

## **CHAPTER 3 – GOALS AND PERFORMANCE MEASURES**

Cover page: The Corpus Christi Metropolitan Planning Organization (Corpus Christi MPO), transit agencies, and the Texas Department of Transportation (TxDOT) are required to develop performance-based plans and processes which align with federal goals. Monitoring the performance of the transportation system – including the condition of physical assets and travel times on the network – is critical for transparency and accountability as required by federal regulations.

### **CHAPTER 3**

The planning framework guides the development of the regional transportation plan, articulating what the Corpus Christi MPO is trying to achieve through the regional transportation planning effort. It establishes the foundation for Transportation Decision-making, focuses data-gathering efforts, shapes project alternatives, and outlines how decision-makers select and implement policies and projects. The following components comprise the planning framework:

- Regional Vision
- Goals and Objectives
- Performance measures and targets
- Project evaluation criteria
- Weighting (Relative importance) of evaluation criteria

### **PLANNING METHODOLOGY CONSIDERATIONS**

The Corpus Christi MPO continuously examines the transportation planning framework to increase citizen orientation and transparency. Procedures are undertaken to verify the transportation planning framework are:

- Legitimate: The process must actively reach out and be accessible to all potentially-affected interests.
- Rigorous: The process should not allow those who voice their concerns most loudly, most often, or most articulately to wield disproportionate influence. Instead, the impacts and alternatives must be evaluated using scientific standards for data and analysis so that competing claims are assessed fairly.
- Timely: The complexity of decision-making can lead to lengthy deliberative processes. There is a need to expedite decision making, though not at the expense of public process.

### **REGIONAL TRANSPORTATION VISION**

*The Corpus Christi MPO multi-modal transportation system is well-maintained, safe, provides efficient movement of people and goods, supports economic growth, and enhances regional quality of life.*

### **PERFORMANCE-BASED PLANNING REQUIREMENTS**

The cornerstone of IJJA/BIL continued the prior MAP-21's highway program transformation, signed in 2012, was the transition to a performance and outcome-based program. The Corpus Christi Metropolitan Planning Organization (Corpus Christi MPO), transit agencies, and the Texas Department of Transportation (TxDOT) must invest resources in projects to achieve individual targets that collectively will make progress toward national goals. Specific quantitative criteria published by the Secretary of Transportation measure whether these goals have been achieved. Monitoring the performance of the transportation system – including the condition of physical assets and travel times on the network – is critical for transparency and accountability as required by federal regulations.

Performance-based planning and programming refers to the evaluating projects against performance targets and their ability to achieve desired performance outcomes for the multimodal transportation system. The objective is to ensure transportation investment decisions are made based on their ability to meet established goals.

While the concepts of performance management and performance measures are generally understood, deciding how to best allocate limited resources across various types of investments to provide acceptable transportation system performance poses a persistent and difficult challenge for most transportation agencies in the nation. In

general, agencies struggle with technical challenges and data analytics, while elected leaders fear a “black box” approach to project prioritization, while other institutional and historic factors may create some barriers to purely technical approaches to choosing which projects to fund.

### **GOALS AND PERFORMANCE MEASURES**

A key takeaway is remembering that goals do not identify specific policies or projects, rather they frame the outcome that is desired and identify the performance measures used to evaluate potential policies and projects. For this 2045 MTP Update, the Corpus Christi MPO used TxDOT's and federally established goals as the basis for the regional goals.

Another key factor to consider is new technologies enable a wider array of choices for locating the production, distribution, and consumption of goods and services. Ongoing shifts in regional, national, and global economies are also reconfiguring travel demands for workers and freight at an accelerating pace. The scale of these changes vary, but all point to a need to invest in new technologies and services to build a dynamic and diverse transportation system that is responsive to the needs of an increasingly global and high-tech economy.

#### **The National Performance Goals are:**

- Achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- Maintain the highway infrastructure asset system in a state of good repair
- Achieve a significant reduction in congestion on the National Highway System
- Improve the efficiency of the surface transportation system
- Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- Enhance the performance of the transportation system while protecting and enhancing the natural environment
- Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods

#### **Federal (IIJA) Emphasis Areas:**

- Emphasize the preservation of the existing transportation system.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Enhance travel and tourism.
- Improve transportation system resiliency and reliability.
- Increase accessibility and mobility of people and freight.
- Increase the safety of the transportation system for motorized and non-motorized users.
- Increase the security of the transportation system for motorized and non-motorized users.
- Promote efficient system management and operation.
- Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
- Reduce (or mitigate) the stormwater impacts of surface transportation.
- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

#### **USDOT Environmental Justice (EJ) and Title VI policies:**

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority or low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority or low-income populations.

