CORPUS CHRISTI MPO
METROPOLITAN PLANNING ORGANIZATION

TECHNICAL ADVISORY COMMITTEE (TAC) REGULAR MEETING AGENDA

AND

2050 MTP WORKSHOP/ACTIVE TRANSPORTATION PLAN STAKEHOLDER GROUP

THURSDAY, NOVEMBER 16, 2023

9:00 A.M. - TAC REGULAR MEETING
11:00 A.M. - 2050 MTP WORKSHOP ACTIVE TRANSPORTATION PLAN STAKEHOLDERS GROUP

Location: Corpus Christi Regional Transportation Authority (CCRTA) Staples Street Center, 602 N. Staples Street, Boardroom 210 TAC / Multi-Purpose Room 324 Stakeholders Group

1. **CALL TO ORDER, ROLL CALL, AND QUORUM DETERMINATION**
2. **NON AGENDA ITEMS PUBLIC COMMENTS:**

   Opportunity for public suggestions and comments for any items not on the Agenda and within the TAC's jurisdiction (except in matters related to pending litigation). Proceedings are recorded. To make a public suggestion or comment at the meeting, please fill out the printed comment card available at the meeting and submit it to Corpus Christi MPO staff 10 minutes before the meeting starts. We ask that remarks be limited to three minutes, that you identify yourself, and give your address. Those persons addressing the TAC through a translator are given twice the amount of time, or six (6) minutes to provide their comments. All Public Comments submitted shall be placed into the record of the meeting.

3. **APPROVAL OF THE TAC OCTOBER 19, 2023 REGULAR MEETING MINUTES**
4. **DISCUSSION AND POSSIBLE ACTION ITEMS**
   - **A. TxDOT 2025 Unified Transportation Program (UTP) Projects Process and Discussion**
5. **INFORMATION ITEMS**
   - **A. Adjusted Urban Area Status Update and Urban Density Discussion**
   - **B. Congestion Management Process (CMP) Working Group Goals Discussion**
   - **C. CMP Working Group Functional Classification (FC) Update Discussion**
   - **D. Receive Comments from TAC members from October meeting information:**
     - **i. CMP/FC Working Group**
     - **ii. Regional Safety Action Plan Draft Documents**
     - **iii. DRAFT Resiliency Plan Technical Memo 2 Comments**
6. **TAC MEMBER STATEMENTS ON LOCAL AGENCY ACTIVITIES OR ITEMS OF INTEREST**
7. **UPCOMING MEETINGS/EVENTS**

A. Transportation Policy Committee:	**Regular Meeting**	**December 7, 2023**
B. Joint Regional Traffic Safety Task Force	**Regular Meeting**	**December 13, 2023**
C. Technical Advisory Committee:	**Regular Meeting**	**December 21, 2023**

8. **ADJOURN TAC REGULAR MEETING**

9. **2050 MTP WORKSHOP/ACTIVE TRANSPORTATION PLAN STAKEHOLDER GROUP**
(Meets in Room 324 CCRTA Building at 11:00 a.m.)

   A. **Active Transportation Plan Existing Conditions Map and Goals Discussion**
   B. **Active Transportation Plan Public Right-of-Way Accessibility Guidelines (PROWAG) and Complete Streets Discussion**
   C. **Highway Economic Resource System (HERS) Overview and Discussion**
   D. **Corpus Christi MPO Resiliency; Critical Infrastructure and Threats Presentation and Discussion**
   E. **Community Impact Model Development and Implementation Consultant Presentation**

- Indicates attachment(s) for the agenda item. - Indicates a weblink for agenda item

Public suggestions and comments may be provided before the meeting by emailing ccmpo@cctxmpo.us, by regular mail, or by hand-delivery to the Corpus Christi MPO Office at 602 N. Staples St., Suite 300, Corpus Christi, TX 78401. Please limit written comments to 1,000 characters. Written comments should be provided at least 1 hour before the start of the TAC meeting.

All Corpus Christi MPO Committee meetings are public meetings and open to the public subject to the access policies of the building owner where the meeting is being held. Any persons with disabilities who plan to attend this meeting and who may need auxiliary aids or services are requested to contact the Corpus Christi MPO at (361) 884-0687 at least 48 hours in advance so that appropriate arrangements can be made.

MEETING LOCATION MAP

CORPUS CHRISTI METROPOLITAN PLANNING ORGANIZATION (CORPUS CHRISTI MPO)
TECHNICAL ADVISORY COMMITTEE (TAC) MEETING MINUTES
Thursday, October 19, 2023

1. CALL TO ORDER, ROLL CALL, AND QUORUM DETERMINATION

TAC Chair Brian DeLatte called the meeting to order at 9:00 a.m.

TAC Members Present:

Chair Brian DeLatte, P.E., City of Portland
Vice-Chair Gordon Robinson, AICP, Corpus Christi Regional Transportation Planning Authority (CCRTA)
Juan Pimentel, P.E., Nueces County
Jeff Pollack, AICP, Port of Corpus Christi Authority
Dan McGinn, AICP, City of Corpus Christi
Paula Sales-Evans, P.E., TxDOT – Corpus Christi District (CRP)

MPO Staff Present: Robert MacDonald, P.E., Craig Casper, AICP, Victor Mendieta, and Karla Carvajal

2. PUBLIC COMMENTS FOR ITEMS NOT ON THE AGENDA

None were made or offered.

3. APPROVAL OF THE TAC SEPTEMBER 21, 2023 REGULAR MEETING MINUTES

Mr. Pimentel made a motion to approve the September 21, 2023, TAC Regular Meeting Minutes. Mr. Robinson seconded; the motion passed unanimously.

4. DISCUSSION AND POSSIBLE ACTION ITEMS

A. Congestion Management Process and Functional Classification Working Group Formation

The Corpus Christi MPO staff is seeking participants to update the Congestion Management Process (CMP) objectives and use TxDOT's Functional Classification SOP to assist with verifying and updating the Federal Functional Classification of roadways within the Corpus Christi MPO region.

Discussion:

Mr. DeLatte noted that there are two options: 1) the workgroup would consist of TAC members, and 2) the workgroup would consist of TAC members plus additional technical expertise from various organizations.

Mr. Pollack advocated for the workgroup to include TAC plus supplemental participation.

Mr. Casper requested names and titles of the recommended list of supplemental people to join the workgroup within a week so that a work group list can be established prior to the next TAC meeting.

Mr. MacDonald noted that a motion is requested from the TAC, yet will not be forwarded to the TPC for action since this is a TAC-led effort.

Ms. Sales-Evans inquired about what exactly the motion is for since the item is not going to TPC and if there isn't a public comment period.

Mr. Pollack responded that the motion is about the structure of the working group to include TAC plus supplemental expertise.

Mr. McGinn asked if the group would meet monthly. Mr. Casper responded that it would meet as needed with the potential for some meetings to be virtual.

Mr. Pollack asked if the meetings would be immediately after TAC meetings. Mr. MacDonald confirmed yes.

Recommendation:

The Corpus Christi MPO staff recommends that TAC be the core members of a Congestion Management Process and Functional Classification Working Group to provide key input into reviewing and updating the Congestion Management Process and the Federal Functional Classification of the regional road system. TAC members are requested to invite or name other members of the Working Group from their local agencies.

Motion:

Mr. Pollack made a motion for TAC members to be the core members of the Congestion Management Process and Functional Classification Working Group with supplemental members to be determined later. Ms. Sales-Evans seconded; the motion passed unanimously.

5. WORKSHOP/INFORMATION ITEMS

A. Small Area Forecast Task Force October 18th Meeting Recap

MPO Staff updated TAC members on TPC actions regarding regional control totals for the 2050 MTP regarding population and employment by county. The consultant presented an introduction to land use forecasting and how it supports transportation planning along with how the software application UrbanSim works and the status of the forecast development for the Corpus Christi MPO's 2050 MTP.

Discussion:

Mr. Robinson inquired how many other MPOs in Texas are using UrbanSim.

Mr. Casper responded that three MPOs in Texas that are using UrbanSim: Austin (CAMPO), Dallas (NCTCOG), and El Paso.

Mr. MacDonald noted that El Paso just finished setting up their model.

B. DRAFT MPO-wide Safety Network Screening Report, including Projects

Mr. Casper presented the DRAFT Regional Safety Action Plan for TAC members to review and bring their questions to next month's meeting. Mr. Casper emphasized that TAC members, task force members, and disadvantaged communities need to be surveyed about safety issues.

Mr. MacDonald mentioned that the MPO recently signed with Social Pinpoint for the development of surveys and outreach. The Corpus Christi MPO will use this platform not only for the Safety Action Plan but for every other plan that the Corpus Christi MPO is currently working on. Mr. MacDonald relayed that TAC members will be receiving copies of all the different surveys. Mr. MacDonald reiterated that there is only a little over a year left to complete the long-range plan and that outreach needs to be completed. Social Pinpoint is going to help with this endeavor. The Corpus Christi MPO has consultant teams working on the public outreach components to every one of the plans.

Mr. Casper explained that there will be four basic considerations when prioritizing projects: benefit/cost ratio, public concern about projects, equity, and scope-joining opportunities. Mr. Casper also noted that the DRAFT Regional Safety Action Plan contains a list of the first 20 locations that were analyzed with potentially 30 more locations to be added later along with updating the crash database to include 2022 data.

Mr. MacDonald explained that the first 20 locations are not ranked or sorted yet. Mr. MacDonald also noted that TxDOT's offer of $50,000 would be utilized toward the next 30 locations to take advantage of the funds that TxDOT has made available to each MPO.

Discussion:

Ms. Sales-Evans asked about the process for potentially deferring or addressing that there needs to be some opportunity for improvements to see what that does with respect to crash information.

Mr. Casper responded that Ms. Sales-Evans questions would be deferred to the MPO's consultants.

Mr. MacDonald noted that when the Corpus Christi MPO amends the current consultant contract to include the 50 additional locations, the 2022 crash data will be acquired, cleaned, and incorporated into the database. Mr. MacDonald also noted that the Vision Zero Suite (VZS) software allows before and after analysis of locations. Mr. MacDonald further relayed that this part of the Safety Action Plan will help inform what projects should be looked at and how they are prioritized; one evaluation criteria being opportunity to combine the safety improvements with other planned projects.

Mr. Pollack commented that there is real merit to the process of identifying priority locations for interventions and that it is really important to confer all relevant existing plans where there may be planned in scope interventions.

Mr. MacDonald agreed and confirmed that there is a master list of projects that are in development that are extracted from member agency plans.

Ms. Sales-Evans commented that these recommendations may not be the solution that the local government or state feels is appropriate for the project.

Mr. Pollack commented that the outside perspective for prospective solutions is a benefit and should not be dismissed.

Ms. Sales-Evans mentioned some projects, i.e. roundabouts, typically need additional property in order to accommodate that solution and that it would be helpful if it's in the contract/project document indicating so.

Mr. Casper responded that the application of Vison Zero Suite's (VZS) benefit cost tool includes right-of-way costs.

Mr. MacDonald noted that the various countermeasures in VZS can be evaluated by the MPO, TAC members, or consultants. Training for VZS will be provided by the consultant to MPO staff and invited local government staff.

C. DRAFT Resiliency Plan Technical Memo 2

One of the requirements for MPOs is to consider resiliency in the long-range plan by way of a resiliency plan. The Corpus Christi MPO is collaboratively developing a resiliency plan. The Harte Institute is now in the process of developing a tool to look at resiliency called GeoRED and they will present their tool to TAC at the next meeting.

The memo attached is the first phase of the consultant's resiliency plan identifying what the critical infrastructure is and what are highest risk threats to that infrastructure. It is requested that TAC review the memo over the next month and provide any comments back to the MPO staff.

Discussion:

Mr. Pollack asked what it looks like in terms of assimilating all the great work done by other technical institutions into the resiliency plan.

Mr. Casper responded that assimilation will be in the form of a GIS tool where you can apply threats to that based on geographic location and updated information. In the memo, a USDOT tool, RDR, will be developed that helps figure out what types of investments can and should be considered during the planning process. Information regarding the RDR tool will be sent out to TAC members for review.

D. Community Impact Model Development and Implementation Preview

The Community Impact tool will look at the social and environmental impacts of transportation investments. It will also be used to help with equity analysis. The scope is included for TAC member review. The tool will be customized for the Corpus Christi MPO region and at a higher resolution. Most federal tools are at the Census Tract level. This tool will try and be at least at the Block Group level, a finer level of detail, where data is available.

Discussion:

Mr. MacDonald inquired if TAC members recognized any of the other federal tools listed in the agenda packet.

Mr. Pollack stated that most of the federal grant pursuits use the EPA tool at minimum.

Mr. Casper noted that the transportation tools use different data inputs and processes which can give different answers.

Ms. Sales-Evans asked if it is needed to look at the tools that might be recommended by FHWA.

Mr. Casper noted that there are three tools that are recommended by FHWA, one of them being the STEAP tool, which is a screening tool at the project level for equity analysis projects.

E. TxDOT FM 624/Northwest Boulevard Project Update

Ms. Sales-Evans gave a presentation on the TxDOT FM 624/Northwest Boulevard.
Update: **https://www.txdot.gov/projects/hearings-meetings/corpus-christi/fm624-110223.html**

6. TAC MEMBER STATEMENTS ON LOCAL AGENCY ACTIVITIES OR ITEMS OF INTEREST

Mr. Pollack stated that the Port spent the last year pursuing a federal designation as a hydrogen hub. The announcements came out last week that the Port is one of the three designated hub alternates nationally but not one of the seven main hubs.

7. UPCOMING MEETINGS/EVENTS

A. Small Area Forecast Task Force:	**Meeting**	**October 18, 2023**
B. Transportation Policy Committee:	**Regular Meeting**	**November 2, 2023**
C. Regional Traffic Safety Task Force:	**Meeting**	**November 8, 2023**
D. Technical Advisory Committee:	**Regular Meeting**	**November 16, 2023**

8. ADJOURN

The meeting was adjourned at 9:49 a.m.

CORPUS CHRISTI MPO
METROPOLITAN PLANNING ORGANIZATION

Date: November 9, 2023

To: Technical Advisory Committee (TAC)

From: Robert MacDonald, Transportation Planning Director

Subject: Item 4A: TxDOT 2025 Unified Transportation Program (UTP) Category 2 and 4U Project Initial Submittal

Action: Review, Discuss and Possible Action

Summary

TxDOT and the Corpus Christi MPO update the TxDOT 10-year Unified Transportation Program (UTP) each year on a similar schedule as the illustrated on the current 2054 UTP process (see Attachment 1). The approval process contains action milestones for both TxDOT and the Corpus Christi MPO to perform. The 2025 UTP will cover the 10-year time period of FY 2025 through FY 2034. The TxDOT 2025 UTP Schedule illustrates that the most recent UTP Document was made available to the public in October 2023 for projects to be considered in fiscal years 2025-2034. We are asking the TAC members to review the current set of 2024 UTP projects for possible changes: cost estimate revisions, delayed projects, "new projects" as part of the public comment portion of the TxDOT 2025 UTP process. TxDOT headquarters is requesting the initial list of projects for the 2025 UTP on December 1, 2023. This schedule requires the TAC to recommend and the TPC to approve and submit an initial list of projects for the TxDOT-CRP District to TxDOT HQ as a first step in the year-long process.

The outcome of the 2025 UTP process is a list of projects TxDOT intends to develop or begin constructing over the next 10 years in the Corpus Christi MPO region as well as the full CRP District area. Project development includes activities such as preliminary engineering work, environmental analysis, right-of-way acquisition and design. Despite its importance to TxDOT as a planning and programming tool, the UTP is neither a budget nor a guarantee that projects will or can be built. However, it is a critical tool in guiding transportation project development within the long-term planning context. In addition, it serves as a communication tool for stakeholders and the public in understanding the project development commitments TxDOT is making.

As part of the joint 2025 UTP planning effort, the Corpus Christi MPO is responsible for conducting a performance-based scoring process and selecting transportation projects for TxDOT Category 2, Category 7, Category 9 and the new CAT 10 CR for Carbon Reduction projects. As part of the annual reevaluation of projects, the Corpus Christi MPO may reevaluate the status of project priorities and selection and provide a report of any changes to TxDOT in the 2025 UTP development process. The reevaluation must be consistent with criteria applicable to the development of the current 2020-2045 Metropolitan Transportation Plan (2045 MTP) and FY 2023-2026 Transportation Improvement Program (FY 2023-2026 TIP) in accordance with federal requirements. The Corpus Christi MPO must also coordinate with TxDOT Corpus Christi District (TxDOT-CRP) on the state's scoring and selecting of projects for funding Category 4-Urban (CAT 4U). In the last process to review and approve the 2024 UTP list of projects, there were no comments from the public nor the local government members of the Corpus Christi MPO.

The projects selected for the first 4 years of the new 2025 TxDOT UTP are likely to be included in the amended FY 2023-2026 TIP/STIP, however, the 2025 UTP process does not guarantee the projects will be

included in the amended FY 2023-2026 TIP/STIP that will be approved by the Corpus Christi MPO and then TxDOT and FHWA/FTA. Additionally, the projects selected for Categories 2 and 4 must also be authorized by the Texas Transportation Commission. The development of the amended Corpus Christi MPO FY 2023-2026 TIP is a separate process that is linked to the project submittals, review, prioritization, and selection for the 2025 UTP.

The project selection continues to rely on prior Corpus Christi MPO performance-based selection processes for Categories 2, 4 and 7. These processes were:

- The 2020-2045 Metropolitan Transportation Plan (2045 MTP)
- FY 2023-2026 Transportation Improvement Program (FY 2023-2026 TIP)
- TxDOT 2023 and 2024 Unified Transportation Program

TxDOT 2025 UTP Funding for Corpus Christi MPO

In order to select the prioritized projects, the process requires that the 2025 UTP be fiscally constrained. The current (July 7, 2023) estimate for 10 years of funding available for use in the Corpus Christi MPO area was developed in the 2024 UTP process. These are illustrated in the Table below. The new funding levels are still being developed by TxDOT with the MPOs for the 2025 UTP. When available, the TAC and TPC will be provided with the new numbers. For now, the 2024 UTP allocations are proposed for use in the discussions for project selection as part of the 2025 UTP.

	Category 10 CR[1]	**Category 2**	**Category 4**	**Category 7**	**Category 9**	
Agency Lead*	MPO	MPO	TxDOT	MPO	MPO	
Coordinated Agency	TxDOT	TxDOT	MPO	TxDOT	TxDOT	**Subtotal**
10-Years	***$15,917,085***	***$144,813,899***	***$97,717,479***	***$111,422,709***	***$12,919,830***	***$382,791,001***
2024	$3,900,223	$22,275,059	$13,114,190	$11,072,350	$1,283,875	$51,645,697
2025	$1,352,423	$26,769,140	$15,902,984	$11,293,811	$1,309,555	$56,627,913
2026	$1,379,474	$14,364,039	$12,851,275	$11,519,702	$1,335,747	$41,450,237
2027	$1,326,424	$14,891,155	$9,404,458	$11,076,692	$1,284,379	$37,983,108
2028	$1,326,424	$15,221,350	$8,389,263	$11,076,692	$1,284,379	$37,298,108
2029	$1,326,424	$10,005,430	$8,411,430	$11,076,692	$1,284,379	$32,104,355
2030	$1,326,424	$11,878,750	$8,214,100	$11,076,692	$1,284,379	$33,780,345
2031	$1,326,424	$10,828,889	$7,671,313	$11,076,692	$1,284,379	$32,187,697
2032	$1,326,424	$9,125,769	$6,783,253	$11,076,692	$1,284,379	$29,596,517
2033	$1,326,424	$9,454,317	$6,975,212	$11,076,692	$1,284,379	$30,117,024

**Per TxDOT's 2024 Unified Transportation Program and Corresponding TIP/STIP Years of 2023-2026.*

1 *Note: The Category 10 CR is new for the Corpus Christi MPO.* The purpose of the Carbon Reduction Program (CRP) is to reduce transportation emissions through the development of State carbon reduction strategies and by funding projects designed to reduce transportation emissions (See 23 U.S.C. 175 as established by the Infrastructure Investment and Jobs Act (IIJA) (Public Law 117-58, also known as the "Bipartisan Infrastructure Law" (BIL)) (BIL § 11403).

Included in the funding estimates is the new Category of CAT 10 CR for the Carbon Reduction Program. Information on this new federal program is provided as Attachment 6. There may also be some additional carryover funds from prior years for some of the funding Categories (CATs). Current carryover amounts are shown in the 2024 UTP List of Approved Projects (see Attachment 4).

The current TxDOT description of all funding categories (CATs) is from the 2024 UTP and is provided as Attachment 2. Any changes to the funding category descriptions will be provided to the TAC and TPC in future meetings.

Eligible Projects List

The fiscally constrained list of projects shown in the FY 2023-2026 TIP as Table 12 is provided as an attached and linked spreadsheet (see Attachment 3). This spreadsheet contains all the projects previously prioritized as part of the 2045 MTP and the FY 2023-2026 TIP. Additionally, we have included a separate "tab" on the spreadsheet that lists the "Unfunded" Projects in the 2045 MTP, just in case, there is a proposal to advance any of these projects in the upcoming 2025 UTP process or the FY 2023-2026 TIP Amendment process.

This spreadsheet list is the proposed source of projects to be used for the selection process for the MPO's 2025 UTP proposed projects with TxDOT recommendations using funding Categories 2, 4 and 7. This list of projects is also likely the source of prioritized projects for TxDOT to select in their process for CAT 4U.

The TxDOT-Corpus Christi District (CRP) 2024 UTP approved projects are shown in Attachment 4 in the 2024 UTP Format and Attachment 5 as the proposed TxDOT-CRP District 2025 UTP initial list of projects. During development of the 2025 UTP process, the Corpus Christi MPO staff believes we will have new project analysis and selection tools for the future UTP, TIP and MTP development processes.

Recommendation

The Corpus Christi MPO Staff recommends that the TAC recommend approval of the Initial list of DRAFT 2025 UTP projects for submittal to TxDOT.

Proposed Motion

Motion to recommend the TPC approve the DRAFT 2025 UTP Project List for the initial submittal to TxDOT.

