Destinations 2045:

The Bryan/College Station MPO

Metropolitan Transportation Plan

December 4, 2019

BCS MPO

BRYAN / COLLEGE STATION METROPOLITAN PLANNING ORGANIZATION

Destinations 2045

The Metropolitan Transportation Plan

Participating Agencies:

Brazos County

City of Bryan

City of College Station

Texas A&M University

Texas Department of Transportation

Brazos Transit District

In Cooperation with:

Federal Highway Administration (FHWA)

Federal Transit Administration (FTA)

Approved by the Policy Board:	December 4, 2019
Approved by the Texas Department of Transportation:	TBD
Approved by FHWA/FTA	TBD

The Bryan/College Station Metropolitan Planning Organization has prepared this plan in compliance with the Fixing America's Surface Transportation Act (FAST) Act, signed into law on December 4, 2015. The preparation of this plan has been funded by the United States Department of Transportation.

For more information regarding this Plan Update, the Metropolitan Planning Organization and its activities, please contact:

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BCS MPO

BRYAN / COLLEGE STATION METROPOLITAN PLANNING ORGANIZATION

RESOLUTION

2020-02

A RESOLUTION ADOPTING DESTINATIONS 2045: THE BRYAN/COLLEGE STATION METROPOLITAN TRANSPORTATION PLAN (MTP)

WHEREAS, the Bryan-College Station Metropolitan Planning Organization (B/CS MPO) Policy Committee is designated by the Governor of Texas, in accordance with federal law, as the transportation planning decision-making body for the Bryan-College Station/Brazos County metropolitan planning area; and

WHEREAS, the B/CS MPO is responsible for developing and publishing the MTP, a 25-year plan of fiscally constrained transportation system improvements in the Brazos County region; and

WHEREAS, the B/CS MPO Technical Advisory Committee reviewed the MTP on November 21, 2019 and has recommended it to the Policy Committee for adoption.

NOW, THEREFORE, BE IT RESOLVED by the BCSMPO Policy Committee that:

SECTION 1: the Director of the BCSMPO is hereby authorized to publish the 2045 MTP on behalf of the Policy Committee; and

SECTION 2: the 2045 MTP and this resolution shall be effective immediately on adoption.

DONE AND APPROVED, this 4th day of December, 2019.

Nancy L Berry

Commissioner Nancy Berry, Chair
Bryan-College Station MPO Policy Board

POLICY BOARD VOTE:

Commissioner Nancy Berry, Chair:	For	Moved By:	Nancy Berry
Mayor Karl Mooney, Vice Chair	For		
Councilmember Greg Owens, Member:	Absent	Seconded By:	Karl Mooney
Dr. Bill Stockton, Member:	For		
Mr. Lance Simmons, Member:	For	Attested By:	Lisa Y. Lyon

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Executive Summary

Federal legislation requires every Metropolitan Planning Organization (MPO) to develop a long-range transportation plan that addresses the transportation needs of their region for a minimum planning horizon of 20-years. The Bryan/College Station MPO has developed Destinations 2045: The 2045 Metropolitan Transportation Plan (MTP) through a continuous, cooperative, and comprehensive (3-C) transportation planning process. The 2045 MTP identifies a list of fiscally constrained multimodal transportation projects that can be implemented to facilitate the efficient movement of people and goods within and through our region between 2020 and 2044.

Destinations 2045: The Metropolitan Transportation Plan

Destinations 2045 contains two primary sections. The first section focuses on analyzing the existing transportation network and how socio-economic, environmental justice and the environment impact how we plan for a 2045 transportation system. The second section focuses on MPO Principles, planning recommendations and a financial analysis including fiscal constraint.

There are some key takeaways from the existing transportation network analysis. These include:

- Congestion is growing and we can't "build" our way out of it
- We have the highest number of transit rides per person in Texas
- Brazos County communities and the MPO are committed to bicycle and pedestrian improvements
- Expansion of Freeport to the deepest port in Texas may increase freight movement on State Highway 6 (Earl Rudder Freeway)
- Transportation system safety must remain a high priority
- The continued development of the RELLIS Campus may impact future transportation plans

The Bryan/College Station MPO can reasonably anticipate having allocation authority over approximately $399 million of federal and state funding over the 25-year planning horizon of this document. This MTP has been developed from the perspective of how the MPO can best utilize these funds within the constraints of categorical restrictions, funding availability and project development timelines. The fiscally constrained projects that the MPO has determined to allocate funding toward are listed in Figure ES.1 on the following pages.

Figure ES.1 Fiscally Constrained Project List

2020 - 2024

MPO Project	TxDOT Project	Facility & Project Length	Project Limits	Project Description	Funding Source(s)	2020 Construction Estimate	2020 Construction Estimate	MPO Funding Allocation	Funding Provided By Others	CAT 2 Funding Running Balance	Fiscal Constraint Running Balance
301	0917-29-133	Coulter Drive -	From South College Avenue To FM 158 (William J. Bryan)	Installation of 6-foot-wide sidewalks on both sides of Coulter Drive. Install bicycle lanes along Coulter from South College Ave. to 29th Street to match existing ones in places from South College Ave. to 29th Street.	Local & TxDOT	$ 1,373,150	$ 1,373,150	$ -	$ 1,373,150	$ 286,000,000	$ 399,000,000
302	0049-12-115	SH 6 Northbound Frontage Road -	From Old Reliance Road To FM 158 (Boonville Road)	Installation of a 12-foot-wide shared use-path on east side.	Local & TxDOT	$ 1,242,900	$ 1,242,900	$ -	$ 1,242,900	$ 286,000,000	$ 399,000,000
1	2399-01-074	FM 2818 - 2.25 miles	From FM 60 To FM 2154	Widen and develop arterial super street and add bicycle and pedestrian facilities	TxDOT & MPO	$ 39,822,000	$ 39,822,000	$ 38,710,000	$ 1,112,037	$ 247,290,000	$ 360,290,000
303	0599-01-009	SH 308 (College Ave) - 0.75 miles	From Brookside Drive To FM 60	Construct sidewalks and shared-use path	MPO	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ -	$ 246,290,000	$ 359,290,000
2	0212-03-050	FM 158 - 1.85 miles	From BS 6-R To SH 6	Construct raised medians, decel. lanes, add traffic signals and pedestrian facilities	MPO	$ 13,000,000	$ 13,000,000	$ 13,000,000	$ -	$ 233,290,000	$ 346,290,000
3	0048-12-110	SH 6 - 14 miles	From SH 21 To SH 40	Widen freeway facility from 4 to 6 lanes, improve frontage roads, add local access lanes and add bicycle/ped. facilities	TxDOT & MPO	$ 174,320,000	$ 174,320,000	$ 12,000,000	$ 162,320,000	$ 221,290,000	$ 334,290,000
4 & 386	0049-09-087 & 0049-09-076 & 0050-01-083	BS 6-R - 5.2 miles	From Old Hearne Road To FM 60	Convert continous center turn lane to controlled access raised median w/ landscaping, shared-use path and signals	TxDOT & MPO	$ 29,374,110	$ 29,374,110	$ 21,000,000	$ 8,374,110	$ 200,290,000	$ 313,290,000
5	0540-04-074	FM 2154 - 3.2 miles	From SH 40 To Greens Prarie Road	Widen 2 lane divided to 4 lane divided w/ bike lanes and sidewalks	MPO	$ 29,000,000	$ 29,000,000	$ 29,000,000	$ -	$ 171,290,000	$ 284,290,000
					Subtotal 2020 to 2024 Projects	$ 289,132,160	$ 289,132,160	$ 114,710,000	$ 174,422,197	$ 171,290,000	$ 284,290,000

