

GOALS, OBJECTIVES AND MEASURES

3.1 Development of Texas Transportation Plan Goals and Objectives

3.1.1 Development Process

As shown in, Exhibit 3-1, developing goals and objectives for the Texas Transportation Plan (TTP) was an inclusive process, and started with an evaluation of TxDOT’s 2015-2019 Strategic Plan and the requirements of MAP-21. “Building Blocks” for TTP goals and objectives were presented in *Technical Memorandum #2: TTP Goals and Objectives*, and were reviewed with the TTP Technical Advisory Committee. After the Technical Advisory Committee input was used to develop specific language for TTP goals and objectives, they were shared with the public in stakeholder and public Outreach Round 1 and finalized for review and approval following stakeholder and public Outreach Round 2.

3.1.2 Incorporating National Goals

MAP-21 established seven national goals for the federal-aid highway program. These goals are incorporated into the TTP as a requirement of MAP-21:

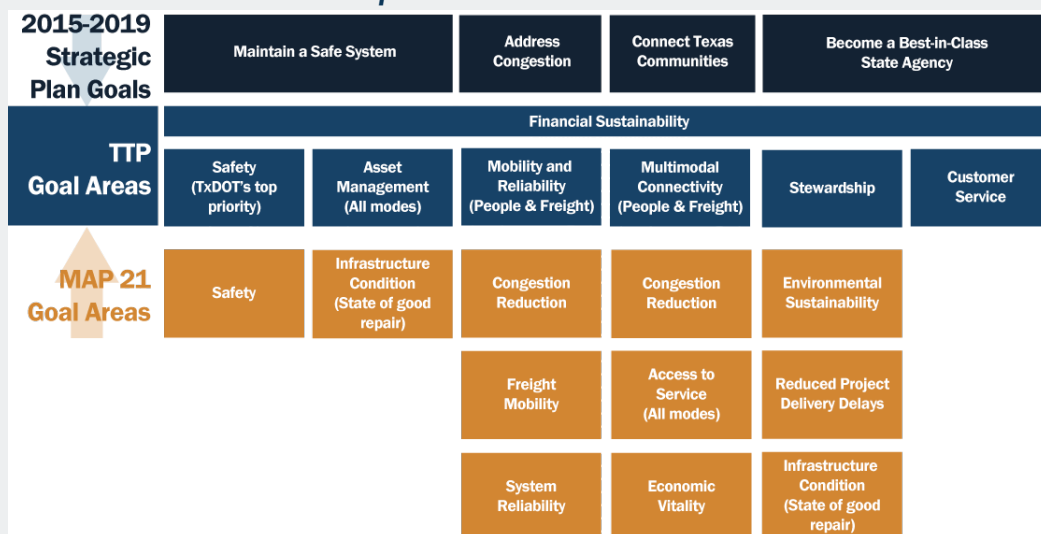
- **Safety:** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads;
- **Infrastructure condition:** To maintain the highway infrastructure asset system in state of good repair;
- **Congestion reduction:** To achieve a significant reduction in congestion on the National Highway System (NHS);
- **System reliability:** To improve the efficiency of the surface transportation system;
- **Freight movement and economic vitality:** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development;
- **Environmental sustainability:** To enhance the performance of the transportation system while protecting and enhancing the natural environment; and
- **Reduced project delivery delays:** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies’ work practices.

State DOTs must incorporate these national goals into their long-range plans. Under-performance in these areas may affect their ability to receive federal funding under the MAP-21 core programs: the National Highway Performance Program, Highway Safety Improvement Program, and Congestion Mitigation and Air Quality Program (CMAQ).

Exhibit 3-1. Texas Transportation Plan Goal and Objective Development Process



Exhibit 3-2. Texas Transportation Plan Goal Areas



3.2 Texas Transportation Plan Goals and Objectives

Based on input from the TTP Technical Advisory Committee and feedback from Texas transportation stakeholders and the public, the final TTP goals are provided in Exhibit 3-2.

