Texas Freight Advisory Committee

Meeting starts at 8:15 AM
Thank you for attending!

Help make this a 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, dial *6 or send your message to the chat box. If you’re still having difficulty, text Tyler Graham at 512-354-9278.

Please type your name and organization into the chat box for official attendance record.
How this hybrid meeting works:

**TxFAC members wishing to provide input during the meeting either:**

- Raise your hand, wait to be called upon and state your name, organization and question
- Virtual participants can also use the chat option to submit your question or comment, and the moderator will call upon you
- Please type your name and organization into the chat box for official attendance record

**Meeting Tips**

- Mute your line/mic if you are not speaking
- Speak loudly and clearly
- Try to limit your input to 2 minutes
- Conserve bandwidth by turning off your camera
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 8:15 a.m.</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>8:15 – 8:30 a.m.</td>
<td>Welcome and Introductions</td>
<td>Judge Ed Emmett, Laura Ryan, Alvin New, Caroline Mays</td>
</tr>
<tr>
<td>8:30 – 8:45 a.m.</td>
<td>Overview of Today’s Meeting Recap of November 10, 2021 TxFAC Meeting</td>
<td>Sherry Pifer, TwDOT</td>
</tr>
<tr>
<td>8:45 – 9:45 a.m.</td>
<td>Critical Rural Freight Corridors</td>
<td>Kale Driemeier, Lizzie Welch, Cambridge Systematics</td>
</tr>
<tr>
<td>9:45 – 10:00 a.m.</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>10:00 – 11:00 a.m.</td>
<td>Safety on the THFN</td>
<td>Sondra Johnson, Lizzie Welch, Paula Dowell</td>
</tr>
<tr>
<td>11:00 – 11:45 a.m.</td>
<td>Initial Needs Assessment</td>
<td>Sherry Pifer, Paula Dowell</td>
</tr>
<tr>
<td>11:45 – 12:00 p.m.</td>
<td>Wrap Up Discussion</td>
<td>Sherry Pifer, Judge Ed Emmett</td>
</tr>
<tr>
<td>Noon</td>
<td>Adjourn</td>
<td></td>
</tr>
</tbody>
</table>
#EndTheStreakTX
End the streak of daily deaths on Texas roadways.
Setting the Stage

Meeting Overview
Overview of Today’s Meeting

Critical Rural Freight Corridors

Safety Assessment of the Texas Highway Freight Network

Initial Needs Assessment
Recap of the February 2, 2022 TxFAC Meeting

- Overview of the Texas Highway Freight Network
- Critical Urban Freight Corridors
- Critical Rural Freight Corridors
- Supply Chains Overview
- Review of Resiliency Case Studies
- Overview of Senate Bill 1308
Critical Rural Freight Corridors (CRFCs)
Purpose of Today’s Discussion

- Presented scoring process and results at Feb 2 TxFAC
- Updated scoring results in approximately 3,200 miles of candidates identified for TxFAC consideration
  - 3+ criteria met
  - Connect to logical termini
- TxFAC requested additional information
- Distributed white paper to members on March 23

Today: Discuss alternatives and make final recommendation for designating CRFCs
CRFC Candidate Identification Process

Identified THFN corridors to be scored
- Primary arterials
- Outside urbanized areas

Scored by adding up number of Federal criteria met
- Scored each segment

TxDOT Developed Two Alternatives for Designating 745 miles
- Highest scoring statewide
- Highest scoring within geographic regions
Approximately 8,600 miles were scored
- On THFN
- Off PHFS
- Rural arterial

<table>
<thead>
<tr>
<th>Number of Criteria</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Federal Criteria</td>
<td>188</td>
</tr>
<tr>
<td>One Federal Criteria</td>
<td>1,422</td>
</tr>
<tr>
<td>Two Federal Criteria</td>
<td>3,319</td>
</tr>
<tr>
<td>Three Federal Criteria</td>
<td>2,719</td>
</tr>
<tr>
<td>Four to Five Federal Criteria</td>
<td>999</td>
</tr>
</tbody>
</table>
Candidate Critical Rural Freight Corridors

- Approximately 3,200 miles of candidates identified for TxFAC consideration
  - 3+ criteria met
  - Connect to logical termini

- About 50 segments throughout state on U.S., state, and F.M. highways
Development of Alternatives

- Two alternatives developed for
  - Alternative 1: Build on 2018 corridors
  - Alternative 2: Fresh Start with Geographic Balance

- Both share same principles:
  - Three or more federal criteria must be met by all included corridors,
  - FSD score is used to prioritize corridors when needed,
  - Total mileage does not exceed 745 miles, with leftover mileage available to TxDOT as needed, and
  - Location, status, and funding of projects does not influence alternatives.
Alternative 1: Remaining 2018 Plus Highest Scoring Eligible Corridors

- 460 miles of 2018 CRFC still met 3 or more criteria (green)
- 285 miles remain for designation
  - Sort candidates by FSD score
  - Select until 745 miles achieved
### Alternative 1: Remaining 2018 Plus Highest Scoring Eligible Corridors

