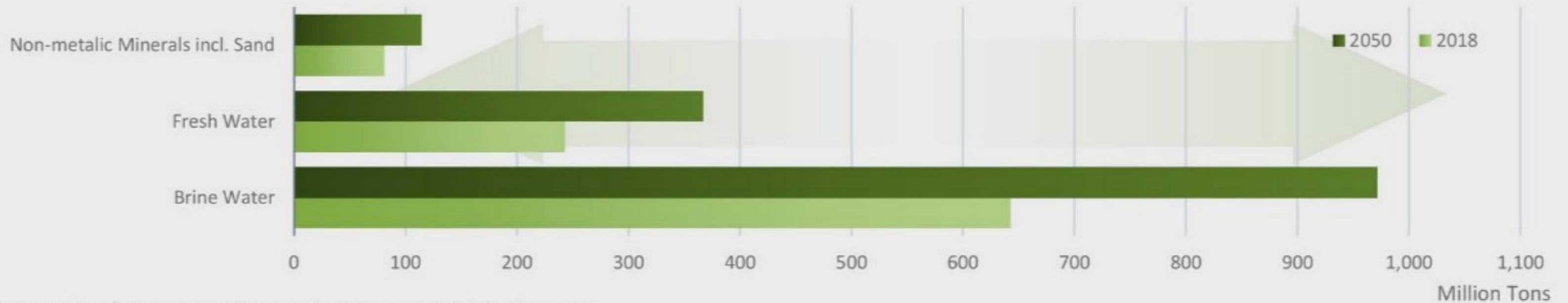
Top 3 Inbound Commodities by Tonnage, 2018 and 2050



Top 3 Outbound Commodities by Tonnage, 2018 and 2050



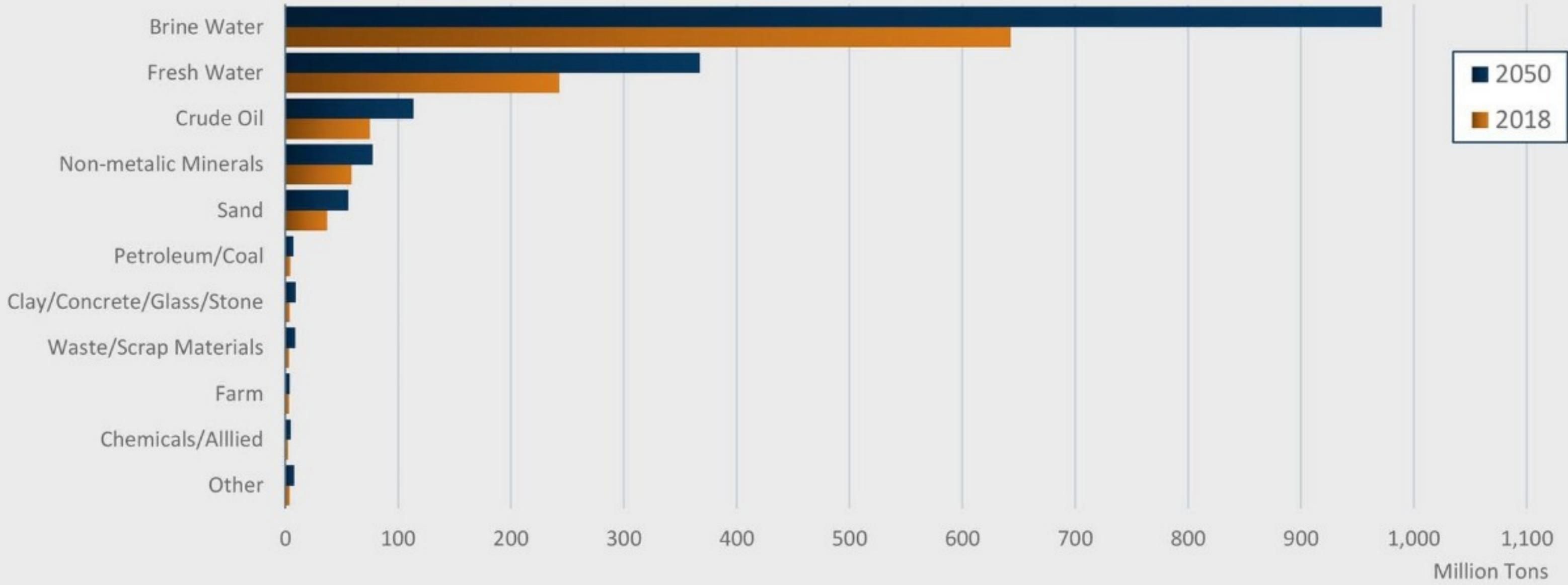
Top 3 Intra Commodities by Tonnage, 2018 and 2050



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



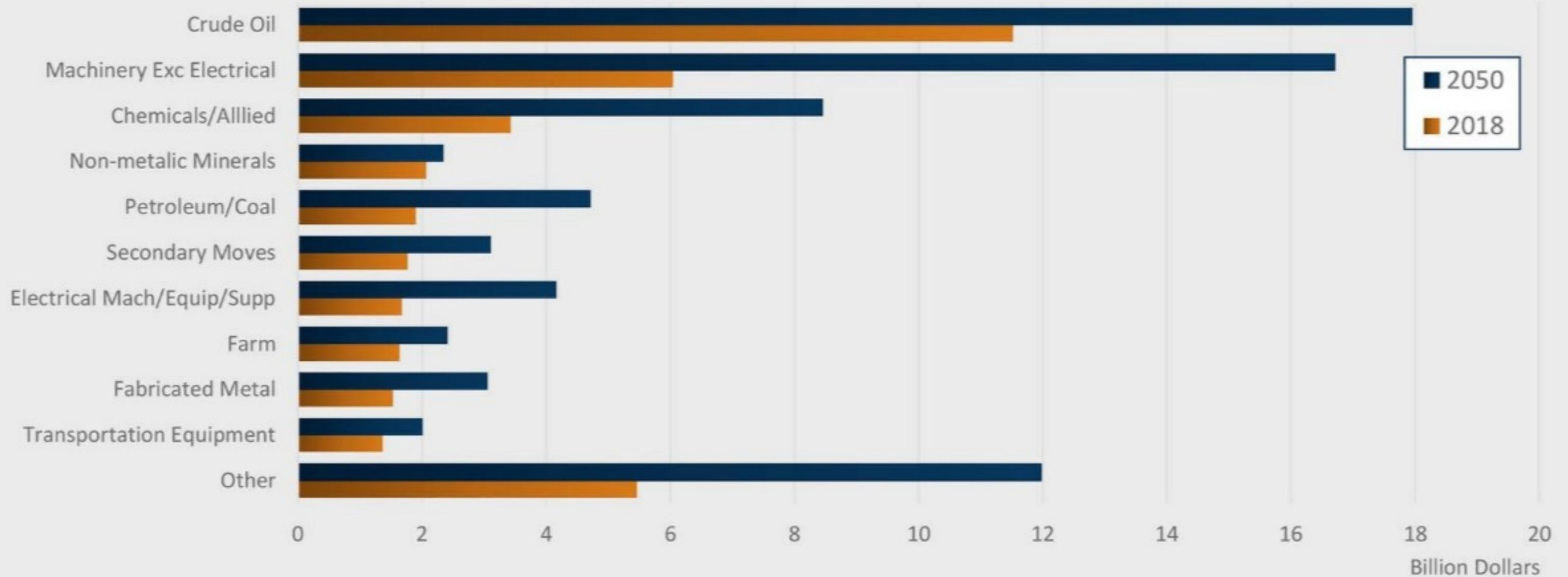
### Top Commodities by Tonnage, 2018 and 2050