2025 - 2029

MPO Project	TxDOT Project	Facility & Project Length	Project Limits	Project Description	Funding Source(s)	2020 Construction Estimate	2025 Construction Estimate	MPO Funding Allocation	Funding Provided By Others	CAT 2 Funding Running Balance	Fiscal Constraint Running Balance
6	0050-02-106	SH 6 - 14 miles	From SH 21 To SH 40	Improvements at various interchanges	TxDOT & MPO	$ 36,000,000	$ 42,000,000	$ 15,000,000	$ 27,000,000	$ 156,290,000	$ 269,290,000
7	0117-01-051	SH 21 - 0.88 miles	From BS 6-R To SH 6	Acquire ROW, widen 4 to 6 lanes, access management and bike/ped improv.	MPO	$ 11,000,000	$ 12,800,000	$ 12,800,000	$ -	$ 143,490,000	$ 256,490,000
313	2446-01-034	SH 30 1.32 miles	From BS 6-R To SH 6	Construct shared-use path on north side	MPO	$ 4,400,000	$ 5,160,000	$ 5,160,000	$ -	$ 138,330,000	$ 251,330,000
8	3138-01-020	FM 2347 - 1 mile	At FM 2154 & Union Pacific Railroad	Construct multimodal Single Point Urban Interchange (Grade Separation)	TxDOT & MPO	$ 60,000,000	$ 69,000,000	$ 5,000,000	$ 64,000,000	$ 133,330,000	$ 246,330,000
17	1316-01-077	FM 1179 - 3 miles	From FM 158 To Eastern Intersection of Inner loop (near Planter's Loop)	Widen road to 5-lane section (w/or wo medians) and convert from rural open ditch to urban with storm sewer and curbs. Includes shared-use path.	TxDOT & MPO	$ 12,000,000	$ 14,000,000	$ 11,000,000	$ 3,000,000	$ 122,330,000	$ 235,330,000
354	1316-01-XXX	FM 1179 - 2 miles	From FM 2818 To BS 6-R	Construct shared-use path on north side	MPO	$ 2,150,000	$ 2,500,000	$ 2,500,000	$ -	$ 122,330,000	$ 232,830,000
14	2446-01-032	SH 30 2.3 miles	From SH 6 To FM 158	Widen 2 lane w/CTWLT to 4 lane divided with bicycle and pedestrian facilities	MPO	$ 11,000,000	$ 12,800,000	$ 12,800,000	$ -	$ 109,530,000	$ 220,030,000
					Subtotal 2025 to 2029 Projects	$ 136,550,000	$ 158,260,000	$ 64,260,000	$ 94,000,000	$ 109,530,000	$ 220,030,000

2030 - 2044

MPO Project	TxDOT Project	Facility & Project Length	Project Limits	Project Description	Funding Source(s)	2020 Construction Estimate	2040 Construction Estimate	MPO Funding Allocation	Funding Provided By Others	CAT 2 Funding Running Balance	Fiscal Constraint Running Balance
9	0917-29-143	New Facility (Inner Loop) -7.65 miles	From SH 6 N at 2818 To SH 21	Construct new facility as major arterial cross section, initially with 2 lanes	MPO	$ 39,000,000	$ 65,000,000	$ 65,000,000	$ -	$ 44,530,000	$ 155,030,000
11	0917-29-142	New Facility (Inner Loop) -3.45 miles	From SH 21 To FM 1179	Construct new facility as major arterial cross section, initially with 2 lanes	MPO	$ 21,000,000	$ 36,000,000	$ 36,000,000	$ -	$ 8,530,000	$ 119,030,000
12	1316-01-076	FM 1179 - 2 miles	From Galindo Parkway To SH 47	Widen road to 5 lane section (w/or w/o medians) and convert from rural open ditch to urban with storm sewer and curbs. Includes shared-use path and 3 traffic signals	MPO	$ 11,000,000	$ 20,000,000	$ 20,000,000	$ -	$ 2,645,890	$ 99,030,000
477	3138-01-XXX	FM 2347 - 1.15 miles	From 2818 To new Wellborn Road interchange	Construct shared-use path	MPO	$ 1,000,000	$ 1,750,000	$ 1,750,000	$ -	$ 2,645,890	$ 97,280,000
13	0540-04-084	FM 2154 - 1.35 miles	From FM 2347 To FM 2818	Widen 4-lane w/CTWLT to 6-lane divided with bicycle & pedestrian facilities	MPO	$ 17,000,000	$ 31,000,000	$ 31,000,000	$ -	$ 2,645,890	$ 66,280,000
18	1560-02-019	FM 1688 (Leonard Rd.) 2.9 miles	From SH 47 To FM 2818	Widen road to 3 lane section, convert from rural open ditch to urban with storm sewer and curbs and include bicyle/pedestrian Facilities	MPO	$ 15,000,000	$ 27,000,000	$ 27,000,000	$ -	$ 2,645,890	$ 39,280,000
19	0540-08-010	SH 40 - .5 miles	at Arrington Road	Construct grade separated interchange	MPO	$ 17,000,000	$ 31,000,000	$ 31,000,000	$ -	$ 2,645,890	$ 8,280,000
380a	0599-01-XXX	SH 308 - .75 miles	Brookside Drive To FM 60	Construct shared-use path on West Side/convert to urban section	MPO	$ 1,375,000	$ 2,500,000	$ 2,500,000	$ -	$ 2,645,890	$ 5,780,000
					Subtotal 2030 to 2044 Projects	$ 122,375,000	$ 214,250,000	$ 214,250,000	$ -	$ 2,645,890	$ 5,780,000
					Total 2020 to 2044 Projects	$ 548,057,160	$ 661,642,160	$ 393,220,000	$ 268,422,197	$ 2,645,890	$ 5,780,000

The MPO is working with TxDOT Bryan District to secure the balance of funds needed to complete this project. Funding will come from a category other than CAT 2, CAT 7 or CAT 9 and is subject to Texas Transportation Transportation Commission approval as part of the annual Unified Transportation Program Update process in the Summer of 2020.