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Num. of Criteria Met</th>
<th>FSD Score</th>
<th>Approx. Mileage</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 290 from Houston to Brenham (Part of 2018 CRFC)</td>
<td>4</td>
<td>64.2</td>
<td>32</td>
</tr>
<tr>
<td>US 59 from El Campo to Rosenberg</td>
<td>4</td>
<td>64.2</td>
<td>24</td>
</tr>
<tr>
<td>US 59 from Lufkin to Livingston</td>
<td>4</td>
<td>64.2</td>
<td>30</td>
</tr>
<tr>
<td>SH 288 from Angleton to Houston</td>
<td>3</td>
<td>63.1</td>
<td>24</td>
</tr>
<tr>
<td>US 181 from Sinton to Gregory</td>
<td>4</td>
<td>62.9</td>
<td>13</td>
</tr>
<tr>
<td>SH 6 from Bryan to Waco</td>
<td>5</td>
<td>62.6</td>
<td>53</td>
</tr>
<tr>
<td>US 281 from Alice to I-37</td>
<td>4</td>
<td>62.4</td>
<td>52</td>
</tr>
<tr>
<td>US 380 from US 287 to I-35 (2018 CRFC)</td>
<td>5</td>
<td>62.2</td>
<td>25</td>
</tr>
<tr>
<td>US 81 from Dallas-Fort Worth to Decatur</td>
<td>3</td>
<td>60.9</td>
<td>18</td>
</tr>
<tr>
<td>US 259 from Nacogdoches to Henderson</td>
<td>3</td>
<td>60.8</td>
<td>34</td>
</tr>
<tr>
<td>US 281 from Falfurrias to Alice</td>
<td>4</td>
<td>59.1</td>
<td>30</td>
</tr>
<tr>
<td>US 87 / SH 35 from US 59 to FM 1593 (2018 CRFC)</td>
<td>3</td>
<td>58.8</td>
<td>31</td>
</tr>
<tr>
<td>US 290 from Austin to Giddings (Part of 2018 CRFC)</td>
<td>4</td>
<td>57.6</td>
<td>34</td>
</tr>
<tr>
<td>US 79 from SH 6 / US 190 to I-45 (Part of 2018 CRFC)</td>
<td>5</td>
<td>57.1</td>
<td>52</td>
</tr>
<tr>
<td>SH 6 / US 281 from I-20 to SH 220 (2018 CRFC)</td>
<td>4</td>
<td>54.6</td>
<td>62</td>
</tr>
<tr>
<td>US 259 from I-20 to US 79 (2018 CRFC)</td>
<td>3</td>
<td>51.2</td>
<td>22</td>
</tr>
<tr>
<td>US 83 from Bravo to Patricio Perez (2018 CRFC)</td>
<td>3</td>
<td>49.5</td>
<td>35</td>
</tr>
<tr>
<td>US 84 from Lubbock to I-20 (2018 CRFC)</td>
<td>5</td>
<td>48.6</td>
<td>109</td>
</tr>
<tr>
<td>US 87 from Big Spring to Sterling City (Part of 2018 CRFC)</td>
<td>4</td>
<td>48.2</td>
<td>39</td>
</tr>
<tr>
<td>US 83 / US 277 from Abilene to US 180 (Part of 2018 CRFC)</td>
<td>5</td>
<td>45.2</td>
<td>23</td>
</tr>
</tbody>
</table>
Alternative 2: Geographic Balancing of Eligible Corridors

- State divided into 5 regions for purpose of this analysis
- Same candidates
  - 3+ criteria met
  - Connect to logical termini
## Alternative 2: Highest Scoring Eligible Corridors from Each Geographic Region

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Num. of Criteria Met</th>
<th>Freight System Designation Score</th>
<th>Approx. Mileage</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 290 from Houston to Brenham (Part of 2018 CRFC)</td>
<td>4</td>
<td>64.2</td>
<td>32</td>
</tr>
<tr>
<td>US 59 from El Campo to Rosenberg</td>
<td>4</td>
<td>64.2</td>
<td>24</td>
</tr>
<tr>
<td>US 59 from Lufkin to Livingston</td>
<td>4</td>
<td>64.2</td>
<td>30</td>
</tr>
<tr>
<td>SH 288 from Angleton to Houston</td>
<td>3</td>
<td>63.1</td>
<td>24</td>
</tr>
<tr>
<td>US 181 from Sinton to Gregory</td>
<td>4</td>
<td>62.9</td>
<td>13</td>
</tr>
<tr>
<td>SH 6 from Bryan to Waco</td>
<td>5</td>
<td>62.6</td>
<td>53</td>
</tr>
<tr>
<td>US 380 from US 287 to I-35 (2018 CRFC)</td>
<td>5</td>
<td>62.2</td>
<td>25</td>
</tr>
<tr>
<td>US 281 from north of Edinburg to Falfurrias</td>
<td>4</td>
<td>59.9</td>
<td>54</td>
</tr>
<tr>
<td>US 83 from Zapata to Laredo</td>
<td>5</td>
<td>56.3</td>
<td>40</td>
</tr>
<tr>
<td>US 287 from Amarillo to Childress</td>
<td>5</td>
<td>54.8</td>
<td>104</td>
</tr>
<tr>
<td>SH 6 / US 281 from I-20 to SH 220 (2018 CRFC)</td>
<td>4</td>
<td>54.6</td>
<td>62</td>
</tr>
<tr>
<td>US 60 from TX-NM State Line to I-27</td>
<td>4</td>
<td>50.7</td>
<td>69</td>
</tr>
<tr>
<td>US 87 from San Angelo to Brady</td>
<td>3</td>
<td>48.8</td>
<td>70</td>
</tr>
<tr>
<td>US 87 from Big Spring to Brady (Part of 2018 CRFC)</td>
<td>4</td>
<td>48.2</td>
<td>39</td>
</tr>
<tr>
<td>US 62 from El Paso to TX-NM State line</td>
<td>4</td>
<td>31.3</td>
<td>104</td>
</tr>
</tbody>
</table>

**Total Mileage**
TxFAC Discussion

- Do you prefer basing designation on
  - Score, similar to Alternative 1
  - Score and geographic balance, similar to Alternative 2
  - Some other alternative
- If other, what are suggested modifications?