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

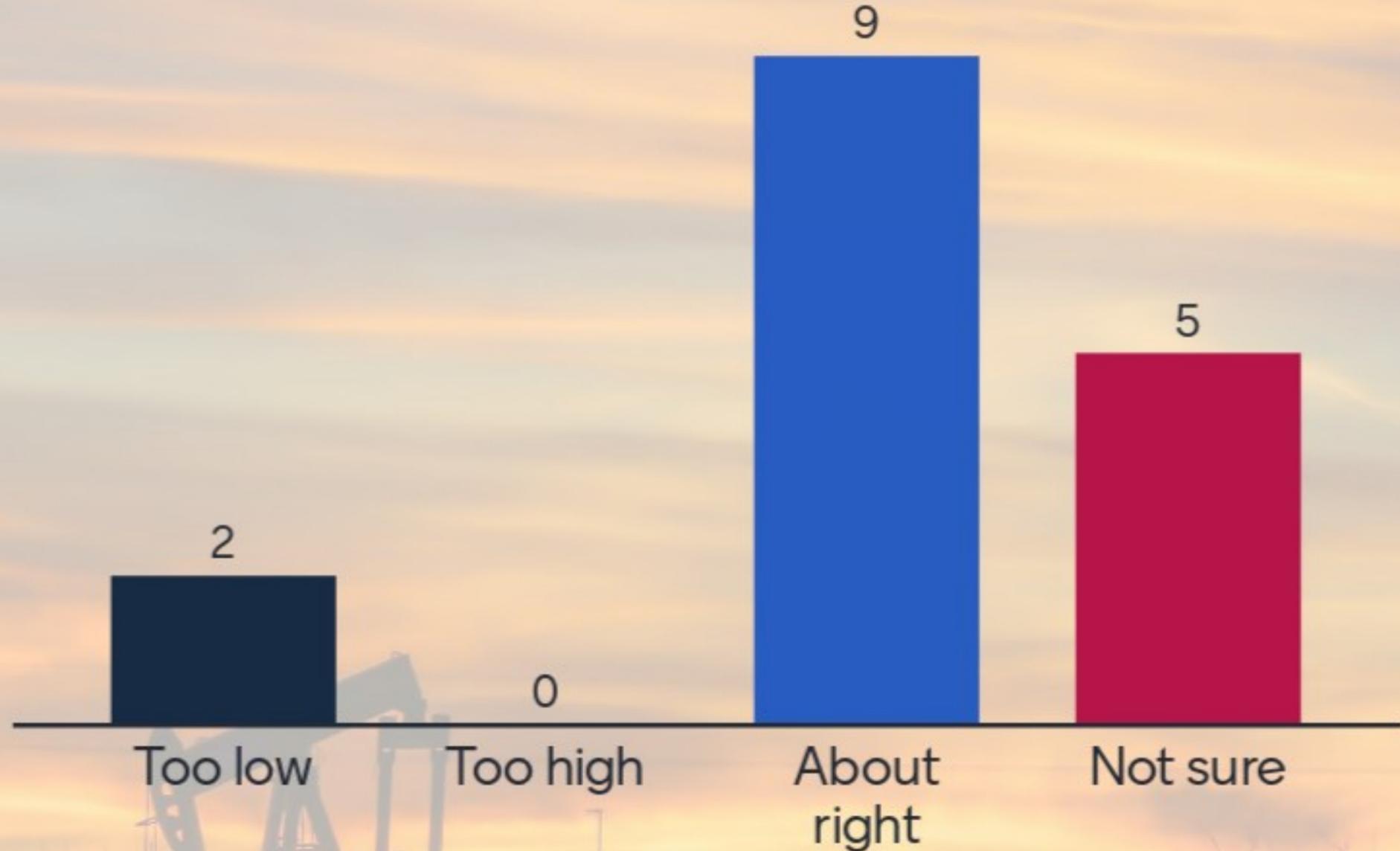


## Top Commodities by Value, 2018 and 2050



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

At 1.1 billion tons in 2018 and a projected 1.6 billion tons in 2050, how well does TRANSEARCH capture freight volumes in the PB?



# Developing Strategies and Recommendations





**Develop comprehensive list of strategies with stakeholder input**

**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

*Technology*

---

*TxDOT led*

---

*TxDOT supported*

## Policies/Outreach/Coordination

*TxDOT led*

---

*TxDOT supported*

## Infrastructure

*Expansion projects*

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*Modernization projects*

---

*Safety projects*



## Operational Strategies

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

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*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.*

---

*Establish a regional Traffic Management Center with a focus on improving safety, mobility and incident management*

---

*Deploy 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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*Deploy Truck Parking Availability System along Tier 1 PBHFN*

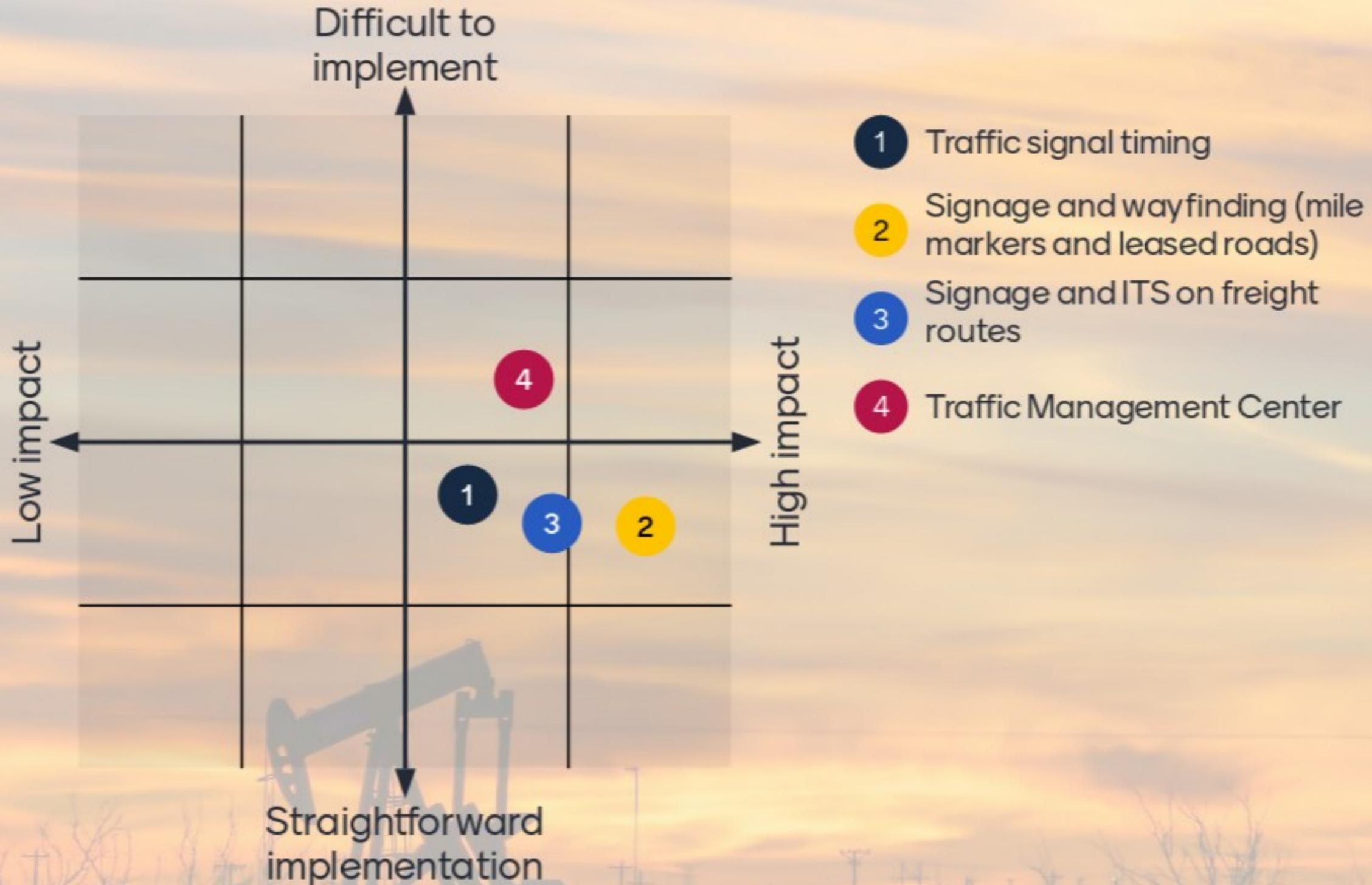
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*Increase regional Weigh-in-Motion and Automated Vehicle Classification/Count systems*