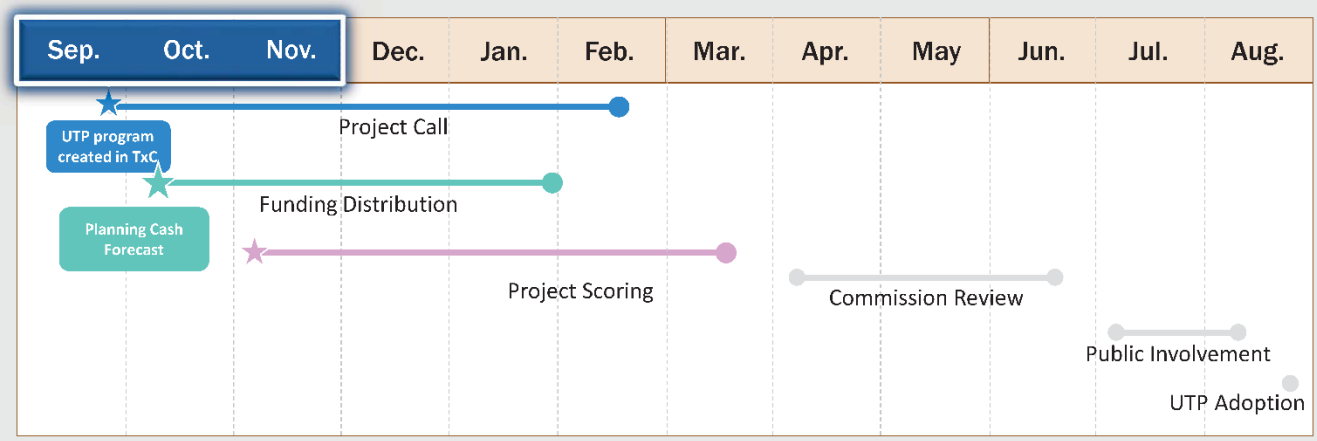
Attachments

1. TxDOT 2025 UTP Development Schedule
2. TxDOT 2024 UTP Complete Category Funding Descriptions
3. Table 12: Project Eligible List for DRAFT 2025 UTP Selection (**Excel Spreadsheet**)
4. TxDOT-CRP District 2024 UTP Approved Project List
5. TxDOT-CRP District 2025 UTP Candidate Project List
6. Federal Carbon Reduction Program Description

TXDOT 2025 UTP DEVELOPMENT SCHEDULE

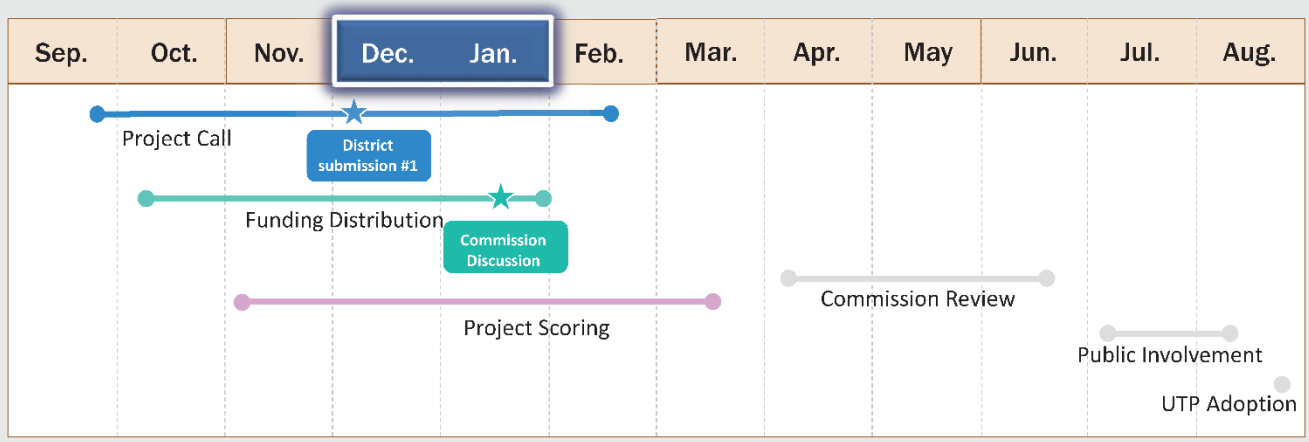
TxDOT 2025 UTP Development Schedule

Sep. 2023 – Aug. 2024



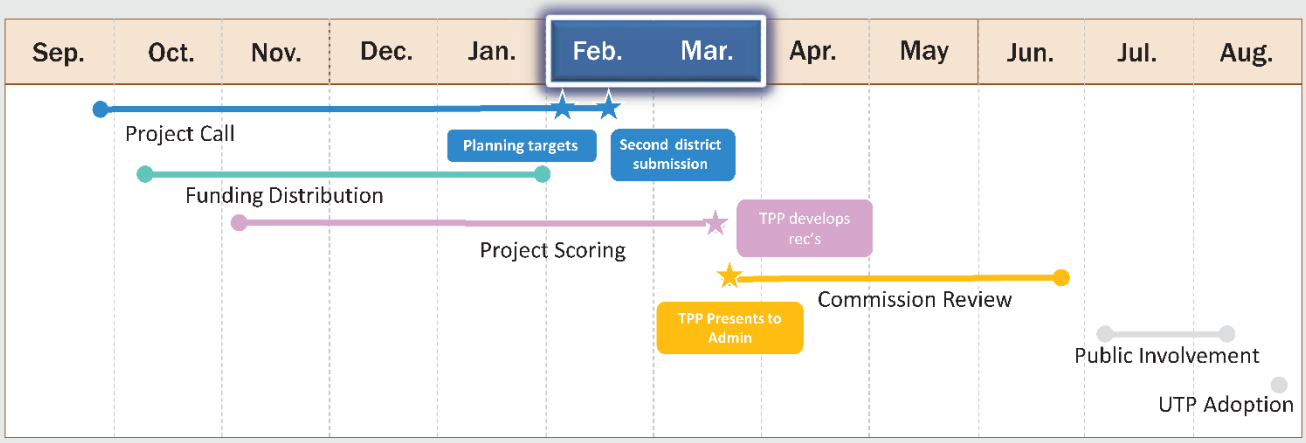
TxDOT 2025 UTP Development Schedule

Sep. 2023 – Aug. 2024



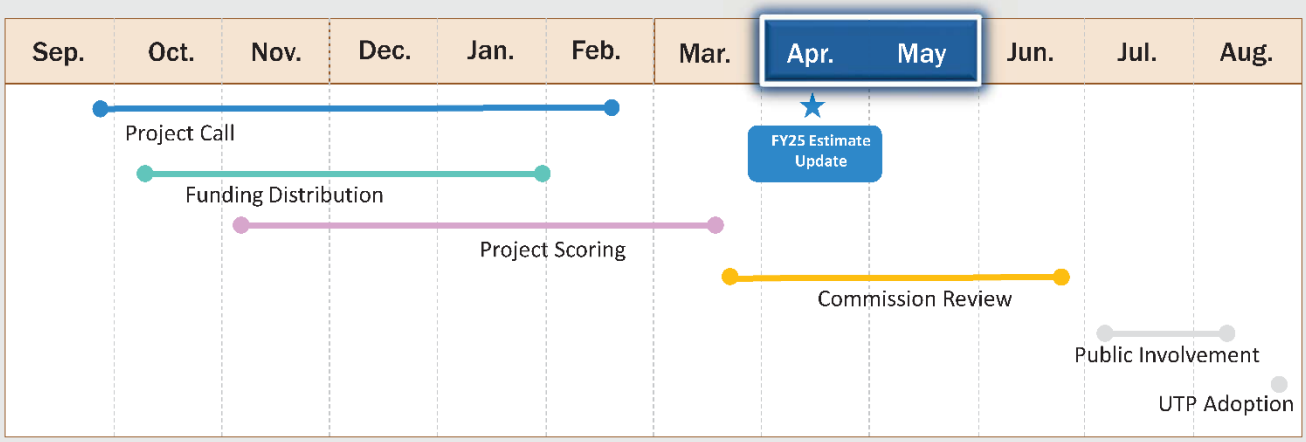
TxDOT 2025 UTP Development Schedule

Sep. 2023 – Aug. 2024



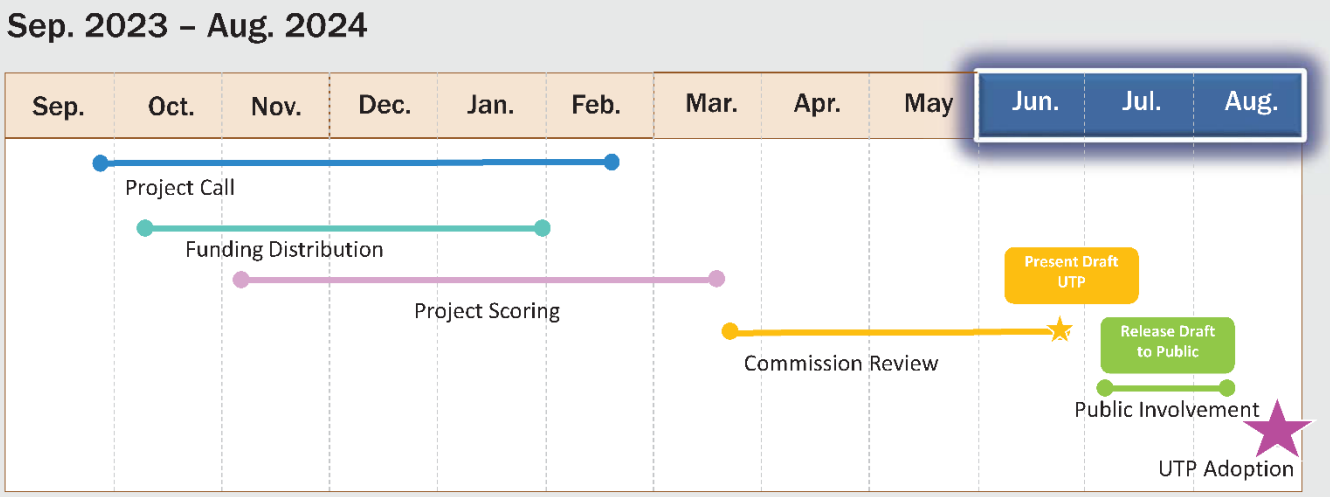
TxDOT 2025 UTP Development Schedule

Sep. 2023 – Aug. 2024



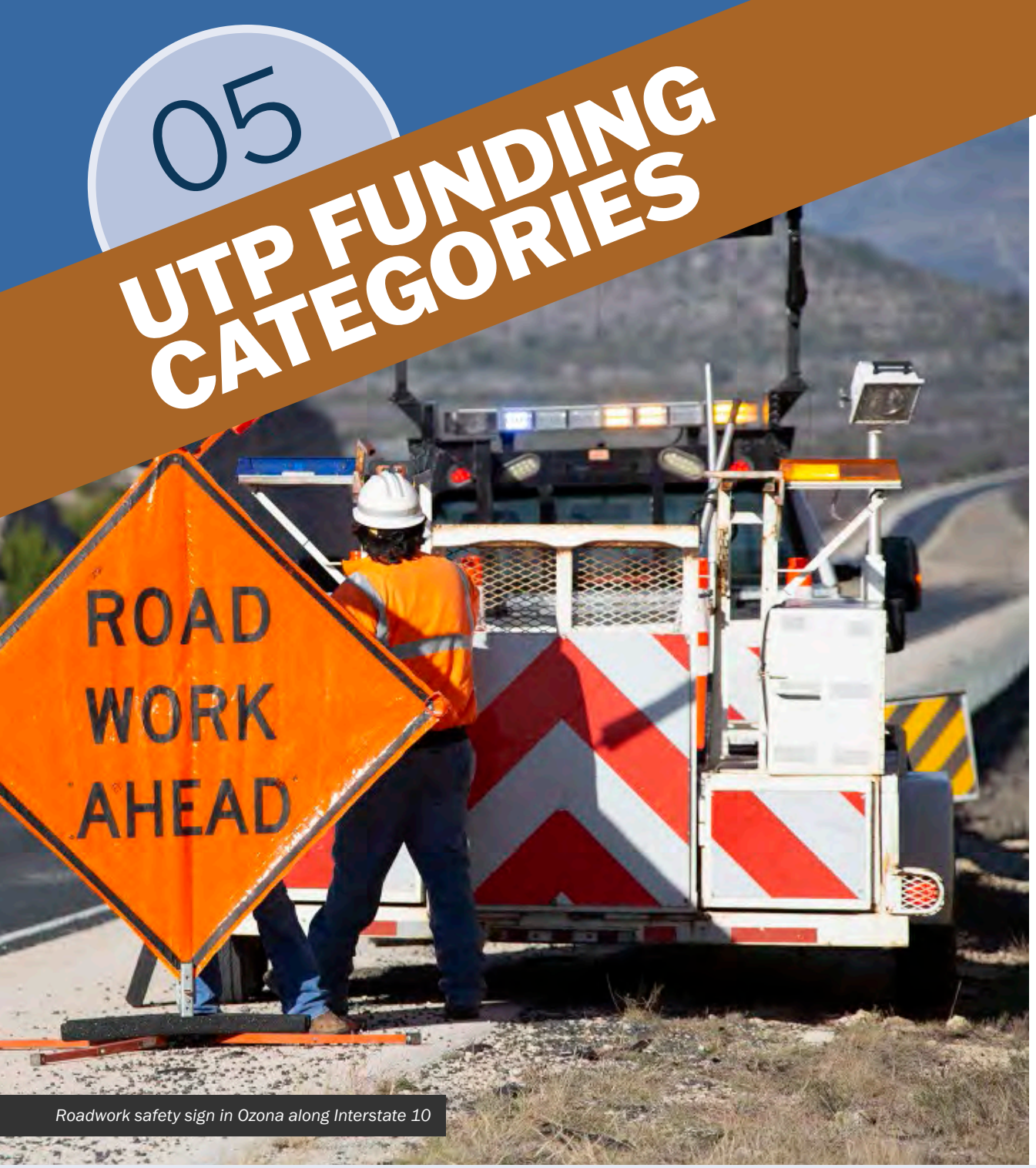
TXDOT 2025 UTP DEVELOPMENT SCHEDULE

TxDOT 2025 UTP Development Schedule



2025 UTP Development | Agenda Item 4A - Attachment 1 | October 2023 | 5

05 UTP FUNDING CATEGORIES



Roadwork safety sign in Ozona along Interstate 10

TxDOT 2024 UTP Complete Category Funding Descriptions

As required by Texas Administrative Code, TxDOT organizes the Unified Transportation Program (UTP) into 12 prescribed funding categories that address specific project types or ranges of eligible activities. The UTP must also list certain projects TxDOT intends to develop or begin constructing during the 10-year UTP period and identify the categories through which each project is funded.

The Texas Transportation Commission sets broad investment levels for the UTP by determining how much funding goes into each category. Once the available funding is distributed across the categories, selected projects are matched to eligible funds. A single project may be funded from multiple categories, based on the type of project and its characteristics. Projects are selected by metropolitan planning organizations (MPOs), TxDOT districts, certain TxDOT divisions, or the Texas Transportation Commission, depending on the category. In addition, categories may be either project-specific or based on allocations. Funding in project-specific categories is awarded to individual projects around the state, while allocation categories are distributed by formula to TxDOT districts or divisions, which subsequently manage the project selection and programming. The following pages outline the rules for each category.

Funding for other programs, including the Public Transportation, Maritime, Aviation, Rail, and Freight Programs, are organized at the program level and are not distributed through the UTP's funding categories.

TABLE 7

COMMON PROJECT TYPES IN THE UTP FUNDING CATEGORIES

The following tables list the most common project types funded through each category in the 2024 UTP and the statewide strategic goals that each project type addresses. All 12 UTP funding categories address all three strategic goals to varying degrees.

FUNDING CATEGORY	PROJECT TYPES	% OF PROGRAMMED FUNDS	STRATEGIC GOAL RANKING		
			PROMOTE SAFETY	PRESERVE OUR ASSETS	OPTIMIZE PERFORMANCE
Category 1: Preventive Maintenance and Rehab	Road surface treatment	31%		1	2
	Road rehab and restoration	30%		1	2
	Rural passing lanes (Super 2)	5%	2		1
	Traffic signals, lighting, signs	3%	1		2
	All other project types	31%			
Category 2: Metropolitan and Urban Corridors	Widening (freeway or non-freeway)	65%	2	2	1
	Freeway interchanges	18%	2		1
	Roadway operational improvements	9%	2		1
	All other project types	8%			
Category 4: Connectivity Corridors	Widening (freeway or non-freeway)	59%	2	2	1
	New-location highway	14%			1
	Roadway operational improvements	12%	2		1
	Freeway interchanges	10%	2		1
	All other project types	6%			
Category 5: Congestion Mitigation and Air Quality	Roadway operational improvements	28%	2		1
	Freeway interchanges	22%	2		1
	Bike and pedestrian infrastructure	20%	1		2
	Public transit, commute alternatives	18%			1
	Traffic mgmt. technology and signals	9%	2		1
	All other project types	4%			
Category 6: Structures (Bridge)	Bridge replacement	91%	2	1	
	Bridge rehab or widening	4%	2	1	2
	Bridge maintenance	3%		1	
	All other project types	2%			
Category 7: Metropolitan Mobility and Rehab	Widening (freeway or non-freeway)	48%	2	2	1
	New-location urban roadway	12%			1
	Roadway operational improvements	11%	2		1
	Freeway interchanges	8%			1
	Road rehab and restoration	5%		1	2
	All other project types	16%			
Category 8: Safety	Safety improvement projects:	100%			
	Medians and safety barriers		1		
	Intersections and rail crossings		1		2
	Turn lanes and shoulders		1	2	2
	Traffic signals, lighting, signs		1		2
	All other project types				
Category 9: Transportation Alternatives	Bike and pedestrian infrastructure	51%	1		2
	Safety rest areas	44%	1		
	All other project types	5%			
Category 10: Supplemental Transportation Programs	Coastal ferry facilities	29%		2	1
	Culverts and storm drainage	16%	2	1	
	Sidewalks and curb ramps	15%	1		
	Widening (freeway or non-freeway)	9%		1	
	State park roads and parking lots	6%		1	
	All other project types	25%			
Category 11: District Discretionary	Road rehab and restoration	23%		1	2
	Widening (freeway or non-freeway)	21%	2	2	1
	Rural passing lanes (Super 2)	17%	2		1
	Road surface treatment	14%		1	2
	New-location highway	9%			1
	All other project types	16%			
Category 12: Strategic Priority	Widening (freeway or non-freeway)	76%	2	2	1
	Freeway interchanges	9%	2		1
	New-location highway	7%			1
	All other project types	8%			

Note: 1 = Primary goal addressed; 2 = Secondary goal addressed

2024 UTP FUNDING CATEGORY DETAILS

FUNDING CATEGORY 1

Preventive Maintenance and Rehabilitation

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 1 addresses preventive maintenance and rehabilitation of the existing state highway system, including pavement, signs, traffic signals, and other infrastructure assets. **Preventive Maintenance** Defined as work to preserve, rather than improve, the structural integrity of a pavement or structure. Examples of preventive maintenance activities include asphalt concrete pavement (ACP) overlays (two-inch thick maximum), seal coats, cleaning and sealing joints and cracks, patching concrete pavement, milling or bituminous level-up, shoulder repair, micro-surfacing, scour countermeasures, restoring drainage systems, cleaning and painting steel members to include application of other coatings, cleaning and sealing bridge joints, bridge deck protection, cleaning and resetting bearings, cleaning rebar/strand, and patching structural concrete. **Rehabilitation** Funds are intended for the repair of existing main lanes, structures, and frontage roads. Rehabilitation of an existing two-lane highway to a Super 2 highway (with passing lanes) may be funded within this category. The installation, replacement, and/or rehabilitation of signs and their appurtenances, pavement markings, thermoplastic striping, traffic signals, and illumination systems, including minor roadway modifications to improve operations, are also allowed under this category. Funds can be used to install new traffic signals as well as modernize existing signals.	Funding is allocated to each TxDOT district based on the following formulas: **Preventive Maintenance** A total allocation is calculated per district using the weighted criteria below. 98% is directed toward roadway preventive maintenance and 2% is directed toward bridge preventive maintenance. 65% On-system lane miles 33% Pavement distress score factor 2% Square footage of on-system bridge deck area **Rehabilitation** 32.5% Three-year average lane miles of pavement with distress scores <70 20% Vehicle miles traveled per lane mile (on system) 32.5% Equivalent single-axle load miles (on and off system and interstate) 15% Pavement distress scores pace factor See note at end of section	TxDOT districts select projects using a performance-based prioritization process that assesses district-wide maintenance and rehabilitation needs. The Texas Transportation Commission allocates Category 1 funds to each district using an allocation formula.

Table note: The Texas Transportation Commission may supplement the funds allocated to individual districts in response to special initiatives, safety issues, or unforeseen environmental factors. Supplemental funding is not required to be allocated proportionately among the districts and is not required to be allocated according to the formulas specified above. In determining whether to allocate supplemental funds to a particular district, the Commission may consider safety issues, traffic volumes, pavement widths, pavement conditions, oil and gas production, well completion, or any other relevant factors.

FUNDING CATEGORY 2

Metropolitan and Urban Area Corridor Projects

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 2 addresses mobility and added capacity projects on urban corridors to mitigate traffic congestion, as well as traffic safety and roadway maintenance or rehabilitation. Projects must be located on the state highway system. The Texas Transportation Commission allocates funds to each metropolitan planning organization (MPO) in the state, by formula. MPOs select and score projects for this category. Common project types include roadway widening (both freeway and non-freeway), interchange improvements, and roadway operational improvements.	Each MPO shall receive an allocation of Category 2 based on the following formula: **Category 2 Metropolitan (2M)** Using the following formula, 87% of Category 2 funding is allocated to MPOs with populations of 200,000 or greater — known as transportation management areas (TMAs). 30% Total vehicle miles traveled (on and off system) 17% Population 10% Lane miles (on system) 14% Truck vehicle miles traveled (on system) 7% Percentage of census population below the federal poverty level 15% Based on congestion 7% Fatal and incapacitating crashes **Category 2 Urban (2U)** Using the following formula, 13% of Category 2 funding is allocated to non-TMA MPOs (population less than 200,000). Distribution Formula: 20% Total vehicle miles traveled (on and off system) 25% Population 8% Lane miles (on system) 15% Truck vehicle miles traveled (on system) 4% Percentage of census population below the federal poverty levels 8% Centerline miles (on system) 10% Congestion 10% Fatal and incapacitating crashes	MPOs select projects in consultation with TxDOT districts using a performance-based prioritization process that assesses mobility needs within the MPO boundaries. Project funding must be authorized by the Texas Transportation Commission.

FUNDING CATEGORY 3

Non-Traditionally Funded Transportation Projects

Category 3 is for transportation projects that qualify for funding from sources not traditionally part of the State Highway Fund, including state bond financing (such as Proposition 12 and Proposition 14), the Texas Mobility Fund, pass-through financing, regional revenue and concession funds, and funding provided by local or military entities. Category 3 also contains funding for the development costs of design-build projects. (Design-build construction costs are covered by other UTP categories) Common project types include new-location roadways, roadway widening (both freeway and non-freeway), and interchange improvements.	Funding is determined by state legislation, Texas Transportation Commission-approved minute order, or local government commitments. Unlike other categories, the amount of funding in Category 3 is subject to change without Commission action. These funds are not part of the Planning Cash Forecast (see pg. 29), because they come from sources outside the regular scope of TxDOT funding. The UTP document reflects the Category 3 amount at the time of the annual UTP adoption.	Projects are determined by state legislation, Texas Transportation Commission-approved minute order, or local government commitments.

