Since We Last Met...

Transportation Commission adopts Plan on 11/16/2017

FHWA sends comments to TxDOT 12/19/2017

FHWA approves Plan on 3/7/2018

TxDOT submits Plan to FHWA for review on 11/17/2017

TxDOT submits revised Plan to FHWA on 03/01/2018
### Key FHWA Comments and Responses

| Clearly identify projects and mitigation strategies addressing needs | • Cross referenced projects and strategies when needs are identified throughout document  
| | • Added text about current TxDOT programs and initiatives that address identified freight bottlenecks |
| Revise Appendix C: Five Year Freight Investment Plan (FIP) to reflect 2016-2020 time period | • Revised Appendix C and associated documents to reflect new time period for the 5-Year FIP  
| | • Identified projects for National Highway Freight Program funds |
Revised 10-Year Unconstrained FIP Summary

**November 2017**

- Stakeholder Proposed Projects: 134 (5%)
- Planned Rail Projects: 88 (4%)
- Planned Highway Projects: 2,360 (91%)

**Revised Final, March 2018**

- Stakeholder Proposed Projects: 134 (5%)
- Planned Rail Projects: 90 (4%)
- Planned Highway Projects: 2,370 (91%)

2,582 projects with an estimated cost of $66 billion

2,594 projects with an estimated cost of $66 billion
Revised 5-Year FIP Summary

November 2017

5-Year Freight Investment Breakdown

612 projects that are fully-funded at an estimated cost of $11.5 billion

National Highway Freight Program Funds:

- 235 projects at an estimated cost of $7.4 billion are eligible

Revised Final, March 2018

5-Year Freight Investment Breakdown

515 projects that are fully-funded at an estimated cost of $7.5 billion

National Highway Freight Program Funds:

- 199 projects at an estimated cost of $4.6 billion are eligible
## Summary of National Highway Freight Program Funding

### National Highway Freight Program Projects

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Number of Projects</th>
<th>NHFP Funding Programmed (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>7</td>
<td>$69.5</td>
</tr>
<tr>
<td>2017</td>
<td>9</td>
<td>$112.6</td>
</tr>
<tr>
<td>2018</td>
<td>8</td>
<td>$137.5</td>
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<tr>
<td>2019</td>
<td>2</td>
<td>$110.1</td>
</tr>
<tr>
<td>2020</td>
<td>5</td>
<td>$110.6</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>$540.3</td>
</tr>
</tbody>
</table>

### National Highway Freight Program Eligible Projects

Legend:
- NHFP Eligible Projects
- Texas Highway Freight Network
- Primary Highway Freight System
- Critical Urban Freight Corridor
- Critical Rural Freight Corridor
Number of projects changed in 5-Year FIP and Unconstrained FIP but the big picture remained the same

- 28% of freight projects are fully funded
- $47 billion gap remains
- 254 high priority freight projects costing $28.5 billion are not funded
TRANSEARCH
COMMODITY FLOW
UPDATE

Freight Advisory Committee

May 31, 2018
Overview of TRANSEARCH Data

US county-level freight-movement data

- Produced by IHS Global Insight
- Developed by combining information from public sources and data on primary shipments obtained from major freight carriers

- Classified by:
  - Inbound, outbound, intrastate and through traffic
  - Mode including truck, rail, water, air and pipeline
  - Tonnage and value
  - Commodity type

- Forecasted based on expected growth in output, employment and consumption factors within each county
Developing 2016 Base Year Data

2017 TFMP Based on 2010 TRANSEARCH Data

- Used growth rates from FHWA Freight Analysis Framework (FAF) to extrapolate 2010 to 2016 and 2040 to 2045

NEW TRANSEARCH DATA Has 2015 Base Year and 2045 Forecast

- Used combination of TRANSEARCH and FHWA FAF growth rates to estimate 2016 data
Adjustments to 2015 TRANSEARCH

**Rail**

**DATA**
- TRANSEARCH (2015)
- Waybill (2015)

**ESTIMATE 2016**
- Adjust using Waybill data
- Apply FAF growth rates for intrastate trades
- Apply TRANSEARCH growth rates for remaining flows

**Water**

**DATA**
- TRANSEARCH (2015)
- U.S. Army Corps of Engineers (2015)

**ESTIMATE 2016**
- Adjust using U.S. Army Corps of Engineers data to account for international trade
- Apply FAF growth rates for crude petroleum and coal products
# Modal Summary—Tonnage for 2016 and 2045

<table>
<thead>
<tr>
<th>Mode</th>
<th>2016 Tonnage (Millions)</th>
<th>2045 Tonnage (Millions)</th>
<th>% Growth</th>
<th>Cumulative Annual Growth Rate</th>
<th>2016 Tonnage (Millions)</th>
<th>2045 Tonnage (Millions)</th>
<th>% Growth</th>
<th>Cumulative Annual Growth Rate</th>
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</thead>
<tbody>
<tr>
<td>Highway</td>
<td>1,257,288</td>
<td>2,246,583</td>
<td>79%</td>
<td>2.0%</td>
<td>1,192,133</td>
<td>2,477,551</td>
<td>108%</td>
<td>2.6%</td>
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<tr>
<td>Rail</td>
<td>440,020</td>
<td>884,205</td>
<td>101%</td>
<td>2.4%</td>
<td>441,083</td>
<td>667,530</td>
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<td>1.4%</td>
</tr>
<tr>
<td>Water</td>
<td>476,467</td>
<td>715,036</td>
<td>50%</td>
<td>1.4%</td>
<td>598,485</td>
<td>889,746</td>
<td>49%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Air</td>
<td>1,126</td>
<td>1,997</td>
<td>77%</td>
<td>2.0%</td>
<td>1,843</td>
<td>4,222</td>
<td>129%</td>
<td>2.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,174,901</strong></td>
<td><strong>3,847,820</strong></td>
<td><strong>77%</strong></td>
<td><strong>2.0%</strong></td>
<td><strong>2,233,544</strong></td>
<td><strong>4,039,048</strong></td>
<td><strong>81%</strong></td>
<td><strong>2.1%</strong></td>
</tr>
</tbody>
</table>

Source: IHS Global Insight TRANSEARCH, STB Waybill data, U.S. Army Corp of Engineers and Cambridge Systematics Analysis
Comparison of 2016 and 2045 Freight Volumes

**2017 TFMP**

- **Inbound:**
  - 2016: 569 Million Tons
  - 2045: 801 Million Tons

- **Intrastate:**
  - 2016: 1,001 Million Tons
  - 2045: 1,936 Million Tons

- **Through:**
  - 2016: 210 Million Tons
  - 2045: 416 Million Tons

- **Outbound:**
  - 2016: 453 Million Tons
  - 2045: 887 Million Tons

- **Total:** 2016: 2.2 billion tons
  - 2045: 4.0 billion tons

**New TRANSEARCH**

- **Inbound:**
  - 2016: 560 Million Tons
  - 2045: 971 Million Tons

- **Intrastate:**
  - 2016: 911 Million Tons
  - 2045: 1,539 Million Tons

- **Through:**
  - 2016: 266 Million Tons
  - 2045: 512 Million Tons

- **Outbound:**
  - 2016: 474 Million Tons
  - 2045: 741 Million Tons

- **Total:** 2016: 2.2 billion tons
  - 2045: 3.7 billion tons
2016

- Total volumes relatively unchanged
- Truck share higher
- Water share lower

2045

- Lower overall freight growth results from lower economic forecasts
- More robust growth in rail freight and more conservative growth in truck and air