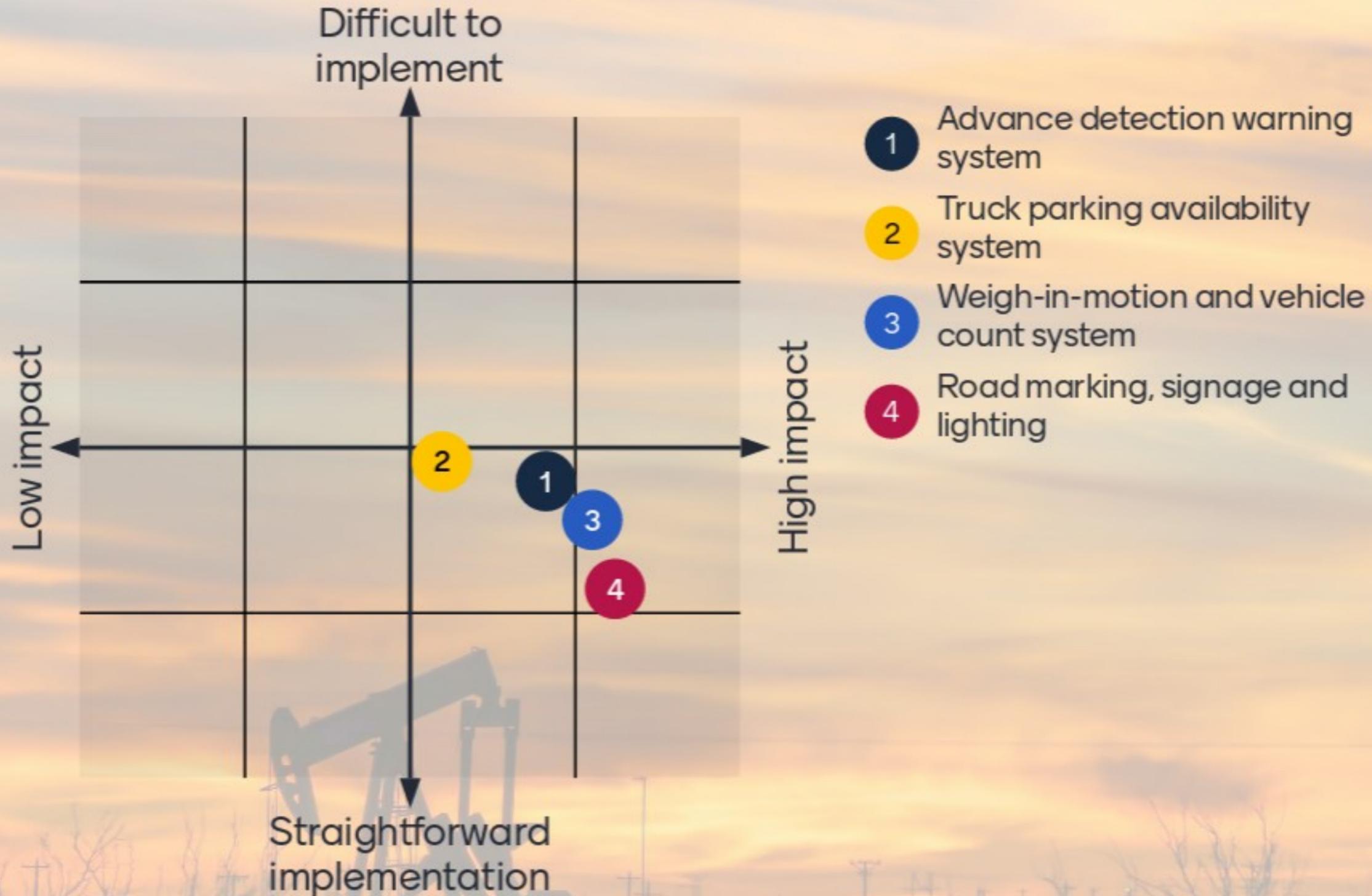
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*Improve road marking , signage and lights on the PBHFN*

# Rate the preliminary operations strategies



# Rate the preliminary operations strategies





## TxDOT Led Strategies

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

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*Implement freight-centric design guidelines for Safety, Bridges, Interchanges, Truck Parking, and Construction*

---

*Develop wayfinding and signage guidelines for urban and rural areas to include private leased roads and major freight generators*

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*Integrate private lease roads and major freight generators (urban/rural) into access management guidelines*

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*Develop a freight data collection program to include weigh-in-motion, vehicle classification counts, truck parking capacity/utilization, safety hotspots, etc.*

---

*Develop a freight transportation planning training program for local and regional planners*

---

*Develop a freight transportation public education and awareness program and share the road campaign*

---

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



## TxDOT Supported Strategies

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

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*Implement a comprehensive and multimodal regional freight planning program*

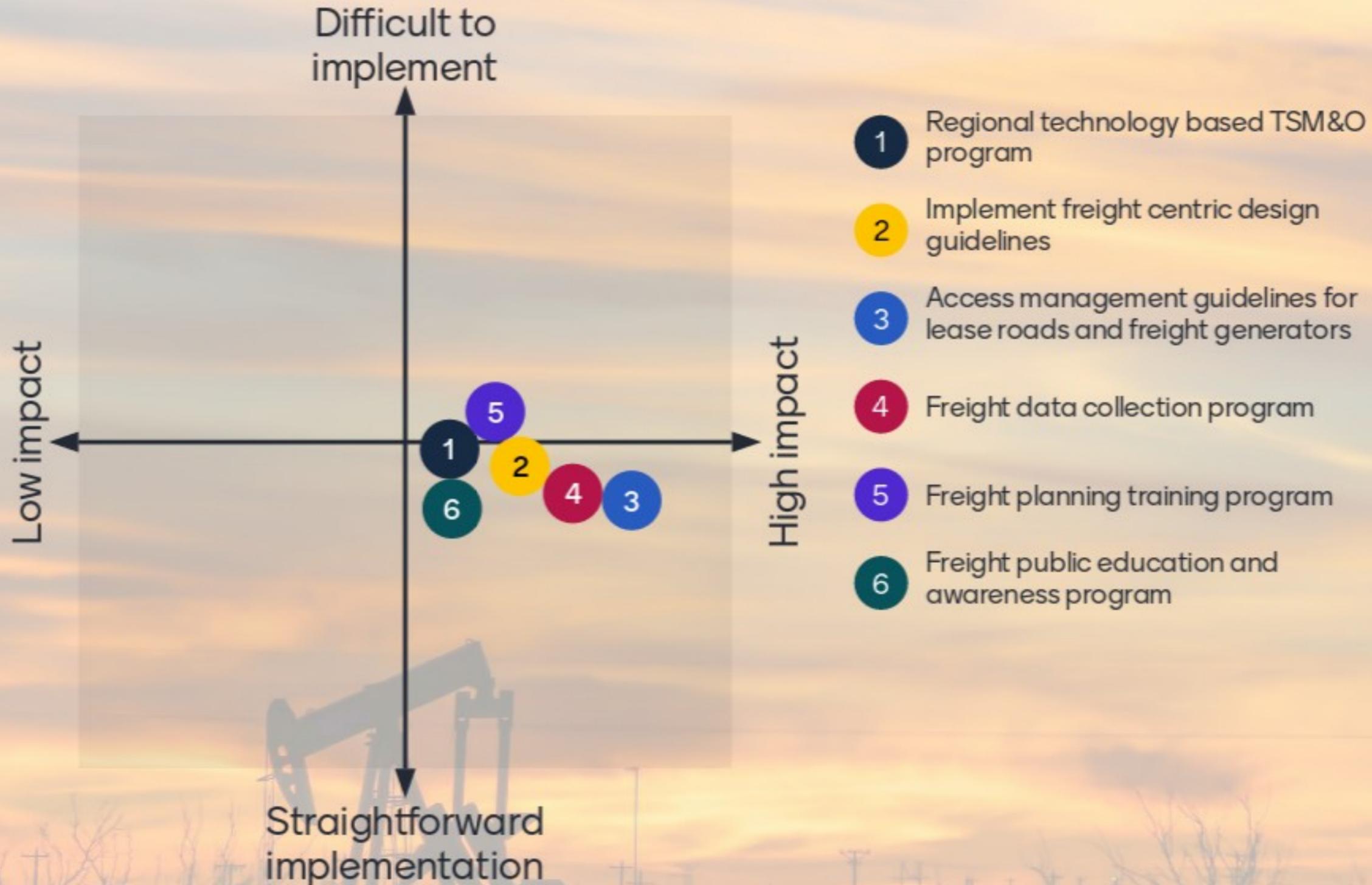
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*Develop regional multimodal thoroughfare plans*

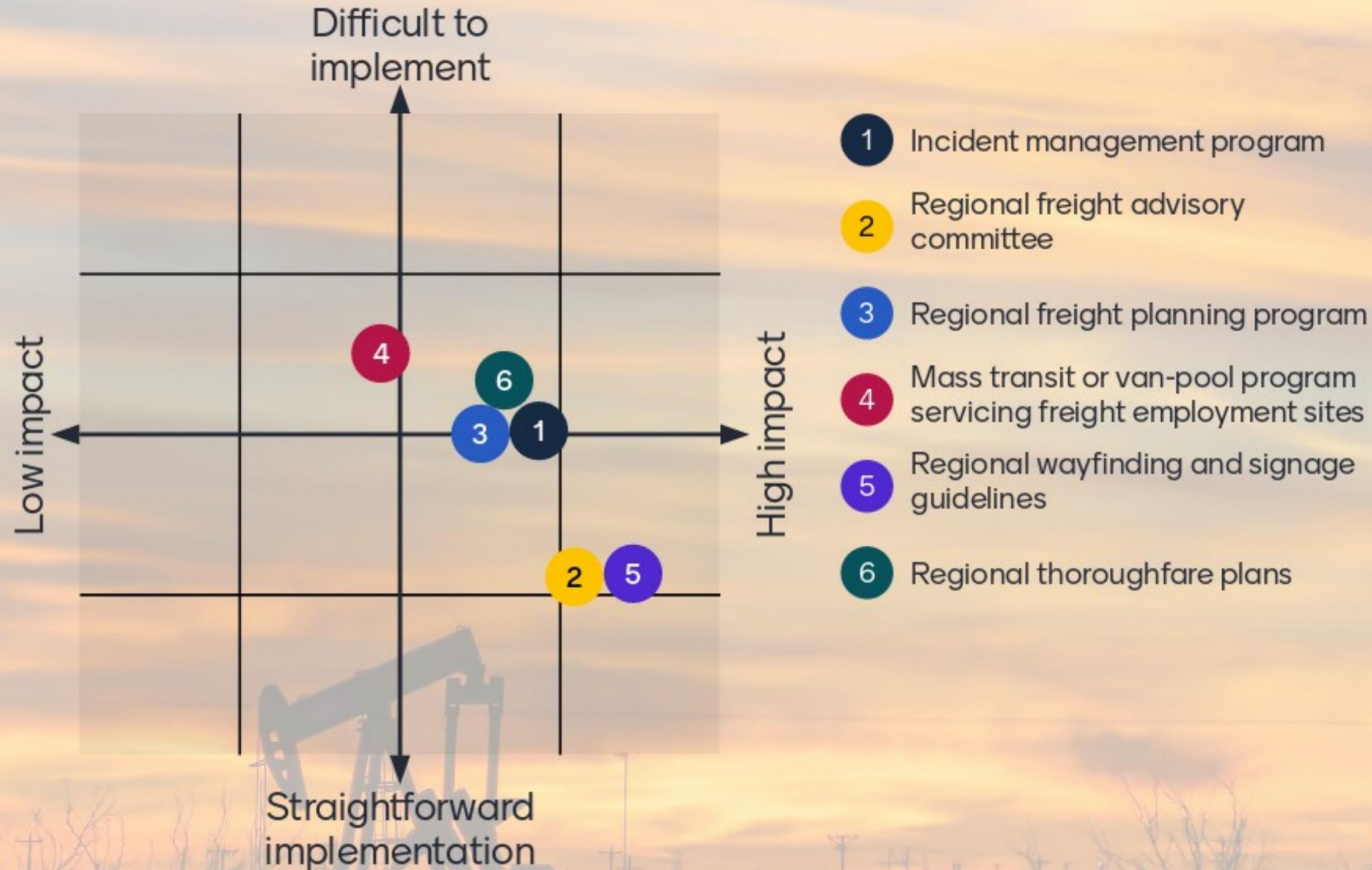
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*Explore opportunities, regulations, and policies for intraregional mass transit or van-pool program servicing major freight employment sites*