Link to web map to review candidates
  TMFN and Critical Freight Corridors (arcgis.com)
Projects on these corridors, FY 2023-2030:
- Fully Funded: 35
- Partially Funded: 15
- Unfunded: 11

Funding on these projects:
- Cost: $926 million
- Authorized: $661 million

CRFC designation does not increase total funding available to TxDOT or guarantee use of National Highway Freight Program funds on designated corridors.
Projects on these corridors, FY 2023-2030:
- Fully Funded: 26
- Partially Funded: 23
- Unfunded: 16

Funding on these projects:
- Cost: $1.64 billion
- Authorized: $1.23 billion

CRFC designation does not increase total funding available to TxDOT or guarantee use of National Highway Freight Program funds on designated corridors.
Texas Highway Freight Network (THFN) Safety Analysis
Today’s Safety Discussion

- Statewide Crash Trends
- Statewide Truck-Involved Crash Statistics
  - Trends
  - Where Crashes Occur
  - How Crashes Occur
  - Who is Involved
- At-Grade Crossing Crashes
- State Highway Safety Plan Focus Areas
- Case Studies of Top Locations – TxFAC input needed
Safety Analysis Overview

- **Key data sources:**
  - TxDOT’s Crash Record Information System (CRIS) data from 2015-2020
  - Average Annual Daily Traffic (AADT) volumes from TxDOT’s annual traffic volume data files

- “Scrubbing” the data
  - Removed data without location (9% crash records)
  - Filtered for specific truck-involved crashes

- Linked data to THFN for crash rate analysis
Definitions in Today’s Analysis

- Urban area: within MPO area
  - Based on analysis in 2018 TFMP
  - Data also to be flagged by urbanized area in needs assessment
- Rural area: outside of MPO area
- Truck: freight vehicle types, see right
# Highest Crash Fatalities by Year

<table>
<thead>
<tr>
<th>Crash Year</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>4,701</td>
</tr>
<tr>
<td><strong>2021</strong></td>
<td><strong>4,485</strong>*</td>
</tr>
<tr>
<td>1980</td>
<td>4,424</td>
</tr>
<tr>
<td>1982</td>
<td>4,271</td>
</tr>
<tr>
<td>1979</td>
<td>4,229</td>
</tr>
<tr>
<td>1978</td>
<td>3,980</td>
</tr>
<tr>
<td>1984</td>
<td>3,913</td>
</tr>
<tr>
<td>2020</td>
<td>3,893</td>
</tr>
</tbody>
</table>
Statewide, we had an increase in 2021 fatalities by 15% compared to 2020.

While total fatalities increased between 2019 and 2020, truck-involved fatalities decreased between those years.
Statewide, we had an increase in work zone 2021 fatalities by 33% compared to 2020.

Truck-involved work zone fatalities increased 52% between 2020 and 2021.

Data as of 02/10/2022
Truck-Involved Crashes Included in Analysis

2015-2020 Truck-Involved Crashes in Texas:

- 159,886 crashes
  - 463,443 units (typically vehicles)
  - 306,203 primary persons (typically drivers)
- 55,948 injuries during 40,504 crashes
- 2,944 fatalities during 2,565 crashes
Truck-Involved Crash Trends, 2015-2020

All Truck-Involved Crashes

Fatal Truck-Involved Crashes

Non-Fatal Truck-Involved Crashes

Fatal Truck-Involved Crashes

Urban/MPO

Rural


0 5,000 10,000 15,000 20,000 25,000 30,000 35,000

0% 20% 40% 60% 80% 100%


424 fatal (1.6%) 418 fatal (1.6%) 413 fatal (1.6%) 446 fatal (1.6%) 444 fatal (1.6%) 420 fatal (1.7%)

0% 20% 40% 60% 80% 100%


0 5,000 10,000 15,000 20,000 25,000 30,000 35,000

Texas Freight Advisory Committee

April 6, 2022
Where Total Crashes Occur

- Urbanized areas, especially
  - Houston
  - Dallas-Fort Worth
  - Austin
  - San Antonio
  - Rio Grande Valley
- Corridors
  - I-35
  - I-20
Where Truck-Involved Crashes Occur

- Urbanized areas and interstates especially
  - Houston, Dallas-Fort Worth, San Antonio
  - I-35, I-45, I-30, I-20

- Differences from all crashes:
  - Lower relative density in Austin and Rio Grande Valley (RGV)
  - East Texas routes stand out slightly more: SH 6, I-69 corridor
Truck-Involved Crashes by Functional Classification, 2015-2020

- Other Rural
- Rural Principal Arterial
- Urban Interstate
- Urban Principal Arterial
- Rural Interstate
- Other Urban
- Not Listed

- Fatal Truck-Involved Crashes
- All Truck-Involved Crashes
# Key Contributing Factor in Truck-Involved Crashes, 2015-2020