GENERAL FINDINGS

- Overall lower long-term growth rates
- Significant increase in value per ton for air freight
Incorporating the Data into the 2017 TFMP

- Change in data has no impact on the findings and recommendations of the 2017 TFMP
- Freight analysis system developed for the 2017 TFMP will be updated with the latest data
- New data will be incorporated into the 2017 TFMP
FREIGHT NETWORK VERTICAL CLEARANCE
(TEXAS FREIGHT ADVISORY COMMITTEE)

Camille Thomason, P.E.
Design Division Director
<table>
<thead>
<tr>
<th></th>
<th>Background</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Policy Development</td>
</tr>
<tr>
<td>3</td>
<td>Policy Implementation</td>
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<tr>
<td>4</td>
<td>Key Dates</td>
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<tr>
<td>5</td>
<td>Design Deviation Request Process</td>
</tr>
<tr>
<td>6</td>
<td>Sample Anticipated Questions</td>
</tr>
<tr>
<td>7</td>
<td>Additional Questions and follow-up from 11-17-17 WebEx</td>
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</table>
In January 2016, the Texas Freight Mobility Plan was accepted by the Transportation Commission. Section 11.6.5 of the plan states, “TxDOT should develop a Bridge Reconstruction and Replacement Program to address deficient bridges, increase vertical clearance to 18 feet 6 inches to accommodate oversize/overweight vehicles and military transportation needs and facilitate efficient movement of people and goods”.
Texas Freight Mobility Plan

https://www.dot.state.tx.us/move-texas-freight/studies/freight-plan.htm  or ...... google “Texas Freight Mobility Plan”
The Texas Freight Mobility Plan was updated, and went to the Transportation Commission on 11/16/17. The Texas Highway Freight Network (THFN) is composed of the following:

- The National Highway Freight Network
- The Texas Highway Trunk System
- The remainder is composed of highways determined as critical to freight movement as determined by the Tx Freight Advisory Committee, TxDOT Districts, and MPOs.

The Texas Highway Freight Network includes 21,861 miles, an increase of 2,655 miles from the 2016 network.

https://www.dot.state.tx.us/move-texas-freight/studies/freight-plan.htm or …… google “Texas Freight Mobility Plan”
Section 11.6.5 states, “TxDOT should develop a Bridge Reconstruction and Replacement Program to address deficient bridges, increase vertical clearance to 18 feet 6 inches to accommodate oversize/overweight vehicles and military transportation needs and facilitate efficient movement of people and goods”.

- **PLAN** but no **POLICY**.

- Policy requires
  - Detailed Information
  - Implementation Date
  - Funding Source

- **Freight Corridor Vertical Clearance Workgroup** formed to assist in formulating a policy for increased vertical clearance on freight corridors.

- **POLICY** to be approved by TxDOT Administration.
<table>
<thead>
<tr>
<th>Team (19)</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Denise Lunski</td>
<td>DAL</td>
<td>Larry Blackburn</td>
</tr>
<tr>
<td>Jonathan Bean</td>
<td>SAT</td>
<td>Willie Garcia</td>
</tr>
<tr>
<td>Gary Law</td>
<td>ODA</td>
<td>Michael O'Toole</td>
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<tr>
<td>Caroline Mays</td>
<td>TPP</td>
<td>Patrick Bachman</td>
</tr>
<tr>
<td>Michael Bolin</td>
<td>WAC</td>
<td>Jorge Carrasco</td>
</tr>
<tr>
<td>Kathleen Newton</td>
<td>AUS</td>
<td>Mark McDaniel</td>
</tr>
<tr>
<td>Kenneth Mora</td>
<td>DES</td>
<td>Cliff Nelson</td>
</tr>
<tr>
<td>Bill Orr</td>
<td>DES</td>
<td>Bryan Elliott</td>
</tr>
<tr>
<td>Dustin Wiggins</td>
<td>TRF</td>
<td><strong>Oversight (2)</strong></td>
</tr>
<tr>
<td>Marco Cameron</td>
<td>TRF</td>
<td>Gregg Freeby</td>
</tr>
<tr>
<td>Luke Chisenhall</td>
<td>TRF</td>
<td>Mark Marek</td>
</tr>
</tbody>
</table>
September 28, 2017 a memorandum was distributed by Bill Hale (Chief Engineer) that provided general guidance for the TxDOT Freight Vertical Clearance policy.
• Review key points of the new policy,
• Cover the proposed Design Deviation request process
• Cover some of the anticipated questions
• Solicit feedback and input for consideration as the implementation components of the new policy are being further developed.
Key Dates

- Policy is applicable to projects letting **Sept. 1, 2020** and later.

- Where vertical clearance is expected to be unachievable in downtown areas, District Engineers to work with MPO’s and Local Governments to determine bypass (alternate) routes that will support 18.5’ vertical clearance by **Sept. 1, 2018**.


Previous Presentations and Webinars.
TxDOT E&O Presentation: **Nov. 1st, 2017**
TxDOT Initial Webinar: **Nov. 17th, 2017**
TxDOT TP&D Presentation: **Dec. 5th, 2017**
The purpose of the Freight Policy is to make Texas the leader in providing movement of Freight in the Nation.

This is a process that should be approached with a well thought out long range vision and plan in place to provide a continuum of efficient Freight movement within the State.

Additional consideration and planning should also be given to existing bridges that due to low vertical clearances act as Freight bottlenecks; even if there are no immediate plans for new construction or reconstruction of these bridges.

Consideration of flipping the stack where appropriate should be given as well.
Plan Purpose

- The selection of an alternate route is a last, not first option, in addressing Freight Network vertical clearances;
- The premise is that there is simply no viable alternative on a particular project, or in the foreseeable future, where the 18.5’ vertical clearance values can be achieved.
- Any selection of an alternate route should be done with the intention of planning for and providing the needed vertical clearances on the alternate route.
- If approved, the alternate route would ultimately be incorporated as the primary route on the Freight Network.
Determination if Design Deviation request is needed (draft)
Anticipated Questions?

**Question:** Which roadways are the 18.5’ vertical clearance criteria applicable to?

**Draft Response:** Those roadways specified as being on the Texas Highway Freight Network System; these roadways are specified on the Statewide Planning Map maintained by TP&P. This would be applicable to new construction and reconstruction projects.

- [http://crossroads/org/tpp/StatewideMapping](http://crossroads/org/tpp/StatewideMapping)
**Anticipated Questions?**

**Question:** Does the new criteria apply if a bridge is not new, nor being reconstructed?

**Draft Response:** The criteria does not have to be addressed if the subject bridge is not new construction or reconstruction, if you are not working on the bridge, it is not necessary to increase vertical clearance, although it may be advisable. Bridge Widening is considered reconstruction. BMIP, maintenance, and redecking projects will be handled on a case-by-case basis in consultation with the Bridge Division.
Anticipated Questions?

**Question**: Do the clearance requirements apply to all roadways on the Freight Network system?

**Draft Response**: No. The requirements need not apply to Freight Network overpasses, frontage roads, direct connectors off the Network, and entrance and exit ramps that include bridge underpasses.

The 18.5’ vertical clearance should be considered for bridges and incidental vertical obstructions to the Freight Network that support significant origin/destination locations.
Anticipated Questions?