# Rate the preliminary program strategies



# Rate the preliminary program strategies





## TxDOT Led Strategies

*Develop driveway separation and consolidation guidelines for improved Access Management*

---

*Integrate freight considerations into the Project Development process to include truck parking, inspection locations, turning radii, accel/decel lanes, etc.*

---

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

---

*Explore opportunities for public-private partnerships for projects and programs*

---

*Develop truck traffic impact analysis guidelines to include truck parking/queuing impact and inspection locations in urban and rural areas*

---

*Collaborate with Texas Railroad Commission (TX RRC) on adding transportation information, such as truck volume estimates, to permit applications*

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*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*



## TxDOT Supported Strategies

*Develop fleet and truck driver training (operational/regulatory) and reporting (including vehicle inspection information) guidelines for drivers operating in the region*

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*Develop incentive programs for off-peak operations*

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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*

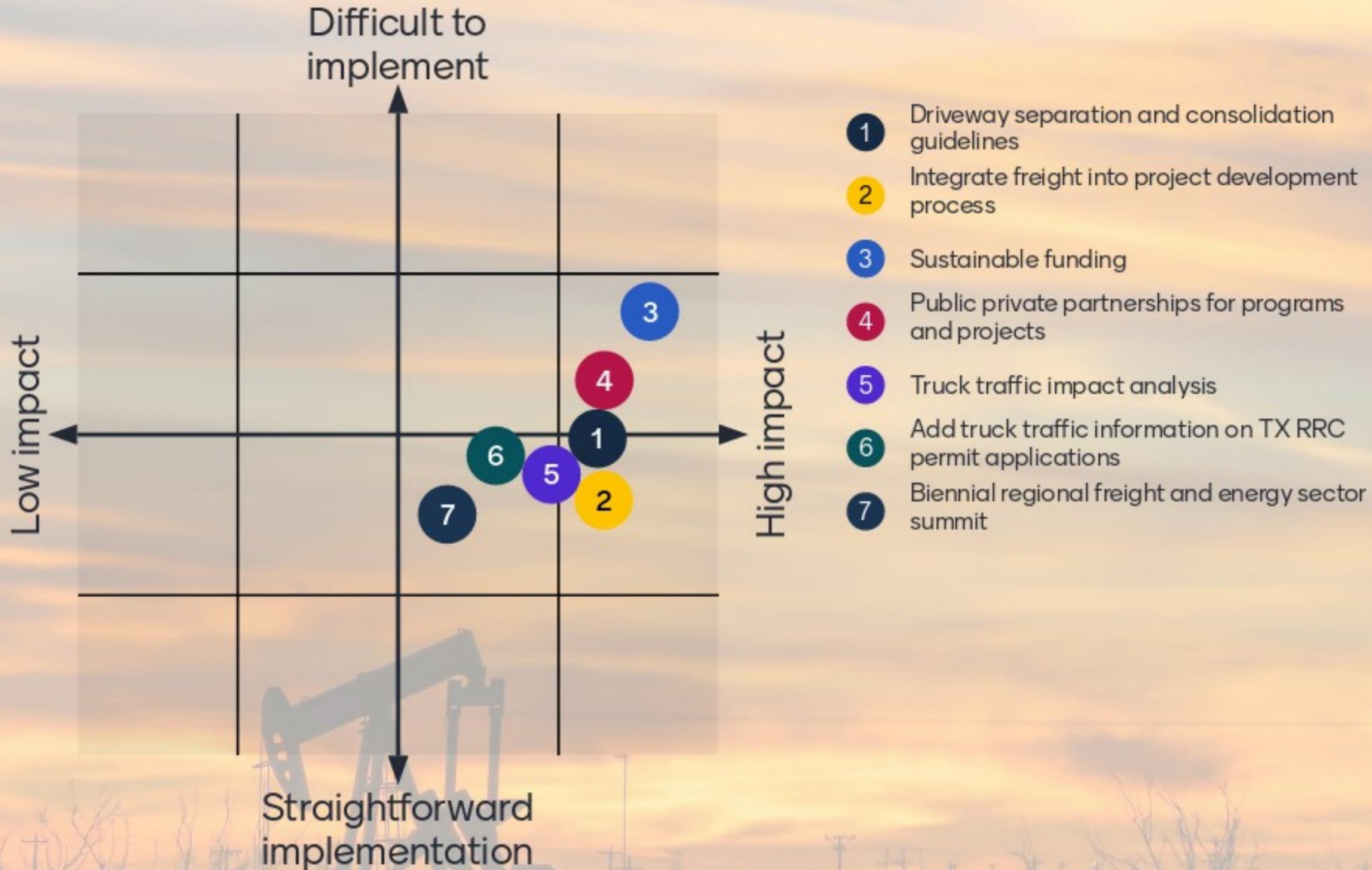
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*Collaborate with regional stakeholders to encourage truck parking at non-TxDOT public facilities and private commercial and industrial sites*

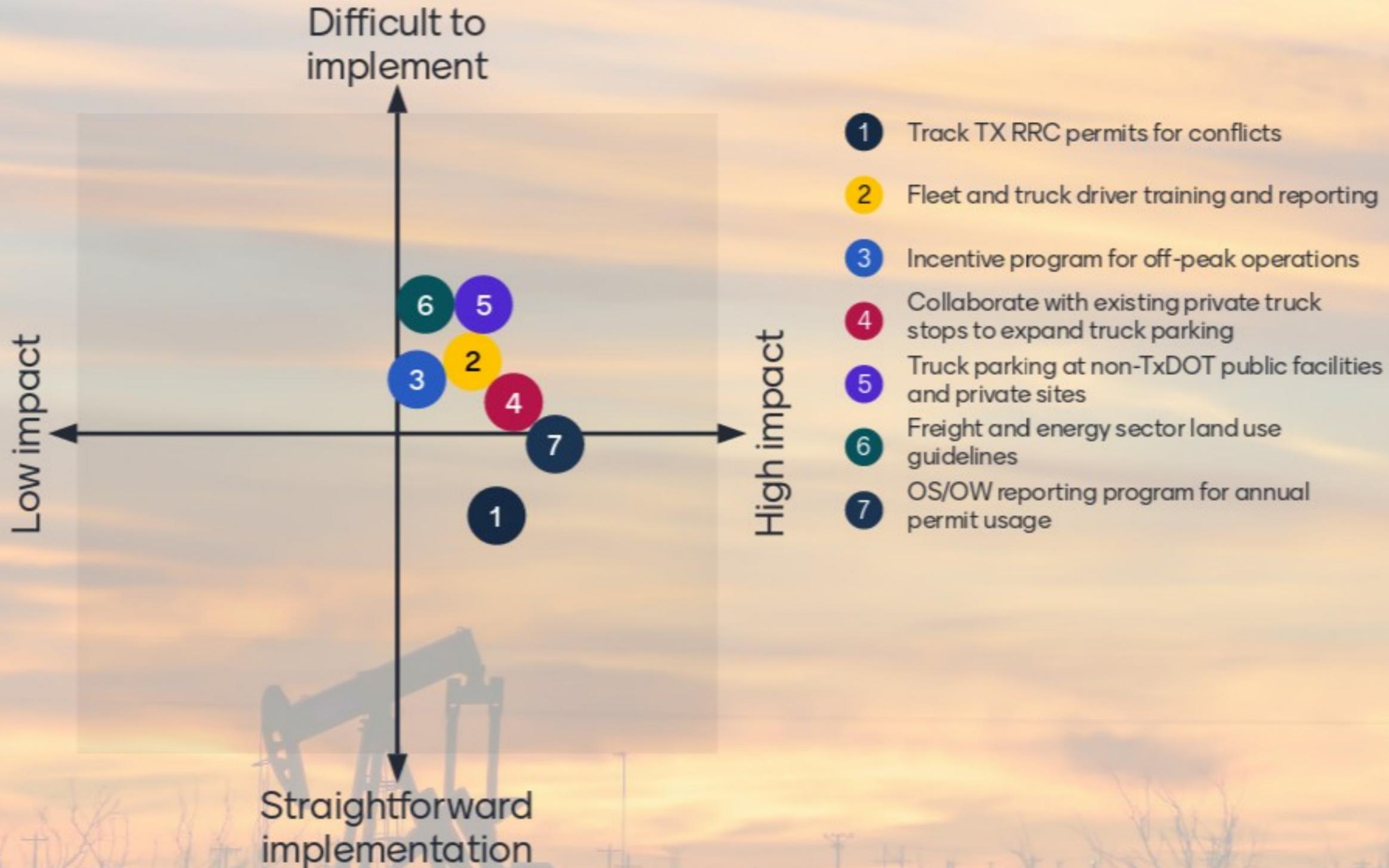
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*Collaborate with TxDMV to develop an OS/OW load reporting program that includes annual permit usage information*