<table>
<thead>
<tr>
<th>Top 10 Factors Statewide Sorted by Fatal Crash Count</th>
<th>Top 10 in MPO Areas</th>
<th>Top 10 in Rural Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed To Control Speed</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Failed To Drive In Single Lane</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Wrong Side - Not Passing</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Unsafe Speed</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Failed To Yield Right Of Way - Stop Sign</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pedestrian Failed To Yield Right Of Way To Vehicle</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Under Influence - Alcohol</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Driver Inattention</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Disregard Stop Sign Or Light</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Disabled In Traffic Lane</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Key Contributing Factor in Truck-Involved Crashes, 2015-2020

In Urban/MPO Areas

- Failed To Control Speed: 278 fatal
- Failed To Drive In Single Lane: 107
- Pedestrian Failed To Yield Right Of Way To Vehicle: 77
- Driver Inattention: 60
- Unsafe Speed: 57
- Under Influence - Alcohol: 56
- Disabled In Traffic Lane: 55
- Wrong Side - Not Passing: 54
- Failed To Yield Right Of Way - Stop Sign: 51
- Disregard Stop And Go Signal: 43

Number of Units Reported

0 10,000 20,000

Non-Fatal Crashes

Fatal Crashes
Key Contributing Factor in Truck-Involved Crashes, 2015-2020

In Rural Areas

- Failed To Control Speed: 239 fatal, 84 non-fatal
- Failed To Drive In Single Lane: 160
- Wrong Side - Not Passing: 160
- Unsafe Speed: 93
- Failed To Yield Right Of Way - Stop Sign: 84
- Disregard Stop Sign Or Light: 47
- Pedestrian Failed To Yield Right Of Way To Vehicle: 46
- Under Influence - Alcohol: 43
- Turned When Unsafe: 37
- Fatigued Or Asleep: 37

Non-Fatal Crashes vs. Fatal Crashes
## Who Is Involved?

<table>
<thead>
<tr>
<th>Truck-Involved Crashes Involving:</th>
<th>Total Crashes</th>
<th>Fatal Crashes</th>
<th>Percent Fatal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Vehicles</td>
<td>120,529</td>
<td>2,052</td>
<td>2%</td>
</tr>
<tr>
<td>Multiple Trucks</td>
<td>11,110</td>
<td>237</td>
<td>2%</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>585</td>
<td>216</td>
<td>37%</td>
</tr>
<tr>
<td>Bicycles</td>
<td>77</td>
<td>12</td>
<td>16%</td>
</tr>
<tr>
<td>Parked Truck (struck by any vehicle)</td>
<td>3,033</td>
<td>137</td>
<td>5%</td>
</tr>
</tbody>
</table>
Majority of truck-involved crashes (75%)

Greatest concentrations in large urbanized areas

Interstate corridors show most frequent occurrence:
- I-35
- I-45
- I-20
- I-10
Truck-Involved Crashes Involving Pedestrians, 2015-2020

- Account for less than one percent of truck-involved crashes
- More than a third of the pedestrian-truck crashes were fatal
- Most commonly reported in Dallas-Fort Worth and Houston areas
Truck-Involved Crashes Involving Cyclists, 2015-2020

- Infrequent event, averaging only 12 per year reported
- 16% were fatal
- Most commonly reported in the Houston area
Crashes Involving Parked Trucks, 2015-2020

- Account for less than 2% of truck-involved crashes
- In cities and on major corridors:  
  - I-35, I-45, I-10, I-20, I-40
- Compared to Statewide Truck Parking Study analysis:  
  - 2013-2017: 463/year
  - 2015-2020: 505/year
At-Grade Crossing Crashes

- Coordinated with Grade Crossing Safety Action Plan (February 2022)
- Utilize historical incident data and prioritized, high-risk crossings from SAP
  - 38 high risk crossings identified
  - Most in large metropolitan areas

<table>
<thead>
<tr>
<th>Grade Crossing Type</th>
<th>Fatal</th>
<th>Injury-only</th>
<th>Non-casualty</th>
<th>Total</th>
<th>% of Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>74</td>
<td>271</td>
<td>597</td>
<td>942</td>
<td>81.6%</td>
</tr>
<tr>
<td>Private</td>
<td>17</td>
<td>50</td>
<td>143</td>
<td>210</td>
<td>18.2%</td>
</tr>
<tr>
<td>Pathway (Public)</td>
<td>1</td>
<td>1</td>
<td>--</td>
<td>2</td>
<td>0.2%</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>322</td>
<td>740</td>
<td>1,154</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: 2022 Highway-Rail Grade Crossing State Action Plan, TxDOT.
Strategic Highway Safety Plan (SHSP) Factors

- Distracted driving
- Impaired driving
- Intersection related
- Older drivers
- Speeding
- Roadway departures
- Pedestrian
Truck-Involved Crashes by SHSP Factors

Distracted Driving

Impaired Driving
Truck-Involved Crashes by SHSP Factors

Intersection Related

Older Drivers
Truck-Involved Crashes by SHSP Factors

Speeding

Roadway Departures
Freight Crash Hotspot Case Studies

Candidates identified based on following criteria:

- Average annual daily truck traffic (AADTT)
- AADTT percentage
- Truck Crash Rate (crashes per 100 million vehicle-miles of travel)
- Number of Truck-Involved Crashes
- Number of Serious Injury Truck-Involved Crashes
- Number of Fatal Truck-Involved Crashes
- TxDOT District
- TTI Truck Delay Rank
Case Study 1 – FM 1472/Mines Road in Laredo

