OVERVIEW OF TODAY’S MEETING
Today’s Meeting

- Recap of last meeting and approval of minutes
- Agenda and objectives for today
  - Stakeholder workshops recap
  - Freight System Designation
  - Trends and challenges for future freight flows
  - TFMP goals and objectives
  - FAST Act formula fund projects
STAKEHOLDER WORKSHOPS
Regional Workshops – Round 1

Week 1
- Jan. 31 – Laredo, Feb. 1 – Brownsville, Feb 2 - Corpus Christi

Week 2
- Feb. 8 – Atlanta/Texarkana, Feb. 9 – Dallas/Fort Worth

Week 3

Week 4
- Feb. 28 – Beaumont, March 2 – San Antonio, March 3- Houston
# Workshop Participation

<table>
<thead>
<tr>
<th>Workshop Location</th>
<th>Date</th>
<th>Registrants</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laredo</td>
<td>31-Jan</td>
<td>58</td>
<td>53</td>
</tr>
<tr>
<td>Brownsville</td>
<td>1-Feb</td>
<td>56</td>
<td>51</td>
</tr>
<tr>
<td>Corpus Christi</td>
<td>2-Feb</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>DFW</td>
<td>8-Feb</td>
<td>54</td>
<td>50</td>
</tr>
<tr>
<td>Texarkana</td>
<td>9-Feb</td>
<td>27</td>
<td>25</td>
</tr>
<tr>
<td>El Paso</td>
<td>21-Feb</td>
<td>36</td>
<td>17</td>
</tr>
<tr>
<td>Midland/Odessa</td>
<td>22-Feb</td>
<td>33</td>
<td>37</td>
</tr>
<tr>
<td>Lubbock</td>
<td>23-Feb</td>
<td>44</td>
<td>34</td>
</tr>
<tr>
<td>Beaumont</td>
<td>28-Feb</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>San Antonio</td>
<td>2-Mar</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>Houston</td>
<td>3-Mar</td>
<td>84</td>
<td>77</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>425</strong></td>
</tr>
</tbody>
</table>
Content Covered in Regional Workshops

- Recap TFMP status and update plan
  - New FAST Act elements
  - Enhancements and expansions

- Focused input on:
  - Trends and policies influencing near-term and long-term freight flows
    - Interactive polling
    - Discussion of regional trends and implications
  - System designation including critical urban and rural corridors
    - System designation system overview
    - Break-out group discussions
Over the next 5 years, do you think the economy in the region will:

- Decline
- Stay about the same
- Grow slower than the rest of the state
- Grow faster than the rest of the state
- Grow about the same as the rest of the state
- Not Sure
What do you think will have the largest impact on region’s economy:

- Population Growth
- Trade Dynamics and Policy
- Energy Dynamics and Policy
- Business Climate
- Other
Technology

What technologies do you think will have the greatest impact on freight movements in your region in the next 10 years:

- Autonomous and connected trucks
- Alternative delivery systems (drones, freight shuttles, etc.)
- Advances in manufacturing
- "Uber-like" cargo shipping
- Warehouse and factory automation
- Other
What changes in business practices will have the greatest impact on freight movements in your region in the next 10 years:

- Near-shoring
- Off-shoring
- Supply chain traceability and identity preservation
- Omni-channel marketing and distribution
- Transloading
- Other
What changes in consumer practices will have the greatest impact on freight movements in your region in the next 10 years:

- E-Commerce
- Sharing economy
- Same day/next day delivery expectations
- Changing consumer attitudes (socially-based consumption)
- Changing consumer demographics and taste
- Other
What regulations and/or institutional settings do you think will most impact freight movements in your region:

- Environmental
- Carrier industry (trucking, rail, waterborne)
- Labor agreements
- Security measures
- Foreign Trade Zones (FTZs)
- Other
System Designation Process: What We Heard...

- Overall support for systematic approach for designating system
- Additional criteria for consideration
  - Movement of HazMat
  - System redundancy
  - Access to FTZ
  - Ability to accommodate freight movements
- Supply chains
  - Consider adding forestry and paper products
  - Separate military as own industry
System Designation Process: What We Heard...

- Weighting of criteria
  - Economic analysis metrics either most important or least important
  - Supply chain metrics generally more important than goods movement criteria
  - Accessibility and connectivity most important in rural regions

- Important regional facilities
  - Local roads that serve as last mile connectors
  - New or proposed facilities
DESIGNATING THE TEXAS FREIGHT SYSTEM

Critical Urban and Rural Corridors
Defining Critical Urban Corridors

- Connects an intermodal facility to:
  - the PHFS
  - the Interstate System
  - an intermodal freight facility
- Located within a corridor of a route on the PHFS and provides an alternative highway option important to goods movement
- Serves a major freight generator, logistic center, or manufacturing and warehouse industrial land
- Important to the movement of freight within the region, as determined by the MPO or the State.
Defining A Critical Rural Corridor

One or more of the following seven elements:

- Minimum of 25 percent of the AADT from trucks
- Provides access to energy exploration, development, installation, or production areas
- Connects the PHFS or the Interstate System to facilities that handle more than:
  - 50,000 20-foot equivalent units per year; or
  - 500,000 tons per year of bulk commodities;
- Provides access to:
  - a grain elevator;
  - an agricultural facility;
  - a mining facility;
  - a forestry facility; or
  - an intermodal facility
- Connects to an international port of entry
- Provides access to significant air, rail, water, or other freight facilities in the State
- Vital to efficient movement of freight of importance to the State’s economy
Objective

- Develop systematic process for designating critical network and corridors
  - Tied to national and TFMP goals, objectives and performance measures
  - Readily available data
  - Replicable
  - Transparent
  - Stakeholder informed
- Accomplished using GIS based tool for efficiency and objectivity
Example System Designation Process

TFMP Goals

- Economic Growth and Prosperity
  - Safe and efficient freight movement
  - Maintain and enhance state of good repair
  - Multimodal connectivity
  - Embrace environmental stewardship and technological innovations

Analysis

- General economic analysis
- Goods movement analysis
- Supply chain analysis for targeted industries
- Market connectivity & accessibility analysis