# Rate the preliminary policy/outreach strategies



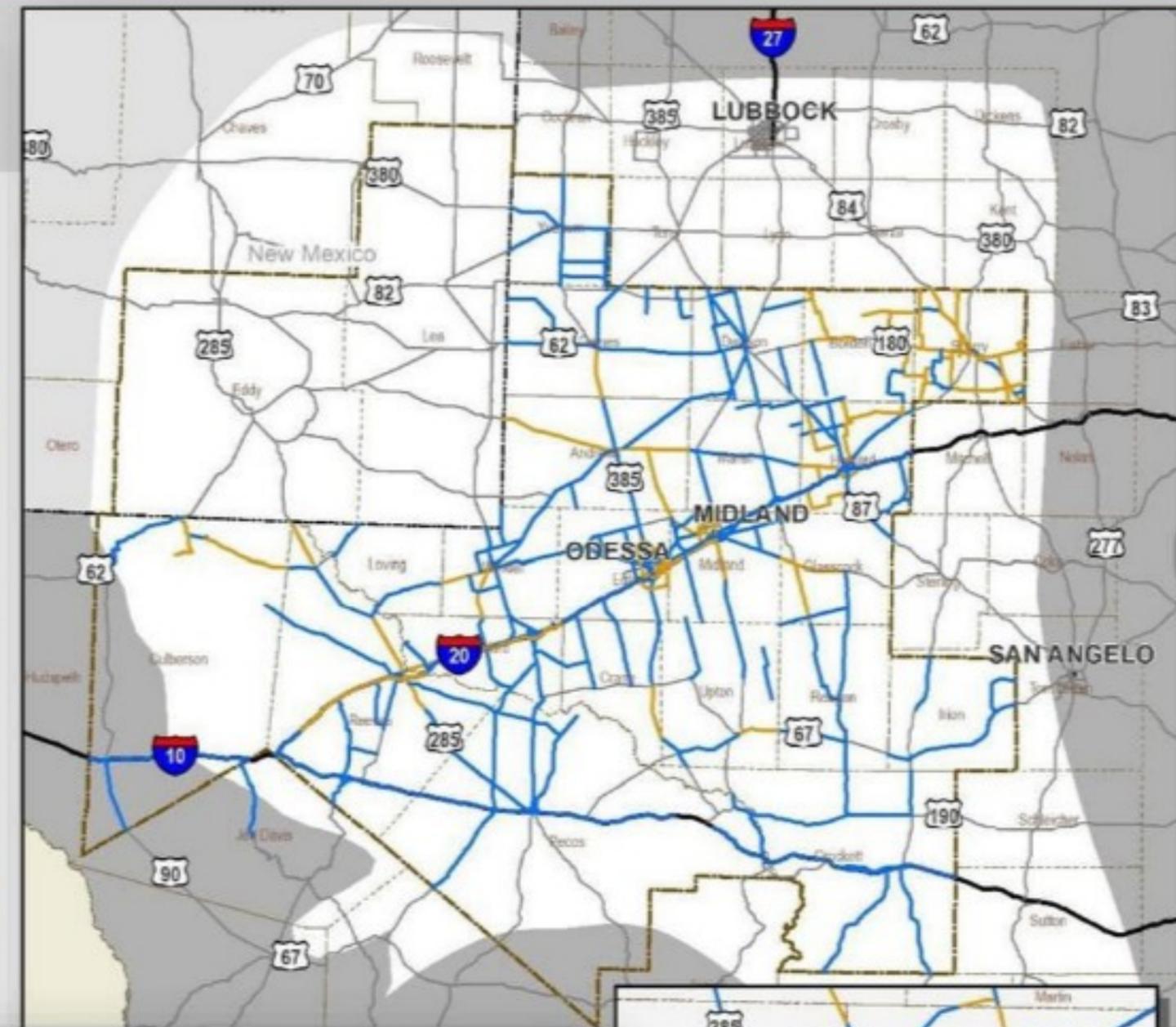
# Rate the following policy and outreach strategies