Draft TTP objectives were developed to respond to the TTP Technical Advisory Committee priorities and recommendations. Final language for TTP goals and objectives is as follows:

▪ Safety

- Improve multimodal transportation safety
- Reduce fatalities and serious injuries
- Improve safety of at-grade rail crossings
- Eliminate conflicts between modes wherever possible
- Increase bicycle and pedestrian safety through education, the design and construction of new facilities, and improvements to existing facilities
- Educate the public on the dangers of high-risk driving behaviors
- Coordinate with enforcement to improve driver compliance with laws
- Improve incident response times



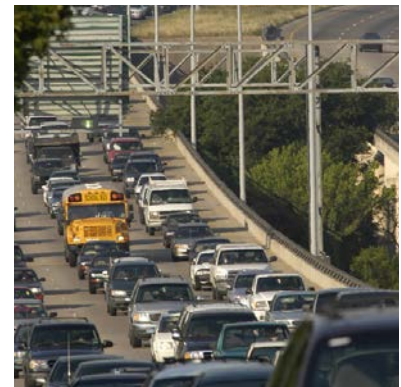
▪ Asset Management

- Maintain and preserve multimodal assets using cost-beneficial treatments
- Decrease the number of bridges that are structurally deficient, functionally obsolete, or substandard-for-load
- Achieve state of good repair for pavement assets, keeping pavements smooth and pothole free
- Achieve state of good repair for transit assets such that they are comfortable and reliable
- Identify and mitigate risks associated with asset failure
- Identify existing and new funding sources and innovative financing techniques for all modes of transportation
- Build upon and regularly update the asset inventories for all transportation modes



▪ Mobility and Reliability

- Reduce congestion and improve system efficiency and performance
- Plan, design, and construct strategic capacity projects
- Implement alternative strategies that reduce peak demand
- Improve operations within existing right-of-way
- Increase travel options and accessibility for all, especially elderly, disabled, and disadvantaged populations
- Increase freight and passenger travel time reliability
- Increase the capacity and efficiency of the transportation system across travel modes



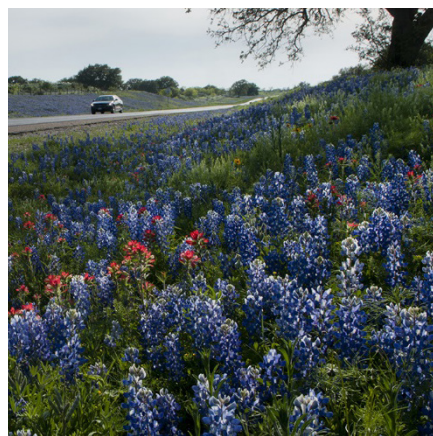
▪ **Multimodal Connectivity**

- Provide transportation choices and improve system connectivity for all passenger and freight modes
- Provide and improve access to jobs, transportation choices, and services for all Texans
- Provide safe and convenient travel choices for all Texans with a focus on the complete trip
- Support the efficient and coordinated movement of goods and services between freight modes to facilitate statewide, national, and global commerce
- Support multimodal and intermodal planning, project development, and investments
- Improve connectivity between urban, suburban, and rural areas and between travel modes



▪ **Stewardship**

- Manage resources responsibly and be accountable and transparent in decisionmaking
- Identify sustainable funding sources and leverage resources wisely to maximize the value of investments and minimize negative impacts
- Develop and implement a project development process that recognizes quality-of-life concerns for all system users and future generations of Texans
- Link transportation planning with land use
- Reduce project delivery delays
- Coordinate project planning and delivery with all planning partners and stakeholders
- Minimize impacts to natural, cultural, and historic resources and promote sustainability in project design and delivery



▪ **Customer Service**

- Understand and incorporate customer desires in decision processes and be open and forthright in all agency communications
- Collect and integrate feedback using innovative engagement techniques and technology
- Promote and enable public participation in project planning and development
- Improve accessibility of information through innovative, understandable, and relatable communication techniques
- Educate the public and stakeholders on transportation costs, funding availability, and investment tradeoffs



▪ **Sustainable Funding:**

- Identify and sustain funding sources for all modes
- Identify and document costs to meet the state's future transportation needs
- Consider all funding sources to fill the needs-to-revenues gap
- Educate the public and stakeholders on the costs associated with constructing and preserving the system
- Evaluate the feasibility of innovative financing solutions
- Improve predictive capabilities for revenue forecasting and long-term needs assessments



3.3 Performance Measures

In accordance with MAP-21 requirements, the USDOT will provide state departments of transportation and MPOs with national performance measures to collect and report on through a series of rulemaking refinements shown in Exhibit 3-3. States and MPOs will be responsible for setting their own targets with respect to these measures.