**The Statewide Long Range Goals are Transportation:**

Connecting Texas 2050 identifies six goals that set the foundation for meeting, supporting, and delivering on TxDOT’s mission and vision for transportation across the state. The goals identified for Connecting Texas 2050 are either performance or strategic goals. Performance goals identify specific tasks to ensure a safe, efficient, and resilient transportation system. Strategic goals guide organizational decision-making and provide overall direction to develop a well-connected and future-focused transportation system.

**Exhibit 3-1: Connecting Texas 2050 Performance and Strategic Goals**



**CORPUS CHRISTI MPO GOALS, OBJECTIVES, PERFORMANCE MEASURES, AND TARGETS**

In adopting the goals, objectives, and performance measures for the 2045 MTP Update, the Corpus Christi MPO, its member communities, and transit agencies reaffirm the need to invest in infrastructure, reduce delays, improve access to transportation modes other than Single Occupancy Vehicles (Non-SOV) transportation, and ensure projects are delivered in a timely manner. The Corpus Christi MPO uses a continuous cycle of target setting, project programming, and performance monitoring to link goals and measures from the 2045 MTP Update with specific investment decisions in the Transportation Improvement Program (TIP). This process includes evaluating alternative investment programs and projects to assess the likely performance impacts of different strategies and funding scenarios.

**CORPUS CHRISTI MPO REGIONAL GOALS**

Goals are the first step to supporting a transportation vision statement. They address the key desired outcomes for the region. The Corpus Christi MPO Goals for the 2045 MTP Update are based on the TxDOT and Federal Highway Administration/US DOT goals.

1. The Corpus Christi MPO Long Range Transportation goals for the 2045 MTP Update are to:
2. Eliminate fatalities, reduce serious injuries, and improve security of the transportation system using proven countermeasures, technology applications, policy adjustments, education, and other reasonable measures.
3. Maintain, preserve, and modernize transportation infrastructure throughout its lifecycle through targeted rehabilitation, modernization, and replacement.
4. Improve multimodal and intermodal connectivity and mobility for both goods and people by improving efficiency, reliability, and resiliency.
5. Protect and enhance the human and natural environment while ensuring efficient use of taxpayer dollars.
6. Build, Operate, and Maintain modern transportation systems that promote regional and personal economic growth, competitiveness, and quality of life.

## **LONG RANGE OBJECTIVES AND PERFORMANCE MEASURES**

The Corpus Christi MPO TPC supports TxDOT's performance measure targets. The objectives listed below may support more than one adopted goal, above.

**Objective A:** By 2028, achieve a 5% reduction in fatalities and serious injuries compared to the 2023 5-year baseline. By 2034, achieve a 50% reduction in fatalities and serious injuries compared to the 2023 5-year baseline. By 2050, eliminate all traffic fatalities and reduce serious injuries by 50% compared to the 2023 5-year baseline.

**Objective B:** By 2028, the percentage of safety funding invested in reducing Vulnerable Road User (A vulnerable road user is a person walking, biking, or rolling) crashes will be proportionate to the previous 5-year average percentage of Vulnerable Road User fatal crashes in the region.

**Objective C:** By 2034, reduce the lane closure duration due to crashes by 10% compared to the 2023 baseline. This can be accomplished both by reducing the number of crashes and reducing the average time each crash closes lanes (This is incident management).

**Objective E:** By 2028, all safety projects in the Corpus Christi Metropolitan Region that request federal funds are analyzed using crash diagnosis software that includes Benefit Cost Analysis (BCA) and this information is reported to the Corpus Christi MPO Transportation Policy Committee.

**Objective F:** By 2034: Maximize life-cycle cost effectiveness of investments in the National Highway System bridges and pavements by reducing fair/poor pavements on the Interstate by 5 miles, fair/poor pavements on non-Interstates by 5 miles, and all bridges in condition in the region by 1000 square feet.

**Objective G:** By 2028, as part of preventive and routine maintenance activities include a 4-year average of 10% (from other sources such as Cat 4 or 7) maintenance and operations funding specifically to "harden" infrastructure identified during resiliency planning efforts as critical.