# 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>

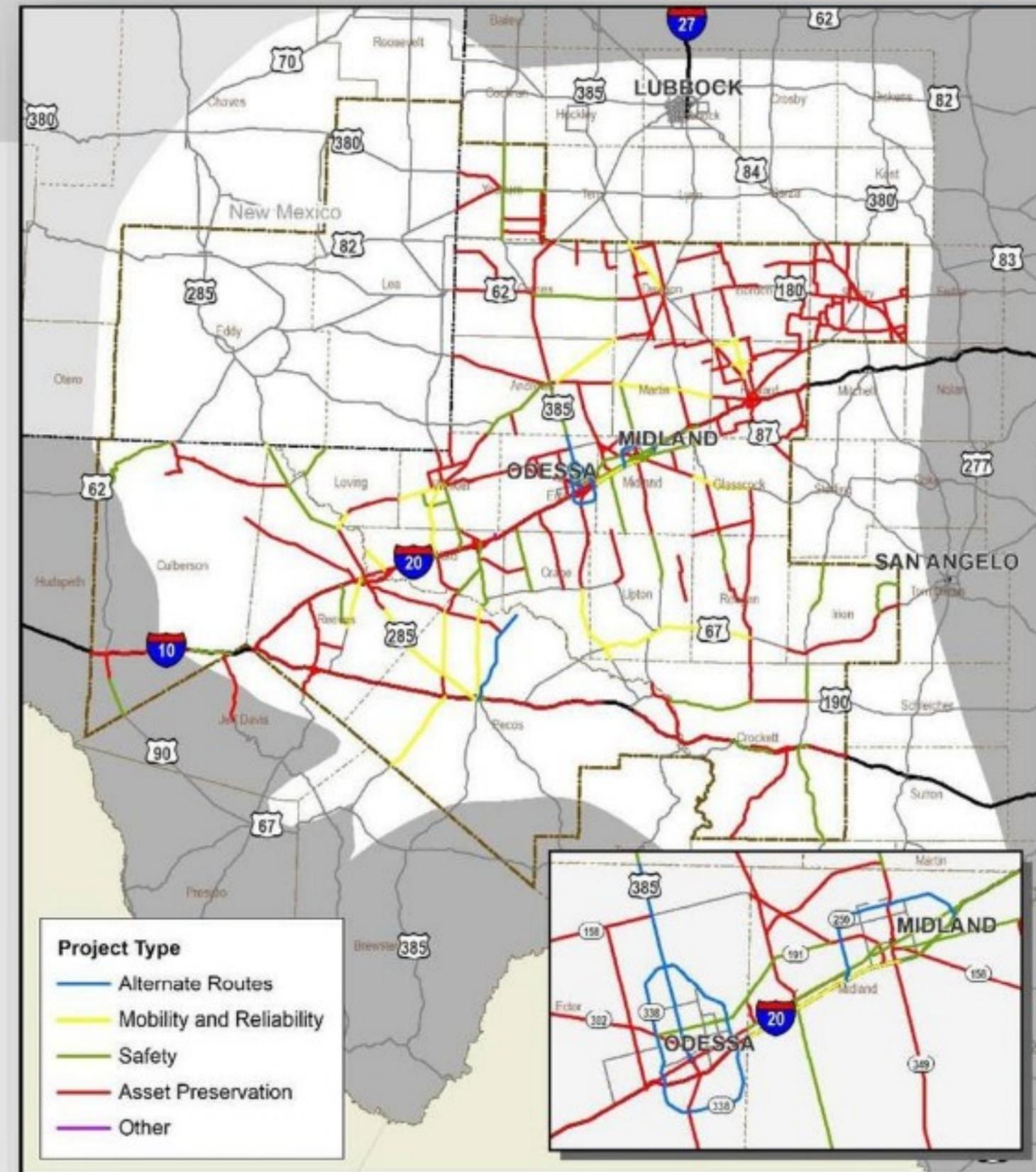


Source: TxDOT

# Infrastructure – TxDOT Highway Projects

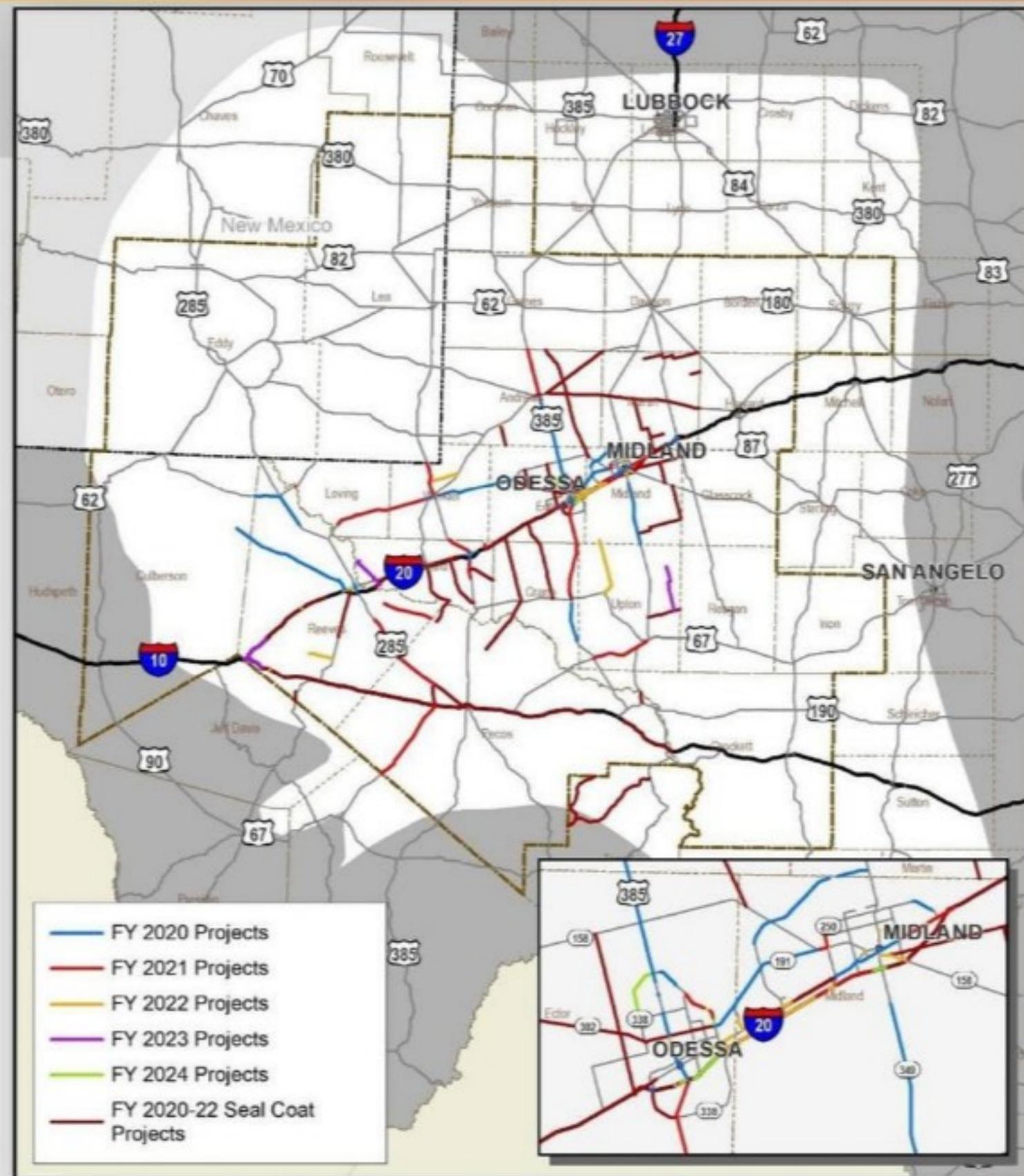
## 2020-2030 TxDOT Unified Transportation Program

Project Category	No. of Projects	Total Cost (millions\$)
Alternate Routes	26	\$ 711.8
Asset Preservation	334	\$ 1,618.4
Mobility and Reliability	96	\$ 2,314.3
Safety	113	\$ 109.8
Other	6	\$12.6
<b>Total</b>	<b>575</b>	<b>\$ 4,766.9</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



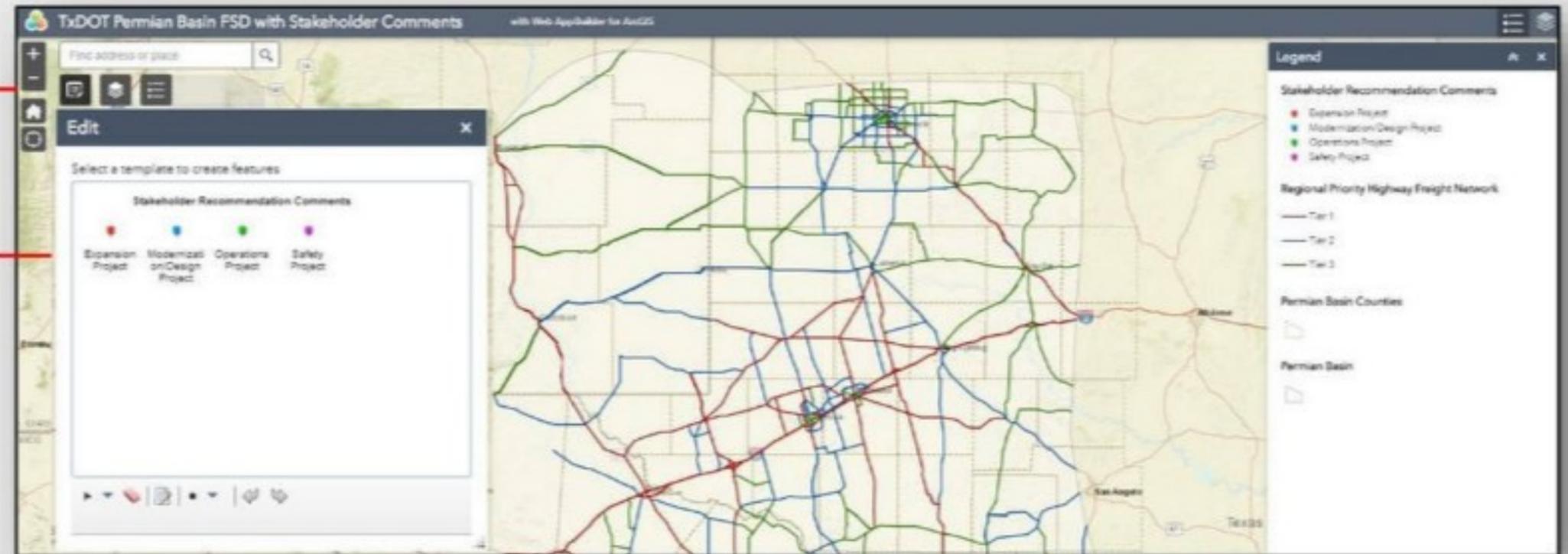
2. Zoom or search to find a location as you would on Google Maps