These federal requirements take effect with the first plan adoption deadline following the USDOT’s adoption of the final rules governing performance-based planning and performance management. While these requirements are not yet in effect, TxDOT is taking steps to begin incorporating some aspects of these federal requirements into the process of defining TTP-specific goals, objectives, and performance measures to better prepare the Texas transportation planning community for working with TxDOT to improve performance-based planning and programming processes.

Exhibit 3-3. USDOT Guidance on MAP-21 Performance Rulemaking

| Program | Measure Category |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Status I | Serious injuries per vehicle miles traveled (VMT) ¹ Fatalities per VMT ¹ Number of serious injuries ¹ Number of fatalities ¹ |
| Status II | Pavement condition on the Interstates ² Pavement condition on the NonInterstate NHS ² Bridge condition on NHS ² |
| Status III | Traffic congestion ³ On-road mobile source emissions ³ Freight movement on the Interstate ⁴ Performance of Interstate system ² Performance of NonInterstate NHS ² |

Source: Osbourne, 2013

Notes:

- 1 Highway Safety Improvement Program
- 2 National Highway Performance Program
- 3 Congestion Mitigation and Air Quality(CMAQ)
- 4 Freight policy

3.3.1 Texas Transportation Plan Performance Measures

The TTP is TxDOT’s long-range, multimodal, performance-based transportation plan that will guide planning and programming decisions for the development, integrated management, and operation of the statewide transportation system in Texas over the next 25 years. The performance measures shown in Exhibit 3-4 and detailed below are recommended for long-range planning and have been used to support TTP predictive modal analyses. These measures provide a direct link to TTP goals and objectives.

Exhibit 3-4. Texas Transportation Plan Performance Measures

| Mode | Performance Measure and Definition | TPP Goal Areas Supported |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Safety* | Number of Fatalities and Serious Injuries | Safety |
| Mobility and Congestion Reduction | Rural and Urban Level of Service (LOS), Total Delay, and Congestion Severity Index (CSI) | Mobility and Reliability Multimodal Connectivity |
| Pavements | National Highway System (NHS) and NonNHS % Lane- Miles with a “Good” or “Better” International Roughness Index (IRI) and % Lane-Miles with a “Good” or “Better” Pavement Condition Score | Asset Management Stewardship Safety |
| Bridges | NHS and NonNHS % Structurally Deficient (SD) Deck Area, Count of Bridges and % Deck Area with Cyclic Maintenance Needs, Count of Bridges and % Deck Area with Preventive Maintenance Needs, and Count of Bridges and % Deck Area with Rehabilitation or Replacement Needs | Asset Management Stewardship Safety |
| Transit | Metropolitan Transit Authority (MTA) and NonMTA % of Transit Assets in “Good” or “Better” condition and Additional Annual Transit Ridership | Asset Management Mobility and Reliability |
| Passenger Rail | % Passenger Rail Needs Met | Mobility and Reliability |
| Intelligent Transportation System (ITS) | % ITS Needs Met | Asset Management Mobility and Reliability |
| Aviation | National Plan of Integrated Airport Systems (NPIAS) and NonNPIAS Backlog of Aviation Projects | Asset Management Multimodal connectivity |
| Bicycle and Pedestrian | % Bicycle and Pedestrian Needs Met | Stewardship Multimodal Connectivity |
| Non-Highway Freight | % NonHighway Freight Needs Met | Mobility and Reliability Multimodal Connectivity |

*Safety is not a mode, but safety is addressed for each mode.

These measures are defined further as follows:

- **Number of Fatalities:** Number of fatalities sustained in reportable motor vehicle traffic crashes. System improvements may help reduce the severity of crashes but cannot control for driver behavior.
- **Number of Serious Injuries:** Number of incapacitating injuries sustained in reportable motor vehicle traffic crashes. System improvements may help reduce the severity of crashes but cannot control for driver behavior.
- **Level of Service (LOS):** The LOS is a standardized grade on an A (best) to F (worst) scale that is used to evaluate the level of roadway congestion. Definitions for each level can be found in *The Highway Capacity Manual* and *American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highway and Streets*, most generally:
 - LOS A = Free flow
 - LOS B = Reasonably Free Flow
 - LOS C = Stable flow, at or near free flow
 - LOS D = Approaching unstable flow
 - LOS E = Unstable flow, operating at capacity
 - LOS F = Forced or breakdown flow. Congested roadways are considered to be those that are at or below LOS D.
- **Total Delay:** The total additional time (hours) that vehicles spend in traffic relative to a free flow scenario. This is a function of system demand and roadway capacity.
- **Congestion Severity Index (CSI):** The CSI metric, developed by FHWA, represents the total delay per vehicle miles traveled on the statewide freeway and arterial system.