**Question**: Do the associated utilities, OSB’s, and other appurtenances need to meet the 18.5’ criteria?

**Draft Response**: Yes, all of the elements associated with the project on the designated THFN route would need to meet the criteria. Overhead signs on a designated THFN route would need to meet 19.5’ vertical clearance; traffic signals on a designated THFN route would need to meet 19’ vertical clearance.
Question: Can I always choose an alternate route (adjacent or non-adjacent) to the primary route? (Note, an Adjacent alternate route would typically mean a frontage road or collector distributor.)

Draft Response: The selection of an alternate route is a last, not first option, in addressing Freight Network vertical clearances; the premise is that there is simply no viable alternative on this particular project, or in the foreseeable future, where the 18.5’ vertical clearance values can be achieved. Any selection of an alternate route should be done with the intention of planning for and providing the needed vertical clearances on the alternate route. If approved, the alternate route would ultimately be incorporated as the primary route on the Freight Network.
Anticipated Questions?

**Question**: Is a deviation from the 18.5’ requirement considered a design exception?

**Draft Response**: No. A design exception only pertains to the current FHWA controlling criteria (see the Roadway Design Manual, Ch. 1, Section 2, for these controlling criteria). The 18.5’ vertical clearance is a programmatic policy instituted solely by the State of Texas (not FHWA), a requested deviation from this would be processed with the Design Division in consultation with the Bridge Division. A version of the vertical clearance design deviation request form is currently available.
Anticipated Questions?

**Question**: What are some of the anticipated items that would be required in a design deviation request?

**Draft Response**: (A partial, but not all inclusive list)

- The Area type in question (Urban, suburban, rural)

- Is a project programmed in the STIP (for example) that will allow the future meeting of the criteria?

- True ROW constraints, simply not desiring to purchase additional ROW (if available) would not be a valid justification.
Draft Response (cont.):
- Age and condition of existing bridge structure.

- Utility considerations, the breadth of the impacts; simply not desiring to adjust the utilities would not be a valid justification.

- Environmental impacts, simply not desiring to update an approved Environmental document and/or schematic would not be a valid justification. Is there a hard environmental constraint that simply can’t be engineered around; or a scheduling impact that would be onerous in nature.

- Drainage/Geometric constraints.
Draft Response (cont.):

- **IF** an alternative route is being proposed; what are the improvements to the alternative route that are being proposed to facilitate the meeting of the criteria. (Covered in subsequent slides).
Anticipated Questions?

**Question**: I’ve already submitted and had approved by FHWA a design exception for not meeting the 16.5’ vertical clearance requirement on an Interstate; would I still need to provide a design deviation request from the 18.5’ requirement?

**Draft Response**: Yes. The FHWA reviews vertical clearance design exceptions for projects on interstates, POCI’s, and PODI’s; this minimum vertical clearance value is 16.5’. The approved design exception from FHWA can serve as back-up to supplement the separate requested design deviation request from the 18.5’ vertical clearance requirement.
Anticipated Questions?

**Question**: I’d like to propose a freight alternate route, what are the limitations on the selection of a alternate route?

**Draft Response**: The alternate route must be on an On-System roadway; and must be coordinated with the MPO, local, and other affected entities. The placement of permitted loads (14’ or greater in height) on toll facilities is addressed in a later question.

Also, a proposed alternate route may be an adjacent facility such as a frontage road or a collector distributor.
Anticipated Questions?

**Question:** I’d like to propose the use of a freight alternate route, do all of the vertical clearance heights on the alternate route need to meet 18.5’ today?

**Draft Responses:** No. Specify the values of all the vertical clearances on the proposed freight alternate route in the deviation request. What is being proposed on the alternate route to attempt to attain the 18.5’ value. Also, what are the future plans/projects that would target the reaching of the vertical clearance criteria in the future (For example, is the project proposed in the STIP).
Anticipated Questions?

**Question:** Follow-up to previous question; I’d like to submit a design deviation request with a selected alternate route(s), what are some of the other key items (besides the 18.5’ clearance values) that will need to be documented/assessed with respect to the alternate route?

**Draft Response:** Be specific with regards to the alternate route (projected anticipated traffic and truck volumes on alternative route, projected pavement life cycle impacts, additional time of travel, LOS impacts, etc.). What improvements are being proposed to the alternate route to mitigate the impacts of additional truck traffic on the alternate route?
Anticipated Questions?

**Question:** Can replacement of an existing bridge to meet 18’-6” vertical clearance on the freight network be funded with Category 6 funds?

**Draft Response:** Only if the bridge is eligible and selected for the Highway Bridge Program (HBP). The bridge must be structurally deficient or functionally obsolete and have a sufficiency rating of 80 or less to be eligible for the HBP.
Anticipated Questions?

**Question**: Are overlays on roadways below underpass bridges crossing over the freight network allowed?

**Draft Response**: Overlays on freight networks that result in vertical clearances less than 18’-0” are not allowed.
**Anticipated Questions?**

**Question**: Is there a recommended priority for replacement of bridges with a vertical clearance on freight networks less than 18’-6”?

**Draft Response**: It is recommended that the districts evaluate the bridges on their freight networks and give the highest priority to replacement of bridges that have vertical clearances less than 16’-0” beginning with the lowest vertical clearance. Almost 93% of all statewide over-height permits in FY 2016 were 16.5’ or less. Upon request, the Bridge Division can assist the districts in determining vertical clearances of bridges on particular highways in their district.
**Question**: Since we are raising the bridges, are we providing more width as well? Many loads overhang the side of a trailer, we don’t want them hitting columns either.

**Draft Response**: Refer to the Roadway Design Manual for the minimum lane width and horizontal clearance values. The proposed structure will need to be designed to accommodate the anticipated vehicles.
Question: Will there be special filing retention requirements for Deviations similar to how we handle Design Exceptions retention and filing requirements?

Draft Response: It’s anticipated that this would be analogous to the retention periods for design exceptions.
Question: I assume we design to 18’-9” so it will sign to 18’-6”?

Draft Response: No, design to 18’-6”. An 18’-6” vertical clearance would then be signed to 18’-3” (3 inches less than actual designed value).
**Question:** Does re-decking a bridge count as reconstruction?

**Draft Response:** Re-decking a bridge would be handled on a case-by-case basis in consultation with the Bridge Division.
**Question:** Will the TAC be updated to require a minimum vertical clearance of 18'-6"? Currently communication lines are allowed to have a minimum clearance of 18'.

**Draft Response:** The applicable documents relating to utility, signage, and other clearances will be updated to reflect the changes for freight routes.
THANK YOU, AND OPEN FOR ANY QUESTIONS AND INPUTS

Camille Thomason, P.E.
Design Division Director
Why Focus on Technology and Operations?