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



Stakeholder Recommendation Comments

Id

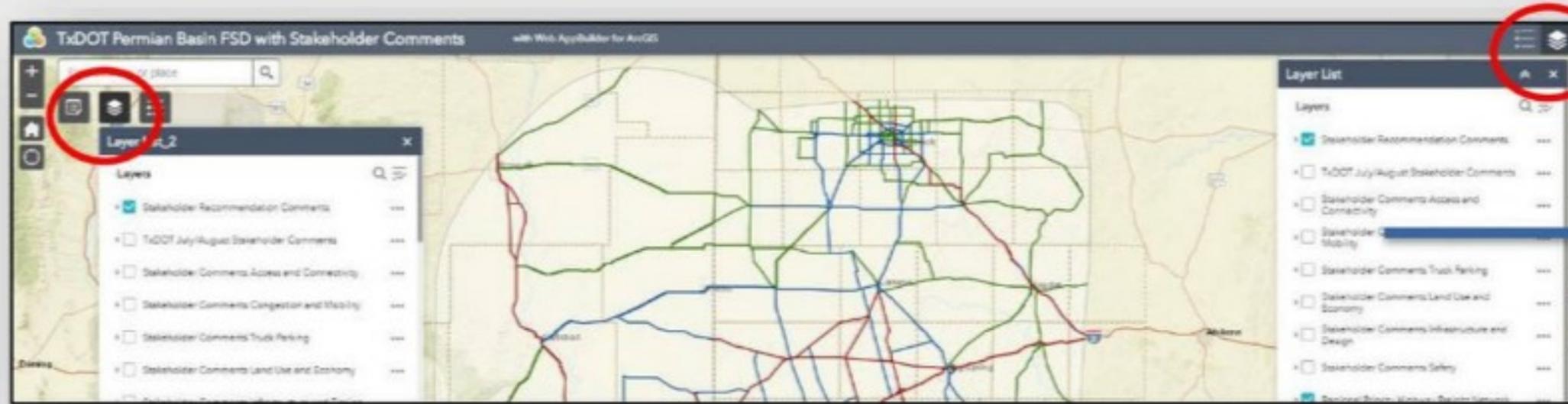
Comment

Comment\_Te

Edited on 6/16/20 at 2:21 PM

Close

# 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**

# Please rank the following goal areas for prioritizing recommendations





## *Industry Forums and Steering Committee*



# Forum Overview





**1**

*Rural Communities*

*Sand Miners and Haulers*

**2**

**3**

*Carriers and Haulers*

*Energy Sector Companies*

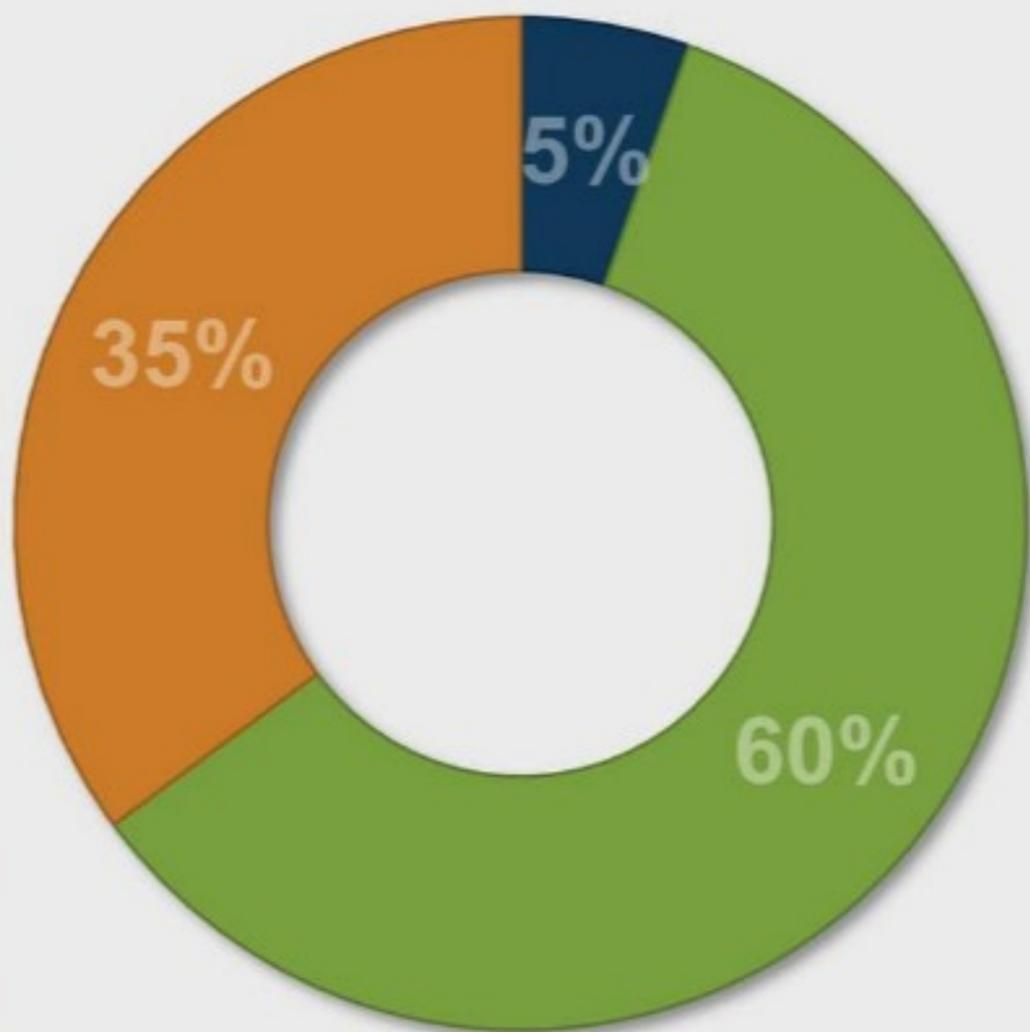
**4**

**5**

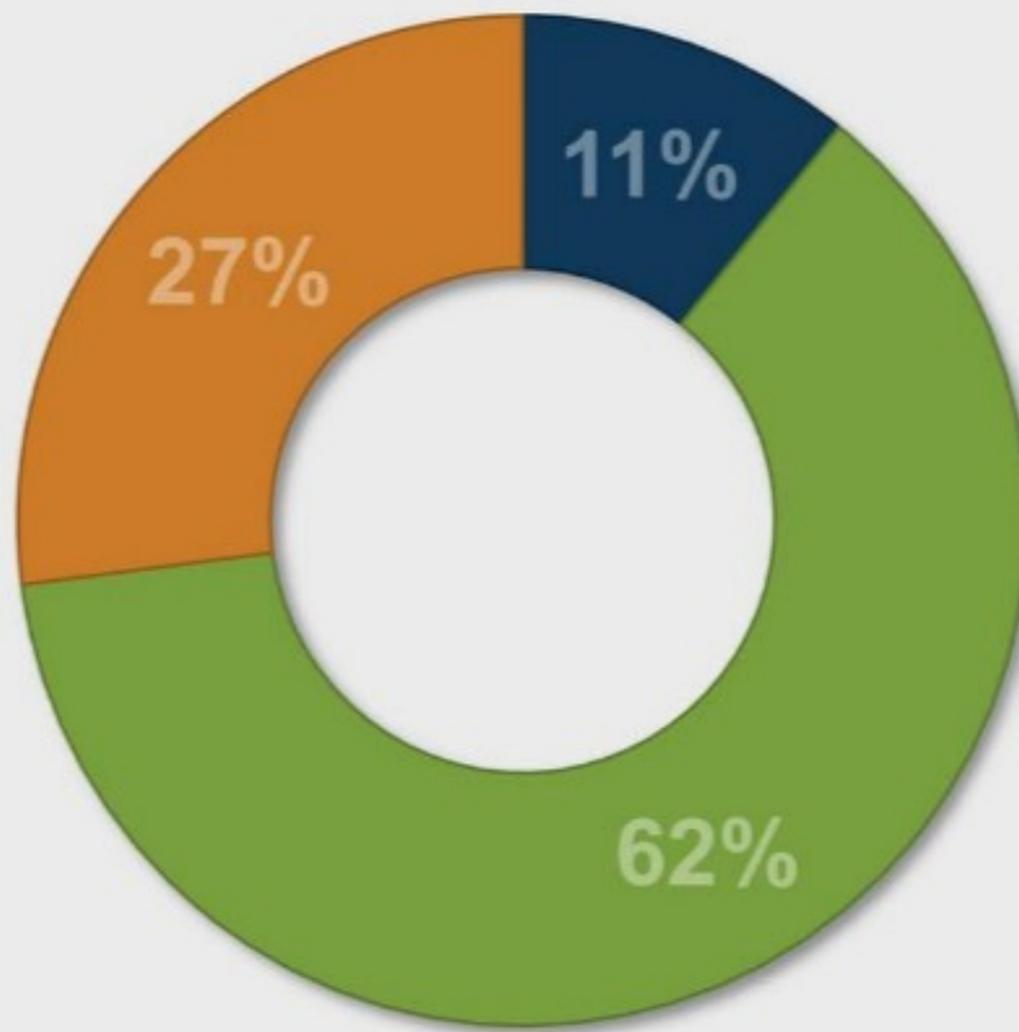
*Urban Area Perspective*



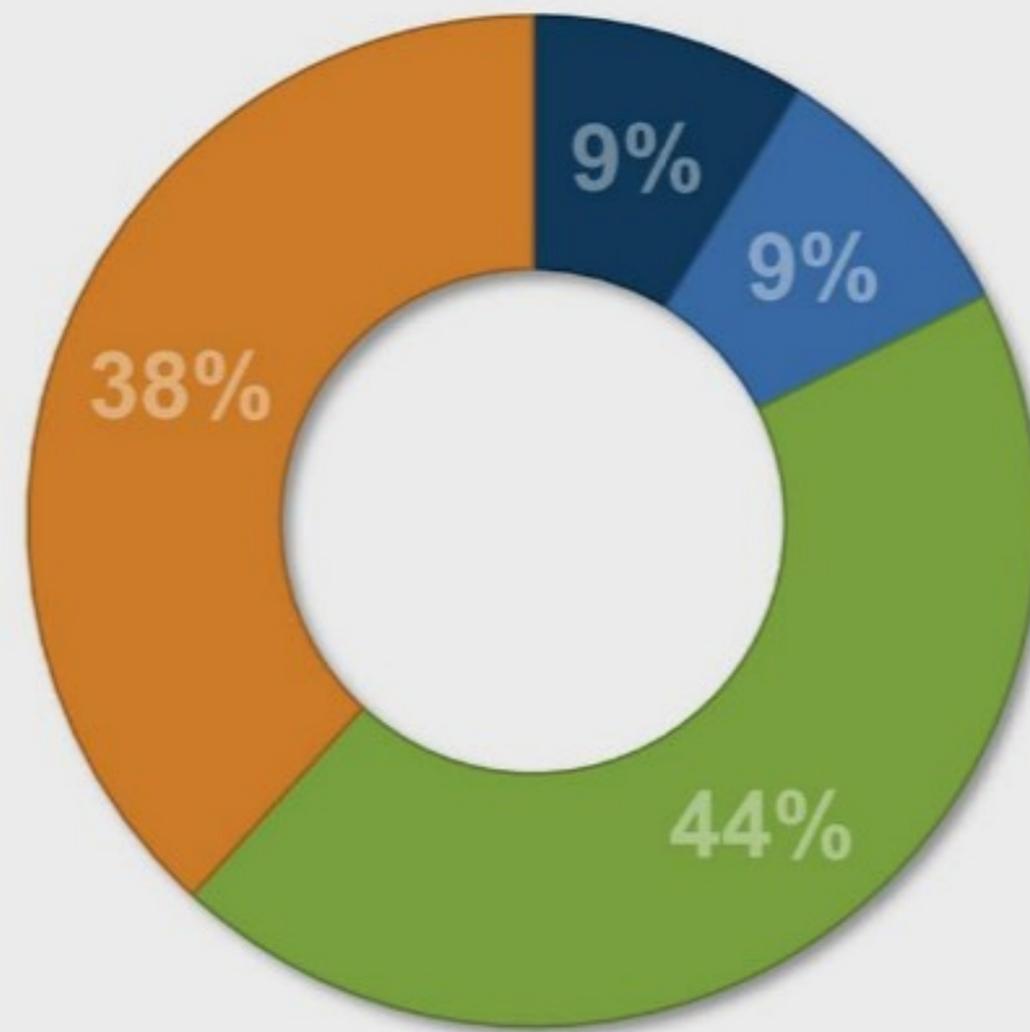
## TRANSEARCH



## SAND ESTIMATES



## WATER ESTIMATES



■ Too Low   ■ Too High   ■ About Right   ■ Not Sure



Operation Strategy	Average Score (Scale 1-5)
Establish incident management program	4.14
Conduct traffic signal timing study on PBHFN routes	3.18
<b>Standardize signage and wayfinding for lease roads and mile markers</b>	<b>4.46</b>
<b>Road marking, lighting and signage</b>	<b>4.24</b>
Static signage and ITS signs for truck parking locations	3.07
<b>Increase driveway separation and consolidation on the PBHFN</b>	<b>4.24</b>
Establish regional traffic management center	3.99
Install advance warning systems on PBHFN and safety hotspots	4.20
Install blocked rail crossing detection system	3.06
<b>Deploy freight specific ITS technologies</b>	<b>4.26</b>
Deploy Truck Parking Availability System	3.15
<b>Expand weigh in motion and automated vehicle classification/count systems</b>	<b>4.40</b>



Program Strategy	Average Score (Scale 1-5)
Freight public education and awareness program	3.42
<b>Regional transportation systems management and operations program</b>	<b>4.05</b>
<b>Develop the freight network using freight centric design guidelines</b>	<b>3.95</b>
<b>Establish a freight data collection program</b>	<b>4.40</b>
Freight transportation planning training program for local planners	3.53