Modal designation

- Highways
- Intermodal connectors
- Marine
- Rail
- Aviation
- Pipeline

Texas Freight Advisory Committee
March 9, 2017
Methodology

- Develop metrics for each goal and analysis area
- Quantify value for each metric
- Each metric would be assigned a scoring system based on distribution of values (e.g., 5 for highest range and 1 for lowest range)
- The scores would be summed across all the metrics for each facility
- Facilities would be ranked based on total scores
- The resulting critical facilities evaluated for project readiness and funding availability for final designation
- Incorporate/compare against MPO input
<table>
<thead>
<tr>
<th>Factor</th>
<th>Metric</th>
<th>Measure</th>
<th>Scoring Method</th>
<th>Data Source(s)</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic</td>
<td>Workforce Size</td>
<td>Census tract workforce size compared to tract population relative to state average</td>
<td>0  = 0&lt;br&gt;1 – 49  = 0.2&lt;br&gt;50 – 99  = 0.4&lt;br&gt;100 – 149  = 0.6&lt;br&gt;150 – 199 = 0.8&lt;br&gt;200 and above  = 1.0</td>
<td>US Census 2015</td>
<td>Higher density of workers indicates a competitive and efficient labor market.</td>
</tr>
<tr>
<td></td>
<td>Educational Attainment</td>
<td>Census tract relative to state average</td>
<td>0  = 0&lt;br&gt;1 – 49  = 0.2&lt;br&gt;50 – 99  = 0.4&lt;br&gt;100 – 149  = 0.6&lt;br&gt;150 – 199 = 0.8&lt;br&gt;200 and above  = 1.0</td>
<td>US Census 2015</td>
<td>Well trained workforce desirable for investment. Population 18 years of age or older with high school or higher education.</td>
</tr>
<tr>
<td></td>
<td>Population Growth</td>
<td>Growth rate of tract compared to statewide growth rate</td>
<td>0  = 0&lt;br&gt;1 – 49  = 0.2&lt;br&gt;50 – 99  = 0.4&lt;br&gt;100 – 149  = 0.6&lt;br&gt;150 – 199 = 0.8&lt;br&gt;200 and above  = 1.0</td>
<td>US Census 2010/2015</td>
<td>Population growth indicates opportunities for economic growth. All negative growth rates scored as 0.</td>
</tr>
<tr>
<td>Freight Intensity</td>
<td>Freight Employment Intensity</td>
<td>Employment in freight intensive sectors vs state average</td>
<td>0  = 0&lt;br&gt;1 – 49  = 0.2&lt;br&gt;50 – 99  = 0.4&lt;br&gt;100 – 149  = 0.6&lt;br&gt;150 – 199 = 0.8&lt;br&gt;200 and above  = 1.0</td>
<td>US Census 2014</td>
<td>Dependence on supporting freight infrastructure key to growth in these areas.</td>
</tr>
<tr>
<td>Supporting Facilities</td>
<td>Key Military Facilities</td>
<td>Census tracts that are comprised of key military facilities</td>
<td>0  = None&lt;br&gt;1  = Facility</td>
<td>Fort Hood, Fort Bliss, Joint Base San Antonio, Coast Guard, Naval Air Stations, TX National Guard, Camps Bullis, Mabry, Swift and Howze, etc.</td>
<td></td>
</tr>
</tbody>
</table>
### Goods Movement Analysis Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Proposed Scoring Method</th>
<th>Data Source(s)</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daily Truck Volumes</strong></td>
<td>0 = Less than 2,500, 1 = 2,501 to 5,000, 2 = 5,001 to 7,500, 3 = 7,501 to 10,000, 4 = 10,001 to 16,000</td>
<td>TxDOT, Highway Performance Monitoring System (HPMS)</td>
<td>Measures daily truck volumes on TX roads. Identifies corridors with heavy truck traffic.</td>
</tr>
<tr>
<td><strong>Absolute Vehicle Miles Traveled (VMT)</strong></td>
<td>0 = Less than 1,000, 1 = 1,000 to 2,499, 2 = 2,500 to 4,999, 3 = 5,000 to 9,999, 4 = More than 10,000</td>
<td>TxDOT, Highway Performance Monitoring System (HPMS)</td>
<td>Use truck counts by link to derive truck VMT</td>
</tr>
<tr>
<td><strong>VMT by Lane Mile</strong></td>
<td>0 = Less than 500, 1 = 500 to 999, 2 = 1,000 to 2,499, 3 = 2,500 to 4,999, 4 = More than 5,000</td>
<td>TxDOT, Highway Performance Monitoring System (HPMS)</td>
<td>Use truck counts by link to derive truck VMT. HPMS data provides number of lanes by link. These sources together will show truck VMT by lane mile.</td>
</tr>
<tr>
<td><strong>Total Tonnage</strong></td>
<td>0 = Less than 5M tons, 1 = 5M to 10M tons, 2 =10M to 20M tons, 3 = 20M to 50M tons, 4 = 50M to 100M tons, 5 = 100M to 200M, 6 = More than 200M</td>
<td>Transearch</td>
<td>Assessment of annual tonnage by road segment for top commodities transported by truck in Texas.</td>
</tr>
<tr>
<td><strong>Total Value</strong></td>
<td>0 = Less than $10B, 1 = $10B to $20B, 2 = $20B to $50B, 3 = $50B to $100B, 4 = $100B to $200B, 5 = $200B to $500B, 6 = More than $500B</td>
<td>Transearch</td>
<td>Assessment of annual value by road segment for top commodities transported by truck in Texas.</td>
</tr>
<tr>
<td><strong>Tonnage Growth</strong></td>
<td>0 = Less than 25%, 1 = 25% - 50%, 2 = 50% - 75%, 3 = 75% - 100%, 4 = 100%+</td>
<td>Transearch</td>
<td>Assessment of percentage change in total tonnage between base (2015) and forecast (2045) years.</td>
</tr>
<tr>
<td><strong>Value Growth</strong></td>
<td>0 = Less than 25%, 1 = 25% - 50%, 2 = 50% - 75%, 3 = 75% - 100%, 4 = 100%+</td>
<td>Transearch</td>
<td>Assessment of percentage change in total tonnage between base (2015) and forecast (2045) years.</td>
</tr>
</tbody>
</table>
### Supply Chain Analysis Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Proposed Scoring Method</th>
<th>Data Source(s)</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for Targeted Industries (TI)</td>
<td>0 = No support&lt;br&gt;1 = Support for 1-4 targeted industries&lt;br&gt;2 = Support for ≥ 5 targeted industries</td>
<td>Department of Commerce</td>
<td>Assess level of support for targeted industries via highway. “Support” determined when industry is located within 2 miles of highway segment.</td>
</tr>
<tr>
<td>Number of Business in Targeted Industries</td>
<td>0 = No support&lt;br&gt;1 = 1 to 2 TI businesses&lt;br&gt;2 = 3 to 5 TI businesses&lt;br&gt;3 = 6 to 10 TI businesses&lt;br&gt;4 = More than 11 TI businesses</td>
<td>Department of Commerce</td>
<td>Assess level of support for targeted industries via highway based on number of TI businesses within 2 miles of highway.</td>
</tr>
<tr>
<td>Support for Commodities Associated with Targeted Industries (Tonnage)</td>
<td>0 = Less than 2M tons&lt;br&gt;1 = 2M to 5M tons&lt;br&gt;2 = 5M to 10M tons&lt;br&gt;3 = 10M to 20M tons&lt;br&gt;4 = More than 20M tons</td>
<td>Department of Commerce / Loaded SAM Network</td>
<td>Assessment of how much annual tonnage is supported via highway for each targeted industry. Evaluated for each roadway segment.</td>
</tr>
<tr>
<td>Support for Jobs Associated with Targeted Industries (Employment)</td>
<td>&lt; 100 – 1&lt;br&gt;100-249 – 2&lt;br&gt;250-1000 – 3&lt;br&gt;1000 – 4999 – 4&lt;br&gt;5000 – 10,000 – 5&lt;br&gt; &gt;10,000 - 6</td>
<td>Department of Commerce</td>
<td>Assessment of how much employment via highway for each targeted industry. Evaluated for each roadway segment.</td>
</tr>
</tbody>
</table>
### Market Access and Connectivity Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Proposed Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multimodal Connectivity</td>
<td>Bureau of Transportation</td>
<td>0 = No connection 2 = Connects Intermodal</td>
<td>Network segments that</td>
</tr>
<tr>
<td></td>
<td>Statistics (BTS)</td>
<td></td>
<td>connect intermodal</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>terminals (truck / rail/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>air / port)</td>
</tr>
<tr>
<td>International Market</td>
<td>Esri, HERE, TxDOT</td>
<td>0 = Outside 4 hour TTT 1 = Within 4 hour</td>
<td>Measured using Truck</td>
</tr>
<tr>
<td>Gateway Access</td>
<td></td>
<td></td>
<td>Travel Times (TTT) from</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>deep draft marine port</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>terminals, and commercial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>border crossings.</td>
</tr>
<tr>
<td>Market Gateway (MG)</td>
<td>Esri, HERE, TxDOT, BTS</td>
<td>0 = Outside 2 hour TTT 1 = Within 2 hour</td>
<td>Identifies road segments</td>
</tr>
<tr>
<td>Access</td>
<td></td>
<td></td>
<td>that facilitate access</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>to domestic markets via</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>inland ports and terminals.</td>
</tr>
</tbody>
</table>

**Metric Details:**
- **Multimodal Connectivity:** Measures network segments that connect intermodal terminals (truck / rail / air / port).
- **International Market Gateway Access:** Measured using Truck Travel Times (TTT) from deep draft marine port terminals, and commercial border crossings.
- **Market Gateway (MG) Access:** Identifies road segments that facilitate access to domestic markets via inland ports and terminals.
TOOL DEMO
Draft Metrics and Results
Weighting of Criteria

- Currently the analyses are equally weighted – 25% each
- Need your input – should some analyses/metrics be weighted more heavily?
- Individual worksheets and group polling
  - Complete individual worksheets on how metrics should be weighted
  - Conduct group polling
## Weighting of Criteria – FAC Member Survey

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Proposed Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Economic</td>
<td></td>
</tr>
<tr>
<td>Goods Movement</td>
<td></td>
</tr>
<tr>
<td>Supply Chain</td>
<td></td>
</tr>
<tr>
<td>Accessibility and Connectivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>
To Participate in Poll

http://Camsys.participoll.com/
General Weighting

Should all the metrics be equally weighted?
A. Yes
B. No
C. Not sure
Economic Analysis

Should the metrics in the economic analysis be weighted...

A. Equally with other metrics
B. More heavily
C. Less heavily
D. Not sure
Goods Movement Analysis

Should the metrics in the good movement analysis be weighted...

A. Equally with other metrics
B. More heavily
C. Less heavily
D. Not sure
Supply Chain Analysis

Should the metrics in the supply chain analysis be weighted...