- Technology trends are a significant driver of future freight flows
- System operations represent key freight transportation challenge and opportunity
- Technology advances are coming, ready or not
- $47 billion gap in Freight Investment Plan
  - Need to find cost effective operational and technology solutions
Goals and Objectives

**PURPOSE**
Position TxDOT as a leader in preparing for and implementing freight network technology and operation solutions

**GOALS**
Develop a detailed plan and an actionable set of Concepts of Operations (ConOps) that will:
- Conceptualize and begin the systems engineering definition
- Leverage at-grade rail crossing information
- Provide implementation guidance for a statewide freight traffic and information system

**OBJECTIVES**
- Provide comprehensive freight traveler data
- Leverage technology and data from existing traffic management centers
- Align with new and planned ITS, as well as emerging and future Connected and Automated Vehicles (CAV) data
- Assess and forecast future developments in connected vehicle and truck automation technology
- Leverage new and emerging programs such as truck platooning, Freight Advanced Traveler Information System (FRATIS), connected trade corridor information, and commercial vehicle enforcement
**Project Approach Overview**

**BASELINING**
- Material review
- Benchmarking
- Gap analysis
  - Identifying gaps
  - Addressing gaps

**FREIGHT NETWORK TECHNOLOGY (FNT) OPPORTUNITIES**
- Identify opportunities
- Assess opportunities
- Define user needs

**FNT CONCEPT**
- Develop FNT strategies
- Develop FNT conceptual framework

**CONCEPT OF OPERATIONS**
- Develop 3 ConOps
- Examine cost effectiveness

**STAKEHOLDER ENGAGEMENT**

**IMPLEMENTATION FRAMEWORK**

**FINAL REPORT AND EXECUTIVE SUMMARY**
Key Tasks

- **Benchmarking**
  - Inventory of existing conditions
    - Identify technologies and systems affecting operations and management of the freight network
    - Compile and map TxDOT and partner information on existing ITS infrastructure
    - Summarize operational and management processes
  - State of the practice assessment
    - Relevant programs and technology developments in Texas
    - Peer states and international practices in freight technology development

- **Gap analysis**
  - Compare the inventory of existing conditions to the state of practice assessment
  - Review urban major freeway corridor and rural freight information gaps across the state
  - Assess emerging programs to address gaps
  - Assess future truck and technology manufacturers to address gaps
Key Tasks

- Strategy Implementation Assessment
  - Emerging technologies
  - Information sharing
  - Incident and workzone management
  - System resiliency
  - Truck parking
  - Positive Train Control
  - Other implementation opportunities
  - TXDOT Readiness

This task will get into significantly greater detail on the most promising multimodal opportunities
Key Tasks

- Development of Freight Network Strategies
  - Recommend strategies
  - Prioritize strategies
  - Document strategies
    - Actions required to implement
    - Costs and benefits
    - Implementation timeline
    - Public and private partners

Develop a series of near-term, mid-term, and long-term multimodal technology strategies – **trucking, ports, border crossings, intermodal and freight transfer facilities**
Example Strategy Element: I-35 FRATIS Workzone Application

<table>
<thead>
<tr>
<th>Workzone Selection</th>
<th>Delay (minutes)</th>
<th>Start Hour</th>
<th>End Hour</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>NB I-35E near US-287 Waxahachie</td>
<td>10</td>
<td>21</td>
<td>22</td>
<td>10/18/17</td>
</tr>
<tr>
<td>NB I-35E near US-287 Waxahachie</td>
<td>15</td>
<td>22</td>
<td>23</td>
<td>10/18/17</td>
</tr>
<tr>
<td>NB I-35E near US-287 Waxahachie</td>
<td>10</td>
<td>23</td>
<td>0</td>
<td>10/18/17</td>
</tr>
<tr>
<td>NB I-35E near US-287 Waxahachie</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>10/19/17</td>
</tr>
<tr>
<td>NB I-35E near US-287 Waxahachie</td>
<td>10</td>
<td>5</td>
<td>7</td>
<td>10/19/17</td>
</tr>
<tr>
<td>Select Workzone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Add another Construction Delay
Apply Forecast Delays

Save Forecast
Example Strategy Element: Texas Truck Platooning

**Without Platooning**

Large gaps are needed to ensure the following driver has enough time to react.

- Large Safety Gap
- Airflow

**With Platooning**

Automatic control means shorter gaps are possible without compromising safety.

- Wireless Communication

**Less Congestion**
Capacity improvements result in less delays and better travel time reliability.

**Cost Savings**
Typical fuel savings average 5-10% for all trucks when platooning.

**Improved Safety**
Automated control of braking and accelerating reduces crash frequency and severity.

**Enhanced Driver Comfort**
Platooning technology takes much of the stress out of stop-and-go driving.
Key Tasks

- Conceptual Framework
  - Develop a detailed Freight Network Technology Conceptual Framework
    - Overall vision, framework and set of objectives that defines the freight network technologies
    - High-level system/network technical concept and information flows

Best Practice
- Articulate an overall vision for the future
- Provide important context
- Expose potential issues
- Promote disciplined planning
- Identify critical roles and responsibilities

The results will support the selection of three technology strategies for which detailed Concept of Operations will be developed
Key Tasks

- Develop formal Concept of Operations
  - Provide the initial systems engineering blueprint for the development of three freight network technologies
    - Build upon user needs identified through stakeholder engagement
    - Provide a detailed description of the desired operation and maintenance of each set of technology applications and specific steps for implementation
    - Illustrate how the technology applications would be used in real-world operations by stakeholders using “Day-in-the-life” operational scenarios
Key Tasks

- **Implementation Framework**
  - Actionable projects and initiatives (time-phased)
  - Responsibilities for implementation
  - Desired outcomes with emphasis on near-term, achievable opportunities
  - Projects and initiatives across a variety of elements including:
    - Pilot and demonstration opportunities
    - Technology company partnership opportunities
    - Necessary changes to planning, operations, organizational structure, legislative/regulatory requirements, safety programs, education and other projects
Key Tasks

- **Final Implementation Plan**
  - Integrate the results into a single, comprehensive Plan document
  - Develop coordination tool which can be used across TxDOT and across state agencies and with partners
  - Include summary briefing for broad outreach
Stakeholder Engagement Plan

- Freight Network Technology (FNT) Working Group
- Texas public-agency-specific workshops
- Public and private sector interviews
- Stakeholder workshops

This Plan is specifically designed to capture and validate real-world freight user needs such that the design and future implementation of the freight network technologies will deliver the forecasted benefits to the users.
## Outcomes

- A blueprint that positions Texas in leadership position for freight technology and operations
- Broad public and private sector participation and support
- Deployable multimodal solutions supported by ConOps, developed according to industry/government standards
- Stakeholder engagement that results in technology plans and ConOps that are fully traceable to actual user needs
- Deployable technologies that provide real-world benefits to public and private stakeholders

The project’s 18 month schedule and technical approach supports responsiveness to opportunities as they arise, including having the Conceptual Framework ready by Spring 2019
REGIONAL FREIGHT PLANS

Freight Advisory Committee

May 31, 2018
Why Regional Freight Plans?

- Project identification and development happen at local level
- State level data do not capture some local freight activity
- Not all freight challenges are on the Texas Multimodal Freight Network
- TFMP policies include expanding freight planning capacity, supporting rural and urban freight movements and enhancing institutional coordination and collaboration
Purpose, Goals and Objectives

**PURPOSE**

Develop regional freight plan to address local and regional freight activities, challenges, opportunities and strategies

**GOALS**

- Enhance multimodal statewide freight transportation and economic competitiveness by integrating freight planning into the local and regional planning process
- Identify how a region’s freight needs and opportunities impact the Texas Multimodal Freight Network and statewide economic competitiveness

**OBJECTIVES**

- Provide a more granular examination of freight trends, assets, issues and opportunities
- Integrate freight into the local and regional planning processes
- Identify unique freight activity, needs, opportunities and recommendations specific to a region
Key Work Elements

Regional Freight Plan

- Material review and data assessment
- Regional freight goals and objectives
- Freight conditions, needs and issues
- Regional multimodal freight network
- Freight needs, bottlenecks and connectivity
- Freight land use and community impact analysis
- Project prioritization and freight performance measures
- Freight projects, policies and strategies