<b>Implement on-going regional freight planning program</b>	<b>4.39</b>
Develop county level comprehensive transportation plans	3.30
Develop freight land use guidelines	3.57
Collaborate with private sector truck parking operators to add new truck parking	3.66
Collaborate with public and private sector business to provide on-site truck parking	3.84
<b>Implement OS/OW reporting program for annual permits</b>	<b>3.92</b>



Policy/Coordination/Outreach Strategy	Average Score
<b>Develop access management guidelines to include leased roads</b>	<b>4.32</b>
Develop guidelines for conducting truck traffic impact analysis	3.99
<b>Integrate truck and freight considerations into the project development process</b>	<b>4.56</b>
<b>Establish sustainable funding for transportation investment in the PB</b>	<b>4.38</b>
Develop regional wayfinding and signage guidelines for leased roads and major freight generators	4.25
Explore PPP opportunities for infrastructure improvements	4.20
Collaborate with Texas RRC on adding transportation information to permit applications	4.06
<b>Establish a regional freight advisory committee</b>	<b>4.36</b>
Convene annual regional freight and energy sector transportation summit	3.94
Implement fleet and driver training and reporting requirements	3.62
<b>Expand truck probe data collection and utilization for public sector planning</b>	<b>4.38</b>
Develop a community awareness "share the road" campaign	3.41
Develop incentives for off-peak operations	3.67

# Next Steps





## Technical Analysis

*Regional Freight Needs Assessment*

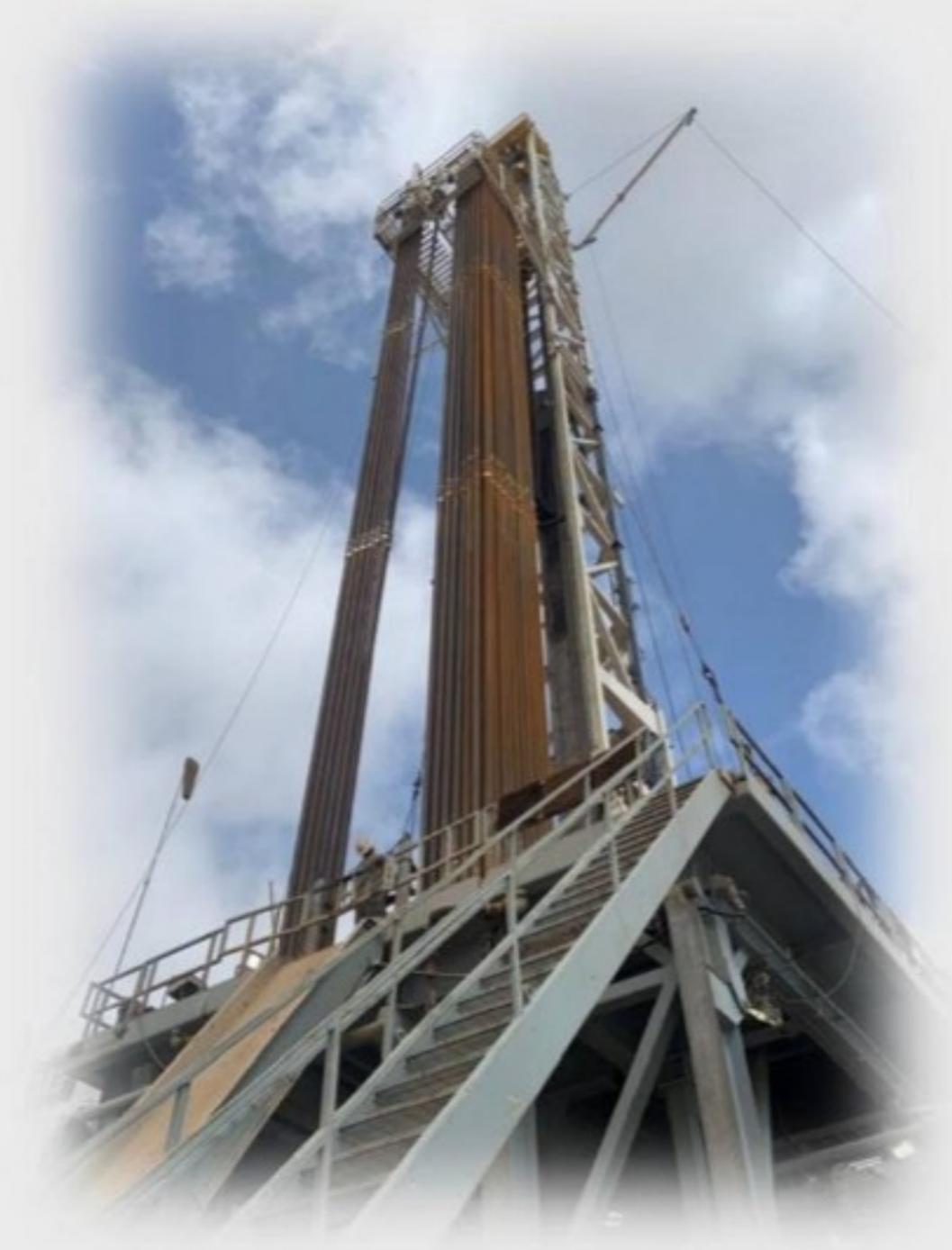
*Economic Profile and Commodity Flow Forecasts*

*Economic Impact of Permian Basin Freight Activity*

*Recommendations and Strategies*

## Stakeholder Outreach

*Steering Committee meeting (August 13, 2020) to review Draft Permian Basin Freight and Energy Sector Transportation Plan*





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

# Thank you!

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

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