A. Equally with other metrics
B. More heavily
C. Less heavily
D. Not sure
Market Accessibility and Connectivity Analysis

Should the metrics in the market accessibility and connectivity analysis be weighted...

A. Equally with other metrics
B. More heavily
C. Less heavily
D. Not sure
Next Steps in System Designation

- Finalize metrics and assemble data
- Develop initial designation of Texas Freight System
- Conduct sensitivity around weighting
- Map STIP and UTP projects on system to inform critical corridor designation
- Develop draft designation and submit for feedback (FAC, MPOs, districts)
- Finalize designation for submittal to FHWA
TRENDS, CHALLENGES AND NEEDS
Key Trend Areas

- Trade
- Energy
- Business practices
- Consumer practices
- Technology
- Regulations
TRADE
Texas’s Goods Exports by Value, 2006-2016

Data Source: Foreign Trade Division, U.S. Census Bureau
Texas’s Top 5 Goods Exports by Value, 2006-2016

Data Source: Foreign Trade Division, U.S. Census Bureau
Texas’s Top 5 Goods Imports by Value, 2008-2016

Data Source: Foreign Trade Division, U.S. Census Bureau
Top Five Trading Partners- Exports

Data Source: Foreign Trade Division, U.S. Census Bureau
Top Five Trading Partners- Imports

Data Source: Foreign Trade Division, U.S. Census Bureau
Texas exports to FTA partners

Data Source: Foreign Trade Division, U.S. Census Bureau
Trade Policy: NAFTA

- Will continue to affect Texas Trade/North America Trade/Industry Supply Chains that link the two (U.S. and Mexico) economies together
  - NA trade increased sharply, from roughly $290 billion in 1993 to more than $1.1 trillion in 2016.
  - Mexico and Canada consume 48% of Texas Exports and 42% of Texas Imports in 2016
  - Manufacturing industries (e.g., motor vehicle parts, motor vehicles, petroleum and coal products, computer equipment, semiconductors & other electronic components, and basic chemicals)
  - Oil and Gas Industry

- Drivers
  - Increased export opportunities/value-added opportunities
  - More efficient production (economies of scale)
  - Shorter supply chains
Total Value of Exports from Texas to NAFTA Partners

Data Source: Foreign Trade Division, U.S. Census Bureau
Total Value of Imports to Texas from NAFTA Partners

Data Source: Foreign Trade Division, U.S. Census Bureau
## Trade Policies

<table>
<thead>
<tr>
<th>Factors Affecting Goods Movement</th>
<th>Freight Implications</th>
<th>Impact (Modest, Moderate, Aggressive)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume (amount of freight)</td>
<td>Flow (How freight moves)</td>
</tr>
<tr>
<td><strong>Globalization</strong></td>
<td>Changing political economies</td>
<td></td>
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<tr>
<td></td>
<td>Near-shoring</td>
<td></td>
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<tr>
<td><strong>FTA</strong></td>
<td>New (e.g., TPP)</td>
<td></td>
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<tr>
<td></td>
<td>Changes to existing</td>
<td></td>
</tr>
<tr>
<td><strong>NAFTA</strong></td>
<td>Changes (e.g., increases in tariffs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Near-shoring/energy mkt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Changing relationships</td>
<td></td>
</tr>
</tbody>
</table>
ENERGY
Shifts in US Energy Production and Use

- Natural gas has overtaken coal as the largest energy source for electricity generation.
- Power sector coal use in Texas dropped 17% from 2007 to 2015.
- US wind generating capacity has grown rapidly in the last decade and now exceeds hydro capacity. Texas leads the nation in wind generation.
Other Major Markets for Natural Gas

- Natural gas provides a low cost feedstock for petrochemical manufacturing (e.g. plastic resins) with massive growth expected in petrochemical manufacturing investment.

- Rather than a US import, LNG is a potentially significant export with massive growth in planned liquefaction facilities.
LNG Exports

- The expanded Panama Canal allows passage of large LNG tankers, cutting LNG transportation times and costs.

- Assuming all contracted LNG volumes transit the Panama Canal, transits could reach more than 550 vessels annually, or 1-2 vessels per day, by 2021.
Transportation Impacts

- Reduction in volumes of coal transported by rail
- Increased demand for pipelines to transport gas from production fields to:
  - Utility users
  - Petrochemical manufacturers
- Increased demands for bulk and containerized transportation of petrochemicals (e.g. plastic resins). Potential for increase of 500,000 TEUs per year (1/4 of current Houston total). Options:
  - Houston region ports to East Asia, Europe and South America
  - For East Asia, bulk rail to Dallas, and then transloaded to containers
  - Bulk transport by rail to other Gulf or East Coast Ports
Impacts on Modal Freight Transportation

- Expanded network of gas pipelines
- Increase in heavy truck loads from plants to rail yards or ports
- Continued shortage of containers to support exports, resulting in significant repositioning of empties
- Increased demand for on-dock rail
- Increase in container imports from East Asia to match export demand, and/or a reconfiguration of liner schedules to make Houston last port of call
- Competition for export transportation for other exports (e.g. cotton)
## Energy Trends

<table>
<thead>
<tr>
<th></th>
<th>Freight Implications</th>
<th>Impact</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upside, Downside, no affect</strong></td>
<td><strong>Volume</strong> (amount of freight)</td>
<td><strong>Flow</strong> (How freight moves)</td>
<td><strong>Volume</strong> (amount of freight)</td>
</tr>
<tr>
<td>NG Replacing Coal</td>
<td>Coal down, NG up</td>
<td>Rail down &amp; up, pipeline up, port bulk &amp; container exports up, domestic truck up, OSOW up</td>
<td>Aggressive</td>
</tr>
<tr>
<td>LNG Exports</td>
<td>Liquid bulk exports up</td>
<td></td>
<td>Aggressive</td>
</tr>
<tr>
<td>Canal Tankers</td>
<td>Liquid bulk exports up</td>
<td></td>
<td>Aggressive</td>
</tr>
<tr>
<td>Low Cost Feedstock</td>
<td>Domestic &amp; export up</td>
<td></td>
<td>Aggressive</td>
</tr>
<tr>
<td>Wind Growth</td>
<td>Up</td>
<td></td>
<td>Moderate</td>
</tr>
</tbody>
</table>
BUSINESS PRACTICES
Business Practices: Off-shoring

- May continue to affect consumer goods; not likely to affect Texas target industries

- Drivers:
  - Continuation of previous trends
    - Supply of cheaper, skilled labor
    - Regulatory or tax advantages
  - Proximity to emerging markets overseas
  - Panama Canal improvements provide easier access to Gulf and East Coasts from Asia
**Business Practices: Reshoring**

*Figure 1. Jobs Reshored by State, 2007-2014*

Business Practices: Reshoring

Texas Reshoring by Industry Grouping

Notes: * signifies the inclusion of the failed case of MotoX, explained in greater detail elsewhere in this study.
** indicates the same foreign company offering production contracts to two separate U.S. manufacturers.
Business Practices: Reshoring

- Likely to affect automotive/transportation, high-tech manufacturing; both important components of Texas freight

- Drivers:
  - Texas’ low energy costs, proximity to Mexico, business climate
  - Investment in Mexican infrastructure, manufacturing hubs, energy and security policy
  - Interest in shorter supply chains, protection of intellectual property
  - Rising wages in Asia
Business Practices: Advances in Manufacturing

- Automation and technology
  - Potential to reduce waste through process control
  - Higher throughput of factories and assembly plants
  - May or may not reduce price enough to change quantity demanded
- Additive manufacturing (3D printing, direct digital manufacturing)
  - May reduce need to ship intermediate components for assembly
  - May or may not reduce price enough to change quantity demanded
  - May result in more small, customized batches of goods
Omni-channel marketing and distribution requires freight to reach individuals as well as traditional retailers.

Harvard Business Review found that shoppers buy more when an omni-channel strategy is used:

- Omni-channel shoppers “spent an average of 4% more on every shopping occasion in the store and 10% more online than single-channel customers.”
- “With every additional channel they used, the shoppers spent more money ... customers who used 4+ channels spent 9% more in the store, on average, when compared to those who used just one channel.”
Many shipping patterns may offer flexibility or shift commodities to other modes, but may or may not change the total volume significantly:

- Transloading
- Modal diversions
  - Truck to rail, rail to truck
  - Land to water, water to land
    - Jones Act could limit impact
- Containerization of bulk

Pipeline construction could reduce surface transportation of freight and bypass much of the state.
Figure 1. U.S. Refinery Capacity by PADD in 2012

Sources: Congressional Research Service; Energy Information Administration.