**Objective H:** By 2028, utilize AASHTO's Green Book Version 8, TxDOT's Innovative Intersection Guidebook, and others such as NACTO's Urban Street Design Guide to update, and regularly review, local design and construction standards for federally classified roads that make streets more complete, more efficient, more safe, while reducing vulnerability to, and improving recovery from, stormwater runoff and extreme weather.

**Objective I:** By 2045, achieve a 10% reduction in travel time index during peak commute hours on the congestion management corridors designated in the 2025 CMP.

**Objective J:** By 2034, construct 5 miles of connected and protected bicycle facilities within the Corpus Christi Metropolitan Planning Area.

**Objective K:** By 2034, construct 5 miles of connected ADA compliant sidewalks within the Corpus Christi Metropolitan Planning Area.

**Objective L:** By 2034, increase the percentage of trips within the metropolitan planning area that utilize a multimodal combination (walking, biking, transit, carpooling) by 10%.

**Objective M:** By 2034, increase the total annual vehicle revenue hours operated by CCRTA to 350,000.

**Objective N:** By 2034, convene a partnership within the Corpus Christi Metropolitan Planning Area among organizations that can expand access for non-emergency services to vulnerable populations and improve the quality and quantity of urban transportation services using eligible federal funding sources such as FTA 5310, Category 7, and Category 10CR.

**Objective O:** By 2034, achieve a 10% increase in Reliable Truck Travel Times throughout the Corpus Christi Metropolitan Planning Area.

**Objective P:** All federally funded transportation projects in the Corpus Christi Metropolitan Region are analyzed using Benefit Cost Analysis (BCA), all selected projects will have a score above 1.0, and this information is reported to the Corpus Christi MPO Transportation Policy Committee during project selection processes as part of both the MTP and TIP processes.

**Objective Q:** Invest 10% of federal transportation funds to serve USDOT Historically Disadvantaged Communities and Areas of Persistent Poverty

**Objective R:** By 2028, update the 2010 Corpus Christi MPO Mitigation Planning Protocol in coordination with state and federal agencies to create a Regional Habitat Mitigation and Resiliency Plan to identify Green Infrastructure projects that incorporates the Beneficial Use Master Plan.

**Objective S:** By 2028, all asset management activities within the Public Right-of-Way will comply with the ADA and ABA Accessibility Guidelines for the Public Right-of-Way.

**Objective T:** Beginning in 2028, at least 5 traffic signals per year on designated congestion corridors will be interconnected or upgraded using equivalent technology to actively coordinate and dynamically control signal operations.

**Objective U:** Beginning in 2028, ensure average trip travel time for residents in disadvantaged population tracts is comparable to, or better than, the average for the entire Metropolitan Planning Area.

**Objective V:** By 2028, all non-motorized transportation asset condition information within the Corpus Christi Metropolitan Planning Area will be acquired for purposes of prioritizing reconstruction and enhancement activities.

**Objective W:** By 2034, all investments into roads federally classified as Principal Arterials and above will modernize infrastructure to support the implementation of emerging transportation technologies.

**CORPUS CHRISTI MPO SYSTEM PERFORMANCE REPORT**

**Regional Crash Occurrence**

<b>TxDOT Established Safety (PM1) Performance Measures and Targets</b>	
<b>Performance Measure</b>	<b>2024 Statewide Targets</b>
Number of Fatalities	3,046
Rate of Fatalities per 100 million VMT	1.14
Number of Serious Injuries	17,062
Rate of Serious Injuries per 100 million VMT	6.39
Number of Non-Motorized Fatalities and Serious Injuries	2,357

*Source: Texas FY 2024 Strategic Highway Safety Plan (SHSP)*

**Regional Asset Management**

TxDOT Summary of Performance assets into a state of good repair:

<b>TxDOT Pavement and Bridge Condition (PM2) Performance Measures and Targets</b>			
<b>Performance Measure</b>	<b>Baseline</b>	<b>2-Year Target</b>	<b>4-Year Target</b>
<b>Pavement Condition</b>			
Percentage of Pavements of the Interstate System in Good Condition	64.5%	63.9%	63.6%
Percentage of Pavements of the Interstate System in Poor Condition	0.1%	0.2%	0.2%
Percentage of Pavements of the Non-Interstate System in Good Condition	51.7%	45.5%	46.0%
Percentage of Pavements of the Non-Interstate System in Poor Condition	1.3%	1.5%	1.5%
<b>Bridge Condition</b>			
Percentage of NHS Bridges Classified in Good Condition	49.2%	48.5%	47.6%
Percentage of NHS Bridges Classified in Poor Condition	1.1%	1.5%	1.5%