Stakeholder Engagement

- Coordination with MPO and local governments
- Regional workshops and listening sessions
- Stakeholder interviews
Midland/Odessa Region

- Rapidly growing region spurred by growth in freight intensive petrochemical industry
- Primarily rural setting struggling to keep up with infrastructure needs

Presidio Region

- Trade and economic development opportunities associated with cross border trade and market access
- Maximize return on investment in commercial border crossing
MIDLAND/ODESSA REGIONAL FREIGHT PLAN
Midland/Odessa Region Specific Objectives

- Supplement state freight data with local data collection specific to petrochemical and construction activity.
- Identify and assess the regional freight network including locally significant freight facilities and first/last mile connections.
- Examine the role of local land use in freight transportation demand and operations.
- Enhance regional freight forecast to account for the rapidly growing and fluid freight volumes arising from the energy sector and resulting economic growth.
- Develop recommendations for enhancing freight mobility and safety on local roads.
- Support identification of freight projects for inclusion in the MPO’s transportation improvement program (TIP) development.
- Document the importance of regional freight movements to the statewide and national economies.
What the Local Stakeholders Are Saying

- The local economy will grow faster than the rest of the state over the next 5 years.
- Changes in energy-related dynamics and policy and business climate will have a large impact on volume of freight flows.
- Transloading and multimodal movement will have significant impact on how freight moves in the region.
- Regulations/institutional settings regarding the carrier industry will significantly impact freight movements.
## Schedule and Milestones

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month 1</td>
<td>Stakeholder outreach plan, freight data and studies review</td>
</tr>
<tr>
<td>Months 2-3</td>
<td>Stakeholder interviews, data collection</td>
</tr>
<tr>
<td>Months 4-7</td>
<td>Regional freight profile, needs assessment, project prioritization and performance measures</td>
</tr>
<tr>
<td>Months 8-10</td>
<td>Regional freight strategies and recommendations, regional freight investment plan and implementation program</td>
</tr>
<tr>
<td>Months 11-12</td>
<td>Final Regional Freight Mobility Plan and executive summary</td>
</tr>
</tbody>
</table>
PRESIDIO REGIONAL FREIGHT PLAN
Presidio Region Specific Objectives

- Document cross border trade volumes, impacts and opportunities
- Conduct a multimodal freight and trade assessment and evaluate the impacts of increased trade volumes
- Develop strategies to:
  - Enhance cross border freight movements
  - Improve market access and connectivity
  - Facilitate freight and trade based development opportunities
Freight and Trade Assessment and Freight Oriented Development

- Expand upon Texas Freight Mobility Plan and coordinate with Border Master Plan to examine business case for freight investments by:
  - **Identifying** the key origins and destinations for goods moving into, out of, and through the Presidio region
  - **Quantifying** the existing and future freight market potential by trade lane and commodity
  - **Assessing** competitive position of the Presidio border crossing with respect to distance, price and service
  - **Evaluating** the adequacy of the cargo delivery/freight infrastructure
  - **Developing** a value proposition and business case for moving freight through Presidio
Evaluate Regional Freight and Trade Development Opportunities

- Implementation Strategy based on the following attributes:
  - **Operational feasibility** - Workable and compatible
  - **Commercial feasibility** - Commercially competitive to attract private sector
  - **Net private benefits** - Private sector must be willing to invest
  - **Net public benefits** - Must yield public benefits
  - **Physical feasibility** - Existing land use with the right combination of location, size and transportation infrastructure
  - **Political Feasibility** - Acceptable to the local community and meet the criteria of funding sources.
## Schedule and Milestones

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<td>Months 4-6</td>
<td>Regional freight profile, needs assessment, trade development assessment, project prioritization and performance measures</td>
</tr>
<tr>
<td>Months 7-8</td>
<td>Regional freight strategies and recommendations, regional freight investment plan and implementation program</td>
</tr>
<tr>
<td>Months 9-10</td>
<td>Final Regional Freight Mobility Plan and executive summary</td>
</tr>
</tbody>
</table>
What Do We Mean by “Truck Parking?”

Types of Facilities

• **Public**
  • Typically *rest areas* and welcome centers, and in some cases at weigh stations or truck inspection locations.
  • In nearly all cases, only limited services and amenities are available at public rest areas or welcome centers.

• **Private**
  • Typically available at commercial *truck stops* for use by drivers accessing associated facilities for fuel, maintenance, food, bathing facilities, and other amenities.
Truck Parking: Key Considerations

- Demand Versus Supply Considerations
- Safety Considerations
- Changes in Transportation Legislation
- Multitude of public and private stakeholders
Private Sector Freight Stakeholders

- Logistics or Supply Chain Managers
  - Key Freight-Dependent Industries, 3rd Party Logistics
- Shippers and Receivers
  - Manufacturer, Cargo Owner, or Consignee
- Carriers
  - Truck, Rail, Marine Terminals, Air Cargo
- Industry and Advocacy Groups
  - Chamber of Commerce, Industry Associations, Economic Development
- Land Developers
  - Industrial, Commercial, and Residential
- Warehouse and Distribution Center
  - Owners or Operators
Demand and Supply

Demand-Supply Mismatch

Significant growth in truck travel demand over last decades

Supply of Truck Parking facilities not growing at same pace

Changes in Supply Chain and Logistics Practices also affect demand for truck parking (lean inventories....)
Mismatches of Demand and Supply

Differences Across Country in Truck Parking Supply

- Different capacity challenges by state and within critical corridors
- Different needs due to “freight intensive” areas (e.g. intermodal facilities, ports or major industrial areas)
- Funding/Financing for new truck parking capacity

Differences Between Urban and Rural Truck Parking Supply

- Scarcity in truck parking in some metropolitan areas
- Many rest areas originally sited in exurban and rural areas along Interstate highways—may not align with current demand

Land Use and Zoning Considerations May Affect Ability to Grow Truck Parking Capacity

- Zoning and land use requirements impact expansion of public or private truck parking supply
National Coalition on Truck Parking

2016 Regional Meetings

• June 8, 2016 -- Salt Lake City, Utah
• July 12, 2016 -- Hanover, Maryland
• August 26, 2016 -- Dallas, Texas
• October 5, 2016 -- Grain Valley, Missouri

Key Observations from Regional Meetings

• Parking capacity
• Technology and data
• Funding and finance
• Coordination with regional/local governments
<table>
<thead>
<tr>
<th>Resource Format</th>
<th>Title</th>
<th>Use/Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report</td>
<td>National Coalition on Truck Parking: Activity 2015-2016 Report</td>
<td>Understand key activities and strategic direction of the National Coalition on Truck Parking</td>
</tr>
<tr>
<td>Report</td>
<td>2015 Jason’s Law Survey and Comparative Assessment</td>
<td>Develop knowledge of the national and state specific findings and issues resulting from the first Jason’s Law survey and summary report.</td>
</tr>
</tbody>
</table>
# Key Truck Parking Resources

<table>
<thead>
<tr>
<th>Resource Format</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Report</td>
<td>NCHRP Report 317: <em>Synthesis of Highway Practice - Dealing with Truck Parking Demands</em> (2003)</td>
<td>Develop knowledge on specific practices that have been used to manage increasing demand for commercial motor vehicle parking.</td>
</tr>
<tr>
<td>Webinar</td>
<td>October 2017: Special Webinar on <em>Truck Parking Findings and Next Steps from the National Coalition</em></td>
<td>Develop knowledge on the key national truck parking issues and challenge and strategies the National Truck Parking Coalition is undertaking to address these.</td>
</tr>
<tr>
<td>Memo</td>
<td><em>Truck Parking Funding Eligibility under Federal-aid Highway Program Memo</em></td>
<td>Identify programs that can be used to fund truck parking projects.</td>
</tr>
</tbody>
</table>
Describe and categorize the most significant truck parking needs in your state or region.