Note: PADD = Petroleum Administration for Defense Districts, five districts established by executive order during World War II for gasoline rationing.
Oil movements by rail and truck increased from 2008 to 2013; rail increased by 20x.

Canadian imports by rail increased from 1.6 million barrels in 2011 to 40 million barrels in 2013.

- Keystone Pipeline would shift some portion to pipeline.
## Business Practices

### Factors Affecting Goods Movement

<table>
<thead>
<tr>
<th>Sourcing</th>
<th>Off-shoring</th>
<th>Reshoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advances in manufacturing</td>
<td>Increased automation</td>
<td>Additive manufacturing</td>
</tr>
<tr>
<td>Shipping Patterns</td>
<td>Modal diversions</td>
<td>Transloading</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pipeline investment</td>
</tr>
</tbody>
</table>

### Freight Implications

<table>
<thead>
<tr>
<th>Volume (amount of freight)</th>
<th>Flow (How freight moves)</th>
<th>Volume (amount of freight)</th>
<th>Flow (How freight moves)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Impact

(Modest, Moderate, Aggressive)
CONSUMER PRACTICES
E-Commerce

• Online sales currently represent 8.1% of retail sales but already have impacts to freight and delivery
• Package carriers including USPS, UPS, and FedEx receive the direct impacts from increases in e-commerce
• E-commerce grew by 15.1% from 2015 to 2016 while total retail sales grew by 2.9% in that same time
• Annual growth for e-commerce is forecast to continue at between 8%-12%
• Traditional retail outlets including Target and Walmart are adapting business models toward more e-commerce
E-Commerce Implications for Freight

- Overall increase in the number of deliveries, dispersed to a greater number of destinations
- Different delivery models must be considered: shipping to homes, store pickup, or lockers
- Number of delivery vehicles may increase while size of vehicles gets smaller
- Consumers’ expectation is for faster deliveries, including same-day delivery
- Mobile devices allow e-commerce to occur throughout the day, with expectation of rapid delivery
• Economic transactions based on web-based or App transactions
• Ranges from ride-shares to Airbnb to rental of everyday household items
• Speeds up transactions
• Reduces need for ownership of goods, thus reducing demand
• Requires transportation for pick-up, delivery and return of goods in most instances
• Growing research indicates a general downward pressure on economic growth
## Population Growth, 2000-2016

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>281.4</td>
<td>308.7</td>
<td>323.1</td>
<td>14.3</td>
<td>4.7%</td>
</tr>
<tr>
<td>Texas</td>
<td>20.8</td>
<td>25.1</td>
<td>27.8</td>
<td>2.7</td>
<td>10.8%</td>
</tr>
<tr>
<td>California</td>
<td>33.8</td>
<td>37.2</td>
<td>39.2</td>
<td>1.9</td>
<td>5.4%</td>
</tr>
<tr>
<td>Florida</td>
<td>15.9</td>
<td>18.8</td>
<td>20.6</td>
<td>1.8</td>
<td>9.6%</td>
</tr>
<tr>
<td>Georgia</td>
<td>8.2</td>
<td>9.7</td>
<td>10.3</td>
<td>.6</td>
<td>6.4%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>8.0</td>
<td>9.5</td>
<td>10.1</td>
<td>.6</td>
<td>6.4%</td>
</tr>
<tr>
<td>Washington</td>
<td>5.8</td>
<td>6.7</td>
<td>7.3</td>
<td>.6</td>
<td>8.4%</td>
</tr>
<tr>
<td>Arizona</td>
<td>5.1</td>
<td>6.4</td>
<td>6.9</td>
<td>.5</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

All values for the decennial dates are for April 1 of the indicated census year. Values for 2012-2016 are for July 1 as estimated by the U.S. Census Bureau.

Estimated Population Change, Texas Counties, 2010 to 2015

99 counties lost population over the five year period.

Components of Population Change by Percent in Texas, 1950-2010

Source: U.S. Census Bureau, Population Estimates

2000

- NH White, 53%
- Hispanic, 32%
- NH Black, 11%
- NH Asian, 3%
- NH Other, 1%

2010

- NH White, 45%
- Hispanic, 38%
- NH Black, 12%
- NH Asian, 4%
- NH Other, 2%

2015

- NH White, 43%
- Hispanic, 39%
- NH Black, 12%
- NH Asian, 5%
- NH Other, 2%

Texas Population Pyramid by Race/Ethnicity, 2014

- Male White, Non-Hispanic
- Male Black, Non Hispanic
- Male Other, Non Hispanic
- Male Hispanic
- Female White, Non-Hispanic
- Female Black, Non Hispanic
- Female Other, Non Hispanic
- Female, Hispanic

Source: Texas Demographic Center, 2014 Population Estimates
Projected Percent Population Change by County, Texas, 2010-2050

Source: Texas State Data Center 2014 Population Projections, 1.0 Scenario
## Consumer Practices

<table>
<thead>
<tr>
<th>Factors Affecting Goods Movement</th>
<th>Freight Implications</th>
<th>Impact (Modest, Moderate, Aggressive)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume (amount of freight)</td>
<td>Flow (How freight moves)</td>
</tr>
<tr>
<td>E-Commerce</td>
<td>Increase use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Changing commodities</td>
<td></td>
</tr>
<tr>
<td>Sharing economy</td>
<td>Rent vs own</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pick-up/return</td>
<td></td>
</tr>
<tr>
<td>Changing demographics and tastes</td>
<td>Population growth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Race/ethnic mix</td>
<td></td>
</tr>
</tbody>
</table>
Autonomous Trucks

- Increasing automation of vehicles ranging from driver monitoring of the environment to full automation with minimal to no actions by driver
  - Volume: No impacts anticipated
  - Cost: Reduced costs due to lower congestion
  - Congestion: Reduced congestion related to safety improvements
  - Delivery Time: Improved delivery times and reliability based on reduced congestion
  - Mode Shift: Potential mode shift depending on reliability improvements

- Example: Otto’s autonomous vehicles offer “Level 4” autonomy on interstates and completed its first delivery in October 2016
Connected Trucks

- Increasing connectivity of vehicles to interact with other vehicles as well as infrastructure to help improve safety, reduce congestion, and optimize movements
  - Volume: No impact anticipated
  - Cost: Reduced costs due to lower congestion
  - Congestion: Reduced congestion related to safety improvements
  - Delivery Time: Improved delivery times and reliability based on reduced congestion
  - Mode Shift: Potential mode shift depending on reliability improvements

- Example: Wyoming DOT is conducting a pilot through FHWA on I-80 focusing on connected vehicle technology, particularly as it relates to weather events (i.e. high winds causing truck blow-overs)
Drones

- Increasing use of drones for light parcel delivery purposes.
  - Volume: No impacts anticipated
  - Cost: Reduction due to automation of flight paths and less reliance on trucks, drivers, etc.
  - Congestion: Reduced due to reduction in vehicle miles traveled
  - Delivery Time: Reduced due to avoidance of congested roadways (Amazon completed drone delivery 13 minutes after an order was placed)
  - Mode Shift: Shift from traditional transportation modes (i.e. trucks) to drones

- Example: Project Wing began testing an aerial delivery system in September 2016 in coordination with an FAA test site run by the Virginia Tech Mid-Atlanta Aviation Partnership
Freight Shuttles

- System unveiled in September 2016 which moves commodities on elevated guideways emissions-free via electric-powered transporters over distances of up to 500 miles
  - Volume: No impacts anticipated
  - Cost: Reduced due to elimination of truck driver
  - Congestion: Reduced due to alternative mode choice and reduction in truck-related highway crashes
  - Delivery Time: Reduced due to improved reliability
  - Mode Shift: Shift from existing modes to Freight Shuttle System

- Example: Freight Shuttle System developed for El Paso estimates that a $1 billion investment would result in $10.5 billion in economic benefits over 20 years. The application of this at the Zaragoza Bridge could triple capacity.
Cargo Shipping

- “Uber-like” technology to match truck drivers with shippers, eliminating the need for third-party brokers
  - Volume: No impacts anticipated
  - Cost: Decrease in cost of operations due to elimination of third-party broker
  - Congestion: Reduction in congestion due to better load matching/reduction in empty backhaul movements
  - Delivery Time: No impacts anticipated
  - Mode Shift: Increase due to ease of truck scheduling and cost reductions

- Example: Amazon Trucking App under development seeks to integrate pricing, directions, and trucker information such as truck stop options to match drivers with cargo, eliminating commissions of roughly 15 percent for brokers
Warehouse and Factory Automation