*Source: Baseline Performance Period Report (BPP), 2/9/2023*

**Reduce Congestion**

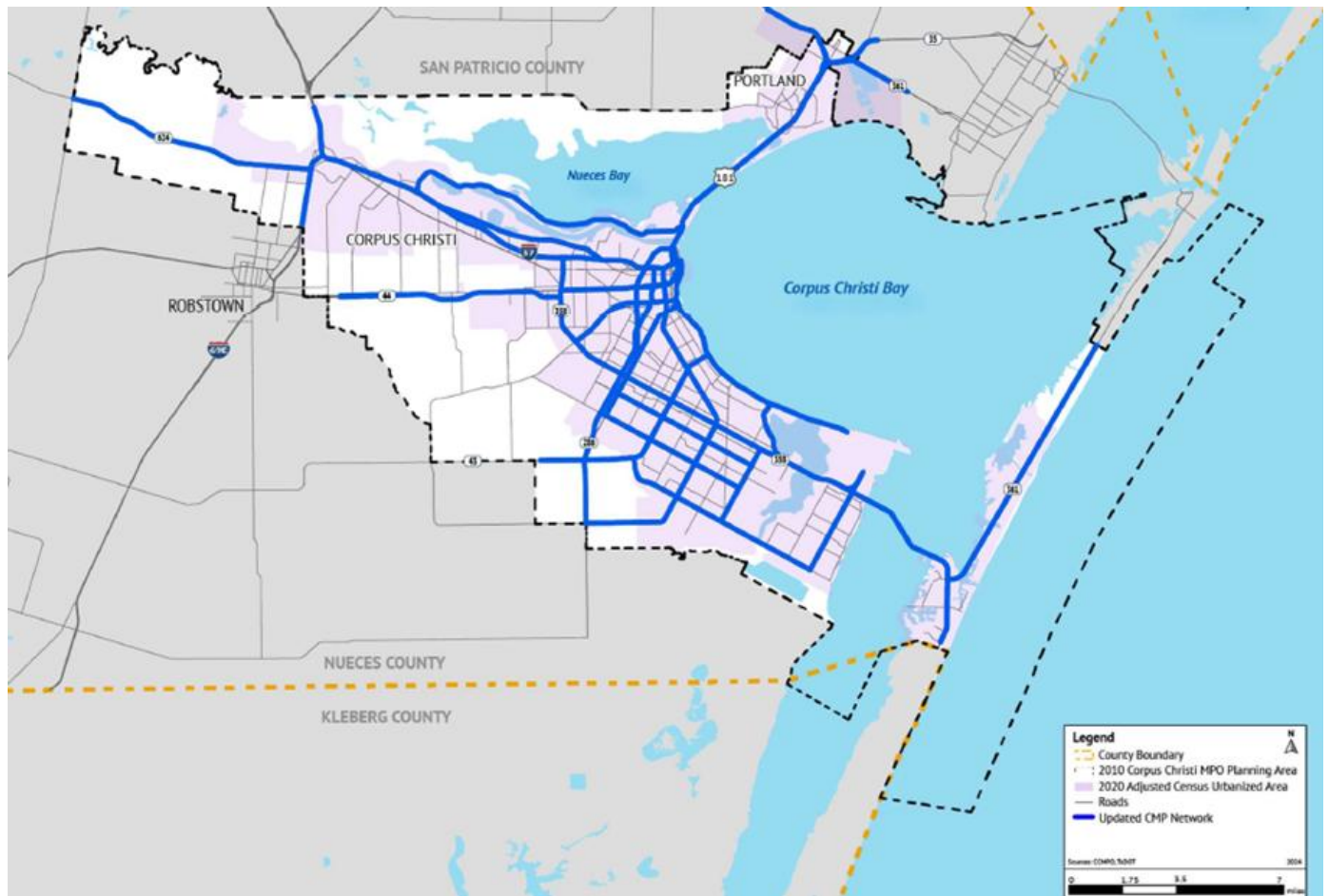
<b>TxDOT System Performance and Freight (PM3) Performance Measures and Targets</b>			
<b>Performance Measure</b>	<b>Baseline</b>	<b>2-Year Target</b>	<b>4-Year Target</b>
<b>System Performance</b>			
Percent of the Person-Miles Traveled on the Interstate That Are Reliable	84.6%	70.0%	70.0%
Percent of the Person-Miles Traveled on the Non-Interstate That Are Reliable	90.3%	70.0%	70.0%
<b>Freight</b>			
Truck Travel Time Reliability (TTTR) Index	1.39	1.55	1.55