Chapter 1 - Introduction

Introduction

THE BRYAN-COLLEGE STATION METROPOLITAN PLANNING ORGANIZATION

The Bryan/College Station Metropolitan Planning Organization (MPO) came into existence as an Urban Transportation Study on May 19, 1970. This action was taken based on the Federal Highway Act of 1962 which created the federal requirement for urban transportation planning in response to citizen complaints regarding the construction of the Interstate Highway System and the planning of routes through and around urban areas without local input. To be eligible to receive federal transportation funds, the Act required any region identified by the United States Bureau of the Census as an Urbanized Area (an area with a population of at least 50,000) to base transportation projects on a continuing, comprehensive, and cooperative (3-C) transportation planning process. In 1965 the Bureau of Public Roads (todays Federal Highway Administration – FHWA) required the creation of organizations to carry out the required planning process. In compliance with this requirement the Bryan/College Station Urban Transportation Study was designated by the Governor of Texas as the Metropolitan Planning Organization for the Brazos County region. The Bryan/College Station MPO is responsible for carrying out the federally required transportation planning process for the Brazos County region.

The Bryan/College Station MPO consists of two standing committees and the MPO staff. The Policy Committee which consists of five members representing Brazos County, City of Bryan, City of College Station, Texas A&M University (TAMU) and the Texas Department of Transportation (TxDOT) is the official decision-making body of the MPO. The Technical Advisory Committee (TAC) is composed of professional staff from the member agencies and Brazos Transit District. The Technical Advisory Committee and the MPO Staff, provide the Policy Committee with the technical assistance necessary for the decision-making process.

The Bryan/College Station MPO and Brazos County are located within the boundary of the TxDOT – Bryan District. Figure 1.1 shows the MPO planning area boundary and the 10-county area within which the Bryan District is responsible for planning, designing, building, operating and maintaining the state transportation system.

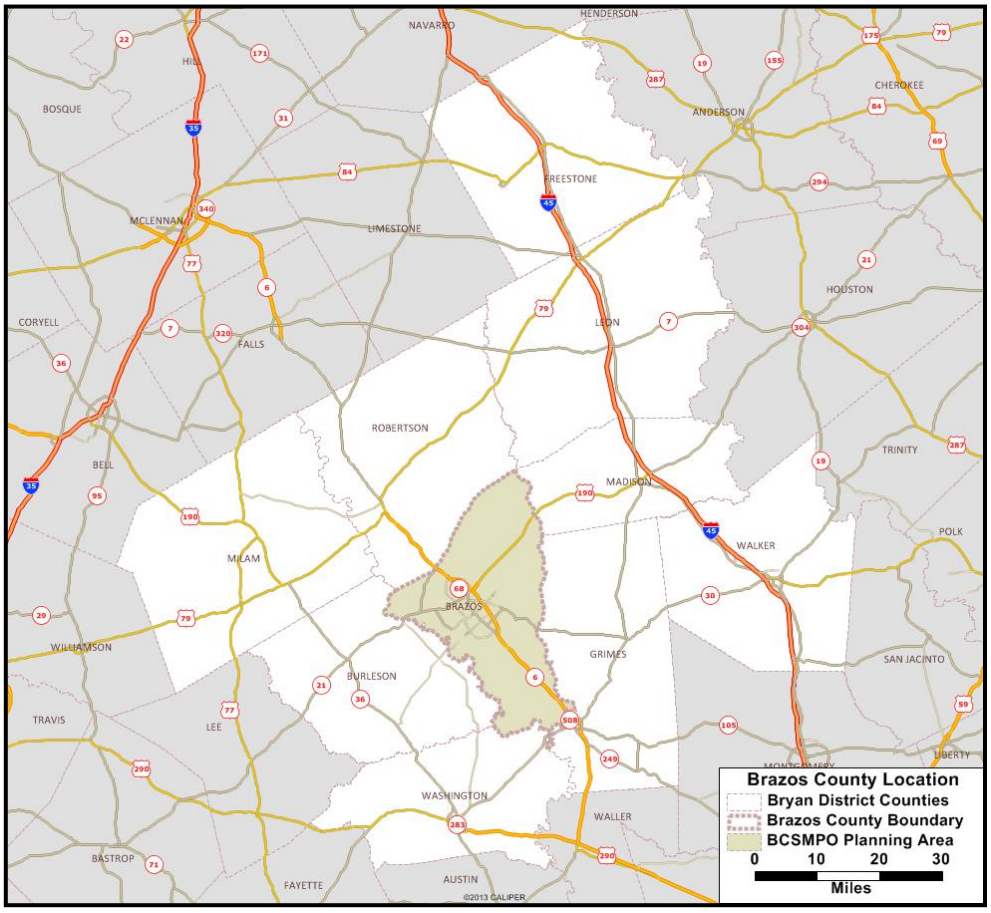
Figure 1.1

THE BRYAN-COLLEGE STATION REGION

Brazos County is located in east central Texas, 180 miles south of Dallas-Fort Worth, 166 miles northeast of San Antonio, about 140 miles north of the Gulf of Mexico, 104 miles east of Austin, and 95 miles northwest of Houston. The region is bordered by the Brazos and Navasota Rivers and has an average elevation of 300 feet

above sea level. According to the US Census Bureau, Brazos County encompasses 586 square miles and has an estimated 2017 general population of 221,500. The 2010 Census of population for the City of Bryan was 76,201 and the 2017 estimated general populations of Bryan was 83,950 a 10.2% increase. For the City of College Station, the 2010 Census of population counted 93,857 as residents and the 2017 population estimate was 111,818, a 19.1% increase. Growth in Brazos County is closely tied to the growth of TAMU which has embarked on an ambitious expansion policy in recent years and had 62,449 students enrolled in the fall of 2017. The economy in Brazos County continues to grow at a steady pace. Brazos County has shown a consistent increase in population and economic activity immediately to the east, west, and south of Bryan and College Station. This trend is expected to continue based upon ongoing development, an increase in energy sector activity, city annexations, labor force trends, household income, sales per capita, total sales, and population growth. Forbes recently ranked Bryan/College Station No. 2 nationally and No. 1 in Texas on their 2014 list of the Best Small Places for Business and Careers[1]. Since 2010 the Bryan/College Station area has been recognized nationally in a variety of economic and social categories, including: Bryan Ranks in Top 10 Most Exciting Cities in Texas, B-CS ranked among top 10 small cities for jobs, B-CS ranks among America's best for recession recovery, B-CS ranked among America's 10 great places to live, and B-CS ranks among best places for military retirement[2].