- Capacity—Demand/Supply
- Capacity—Facility Design
- Supply Chain Issues
- Driver Considerations
- Stakeholder Coordination and Partnering
- Information Technology and Communication
- Others?
Key Factors in Successful Implementation:

• Develop new approaches and data to support advanced measurement of truck parking and inclusion in transportation planning.

• Educate and provide outreach with MPOs, State Highway Agencies, and private sector stakeholders to ensure that all partners are aware of the opportunities to advance projects and the eligibility of these projects for funding under the Federal-Aid Highway Program.

• Investigate P-3 approaches that involve private sector partners in the development of truck parking investments.
Welcome to American Truck Parking. This website is designed to show you truck parking availability and truck parking locations. You can find truck parking at public rest areas, private truck stops, and truck fueling locations. You can also search for public alternative fueling locations that are capable of receiving 5-axle trucks.

There are limited locations in California where we show dynamic truck parking availability that is updated at least every five minutes. Our truck parking database is expanding all the time to incorporate new truck parking locations nationwide. For more background, see About Us.
Case Study: Unilver

Project Background

• Utilized industrial park facility

• Alignment of supply chain considerations

• Line haul between Canadian supplier and Harrisburg, PA, area receiver

• Accommodate truck driver hours-of-service needs with on-site rest facilities.

Transferable Ideas/Approaches?

• Key role of private sector solving truck parking problem

• Improved reliability of deliveries

• Secured space within distribution center for drivers to rest

• “Safe Haven” approach offers on-site secure, safe truck parking opportunities
Federal Funding Sources

FHWA Office of Operations Memo (12/5/16) presents the programs that can be used to fund truck parking projects:

**Core Programs:**
- Surface Transportation Block Grant Program;
- National Highway Freight Program;
- Highway Safety Improvement Program;
- National Highway Performance Program;
- Congestion Mitigation/Air Quality Program.

**Discretionary Programs:**
- INFRA Grants;
- TIGER Grants.
Truck Parking Technical Roundtables

Operation of the Round Tables:

• Available through FHWA’s Resource Center;
• Bring regional and local stakeholders together;
• Establish a common understanding of the frequency and severity of truck parking problems;
• Consider the pallet of solutions available focusing on those most applicable to the regional/local situation.
• Construct an Action Plan laying out specific actions, owners of those actions and timetable for delivery.
Truck Parking Contacts at FHWA

- Truck Parking Program and National Work Group Inquiries:
  Tiffany Julien, Freight Office
  tiffany.julien@dot.gov
  (202) 366-9241

- Jason’s Law Update Inquiries:
  Jeff Purdy, Freight Office
  jeffery.purdy@dot.gov
  (202) 366-6993

- Technical Assistance and Technical Roundtables:
  Tom Kearney, Resource Center Freight & TPM Team
  tom.kearney@dot.gov
  (518) 391-9508
Truck Parking

A Growing Concern for Texas and its Trucking Industry
What we know

• 182,370 Heavy & Tractor Trailer Drivers in Texas which is more than Louisiana (21,190); Oklahoma (24,680); Arkansas (32,640); and New Mexico (9,940) combined together. Texas has 10.4% of total Heavy & Tractor Trailer Drivers in USA. Total USA= 1,748,140 drivers.

• 2.8 billion tons of freight flow (2012 number) in Texas.

• Houston-The Woodlands-Sugar Land, Tx. MSA has third highest level of truck driver employment in Nation (Behind, Chicago and New York).

• Dallas-Plano-Irving, Texas MSA has fourth highest level of truck driver employment in USA.
Annual Average Daily Traffic on National Highway Freight Network System
Truck Parking in Context With Texas Freight Mobility Plan

• Texas Highway Freight Network to Include:
  - USDOT designated National Highway Freight Network (NHFN)
  -All Highways scoring 15 and above in designation for NHFN
  -All highways on the Trunk System are on NHFN regardless of Score
  - All Highways on Previously Adopted Freight Network are part of NHFN regardless of score
Critical Urban Freight Corridor (CUFC) Designation for Texas

Available CUFC Miles per USDOT 373
Large Area (>500,000 MPOs) Submission
- Alamo Area MPO (AAMPO) 50
- Capital Area MPO (CAMPO) 15
- El Paso MPO (EPMPO) 20
- Hidalgo County MPO 32
- Houston-Galveston (HGAC) 91
- North Central Tx (NCTCOG) 93
Subtotal 301

Remaining Miles to Designate 72

https://tinyurl.com/18mz94t
Current State of Truck Parking in Texas

- Truck parking currently handled with no government involvement.
- Primary resources for truck parking are roadside rest stops, truckstops (109+ in Houston area), private roads/lots (including hotels, Wal-Mart, etc.), and parking along streets and highways.
- With advent of FMCSA’s rules for Electronic Log Devices, truck parking has become more critical issues as Drivers that are out of hours must find place to park trucks.
- Texas currently has no plan in place to help facilitate parking for Trucking Industry although studies are being done on Freight Villages.
- Trucking Congestion, both in Parking and Driving can adversely impact Critical Urban Freight Corridors (CUFCs) in Texas.
Possible Approaches to help Truck Parking in Texas: Two Different Approaches

1. Regional Truck Parking Information System (MAASTO TPIMS Example)
   - Network developed for safe, convenient parking areas with ability to collect and broadcast real-time parking availability to Drivers.
   - System being rolled out in that covers nine high volume freight corridors in 8 state region in Midwest.
   - Funded by $25 million Federal Grant.

2. Freight Villages
   - Intermodal transfer point located at nexus of modes: road, rail, sea, air
   - Freight Consolidation (Cross Dock)
   - Promotion of Synergies
   - Value added services (Food, Fuel, Maintenance, Showers)
   - Has been implemented in Italy, Germany, New Jersey, Ft. Worth, Texas (Alliance Texas Facility)
Truck Parking Information Management System & Freight Villages- Both can Work

**Truck Parking Information Management System (TPIMS)**

**Pros**
1. Can provide truckers real time view of available parking down the road and help prevent congestion and incidents.

**Challenges:**
1. Costs money along with decision as to whether it is Texas only system or to cooperate with surrounding States.
2. Requires public and private sector ongoing cooperation and coordination.

**Freight Villages**

**Pros**
1. Can reduce congestion in traffic for overall geographical area while providing productivity and maximize movement of freight.
2. Tend to be friendlier to small firms but benefit from strong anchor tenants.