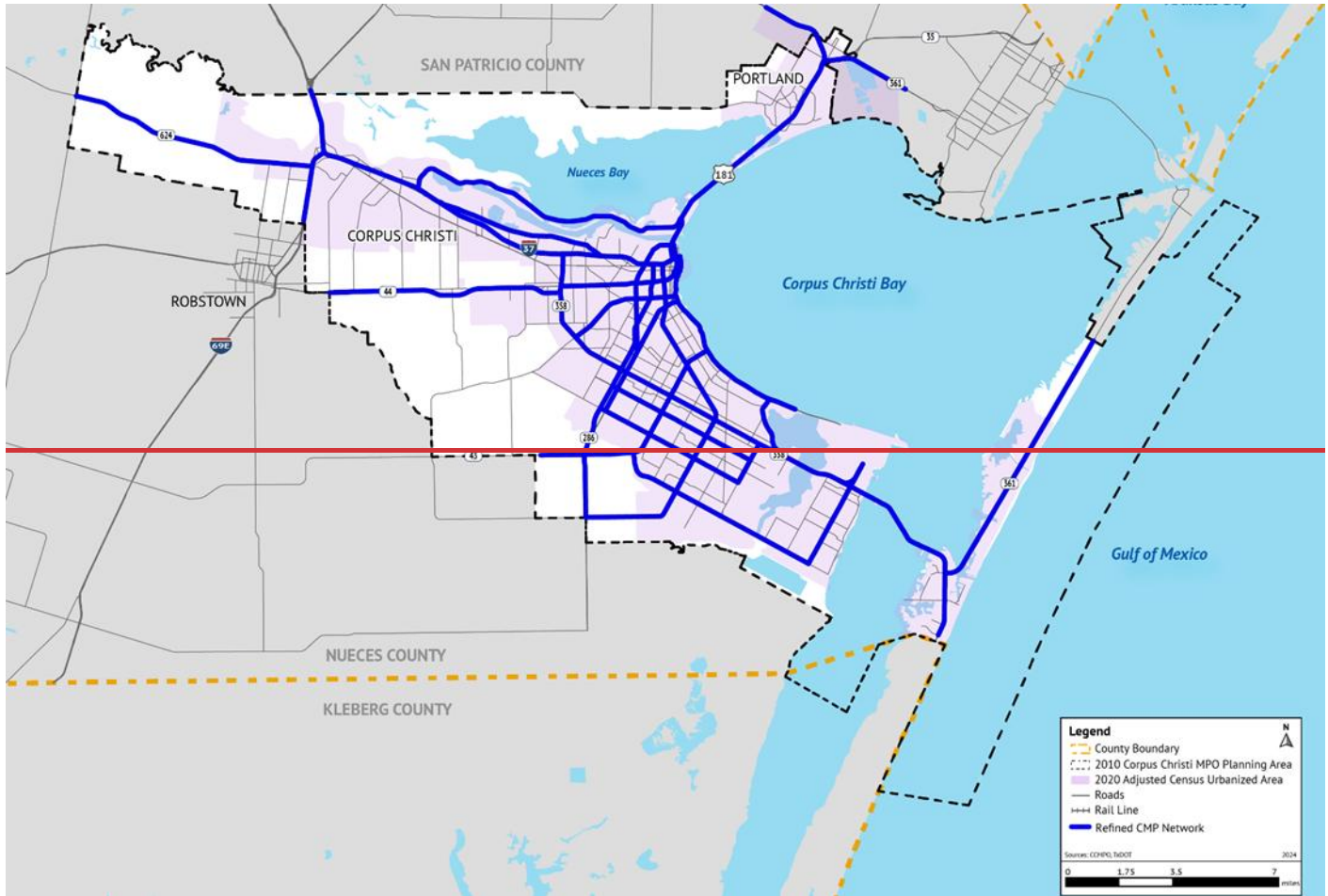
Source: Baseline Performance Period Report (BPP), 2/9/2023

**Regionally Significant Corridors**

The urban reliability index is the ratio of the 95th percent peak-period travel time (“rush hour”) to free-flow travel time (when traffic flows at the speed limit) in areas with populations over 50,000. The 95th percent is an indicator of the heaviest traffic time period. This index is useful as a trip-planning tool for drivers for understanding the longest amount of time it could take to drive to their destinations. Example: A person in Ingleside leaves home to travel downtown Corpus Christi on a Monday morning at 8:00 a.m. through heavy traffic, and the travel time is 30 minutes. On Saturday at 8:00 a.m., the same person can make the same trip from home to downtown, able to drive the speed limit, and complete the trip in 20 minutes. The resulting urban reliability index is 1.5 (30 minutes divided by 20 minutes). Numbers closer to 1.0 are better.