- Increasing automation in warehouses and factories reduces the need for additional workers and speeds up existing processes
  - Volume: Increase in capacity due to automation of processes
  - Cost: Reduction in labor costs due to increased reliance on machinery
  - Congestion: No impacts anticipated
  - Delivery Time: Reduction in delivery time if combined with nearshoring due to reduced labor costs
  - Mode Shift: No impacts anticipated

- Example: TVH in the Americas is building a new automated storage and retrieval system which will double current capacity and output to 1,000 orders per hour
## Technology Impacts on Freight Trends

<table>
<thead>
<tr>
<th>Technology Factors</th>
<th>Technology</th>
<th>Freight Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Volume</td>
</tr>
<tr>
<td>Vehicle Technology</td>
<td>Autonomous Trucks</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Connected Trucks</td>
<td>-</td>
</tr>
<tr>
<td>Alternative Delivery Systems</td>
<td>Drones</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Freight Shuttles</td>
<td>-</td>
</tr>
<tr>
<td>Manufacturing Advances</td>
<td></td>
<td>↑</td>
</tr>
<tr>
<td>Cargo Shipping</td>
<td>“Uber”</td>
<td>-</td>
</tr>
<tr>
<td>Automation</td>
<td>Warehouse/Factory</td>
<td>↑</td>
</tr>
<tr>
<td>Others?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Regulations/Policy: National**

- **Carrier industry- hours of service**
  - FMCSA published Hours of Service of Drivers Final Rule in 2011, which went into effect in 2012
  - Creates a safety issue because not enough parking
  - Push to relax regulations

---

<table>
<thead>
<tr>
<th>HOURS-OF-SERVICE RULES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPERTY-CARRYING DRIVERS</td>
<td>PASSENGER-CARRYING DRIVERS</td>
<td></td>
</tr>
<tr>
<td><strong>11-Hour Driving Limit</strong></td>
<td>May drive a maximum of 11 hours after 10 consecutive hours off duty.</td>
<td>10-Hour Driving Limit</td>
</tr>
<tr>
<td><strong>14-Hour Limit</strong></td>
<td>May not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period.</td>
<td>15-Hour Limit</td>
</tr>
<tr>
<td><strong>Rest Breaks</strong></td>
<td>May drive only if 8 hours or less have passed since end of driver’s last off-duty or sleeper berth period of at least 30 minutes. Does not apply to drivers using either of the short-haul exceptions in 395.1(c). [49 CFR 397.5 mandatory “in attendance” time may be included in break if no other duties performed]</td>
<td>60/70-Hour Limit</td>
</tr>
</tbody>
</table>
Decreased environmental regulations
  – Likely roll back of EPA regulations
  – More business friendly- reducing cost of doing business
  – Could roll back emission standards and decrease costs to move goods
  – Ability to retain existing fleet as opposed to investing in new equipment/vehicles
Bridge vertical clearance
  – Current minimum is 16 feet 6 inches
  – Raising minimum vertical clearance would:
    • Allow larger truck loads to travel on most direct routes
    • Decrease truck travel time
    • Decrease bridge strikes by trucks
- Increase allowable minimum truck weights
  - Current weight limit is 80,000 pounds, 84,000 pounds with a permit
  - Push to increase weight limit to 88,000 pounds with a special permit or 97,000 for 6-axle vehicles
  - Increasing weight limit allows shippers to consolidate freight on fewer trucks, reducing road congestion
  - May require infrastructure updates
Public/private partnerships

- SB-28 would allow commission to use money from Texas Mobility fund to provide funding for port access improvement projects
- Similar legislation could lead to more infrastructure projects completed facilitating movement of freight
Reduced tolls for trucks

- TxDOT currently offers truck toll discount program on SH 130 from I-35 exit in Georgetown to US 183 in Buda and on SH 45 SE
- Trucks with a valid TxTag transponder will pay the standard two-axle rate of $8.04; a savings of 67% off the standard $24.12
- Hope to help ease congestion by incentivizing truck drivers to use alternative routes
DISCUSSION
RE-EVALUATION OF TFMP GOALS AND POLICIES
“The strategic goals and objectives serve as critical building blocks for the development of the Freight Plan and its implementation. Together, they formalize the direction and priorities for the evaluation of the freight transportation system.”
Texas Freight Mobility Plan Goals

- Safety
- Asset Management
- Mobility & Reliability
- Multimodal Connectivity
- Stewardship
- Customer Service
- Sustainable Funding
- Economic Competitiveness
- Technology

Texas Freight Advisory Committee

March 9, 2017
### Freight Plan/TTP Goal Alignment with MAP-21 and TxDOT Strategic Plan

#### EXISTING GOALS

<table>
<thead>
<tr>
<th>TFMP</th>
<th>Safety</th>
<th>Asset Management</th>
<th>Mobility and Reliability</th>
<th>Multimodal Connectivity</th>
<th>Stewardship</th>
<th>Customer Service</th>
<th>Sustainable Funding</th>
<th>Economic Competitiveness</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTP 2040</td>
<td>Safety</td>
<td>Asset Management</td>
<td>Mobility and Reliability</td>
<td>Multimodal Connectivity</td>
<td>Stewardship</td>
<td>Customer Service</td>
<td>Sustainable Funding</td>
<td>Safety</td>
<td></td>
</tr>
<tr>
<td>2015-2019 Strategic Plan</td>
<td>Maintain a Safe System</td>
<td>Address Congestion</td>
<td>Connect Texas Communities</td>
<td>Become a Best-in-Class State Agency</td>
<td>Address Congestion</td>
<td>Connect Texas Communities</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Safety**
- **Asset Management**
- **Mobility and Reliability**
- **Multimodal Connectivity**
- **Stewardship**
- **Customer Service**
- **Sustainable Funding**
- **Economic Competitiveness**
- **Technology**

**EXISTING GOALS**

- **Safety**
- **Asset Management**
- **Mobility and Reliability**
- **Multimodal Connectivity**
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- **Customer Service**
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**EXISTING GOALS**

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- **Asset Management**
- **Mobility and Reliability**
- **Multimodal Connectivity**
- **Stewardship**
- **Customer Service**
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- **Economic Competitiveness**
- **Technology**

**EXISTING GOALS**

- **Safety**
- **Asset Management**
- **Mobility and Reliability**
- **Multimodal Connectivity**
- **Stewardship**
- **Customer Service**
- **Sustainable Funding**
- **Economic Competitiveness**
- **Technology**
Changes Since TFMP Adoption

2017-2021 TxDOT Strategic Plan
- Established 7 new strategic goals

FAST Act
- Established a National Multimodal Freight Policy that includes national goals to guide decision-making

Sunset Commission Review
- Key recommendation requiring TxDOT to adopt one consistent set of statewide transportation goals
Re-evaluation: Any Adjustments to the TFMP Goals?

## ALIGNMENT OF GOALS

<table>
<thead>
<tr>
<th>TFMP</th>
<th>Asset Management</th>
<th>Safety</th>
<th>Technology</th>
<th>Mobility and Reliability</th>
<th>Multimodal Connectivity</th>
<th>Economic Competitiveness</th>
<th>Stewardship</th>
<th>Sustainable Funding</th>
<th>Customer Service</th>
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</thead>
<tbody>
<tr>
<td>FAST Act</td>
<td>State of Good Repair</td>
<td>Innovation and Advanced Technology</td>
<td>Short &amp; Long Distance Movement</td>
<td>Economic Competitiveness</td>
<td>Environmental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TTP 2040</td>
<td>Asset Management</td>
<td>Safety</td>
<td>Mobility and Reliability</td>
<td>Multimodal Connectivity</td>
<td>Stewardship</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2017-2021 Strategic Plan</td>
<td>Preserve our Assets</td>
<td>Promote Safety</td>
<td>Optimize System Performance</td>
<td>Foster Stewardship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **State of Good Repair**
- **Innovation and Advanced Technology**
- **Short & Long Distance Movement**
- **Economic Competitiveness**
- **Environmental**
- **Safety**
- **Mobility and Reliability**
- **Multimodal Connectivity**
- **Stewardship**
- **Sustainable Funding**
- **Customer Service**
DISCUSSION
TFMP Goals
Texas Freight Mobility Plan Goals

- **Goal 1: Safety** – Improve multimodal transportation safety.
- **Goal 3: Mobility and Reliability** – Reduce congestion and improve system efficiency and performance.
- **Goal 4: Multimodal Connectivity** – Provide transportation choices and improve system connectivity for all freight modes.
- **Goal 5: Stewardship** – Manage resources responsibly and be accountable in decision-making.
Texas Freight Mobility Plan Goals

- **Goal 6: Customer Service** – Understand and incorporate citizen desires in decision-making processes and be open and forthright in all agency communications.