FUNDING CATEGORY 4

Statewide Connectivity Corridor Projects

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 4 addresses mobility on major state highway system corridors, which provide connectivity between urban areas and other statewide corridors. Projects must be located on the designated highway connectivity network that includes: – Texas Highway Trunk System – National Highway System (NHS) – Connections to major seaports or border crossings – National Freight Network – Hurricane evacuation routes The designated connectivity network was selected by the Texas Transportation Commission and includes three corridor types: – Mobility corridors: High-traffic routes with potential need for additional roadway capacity – Connectivity corridors: Two-lane roadways requiring upgrade to four-lane divided – Strategic corridors: Routes that provide unique statewide connectivity, such as Ports-to-Plains	**Category 4 Rural Connectivity** Funds distributed to specific projects based on performance scoring thresholds and qualitative analysis. **Category 4 Urban Connectivity** Funds distributed using the same formula as Category 2	TxDOT districts select Category 4 Rural projects in consultation with TxDOT's Transportation Planning and Programming Division using a performance-based prioritization process that assesses mobility needs on designated connectivity corridors in the district. TxDOT districts select Category 4 Urban projects in consultation with MPOs using a similar prioritization process. All Category 4 funding must be authorized by the Texas Transportation Commission.

FUNDING CATEGORY 5

Congestion Mitigation and Air Quality Improvement

Category 5 addresses attainment of National Ambient Air Quality Standard in non-attainment areas (currently the Dallas-Fort Worth, Houston, San Antonio, and El Paso metro areas). Each project is evaluated to quantify its air quality improvement benefits. Funds cannot be used to add capacity for single-occupancy vehicles. Common project types include interchange improvements, local transit operations, and bike and pedestrian infrastructure.	TxDOT distributes funding from the federal Congestion Mitigation and Air Quality Improvement (CMAQ) program to non-attainment areas by population and weighted by air quality severity. Non-attainment areas are designated by the federal Environmental Protection Agency (EPA).	TxDOT districts oversee the selection of MPO projects using a performance-based prioritization process that assesses mobility and air quality needs within a nonattainment area.

FUNDING CATEGORY 6

Structures Replacement and Rehabilitation (Bridge)

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 6 addresses bridge improvements through the following sub-programs. **Highway Bridge Program** For replacement or rehabilitation of eligible bridges on and off the state highway system that are considered functionally obsolete or structurally deficient. Bridges with a sufficiency rating below 50 are eligible for replacement. Bridges with a sufficiency rating of 80 or less are eligible for rehabilitation. A minimum of 15% of the funding must go toward replacement and rehabilitation of off-system bridges. **Bridge Maintenance and Improvement Program** For rehabilitation of eligible bridges on the state highway system. **Bridge System Safety Program** For elimination of at-grade highway-railroad crossings through the construction of highway overpasses or railroad underpasses, and rehabilitation or replacement of deficient railroad underpasses on the state highway system. For the elimination of higher risks on bridges such as deficient rails, documented scour, and narrow bridge decks.	Category 6 funding is allocated to TxDOT's Bridge Division, which selects projects statewide.	**TxDOT's Bridge Division** selects projects using a performance-based prioritization process. **Highway Bridge** projects are ranked first by condition categorization (e.g., Poor, Fair, Good) and then by sufficiency ratings. **Bridge Maintenance and Improvement** projects are selected statewide based on identified bridge maintenance/ improvement needs. **Bridge System Safety** projects involving railroad grade separations are selected based on a cost-benefit analysis of factors such as vehicle and train traffic, accident rates, casualty costs, and delay costs for at-grade railroad crossings. Other system safety projects are selected on a cost-benefit analysis of the work needed to address the safety concern at bridges identified with higher risk features.

FUNDING CATEGORY 7

Metropolitan Mobility and Rehabilitation

Category 7 addresses transportation needs within the boundaries of MPOs with populations of 200,000 or greater — known as transportation management areas (TMAs). This funding can be used on any roadway with a functional classification greater than a local road or rural minor collector. Common project types include roadway widening (both freeway and non-freeway), new-location roadways, and interchange improvements.	TxDOT distributes federal funds through Category 7 to each TMA in the state. Distribution is based on the population of each TMA.	MPOs operating in TMAs select projects in consultation with TxDOT districts. The MPOs use a performance-based prioritization process that assesses mobility needs within the MPO boundaries.

FUNDING CATEGORY 8

Safety

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 8 addresses highway safety improvements through the sub-programs listed below. Common Category 8 project types include medians, turn lanes, intersections, traffic signals, and rumble strips. **Highway Safety Improvement Program (HSIP)** Federal aid program administered by Traffic Safety Division (TRF) to fund safety projects on and off the state highway system, with the purpose to achieve significant reductions in traffic fatalities and serious injuries on all public roads. Traffic projects must align with the emphasis areas in the Texas Strategic Highway Safety Plan (SHSP) such as roadway and lane departures, intersections, older road users, and pedestrian safety. TRF provides districts with funding projections for on-system targeted, on-system systemic, and off-system projects, and districts submit project proposals for review and concurrence by TRF. The funding remains allocated to and supervised by TRF. **Systemic Widening Program (SSW)** Statewide program to fund the widening of high-risk narrow highways on the state highway system. **Road to Zero (RTZ)** Program initiated by the Texas Transportation Commission in the 2020 UTP with $600M commitment for the FY 2020–2021 biennium. Funding on the state highway system dedicated to target and reduce fatalities and suspected serious injuries in the three highest contributing categories: roadway and lane departure, intersection safety, and pedestrian safety.	Category 8 funding is allocated to TxDOT's Traffic Safety Division, which selects projects statewide.	**HSIP** Projects are evaluated, prioritized, and selected at the district level based on three years of crash data (targeted funds) or systemic approved projects as outlined in the HSIP guidance. SSW Projects are evaluated by roadway safety features for preventable severe crash types using total risk factor weights. **Road to Zero** Projects were evaluated by roadway safety factors, crash reduction factors, the safety improvement index, and time required to complete a candidate project. All evaluation factors were directly tied to the targeted top three contributing categories in fatalities and suspected serious injuries.

FUNDING CATEGORY 9

Transportation Alternatives Set-Aside Program

Category 9 handles the federal Transportation Alternatives (TA) Set-Aside Program. These funds may be awarded for the following activities: Construction of sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic-calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act. Construction of infrastructure-related projects that provide safe routes for non-drivers.	MPOs that are TMAs receive a portion of TA funds to administer within their planning areas. In addition, TxDOT distributes federal TA funds through a competitive statewide call for projects. 50% of these funds are designated for statewide flexible use, and the other 50% are distributed by population. TA project eligibility is determined by TxDOT, MPOs, and FHWA. TA Flex funds must go through a competitive call for projects and meet other conditions before they can be flexed to other uses.	For urbanized areas with populations over 200,000 (TMAs), MPOs select projects through independent competitive calls for projects, in consultation with TxDOT. Funds allocated to statewide use, as well as small urban areas and non-urban areas (with populations below 200,000) are administered by TxDOT's Public Transportation Division through a competitive process.

FUNDING CATEGORY

10

Supplemental Transportation Programs

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 10 addresses a variety of transportation improvements through the following sub-programs: **Supplemental Transportation Projects (Federal)** Federal discretionary and congressional high-priority projects. **Carbon Reduction Program (CRP)** Addresses improvements designed to reduce transportation emissions, defined as carbon dioxide (CO2) emissions from on-road highway sources. **Federal Lands Access Program (FLAP)** Addresses transportation facilities located on, are adjacent to, or provide access to federal lands. **Texas Parks and Wildlife Department (TPWD)** Construction and rehabilitation of roadways within or adjacent to state parks and other TPWD properties. Subject to memorandum of agreement between TxDOT and TPWD. **Green Ribbon Program** Projects to plant trees and other landscaping to help mitigate the effects of air pollution in air quality non-attainment or near non-attainment counties. **Americans with Disabilities Act (ADA) Pedestrian Program** Addresses construction or replacement of on-system pedestrian facilities to make the system more accessible and safer for all pedestrians including those with disabilities. **Landscape Incentive Awards** Allows TxDOT to execute joint landscape development projects in nine locations based on population categories in association with the Keep Texas Beautiful Governor's Community Achievement Awards Program. The awards recognize participating cities' or communities' efforts in litter control, quality of life issues, and beautification programs and projects. **Railroad Grade Crossing and Replanking Program** Replacement of rough railroad crossing surfaces on the state highway system (approximately 50 installations per year statewide).	**Supplemental Transportation Projects (Federal)** Directed by federal legislation. **Carbon Reduction Program** TxDOT distributes to the MPOs and other areas of the state. A portion of these funds are designated for statewide use and the remaining portion is distributed to MPOs by population. **Federal Lands Access Program** Project applications are scored and ranked by the Programming Decision Committee (PDC), which includes representatives from FHWA, TxDOT, and a political subdivision of the state. **Texas Parks and Wildlife Department (TPWD)** Per Rider 21(c), funding is distributed as a statewide allocation. **Green Ribbon Program** Per Rider 15, allocations based on one-half percent of the estimated letting capacity for the TxDOT districts that contain air quality non-attainment or near non-attainment counties. **Americans with Disabilities Act (ADA)** Projects are selected statewide based on conditions of curb ramps or location of intersections without ramps. **Landscape Incentive Awards** Funding is distributed to 10 locations in the state based on results of the Keep Texas Beautiful Awards Program. **Railroad Grade Crossing and Replanking Program** Condition of crossing's riding surface and benefit to cost per vehicle using crossing. **Railroad Signal Maintenance Program** Based on number of crossings and type of automatic devices present at each.	For **CRP**, statewide projects are administered by TxDOT's Transportation Planning & Programming Division whereas MPOs administer project selection for funds distributed to urbanized areas with populations over 200,000 (TMAs), areas with populations 50,000 to 200,000, and small areas with populations under 50,000. For **FLAP**, project applications are scored and ranked by the Programming Decision Committee (PDC). Projects selected under FLAP are managed by TPP. **The Texas Parks and Wildlife Department** (TPWD) selects State Park Roads projects in coordination with TxDOT districts. **Green Ribbon** allocations are based on one-half percent of the estimated letting capacity for the TxDOT districts that contain air quality non-attainment or near non-attainment counties and managed by the TxDOT Design Division. **ADA** projects are selected based on conditions of curb ramps or the location of intersections without ramps and are managed by the Design Division. **Landscape Incentive Awards** are managed by the TxDOT Design Division.

FUNDING CATEGORY
10

Supplemental Transportation Programs
(continued)

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Railroad Signal Maintenance Program Financial contributions to each railroad company in the state for signal maintenance. **Safety Rest Area/Truck Parking** This program is a state and national priority addressing the shortage of long-term parking for commercial motor vehicles on the highway system. **Intelligent Transportation Systems (ITS)** Improve Traffic Asset Management and Device Monitoring for better security controls. **Category 10 Carbon Reduction** In accordance with the federal IIJA, a new Carbon Reduction subprogram has been added to Category 10. Carbon Reduction funding is allocated to urbanized areas with populations over 200,000 (TMAs), areas with populations 50,000 to 200,000, and small areas with populations under 50,000. Some eligible projects include traffic management, congestion reduction technology, truck parking, energy efficient streetlights, traffic controls and options to reduce congestion using alternatives to single-occupant vehicle trips, including public transportation, pedestrian and bicycle facilities, and shared/pooled vehicle trips.	**Safety Rest Area/Truck Parking** Allocated to TxDOT's Maintenance Division, which selects projects statewide. **Intelligent Transportation System** Allocated to various TxDOT Divisions, which selects projects statewide.	The TxDOT Rail Division in coordination with TxDOT districts selects **Railroad Grade Crossing Replanking and Railroad Signal Maintenance projects**. All projects are selected using a performance-based prioritization process. **Safety Rest Area/Truck Parking** projects are selected and managed by TxDOT's Maintenance Division. **Intelligent Transportation System** projects are selected and managed by TxDOT's various divisions.

FUNDING CATEGORY
11

District Discretionary

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 11 addresses TxDOT district transportation needs through the sub-programs listed below. Common Category 11 project types include roadway maintenance or rehabilitation, added passing lanes (Super 2), and roadway widening (non-freeway). **District Discretionary** Projects selected at the discretion of each TxDOT District. Most projects are on the state highway system. However, some projects may be selected for construction off the state highway system on roadways with a functional classification greater than a local road or rural minor collector. Funds from this program should not be used for right of way acquisition. **Energy Sector** Safety and maintenance work on state highways impacted by the energy sector. **Border State Infrastructure Funding** Rider 11(b) funding is distributed to the three TxDOT districts with international ports of entry (Pharr, Laredo, and El Paso Districts) for highway projects within 25 miles of a port of entry. Selection criteria include improvements that facilitate safe movement of motor vehicles at or across the land border between the United States and Mexico. **District Safety** District discretionary funds for standalone safety projects that include proven engineering safety countermeasures. These countermeasures have been proven on a national or state level, and most have established crash modification factors. **Construction Cost Overruns/Change Order** Provides additional funding for costs that are realized at letting and during construction.	**District Discretionary** Minimum $2.5 million allocation to each TxDOT district per legislative mandate. If additional funds are distributed, the formula below is used: 70% On-system vehicle miles traveled 20% On-system lane miles 10% Annual truck vehicle miles traveled The Texas Transportation Commission may supplement the funds allocated to individual districts on a case-by-case basis to cover project cost overruns. **Energy Sector** Allocation formula based on the following weighted factors: 40% Three-year average pavement condition score 25% Oil and gas production taxes collected 25% Number of well completions 10% Volume of oil and gas waste injected **Border State Infrastructure Funding** Rider 11(b): Under a provision in the FAST Act, TxDOT may designate 5% of the state's federal Surface Transportation Block Grant (STBG) funds for border infrastructure projects. This funding is distributed to the three border districts with ports of entry: Pharr, Laredo, and El Paso Districts. **District Safety** 10% On-system daily vehicle miles traveled 10% On-system lane miles 2020 40% On-system fatal and incapacitating crashes 40% Fatal and incapacitating crash rate **Construction Cost Overruns/Change Order** Statewide allocation is managed by a governance committee. Approval of funds is on a case-by-case basis.	**TxDOT Districts** select projects using a performance-based prioritization process that assesses district-wide maintenance, safety, or mobility needs. **The Texas Transportation Commission** allocates funds through a formula allocation program. The Commission may supplement the funds allocated to individual districts on a case-by-case basis to cover project cost overruns, as well as energy sector initiatives. **Border State Infrastructure Funding** Project selection criteria include, but are not limited to: – Number of land border ports of entry – Number of incoming commercial trucks and railcars – Number of incoming personal motor vehicles and buses – Weight of incoming cargo by commercial trucks

FUNDING CATEGORY

12

Strategic Priority

DESCRIPTION	ALLOCATION OR DISTRIBUTION	PROJECT SELECTION GUIDELINES
Category 12 addresses projects with specific importance to the state, including those that improve: – Congestion and connectivity – Economic opportunity – Energy sector access – Border and port connectivity – Efficiency of military deployment routes or retention of military assets in response to the Federal Military Base Realignment and Closure Report – The ability to respond to both man-made and natural emergencies Common project types include roadway widening (both freeway and non-freeway), interchange improvements, and new-location roadways.	Funding in Category 12 is awarded to specific projects at the discretion of the Texas Transportation Commission, which selects from candidate projects nominated by TxDOT districts and MPOs. **Texas Clear Lanes** This subset of Category 12 projects is prioritized in collaboration with the MPOs in the state's five largest metro areas (Dallas, Fort Worth, Houston, San Antonio, and Austin). Projects are intended to address the top 100 most-congested segments in the state (directly and indirectly).	The Texas Transportation Commission selects projects statewide using a performance-based prioritization process. Per state law, the Texas Transportation Commission may make discretionary funding decisions for no more than 10% of TxDOT's current biennial budget. The amount in Category 12 is calculated as 10% of the average of TxDOT's total budget for the current fiscal biennium.

TxDOT-CRP District 2024 UTP Approved Project List

				AUTHORIZED IN THE 2023 UTP			UPDATED CONSTRUCTION ESTIMATE	% increase	FUNDING GAP IN TODAY'S DOLLARS	2024 UTP CANDIDATES REQUESTED AMOUNTS					
CSJ	COUNTY	HWY	PROJECT DESCRIPTION	EST LET DATE RANGE	AUTHORIZED CONSTRUCTION FUNDING BY CATEGORY	FUNDING APPROVED & AUTHORIZED IN THE 2023 UTP				PROPOSED EST LET DATE RANGE	FUNDING CATEGORY REQUESTED	TOTAL REQUESTED CONSTRUCTION FUNDING	INCLUDING INFATION	DRAFT UTP AUTHORIZED CONSTRUCTION FUNDING	COMMENTS *(from 11/17/22)*
1209-01-030	San Patricio	FM 893	UPGRADE TO 5-LANE URBAN ROADWAY BY CONSTRUCTING ADDTNL 2 LANES AND CLTL	FY 2023-2026	CAT 2M	$7,904,000	$12,500,000	58%	$4,596,000	FY 2024-2027	CAT 2 METRO	$12,500,000	$12,500,000	**$12,500,000**	Updated to current bid prices. High cost for storm sewer and drainage items.
0617-01-177	Nueces	SH 358	RAMP REVERSAL PHASE II-B	FY 2023-2026	CAT 2M	$39,960,000	$55,000,000	38%	$15,040,000	FY 2024-2027	CAT 2 METRO	$50,000,000	$50,000,000	**$50,000,000**	Updated to current bid prices. Higher cost for retaining walls and confined construction space.
											CAT 4 URBAN	$5,000,000	$5,000,000	**$6,000,000**	
0326-01-056	Nueces	SH 286	CONSTRUCT PHASE I FREEWAY EXTENSION BY UPGRADING EXISTING 2- LN RDWY TO 4-LN DIVIDED HIGHWAY	FY 2023-2026	CAT 2M	$52,000,000	$58,000,000	12%	$6,000,000	FY 2024-2027	CAT 2 METRO	$58,000,000	$58,000,000	**$60,000,000**	Updated to current bid prices.
0989-02-057	Nueces	FM 624	Construct additional two travel lanes to upgrade existing four lane rural roadway to an urban six lane boulevard with raised median.	FY 2023-2026	CAT 2M	$9,280,000	$27,500,000	29%	$6,220,000	FY 2024-2027	CAT 2 METRO	$9,500,000	$10,600,000	**$11,640,000**	Updated to current bid prices.
					CAT 4U	$10,000,000					CAT 4 URBAN	$16,000,000	$16,000,000	**$16,000,000**	
					CAT 7	$2,000,000					CAT 7	$2,000,000	$2,000,000	**$2,000,000**	
0180-06-118	San Patricio	SH 35	UPGRADE/ADD Elevated SPUI	FY 2027-2032	CAT 4U	$29,680,000	$32,000,000	8%	$2,320,000	FY 2024-2027	CAT 4 URBAN	$32,000,000	$35,840,000	**$36,400,000**	Updated to current bid prices. High level of risk on accuracy of estimate until completion of the schematic/environmental process.
0180-10-082	San Patricio	SH 361	UPGRADE/ADD Elevated SPUI	FY 2027-2032	CAT 2M	$44,800,000	$52,000,000	16%	$7,200,000		CAT 2 METRO	$52,000,000	$58,240,000	**$46,862,407**	
											CAT 4 URBAN	$0	$0	**$12,497,593**	
0180-11-016	San Patricio	SP 202	UPGRADE/ADD Elevated SPUI	FY 2027-2032		$0	$15,000,000	New	$15,000,000		CAT 2 METRO	$15,000,000	$16,800,000	**$16,800,000**	
0326-03-103	Nueces	SH 286	Construct 1 additional travel lane northbound.	FY 2027-2032	CAT 2M	$24,000,000	$30,000,000	7%	$2,000,000	FY 2024-2027	CAT 2 METRO	$25,000,000	$28,000,000	**$28,000,000**	Updated to current bid prices and future inflation.
					CAT 4U	$4,000,000					CAT 4 URBAN	$5,000,000	$5,600,000	**$5,600,000**	
0617-02-073	Nueces	PR 22	CORRIDOR UPGRADE FOR PEDESTRIAN AND ACCESS _MANAGEMENT IMPROVEMENTS WITHOUT ADDING CAPACITY	FY 2027-2032	CAT 2M	$17,920,000	$16,000,000	0%	--	FY 2028-2033	CAT 2 METRO			**$15,920,000**	
											TBD			**$2,000,000**	

Cat 2M 2024 UTP SUMMARY	
Draft 2024 UTP Cat 2M Allocation	$144,813,899
Projected Carryover (FY 2023)	$96,908,508
Total Adjusted Allocation	$241,722,407
Draft Cat 2M Total Authorized Construction Funding	$241,722,407
Remaining Balance	**$0**

Cat 4U 2024 UTP SUMMARY	
Draft 2024 UTP Cat 4U Allocation	$97,717,479
Projected Carryover (FY 2023)	-$772,710
Total Adjusted Allocation	$96,944,769
Draft Cat 4U Total Authorized Construction Funding	$76,497,593
Remaining Balance	**$20,447,176**