Figure 1.2: TxDOT-Bryan District, Brazos County, & B/CS MPO Boundary



(Source: MPO Staff)

[1] http://www.forbes.com/best-places-for-business/list/small/

[2] http://www.movoto.com/blog/top-ten/exciting-texas/, http://www.forbes.com/pictures/edgl45ggej/no-9-college-station-bryan-tx/,http://www.nerdwallet.com/blog/cities/economics/recession-recovery-cities-improved/, http://www.kiplinger.com/article/real-estate/T006-C000-S002-10-great-places-to-live.html, http://www.military.com/finance/usaa-best-places-to-retire/2010/college-station-tx.html

Chapter 2 – Planning Framework

Planning Framework

FEDERAL REQUIREMENTS

The first federal requirement for urban transportation planning was enacted with the Federal-Aid Highway Act of 1962. This requirement was implemented in response to a strong public outcry against the lack of input from local elected officials during the planning of Interstate Highway System routes through and around urban areas. The Act required transportation projects in areas with an urbanized population of 50,000 or more to be based on a continuing, comprehensive, and cooperative (3C) process by states and local governments as a condition to receiving federal transportation funds.

In 1965 the Bureau of Public Roads (predecessor to the FHWA) followed suit, requiring planning agencies/organizations capable of carrying out the required planning process. This resulted in the formation of Metropolitan Planning Organizations (MPOs) because of the federal financing of the planning process.
The urban transportation planning process flourished during the 1960's and 1970's. By 1968 most urbanized areas had completed or were well along in their 3C planning process, and the emphasis shifted to implementing a continuing transportation planning process. During the 1970's shorter-range capital improvement programs were added to the requirement for long-range plans. This was done to place more emphasis on non-capital intensive measures to reduce traffic congestion as alternatives to major construction projects. Environmental concerns and the energy crises of the 1970's encouraged a corridor level focus as well as the integration of environmental and energy concerns within the planning process.

During the 1980's the transportation planning regulations were rewritten to require a transportation plan, a transportation improvement program (TIP), and a unified planning work program for areas of 200,000 or more in population. The planning process was to be self-certified by the states and MPOs as to its conformance with all requirements.

The 1990's brought us the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and the Transportation Act for the 21st Century (TEA-21) of 1998. ISTEA was the first federal transportation act implemented in the post-interstate highway system era. ISTEA gave more discretionary power to states and MPOs and emphasized an integrated multimodal strategy for increasing the performance of the existing system. TEA-21 reduced the original fifteen planning factors into seven, increased the role of and funding for alternative modes of transportation, and gave states and MPOs more flexibility in how federal funds were used to address transportation needs.

In 2005 the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law. SAFETEA-LU was the largest federal investment in our surface transportation system with $286 billion in funding over six years. SAFETEA-LU increased attention on trade corridors and ports-of-entry emphasized projects of national and regional significance and improved the air quality conformity process.

In 2012, Moving Ahead for Progress in the 21st Century (MAP-21) was signed into law. MAP-21, which provided $105 billion dollars in funding, was only a two-year bill, due to the lack of available funding and the projected bankruptcy of the Highway Trust Fund. A Continuing Resolution was passed by Congress and sent to the President for signing that would extend funding through December of 2015. MAP-21 retained the requirement to consider eight transportation planning factors originally identified in SAFETEA-LU, required the implementation of a performance-based planning process and established nine national performance goals.

On December 4, 2015 The Fixing America's Surface Transportation (FAST) Act was passed to govern United States federal surface transportation spending. The $305 billion, five-year bill was funded without increasing transportation user fees. Instead, funds were generated through changes to passport rules, Federal Reserve Bank dividends, and privatized tax collection.

The bill added two new planning factors, continued the progress toward performance-based planning, required MPOs to begin adopting planning targets around the national performance goals and bring all planning documents into compliance with rules established in the FAST Act.

The ten planning factors are:

1) Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;

2) Increase the safety of the transportation system for motorized and non-motorized users;

3) Increase the security of the transportation system for motorized and non-motorized users;

4) Increase accessibility and mobility of people and freight;

5) Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;

6) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;

7) Promote efficient system management and operation;

8) Emphasize the preservation of the existing transportation system;

9) Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and

10) Enhance travel and tourism.

To address these ten planning factors, the MPO developed a set of project selection criteria that emphasized economic development, safety and security, connectivity, and system efficiency (congestion reduction). These criteria are explained in Chapter Six. The MPO's Travel Demand Model was used extensively in developing data for these criteria. The traffic model population and employment projections were developed in cooperation with local government planning and economic development staff to ensure consistency with planned growth. In addition, all MPO funded projects must contain a bicycle/pedestrian component to better integrate all modes and expand system user choices. These projects also must mitigate stormwater impacts. MPO staff also attends the monthly Chamber of Commerce Transportation Committee meetings which are also attended by the Convention and Visitors Bureau and many businesses that rely on travel and tourism. A special public meeting was conducted at the Chamber meeting to receive input on the plan.

According to Title 23, United States Code Section 134, each MPO must develop and/update their Metropolitan Transportation Plan (MTP) every four or five years, depending upon whether the MPO is in attainment with the Clean Air Act. Since the Bryan/College Station MPO is in attainment, our MTP must be updated every five years in order to be eligible to receive transportation program funding. The purpose of the MTP is to provide a systematic long-range transportation planning process that identifies current and future transportation needs in the Bryan/College Station Metropolitan Planning Area and prioritizes projects/programs to address those needs.

The MTP is required under Title 23, Section 134 to follow a continuing, comprehensive, and cooperative effort to transportation planning with its planning partners. For the Bryan/College Station MPO these planning partners are: The Texas Department of Transportation (TxDOT), Brazos County, City of Bryan, City of College Station, TAMU, and Brazos Transit District. This 2045 MTP provides a listing of fiscally constrained projects identifying transportation improvements selected to meet the MTP's goals and objectives. The MPO is also responsible for developing the Public Participation Plan, the Unified Planning Work Program, and the Transportation Improvement Program.

The Public Participation Plan (PPP) documents the MPO's policies and procedures to facilitate citizen participation in the transportation planning process. Citizen involvement provides an opportunity for better informed decision making and creates awareness of and understanding about the transportation issues being addressed. The MPO employs a variety of approaches to provide opportunities for public involvement. Per requirements of the FAST Act, the PPP was required to be updated to include additional participants in the planning process and to address ways the ten planning factors would be incorporated into public participation procedures. The Bryan-College Station MPO PPP was over ten years old when the planning partners and MPO staff began their review of the document. A new FAST Act compliant Public Participation Procedures was approved by the MPO Policy Board in May of 2017.