- **Goal 7: Sustainable Funding** – Identify and sustain funding sources for all modes.

- **Goal 8: Economic Competitiveness** – Improve the contribution of the Texas freight transportation system to economic competitiveness, productivity and development.

- **Goal 9: Technology** – Improve the safety and efficiency of the Texas Freight Network through the development and utilization of innovative technological solutions.
POLICY RECOMMENDATIONS REVIEW
Existing TFMP Policy Recommendations

- Expand freight planning capacity and activities;
- Designate and invest in the Texas Freight Network;
- Modify design standards on the Texas Highway Freight Network;
- Implement a comprehensive system-wide freight planning program;
- Invest in solutions that link the different freight transportation modes;
- Identify freight transportation issues critical to rural economic development;
- Align investments in the transportation system with the state’s vision for economic growth;
- Develop Texas as a premier North American Trade and Logistics Hub and Gateway;
- Implement strategies to reduce crash rates and fatalities on the Texas Freight Network;
- Invest in the Texas Freight Network’s state of good repair, maintenance and management;
- Develop and implement innovative technologies, techniques and research methods;
Existing TFMP Policy Recommendations

- Identify and adopt strategies to improve the management of the Texas Freight Network;
- Facilitate international border coordination to improve mobility and eliminate barriers to trade;
- Identify current and future energy freight transportation needs and impacts;
- Partner with railroads to identify strategies to expand rail capacity and ease traffic congestion;
- Collaborate with maritime stakeholders to identify strategies to improve maritime freight movement;
- Integrate air cargo needs into state planning activities;
- Support strategies that address pipeline capacity needs and challenges;
- Investigate options to enhance flexibility for funding and financing freight projects;
  Coordinate with industries, and international, national, state, regional and local agencies; and
- Partner with public and private sectors to educate and build awareness of the importance of freight movement to the state’s economy.
FAST ACT FREIGHT FORMULA FUND PROJECTS
Texas Primary Freight System Designation Process

Texas Freight Mobility Plan
March 2017
**Introduction**

This document describes the analysis and designation process for Texas’ primary highway freight system in accordance with the Texas Freight Mobility Plan goals. Figure 1 provides an overview of the process. A customized GIS-based system designation tool is being developed and used to designate the Texas Primary Freight Network, including Critical Urban Freight Corridors (CUFC) and Critical Rural Freight Corridors (CRFC). The tool will employ metrics evaluating facilities based on economic role, goods movement volumes, and values, key industry supply chains and access and connectivity to major domestic and global markets.

Once the state’s primary freight network is identified, it will become the foundation from which CUFCs and CRFCs are designated. CUFC must be located within an urbanized area. MPOs with populations greater than 500,000 will have the responsibility for designation. TxDOT will take the lead on designating the remaining CUFCs and all of the CRFCs.

Figure 1 presents and overview of the designation process. This process is categorized into four types of analysis: general economic analysis, goods movement analysis, supply chain analysis for targeted industries, and market connectivity & accessibility analysis. The following presents the proposed metrics, scoring and data sources for designating the Texas Primary Freight Highway System.

**Figure 1: Overview of the Texas Freight System Designation Process**
Economic Analysis

The economic factors used in this evaluation attempt to measure economic activities that interact with transportation investments with the goal of producing economic growth. The measures based on US Census data for 2014 and are applied to the Freight Model network at the Census Tract level. Measures for Demographic Preparedness include: Population Growth; Workforce Size; Educational Attainment; and Per Capita Income. Freight Intensity and Supported Industries were measured using: Freight Employment Intensity; Technology Centers; Medical Centers; Institutions of Higher Learning; Key Military Facilities; and Property Tax data. Table 1 provides details on the scoring of each economic factor.
<table>
<thead>
<tr>
<th>Factor</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Measure</th>
<th>Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
</table>
| Demographic Preparedness     | Population Growth          | US Census 2010 / 2015   | Growth rate of tract compared to statewide growth rate                   | 0 = 0
1 – 49 = 0.2
50 – 99 = 0.4
100 – 149 = 0.6
150 – 199 = 0.8
200 and above = 1.0                                                                 | Population growth indicates opportunities for economic growth. All negative growth rates scored as 0. |
| Workforce Size                | Census tract workforce size compared to tract population relative to state average | US Census 2015 | 0 = 0
1 – 49 = 0.2
50 – 99 = 0.4
100 – 149 = 0.6
150 – 199 = 0.8
200 and above = 1.0                                                                 | Higher density of workers indicates a competitive and efficient labor market. |
| Educational Attainment        | Census tract relative to state average | US Census 2015 | 0 = 0
1 – 49 = 0.2
50 – 99 = 0.4
100 – 149 = 0.6
150 – 199 = 0.8
200 and above = 1.0                                                                 | Well trained workforce desirable for investment. Population 18 years of age or older with high school or higher education. |
| Freight Intensity             | Employment in freight intensive sectors vs state average | US Census 2015 | 0 = 0
1 – 49 = 0.2
50 – 99 = 0.4
100 – 149 = 0.6
150 – 199 = 0.8
200 and above = 1.0                                                                 | Dependence on supporting freight infrastructure key to growth in these areas. |
| Technology Centers            | Employment in technology sectors vs state average | US Census 2015 | 0 = 0
1 – 99 = 0.4
100 – 199 = 0.8
200 – 299 = 1.2
300 – 399 = 1.6
400 and above = 2.0                                                                 | High tech industries typically require highly mobile staff and rely on products being shipped rapidly. Improved infrastructure will promote growth. |
| Medical Centers               | Employment in medical care sectors vs state average | US Census 2015 | 0 = 0
1 – 49 = 0.2
50 – 99 = 0.4
100 – 199 = 0.8
200 and above = 1.0                                                                 | Connectivity to medical centers is important to the regional economy. |
| Institutions of Higher Learning | Students enrolled in public / private universities and colleges vs state average | US Census 2015 | 0 = 0
1 – 99 = 0.4
100 – 199 = 0.8
200 – 299 = 1.2
300 – 399 = 1.6
400 and above = 2.0                                                                 | Attract adjacent growth of industry and promote skilled workforce. |
| Key Military Facilities       | Census tracts that are comprised of key military facilities | TxDOT Planning GIS Data – Military Facilities | 0 = None
1 = Facility                                                                 | Fort Hood, Fort Bliss, Joint Base San Antonio, Coast Guard, Naval Air Stations, TX National Guard, Camps Bullis, Mabry, Swift and Howze, etc. |
Goods Movement Analysis

The purpose of the goods movement analysis is to use tonnage, value, volume, and other metrics to score mobility across freight modes.

Table 2  Goods Movement Analysis Metrics and Scoring Methodology

<table>
<thead>
<tr>
<th>Mode</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Value Range</th>
<th>Proposed Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>Daily Truck Volumes</td>
<td>TxDOT SAM</td>
<td>0 – 29,000 AADTT</td>
<td></td>
<td>Measures daily truck volumes on TX roads. Identifies corridors with heavy truck traffic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 = Less than 2,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 2,501 to 5,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 = 5,001 to 7,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 7,501 to 10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 = More than 10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute Vehicle Miles</td>
<td>Absolute Vehicle Miles Traveled (VMT)</td>
<td>TxDOT SAM</td>
<td>0 – 50,000</td>
<td></td>
<td>Use truck counts by link to derive truck VMT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 = Less than 1,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 1,000 to 2,499</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 = 2,500 to 4,999</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 5,000 to 9,999</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 = More than 10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VMT by Lane Mile</td>
<td>VMT by Lane Mile</td>
<td>Calculated</td>
<td>0 – 12,500</td>
<td></td>
<td>Use truck counts by number of lanes and segment mileage to derive truck VMT.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value</td>
<td>0 = Less than 500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 500 to 999</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 = 1,000 to 2,499</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 2,500 to 4,999</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 = More than 5,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Truck</td>
<td>Percent Truck</td>
<td>Calculated</td>
<td>0-100</td>
<td></td>
<td>Adds value to roadways with low truck counts, but high truck percentage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value</td>
<td>0 = Less than 25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 25 to 50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 = 50 to 75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = More than 75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Tonnage</td>
<td>Total Tonnage</td>
<td>TxDOT SAM</td>
<td>0 – 200M+ tons</td>
<td></td>
<td>Assessment of annual tonnage by road segment for top commodities transported by truck in Texas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 = Less than 5M tons</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 5M to 10M tons</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 = 10M to 20M tons</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 20M to 50M tons</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 = 50M to 100M tons</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 = 100M to 200M</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 = More than 200M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Value</td>
<td>Total Value</td>
<td>TxDOT SAM</td>
<td>0 - $500B+</td>
<td></td>
<td>Assessment of annual value by road segment for top commodities transported by truck in Texas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 = Less than $10B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = $10B to $20B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 = $20B to $50B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = $50B to $100B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 = $100B to $200B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 = $200B to $500B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 = More than $500B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonnage Growth</td>
<td>Tonnage Growth</td>
<td>Calculated</td>
<td>Change in Tonnage (%)</td>
<td></td>
<td>Assessment of percentage change in total tonnage between base (2015) and forecast (2045) years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value</td>
<td>0 = Less than 25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 25% - 50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 = 50% - 75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 75% - 100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 = 100%+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value Growth</td>
<td>Value Growth</td>
<td>Calculated</td>
<td>Change in Value (%)</td>
<td></td>
<td>Assessment of percentage change in total tonnage between base (2015) and forecast (2045) years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value</td>
<td>0 = Less than 25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 25% - 50%</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2 = 50% - 75%</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 75% - 100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 = 100%+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Supply Chain Analysis