Network Connections

- FM 1472 Mines Road
- IH 35 at southern terminus
- IH 69W and IH 35 international connections
- I-69W/US 59
- Interstate principal arterials
- World Trade International Bridge

Roadway Characteristics

- The FM 1472 segment is Principal Arterial with three lanes in both directions
- A one-lane southbound elevated direct connector to eastbound IH 69W/US 59
Case Study 1 – FM 1472/Mines Road in Laredo

- Baseline statistics for key metrics:
  - Speed and delay
  - Impact to truck and passenger vehicles
  - Quantify and monetize time lost

- Crash comparison in process for different conditions:
  - No crash/clear condition
  - Periods with non-truck-involved crashes
  - Periods with truck-involved crashes
  - Differentiate between fatal/non-fatal
Case Study 2 – I-35 in San Antonio

Network Connections

- Southbound IH35/IH 410 North of Eisenhauer Road
- Interstate inner beltway
- IH 37
- US 281
- Part of the 1,568-mile interstate route

Roadway Characteristics

- The IH 35 San Antonio segment is classified as an interstate freeway with full access control.
- 4-freeway main lanes in each direction and 2/3 lanes of frontage road in each direction.
- The estimated Average Annual Daily Traffic was 167,897 vehicles, with 12% being trucks.
Case Study 2 – I-35 in San Antonio

- Baseline statistics for key metrics:
  - Speed and delay
  - Impact to truck and passenger vehicles
  - Quantify and monetize time lost

- Crash comparison in process for different conditions:
  - No crash/clear condition
  - Periods with non-truck-involved crashes
  - Periods with truck-involved crashes
  - Differentiate between fatal/non-fatal

![Congestion Characteristics (2019)]

- Average Peak Period Truck Speed: 50.1 MPH
- Truck Congestion Index: 1.34
- Annual Vehicle Hours of Delay: 450,698 hr
- Annual Truck Hours of Delay: 16,100 hr

- Annual Peak Period Hour of Truck Delay: 35,959 hr
- Congested Truck Segment Ranking: 38th
- Costs due to Truck Delay: $3,801,175

Source: TTI ranking of Texas’ most congested roadways
TxFAC Input on Case Study Analysis

- Are we asking the right questions with the case studies?
- Are there other aspects we should examine?
- Are there aspects we shouldn’t include?
Top Truck-Involved Crash Segments, 2015-2020

- Analyzed truck-involved crash rates to identify candidates
- Top 5 Urban and Rural:
  - Interstates
  - U.S. Highways
  - State Highways
  - FM Roads
- Total of 40 candidates
## Urban Safety Hotspot Case Study Candidates

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Highway Name</th>
<th>Length (Miles)</th>
<th>AADT</th>
<th>Truck AADT</th>
<th>Truck Crash Rate (crashes per 100 million vehicle-miles of travel)</th>
<th>Number of Truck Crashes</th>
<th>Number of Serious Injury Truck Crashes</th>
<th>Number of Fatal Truck Crashes</th>
<th>TxDOT District</th>
<th>TTI Truck Delay Rank</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Interstate</td>
<td>IH0030</td>
<td>1.58</td>
<td>154,099</td>
<td>9%</td>
<td>13,767</td>
<td>962.30</td>
<td>459</td>
<td>2</td>
<td>1</td>
<td>Dallas</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>IH0035W</td>
<td>1.17</td>
<td>121,630</td>
<td>8%</td>
<td>9,500</td>
<td>933.38</td>
<td>228</td>
<td>4</td>
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<td>Fort Worth</td>
<td>2</td>
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<td></td>
<td>IH0410</td>
<td>2.39</td>
<td>30,794</td>
<td>5%</td>
<td>1,632</td>
<td>832.55</td>
<td>71</td>
<td>1</td>
<td>1</td>
<td>San Antonio</td>
<td>174</td>
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<tr>
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<td>IH0610</td>
<td>1.58</td>
<td>132,823</td>
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<td>779.73</td>
<td>330</td>
<td>7</td>
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<td>Houston</td>
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<tr>
<td></td>
<td>IH0035</td>
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<td>12%</td>
<td>19,582</td>
<td>675.22</td>
<td>528</td>
<td>4</td>
<td>3</td>
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<tr>
<td>US Highway</td>
<td>US0180</td>
<td>3.78</td>
<td>11,974</td>
<td>7%</td>
<td>790</td>
<td>1224.22</td>
<td>80</td>
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<td>705</td>
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<td></td>
<td>US0062</td>
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<td>13,234</td>
<td>11%</td>
<td>1,516</td>
<td>891.58</td>
<td>34</td>
<td>68</td>
<td>1</td>
<td>El Paso</td>
<td>US 54 to Almeda Avenue</td>
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<td></td>
<td>US0380</td>
<td>1.80</td>
<td>31,245</td>
<td>8%</td>
<td>2,433</td>
<td>710.10</td>
<td>655</td>
<td>68</td>
<td>1</td>
<td>Dallas</td>
<td>CR 26 to Preston Road</td>
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<tr>
<td></td>
<td>US0080</td>
<td>4.59</td>
<td>66,083</td>
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<td>1,486</td>
<td>649.60</td>
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<tr>
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<td>US0175</td>
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<td>16,525</td>
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<td>364</td>
<td>604.24</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>Tyler</td>
<td>US 175 to SH 19</td>
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<tr>
<td>State Highway</td>
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<td>4.48</td>
<td>12,103</td>
<td>4%</td>
<td>458</td>
<td>1601.29</td>
<td>72</td>
<td>11</td>
<td>4</td>
<td>Dallas</td>
<td>E Overton Road to LB J Freeway</td>
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<tr>
<td></td>
<td>SH0170</td>
<td>3.50</td>
<td>44,752</td>
<td>1%</td>
<td>655</td>
<td>1554.53</td>
<td>78</td>
<td>4</td>
<td>3</td>
<td>Fort Worth</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td>SH0099</td>
<td>4.51</td>
<td>7,294</td>
<td>8%</td>
<td>612</td>
<td>777.44</td>
<td>47</td>
<td>5</td>
<td>1</td>
<td>Beaumont</td>
<td>SH 146 split to Fisher Road</td>
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<tr>
<td></td>
<td>SH0359</td>
<td>1.33</td>
<td>23,426</td>
<td>11%</td>
<td>2,503</td>
<td>686.85</td>
<td>50</td>
<td>1</td>
<td>1</td>
<td>Laredo</td>
<td>Bob Bullock Loop Srrano Road</td>
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<tr>
<td></td>
<td>SH0149</td>
<td>1.10</td>
<td>10,511</td>
<td>29%</td>
<td>3,055</td>
<td>311.35</td>
<td>23</td>
<td>1</td>
<td>1</td>
<td>Atlanta</td>
<td>Ball Park Road to US 59</td>
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<tr>
<td>FM Road</td>
<td>FM1472</td>
<td>2.42</td>
<td>31,809</td>
<td>11%</td>
<td>3,594</td>
<td>3299.47</td>
<td>629</td>
<td>3</td>
<td>3</td>
<td>Laredo</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>FM1925</td>
<td>2.01</td>
<td>19,890</td>
<td>2%</td>
<td>375</td>
<td>1270.81</td>
<td>21</td>
<td>1</td>
<td>1</td>
<td>Pharr</td>
<td>1,361</td>
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<tr>
<td></td>
<td>FM0521</td>
<td>4.34</td>
<td>22,519</td>
<td>3%</td>
<td>606</td>
<td>1007.74</td>
<td>58</td>
<td>2</td>
<td>1</td>
<td>Houston</td>
<td>223</td>
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<td></td>
<td>FM0157</td>
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<td>35,856</td>
<td>2%</td>
<td>594</td>
<td>729.37</td>
<td>31</td>
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<td>Fort Worth</td>
<td>W Euless Bulvd to Ashford Lane</td>
</tr>
<tr>
<td></td>
<td>FM0653</td>
<td>2.89</td>
<td>64,226</td>
<td>10%</td>
<td>6,509</td>
<td>495.86</td>
<td>204</td>
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<td>1</td>
<td>El Paso</td>
<td>North Loop Dr to Pellicano Dr</td>
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</table>
## Rural Safety Hotspot Case Study Candidates