The Unified Planning Work Program (UPWP) outlines the various activities performed in support of the overall transportation planning process. The UPWP covers two fiscal years and presents the planning priorities and activities to be addressed within the metropolitan planning area. Work tasks and the resulting products are identified. The responsible entity, a time frame for completion and the budget for each task is presented. The FY 2020 – FY 2021 UPWP is FAST Act compliant and was adopted by the MPO Policy Board in July of 2019.

The Transportation Improvement Program (TIP) is a short-range project implementation plan for the MPO planning area. The TIP includes a list of prioritized transportation projects selected from the MTP and intended to be let for construction during the four-year life of the program. Any project in the MPO planning area that intends to utilize Federal Highway Administration or Federal Transit Administration funds is required to be included in the TIP and must either be incorporated in the Metropolitan Transportation Plan or considered "in accordance" with the goals, objectives and priorities identified in the MTP. Projects that enhance or expand capacity are generally listed as individual projects in the MTP. Projects in accordance with the MTP are typically maintenance related or are projects included by TxDOT that use state-based funding categories that are not the purview of the MPO Policy Board. The most recent TIP is FAST Act compliant and was approved by the MPO Policy Board in May of 2018.

Planning targets are first set by TxDOT or by our local transit agency, the Brazos Transit District (BTD). Once TxDOT or BTD establish a target, the Bryan-College Station MPO must establish its own target in support of those established by TxDOT and/or BTD. Targets that were set during the development process of this MTP include transportation system safety, bridge condition, pavement condition and travel time reliability. Transit Asset Management (TAM) targets are also required and are included in the 2019 TAM Plan later in this document.

The targets adopted by the BCSMPO Policy Board are as follows:

2019 TxDOT and Bryan/College Station MPO Safety PM Targets

Target: Total number of traffic fatalities (C-1)

2019 Target: To decrease the expected rise of fatalities to not more than a five-year average of 3,791.0 fatalities in 2019

The 2019 Target expressed as a 5-year average would be as follows:

Year	Target or Actual Data	Source
2015	3,582	FARS
2016	3,776	ARF
2017	3,726	CRIS
2018	3,891	Target
2019	3,980	Target
2019 Target expressed as 5-year average		3, 791

As noted in the table above, the calendar year target for 2019 would be 3,980 fatalities.

2021 Target: To decrease the expected rise of fatalities from the projected 4,012 in 2019 to not more than 4,155 fatalities in 2021.

Target: Total number of serious injuries (C-2)

2019 Target: To decrease the expected rise of serious injuries to not more than a five year average of 17,751.0 serious injuries in 2019

The 2019 Target expressed as a 5-year average would be as follows:

Year	Target or Actual Data	Source
2015	17,110	CRIS
2016	17,602	CRIS
2017	17,546	CRIS
2018	18,130	Target
2019	18,367	Target
2019 Target expressed as 5-year average		17,751.0

As noted in the table above, the calendar year target for 2019 would be 18,367 serious injuries.

2021 Target: To decrease the expected rise of serious injuries from the projected 18,516 serious injuries in 2019 to not more than 18,835 serious injuries in 2021

Target: Fatalities per 100 million vehicle miles traveled (C-3)

2019 Target: To decrease the expected rise of fatalities per 100 MVMT to not more than a five year average of 1.414 fatalities per 100 MVMT in 2019

The 2019 Target expressed as a 5-year average would be as follows:

Year	Target or Actual Data	Source
2015	1.39	FARS
2016	1.39	ARF
2017	1.36	CRIS
2018	1.46	Target
2019	1.47	Target
2019 Target expressed as 5-year average		1.414

As noted in the table above, the calendar year target for 2019 would be 1.47 fatalities per 100 MVMT.

2021 Target: To decrease the expected rise of fatalities per 100 MVMT from the projected 1.48 fatalities per 100 MVMT in 2019 to not more than 1.49 fatalities per 100 MVMT in 2021

Target: Serious Injuries per 100 million vehicle miles traveled

2019 Target: To decrease the serious injuries per 100 MVMT to not more than a five year average of 6.550 serious injuries per 100 MVMT in 2019

The 2019 Target expressed as a 5-year average would be as follows:

Year	Target or Actual Data	Source
2015	6.63	CRIS
2016	6.49	CRIS
2017	6.39	CRIS
2018	6.64	Target
2019	6.60	Target
2019 Target expressed as 5-year average		6.550

As noted in the table above, the calendar year target for 2019 would be 6.60 serious injuries per 100 MVMT.

2021 Target: To decrease the rate of serious injuries per 100 MVMT from 6.60 serious injuries per 100 MVMT in 2019 to 6.51 serious injuries per 100 MVMT in 2021

Target: Total number of non-motorized fatalities and serious injuries

2019 Target: To decrease the expected rise of non-motorized fatalities and serious injuries to not more than a five year average of 2,237.6 non-motorized fatalities and serious injuries in 2019

The 2019 Target expressed as a 5-year average would be as follows:

Year	Target or Actual Data	Source
2015	2,036	FARS-CRIS
2016	2,301	ARF-CRIS
2017	2,148	CRIS
2018	2,309	Target
2019	2,394	Target
2019 Target expressed as 5-year average		2,237.6

As noted in the table above, the calendar year target for 2019 would be 2,394 non-motorized fatalities and serious injuries.

2021 Target: To decrease the expected rise of non-motorized fatalities and serious injuries from the projected 2,413 serious injuries in 2019 to not more than 2,560 non-motorized fatalities and serious injuries in 2021

TxDOT Target for Bridge Deck Condition on the National Highway System

% in Poor Condition

2020 Target: 0.80%

2022 Target: 0.80%

% in Good Condition

2020 Target: 50.58%

2022 Target: 50.42%

Bryan/College Station MPO Target for Bridge Deck Condition on the National Highway System

% in Poor Condition

2020 Target: 0.80%

2022 Target: 0.80%

% in Good Condition

2020 Target: 60%

2022 Target 60%

Reasoning: The Bryan/College MPO selected % of good bridge deck condition targets more stringent than the state for several reasons. First, the percentage of bridge decks in good condition are higher in our area than the state. Our TxDOT district is aggressively pursuing safety improvements across all of its infrastructure. Second, we have numerous bridge improvements in our current TIP that will allow our area to either maintain the level of bridge deck segments considered in good condition or improve on that rating. Third, TxDOT staff took a lead role in requesting that we have a more stringent target since they have focused much of their expenditures on safety. Finally, we believe that some areas of the state need to set more stringent targets to compensate for other areas of the state that have older infrastructure and limited budgets.