7/12/2023

TxDOT-CRP District 2025 UTP Candidate Project List

				AUTHORIZED IN THE 2023 UTP			UPDATED CONSTRUCTION ESTIMATE	% increase	FUNDING GAP IN TODAY'S DOLLARS	2024 UTP CANDIDATES REQUESTED AMOUNTS					
CSJ	COUNTY	HWY	PROJECT DESCRIPTION	EST LET DATE RANGE	AUTHORIZED CONSTRUCTION FUNDING BY CATEGORY	FUNDING APPROVED & AUTHORIZED IN THE 2023 UTP				PROPOSED EST LET DATE RANGE	FUNDING CATEGORY REQUESTED	TOTAL REQUESTED CONSTRUCTION FUNDING	INCLUDING INFATION	DRAFT UTP AUTHORIZED CONSTRUCTION FUNDING	COMMENTS *(from 11/17/22)*
1209-01-030	San Patricio	FM 893	UPGRADE TO 5-LANE URBAN ROADWAY BY CONSTRUCTING ADDTNL 2 LANES AND CLTL	FY 2023-2026	CAT 2M	$7,904,000	$12,500,000	58%	$4,596,000	FY 2024-2027	CAT 2 METRO	$12,500,000	$12,500,000	**$12,500,000**	Updated to current bid prices. High cost for storm sewer and drainage items.
0617-01-177	Nueces	SH 358	RAMP REVERSAL PHASE II-B	FY 2023-2026	CAT 2M	$39,960,000	$55,000,000	38%	$15,040,000	FY 2024-2027	CAT 2 METRO	$50,000,000	$50,000,000	**$50,000,000**	Updated to current bid prices. Higher cost for retaining walls and confined construction space.
											CAT 4 URBAN	$5,000,000	$5,000,000	**$6,000,000**	
0326-01-056	Nueces	SH 286	CONSTRUCT PHASE I FREEWAY EXTENSION BY UPGRADING EXISTING 2- LN RDWY TO 4-LN DIVIDED HIGHWAY	FY 2023-2026	CAT 2M	$52,000,000	$58,000,000	12%	$6,000,000	FY 2024-2027	CAT 2 METRO	$58,000,000	$58,000,000	**$60,000,000**	Updated to current bid prices.
0989-02-057	Nueces	FM 624	Construct additional two travel lanes to upgrade existing four lane rural roadway to an urban six lane boulevard with raised median.	FY 2023-2026	CAT 2M	$9,280,000	$27,500,000	29%	$6,220,000	FY 2024-2027	CAT 2 METRO	$9,500,000	$10,600,000	**$11,640,000**	Updated to current bid prices.
					CAT 4U	$10,000,000					CAT 4 URBAN	$16,000,000	$16,000,000	**$16,000,000**	
					CAT 7	$2,000,000					CAT 7	$2,000,000	$2,000,000	**$2,000,000**	
0180-06-118	San Patricio	SH 35	UPGRADE/ADD Elevated SPUI	FY 2027-2032	CAT 4U	$29,680,000	$32,000,000	8%	$2,320,000	FY 2024-2027	CAT 4 URBAN	$32,000,000	$35,840,000	**$36,400,000**	Updated to current bid prices. High level of risk on accuracy of estimate until completion of the schematic/environmental process.
0180-10-082	San Patricio	SH 361	UPGRADE/ADD Elevated SPUI	FY 2027-2032	CAT 2M	$44,800,000	$52,000,000	16%	$7,200,000		CAT 2 METRO	$52,000,000	$58,240,000	**$46,862,407**	
											CAT 4 URBAN	$0	$0	**$12,497,593**	
0180-11-016	San Patricio	SP 202	UPGRADE/ADD Elevated SPUI	FY 2027-2032		$0	$15,000,000	New	$15,000,000		CAT 2 METRO	$15,000,000	$16,800,000	**$16,800,000**	
0326-03-103	Nueces	SH 286	Construct 1 additional travel lane northbound.	FY 2027-2032	CAT 2M	$24,000,000	$30,000,000	7%	$2,000,000	FY 2024-2027	CAT 2 METRO	$25,000,000	$28,000,000	**$28,000,000**	Updated to current bid prices and future inflation.
					CAT 4U	$4,000,000					CAT 4 URBAN	$5,000,000	$5,600,000	**$5,600,000**	
0617-02-073	Nueces	PR 22	CORRIDOR UPGRADE FOR PEDESTRIAN AND ACCESS _MANAGEMENT IMPROVEMENTS WITHOUT ADDING CAPACITY	FY 2027-2032	CAT 2M	$17,920,000	$16,000,000	0%	--	FY 2028-2033	CAT 2 METRO			**$15,920,000**	
											TBD			**$2,000,000**	

Cat 2M 2024 UTP SUMMARY	
Draft 2024 UTP Cat 2M Allocation	$144,813,899
Projected Carryover (FY 2023)	$96,908,508
Total Adjusted Allocation	$241,722,407
Draft Cat 2M Total Authorized Construction Funding	$241,722,407
Remaining Balance	**$0**

Cat 4U 2024 UTP SUMMARY	
Draft 2024 UTP Cat 4U Allocation	$97,717,479
Projected Carryover (FY 2023)	-$772,710
Total Adjusted Allocation	$96,944,769
Draft Cat 4U Total Authorized Construction Funding	$76,497,593
Remaining Balance	**$20,447,176**

7/12/2023

Federal Carbon Reduction Program Description

U.S. Department of Transportation
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590
202-366-4000

Carbon Reduction Program (CRP)

	FAST Act (extension)	Bipartisan Infrastructure Law (BIL)				
Fiscal year (FY)	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Contract authority	---	$1.234 B*	$1.258 B*	$1.283 B*	$1.309 B*	$1.335 B*

*Calculated (sum of estimated individual State Carbon Reduction Program apportionments)

Note: Except as indicated, all references in this document are to the Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act, Pub. L. 117-58 (Nov. 15, 2021).

Program Purpose

The BIL establishes the Carbon Reduction Program (CRP), which provides funds for projects designed to reduce transportation emissions, defined as carbon dioxide (CO2) emissions from on-road highway sources.

Statutory Citations

- § 11403; 23 U.S.C. 175

Funding Features

Type of Budget Authority

- Contract authority from the Highway Account of the Highway Trust Fund, subject to the overall Federal-aid obligation limitation.

Apportionment of Funds

- As under the FAST Act, the BIL directs FHWA to apportion funding as a lump sum for each State then divide that total among apportioned programs.
- Each State's CRP apportionment is calculated based on a percentage specified in law. [23 U.S.C. 104(b)(7)] (See "Apportionment" fact sheet for a description of this calculation)

Transferability to Other Federal-aid Apportioned Programs

- A State may transfer up to 50% of CRP funds made available each fiscal year to any other apportionment of the State, including the National Highway Performance Program, Surface Transportation Block Grant Program, Highway Safety Improvement Program, Congestion Mitigation and Air Quality Improvement (CMAQ) Program, National Highway Freight Program, and **[NEW]** Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Formula Program. Conversely, subject to certain limitations, a State may transfer up to 50% of funds made available each fiscal year from each other apportionment of the State to CRP. [23 U.S.C. 126(a)] (See other program-specific fact sheets for additional details.)

Suballocation

- 65% of a State's CRP apportionment is to be obligated in the following areas in proportion to their relative shares of the State's population. [§ 11403; 23 U.S.C. 175(e)(1)(A)] Funds attributed to an urbanized area may be obligated in the metropolitan area established under 23 U.S.C. 134 that encompassed the urbanized area [23 U.S.C. 175(e)(2)]:
    - *Urbanized areas with an urbanized area population greater than 200,000*: This portion is to be divided among those areas based on their relative share of population, unless the Secretary approves a joint request from the State and relevant MPO(s) to use other factors. [§ 11403; 23 U.S.C. 175(e)(1)(A)(i) and (e)(3)]
    - *Urbanized areas with an urbanized area population of at least 50,000 but no more than 200,000*: This portion is to be divided among those areas based on their relative share of population, unless the Secretary approves a joint request from the State and relevant MPO(s) to use other factors. [§ 11403; 23 U.S.C. 175(e)(1)(A)(ii) and (e)(3)]
    - *Urban areas with population at least 5,000 and no more than 49,999*. [§ 11403; 23 U.S.C. 175(e)(1)(A)(iii)]
    - *Areas with population of less than 5,000*. [§ 11403; 23 U.S.C. 175(e)(1)(A)(iv)]
- The remaining 35% of the State's CRP apportionment be obligated in any area of the State. [§ 11403; 23 U.S.C. 175(e)(1)(B)]
- Requires each State, over the period of FY22-26, to make available to each urbanized area with a population of at least 50,000 obligation authority for use with the suballocated CRP funding. [§ 11403; 23 U.S.C. 175(e)(6)] States are required to divide the funding to urbanized areas with a population of at least 50,000 based on the relative population of the areas. [23 U.S.C. 175(e)(3)]

Federal Share

- In accordance with 23 U.S.C. 120. (See the "Federal Share" fact sheet for additional detail.) [§ 11403; 23 U.S.C. 120 and 175(f)]

Eligible Projects

- CRP funds may be obligated for projects that support the reduction of transportation emissions, including, but not limited to– [except as noted, § 11403; 23 U.S.C. 175(c)(1)]
    - a project described in 23 U.S.C. 149(b)(4) to establish or operate a traffic monitoring, management, and control facility or program, including advanced truck stop electrification systems;
    - a public transportation project eligible under 23 U.S.C. 142;
    - a transportation alternative (as defined under the Moving Ahead for Progress under the 21st Century Act [23 U.S.C. 101(a)(29), as in effect on July 5, 2012]), including, but not limited to, the construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation;
    - a project described in 23 U.S.C. 503(c)(4)(E) for advanced transportation and congestion management technologies;
    - deployment of infrastructure-based intelligent transportation systems capital improvements and the installation of vehicle-to-infrastructure communications equipment;
    - a project to replace street lighting and traffic control devices with energy-efficient alternatives;
    - development of a carbon reduction strategy developed by a State per requirements in 23 U.S.C. 175(d);
    - a project or strategy designed to support congestion pricing, shifting transportation demand to nonpeak hours or other transportation modes, increasing vehicle occupancy rates, or otherwise reducing demand for roads, including electronic toll collection, and travel demand management strategies and programs;
    - efforts to reduce the environmental and community impacts of freight movement;
    - a project that supports deployment of alternative fuel vehicles, including–
        - acquisition, installation, or operation of publicly accessible electric vehicle charging infrastructure or hydrogen, natural gas, or propane vehicle fueling infrastructure; and
        - purchase or lease of zero-emission construction equipment and vehicles, including the acquisition, construction, or leasing of required supporting facilities;
    - a project described in 23 U.S.C. 149(b)(8) for a diesel engine retrofit;
    - certain types of projects to improve traffic flow that are eligible under the CMAQ program, and that do not involve construction of new capacity; [§ 11403; 23 U.S.C. 149(b)(5); and 175(c)(1)(L)]
    - a project that reduces transportation emissions at port facilities, including through the advancement of port electrification; and
    - any other STBG-eligible project, if the Secretary certifies that the State has demonstrated a reduction in transportation emissions, as estimated on a per capita and per unit of economic output basis. (Note: FHWA will issue guidance on how the Secretary will make such certifications.) [§ 11403; 23 U.S.C. 133(b) and 175(c)(2)]

Coordination in Urbanized Areas Other Than Transportation Management Areas

Before obligating CRP funds for an eligible project in an urbanized area that is not a transportation management area, a State shall coordinate with any MPO that represents the urbanized area prior to determining which activities should be carried out under the project. [§ 11403; 23 U.S.C. 175(e)(4)]

Consultation in Rural Areas

Before obligating CRP funds for an eligible project in a rural area, a State shall consult with any regional transportation planning organization or MPO that represents the rural area prior to determining which activities should be carried out under the project. [§ 11403; 23 U.S.C. 175(e)(5)]

Program Features

Carbon Reduction Strategy

- Requires each State, in consultation with any MPO designated within the State, to– [§ 11403; 23 U.S.C. 175(d)]
  - develop a carbon reduction strategy not later than 2 years after enactment; [§ 11403; 23 U.S.C. 175(d)(1)] and
  - update that strategy at least every four years; [§ 11403; 23 U.S.C. 175(d)(3)]

- Requires the carbon reduction strategy to–
  - support efforts–and identify projects and strategies–to support the reduction of transportation emissions;
  - at the State's discretion, quantify the total carbon emissions from production, transport, and use of materials used in the construction of transportation facilities in the State; and
  - be appropriate to the population density and context of the State, including any MPO designated within the State. [§ 11403; 23 U.S.C. 175(d)(2)]

- Allows the carbon reduction strategy to include projects and strategies for safe, reliable, and cost-effective options to–
  - reduce traffic congestion by facilitating the use of alternatives to single-occupant vehicle trips, including public transportation facilities, pedestrian facilities, bicycle facilities, and shared or pooled vehicle trips within the State or an area served by the relevant MPO;
  - facilitate use of vehicles or modes of travel that result in lower transportation emissions per person-mile traveled as compared to existing vehicles and modes; and
  - facilitate approaches to the construction of transportation assets that result in lower transportation emissions as compared to existing approaches. [§ 11403; 23 U.S.C. 175(d)(2)(B)]

- Requires FHWA to–
  - review the State's process for developing its carbon reduction strategy and certify that the strategy meets statutory requirements; and
  - at the request of a State, provide technical assistance in the development of the strategy. [§ 11403; 23 U.S.C. 175(d)(4) and (5)]

Treatment of Projects

- Treats every project funded under the program as if it were located on a Federal-aid highway. This ensures applicability of Davis-Bacon wage requirements. [§ 11403; 23 U.S.C. 175(g)]

Additional Information and Assistance

- FHWA can connect you with your local FHWA office and support you with technical assistance for planning, design, construction, preserving, and improving public roads and in the stewardship of Federal funds. For assistance, visit: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/technical_support.cfm

Page last modified on April 20, 2022

CORPUS CHRISTI MPO
METROPOLITAN PLANNING ORGANIZATION

Date:	November 9, 2023
To:	Technical Advisory Committee (TAC)
From:	Craig Casper, Senior Transportation Planner
Through:	Robert MacDonald, Transportation Planning Director
Subject:	Item 5A: Adjusted Urban Area Status Update and Urban Density Discussion
Action:	Information Only

Summary

The Corpus Christi MPO TPC approved the Adjustments to the Census Urban Area as shown in Attachment 1.

TxDOT and FHWA approved the Adjustments to Census Urban Areas as shown in Attachment 2.

As mentioned last month, MPOs and TxDOT had until October 31 to adjust the Urban Area Boundary using the 9 factors listed in FHWA's *Highway Functional Classification Criteria and Procedures.* During September the Corpus Christi MPO staff participated in 2 online sessions with TxDOT and met in our offices with FHWA and TxDOT to discuss detailed areas for inclusion or exclusion. These discussions were summarized during discussions with the Technical Advisory Committee (TAC) and presented to the Transportation Policy Committee.

As stated in the law/regulations/guidance, if MPOs and TxDOT cannot achieve consensus with FHWA on the Adjusted Urban Area boundaries, the original version of the 2020 Census Designated Urban Area boundary will take effect in December. To meet this schedule, the Corpus Christi MPO Transportation Policy Committee (TPC) had to approve an adjusted boundary and submit it to TxDOT no later than October 30, 2023. The Corpus Christi Adjusted Urban Area Boundary was approved by the TPC during the October 12, 2023 meeting. While this Adjusted Urban Area Boundary must be updated every decade when the new Census results are released, the federal guidance does not preclude mid-Census adjustments, stating ***"Although there is no specific FHWA policy on how often adjustments to urban area boundaries can be made, states are encouraged to make such adjustments as infrequently as possible and only when deemed absolutely necessary."***

The Adjusted Urban Area Boundary is important for several reasons:

1) Metropolitan Planning Organizations (MPOs) have jurisdiction for Census Designated Urban Areas with a population over 50,000. In Census Urban Areas over 200,000 MPOs are Transportation Management Areas (TMA) and have added authority and responsibility.
2) The boundary of an MPO is determined by including the Adjusted Urban Area, plus all contiguous areas that will be urban within the timeframe of the Metropolitan Transportation Plan (MTP). Areas outside of an MPO boundary are in the state DOT planning jurisdiction.
3) Federal transportation funds are allocated to MPOs based on several criteria; a fundamental criterion is the population of the urban area. Another funding consideration is the mileage of roads by each federal functional classification within the Adjusted Urban Area.
4) The federal functional classification of roads (this is occasionally different from what local jurisdictions have functionally classified roads as) determines eligibility for the use federal funds on

a roadway and the relative importance of each roadway when scored against performance measures. Federal functional classification is predicated on inclusion in an Adjusted Urban Area.

Considerations for Adjusting the Census Urban Area Boundary

The requirements for adjusting the Census Urban Area are: First, it must expand, not contract, the Census Designated Urban Area. Second, it must be approved by the Texas Division of the Federal Highway Administration (FHWA). When adjusting the urban area boundary participants should use the following 9 factors from FHWA's *Highway Functional Classification Criteria and Procedures, Section 6. Urban Boundaries*:

a. The adjusted urban area boundary will be one, single contiguous area.
b. The adjusted urban area boundary should include terminals (e.g. airports, seaports) and their access roads, if such terminals lie within a reasonable distance of the urban area.
c. The adjusted urban area boundary is adjusted to encompass all large traffic generators that are within a reasonable distance from the urban area (e.g., fringe area public parks, large places of assembly, large industrial plants, etc.).
d. The adjusted urban area boundary should consider transit service routes (e.g., bus route, passenger rail line) in the placement of a boundary location.
e. The adjusted urban area boundary should be defined so that its physical location is easy to discern in the field. Whenever possible it should follow physical features (e.g., rivers, streams, irrigation canals, transmission lines, railroads, streets or highways).
f. All ramps and interchanges should be either included or excluded from the adjusted urban area boundary and interchanges should not be divided by the boundary.
g. For coastal areas, the generally accepted coastal boundaries most commonly used for spatial analysis or map-making should be used.
h. It is important to recognize that the adjusted urban area boundary is a significant factor in developing the functional classification of a road in an urban/rural context.
i. The adjusted urban area boundary should be designed to eliminate or minimize a roadway's snaking in and out of the boundary. In these cases, as the boundary is adjusted, it needs to be clearly defined that the road is either in or out.

The following definitions are provided for the discussion:

Please note that both the Census Urban Area and the Adjusted Urban Area are different from the Metropolitan Planning Area boundary, which will be updated to incorporate the Adjusted Urban Area and the area that the Small Area Forecast shows is Urbanizing Area.

Census Urban Area: The area defined by the Census as Urban based on density of residential units.

Adjusted Urban Area: The area smoothed by local entities and TxDOT to create a single, contiguous boundary. It is approved by FHWA and is based on 9 factors and must include all of the Census Urban Area.

Urbanizing Area: The area that is currently rural according to the Census, but the Corpus Christi TPC adopted Small Area Forecast says will reach urban density. This can overlap with the areas that are added during the Adjusted Urban Area process.

Metropolitan Planning Boundary: The area that the Transportation Policy Committee is responsible for conducting the 3C Planning Process for. This must be approved by the Governor. It includes the Adjusted Urban Area plus all contiguous areas that will be Urban in the Metropolitan Plan year (2050).

Urban Density: having developed density equivalent to 200 housing units per square mile, generally at the Census Block level. Further discussion of the large Census Blocks on the perimeter of the region should take place.

Recommendation

None

Proposed Motion

None

Attachments:

1. Map of the 2020 Census Urban Areas and Recommended Adjusted Corpus Christi Urban Area
2. Map of the TxDOT and FHWA approved 2020 Census Adjusted Urbanized Areas

SAN PATRICIO COUNTY

NUECES COUNTY

Gregory

Portland

Ingleside

Aransas Pass

Ingleside on the Bay

Port Aransas

Robstown

Corpus Christi

Nueces Bay

Corpus Christi Bay

Gulf of Mexico

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

A1 A2 A3 A4

Legend

IDs 1-24: Adjusted Urban Area Locations

IDs A1-A4: Locations Considered for Adjustment

- Corpus Christi Metropolitan Planning Area (2010)
- 2020 Census Urban Areas

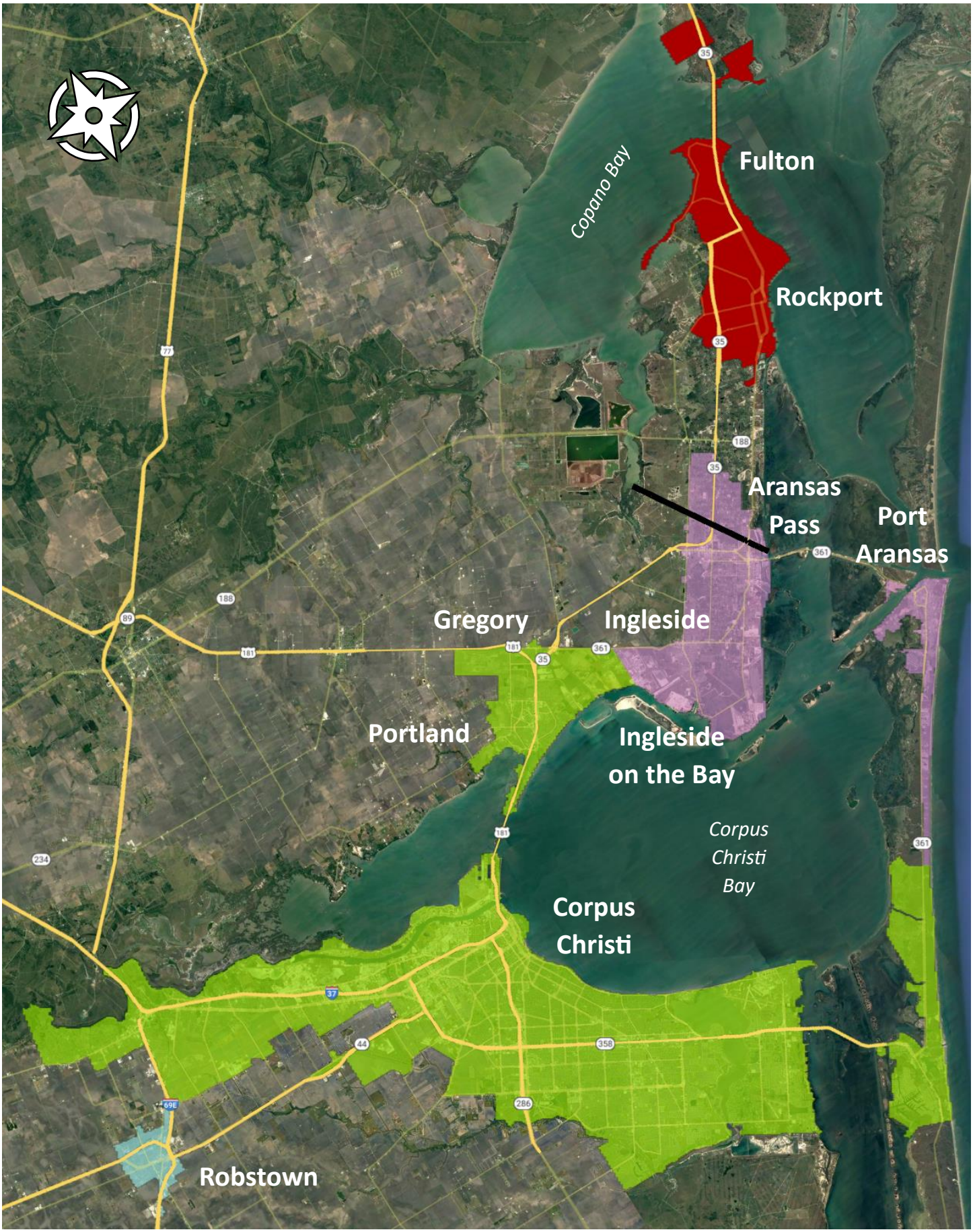
2020 Adjusted Urban Areas

- Corpus Christi (MPO Recommended)
- Robstown (TxDOT)
- Robstown (MPO Recommended Append)
- Aransas Pass-Port Aransas-Ingleside (TxDOT)

N

Map of the 2020 Census Urban Areas and Recommended Adjusted Corpus Christi Urban Area

Map of the TxDOT and FHWA approved 2020 Census Adjusted Urbanized Areas



CORPUS CHRISTI MPO
METROPOLITAN PLANNING ORGANIZATION

Date: November 9, 2023
To: Technical Advisory Committee (TAC)
From: Craig Casper, Senior Transportation Planner
Through: Robert MacDonald, Transportation Planning Director
Subject: Item 9C: Highway Economic Resource System (HERS) Overview and Discussion
Action: Information Only

Summary

The Corpus Christi MPO retained a contractor to customize the FHWA Highway Economic Requirements System (HERS) investment forecast tool, including incorporation of local vehicle operating costs and revisions to pavement condition data using locally acquired data. The model specifications and usage will reflect current USDOT economic infrastructure investment principles. The Contractor shall produce a regionally customized version of HERS, including: an estimate cost of needed maintenance on the federally eligible road system, the resulting conditions using historic levels of funding, the resulting conditions using all reasonably available federal funding, the gap between needed and actual. The full scope of services and corresponding schedule is attached.