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Highway Name</th>
<th>Length (Miles)</th>
<th>AADT</th>
<th>Truck AADT Percent</th>
<th>Truck AADT</th>
<th>Truck Crash Rate (Hundred Million Vehicles)</th>
<th>Number of Truck Crashes</th>
<th>Number of Serious Injury Truck Crashes</th>
<th>Number of Fatal Truck Crashes</th>
<th>TxDOT District</th>
<th>TT Truck Delay Rank</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td><strong>Interstate</strong></td>
<td>IH0010</td>
<td>3.77</td>
<td>42,415</td>
<td>30%</td>
<td>12,852</td>
<td>156.44</td>
<td>166</td>
<td>2</td>
<td>2</td>
<td>Beaumont</td>
<td>692</td>
<td>FM 365 to FM 1663 Road</td>
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<tr>
<td></td>
<td>IH0010</td>
<td>1.77</td>
<td>79,517</td>
<td>19%</td>
<td>14,790</td>
<td>160.11</td>
<td>92</td>
<td>1</td>
<td>2</td>
<td>Beaumont</td>
<td>692</td>
<td>Little Cypress Bayou to Sabine River</td>
</tr>
<tr>
<td></td>
<td>IH0045</td>
<td>2.21</td>
<td>50,582</td>
<td>20%</td>
<td>10,040</td>
<td>123.23</td>
<td>60</td>
<td>1</td>
<td>3</td>
<td>Bryan</td>
<td>1,431</td>
<td>SH 75 A Merge to Little Chinquapin Creek</td>
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<tr>
<td></td>
<td>IH0020</td>
<td>4.04</td>
<td>35,263</td>
<td>29%</td>
<td>10,212</td>
<td>122.93</td>
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<td>2</td>
<td>Tyler</td>
<td>1,593</td>
<td>US 69 to CR 35</td>
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<td>12,176</td>
<td>41%</td>
<td>5,011</td>
<td>118.13</td>
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<td>3</td>
<td>2</td>
<td>Amarillo</td>
<td>307</td>
<td>CR 35 to N Main Street</td>
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<tr>
<td><strong>US Highway</strong></td>
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<td>1.38</td>
<td>10,804</td>
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<td>1,197</td>
<td>830.05</td>
<td>30</td>
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<td>2</td>
<td>San Angelo</td>
<td>165</td>
<td>SH 137 to Alaska Street</td>
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<tr>
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<td>US0059</td>
<td>1.06</td>
<td>2,315</td>
<td>20%</td>
<td>470</td>
<td>641.84</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>Corpus Christi</td>
<td>159</td>
<td>Dougherty Ranch Road to FM 624</td>
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<tr>
<td></td>
<td>US0180</td>
<td>2.83</td>
<td>1,331</td>
<td>13%</td>
<td>177</td>
<td>639.13</td>
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<td>4</td>
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<td>159</td>
<td>Lower Brad to S FM 919</td>
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<td>US0277</td>
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<td>182</td>
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<td>4</td>
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<td>Laredo</td>
<td>159</td>
<td>FM 1591 to FM 1665</td>
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<td></td>
<td>US0083</td>
<td>1.81</td>
<td>5,472</td>
<td>13%</td>
<td>703</td>
<td>611.15</td>
<td>17</td>
<td>4</td>
<td>1</td>
<td>Abilene</td>
<td>160</td>
<td>CR 160 to US 83</td>
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<tr>
<td><strong>State Highway</strong></td>
<td>SH0090</td>
<td>1.10</td>
<td>1,928</td>
<td>14%</td>
<td>278</td>
<td>1497.32</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>Bryan</td>
<td>155</td>
<td>CR 155 to FM 39</td>
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<td></td>
<td>SH0158</td>
<td>4.46</td>
<td>5,200</td>
<td>38%</td>
<td>1,995</td>
<td>498.12</td>
<td>97</td>
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<td>5</td>
<td>San Angelo</td>
<td>1621 to SH 137</td>
<td>Private Road</td>
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<td>SH0046</td>
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<td>799.64</td>
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<td>2</td>
<td>San Antonio</td>
<td>467 to SH 123</td>
<td>FM 467 to SH 123</td>
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<td>6%</td>
<td>859</td>
<td>233.33</td>
<td>19</td>
<td>2</td>
<td>2</td>
<td>Beaumont</td>
<td>591</td>
<td>Englin Road to Big Hill Road</td>
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<td>SH0255</td>
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<td>2,078</td>
<td>6%</td>
<td>125</td>
<td>543.91</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>Laredo</td>
<td>591</td>
<td>Las Tiendas Road to US 83</td>
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<td>108</td>
<td>794.92</td>
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<td>1</td>
<td>2</td>
<td>Yoakum</td>
<td>172</td>
<td>Prairie St to SH 172</td>
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<td>FM0099</td>
<td>3.06</td>
<td>1,471</td>
<td>11%</td>
<td>169</td>
<td>708.21</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>Corpus Christi</td>
<td>2417</td>
<td>US 281 Alt to CR417</td>
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<td></td>
<td>FM0624</td>
<td>1.69</td>
<td>1,243</td>
<td>20%</td>
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<td>534.10</td>
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<td>1</td>
<td>2</td>
<td>San Antonio</td>
<td>16 to Elm Creek</td>
<td>SH 16 to Elm Creek</td>
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<td>FM0791</td>
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<td>1,375</td>
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<td>187</td>
<td>520.18</td>
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<td>2</td>
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<td>417 to FM 2924</td>
<td>CS 417 to FM 2924</td>
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<td>FM1774</td>
<td>1.82</td>
<td>5,908</td>
<td>6%</td>
<td>343</td>
<td>366.09</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>Houston</td>
<td>303 to FM 1486</td>
<td>CR 303 to FM 1486</td>
</tr>
</tbody>
</table>
TxFAC Input on Case Studies