The purpose of the supply chain analysis is to examine freight supply chains in order to understand how businesses move goods between suppliers, producers, distributors, and final consumers.

Table 3  Supply Chain Analysis Metrics and Scoring Methodology

<table>
<thead>
<tr>
<th>Mode</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Value Range</th>
<th>Proposed Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>Support for targeted supply chains</td>
<td>Department of Commerce</td>
<td>0 – 15</td>
<td>0 = No support</td>
<td>Assess level of support for industries via highway. “Support” determined when industry is located within 2 miles of highway segment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = Support for 1-4 targeted industries</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Support for ≥ 5 targeted industries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of business in targeted supply chains</td>
<td>Department of Commerce</td>
<td>0 – 21</td>
<td>0 = No support</td>
<td>Assess level of support for targeted industries via highway based on number of businesses within 2 miles of highway.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = 1 to 2 TI businesses</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = 3 to 5 TI businesses</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = 6 to 10 TI businesses</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 = More than 11 TI businesses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume for Commodities Associated with Targeted</td>
<td>Loaded SAM Network</td>
<td>0 – 132M</td>
<td>0 = Less than 2M tons</td>
<td>Assessment of how much annual tonnage is supported via highway for each targeted industry. Evaluated for each roadway segment.</td>
</tr>
<tr>
<td></td>
<td>Industries (Tonnage)</td>
<td></td>
<td></td>
<td>1 = 2M to 5M tons</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = 5M to 10M tons</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = 10M to 20M tons</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 = More than 20M tons</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employment Associated with Targeted Industries</td>
<td>Department of Commerce</td>
<td>TBD</td>
<td>TBD</td>
<td>Assessment of size of each targeted industry. Evaluated for each roadway segment.</td>
</tr>
<tr>
<td></td>
<td>(Value)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Targeted Industry Definitions: There are nine targeted industries for Texas shown in Table 4. Each targeted industry is comprised of a specific set of NAICS codes to capture the businesses that are included as part of that industry category.
<table>
<thead>
<tr>
<th>Aerospace, Aviation and Military/Defense</th>
<th>Advanced technology and manufacturing (i.e., automotive, electronics)</th>
<th>Biotechnology and Life Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and Communications Technology</td>
<td>Chemicals, Plastics and Rubber</td>
<td>Trade and Distribution/Logistics</td>
</tr>
<tr>
<td>Agriculture and Food Processing and Distribution</td>
<td>Energy</td>
<td>Petroleum refining and chemicals</td>
</tr>
</tbody>
</table>
**Market Access and Connectivity**

The purpose of the market access and connectivity analysis will evaluate intermodal connectivity and connectivity to trading partners and international gateways.

**Table 5  Market Access and Connectivity Metrics and Scoring Methodology**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Value Range</th>
<th>Proposed Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
</table>
| Highway                     | Multimodal Connectivity         | Bureau of Transportation Statistics (BTS) | N/A                      | 0 = No connection  
2 = Connects Intermodal Terminal  
Network segments that connect intermodal terminals (truck / rail / air / port) | Network segments that connect intermodal terminals (truck / rail / air / port) |
| International Market Gateway Access |                                                | Esri, HERE, TxDOT                    | N/A                      | 0 = Outside 4 hour TTT  
1 = Within 4 hour TTT  
2 = Within 2 hour TTT  
3 = Within 1 hour TTT  
Measured using Truck Travel Times (TTT) from deep draft marine port terminals, and commercial border crossings. | Measured using Truck Travel Times (TTT) from deep draft marine port terminals, and commercial border crossings. |
| Market Gateway (MG) Access  |                                                | Esri, HERE, TxDOT, BTS               | N/A                      | 0 = Outside 2 hour TTT  
1 = Within 2 hour TTT  
2 = Within 1 hour TTT  
3 = Within Half hour TTT  
Identifies road segments that facilitate access to domestic markets via inland ports and terminals. | Identifies road segments that facilitate access to domestic markets via inland ports and terminals. |
TFMP Policy Recommendations

The Freight Plan’s policy recommendations are broad-based strategies designed to address the freight transportation challenges confronting Texas. These policies were developed based not only on input received from extensive stakeholder outreach which included TxFAC meetings, listening sessions, the freight leadership summit, and other outreach efforts; but also on the comprehensive analysis of data, and assessment of numerous freight transportation needs and challenges identified throughout the plan development process. The Freight Plan includes 21 policy recommendations. These recommendations provide a strategic framework for aligning transportation investment decision making:

- Expand freight planning capacity and activities;
- Designate and invest in the Texas Freight Network;
- Modify design standards on the Texas Highway Freight Network;
- Implement a comprehensive system-wide freight planning program;
- Invest in solutions that link the different freight transportation modes;
- Identify freight transportation issues critical to rural economic development;
- Align investments in the transportation system with the state’s vision for economic growth;
- Develop Texas as a premier North American Trade and Logistics Hub and Gateway;
- Implement strategies to reduce crash rates and fatalities on the Texas Freight Network;
- Invest in the Texas Freight Network’s state of good repair, maintenance and management;
- Develop and implement innovative technologies, techniques and research methods;
- Identify and adopt strategies to improve the management of the Texas Freight Network;
- Facilitate international border coordination to improve mobility and eliminate barriers to trade;
- Identify current and future energy freight transportation needs and impacts;
- Partner with railroads to identify strategies to expand rail capacity and ease traffic congestion;
- Collaborate with maritime stakeholders to identify strategies to improve maritime freight movement;
- Integrate air cargo needs into state planning activities;
- Support strategies that address pipeline capacity needs and challenges;
- Investigate options to enhance flexibility for funding and financing freight projects;
- Coordinate with industries, and international, national, state, regional and local agencies; and
- Partner with public and private sectors to educate and build awareness of the importance of freight movement to the state’s economy.
<table>
<thead>
<tr>
<th>Metrics</th>
<th>Proposed Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Economic</td>
<td></td>
</tr>
<tr>
<td>Demographic preparedness</td>
<td></td>
</tr>
<tr>
<td>Freight Intensity</td>
<td></td>
</tr>
<tr>
<td>Supporting facilities</td>
<td></td>
</tr>
<tr>
<td>Goods Movement</td>
<td></td>
</tr>
<tr>
<td>Truck Volumes</td>
<td></td>
</tr>
<tr>
<td>Absolute Truck VMT</td>
<td></td>
</tr>
<tr>
<td>Truck VMT per lane mile</td>
<td></td>
</tr>
<tr>
<td>Truck percentages</td>
<td></td>
</tr>
<tr>
<td>Total tonnage</td>
<td></td>
</tr>
<tr>
<td>Total commodity value</td>
<td></td>
</tr>
<tr>
<td>Growth in tonnage</td>
<td></td>
</tr>
<tr>
<td>Growth in value</td>
<td></td>
</tr>
<tr>
<td>Supply Chain</td>
<td></td>
</tr>
<tr>
<td>Number of targeted supply chains</td>
<td></td>
</tr>
<tr>
<td>Number of targeted supply chain businesses</td>
<td></td>
</tr>
<tr>
<td>Tonnage of goods for targeted supply chains</td>
<td></td>
</tr>
<tr>
<td>Employment in targeted supply chain businesses</td>
<td></td>
</tr>
<tr>
<td>Accessibility and Connectivity</td>
<td></td>
</tr>
<tr>
<td>Modal connectivity</td>
<td></td>
</tr>
<tr>
<td>International gateway</td>
<td></td>
</tr>
</tbody>
</table>
Map showing preliminary FSD scoring results.