- **Percent Lane-Miles with a “Good” or “Better” International Roughness Index (IRI):** IRI is an AASHTO-supported MAP-21 measure of pavement roughness. The ride quality of the pavement is determined by capturing the roughness experienced by drivers in terms of inches per mile that a vehicle’s suspension is jostled at standardized speeds. A lower IRI indicates a smoother pavement. What is considered “good” depends on the functional classification of the roadway: for a NHS pavement, 95 inches per mile or lower is preferred; for a non-NHS pavement, 170 inches per mile or lower is preferred.
- **Percent Lane-Miles with a “Good” or “Better” Pavement Condition Score:** Pavement Condition Score is a TxDOT-defined comprehensive pavement condition index to measure the overall pavement condition considering both pavement distress and roughness. It ranges from 1 (worst) to 100 (best). A score between 90 and 100 is considered “Very Good”; a score between 70 and 89 is considered “Good”, a score between 50 and 69 is considered “Fair”; a score between 35 and 49 is considered “Poor”; and a score less than 35 is considered “Very Poor.”
- **Percent Structurally Deficient (SD) Deck Area:** Percent of deck area of structures that are deemed to be in need of structural rehabilitation or replacement. While not necessarily unsafe, these structures are due for improvements to load carrying capacity, waterway adequacy, and component condition ratings. Technically speaking, the National Bridge Inventory (NBI) database defines a SD bridge as either having a deck, superstructure, substructure, or culvert condition rating of 4 or less or a structural evaluation and waterway adequacy rating of 2 or less. These ratings are based on biannual or more frequent inspections using a 0 (worst) to 9 (best) scale.
- **Count of Bridges and Percent Deck Area with Cyclic Maintenance Needs:** Number of structures and percent deck area of structures with a deck, superstructure, substructure, or culvert NBI rating of 7 or higher. These structures require minimal work due to being in a state of good repair.
- **Count of Bridges and Percent Deck Area with Preventive Maintenance Needs:** Number of structures and percent deck area of structures with a deck, superstructure, substructure, or culvert NBI rating of 5 or 6. These structures can be targeted for preventive treatments that can extend the life of the bridge or culvert by reducing their rate of deterioration.
- **Count of Bridges and Percent Deck Area with Rehabilitation or Replacement Needs:** Number of structures and percent deck area of structures with a deck, superstructure, substructure, or culvert NBI rating of 4 or less. These structures are deemed SD and require more extensive work to improve the condition rating of one or multiple components.
- **Percent of Transit Assets in “Good” or “Better” condition:** Percentage of transit facilities, stations, vehicles, and guideway elements in a state of good repair. State of good repair is defined as components that are operable and sufficient to provide smooth and comfortable service to customers.
- **Additional Annual Transit Ridership:** Represents the additional ridership that can be served through system expansion and operational efficiency improvements.
- **Percent Passenger Rail Needs Met:** Represents the percentage of unconstrained needs in terms of planned and programmed projects that can be funded. These include high speed rail service as well as planned AMTRAK expansions and reroutes.
- **Percent Intelligent Transportation System (ITS) Needs Met:** Represents the percentage of unconstrained needs that are able to be funded. Projects include an array of activities ranging from dynamic messaging signs to smart signal.
- **Backlog of Aviation Projects:** Number of projects that remain unfunded at specified investment level. These projects may include runway, taxiway, apron construction or rehabilitation, airfield lighting, signage, and drainage, planning and environmental studies, weather observation stations, and safety improvements.
- **Percent Bicycle and Pedestrian Needs Met:** Represents the percentage of unconstrained needs able to be funded. Bicycle and pedestrian needs include local projects identified to preserve facility infrastructure, enhance connectivity, and improve safety.
- **Percent Non-Highway Freight Needs Met:** Represents the percentage of unconstrained needs able to be funded. Non-highway freight needs include infrastructure improvements to the ports, rail, and aviation distribution centers and their connectivity to the highway system.

3.3.2 National Performance Measures

The Texas A&M Transportation Institute assisted TxDOT in determining fiscal year 2014 urban, rural and statewide targets for MAP-21 Congestion Reduction, System Reliability, and Freight Vitality. As can be seen in Exhibit 3-5, statewide targets will only be set and results reported for safety, freight, bridge and pavement condition, system performance, and transit measures; no targets have been established for CMAQ measures. In some cases, separate performance targets are provided for rural and urban areas of the state.