- Are there any locations you would be interested in seeing (from this list or other locations)?
- Are there any locations on the initial list you think are inappropriate?
- Menti- Rank the case studies
Preliminary Multimodal Freight Network Needs Assessment
Today’s Needs Assessment Discussion

- Initial network assessment – more detailed assessment by supply chain to follow
- Overview/discussion of methodology
- Preliminary Texas Highway Freight Network (THFN) network findings
Needs Assessment Categories and Metrics

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 RELIABILITY
- Congestion
- Truck travel time reliability
- At-grade highway-rail crossings

SAFETY
- Truck involved crash rate
- Truck crash severity
- At-grade highway-rail crossings

FREIGHT ASSET UTILIZATION AND PRESERVATION
- Pavement conditions
- Bridge load restrictions and conditions
- Vertical bridge clearance
- Oversize/Overweight permitted loads

FREIGHT NETWORK DESIGN
- Frontage roads
- Number of lanes
- Shoulder widths
- Lane width
Needs Assessment Categories and Metrics

**TECHNOLOGY**
- Weigh-in-Motion needs
- Traffic management center coverage
- Traveler information systems
- Incident management systems

**CONNECTIVITY**
- Strategic industries
- Intermodal terminals
- Gateways

**EQUITY**
- Vulnerable communities index
  - Poverty, Minority, English proficiency, Education, Age, Disability, Unemployment

**RESILIENCY**
- Exposure to disruptors
  - Extreme weather events, Labor disputes, Cyber attacks
  - Infrastructure failures, Other man-made disruptions

**Overlay factors on Freight System Designation score**

**Combined score of factors and relative freight importance to get high, medium, and low needs score**
West Texas and border regions experienced most significant increase in mobility needs since 2018.
Safety Needs

<table>
<thead>
<tr>
<th>Safety Needs</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
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</thead>
<tbody>
<tr>
<td>THFN Mileage</td>
<td>3,256</td>
<td>6,752</td>
<td>13,058</td>
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<tr>
<td>% of Miles</td>
<td>14%</td>
<td>29%</td>
<td>57%</td>
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</tbody>
</table>

- Highest needs
  - Large metro areas
  - Panhandle region
  - Permian Basin
### Truck Parking Needs