Prepared by Cambridge Systematics.

Map showing preliminary FSD scoring results.

Prepared by Cambridge Systematics.

March 8, 2017
Map showing preliminary FSD scoring results.

Prepared by Cambridge Systematics.

March 8, 2017
Map showing preliminary FSD scoring results.

Prepared by Cambridge Systematics.

March 8, 2017
Texas Freight Advisory Committee

March 9, 2017

FAST Act

- The FAST Act establishes a new National Highway Freight Program to improve the efficient movement of freight on the National Highway Freight Network (NHFN).
  - Texas funding is limited to the Primary Highway Freight System (PHFS) and Critical Urban and Critical Rural corridors as it is a high mileage state.
  - 2% of a State's NHFP funding is set aside for State Planning & Research (SPR).
- NHFP funds must contribute to the efficient movement of freight on the NHFN and be identified in a freight investment plan included in the State’s freight plan
  - Beginning on December 4, 2017 (two years after enactment of the FAST Act) a State may not obligate NHFP funds unless it has developed a freight plan that is compliant with the FAST Act.
  - A State may use not more than 10% of its total NHFP apportionment each year for freight intermodal or freight rail projects.
FAST Act Funding

- **National Highway Freight Program (Formula Funds):**
  - $551* million for Texas over next 5 years:
    - 2016: $100,641,720
    - 2017: $100,638,522* (highest in the nation for first time)
    - 2018: $105,017,447
    - 2019: $118,144,628
    - 2020: $131,271,809

- **Criteria:**
  - Highway projects must be identified in the Freight Plan and located on the Primary Highway Freight System (PHFS) or critical rural or urban corridor.
FAST Act Funding

PROJECT ELIGIBILITIES:
- MUST BE IDENTIFIED IN THE FREIGHT PLAN
- MAX 10% CAN BE SPENT ON NON-HIGHWAY PROJECTS

<table>
<thead>
<tr>
<th>Inside the fence port projects</th>
<th>Project development activities</th>
<th>Construction and reconstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land acquisition</td>
<td>ITS freight projects</td>
<td>Environmental mitigation</td>
</tr>
<tr>
<td>Rail-highway grade separation</td>
<td>Geometric design improvements</td>
<td>Runaway and climbing truck lanes</td>
</tr>
<tr>
<td>Shoulder widening</td>
<td>Truck parking</td>
<td>Traffic signals</td>
</tr>
<tr>
<td>Work zone management</td>
<td>Ramp metering</td>
<td>Additional road capacity for hwy bottlenecks</td>
</tr>
<tr>
<td>Projects that improve the flow of freight to the NHFN</td>
<td>Diesel retrofits</td>
<td>Data collection and analysis</td>
</tr>
</tbody>
</table>
FAST Act Funding, Project Identification

- Highway projects identified by taking the FY letting schedule, cross referencing with TFMP project list, filtering for projects on the PHFN, and filtering out:
  - Congestion Mitigation and Air Quality Improvement Program (CMAQ) projects
  - Surface Transportation Program (STP) projects
  - Federal earmarks
  - Proposition 1 projects (i.e. not federally funded)
FAST Act Funding, FY 2016

- Fiscal Year 2016:
  - 5 projects from the Texas Freight Mobility Plan submitted for $98.6 million apportionment for Texas under the National Highway Freight Program.
- Projects located in the following counties:
  - Bexar
  - Potter
  - Travis (2)
  - Walker
<table>
<thead>
<tr>
<th>DIST DATE</th>
<th>CCSJ</th>
<th>CSJ</th>
<th>BREAKOUT_COST</th>
<th>FREIGHT_AMOUNT</th>
<th>FREIGHT NOTE</th>
<th>County</th>
<th>HIGHWAY_NUMBER</th>
<th>TYPE_OF_WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016/04</td>
<td>0017-10-273</td>
<td>0017-10-273</td>
<td>4,558,363.86</td>
<td>4,558,363.86</td>
<td>FULL BEXAR</td>
<td>IH 35</td>
<td></td>
<td>REPLACE BRIDGE AND APPROACHES</td>
</tr>
<tr>
<td>2016/06</td>
<td>0275-01-177</td>
<td>0275-01-175</td>
<td>3,500,000.00</td>
<td>3,500,000.00</td>
<td>FULL POTTER</td>
<td>IH 40</td>
<td></td>
<td>REPLACE EXISTING BRIDGE</td>
</tr>
<tr>
<td>2016/06</td>
<td>0275-01-177</td>
<td>0275-01-176</td>
<td>3,500,000.00</td>
<td>3,500,000.00</td>
<td>FULL POTTER</td>
<td>IH 40</td>
<td></td>
<td>REPLACE EXISTING BRIDGE</td>
</tr>
<tr>
<td>2016/06</td>
<td>0275-01-177</td>
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<td>IH 40</td>
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<td>IH 45</td>
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<td>WIDEN FREEWAY (SIX LANES)</td>
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</table>
State-by-State apportionment calculations for FY 2017 were required to be adjusted so that each State receives at least 95% of the dollar amount of its contributions to the Highway Account of the Highway Trust Fund (HTF).

Texas triggered an adjustment in FY 2017 based on HTF contributions data updated in August. As such, the apportionments for Texas were adjusted upward accordingly and the apportionments for all other States were required to be adjusted proportionally downward.

The apportionments for Texas were adjusted upward by 6.68%.

- **FY 2017 apportionment:** $100,638,523.00 (after 2% SPR set aside)
- **FY 2016 carry over:** $12,802,455.58
- **Total Available:** $113,440,978.58
## FAST Act Funding, FY 2017 Eligible Projects in UTP

<table>
<thead>
<tr>
<th>Letting Date</th>
<th>Control Section Job Number</th>
<th>County</th>
<th>Highway</th>
<th>Type of Work</th>
<th>TFMP Priority</th>
<th>Total Project Cost (Est.)</th>
<th>Federal Share</th>
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<tbody>
<tr>
<td>2017/05</td>
<td>0373-01-103</td>
<td>NUECES</td>
<td>IH 69E</td>
<td>RAMP REVERSAL</td>
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<tr>
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<td>BEXAR</td>
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<td>GR, STRS, BASE, SURF, SIGN &amp; UTIL</td>
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<td>IH 35E</td>
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<td>High</td>
<td>20,000,000.00</td>
<td>18,000,000.00</td>
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<tr>
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<td>IH 35E</td>
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<td>High</td>
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<td>72,000,000.00</td>
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<tr>
<td>2017/07</td>
<td>0168-09-161</td>
<td>RANDALL</td>
<td>IH 27</td>
<td>REHAB EXISTING ROADWAY</td>
<td>High</td>
<td>12,046,567.00</td>
<td>9,637,253.60</td>
</tr>
<tr>
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<td>0168-09-161</td>
<td>RANDALL</td>
<td>IH 27</td>
<td>REHAB EXISTING ROADWAY</td>
<td>High</td>
<td>900,000.00</td>
<td>720,000.00</td>
</tr>
<tr>
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<td>EL PASO</td>
<td>IH 10</td>
<td>INTERCHANGE IMPROVMENTS</td>
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<td>2,523,561.30</td>
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<td>IH 10</td>
<td>INTERCHANGE IMPROVMENTS</td>
<td>High</td>
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<tr>
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<td>GR, STRS, BS &amp; SURF, PVT MRKG</td>
<td>High</td>
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<td>3,520,000.00</td>
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<tr>
<td>2017/08</td>
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<td>HARRIS</td>
<td>IH 610</td>
<td>CONSTRUCT DIRECT CONNECTOR</td>
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<td>8,437,500.69</td>
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<td>HARRIS</td>
<td>IH 610</td>
<td>CONSTRUCT DIRECT CONNECTOR</td>
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<td>2,520,000.00</td>
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<td>GR, BS, PAV &amp; STR</td>
<td>High</td>
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Total $231,000,916

FY17 available $113,440,979
## Eligible Projects Letting in May and June (subject to change)

<table>
<thead>
<tr>
<th>Letting Date</th>
<th>Control Section Job Number</th>
<th>County</th>
<th>Highway</th>
<th>Type of Work</th>
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<td><strong>Total</strong></td>
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## Eligible Projects Letting in July and August (subject to change)

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<th>Control Section Job Number</th>
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<th>Highway</th>
<th>Type of Work</th>
<th>TFMP Priority</th>
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**Total**: 121,239,525