Mr. Richard Margiotta of the consultant team will present the proposed approach and potential outcomes.

Attachments

1. Consultant Scope and Cost for the HERS Development Consultant
2. HERS Project Schedule

CORPUS CHRISTI MPO

METROPOLITAN PLANNING ORGANIZATION

FREESE AND NICHOLS

602 N. Staples St., Suite 300
Corpus Christi, TX 78401

Telephone: 361.884.0687
Email: ccmpo@cctxmpo.us
www.corpuschristi-mpo.org

April 21, 2023

Work Authorization 2023.05

FNI Project CHO21496
Infrastructure Condition Data Aggregation and Analysis Models

Notice to Proceed: April 21, 2023

Description of Services: The Contractor shall customize the FHWA Highway Economic Requirements System (HERS) investment forecast tool, including incorporation of local vehicle operating costs and revisions to pavement condition data using locally acquired data. The model specifications and usage will reflect current USDOT economic infrastructure investment principles. The Contractor shall produce a regionally customized version of HERS, including: an estimate cost of needed maintenance on the federally eligible road system, the resulting conditions using historic levels of funding, the resulting conditions using all reasonably available federal funding, the gap between needed and actual. The full scope of services and corresponding schedule is attached.

The work shall not exceed $45,000 unless preapproved in writing.

Deliverables: Consultant will provide professional services and deliver:

- Project Kick-off Meeting
- Two (2) Technical Advisory Committee meetings
- Monthly progress reports and invoices specific to this Work Authorization
- Refined Maintenance Cost, HPMS, local municipality PCI, and NBI datasets
- Customized FHWA HERS Investment Forecast Tool
- Range of completed investment forecast scenarios
- A technical memorandum and presentation to the Corpus Christi MPO Technical Advisory Committee and Transportation Policy Committee
- A regionally customized HERS Cost/Benefit Tool

This attached Work Authorization 2023.05 ends on September 30, 2024 unless extended in writing.

Respectfully,

Robert MacDonald, MPA, P.E.
Transportation Planning Director

PROFESSIONAL SERVICES AGREEMENT

WORK AUTHORIZATION 2023.5 – Infrastructure Condition Data Aggregation and Analysis Models

Corpus Christi MPO
Attn: Craig Casper, AICP
Corpus Christi Metropolitan Planning Organization
602 N. Staples Street, Suite 300
Corpus Christi, TX, 78401

FNI PROJECT: CHO21496
Work Authorization 2023.5 – Infrastructure Condition Data Aggregation and Analysis Models

Date: 4/21/2023

This authorization is in accordance with the terms and conditions outlined in the Corpus Christi Metropolitan Planning Organization (Corpus Christi MPO) General Planning Consultant Contract Agreement (executed on April 2021) between the Corpus Christi MPO and FNI. This contract was amended on June 21, 2022 (executed on July 19, 2022) and is scheduled to expire on September 30, 2024.

Project Name: Infrastructure Condition Data Aggregation and Analysis Models

Description of Services:
The Contractor shall customize the FHWA Highway Economic Requirements System (HERS) investment forecast tool, including incorporation of local vehicle operating costs and revisions to pavement condition data using locally acquired data. The model specifications and usage will reflect current USDOT economic infrastructure investment principles. The Contractor shall produce a regionally customized version of HERS, including: an estimate cost of needed maintenance on the federally eligible road system, the resulting conditions using historic levels of funding, the resulting conditions using all reasonably available federal funding, the gap between needed and actual.

WORK AREA A. Project Management

Effective project management is a critical component of successful projects and requires clear and consistent communication of project progress and contract expenditures to the client.

Task A1. Project Communications
The project team will hold monthly virtual meetings with Corpus Christi MPO Staff to discuss data needs, issues resolution, and upcoming meetings and deliverables. These meetings will be held at the discretion of the Corpus Christi MPO and may be cancelled or rescheduled at their request.

Task A2. Project Kick-off Meeting
FNI staff will coordinate with the Corpus Christi MPO to conduct one (1) virtual kick-off meeting to discuss the task effort and approach. At the request of the Corpus Christi MPO, an in-person meeting can be arranged if the meeting can be conducted in coordination with other project meetings.

Task A3. Project Meetings
FNI will conduct up to two (2) formal meetings with Corpus Christi MPO staff throughout the project to present findings and receive guidance on project tasks, deliverables, and recommendations. The meetings will be held virtually unless they can be coordinated with other concurrent FNI projects with the Corpus Christi MPO.

Corpus Christi MPO staff will conduct a final review of the draft technical memorandum and provide one (1) set of consolidated comments before presentation of the final version to both the Corpus Christi MPO Technical Advisory Committee and the Transportation Policy Committee.

Task A4. Scope, Schedule and Budget Adherence
Regular monthly progress reports and invoices specific to this Work Authorization (2023.05) will be submitted to the Corpus Christi MPO for review and approval. All project reports will list work completed, work task status (as outlined in the scope), and percentage of project funds expended.

Deliverables

- Project Kick-off Meeting
- Two (2) Technical Advisory meetings
- Monthly progress reports and invoices specific to this work authorization

WORK AREA B. Data Collection

Task B1. Data Collection

The Consultant will collect and assemble the latest HPMS, local pavement condition, and NBI data for the Corpus Christi MPO region and set parameters. Datasets will be compiled and reviewed for accuracy by conducting range and cross-checks in coordination with Corpus Christi MPO staff and the Technical Advisory Committee.

Deliverables

- Refined HPMS, local pavement conditions, and NBI datasets

WORK AREA C. Scenario Development and Implementation

Task C1. FHWA Highway Economic Requirements System (HERS) Investment Forecast Tool Setup

The Consultant shall utilize the FHWA Highway Economic Requirements System (HERS) investment forecast tool and incorporate local vehicle operating costs, local maintenance and rehabilitation costs, and pavement condition data. The model specifications and usage will reflect current USDOT economic infrastructure investment principles.

Task C2. Scenario Development and Implementation

The Consultant will use the HERS tool developed in Task D1 to run at least three (3) and no more than five (5) scenarios developed in coordination with Corpus Christi MPO staff. The forecast years will be set at 2035 and 2050.

Deliverables

- Customized FHWA HERS Investment Forecast Tool
- Range of completed investment forecast scenarios for 2035 and 2050

WORK AREA D. Documentation

Task D1. Technical Memorandum

The project team will prepare a technical memorandum detailing the model development process as well as the final investment forecasts. All meeting notes and materials will be included as part of the final submission. The project team will submit a draft technical memorandum in electronic format for review and comment. Staff comments shall be provided in one consolidated document within 10 business days of submittal. A final technical memorandum will be prepared based on these comments. A presentation of the technical memorandum, including an overview of the HERS model customization process, scenario development, and summary forecast investment data, will be presented to both the Corpus Christi MPO Technical Advisory Committee and the Transportation Policy Committee.

Deliverables:

- A technical memorandum and presentation to both the Corpus Christi MPO Technical Advisory Committee and the Transportation Policy Committee
- A regionally customized HERS Cost/Benefit Tool

Schedule: The project has an initial schedule of 6 months and may be subject to change.

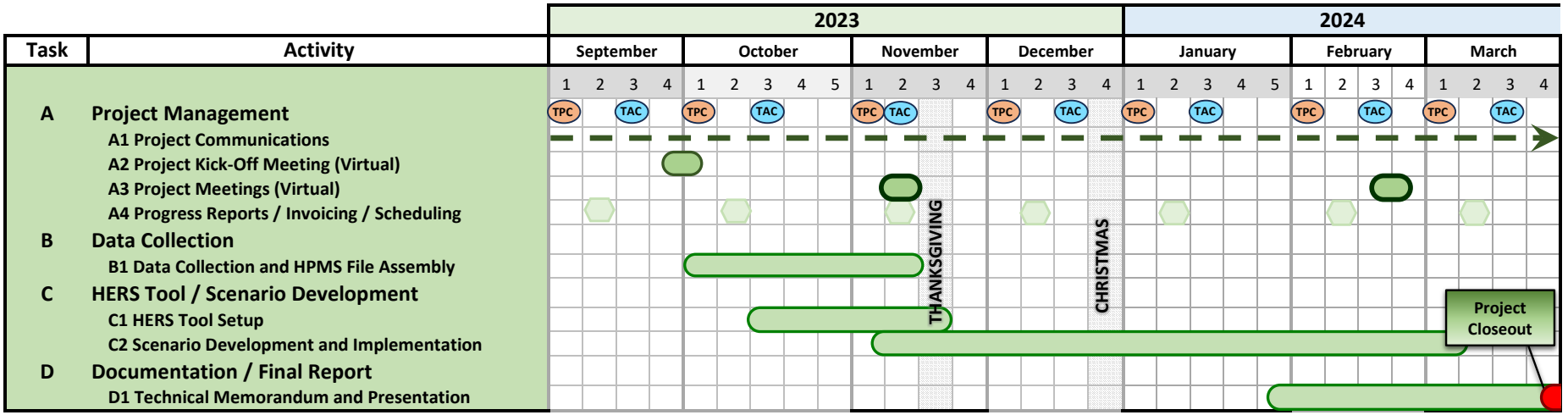
Compensation: An amount not to exceed Forty-Five Thousand Dollars ($45,000.00). Any changes in scope or fee shall be approved by the client in advance of any proposed out of scope work.

All other provisions, terms and conditions of the Professional Services Agreement which are not expressly amended shall remain in full force and effect.

FREESE AND NICHOLS, INC.	**Corpus Christi MPO**
BY: _____	BY: _____
Edmund Haas, AICP	Robert F. MacDonald, PE
(Print Name)	(Print Name)
TITLE: Vice-President, Transportation Planning	TITLE: Transportation Planning Director
DATE: April 21, 2023	DATE: April 21, 2023

Highway Economic Resource System (HERS) Project Schedule

Work Authorization 2023.5 - Infrastructure Condition, Data Aggregation, and Analysis Models



CORPUS CHRISTI MPO
METROPOLITAN PLANNING ORGANIZATION

Date: November 9, 2023

To: Technical Advisory Committee (TAC)

From: Craig Casper, Senior Transportation Planner

Through: Robert MacDonald, Transportation Planning Director

Subject: Item 9D: Corpus Christi MPO Resiliency Plan Phase 1; Critical Infrastructure and Threats Presentation and Discussion

Action: Information Only

Summary

The Preliminary Draft map of critical infrastructure and estimated yearly losses is available for review and comment. https://hspartner.maps.arcgis.com/apps/mapviewer/index.html?webmap=c1ecc29deda644848f708ca4c33cb5aa

Background

According to the Fixing America's Surface Transportation (FAST) Act, signed into law in December 2015, the nation's transportation system must be secure and resilient to a myriad of hazards. Resilience is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions. Following passage of the FAST Act, the Federal Highway Administration and the Federal Transit Administration updated the metropolitan and statewide transportation planning regulations to reflect these new requirements. The transportation planning rule includes:

- A new planning factor for states and metropolitan planning organizations (MPOs) to consider and implement: improving the resiliency and reliability of the transportation system (23 CFR 450.206(a)(9) and 23 CFR 450.306(b)(9)).
- A recommendation for MPOs to consult with agencies and officials responsible for natural disaster risk reduction when developing a metropolitan transportation plan and the transportation improvement program (23 CFR 450.316(b)).
- A requirement that the metropolitan transportation plan assess capital investment and other strategies that reduce the vulnerability of the existing transportation infrastructure to natural disasters (23 CFR 450.324(f)(7)).

At each stage of the transportation planning process, agencies have opportunities to integrate resilience.

Attachments:

1. Technical Memo 2: Hazard Definition Corpus Christi MPO Regional Resiliency Improvement Plan
2. Resiliency Plan Criticality Framework
3. Example of layers incorporated into the Preliminary Draft Regional Transportation Map

Technical Memo 2: Hazard Definition

Corpus Christi MPO Regional Resiliency Improvement Plan Phase 1

Project Context

The Corpus Christi Metropolitan Planning Organization (MPO) and its region face a unique combination of natural hazards including a dry, non-freeze southern Texas climate and its location in 'hurricane alley' along the Gulf Coast. The ability to continue and or quickly restore transportation operations in the face of such hazards can save lives and protect critical and costly infrastructure investments and is therefore of central concern to the Corpus Christi Metropolitan MPO. As evidenced by recent experiences with Hurricane Harvey - which destroyed or severely damaged 80 percent of homes and buildings in Rockport, Fulton, Bayside, Aransas Pass, and Port Aransas [Texas A&M Corpus Christi, 2018] – there is a critical need for more resilient infrastructure in the region.

To proactively make the system more resilient and mitigate potential consequences of known environmental risks and hazards, the Corpus Christi MPO has contracted with the High Street Consulting Group to make progress toward developing a regional Resiliency Improvement Plan by completing a Phase 1 analysis. Phase 1 will identify and prioritize an initial set of assets based on existing data related to their vulnerability to hazards and criticality. This in turn will help position Corpus Christi MPO to tactically pursue federal PROTECT grants that can help fund identified improvements to its vulnerable assets. The PROTECT Formula and Discretionary Grant Programs (1) provides formula funding to states for resilience improvements, (2) distributes competitive planning grants to enable communities to assess vulnerabilities to current and future weather events, natural disasters and changing conditions, and plan transportation improvements and emergency response strategies to address those vulnerabilities, and (3) distributes competitive resilience improvement grants to protect surface transportation assets, coastal infrastructure, natural infrastructure, and communities.

Task Overview

This technical memo (TM2) builds on the previous Technical Memo 1: Network Definition (TM1), which analyzed existing regional resiliency work to identify assets generally considered in resiliency analyses. TM2 incorporates new discussions of relevant natural hazards which have been included in similar resiliency planning efforts through a **Resource Review**

, Hazard Summary

All 11 sources considered in the literature review discussed relevant hazards. Figure 4 provides the literature review hazard reference counts. Flood was referenced the most frequently, with each source mentioning it as a hazard (this includes sources that mention storm surge or specific types of floods, like riverine). Heat Waves and Wildfires are mentioned in half the resources with the other hazards being mentioned in fewer than half. Dam/Levee Failure, Lightning, and Expansive Soils were each mentioned once. Tables 3 and 4 display the hazard references for each individual source.

Data Assessment, and preliminary set of **Implementation Recommendations**. **Appendix II: Additional Resources** summarizes other topical but not directly relevant resources (which may be used in future stages of the analysis).

Asset Definitions

The definitions of the assets identified in this resource review and therefore included in the technical memorandum are listed below:[2]

Roadways: physical infrastructure designed and built to accommodate passenger and freight vehicular, bicycle, and pedestrian traffic. Roadway assets review covers roads on and off system as well as evacuation routes.

Railways: networks of tracks and associated structures that enable the movement of trains, which can carry passengers, freight, or both.

Airports: aviation facilities designed to accommodate the arrival, departure, and maintenance of aircraft. The review encompasses various types of aviation facilities including public airports, private airports, and heliports.

Bridges: structures built to span physical obstacles, such as rivers, valleys, or roads, providing a passage for vehicles, pedestrians, and sometimes railways. Bridges included in this document research include bridges that are part of the National Bridge Inventory (NBI), which have spans over 20 ft, and non-NBI bridges.

Seaports: areas along coastlines or navigable waterways where ships can dock to load and unload cargo and passengers. Seaports review covers maritime facilities, waterways, and ports facilities including both shallow and deep draft ports.

Large and Small Culverts: tunnels or pipes that allow water to flow under roads, railways, or other structures. The literature review sections below do not consistently distinguish culverts based on their sizes, so they are referred to as merely culverts. However, the data assessment sections report data availability for the two culvert categories, large and small, which have span greater than and less than or equal to 20 feet, respectively.

Oil and Gas Pipelines: systems for transporting petroleum products, natural gas, and other fluids. Oil and gas pipelines review includes pipelines carrying various commodities such as crude oil, anhydrous ammonia, natural gas, and refined liquid products.

Transit Facilities: stations and routes of the public transportation system that are used to move people from one place to another. Transit facilities cover various modes such as buses, subways, trams, and light rail.

Low Water Crossings: low-elevation roadways traversing over a body of water that stays dry above the water when the flow is low and are designed to be submerged under high-flow conditions, such as floods.

[2] Asset type nomenclature varies among plans and resources; the High Street Team grouped similar or analogous asset names together as illustrated in **Appendix I: Asset Type Crosswalk**.

Ferry Facilities: stations where ferries, which are vessels that transport passengers and vehicles across bodies of water, dock and embark/disembark passengers and vehicles. The ferry facilities review includes terminals and routes.

ITS/Ancillary Assets: Intelligent Transportation Systems (ITS) and ancillary assets refer to technologies and equipment used to improve transportation safety, efficiency, and coordination. This includes traffic signals, cameras, electronic signs, sensors, communication systems, and data management tools.

Hazard Definitions

The following relevant hazards and definitions were identified through the literature review:

Coastal Erosion: the loss of land, marshes, wetlands, beaches, or other coastal features within the coastal zone because of the actions of wind, waves, tides, storm surges, subsidence, or other forces**.**

Dam and Levee Failure: A dam is a barrier that is constructed to hold back water. A dam failure is a systematic failure of a dam structure resulting in the uncontrolled release of water, often resulting in floods that could exceed the 100-year floodplain boundaries. A levee is an embankment built to prevent overflow from a body of water. A levee failure is when a levee embankment fails, or is intentionally breached, causing the previously contained water to flood the land behind the levee.

Drought: a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length.

Expansive Soil: soils and soft rock that tend to swell or shrink due to changes in moisture content.

Extreme Heat/Heat Wave: a combination of very high temperatures and, usually, exceptionally humid conditions. When persisting over a period of time (generally more than two days), it is called a heat wave.

Flooding: the accumulation of water within a water body and the overflow of excess water into adjacent floodplain lands. Types of floods include:

> **Coastal Flooding/Storm Surge**: areas at risk of flooding when sea water surges inland from tropical storm events/an abnormal rise of water generated by a storm over and above the predicted astronomical tide.
>
> **Riverine Flooding:** areas at risk of flooding when rivers and creeks come out of their banks.

Land subsidence/Landslides: the loss of surface elevation due to the removal of subsurface support. It can range from broad, regional lowering of the land surface to localized, full-blown collapses. Land subsidence occurs in different areas for different reasons. A sinkhole is a category of subsidence.

Lightning: a massive electrostatic discharge between electrically charged regions within clouds, or between a cloud and the Earth's surface.

Sea Level Rise: an increase in the level of the world's oceans.

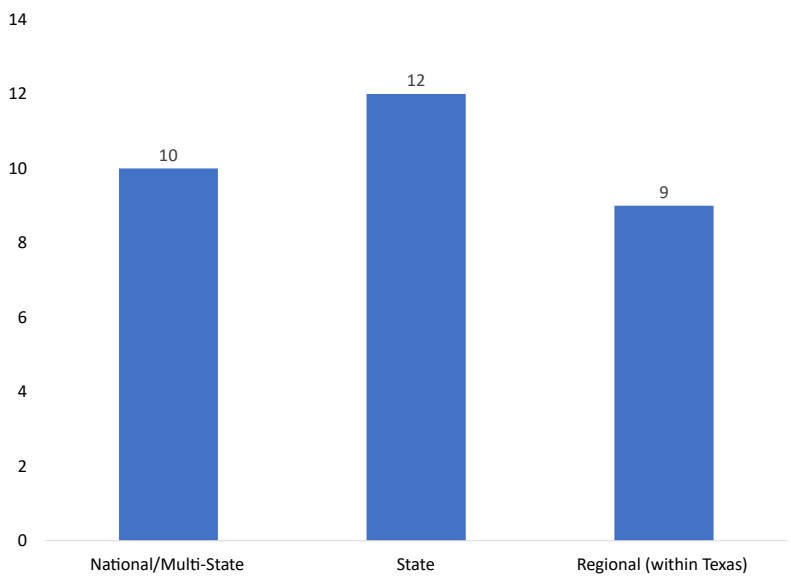
Strong Wind: a storm with high winds or violent gusts with little or no rain. The windstorm hazard excludes extreme wind events that occur with other wind-related natural hazards such as hurricanes, tropical storms, and tornados.

Wildfire: a sweeping and destructive conflagration and can be further categorized as wildland, interface, or intermix fires. Wildland fires are fueled almost exclusively by natural vegetation wildland/urban interface (WUI) fires include both vegetation and the built environment. The wildfire disaster cycle begins when homes are built adjacent to wildland areas.

Resource Review

Resiliency is an emerging and important topic that has garnered increased attention and has new funding programs associated with it (such as PROTECT); as a result, agencies from federal to regional and local have developed resiliency plans, studies, and programs, as well as provide databases and GIS files ("resources"). Therefore, to understand which transportation assets and hazards Corpus Christi MPO should consider including in its inaugural Resiliency Improvement Plan, the project team documented which asset types have been considered most frequently and has available data. High Street team reviewed a total of 31 resources covering a range of geographies, as illustrated Figure 1.

Figure 5: Resources by Geographical Coverage



Literature Review

The literature review identifies which assets and hazards are considered in relevant plans, programs, and studies. There is sometimes overlap and agreement among resources, and they can often differ in their scope, methodology, terminology, and focus. The literature review covers the following:

- **resiliency plans and programs in Texas** such as the Regional Resilience Partnership for Coastal Bend regional counties, Texas Department of Transportation (TxDOT) Statewide Resiliency Plan, vulnerability assessment reports for the Austin and Dallas metropolitan areas; and
- **emergency plans** from Corpus Christi, Nueces County, and other research entities and government agencies.

The following section details the resources considered and summarizes the assets referenced. It also provides a foundation for further work on identifying hazard types and criticality criteria.

Resiliency Plans and Programs in Texas

TxDOT Statewide Resiliency Plan (SRP)

The Texas Statewide Resiliency Plan began in December 2022 and is slated to finish in the Summer of 2024. This ongoing effort aims to proactively manage and assess future transportation system disruptions due to extreme weather events. This includes identifying critical infrastructure and hazards, evaluating the vulnerability of these infrastructure assets to the hazards, and accordingly developing strategies to improve resilience. The SRP includes a balance of a science-based approach and stakeholder and public involvement. The SRP will satisfy Texas' Infrastructure Investment and Jobs Act PROTECT requirements and serve as a resource for state and local agencies to pursue further funding. The TxDOT SRP website lists the types of assets and hazards that will be analyzed in the plan.

Texas SRP

Assets	Hazards
❖ Roadways	❖ Flooding
❖ Railways	❖ Wildfire
❖ Airports	❖ Heat Wave
❖ Bridges	❖ Drought
❖ Seaports	
❖ Oil & Gas Pipelines	
❖ Culverts	
❖ ITS/Ancillary Assets	

TxDOT Statewide Freight Resiliency Plan, Stage 1: Prepare the Freight System

TxDOT developed the Statewide Freight Resiliency Plan to prepare, detect, respond to, and recover from events, which include natural disasters, terrorist incidents, or infrastructure failure. Specifically, the purpose of this study is to "assess the resilience of the strategic freight system in Texas when an event of extended duration limits freight mobility, resulting in prioritized infrastructure enhancements to keep freight moving." Stage 1 of the Plan, released in 2011, focuses on understanding the existing system's preparedness. The report identifies relevant freight infrastructure and hazards before analyzing resiliency. Stage 2, also released in 2011, primarily focuses on the freight communication network. The Statewide Freight Resiliency Plan analyzes the assets relevant to Texas' Freight System, which are included in the call-out box. Additionally, the Plan provides a matrix of hazards considered.