<table>
<thead>
<tr>
<th>Truck Parking Needs</th>
<th>High (Miles)</th>
<th>Medium (Miles)</th>
<th>Low (Miles)</th>
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</thead>
<tbody>
<tr>
<td>THFN Mileage</td>
<td>4,455</td>
<td>5,031</td>
<td>13,580</td>
</tr>
<tr>
<td>% of Miles</td>
<td>19%</td>
<td>22%</td>
<td>59%</td>
</tr>
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</table>

- High needs throughout state
  - Large metro areas
  - Permian Basin
  - Panhandle
  - Eastern border region

![Map of Texas highlighting truck parking needs]
Asset Preservation Needs - Pavement Conditions

International Roughness Index (IRI)

Pavement Condition Rating (PCR)

Needs Assessment - Pavement Condition
- Texas Highway Freight Network (THFN)
- Rough (IRI 171 - 220)
- Very Rough (IRI >220)

THFN Pavement Condition
- Poor
- Fair
- Good
Asset Preservation – Bridge Conditions

Functionally Deficient and/or Structurally Obsolete

Bridge Constraints

Deck Condition Rating
- Poor Deck Condition
- Fair Deck Condition
- Good Deck Condition

THFN Bridge Constraints
- Load Constraint
- Clearance Constraint
- Load and Clearance Constraint
### THFN Asset Preservation Needs

<table>
<thead>
<tr>
<th>Pavement Needs</th>
<th>Bridge Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THFN Mileage</strong></td>
<td><strong>High</strong></td>
</tr>
<tr>
<td>8,317</td>
<td>6,404</td>
</tr>
<tr>
<td>36%</td>
<td>28%</td>
</tr>
<tr>
<td>6,664</td>
<td>11,148</td>
</tr>
<tr>
<td>29%</td>
<td>48%</td>
</tr>
<tr>
<td>8,085</td>
<td>5,513</td>
</tr>
<tr>
<td>35%</td>
<td>24%</td>
</tr>
</tbody>
</table>
Freight Design Needs

- High needs are isolated
  - Southeast Texas
  - Rural roads on urban fringes
- Medium needs more widespread and longer segments

<table>
<thead>
<tr>
<th>Freight Design Needs</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>THFN Mileage</td>
<td>396</td>
<td>4,599</td>
<td>18,071</td>
</tr>
<tr>
<td>% of Miles</td>
<td>2%</td>
<td>20%</td>
<td>78%</td>
</tr>
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</table>
Technology on the THFN

<table>
<thead>
<tr>
<th>Technology Needs</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>THFN Mileage</td>
<td>9,527</td>
<td>7,930</td>
<td>5,610</td>
</tr>
<tr>
<td>% of Miles</td>
<td>41%</td>
<td>34%</td>
<td>24%</td>
</tr>
</tbody>
</table>

- High needs reflect absence of technology
- Rural areas less likely to have:
  - Traffic management centers
  - Travel information service
  - Dynamic messaging signs
  - Weigh-in-motion
## Combined Needs Assessment

<table>
<thead>
<tr>
<th>Number of High Need Assessment Categories</th>
<th>THFN Mileage</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5,221</td>
<td>23%</td>
</tr>
<tr>
<td>1</td>
<td>7,077</td>
<td>31%</td>
</tr>
<tr>
<td>2</td>
<td>5,951</td>
<td>26%</td>
</tr>
<tr>
<td>3</td>
<td>3,281</td>
<td>14%</td>
</tr>
<tr>
<td>4</td>
<td>1,173</td>
<td>5%</td>
</tr>
<tr>
<td>5</td>
<td>317</td>
<td>1%</td>
</tr>
<tr>
<td>6</td>
<td>45</td>
<td>&lt;1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23,065</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
**TxFAC Input**

- Any surprises?
- Needs you expected to see but did not?
- Needs you saw that you were not expecting?
- Are we missing any need categories or metrics?
Next Steps

1. Refine process
2. Finalize network needs
3. Evaluate non-highway modes
4. Final needs assessment
5. Vet with Supply Chain Working Group
6. Drill-down to industry level needs
TFMP Next Steps and Closing Remarks

Meeting Overview
ACCESSING CRITICAL SUPPLY CHAINS, UNDERSTANDING THE TEXAS MULTIMODAL FREIGHT NETWORK
Freight and Economic Profiles; Supply Chain Analysis, Network Designation; Trends, Disruptors & Opportunities

ASSESSING CURRENT & FUTURE FREIGHT NEEDS
Commodity Flow Forecasts and Scenarios; Needs Assessment

DEVELOPING STRATEGIES
Policy, Program, and Project Strategies

STAKEHOLDER OUTREACH

STAKEHOLDER FORUM #1
Goals, Freight Profiles, Freight System

STATEWIDE STAKEHOLDER SURVEY

SUPPLY CHAIN WORKING GROUP #1
Needs and Forecasts

SUPPLY CHAIN WORKING GROUP #1
Needs and Forecasts

SUPPLY CHAIN WORKING GROUP #3
Strategies and Implementation

STAKEHOLDER FORUM #2
Forecasts, Needs, Strategies

TxFAC Meetings
Stakeholder Outreach

- Supply Chain Working Group
  - Laredo workshop – April 18
  - Meeting 2 in May
  - Meeting 3 in July

- Stakeholder workshops- Round 2
  - Virtual – week of May 15
  - In-person – Houston, Permian Basin, and Brownsville – June 14-16

- TxFAC Meetings
  - July 20, 2022