**Challenges:**
1. Coordination between users
2. Vertical Supply chains vs. Horizontal Cooperation.
3. Coordination between levels of government.
4. Risk of Oversupply of Freight Villages
5. Most Freight Villages require Rail Service
Thoughts to Consider

1. Initial Priority for I-45, I-35, and I-10 traffic corridors where greatest concentration of trucks and trucking in Texas is at this time.
2. Texas is at least three years behind MAASTO coalition if it wants to implement TPIMS system.
3. Private and Public Sector involvement is needed for development of Freight Village Concept.
4. Time is of the essence. Enough meetings- start doing something now.
Understanding The Impacts of Truck Parking Shortages

Dan Murray
American Transportation Research Institute
ATRI

Trucking industry’s NFP research organization

- Safety
- Mobility
- Economic Analysis
- Technology
- Environment

www.TruckingResearch.org
Board of Directors
2017 Top Industry Issues

1. Driver Shortage (7)
2. ELD Mandate (1)
3. Hours-of-Service (2)
4. Truck Parking (4)
5. Driver Retention (8)
6. CSA (6)
7. Cumulative Economic Impact of Regulations (3)
8. Driver Distraction (10)
9. Transportation Infrastructure / Congestion/ Funding (9)
10. Driver Health and Wellness (12)
## Top Issues Drivers vs. Carriers

<table>
<thead>
<tr>
<th>Commercial Drivers</th>
<th>Motor Carrier Execs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ELD Mandate</td>
<td>1. Driver Shortage</td>
</tr>
<tr>
<td>2. Truck Parking</td>
<td>2. ELD Mandate</td>
</tr>
<tr>
<td>3. Hours-of-Service</td>
<td>3. Driver Retention</td>
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<tr>
<td>4. Cumulative Economic Impact of Trucking Regulations</td>
<td>4. CSA</td>
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<tr>
<td>5. Driver Distraction</td>
<td>5. HOS</td>
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<tr>
<td>6. CSA</td>
<td>6. Cumulative Economic Impact of Trucking Regulations</td>
</tr>
<tr>
<td>7. Driver Health/ Wellness</td>
<td>7. Transportation Infrastructure / Congestion/ Funding</td>
</tr>
<tr>
<td>9. Transportation Infrastructure / Congestion/ Funding</td>
<td>9. Truck Parking</td>
</tr>
<tr>
<td>10. Autonomous Vehicles</td>
<td>10. Tort Reform</td>
</tr>
</tbody>
</table>
Truck Parking Research

- Truck Parking Diaries
- Drivers kept 14 days of parking activity
- Includes when, where, how long to find a spot, how many spots occupied by non-CMVs, lost productivity, etc
- 148 completed diaries were returned between June and September 2016
  - 2,035 days of truck parking activity
  - 4,763 unique stops
Average Remaining Drive Time

Average = 56 minutes/day
Opportunity Cost = $4,600 annually
ELDs: nearly 2x as likely to spend 30+ minutes looking for parking
Cumberland County, PA Rest Area: I-81 Northbound
January, 2017
Frequency of Unauthorized/Undesignated Parking

- **Daily**: 9.5%
- **Never**: 10.8%
- **5-7 Times per Week**: 12.2%
- **Twice per Month**: 5.4%
- **3-4 Times per Week**: 36.5%
- **1-2 Times per Week**: 25.7%
### 2nd Tier Factors Influencing Stop Location Choices

<table>
<thead>
<tr>
<th>Important Factor</th>
<th>Percent of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximity to Route / Destination</td>
<td>96.5%</td>
</tr>
<tr>
<td>Restroom / Showers</td>
<td>79.8%</td>
</tr>
<tr>
<td>Expected Parking Availability</td>
<td>75.5%</td>
</tr>
<tr>
<td>Width of Parking Space / Ease of Access</td>
<td>31.9%</td>
</tr>
<tr>
<td>Restaurant</td>
<td>30.5%</td>
</tr>
<tr>
<td>Security</td>
<td>20.3%</td>
</tr>
<tr>
<td>Company Policy / Loyalty Program</td>
<td>18.1%</td>
</tr>
<tr>
<td>Internet</td>
<td>6.9%</td>
</tr>
<tr>
<td>Laundry</td>
<td>4.0%</td>
</tr>
<tr>
<td>Maintenance / Service Center</td>
<td>3.7%</td>
</tr>
<tr>
<td>Weather Conditions</td>
<td>3.6%</td>
</tr>
</tbody>
</table>
Tools Used to Find Parking

- Website / Application: 55.5%
- GPS: 53.4%
- Book: 37.7%
- Other: 23.3%
- None: 8.2%
- Blank: 0.7%
“Easy” Fixes

- **Public Sector**
  - Increase time limits at public rest areas
  - Allow parking at weigh stations, other public facilities
  - Reduce legal obstacles (e.g. zoning laws) for private truck stop operators to open/expand facilities

- **Truck Parking Availability Information**
“Easy” Fixes

- **Private Truck Stops**
  - Better management of available spaces
  - Separate space for bobtails/non-CMVs

- **Motor Carriers**
  - Carrier-paid truck parking reservation fees may offset productivity loss from pulling over early, reduce driver stress, improve retention

- **Professional Drivers**
  - Plan, plan, plan
  - Better utilization of available spaces
Questions?

Dan Murray
dmurray@trucking.org
www.TruckingResearch.org
TEXAS STATEWIDE TRUCK PARKING STUDY

Freight Advisory Committee
Why Should TxDOT Care About Truck Parking?

- Lack of information causes truck drivers to make challenging decisions regarding truck parking

**IMPACTS**
- Safety and congestion impacts
- Productivity and economic competitiveness impact
- Enforcement officials have to make difficult trade-offs

- Park early and lose drive time
- Park in unauthorized spot
- Drive beyond legal limit
Purpose, Goals and Objectives

Purpose

- Assess and address truck parking needs with practical, innovative and cost-effective strategies

Goals

- Enhance the safety, mobility and efficiency on the Texas Multimodal Freight Network
- Develop actionable strategies to meet truck parking needs across the state by partnering with the private sector
- Use technology to optimize existing truck parking assets

Objectives

- Improve safety on the roadways and mitigate community impacts associated with truck parking
  - Identify specific needs for truck parking in Texas
  - Identify technologies and other strategies to address truck parking needs
  - Assess the ability of current and future technologies to help drivers
  - Recommend strategies to address current and future truck parking needs
  - Develop an action plan for technology implementation
Project Approach Overview

1. COLLECT DATA AND IDENTIFY BEST PRACTICES
2. DEVELOP INVENTORY AND UTILIZATION
3. ASSESS CURRENT AND FUTURE CONDITIONS
4. DEPLOY IMPLEMENTATION PLAN
5. ENRICH FINDINGS WITH STAKEHOLDER WORKSHOPS (ROUND 2)
6. STAKEHOLDER WORKSHOPS (ROUND 1) AND MOTOR CARRIER SURVEY
7. EXPLORE TRUCK PARKING OPTIMIZATION MODEL

ASSESS CURRENT AND FUTURE CONDITIONS

DEVELOP IMPLEMENTATION PLAN

DEVELOP RECOMMENDATIONS

ENRICH FINDINGS WITH STAKEHOLDER WORKSHOPS (ROUND 2)

DEVELOP INVENTORY AND UTILIZATION

COLLECT DATA AND IDENTIFY BEST PRACTICES

STAKEHOLDER WORKSHOPS (ROUND 1) AND MOTOR CARRIER SURVEY

EXPLORE TRUCK PARKING OPTIMIZATION MODEL
Key Tasks

NEEDS ASSESSMENT ACTIVITIES

Texas Data and Impacts
- Crash data for highways/ramps
- Freight forecast impacts
- Safety impacts
- Land use impacts
- Optimization model

Other States
- Review of literature
- Laws and regulations
- Current inventory and utilization

RECOMMENDATIONS

- Current and anticipated parking technologies
- Other strategies for coordination and information sharing
- Assessment of parking priority locations
- Solution recommendations
- Action plan