Statewide Freight Resiliency Plan

Assets	Hazards
❖ Roadways	❖ Flooding
❖ Railways	❖ Wildfire
❖ Airports	❖ Strong Wind
❖ Seaports	❖ Land Subsidence/ Landslides
❖ Oil and Gas Pipelines	

Central Texas Extreme Weather and Climate Change Vulnerability Assessment of Regional Transportation Infrastructure

This 2015 report was part of a series of Federal Highway Administration (FHWA) grant pilot studies meant to establish best practices for assessing transportation infrastructure vulnerability to climate change and extreme weather, as well as determine strategies for improving resiliency. Specifically, the Capital Area Metropolitan Planning Organization (CAMPO) and the City of Austin Office of Sustainability assess the potential vulnerability of a limited number of critical transportation assets in the CAMPO region to the effects of extreme weather and climate. The report

Central Texas Extreme Weather and Climate Report

Assets	Hazards
❖ Roadways	❖ Flooding
❖ Railways	❖ Wildfire
❖ Airports	❖ Strong Wind
❖ Bridges	❖ Land Subsidence/ Landslides
❖ Transit Facilities	

discusses the transportation data considered before assessing criticality, sensitivity, and vulnerability to natural hazards.

Climate Change/Extreme Weather Vulnerability and Risk Assessment for Transportation Infrastructure in Dallas and Tarrant Counties

The University of Texas Arlington created this report in 2015 for the North Central Texas Council of Government, a voluntary assortment of local governments and districts, and the MPO for the Dallas-Fort Worth metropolitan regions. The main objectives of this study are to assess how extreme weather events could affect the transportation infrastructure of North Central Texas, focusing on Dallas and Tarrant counties. It enables transportation planners to adapt and prepare future transportation infrastructure for extreme weather events. The assessment discusses the transportation infrastructure and hazards considered before assessing vulnerability. The assets and hazards considered are in the Climate Change/Extreme Weather Risk Assessment call-out box.

Climate Change/Extreme Weather Risk Assessment

Assets	Hazards
❖ Roadways	❖ Flooding
❖ Railways	❖ Wildfire
❖ Airports	❖ Heat Wave
❖ Bridges	

Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: The Gulf Coast Study, Phases 1 and 2 (Gulf Coast Study)

The Gulf Coast Study was produced by the U.S. Climate Change Science Program with funds from the U.S. Department of Transportation (DOT) in partnership with the U.S. Geological Survey. The Study Phases consider how changes in weather could affect the transportation infrastructure of the U.S. Gulf Coast between Galveston, Texas and Mobile, Alabama. The Phases aim to evaluate how changes in climate could impact design, construction, safety, operations, and maintenance of transportation infrastructure. Moreover, they focus on the decisions policy makers and managers can consider which increase safety and resiliency in the transportation system. Phase 1 (2008) takes a regional case study approach, while Phase 2 (2013) takes a more focused approach by analyzing specific infrastructure components and adaptation strategies. After elaborating on the importance of and risks to the Gulf Coast, the Phases analyze the potential climate impacts on different transportation modes, with Phase 1 analyzing the entire Gulf Coast and Phase 2 focusing on examples in Mobile, AL.

Gulf Coast Study

Assets	Hazards
❖ Roadways	❖ Flooding
❖ Railroads	❖ Heat Wave
❖ Roadways	❖ Sea Level Rise
❖ Airports	
❖ Seaports	

Texas Coastal Resiliency Study (TCRS)

This report was created in 2016 for the Texas General Land Office to identify the critical coastal infrastructure assets that are most vulnerable to storms similar to Hurricanes Dolly and Ike. The report identified and ranked priority existing and future projects that could protect vulnerable assets. Through three phases, the report recommends the projects that

TCRS

Assets	Hazards
❖ Roadways	❖ Flooding
❖ Railways	❖ Coastal Erosion
❖ Airports	❖ Strong Wind
❖ Bridges	
❖ Seaports	
❖ Transit Facilities	
❖ Oil & Gas Pipelines	
❖ Low Water Crossings	
❖ Ferry Facilities	

would have the greatest impact on recovery and resiliency. The TCRS identifies the critical infrastructure considered, specifies the transportation assets, and then performs the risk analysis for identified hazards.

Texas Coastal Resiliency Master Plan (TCRMP)

The Texas Coastal Resiliency Master Plan (TCRMP), created by the Texas General Land Office (GLO), is a multi-part statewide plan to analyze and protect the natural environment and infrastructure along the Texas coast. The TCRMP outlines projects across four Gulf regions compiled by coastal and environmental experts that will help enhance resiliency along the state's coast. The most recent installment, TCRMP 2023, is an update to the 2019 report. Analysts were asked to assess the impact of eight vulnerabilities in 48 coastal subregions identified in the 2023 TCRMP through a Qualtrics Survey. The projects are ranked by economic and ecological measures to help communities determine which to implement. The report is accompanied by data and mapping resources, which are discussed in depth in the Data Assessment section. The TCRMP 2023 covers five hazards, which are most relevant to the coastal regions of Texas, and it distinguishes between riverine and coastal flooding.

TCRMP

Assets	Hazards
❖ Roadways	❖ Flooding
❖ Railways	❖ Sea Level Rise
❖ Airports	❖ Coastal Erosion
❖ Bridges	❖ Land Subsidence/ Landslides
❖ Maritime	
❖ Seaports	
❖ Transit Facilities	

Coastal Texas Protection and Restoration Feasibility Study Final Report (Coastal Texas Study)

The Coastal Texas Study was a collaboration between the US Army Corps of Engineers and the Texas General Land Office completed in 2021. In recognition of the economic and ecological importance of Texas, the authors created the report to identify feasible projects that can address natural hazard risks to the economy and public health, as well as restore ecosystems and improve coastal resiliency. The report focuses on mechanisms for mitigating the impact of storm surges and protecting communities. It does not discuss specific transportation assets.

Coastal Texas Study

Hazards
- ❖ Flooding
- ❖ Sea Level Rise
- ❖ Coastal Erosion

Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, 2021 Update (Extreme Weather Assessment)

The Extreme Weather Assessment was an update to a report created by the Texas A&M University, Office of the Texas State Climatologist. The report was sponsored by Texas 2036, a nonpartisan think tank. The report reviews historic trends in temperature, precipitation, and extreme weather in Texas to forecast trends out to 2036. The report acknowledges variation in the actual climate, but this provides scenarios that Texas can use to inform decision making. The report covers the entire state and hazards including coastal erosion, drought, flooding, wildfires, and a variety of storm types. The data employed in the report is not readily available but can provide methods for evaluating resiliency.

Extreme Weather Assessment

Hazards
- ❖ Flooding
- ❖ Heat Wave
- ❖ Wildfire
- ❖ Coastal erosion
- ❖ Strong Wind
- ❖ Drought
- ❖ Lightning

Local Hazard Resources and Emergency Plans

Corpus Christi MPO identified a few regionally specific resources which provide important information for a local understanding of assets, hazards, and critical infrastructure. This subsection provides a summary of these resources.

Nueces County Hazard Mitigation Action Plan (HMAP) Draft

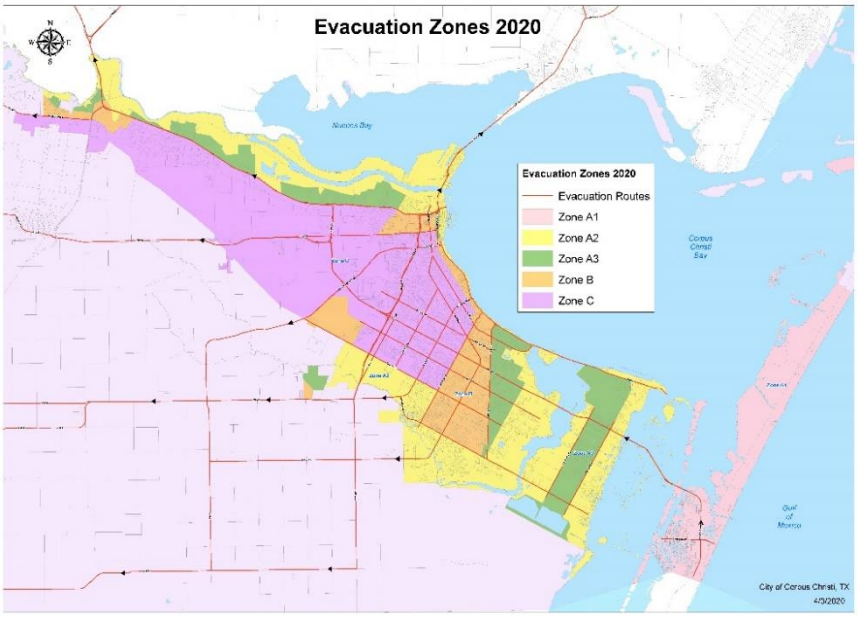
The 2023 HMAP Draft is a 5-year update of the 2017 HMAP sponsored by the Coastal Bend Council of Governments. The goal of the Nueces County HMAP is to eliminate losses due to natural disasters and improve community resilience. The plan employs data analysis, stakeholder meetings, and public engagement to understand the assets and risks for the county and individual cities and districts. It provides valuable insights into the region's hazards and the public's perception towards their seriousness. For each identified hazard, the plan mentions the assets that could be harmed in the included parts of the county.

HMAP	
Assets ❖ Roadways ❖ Railways	Hazards ❖ Flooding ❖ Wildfire ❖ Heat Wave ❖ Coastal Erosion ❖ Drought ❖ Land Subsidence/ Landslides ❖ Strong Wind ❖ Expansive Soil ❖ Lightning ❖ Dam/Levee Failure

City of Corpus Christi Emergency Operations Center

The City of Corpus Christi's website contains valuable information on emergency response, including resources for residents and information about the Emergency Operations Center (EOC). One such resource provided is an evacuation map with labeled routes (Figure 2). The city is separated into zones and the routes indicate which direction residents should evacuate. Operating as an evacuation route is an important criticality criterion for roadways. The EOC is assembled during an emergency to coordinate the efforts between local, regional, state, and national departments and agencies. Day-to-day EOC activities include receiving and communicating warnings and information, developing policies, and preparing for emergencies. During emergencies, the EOC leads the operations, analyzes information to recommend countermeasures, and communicates with residents, officials, and neighboring jurisdictions. The EOC operates in tandem with the City's Office of Emergency Management (OEM). Both the EOC and OEM contain experts on the City's assets, hazards, and critical infrastructure.

Figure 6: City of Corpus Christi Evacuation Map



Corpus Christi Regional Transit Authority (CCRTA) Emergency Preparedness Policy

The CCRTA Emergency Preparedness Policy, updated 2023, outlines CCRTA employee responsibilities. During an emergency, CCRTA provides evacuation services for multiple cities and unincorporated areas in Nueces County. CCRTA receives instructions on evacuation procedures from the Nueces County Emergency Management Offices (EMO) when an emergency arises. CCRTA performs evacuation services while safety permits.

Nueces Regional Flood Plan

The Nueces Regional Flood Plan is updated by the Nueces Regional Flood Planning Group, one of 15 regions overseen by the Texas Water Development Board. The Nueces Regional Flood Plan focuses on determining hazards, exposure, and vulnerability to evaluate the current and future flood risk. This includes evaluating the region's susceptibility to flooding, determining what and who will be impacted, and identifying the most vulnerable communities and critical facilities. This Plan provides in-depth information pertaining specifically to flood risks and policy recommendations for mitigation. As part of the vulnerability analyses, it identifies roadways and roadway crossings (bridges, culverts, low water crossings), as well as hazards to the region.

Nueces Regional Flood Plan	
Assets ❖ Roadways ❖ Airports ❖ Bridges ❖ Culverts ❖ Low Water Crossings	Hazards ❖ Flooding ❖ Heat Wave ❖ Sea Level Rise

Summary of Findings

Asset Summary

Nine of the 10 sources in the literature review elaborated on asset types. **Error! Reference source not found.** provides the reference counts for each asset type; roadways, airports, and railways were mentioned most frequently. Table 1 and Table 2 provide the breakdown for which sources referenced which assets. For instance, the Texas Statewide Resilience Plan mentions eight of the 11 asset types.

Figure 7: Count of Asset Types References in the Literature Review

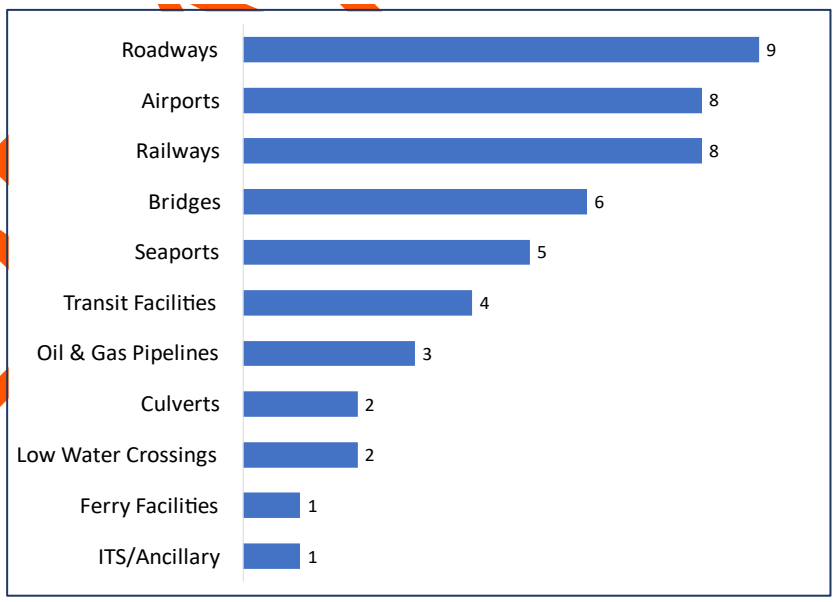


Table 5: Asset Type Literature Review Reference Summary Table

Asset Type	Roadways	Railways	Airports	Bridges	Seaports
Total	**9**	**8**	**8**	**6**	**5**
Texas SRP	x	x	x	x	x
Statewide Freight Resiliency Plan	x	x	x		x
Central Texas Extreme Weather and Climate Report	x	x	x	x	
Climate Change/Extreme Weather Risk Assessment	x	x	x	x	
Gulf Coast Study	x	x	x	x	x
TCRS	x	x	x		x
TCRMP	x	x	x	x	x
HMAP	x	x			
Nueces Regional Flood Plan	x		x	x	

Table 6: Asset Type Literature Review Reference Summary Table (Continued)

Asset Type	Transit Facilities	Oil & Gas Pipelines	Culverts	Low Water Crossings	Ferry Facilities	ITS/Ancillary Assets
Total	**4**	**3**	**2**	**2**	**1**	**1**
Texas SRP		x	x			x
Statewide Freight Resiliency Plan		x				
Central Texas Extreme Weather and Climate Report	x					
Climate Change/Extreme Weather Risk Assessment						
Gulf Coast Study	x					
TCRS	x	x		x	x	
TCRMP	x					
HMAP						
Nueces Regional Flood Plan			x	x		

Hazard Summary

All 11 sources considered in the literature review discussed relevant hazards. Figure 4 provides the literature review hazard reference counts. Flood was referenced the most frequently, with each source mentioning it as a hazard (this includes sources that mention storm surge or specific types of floods, like riverine). Heat Waves and Wildfires are mentioned in half the resources with the other hazards being mentioned in fewer than half. Dam/Levee Failure, Lightning, and Expansive Soils were each mentioned once. Tables 3 and 4 display the hazard references for each individual source.

Figure 8: Count of Hazard Types References in the Literature Review

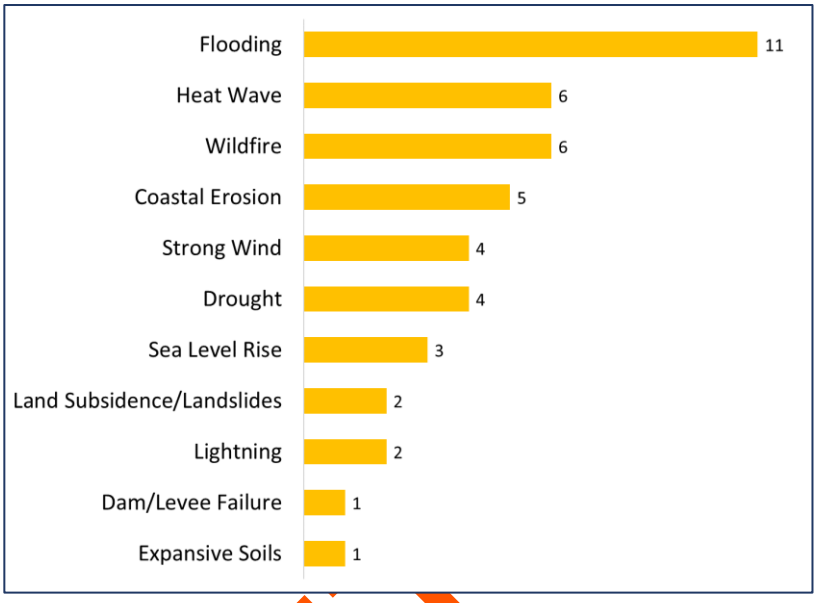


Table 3: Hazard Type Literature Review Reference Summary Table

Asset Type	Flooding	Heat Wave	Wildfire	Coastal Erosion	Strong Wind
Total	**11**	**6**	**6**	**5**	**4**
Texas SRP	X	X	X		
Statewide Freight Resiliency Plan	X		X		X
Central Texas Extreme Weather and Climate Report	X	X	X		
Climate Change/Extreme Weather Risk Assessment	X	X	X		
Gulf Coast Study	X	X			
TCRS	X			X	X
TCRMP	X			X	
Coastal Texas Study	X			X	
Extreme Weather Assessment	X	X	X	X	X
HMAP	X	X	X	X	X
Nueces Regional Flood Plan	X				

Table 4: Hazard Type Literature Review Reference Summary Table (Continued)

Asset Type	Drought	Sea Level Rise	Land Subsidence /Landslides	Lightning	Dam/Levee Failure	Expansive Soils
Total	**4**	**3**	**2**	**2**	**1**	**1**
Texas SRP	X					
Statewide Freight Resiliency Plan			X			
Central Texas Extreme Weather and Climate Report	X					
Climate Change/Extreme Weather Risk Assessment						
Gulf Coast Study		X				
TCRS						
TCRMP		X				
Coastal Texas Study		X				
Extreme Weather Assessment	X			X		
HMAP	X		X	X	X	X
Nueces Regional Flood Plan						

Data Assessment

To understand what data is currently available to locate and potentially assess the criticality of the various asset types and hazards in Corpus Christi MPO, the project team reviewed relevant Esri maps, dashboards, and data hubs. These data sources fall into three groups:

- National-level data sources
  - Homeland Infrastructure Foundation-Level Data (HIFLD)
  - United States Army Corps of Engineers (USACE) National Inventory of Dams (NID)
  - United States Department of Agriculture (USDA) Web Soil Survey (WSS)
- Statewide data sources
  - TxDOT Open Data Portal
  - TxDOT Planning Map
  - Texas Railroad Commission Data
  - Texas Water Development Board
- Regional data sources for Corpus Christi MPO and Nueces County:
  - GeoRED Hazard Impact and Planning Tool
  - The Coastal Bend Hurricane Evacuation Study Planning Atlas

The project team reviewed each data source to assess the availability of location and criticality information including ridership, demand, and condition. The review covered the 11 asset types: roadways, railways, airports, bridges, seaports, oil and gas pipelines, transit facilities, culverts, ferry facilities, ITS/ ancillary assets, and low water crossings.

The team also considered whether spatial data was available for each hazard type identified through the literature review. The following subsections provide full details of the information each data source covered for each asset and hazard type.

Homeland Infrastructure Foundation-Level Data (HIFLD)

Homeland Infrastructure Foundation-Level Data (HIFLD) is a program within the United States Department of Homeland Security (DHS) that focuses on collecting, maintaining, and providing geospatial data related to critical infrastructure and key resources across the United States. The goal of HIFLD is to enhance the nation's understanding of its infrastructure and to support decision-making processes for emergency management, disaster response, and national security. HIFLD collects data from various federal, state, local, tribal, and private sector sources, and compiles this information into a comprehensive geospatial database. This database includes data about infrastructure such as transportation systems, energy facilities, communication networks, water resources, healthcare facilities, and more.

HIFLD	
Assets ❖ Roadways ❖ Railroads ❖ Airports ❖ Oil and Gas Pipelines ❖ Transit Facilities ❖ Railroads	Hazards ❖ Flooding ❖ Wildfire

HIFLD covers six main asset types: roadways, railroads, airports, ferry facilities, transit facilities, and oil and gas pipelines. For roadways, HIFLD provides information about the locations of primary, secondary, and local roads. HIFLD includes the Federal Aviation Administration's aviation facilities dataset, providing precise airport locations. Railroads are also covered, offering insights into their locations. Ferry facilities are comprehensively detailed, revealing essential information such as ferry route locations, lengths, trip durations, passenger numbers, vessel types, and trip types. In terms of transit, HIFLD supplies data on national transit routes and stops. Additionally, the program extends its coverage to oil and gas pipelines, disclosing the locations of major natural gas transmission pipelines, including both interstate and gathering pipelines, as sourced from the U.S. Energy Information Administration.

National Inventory of Dams (NID)

The National Inventory of Dams is a database provided by the U.S. Army Corps of Engineers. The focus of the NID is to provide dam location, type, size, purpose, uses and benefits, date of last inspection, other structural and geographical information. The NID also models dam flood inundation to demonstrate what could occur during a dam-related flood. The NID also provides data from the HIFLD for various public works and critical infrastructure, including nuclear power stations, fire stations, and railway lines.

NID
Hazards ❖ Dam and Levee Failure

Web Soil Survey (WSS)

The Web Soil Survey is a product provided by the US Department of Agriculture Natural Resources Conservation Service. The WSS provides soil information and data collected through the Cooperative Sil Survey. The soil data was collected to provide information for agriculture purposes but can also be used to assess susceptibility to erosion, land subsidence, and expansive soils.

WSS
Hazards ❖ Coastal Erosion ❖ Land Subsidence /Landslides ❖ Expansive Soils

TxDOT Open Data Portal

The TxDOT Open Data Portal is TxDOT's platform for exploring and downloading GIS datasets. It serves as the primary location for state transportation inventory data. It has a wide variety of datasets that are referenced and used in other tools and dashboards. This data source is unique because it includes both on-system and off-system roadway inventory. It also has the location and type of seaports and railroads, including their classification such as business lead, industrial lead, main line, side-track, and spur line. Furthermore, the TxDOT Open Data Portal provides access to the statewide oil and gas pipelines data provided by the Texas Railroad Commission.