Exhibit 3-5. TxDOT National Performance Measures for MAP-21 Reporting

| 2015-2019 Strategic Plan Goals | TTP 2040 Goals | MAP-21 Goals | Performance Measures | FY 2014 Target | | |
|-------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------|--------|-----------|
| | | | | Urban | Rural | Statewide |
| Maintain a Safe System | Safety | Safety | Fatality Rate (5-year moving average) | 0.94 | 2.14 | 1.36 |
| | | | Number of Fatalities (5-year moving average) | 1,442 | 1,767 | 3,209 |
| | | | Serious Injury Rate (5-year moving average) | 37.9 | 31.3 | 35.59 |
| | | | Number of Serious Injuries (5-year moving average) | 58,232 | 25,894 | 84,126 |
| | Asset Management | Infrastructure Condition | % Structurally Deficient Deck Area on NHS Bridges – Percent based on total NHS Deck Area | | | 1.1% |
| | | | % Structurally Deficient Deck Area on NonNHS Bridges – Percent Based on Total NonNHS Deck Area | | | 2.0% |
| | | | Count of Bridges (Entire Inventory) with Cyclic Maintenance Needs | | | 28,280 |
| | | | % Bridges (Entire Inventory) by Deck Area with Cyclic Maintenance Needs | | | 53.9% |
| | | | Count of Bridges (Entire Inventory) with Preventive Maintenance Needs | | | 23,800 |
| | | | % Bridges (Entire Inventory) by Deck Area with Preventive Maintenance Needs | | | 44.8% |
| | | | Count of Bridges (Entire Inventory) with Rehabilitation or Replacement Needs | | | 840 |
| | | | % Bridges (Entire Inventory) by Deck Area with Rehabilitation or Replacement Needs | | | 1.3% |
| | | | Transit State of Good Repair Average Condition. Ratings are 1=Bad, 2=Poor, 3=Fair, 4=Good, 5=Excellent | 4.00 | 4.00 | 4.00 |
| | | | Interstate Pavement in Good Condition (IRI <95) | | | 68.08% |
| | | | Interstate Pavement in Fair Condition (IRI 95 – 170) | | | 28.89% |
| | | | Interstate Pavement in Poor Condition (IRI > 170) | | | 3.03% |
| | | | NonInterstate NHS Pavement in Good Condition (IRI <95) | | | 51.58% |
| NonInterstate NHS Pavement in Fair Condition (IRI 95 – 170) | | | 41.69% | | | |
| NonInterstate NHS Pavement in Poor Condition (IRI > 170) | | | 6.73% | | | |
| Address Congestion/ Connect Texas Communities | Mobility and Reliability/ Multimodal Connectivity | Congestion Reduction/ System Reliability/ Freight Vitality | Annual Hours of Truck Delay – Interstates (millions) | 11.5 | 1.0 | 12.5 |
| | | | Truck Reliability Index | 1.86 | 1.07 | 1.58 |
| | | | Annual Hours of Delay – NHS (millions) | 384.5 | 43.8 | 428.3 |
| | | | Annual Hours of Delay – Interstates (millions) | 122.8 | 4.1 | 126.9 |
| | | | Annual Hours of Delay – NonInterstate NHS | 261.7 | 39.7 | 301.4 |
| | | | Reliability Index – NHS | 1.91 | 1.18 | 1.66 |
| | | | Reliability Index – Interstates | 1.86 | 1.07 | 1.58 |
| Become a Best-in-Class State Agency | Stewardship | Environmental Sustainability | Daily kilograms of VOC reduced by the latest annual program of CMAQ projects in areas with 1 million pop. or more (5-year average) | | | |
| | | | Daily kilograms of NOx reduced by the latest annual program of CMAQ projects in areas with 1 million pop. or more (5-year average) | | | |
| | | | Daily kilograms of CO reduced by the latest annual program of CMAQ projects in areas with 1 million pop. or more (5-year average) | | | |
| | | | Annual Hours of Delay Reduced by CMAQ Projects in areas with 1 million pop. or more (1,000 of hours) | | | |

Additional information the development of TTP-specific performance measures and targets for the MAP-21 national performance measures can be found in *Technical Memorandum #2: TTP Goals and Objectives*.