TxDOT and BCSMPO Targets for Non-Interstate National Highway System Pavement Condition

% in Good Condition

2020 Target: 52.0%

2022 Target: 52.3%

% in Poor Condition

2020 Target: 14.3%

2022 Target: 14.3%

TxDOT Target for Non-Interstate Level of Travel Time Reliability

2020 Target: N/A

2022 Target: 55.4%

Bryan/College Station MPO Target for Non-Interstate Travel Time Reliability

2020 Target: N/A

2022 Target: 75%

Reasoning: In reviewing the data provided to us by TxDOT prior to its submission to the Federal Highway Administration (FHWA), we were asked to make changes to reflect local growth rate and to consider what should be done with Person Miles Traveled (PMT) that was greater than 1.4 but less than 1.5. The MPO understands that any PMT with a value greater than 1.5 is considered unreliable and that PMT between 1.4 and 1.5 could become unreliable if a small change in conditions were to occur. The MPO chose a 5% growth rate which reflects observed local growth rate instead of the 2% assumed by TxDOT. Even with this change our reliable PMT was 83% (with the assumption that all segments between 1.4 and 1.5 would become unreliable). These changes were submitted to TxDOT and incorporated into the final State Target submitted to FHWA.

After considering the State Target and the need for some areas of the State to have a more aggressive target than the one selected by TxDOT to balance some of the larger urban areas that couldn't meet the state target, the Bryan/College Station MPO adopted a more stringent target. We selected a target of 75% for several reasons. First, the change in data sets and the limited amount of experience with this data gave us pause to not select the 83% PMT that is reliable in case unforeseen variability in the new data set had not yet been revealed. Second, we have two major roadways in our area that have been selected for Category Two funding and will be under construction between now and 2022.

The first of these is FM 2818 which is considered unreliable in the segment that will be under construction. Since our primary scoring criteria during the last Metropolitan Transportation Plan were congestion and safety, we believe that the project will improve the segment from unreliable to reliable once construction is complete. However, this project will not be complete by 2022 and construction could make additional segments of the

roadway fall into the unreliable category. The second is FM 158 which scored high in our selection criteria due to safety issues but is considered reliable for target setting purposes. During construction, we believe that segment will become unreliable and construction will not be complete by 2022. Given these factors we are not confident we could meet the 83% PMT reliability and adjusted are target down to 75% to allow for the completion of these projects.

We believe that target setting should be an attempt by our MPO to develop a useful measure upon which project selection can be based. Adopting the state target does not provide us with the level of urgency necessary to focus funding on segments that would be considered unreliable in the Bryan/College Station area. We therefore have not adopted the State target and instead adopted a target more stringent than the state target.

TEXAS DEPARTMENT OF TRANSPORTATION REQUIREMENTS

The Texas Department of Transportation is responsible for planning, designing, constructing, operating and maintaining the state transportation system in cooperation with local and regional agencies. There are 25 TxDOT District offices across the state. The TxDOT-Bryan District oversees the implementation of transportation projects in the Bryan/College Station region and works with the MPO to carry out the transportation planning process in the metropolitan planning area.

In addition, TxDOT must follow requirements of House Bill 20 (HB20) promulgated by the 84th Texas Legislature. HB 20 requires the Texas Transportation Commission (TTC) to develop rules and implement performance-based planning and programming dedicated to providing the executive and legislative branches of government with indicators that quantify and qualify progress toward attaining TxDOT goals and objectives established by the Legislature and the TTC.

The TTC will develop performance metrics and measures as part of:

1) the review of strategic planning in the statewide transportation plan, rural transportation plans, and the unified transportation program,

2) the evaluation of decision-making on projects selected for funding in the unified transportation program and statewide transportation improvement program, and

3) the evaluation of project delivery for projects in the department's letting schedule.

The TTC will adopt and review performance metrics and measures and must implement periodic reporting schedules for all performance metrics and measures.

Metropolitan Planning Organizations (MPO) are required to develop a 10-year plan for the use of funding allocated to the region with the first four years of the plan being developed to meet the transportation improvement plan requirements. MPOs must also develop project recommendation criteria, which must include consideration of:

1) projected improvements to congestion and safety;

2) projected effects on economic development opportunities for residents of the region;

3) available funding;

4) effects on the environment, including air quality;

5) socioeconomic effects, including disproportionately high and adverse health or environmental effects on minority or low-income neighborhoods; and

6) any other factors deemed appropriate by the planning organization

The bill also requires the TTC to prioritize and approve projects included in the statewide transportation plan in order to provide financial assistance. The TTC will establish a performance-based process for setting funding levels for the categories of projects in the unified transportation program and establish a scoring system for prioritizing projects. The Commission may make discretionary funding decisions for no more than 10 percent of the current biennial budget of the department.

The goals and objectives of TxDOT must be considered in the selection of MPO projects. The goals and objectives of TxDOT are:

Deliver the Right Projects – Implement effective planning and forecasting processes that deliver the right projects on-time and on-budget.

- Use scenario-based forecasting, budgeting, and resource management practices to plan and program projects.
- Align plans and programs with strategic goals.
- Adhere to planned budgets and schedules.
- Provide post-delivery project and program analysis.

Focus on the Customer – People are at the center of everything we do.

- Be transparent, open, and forthright in agency communications.
- Strengthen our key partnerships and relationships with a customer service focus.
- Incorporate customer feedback and comments into agency practices, project development, and policies.
- Emphasize customer service in all TxDOT operations.

Foster Stewardship – Ensure efficient use of state resources.

- Use fiscal resources responsibly.
- Protect our natural resources.
- Operate efficiently and manage risk.

Optimize System Performance – Develop and operate an integrated transportation system that provides reliable and accessible mobility and enables economic growth.

- Mitigate congestion.
- Enhance connectivity and mobility
- Improve the reliability of our transportation system.
- Facilitate the movement of freight and international trade.
- Foster economic competitiveness through infrastructure investments.

Preserve our Assets – Deliver preventive maintenance for TxDOT's system and capital assets to protect our investments.

- Maintain and preserve system infrastructure to achieve a state of good repair and avoid asset deterioration.
- Procure, secure, and maintain equipment, technology, and buildings to achieve a state of good repair and prolong life cycle and utilization.

Promote Safety - Champion a culture of safety.

- Reduce crashes and fatalities by continuously improving guidelines and innovations along with increased targeted awareness and education.
- Reduce employee incidents.

Value our Employees – Respect and care for the well-being and development of our employees.

- Emphasize internal communications.
- Support and facilitate the development of a successful and skilled workforce through recruitment, training and mentoring programs, succession planning, trust, and empowerment.
- Encourage a healthy work environment through wellness programs and work-life balance.