TxDOT Open Data Portal

Assets
- Roadways
- Railroads
- Airports
- Bridges
- Seaports
- Oil and Gas Pipelines
- Large Culverts

TxDOT Statewide Planning Map

The TxDOT Statewide Planning Map is an Esri application designed to present a variety of TxDOT transportation geospatial data to facilitate planning operations within the organization. The mapping tool includes the geographic positions and types of seaports and railroads assets. Additionally, the map offers comprehensive details regarding bridges as reported to the National Bridge Inventory (NBI), such as their locations, condition ratings, ages, deck geometries, waterway sufficiency ratings, and lengths.

TxDOT Planning Map

- Roadways
- Bridges
- Railroads
- Seaports

The map also includes a wealth of data about roadway assets including locations, Average Annual Daily Traffic (AADT), Vehicle Miles Traveled (VMT), percentage of truck traffic, geometric characteristics, anticipated future traffic and truck percentages, presence within the Strategic Highway Network, locations of evacuation routes, the top 100 congested roads, as well as both State and National freight networks including critical urban and rural freight corridors.

Texas Railroad Commission

The Railroad Commission (RRC) of Texas is the state agency that regulates the oil and gas industry, gas utilities, pipeline safety, safety in the liquefied petroleum gas industry, and surface coal and uranium mining. RRC publishes Esri maps that have information about oil and gas pipelines (also included in the TxDOT Open Data Portal described above) and wells. Pipelines data include location, diameter, commodity types, and status (active or abandoned). The TRC does not address hazards.

Texas Railroad Commission

Assets
- Oil and Gas Pipelines

Texas Water Development Board (TWDB)

The Texas Water Development Board (TWDB) is a state agency in Texas responsible for collecting and disseminating water-related data; assisting with regional water supply and flood planning that contributes to preparing the state water plan and state flood plan; and administering cost-effective financial programs for constructing water supply, wastewater treatment, flood control, and agricultural water

TWDB

Assets	Hazards
❖ Low Water Crossing	❖ Flooding ❖ Dam & Levee Failure

conservation projects. The TWDB has an open data hub that has data covering the state's hydrological assets and only one transportation asset, which is the low water crossing. TWDB open data hub has the location of the low water crossing assets without information about their criticality. TWDB open data hub also includes data related to flooding and dam or levee failure.

GeoRED - Hazard Impact and Planning Tool

GeoRED	
Assets ❖ Roadways ❖ Railroads ❖ Airports ❖ Oil and Gas Pipelines ❖ Railroads ❖ Ferry Facilities	Hazards ❖ Flooding ❖ Sea Level Rise

The Regional Resilience Partnership (RRP) developed a GIS platform called the Geospatial Resilient Economic Development (GeoRED), which is a tool for building resilience to disaster and economic risks. The GeoRED online platform has multiple tools for local officials and experts to analyze and share data with other interested stakeholders. One of these tools is the Hazard Impact and Planning Tool, which is an Esri tool that contains data layers focused on hazard planning and response, such as critical infrastructure and facilities, storm surge, and FEMA's National Flood Hazard Layer (NFHL) 1% and 0.2% flood zones. This tool includes the locations of roadways, evacuation routes, airports, railroads, ferry facilities, and transit facilities. It also has spatial files for subsets of these assets that are in FEMA 1% and 0.2% annual flood risk. For oil and gas pipelines, this tool has data showing pipelines locations, diameters, commodity types, and activity status.

The Coastal Bend Hurricane Evacuation Study Planning Atlas

Hurricane Planning Atlas	
Assets ❖ Roadways ❖ Railroads ❖ Airports	Hazards ❖ Flooding ❖ Sea Level Rise

The Coastal Bend Hurricane Evacuation Study Planning Atlas is an Esri map that has multiple data layers for the coastal bend region and is published as part of the Coastal Bend Hurricane Evacuation Study. These data layers cover:

- Administrative unit layers, including counties, places, school districts, coastal management zones, and coastal zones.
- Physical risks layers covering:
    - Historic wind and storm tracks.
    - Three sea level rise scenarios.
    - Storm surge models for tropical storms, and storm categories 1 through 5.
- Built environment and critical facilities:
    - Population.
    - Critical facilities including police stations; fire stations, local EOC, EMS, Urgent care, nursing homes, and hospitals.
    - Built environment including hotels, schools, mobile home units, buildings, and infrastructure.
- Social risk layers:
    - Social vulnerability index.
    - Childcare need.
    - Eldercare need.
    - Transportation need.

  - Shelter need.
  - Housing types.
  - Poverty status.
  - Limited English proficiency.
  - Unemployment.
  - Civic capacity.
  - Low to moderate income.
  - Education level.
- Evacuation zones and routes layers.

The Coastal Bend Hurricane Evacuation Study Planning Atlas provides data layers encompassing three primary transportation asset types: roadways, airports, and railroads. Within each of these asset types, users can access two key pieces of information: their respective locations and types. The roadway category includes various types such as major highways, US and state highways, farm roads, and city/county roads. Notably, the Atlas includes layers dedicated to evacuation routes, each representing distinct route types, including major evacuation routes, potential contraflow routes, and evacuation lanes. Moreover, the Atlas features surge-affected routes categorized by storm category.

Texas Geographical Information Office (TxGIO, previously TNRIS)

TxGIO	
Assets ❖ Low Water Crossing	Hazards ❖ Flooding

The Texas Geographic Information Office, previously the Texas Natural Resources Information System, is a division of the Texas Water Development Board. It is a geographical information systems resource. It contains maps and data captured by LIDAR, sensors, and imagery. Some data is region specific while others span the entire state. While TxGIO has extensive data for hazards including increased temperature and extreme heat, wind, wildfires, winter storms, and more, only data related for floods and storm surges covering Corpus Christi has been identified by the project team. Regarding assets, only Low Water Crossing data is available.

Climate Toolbox

Climate Toolbox
Hazards ❖ Wildfire ❖ Heat Wave ❖ Drought ❖ Strong Wind

A University of California Merced project, the Climate Toolbox is a collection of web tools that visualize past and forecasted climate and hydrology for the contiguous US. The applications cover agriculture, climate, fire, and water. One such tool is the Climate Mapper which maps real-time conditions, current forecasts, and future projections of climate information across the United States to assist with decisions related to agriculture, climate, fire conditions, and water. The data employed in the maps is also available for download. Partners for this project include the Climate Impacts Research Consortium, Regional Integrated Sciences and Assessments, the US Department of Agriculture's Northwest Climate Hub, and other regional and national organizations and agencies.

Texas Coastal Resiliency Master Plan (TCRMP) and the Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC)

Both the TCRMP 2019 and 2023 installments provide data employed in the written reports. TCRMP 2019 provides an ESRI power map for Region 3, which covers Corpus Christi. The map includes data recording the potential impact of flooding from storm surges.

TCRMP/GRIIDC
Assets ❖ Flooding ❖ Wildfire ❖ Heat Wave ❖ Drought

The data employed in the TCRMP 2023 is published on the GRIIDC. The Gulf of Mexico Research (GoMRI) Initiative is an independent research program funded by BP following the Deepwater Horizon spill to study the impacts of oil spills in the Gulf of Mexico. The GRIIDC is the data center that aims to provide data and information to promote and support research and awareness about the Gulf of Mexico ecosystem. The GRIIDC hosts data and reports from researchers studying the Gulf of Mexico. The GRIIDC satisfies the GoMRI requirement to ensure that relevant data from research is publicly available. The GRIIDC encourages researchers to use available data and share their own data to promote regional research.

Data Assessment Summary

Asset Summary

Figure 9 summarizes the findings of the data assessment. Table 7 details the asset data available for each source. For location data availability, roadway and railroads assets are at the top of the list followed by airports and pipelines. On the other hand, no location data were found for small culverts and ITS/ ancillary assets.

If a data source reports asset condition and/or traffic levels/ridership, it is considered to have criticality data for that asset. Furthermore, data sources with evacuation routes information are considered to have criticality data for roadway assets only. With this initial definition of criticality, roadway assets are covered by the largest number of data sources as expected. Bridges come next in order as they are covered by two data sources. On the contrary, none of the data sources have criticality data for seaports, small culverts, airports, railroads, transit facilities, and ITS/ ancillary assets. It is also important to highlight that vulnerability to FEMA 1% and 0.2% annual flood risk is available for roadways, airports, railroads, ferry facilities, and transit facilities, which fit into the hazards data that will be investigated in later tasks.

Regarding low water crossings, TWDB includes point data for low water crossings. The point data can be joined to roadway data from the TxDOT Open Data Portal to determine the criticality of the low water crossing.

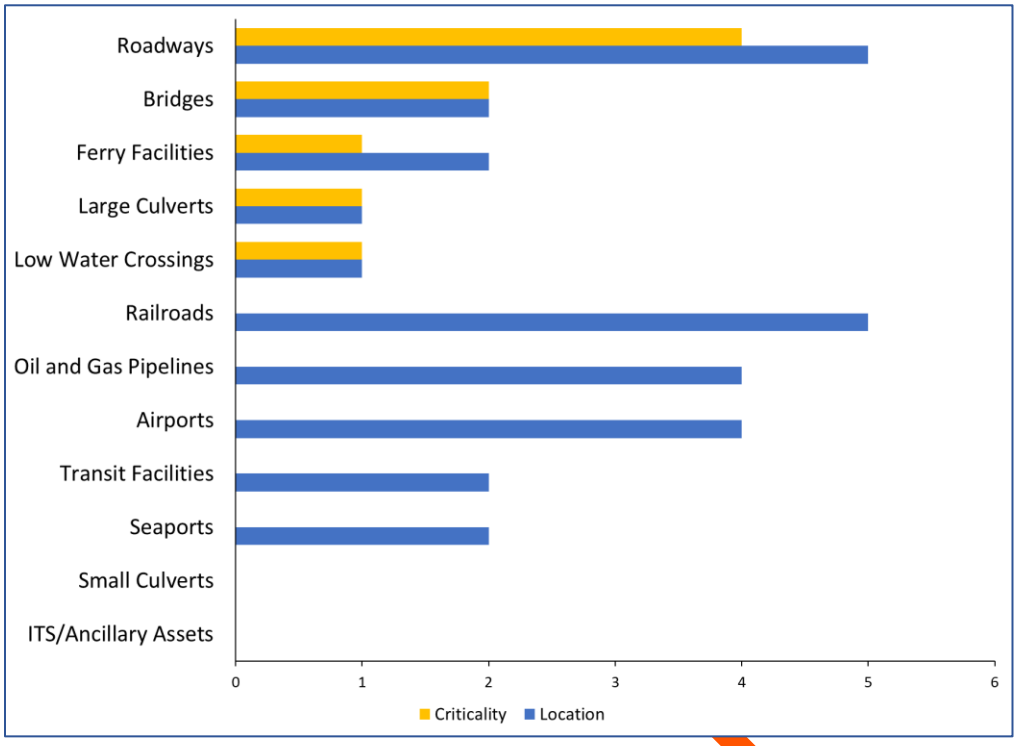
Table 7: Asset Data Assessment Reference Summary Table

Assets	HIFLD	TxDOT Open Data Portal	TxDOT Planning Map	Texas Railroad Commission	GeoRED	Hurricane Planning Atlas	TWDB
Roadways	📍	📍 !	📍 !		📍 !	📍 !	
Railroads	📍	📍	📍		📍	📍	
Airports	📍	📍			📍	📍	
Bridges		📍 !	📍 !				
Seaports		📍	📍				
Oil and Gas Pipelines	📍	📍		📍	📍		
Transit Facilities	📍				📍		
Large Culverts		📍 !					
Small Culverts							
Low Water Crossings		!					📍
Ferry Facilities	📍 !				📍		
ITS/Ancillary Assets							

📍 Asset Locations Available

! Some Criticality Information Available

Figure 9: Location and Criticality Data Availability by Asset Types



Hazard Summary

Table 6 summarizes the hazard data through Technical Memo 2. Notably, each hazard type has at least one data source. Some data hubs reference data from the same resources, for example flood data from FEMA. In a later stage of this project, the asset inventory will be assessed for susceptibility to hazards.

Table 8: Hazard Type Literature Review Reference Summary Table

	RAPT	HIFLD	TWDB	GeoRED	Hurricane Planning Atlas	TxGIO	Climate Toolbox	TCRMP/ GRIIDC	Web Soil Survey	NID
Flooding	✓	✓	✓	✓	✓	✓		✓		
Wildfire	✓	✓					✓			
Heat Wave	✓						✓			
Sea Level Rise	✓			✓				✓		
Coastal Erosion									✓	
Drought	✓						✓			
Land Subsidence /Landslides									✓	
Strong Wind	✓						✓			
Expansive Soils									✓	
Lightning			✓							
Dam and Levee Failure			✓							✓

Implementation Recommendations

Asset Recommendations

Based on the literature review and data assessment, the project team developed recommendations for which assets should continue to be considered in subsequent steps of the Phase 1 Corpus Christi MPO regional resiliency improvement plan. Recommendations are based on whether each asset type i) is included in existing resiliency plans; ii) has location data readily available; and iii) has at least some criticality data readily available (Table 7). Future research and analysis will identify what criteria or data should be used to assess assets' criticality. The list of assets may be narrowed further if data limitations are identified.

The project team recommends focusing on the following assets for the subsequent stages of this Phase 1 analysis:

Roadways are referenced by each of the eight resources which included assets in the literature review and have numerous data sources for both location and potential criticality criteria, which indicates that they are an important and relevant asset and data is likely to be available to execute the initial prioritization. Moreover, roadways connect to most other transportation assets and serve multiple

modes of travel including passenger and freight vehicles, emergency response vehicles, pedestrians, transit, and bicyclists.

Bridges are explicitly referenced in five of eight resources considered in the literature review; in addition, some sources included bridges as part of their definition of "roadway". Bridge location and criticality data are available through multiple TxDOT sources. Similar to roadways, the region's bridges serve multiple modes of travel.

Large culverts were referenced in the literature review and location and potential criticality data related to large culverts is readily available. In some instances, from the literature review, large culverts are classified as bridges or as part of roadways.

Table 9: Recommendation Summary Table

Asset Class	Recommended	Literature Review	Location	Criticality
Roadways	✓	✓	✓	✓
Bridges	✓	✓	✓	✓
Large Culverts	✓	✓	✓	✓
Ferry Facilities	✓	✓	✓	✓
Low Water Crossings	✓	✓	✓	✓
Railways		✓	✓	
Airports		✓	✓	
Seaports		✓	✓	
Oil & Gas Pipelines		✓	✓	
Transit Facilities		✓	✓	
Small Culverts		✓		
ITS/Ancillary Assets		✓		

Ferry Facilities are relatively unique; while slightly outside of the Corpus Christi MPO boundaries, the Port Aransas ferry is one of only two ferry systems in Texas and provides connection to locations within the MPO boundaries. Ferry facilities were mentioned in the literature review and there are both location and criticality data available, so if desired, ferry facilities could be included in future analysis stages.

Low Water Crossings are not mentioned often, only two times in the literature review. Yet, there is location data available, and since they are sections of roadway, the criticality roadway can be employed to determine the criticality of the low water crossing.

Hazard Recommendations

Considering the hazards mentioned in the literature review and with data available per the data assessment, each hazard could be eligible for analysis. Indeed, employing reference and data availability criteria for inclusion would not remove any hazards from the analysis. Therefore, the High Street team recommends that all hazards be considered going into the next phase of the project. Subsequently, the project team will identify the most relevant hazards based on the number of impact assets and the potential impact severity on the transportation assets identified in TM1 and above.

Appendix I: Asset Type Crosswalk

The literature review and data assessment produced a list of 29 distinct asset names, many of which were analogous or overlapping. For the purposes of this memorandum, High Street Team distilled the 29 asset names into a set of 11 as shown in **Error! Reference source not found.**.

Table A1: Asset Types and Assets Mentioned in Resources Crosswalk

Asset Types	Assets Mentioned in Resources
Airports	Airports Aviation
Bridges	Bridges Bridges and Culverts
Culverts, Large & Small	Bridges and Culverts Culverts
Ferry Facilities	Ferries Ferry Facilities
ITS/Ancillary	Intelligent Transportation Networks
Low Water Crossings	Low Water Crossings
Oil & Gas Pipelines	Oil and Gas Pipelines Pipelines
Railways	Rail Rail Transportation Railroad Lines Railroads Railway Facilities Railways
Roadways	Roads Roadways Evacuation Routes Streets
Seaport	Maritime Maritime Ports Ports Waterways Seaports
Transit Facilities	Transit Facilities Public Transportation

Appendix II: Additional Resources

The following resources and data sources did not discuss specific assets but may provide valuable hazard and criticality criteria that will be important for later analyses, technical memos, and reports.

FEMA Resilience Analysis and Planning Tool (RAPT)

RAPT is a free, publicly available geographic information systems (GIS) tool developed by Federal Emergency Management Agency (FEMA) to help emergency managers and community partners of all GIS skill levels visualize and assess potential challenges to community resilience. RAPT has over 100 data layers covering buildings and hazards. RAPT is designed to help decision-makers understand the population and infrastructure at risk for forecasted extreme weather, identify at-risk infrastructure assets, prioritize areas for evacuation, with estimates of nursing home and hospital beds.

Establish TxDOT Transportation Resilience Planning Scorecard and Best Practices: Technical Report

This report was developed by the Texas A&M Institute and sponsored by FHWA and TxDOT. It contains an analysis on policies TxDOT can implement to improve resilience and mitigate the impact of natural hazards. The report performs literature review then implements analytical methods on the Texas road network's vulnerability and resilience. Moreover, it aims to provide a scorecard of best practices that Texas can use to evaluate and improve transportation resiliency. The report outlines an in-depth methodology for determining criticality for roadways.

NCHRP Research Report 1014: Developing a Highway Framework to Conduct an All-Hazards Risk and Resilience Analysis

This report, completed in 2023, was conducted by the Transportation Research Board as part of the National Cooperative Highway Research Program (NCHRP). This report presents a framework for performing quantitative risk and resilience evaluations that satisfy recent federal requirements. It includes economic analyses, project prioritization, performance management, and risk and resilience evaluation. Specifically, the study focuses on protecting and reinforcing the highway system.

Vulnerability Assessment Scoring Tool (VAST)

VAST is a tool created by the USDOT to aid transportation organizations such as DOTs and MPOs in evaluating the vulnerability of their assets. VAST uses asset characteristics as indicators of exposure, sensitivity, and adaptive capacity which are used to calculate assets vulnerability scores. VAST covers various asset types like rail, seaports, airports, pipelines, bridges, and roads, along with climate stressors such as temperature changes, floods, sea level rise, storms, wind, drought, wildfires, freeze/thaw and permafrost thaw. VAST, operating in Microsoft Excel, helps users document asset vulnerability by determining the scope of the vulnerability assessment, selecting appropriate indicators, collecting data about those indicators, and devising an approach to convert raw data about indicators into scores. This process facilitates ranking assets by vulnerability and improving transportation planning and adaptation strategies.

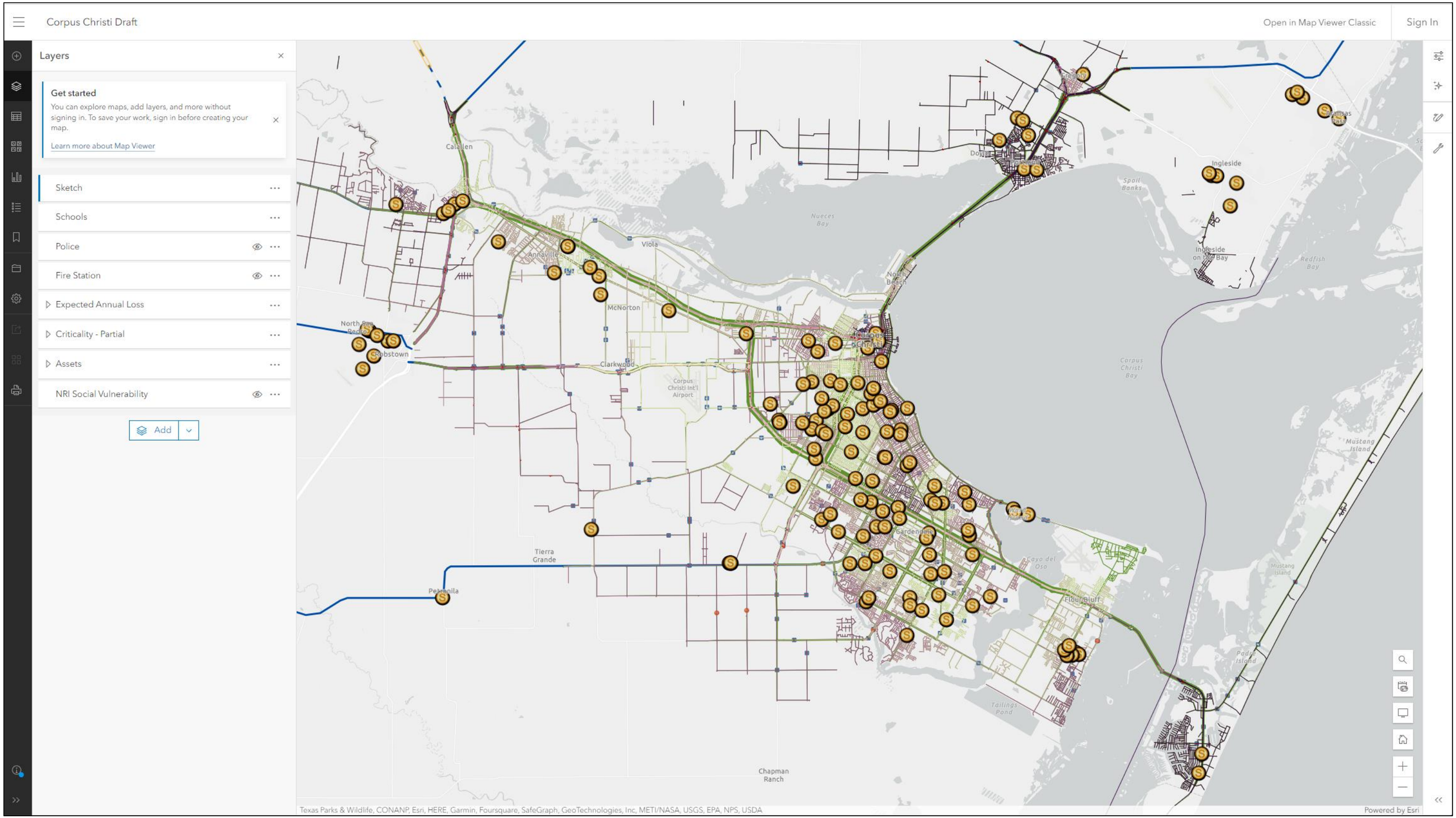
CORPUS CHRISTI MPO & HIGH STREET

Establish Criticality Framework

Any additional considerations from TAC or others related to criticality?