**Exhibit 3-2: Map of Regionally Significant Corridors**





Annual Delay Per Person: Measurement of the hours of delay for a driver on Texas roadways. How it is measured: Annual delay per person is the ratio of the total annual hours of delay for all vehicles on Texas roadways to the estimated population of Texas (population estimates are sourced from the Texas Demographic Center). This measure calculates the estimated annual delay per person for the state inclusive of passenger vehicles and commercial trucks. Conducting a life cycle benefit cost analysis will provide relevant information on projects.

**Regional Transit Asset Management**

As part of the IJJA/BIL, as was part of the FAST act, performance measures were incorporated for transit agencies, primarily through the Transit Asset Management (TAM) assessment and planning requirements. The most recent TAM assessment is included in Appendix D#.

Achieve an average State of Good Repair (SGR) of 85% for all rolling stock assets across the 4-year planning horizon by ensuring they are operating within their Useful Life Benchmark (ULB); Maintain a facility condition of adequate (3.0+ on the TERM scale).

Useful Life Benchmark	Baseline	2020 Target	2022 Target
Percentage of Revenue Vehicles at or Exceeding Useful Life Benchmark	-	0%	<15%
Percentage of Service Vehicles at or Exceeding Useful Life Benchmark	-	0%	<15%
Percentage of Facilities Rated Below 3 on Condition Scale (TERM)	-	0%	<15%

**Regional Transit Safety and Security**

For this information, please refer to Appendix E#, the [CCRTA-Public-Transportation-Agency-Plan-Ver3-20240904CCRTA\\_PTASP\\_2023\\_Version 2](#) Amended [September August 42 20234](#).

**Improve regional freight transportation facility performance.**

The truck reliability index is the ratio of the 95th percent peak-period travel time (“rush hour”) to free-flow travel time (when traffic flows at the speed limit) in areas with populations over 50,000. The 95th percent is an indicator of the heaviest traffic time period. This index is useful as a trip-planning tool for drivers for understanding the longest amount of time it could take to drive to their destinations. Example: A person in Ingleside leaves home to travel downtown Corpus Christi on a Monday morning at 8:00 a.m. through heavy traffic, and the travel time is 30 minutes. On Wednesday at 8:00 p.m., the same person can make the same trip from home to downtown, able to drive the speed limit, and complete the trip in 20 minutes. The resulting Truck Travel Time Reliability (TTR) index is 1.5 (30 minutes divided by 20 minutes). The Texas statewide baseline was 1.5 in 2017, the 2020 target is 1.7 and the 2022 target is 1.79. Numbers closer to 1.0 are better.

**Provide an equitable transportation system for all, regardless of age, ability, race, ethnicity, or income.**

The projects for the Metropolitan Transportation Plan were evaluated for the USDOT Title VI and Environmental Justice (EJ) requirements. (See Chapter 4 for a TAZ/schematic map of these populations) A “distribution of investment” approach determined where projects fall in relation to identified EJ communities and the investment resulting from these projects within EJ communities versus non-EJ communities.

**EVALUATION METHODOLOGY**

**SCORING AND PRIORITIZING PROJECTS**

Districts and MPOs

Project selection starts locally with districts and MPOs working collaboratively with stakeholders to identify projects based on their regional needs. The districts and MPOs are responsible for project prioritization based on those same regional and statewide needs.

TxDOT provides its districts and partnering MPOs with a software application to rank candidate projects against each other based on measures of safety, pavement and bridge preservation, congestion mitigation, connectivity, economic development and environmental impact.

The scores assigned by the software depend on the group of projects with which it is compared. This method allows TxDOT and partnering MPOs to rank candidates against each other within a dynamic portfolio of projects but does not assign a single, standard score on a project.

TxDOT and its partners also consider other factors when making final decisions, including project costs, scheduling concerns and public input.