To assist MPOs in incorporating both federal and state planning mandates, TxDOT has made available to all MPOs in Texas a software program called Decision Lens. Decision Lens allows MPOs to upload all projects being considered in the MTP for priority ranking and the program will provide all necessary data related to on-system projects. Based on the goals and objectives of TxDOT and federal performance-based planning requirements, four factors are developed to score the projects. The MPOs select what weight each factor receives and then Decision Lens provides a priority ranking based on the weights applied to each factor. MPOs will then apply fiscal-constraint to come up with a list of projects for inclusion in the final MTP.

After a test run using the TxDOT default criteria in Decision Lens, the Bryan/College Station MPO decided to develop its own data sets that focused on four main criteria for selection of roadway projects. Those criteria were safety, congestion, connectivity and economic

LOCAL PLANNING EFFORTS

The City of Bryan completed an update of its Comprehensive Plan in 2017. The transportation section of that plan addresses multiple modes with a focus on streets and active transportation. It also places an emphasis on efforts to do neighborhood and corridor planning. As a result, the City is nearing completion of its Midtown neighborhood plan that is being driven by citizen input.

The plan's Thoroughfare Concept has been incorporated into the MPO's 2050 Major Thoroughfare Concept. The bicycle and pedestrian recommendations have been incorporated into the MPO's Active Transportation Plan which is included within this document. The MPO and the City of Bryan continue to coordinate transportation planning activities as warranted.

The City of College Station is in the process of updating their Comprehensive Plan. At this time, the City and MPO have developed a coordinated Major Thoroughfare Concept that is shown in the MPO's 2050 Major Thoroughfare Concept. The City of College Station also has a standing Bicycle, Pedestrian and Greenways Advisory Board that develops plans for active transportation in the community. Active transportation facilities that exist or are planned by the City of College Station have been incorporated into the MPO's Active Transportation Plan.

The City of College Station also has a subcommittee of the City Council that focuses on transportation and mobility. This subcommittee meets monthly and the MPO is an active participant in the subcommittee. In addition to making presentations on MPO activities, the subcommittee actively encourages MPO staff to speak up on any topic the subcommittee is considering.

Texas A&M University completed a Campus Master Plan in 2016. The plan intends to transform the campus to a pedestrian oriented community and the University is already undertaking steps to move campus parking areas from the center of campus to the periphery of the main campus and providing mobility alternatives to reach the center of campus. As a result of the Campus Master Plan the university tasked the Texas A&M Transportation Institute (TTI) to develop a Campus Transformational Mobility Plan.

The university has grown from a few buildings and a few hundred students to a flagship campus of 5,500 acres and 64,000 students. Add in another 13,000 faculty, staff, and employees in adjacent businesses and the campus becomes the fourth largest downtown in the state. With over 115,000 people filling Kyle Field and visiting on football weekends in the fall, the campus and surrounding communities experience increasing traffic congestion on a regular basis and during events.

The transportation network on campus includes 37,000 parking spaces in 5 garages and some 150 surface lots, and a university operated bus system serving 7.5 million annual riders. Recent additions include Zipcar, Uber and Lyft, and bike share and dockless bike programs.

The Texas A&M University Mobility Plan will transform the Flagship Campus into a greener, more people-centric place by providing seamless mobility for students, faculty, staff, residents, visitors, and event goers and to connect with the surrounding community.

The vision will be accomplished through enhanced pedestrian and bicycle connections, improved accessibility, transit options, shared mobility services, innovative technologies, and autonomous vehicles. The transformation will support the teaching, service, and research missions of the university and make Texas A&M University a premier college campus.

The following principles will guide the development and implementation of the Campus Transformational Mobility Plan:

- The mobility technologies and services will be planned, developed, and operated to improve safety.
- The campus mobility and services will be environmentally friendly.
- Mobility will be provided equitably for all groups, including individuals with disabilities and individuals in lower income groups.
- The university will serve as a test bed for innovative mobility technologies and services.
- Technology will be developed when ready and in a way that allows flexibility for future changes.
- Innovative funding will be promoted to advance technologies and services, but deployment will be based on resource availability.

Elements of the plan include:

- Coordinated Multimodal Approach. The plan elements focus on providing a coordinated and seamless information, marketing, and payment package.
- Trip Planning. This element provides travel options, routes, and times for all modes through a variety of methods.
- Transit. The long-term vision for the campus and community transit system focuses on electric and automated buses using a range of vehicles (articulated buses, coaches, and shuttles), expanded services, park-and-ride facilities, bus only facilities, transit priority corridors, and safe/smart intersections.
- Pedestrian Enhancements. Potential pedestrian enhancements include new and improved paths and walkways, expanded dismount zones, improved lighting, connections to community facilities, and safe/smart intersections.
- Bicycle Enhancements. Elements in this category include providing options – dockless and bikeshare – and individually owned bikes, improving existing and developing new bike lanes and paths, connecting to community facilities, and education, outreach, and training programs.
- Ride Sourcing, Ride Sharing, and Car Sharing. Elements in this category focus on providing options and locations for Transportation Network Companies (Uber and Lyft), Zipcar, and traditional carpooling and vanpooling.
- Parking. The type and location of parking facilities and possible pricing and shared-use options to support the campus Master Plan are being examined.
- Class and Work Schedules, Telework. A variety of innovative approaches to class and work scheduling are being examined.
- Goods Movement. Elements being examined include autonomous delivery vehicles, and service vehicle types, routes, and hours.

Chapter 3 - Socio-Economic, Environmental Justice, and Environmental Considerations

Socio-Economic Conditions

INTRODUCTION

The Bryan-College Station Metropolitan Planning Organization (BCSMPO), served as the Metropolitan Planning Organization (MPO) for Brazos County, TX. BCSMPO is comprised of three local governmental entities: The cities of Bryan and College Station and Brazos County; one University: Texas A&M University (TAMU), and finally one state government agency: Texas Department of Transportation (TxDOT). The local entities and TAMU each have very distinct socioeconomic characteristics, which has a profound effect on the local economy.

A transportation plan can only be effective if it examines the changing socioeconomic patterns of the region that the plan will cover. Socioeconomic characteristics include population, households, employment patterns and, in the case of BCSMPO, college students and their daily activities, and these help characterize the area. The study of where people live and work is essential in transportation planning because the transportation network must be able to accommodate changing commuting patterns and habits of the population.

For the BCSMPO, as with other metropolitan areas, Metropolitan Transportation Plan (MTP), total population, number and type of commuters, households and employment are all important characteristics that will be examined in this section. In addition, college students will also be covered. Transportation Analysis Zones (TAZs) will be used as a tool to graphically represent population and employment densities. TAZs are defined as areas of homogeneous activity served by one or two major roadways. It should be noted that population groups covered under the Civil Rights Act and which represent traditionally underserved populations as determined by the US Department of Transportation will be examined in the Environmental Justice section of this document.