- Level of usage (e.g., AADT, ADTT, Ridership)
- Redundancy (e.g., detour length, closest alternative peer facility)
- # of Critical Infrastructure Points of Interest within 0.1 mile buffer
  - Emergency Centers
  - Police Stations
  - Fire Stations
  - Schools
- Average NRI Social Vulnerability Score
- Average NRI Community Resilience Score

Example of Layers Incorporated into the Preliminary Draft Regional Transportation Map



CORPUS CHRISTI MPO
METROPOLITAN PLANNING ORGANIZATION

Date: November 9, 2023
To: Technical Advisory Committee (TAC)
From: Craig Casper, Senior Transportation Planner
Through: Robert MacDonald, Transportation Planning Director
Subject: Item 9E: Community Impact Model Development and Implementation Consultant Presentation
Action: Information Only

Summary

The development of the Community Impact Model and Implementation Project meets the intent of the Corpus Christi MPO's 2023 Program Addressing Discrimination, specifically that the Corpus Christi MPO will pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. The consultant team will provide an overview of the project status during the TAC 2050 MTP Workshop on November 16.

Background

To capture the comprehensive effects of transportation investments and ensure an equitable distribution of benefits and unintentional burdens requires an assortment of analytical tools and techniques. There are a number of industry tools available, each with its own unique set of corresponding input requirements, though some impacts are less frequently evaluated than others. This effort will examine the community impact tools available and come up with a unifying framework for integrating such pieces into the overall project evaluation framework at the Census Tract and Block Group levels.

Consistent with Corpus Christi Metropolitan Planning Organization's (Corpus Christi MPO) values for increased transparency and improved stewardship, Corpus Christi MPO is developing project prioritization processes using a repeatable, data-informed performance framework. A separate task order will focus on implementing:

- a project collection tool that stores standardized information about candidate projects for TxDOT UTP Funding Categories 2, 4, 7, 9, and 10CR.
- a project scoring tool that prioritizes candidate projects based on a composite rating across criteria in alignment with Corpus Christi MPO's goals.

The community impact criteria will be incorporated into the project scoring tool and ensuring the project collection tool captures sufficient information to determine societal impacts. This tool will also include enhanced methods for assessing the societal impacts of the TIP.

Attachment

1. Community Impact Project Data Assessment Matrix Spreadsheet
2. Community Impact Project Update - Presentation

Community Impact Project Data Assessment Matrix Spreadsheet

Resource	Lowest Level of Geographic Granularity	Existing Condition	Assesses Project Impact	Date of last update	Attributes	Documentation Link	Tool Link	Notes: Description of information the tool provides, attributes provided, and update frequency if specified
Texas Broadband Development Map	Site	Yes	No	10/7/2022			https://lightbox-tx.maps.arcgis.com/apps/webappviewer/index.html?id=37cb56b9f648449191c2a37e3eb2fb1a	This map provides the broadband speeds for housing units and categorizes this into three tiers of service. This is also shown aggregated at the Block level. It also provides a map of funding eligibility for census blocks based upon the percent of housing units served for the block.
FHWA Screening Tool for Equity Analysis of Projects (STEAP)	Road Segment	Yes	No	2021			https://hepgis.fhwa.dot.gov/fhwagis/BufferTool/	The tool provides estimates of the socioeconomic characteristics of the resident population surrounding a project location using ACS data and a buffer analysis.
NEPAssist	Various (Points, Lines, Polygons, and Rasters of various resolutions)	Yes	No	2021	https://nepassisttool.epa.gov/nepassist/help/layersdescription.html#		https://www.epa.gov/nepa/nepassist	This tool performs a buffer analysis of a drawn or uploaded geography, joining the user input to a wide variety of environmental data such as water quality monitors, EPA facilities, and non-attainment areas. The tool then does a screening analysis of a predetermined set of Yes-No questions based on the proximity of the drawn geometry to the features included in the map.
EJ Screen	Census Block Groups	Yes	No	Sep-23	Socioeconic Indicators, Pollution Metrics, Health Metrics, Access Metrics, Climate Change Risks		https://www.epa.gov/ejscreen	EJ Screen provides population characteristics and pollution burdens as raw data and percentile ranks for tracts or block groups. The tool also allows drawing or uploading shapes and provides a report of the data within a mile buffer of the "corridor." It seems to go through major updates yearly, with regular upkeep and bug fixing. It is based primarily on ACS data but has other data sources for pollution as well.
Justice 40 Covered Programs	Non-geographic	N/A	N/A	4/20/2023	Programs beholden to Justice 40 Initiative		https://www.whitehouse.gov/wp-content/uploads/2023/04/Justice40-Covered-Programs-List_v1.4_04-20-2023.pdf	While not strictly a "tool" this lists programs that the Justice 40 executive order applies to. A use for this could be in assessing whether or not a proposed project may fall under the jurisdiction or funding opportunities of one of these programs.
Climate and Economic Justice Screening Tool (CEJST)	Census Tracts	Yes	No	11/22/2022	https://screeningtool.geoplatform.gov/en/methodology		https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5	CEJST includes a comprehensive, national percentile scoring of a wide array of socio-economic, pollution burden, and transportation indicators at the tract level. It is updated yearly and based includes open-source code. Population measures are from the ACS, but the tool includes a wide array of data sources, some of which, such as NEPAssist, are described elsewhere here.
GeoRED Hazard Impact Planning Tool	POI	Yes	No	5/10/2023	Critical Infrastructure and Facilities, Flood Risk, Sea Level Rise Scenario Risk		https://www.arcgis.com/apps/webappviewer/index.html?id=3c49c80f722745bb9060b8cebc8c2b76	This tool shows critical infrastructure, flood risk, and sea level rise risk. It performs a buffer analysis of a drawn project to show which critical facilities and risk layers are nearby to the project.
US DOT Equitable Transportation Community Explorer	Census Tracts	Yes	No	6/22/2023	https://experience.arcgis.com/experience/0920984aa80a4362b8778d779b090723/page/Understanding-the-Data/		https://experience.arcgis.com/experience/0920984aa80a4362b8778d779b090723/page/ETC-Explorer---State-Results/	This builds on the CEJST analysis by looking more closely at transportation access burdens, including transportation cost burden and access quality. The tool itself has views to look at national or state percentile ranks, with some simple but helpful bar charts to show how selected tracks stack up in the percentile ranks of different categories. You can also add your own data to visualize on top of the built-in data layers.
Volpe Center Transportation for Social Equity (TrasportSE)	Census Block Groups	Yes	No	7/15/2022	PM2.5, Transportation Noise, Income, Minority Population, Car Ownership		https://explore.dot.gov/views/TransportSECensusMetricsDashboard/TransportSE?%3AisGuestRedirectFromVizportal=y&%3Aembed=y	This is similar to the CEJST and US DOT Equitable Transportation community map in that it uses a national percentile rank of socioeconomic indicators, but it uses are more select group of indicators. The actual interface of the tool has a map and histograms for each measure's score which update as you select regions on the map and vice versa.
TxDOT's Community Impacts Data Tool	Census Blocks	Yes	No		Income, Race, and Language data	https://ftp.txdot.gov/pub/txdot-info/env/toolkit/710-07-gui.pdf	https://txdot.maps.arcgis.com/apps/webappviewer/index.html?id=da899c1b75614ad68945ded21e537642	This tool performs a buffer analysis based on a drawn project to provide a screening report that outputs the population variables of the nearby census blocks. It appears to be the default tool for TxDOT when receiving Community Impact Assessments and therefore may be particularly useful when choosing population measures or scoring projects.
USDOT's Area of Persistent Poverty & Historically Disadvantaged Communities	Census Tracts	Yes	No	7/13/1905	https://www.transportation.gov/RAISEgrants/raise-app-hdc	https://datahub.transportation.gov/stories/s/tsyd-k6ij	https://maps.dot.gov/BTS/GrantProjectLocationVerification/	This is an interactive visualization that shows census tracts defined as areas of persistent poverty as defined by the bipartisan infrastructure law (counties with 20% or more in poverty from 1990 to 2021, or Tracts with poverty rate of at least 20% in the 2014-2018 ACS). Whether or not a project is an area contained by these definitions is important for grant funding.
FEMA's National Risk Index	Census Tracts	Yes	No	3/23/2023	A composite "Risk Index" made up of Expected Annual Loss, the CDC Social Vulnerability Index, and a Community Resilience Score	https://www.fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf	https://hazards.fema.gov/nri/map	This is a visualization of FEMA's composite risk index and the component indices by county or census tract with percentile scores calculated at a national or state level. It can also generate a nice report for the selected census tract that details the component variables and characteristics: https://hazards.fema.gov/nri/report/viewer?dataLOD=Census%20tracts&dataIDs=T48355002102
US Climate Resilience Toolkit Climate Mapping for Resilience and Adaptation Assessment Tool	Census Tracts	Yes	No		Exposure to major climate hazards: Extreme Heat, Drought, Wildfire, Flooding, Coastal Inundation	https://resilience.climate.gov/pages/learn-more	https://livingatlas.arcgis.com/assessment-tool/search	The tool lets you drop a pin on the map and generates a report of the climate hazards, current conditions, and projected risks at the tract, county, or tribal level and includes data for several global emissions scenarios. It is regularly maintained with current condition data. It also has a very nice look and feel.
US Census Community Resilience Estimates for Equity and Disasters	Census Tracts	Yes	No	6/29/2023	https://api.census.gov/data/2019/cre/variables.html		https://experience.arcgis.com/experience/b0341fa9b237456c9a9f1758c15cde8d/	This is another visualization tool that shows the number or risk factors a census tract meets based on 2021 ACS socioeconomic variables. One particularly interesting and unique visual is the statistical difference map that shows census tracts where the risk factors are statistically different then the national estimate at the 90% confidence interval.

Community Impact Project Data Assessment Matrix Spreadsheet

BTS Transportation Noise Model	30m Raster	Yes	No	11/24/2022	Noise Levels for Different Modes (Aviation, Road, and Rail)	https://rosap.ntl.bts.gov/view/dot/53773	https://maps.dot.gov/BTS/NationalTransportationNoiseMap/	This tool, updated roughly every two years (2016, 2018, 2020), provides a 24-hr noise level based on multiple different noise modeling approaches. The road noise modeling approach (the FHWA Traffic Noise Model) seems like it might have simple enough inputs to calculate project impacts with limited data (using mostly AADT or average speed changes). More details on this can be found in the tool documentation.
CNT H+T Affordability Index	Census Block Groups	Yes	No	2022	https://htaindex.cnt.org/about/	https://htaindex.cnt.org/about/method-2022.pdf	https://htaindex.cnt.org/map/	The tool uses unique metrics to show housing and transportation costs in relation to a regionally typical household, a regionally moderate household, or a nationally typical household. It provides functionality to switch between jurisdictions and different metrics as well.
CDC Agency for Toxic Substances and Disease Registry (ATSDR)	Site	Yes	No	2020		https://www.atsdr.cdc.gov/sites/brownfields/docs/SiteScreeningToolTourGuide24mar2017.pdf	https://www.atsdr.cdc.gov/sites/brownfields/site_inventory.html	The ATSDR has a few things called "tools" but none of them are GIS based or provide data. They have a toolkit for scoring land reuse, and they have a Microsoft Access based Site Inventory tool which is the closest thing to a GIS tool. The Site Inventory tool is a tool for public health officials to build a database of local brownfield sites and record information about them, including contamination data for retrieval and redevelopment evaluation. The data input seems extensive, requiring many details about the site, especially since there is no inherent geospatial functionality or reference data outside of the inputs. There is no centralized data for this tool. It is designed as a template and framework for local officials to build out and maintain.
CDC Environmental Justice Index Explorer	Census Tracts	Yes	No	8/24/2023	https://www.atsdr.cdc.gov/placeandhealth/eji/indicators.html	https://www.atsdr.cdc.gov/placeandhealth/eji/technical_documentation.html	https://onemap.cdc.gov/portal/apps/sites/#/eji-explorer	This is a similar tool to the other percentile indexes. It includes a similar set of socio-economic variables and calculates percentile scores, one for each variable, one cumulative score for a category of variables, and one collective score for all variables. It only visualizes at the tract level. The GUI for the tool is confusing to navigate, with several parallel widgets and multiple scrolling elements.
CDC Social Vulnerability Index	Census Tracts	Yes	No	12/22/2022	https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/SVI_documentation_2020.html	https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/SVI_documentation_2020.html	https://www.atsdr.cdc.gov/placeandhealth/svi/interactive_map.html	The SVI is also a percentile based index, but includes several additional housing and transportation variables whereas the Environmental Justice Index listed above focuses on health variables.
FEMA Resilience Analysis and Planning Tool	POI	Yes	No	May-23	https://experience.arcgis.com/experience/618796a76ff54ebe8bbdb677096d49ed/	https://www.fema.gov/sites/default/files/documents/fema_rapt-user-guide-2023.pdf	https://fema.maps.arcgis.com/apps/webappviewer/index.html?id=90c0c996a5e242a79345cdbc5f758fc6	This tool has an amalgamation of indicators, important points of interest, and historical weather and climate risk indicators. It allows you to draw areas and performs a select and clipping operation and then lets you calculate selected population variables.
FTA's Title VI Guidance	Non-geographic			10/21/2022			https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf	There are several web pages with information under this name but the attached link is the most official and final guidance under this title. It provides the most recent set of regulations and guidance governing Title VI for the FTA. We may need additional guidance into why this was included and what may be of interest here.
CarbonBrief Shared Socioeconomic Pathways	Non-geographic	No		2018	https://www.carbonbrief.org/explainer-how-shared-socioeconomic-pathways-explore-future-climate-change/	https://www.sciencedirect.com/science/article/pii/S0959378016300681		This is an article about the Shared socioeconomic pathways that are a set of descriptive scenarios used to model climate change projections based upon various potential policy and social conditions in the coming century. These descriptive pathways were used to generate data points and projections for a variety of data types and radiative forcing climate projections based on the socioeconomic pathway conditions. The actual database of the modeling data is below.
International Institute for Applied Systems Analysis Shared Socioeconomic Pathways Database	National	Yes	No	2018		https://www.sciencedirect.com/science/article/pii/S0959378016300681	https://tntcat.iiasa.ac.at/SspDb/dsd?Action=htmlpage&page=about#v2	This database includes outputs of the modeled climate scenarios based upon the shared socioeconomic pathways detailed above. It gets quite technical, but it offers data into baseline scenarios and projections based on possible policy futures and the climate implications of different policy scenarios. It is likely that the geographic resolution is not fine enough for the data itself to be useful here, but it could be a useful reference if we were to rate projects based on the Shared Socioeconomic pathways narratives.
Sopact Social Impact Assessment	Non-geographic	N/A	N/A	N/A		https://university.sopact.com/article/social-impact-assessment	https://www.sopact.com/	This is an SaaS company who's product is a general data management/visualization software designed for measuring "social impact" and intended to be customized by use case. There does not seem to be any particular methodology shown and it seems mostly marketed towards non-profits and investors. Overall, this does not feel like a particularly useful tool for planning use cases.
Planetizen Equity Plus: Toward More Integrated Solutions	Non-geographic	N/A	N/A	1/4/2022			https://www.planetizen.com/blogs/115706-equity-plus-toward-more-integrated-solutions	This is an op-ed style article advocating for systemic and integrated planning goals that support integrated transportation and land use planning that serves multiple smaller benefits rather than addressing any 1 specific need the way something like a road widening project would. This is very much a smart growth take and is mostly advocating for approaches that look at co-benefits (transit access, housing affordability, etc.). One of the more useful things discussed here is the initial list of Transportation Equity
FEMA Climate Risk and Resilience Portal ClimRR	12km Raster	Yes	No		https://disgeoportal.egs.anl.gov/ClimRR/?page=Data-Catalog		https://disgeoportal.egs.anl.gov/ClimRR/	This tool provides the outputs of local climate modeling for use in local planning efforts. It includes temperature and heat index data, wildfire data, and precipitation data. The user interface is relatively simple, allowing you to drop a point on the map and output several specific projection data points for the local area, but the underlying data is very useful.
Transit Center Equity Dashboard	Census Block Groups	Yes	No	8/7/2022	Regional transit access to opportunities and needs measures		https://dashboard.transitcenter.org/map/la?key=C000_P_c45_AM_autoN_fareN&zone=msa&date=2022-08-07&demo=none	This tool has only been generated for a handful of metropolitan areas, but it provides "access to opportunity" style maps based on public transit service in the area at various times of day and distances. The "access to opportunity" here includes jobs, low wage jobs, healthcare, or other necessary points of interest. It performs a static analysis similar to what Conveyal, described below, can output on demand.
FHWA Alternative Fuel Corridors (Liquefied Natural Gas)	NHS Corridors	Yes	No	10/16/2023	Locations and Types of Designated Alternative Fuel Corridors		https://hub.arcgis.com/datasets/usdot::alternative-fuel-corridors/about	This is the published map of the locations and status of alternative fuel corridors nationwide. Each corridor has ratings of "ready" or "pending" for different alternative fuels to show the current status of the corridor's readiness for use with alternative fuels.
American Enterprise Institute Housing Center's the Housing and Economic Analysis Toolkit	Site	Yes	No		https://heat.aeihousingcenter.org/toolkit		https://heat.aeihousingcenter.org/toolkit	This tool includes many different analyses into housing pricing and housing stock. The most interesting and applicable analysis they have is their "Light Touch density" map which looks at the property level to evaluate the land's percentage of the property value and rates the property as a candidate for "light touch densifying". Their other data is certainly interesting but is less geographic in nature and doesn't cover the country as a whole.

Community Impact Project Data Assessment Matrix Spreadsheet

FHWA's Environmental Justice Analysis in Transportation Planning and Programming State of the Practice	Non-geographic	N/A		2/1/19			https://rosap.ntl.bts.gov/view/dot/43567	This is a long (upwards of 100 page) document outlining environmental justice analysis practices nationwide and providing guidance into things such as developing consistency with types of analysis and clarifying terms like "disproportionate" impacts. A detailed read may provide some specific analytical tools; however, the state of the practice has likely evolved somewhat from initial publishing (2019).
Conveyal	Road Segment	Yes	Yes	Custom	Census, LODES, or other custom data		https://conveyal.com/	This is a service rather than a public data tool, but it is one of the few tools that allows users to modify a GIS transportation network and uses routing/travel time analysis to analyzes a transportation's project impact on access to and from various resources for various populations. The population and resource data are ACS and LODES data by default but can be customized. It is designed mainly for transit projects but can be used for vehicular and active transportation projects. The tool requires the user to input a project by modifying the network travel cost on the links the project is changing (such as travel time for modes, or a level of traffic stress for bike/ped, or a transit schedule for transit). The outputs of this tool can be the same as the transit center equity dashboard but calculated for various scenarios. The service is paid but the code is open-source.
California Air Resources Board Handbook for Analyzing GHG Emission Reductions, Assessing Climate Vulnerabilities and Advancing Health and Equity: Chapter 6	Non-geographic	N/A	Yes	2022			https://www.caleemod.com/documents/handbook/ch_6/chapter_6.pdf	This handbook includes a number of resources for calculating emissions reductions for many types of projects based on a variety of mitigation measures for different areas of development including transportation. Chapter six describes a number of California specific tools and resources for supporting equitable resilient land use, namely the Caleemod tool (described below) that uses this handbook to evaluate project impacts. The other tools generally have similar properties to other tools described above, such as Cal Envirosdcreen, and Cal Adapt, which are socioeconomic equity scoring and climate models respectively. Chapter 3's transportation subsection may be useful as these provide GHG emission reduction factors for different types of mitigations that a project/plan might use.
California Emissions Estimator Model	Site	Yes	Yes	10/2/2023	https://www.caleemod.com/search-measures	https://www.caleemod.com/user-guide	https://www.caleemod.com/	This tool, based on the handbook cited above, takes in depth project information to model emissions for any project in the state. It takes in quite detailed information about a project and will do a basic proximity analysis of the nearby populations and climate risks but will also estimate emissions for the construction and operation for the project based either on default assumptions or based on user inputs. It then allows users to select mitigation measures and model reductions based on the selected mitigations.

Community Impact Project Update - Presentation

Purpose

Community impacts of a transportation project are impacts that disrupt the normal daily functions of a community or neighborhood.

Typically, it is the broader region or jurisdiction that enjoys the social benefits of a transportation project while social impacts are borne by the local community—particularly the neighborhoods immediately adjacent to the transportation project.

This task order seeks to create a systematic approach for evaluating these impacts within the Corpus Christi MPO region.

CORPUS CHRISTI MPO & HIGH STREET

Establish a Project Prioritization Framework

Project Purpose

Multiple Objective Decision Analysis is an industry-standard best practice for transparently evaluating cross-discipline performance considerations on a level-playing-field in alignment with agency priorities.

Steps include:

- **Identify** evaluation criteria in alignment with TxDOT and CCMPO's MTP;
- **Weight** the criteria's relative importance;
- **Rate** projects on comparative scales;
- **Score** projects based on weighted ratings; and
- **Optimize** programs amidst constraints;

CORPUS CHRISTI MPO & HIGH STREET

General Concept:

1. **Gather Projects**
   Locate Improved Areas
2. **Spatially Overlay Data**
   Join Performance Layers with Projects
   - **Demographics**
   - **Environmental**
   - **Noise**
3. **Predict Underlying Performance & Estimate Performance Impacts**
   Forecast Baseline ("no build") Performance Without Investment & Investment Performance
4. **Prioritize Across Programs**
   Conduct Trade-Off Analysis

Task Order Outcome:

Prioritized projects based on benefits to communities

Project Schedule

▼ Deliverable for TAC ▼ Feedback from TAC

	Oct	Nov	Dec	Jan	Feb	Mar
Project Management	Kickoff meeting					
Tool Assessment		Recommendations on criteria from tool review provided to TAC				
Criteria Development and Testing			Feedback on Criteria Provided by TAC	Draft #1 Scores of test projects	Draft #2 Scores of test projects	
Update Project Scoring and Collection Tools					Draft project scoring dashboard	Project collection form questions

Tool Assessment

Initial Promising Tools and Data Sources

Climate and Economic Justice Screening Tool

Bureau of Transportation Statistics
Transportation Noise Model

Types of Attributes Being Evaluated

Population Variables

- Socio-Economic Variables (Income, Race, Age, Linguistic Isolation, etc.)
- Health Risks (rates for asthma, diabetes, heart disease, etc)
- Transportation Burdens

Climate Risks

- Flood Risk
- Sea Level Rise
- Heat Risk

Environmental Burdens

- Transportation noise and air pollution
- Proximity to other pollution sources

Potential Evaluation Criteria

- **Access to community facilities**: Will the project impede or enhance the ability of residents to use community facilities and services
- **Local mobility**: will the project enhance or impede the ability of residents to move freely about *their neighborhood*
  - May include complete streets, multimodal choice, community cohesion
- **Environmental***:* How will the project improve or worsen noise, emissions, and stormwater impacts
- **Land use**: How will the project impact property values or encourage or discourage density

A woman in a wheelchair travels in the 4900 block of Ayers Street