STAKEHOLDER FEEDBACK

- Stakeholder outreach plan
- TxFAC coordination
- Motor carrier survey
- Stakeholder interviews
- Stakeholder workshops
Stakeholder Engagement Plan

Stakeholder-informed process throughout

- TxFAC
- Trucking companies, Texas Trucking Association and industry groups
- Private truck parking facility operators
- TxDOT districts, MPOs and border crossing agencies
- Local governments
- Texas State Highway Patrol
- Distribution centers and shippers
- 3PLs and brokers
- Multimodal or intermodal facility operators
- Other states and other state trucking associations
## Schedule

<table>
<thead>
<tr>
<th>Scheduled Activities</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project startup and Stakeholder Outreach Plan</td>
<td>May/June 2018</td>
</tr>
<tr>
<td>TxFAC coordination</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Information collection (state of practice, laws/regs, data)</td>
<td>May – Sept 2018</td>
</tr>
<tr>
<td>Stakeholder workshops</td>
<td>Aug 2018 and April 2019</td>
</tr>
<tr>
<td>Motor carrier survey</td>
<td>Sept 2018</td>
</tr>
<tr>
<td>Truck parking inventory and utilization</td>
<td>Nov 2018</td>
</tr>
<tr>
<td>Current and expected future conditions</td>
<td>Jan 2019</td>
</tr>
<tr>
<td>Develop recommendations and implementation plan</td>
<td>July 2019</td>
</tr>
<tr>
<td>Final Report</td>
<td>Sept 2019</td>
</tr>
</tbody>
</table>
Examples of Intended Study Impacts

- Strategies to address truck parking challenges before they become critical to a community
- Improved safety and reduced congestion in areas with severe truck parking challenges
- Improved productivity and economic competitiveness
- An action plan for reducing negative impacts over both the short term and long term
TEXAS FREIGHT CENTRIC DESIGN GUIDELINES

Freight Advisory Committee
Why are Freight Centric Design Guidelines Needed?

- Roads may not be designed for today’s trucks, especially off core interstate corridors
  - Access routes, first/last miles, work zones, etc.
- Impacts performance: safety, productivity, mobility, reliability, and resiliency
- How big is the design factor in these issues? Is it worth the cost to fix it? How does the answer vary with conditions?
Purpose, Goals and Objectives

**PURPOSE**
Address roadway functional design and operational issues related to the movement of freight in Texas

**GOALS**
- Enhance the safety, mobility and conditions on the Texas Multimodal Freight Network
- Establish design guidelines for incorporation of freight vehicle considerations

**OBJECTIVES**
- Apply cost-effective methods to improve statewide and first/last mile freight system capacity, operations, connectivity, reliability, safety, and resilience
- Increase safety on roadways, work zones, and at-grade rail crossings
- Improve operability and access for public truck parking and major freight generators
- Reduce cost and frequency of highway maintenance related to truck freight
- Improve multimodal access management on and to the freight network
- Prepare the state for automated and connected vehicle operations
Tight Access
Narrow and Short Access
Rail At-Grade Crossings
Congested, Constrained Work Zone
Hurricane and Extreme Weather Events
High and Wide Loads
Bridge Strikes
Project Approach Overview

DATA COLLECTION
- Literature Review
- Adjacent State Practices
- Comparison Matrix
- Current TxDOT Efforts
- Truck Parking Analysis
- Stakeholder Workshops

SAFETY AND CONGESTION ANALYSIS
- Safety Analysis
- Corridor Analysis
- Hot-Spot Analysis
- Congestion and Resiliency Regional Analysis
- Regulatory Consistency

DESIGN ISSUE IDENTIFICATION
- Geometric
- Operations
- Issue Matrix

DESIGN SOLUTIONS
- Fiscal Impact Analysis
- Cost Effectiveness

DATA COLLECTION AND ANALYSIS

DRAFT FREIGHT CENTRIC DESIGN GUIDELINES

STAKEHOLDER WORKSHOPS AND TxFAC REVIEW

REVISED FREIGHT CENTRIC DESIGN GUIDELINES

FINAL FREIGHT CENTRIC DESIGN GUIDELINES

REPORT AND EXECUTIVE SUMMARY

WORKING GROUP REVIEW

SAFETY AND CONGESTION ANALYSIS
Key Tasks

DATA COLLECTION

- Review literature, including work zone treatment and multimodal design criteria from AASHTO and TxDOT (e.g., TxDOT 5R Mobility Corridor Design Criteria)
- Review Texas Freight Mobility Plan (TFMP) data sets
- Review and compare adjacent state design guidelines
- Document current TxDOT efforts: bridges, roadway design, traffic operations, construction, ITS
- Identify factors for truck parking, including access design, ITS and regulations
- Engage stakeholders in first round of workshops, coordinated with Truck Parking study
Key Tasks

SAFETY AND CONGESTION ANALYSES

- Multimodal safety, congestion and resiliency analysis
  - Facility types (e.g., urban/rural, interstates, intermodal connectors)
  - Operational factors (e.g., connectivity, ITS, wayfinding)
  - Performance factors (e.g., bottlenecks)

- Regulatory consistency impact analysis
  - Potential effect of aligning TX regulations with those of adjacent states
    - Cost
    - Operational impacts
    - Local and industry impacts
Key Tasks

IDENTIFICATION OF DESIGN ISSUES

- Identify and prioritize design factors contributing to:
  - Crashes
  - Congestion and operational performance
  - Roadway geometrics, pavement and bridges
  - Intersections and interchanges
  - Signage, facility and multimodal access, parking, land use
  - Disruption
- Matrix of issues and impacts (on safety, service, congestion, operations, maintenance)

IDENTIFICATION OF DESIGN STRATEGIES

- Compile design solutions for priority issues
- Conduct fiscal impact analysis: case studies on costs per mile based on applying solutions
- Examine cost-effectiveness of solutions
- Draft guidelines
  - Structural and geometric
  - Intersection & interchange design
  - Construction and maintenance, operations
  - Advanced technology
- Two rounds of vetting with Stakeholders, TxFAC, and TxDOT
Stakeholder Engagement Plan

- Working Group meetings
- Stakeholder workshops and industry forums
  - Coordinated with Truck Parking Study workshops
- Stakeholder engagement has a critical function in vetting the draft Guidelines
Expected Outcomes

- Systematic improvement of conditions affecting freight performance end to end
  - First and last mile
  - Including work zones, parking, and intermodal access
  - Resiliency
- Reduces supply chain costs through better safety, productivity, reliability and resiliency
- Reduces cost to public through enhanced safety, lower maintenance, longer pavement life, and improved congestion
# Deliverables and Schedule

<table>
<thead>
<tr>
<th>Deliverable</th>
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<tbody>
<tr>
<td>Literature review, adjacent state review and comparison matrix, documentation of current TxDOT effort</td>
<td>Sept 2018</td>
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<tr>
<td>Safety and congestion analysis, regulatory consistency impact analysis</td>
<td>Dec 2019</td>
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<tr>
<td>Design issue matrix and technical memorandum</td>
<td>Jan 2019</td>
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<tr>
<td>Cost effectiveness methodology and fiscal impact</td>
<td>Feb 2019</td>
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<tr>
<td>Freight Centric Design Guidelines (drafts and final)</td>
<td>May 2019</td>
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<tr>
<td>Stakeholder workshops (with Truck Parking Study)</td>
<td>Aug 2018   Apr 2019</td>
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<tr>
<td>Final report and executive summary</td>
<td>June 2019</td>
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