# 2025 UTP Project Scoring and Prioritization (Categories 2, 4 and 12)



## KNOWN DATA

### Statewide Priorities and System Needs

#### Safety 25%

- Fatal/Incap. Crash Rate
- Fatal/Incap. Crash Count
- Overall Crash Rate

#### Congestion 25%

- 100 Most Congested Roadways
- Congestion Task Force Projects
- Current and Future Volume/Capacity

#### Connectivity 25%

- National Highway System
- Texas Trunk System
- Texas Freight Network and Freight Mobility Plan Projects
- Key Rural Corridors
- Energy Sector Regions
- Hurricane Evacuation Routes

#### Preservation 12.5%

- Pavement Condition Score
- Bridge Sufficiency Score

#### Economy 12.5%

- Population Density
- Employment Density
- Daily Truck Volume
- Freight Volume

50%

### Projected Project Performance

#### Safety 31.4%

- Reduction in Crash Count
- Reduction in Crash Rate
- Societal Cost Savings

#### Preservation 20.9%

- Lane Miles Improved (Pavement Condition)
- Bridge Deck Area Improved (Bridge Condition)

#### Congestion 19.2%

- Benefit Congestion (Delay Hours)

#### Connectivity 13.5%

- Lane Miles of New Roadway

#### Economic Dev. 9.8%

- Average Daily Traffic
- Average Daily Truck Traffic

#### Environmental 5.2%

- Environmental Mitigation Cost
- Project Scope Addresses Environment

50%

## PREDICTIVE DATA

CSJ	CCSJ	District	County	Highway	Project Description	MPO Name	Project Classification	Project Stage	FY	Project Score (Overall)	System Needs Score (Base of 5)	System Needs - Congestion (25%)	System Needs - Connectivity (25%)	System Needs - Safety (25%)	System Needs - Preservation (25%)	System Needs - Economic (12.5%)	System Needs - Environmental (5.2%)	Performance Score (Base of 1)	Performance Score (Base)
0989-02-057	0989-02-057	Corpus Christi	Nueces	FM 624	Construct additional two travel lanes to upgrade existing four lane rural roadway to an urban six la	Corpus Christi Metropolitan Planning Organization	Widen Non-Freeway	PE	2025	1.04	1.87	1.84	1.55	3.48	0.00	1.23	0.21	0.0411	
2263-03-024	2263-03-024	Corpus Christi	Nueces	SH 361	CONSTRUCT ADDITIONAL 2 LANES FOR 4 LANE DIVIDED SECTION	Corpus Christi Metropolitan Planning Organization	Widen Non-Freeway	PE	2032	0.29	0.43	0.00	0.00	0.98	0.49	1.02	0.15	0.0310	
0180-06-118	0180-06-118	Corpus Christi	San Patricio	SH 35	UPGRADE/ADD DIRECT CONNECTORS	Corpus Christi Metropolitan Planning Organization	Interchange (New or Reconstructed)	PS&E	2027	0.56	0.92	0.00	2.88	0.33	0.00	0.94	0.20	0.0404	
0180-10-082	0180-06-118	Corpus Christi	San Patricio	SH 361	UPGRADE/ADD DIRECT CONNECTORS	Corpus Christi Metropolitan Planning Organization	Interchange (New or Reconstructed)	PE	2027	0.86	1.57	0.00	0.80	5.00	0.00	0.93	0.20	0.0298	
0180-11-016	0180-06-118	Corpus Christi	San Patricio	SS 202	Construct Single Point Urban Intersection (DPL)	Corpus Christi Metropolitan Planning Organization	Interchange (New or Reconstructed)	PE	2027	0.15	0.17	0.00	0.00	0.00	0.67	0.71	0.20	0.0270	
1069-01-042	1069-01-042	Corpus Christi	Nueces	SH 357	Construct raised medians	Corpus Christi Metropolitan Planning Organization	Intersection & Operational Imprv	Planning	2029	1.25	2.37	2.23	2.00	3.80	0.00	2.92	0.13	0.0261	
0326-03-103	0326-03-103	Corpus Christi	Nueces	SH 286	Construct 1 additional travel lane northbound.	Corpus Christi Metropolitan Planning Organization	Widen Freeway	PE	2027	0.70	1.15	0.41	2.13	0.51	0.00	3.10	0.25	0.0495	
1209-01-030	1209-01-030	Corpus Christi	San Patricio	FM 893	UPGRADE TO 5-LANE URBAN ROADWAY BY CONSTRUCTING ADDITNL 2 LANES AND CLTL	Corpus Christi Metropolitan Planning Organization	Widen Non-Freeway	PS&E	2025	0.14	0.13	0.00	0.13	0.14	0.00	0.54	0.14	0.0290	
1557-01-045	1557-01-045	Corpus Christi	Nueces	FM 43	CONSTRUCT 2 ADDITIONAL TRAVEL LANES FOR 4 LN DIVIDED HIGHWAY	Corpus Christi Metropolitan Planning Organization	Widen Non-Freeway	Planning	2033	0.73	1.30	0.00	1.50	2.20	0.87	2.10	0.15	0.0300	
0617-02-073	0617-02-073	Corpus Christi	Nueces	PR 22	CORRIDOR UPGRADE FOR PEDESTRIAN AND ACCESS _MANAGEMENT IMPROVEMENTS WITHOUT	Corpus Christi Metropolitan Planning Organization	Intersection & Operational Imprv	Planning	2029	1.01	1.88	0.00	2.05	4.94	0.00	1.06	0.13	0.0289	

Decision makers need useful information about potential impacts and tradeoffs between alternatives in order to make the best decisions possible. Because negative consequences can potentially result from transportation investments, many people assume that transportation decisions are based on complete and accurate information. The complexity of land development, travel-decision dynamics, rapidly changing industry, shifting population structure, changing lifestyles, increasing motor-vehicle fuel costs, and other variables mean that even with excellent transportation forecasting methods, uncertainty will exist.

Likewise, other social, economic, and political information unrelated to transportation but that impacts transportation decision making is rarely complete. As a result, transportation policy-makers cannot wait until they are totally certain of the trade-offs between economic, ecological, and social impacts of a decision before the decision must be made.

Exogenous factors (those factors that are outside of our control) that will significantly impact transportation and travel between 2025 and 2045 include, but are not limited to:

- Globalization, global trade, and cross-border freight flow. In today's global economy, physical access to markets is essential to regional competitiveness. While trucks, ships and trains move more than two-thirds of all U.S. goods, air transportation is key to emerging sectors that emphasize innovative, high-value commodities. Investing in diverse transportation modes could support more efficient goods movement in tradable industries and emerging industry sectors.
- Mobility as a Service (MaaS). MaaS may reduce personal vehicle ownership. Personal mobility is less dependent on personal vehicle ownership. Many people now use a variety of on-demand services that

provide convenient access without the high costs of owning a personal vehicle. This shift to MaaS is fueled by emerging services, like transportation network companies, micromobility (scooter) programs, and in the near future, connected and autonomous vehicles (CAV). These CAVs have their own requirements, such as improved striping during maintenance. Mobility as a service is further enabled by digital platforms that integrate multiple modes of transport into seamless trip chains and provide end-to-end trip planning, booking and payment services.

- Improvements in communication and information technology. Today, access to employment, education, and shopping is not always physical, and 24% of U.S. workers do some or all of their work at home.
- Telecommuting, telemedicine, and online education have become pervasive across many sectors with the potential to reduce travel expenses, (and transportation funding) and limit traffic congestion.
- Rise in Automation. About half of today's jobs will be performed by machines in a decade or two. Job automation could limit employment in some of today's most common jobs, like in retail. Autonomous, self-driving vehicles could also reduce jobs in other sectors, like logistics, while presenting new employment opportunities in technology, business and maintenance. These autonomous vehicles will likely be electrified, exacerbating transportation funding challenges due to reliance on fuel taxes.
- Evolution of sharing and gig economies. Online ride-sharing platforms enabled by digital technology are dramatically expanding transportation options. These companies reflect a broader shift towards freelance employment characteristic of the "gig economy." There are nearly 70 million of these "gig" workers estimated in the U.S., working non-traditional shifts and making more off-peak, non-rush hour trips, which might reduce road congestion during peak periods, especially with 5G communications on the near horizon.

Total certainty, even if achievable, is not necessary. Even when more detailed information becomes available, it may not lead to better decisions, because all decisions involve choosing between a range of positives and negatives, and the relative importance given to each trade-off. In addition, no decision is ever objectively "right," and will always be subjective and contestable. As we update the regional transportation plan every five years, we will investigate the status and future implementation of these ideas and several yet to be introduced in the transportation industry.

## **SUMMARY**

The planning framework is crucial in guiding the development of the entire 2045 MTP Update. These components state the purpose of what the Corpus Christi MPO region is trying to achieve, show the steps necessary, and provide the foundation required to complete the plan.

A good technical process includes uncertainty and uses a precautionary approach to decision-making, while considering complex issues. This process must be documented in order to carry information from long-range planning into the environmental analysis and subsequent implementation of individual projects.