POPULATION AND HOUSEHOLDS

According to the US Census Bureau the total population of the MPO area in 2010 was 194,851 with 71,739 households. The MPO's Travel Demand Model projects a total population within Brazos County to be 371,869 in 2045. This represents a 90.8% increase in population over a 35-year period. In the same time period, the area is expected to reach a total of 157,219 households, corresponding to an increase of almost 119.2%. These projections imply that by 2045 the average number of persons per household will decrease.

Figure 3.1 shows the population of individual jurisdictions within the MPO boundary in 2010 and projections for 2045. The population shown for Brazos County only includes the unincorporated portion of the county.

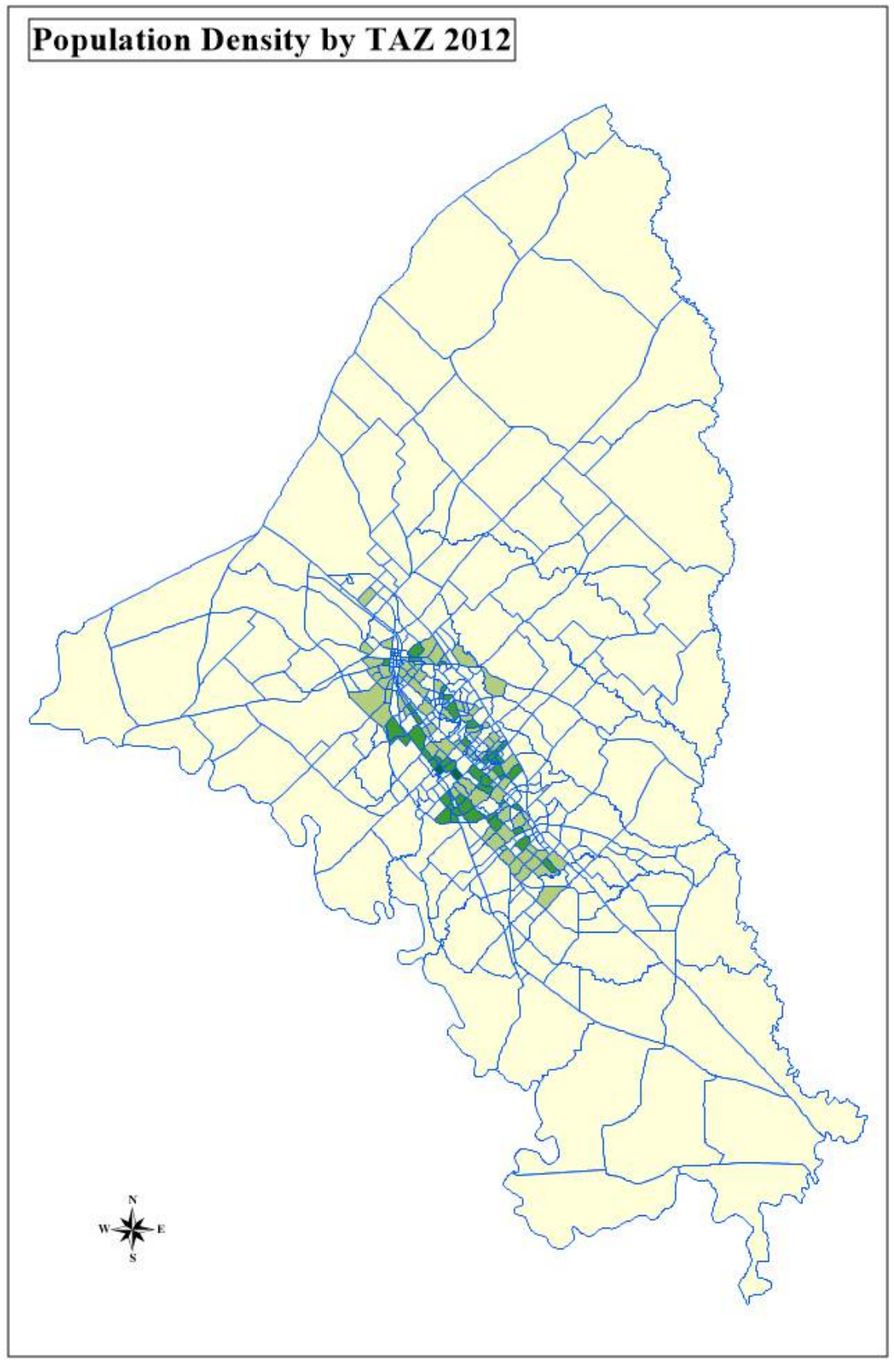
Figure 3.1 Population and Households by Jurisdiction in Brazos County

Jurisdiction	Population		% Change in Population 2010-2045	Households		% Change in Households 2010-2045
	2010	2045		2010	2045	
City of Bryan	76,201	101,447	33.1%	27,725	40,522	46.2%
City of College Station	93,857	160,654	71.2%	35,037	71,127	103.0%
Brazos County (Unincorporated)	24,793	109,768	342.7%	8,977	45,570	407.6%
Total Brazos County	**194,851**	**371,869**	**90.8%**	**71,739**	**157,219**	**119.2%**

The major share of the growth in Brazos County is expected to occur towards the south along State Highway 6 and to the east along FM 1179. Growth is also expected to take place to the west along State Highway 47, spurred by the development of the TAMU Health Science Center and the RELLIS Campus. Depending on how the RELLIS Campus develops, a significant impact to our transportation network may result. Access to RELLIS is currently acceptable by private automobile and Texas A&M Transit services. However, access via active transportation modes is extremely limited and raises safety concerns. If developed as planned and phased, access to RELLIS will have a significant impact on future transportation planning and programming.

Of the jurisdictions in Brazos County, The City of College Station is the largest and fastest growing with 48% of the total county population (Figure 3.3). Given the planned growth of Texas A&M, this trend will continue. The City of Bryan came in second with 39% of the population. However, it is the unincorporated portions of Brazos County (13% of total population in 2010) that are expected to see the greatest amount of change (Figure 3.4). The City of College Station will continue to be the largest jurisdiction in the MPO area, however, its share of total population will shrink to 43%. The City of Bryan's share will also see a reduction to 27% of total. Unincorporated Brazos County will see an increase in share of total population growing from 13% in 2010 to 30% by 2045. It should be noted that these numbers do not reflect the change in city limits due to future annexation.

The Population Density by TAZ maps (Figure 3.2) illustrate the dynamics of change over time. The BCSMPO forecasts clearly show significant densification around the TAMU campus and in an around downtown Bryan. There is also increasing density in North Bryan along Old Hearne Road, and to the east along FM 158 showing the growth that is already occurring in these areas. In College Station, growth is occurring, and will continue to occur south of Rock Prairie Road to the west of SH 6. There will also be growth east of SH 6 in conjunction with the College Station Medical District.



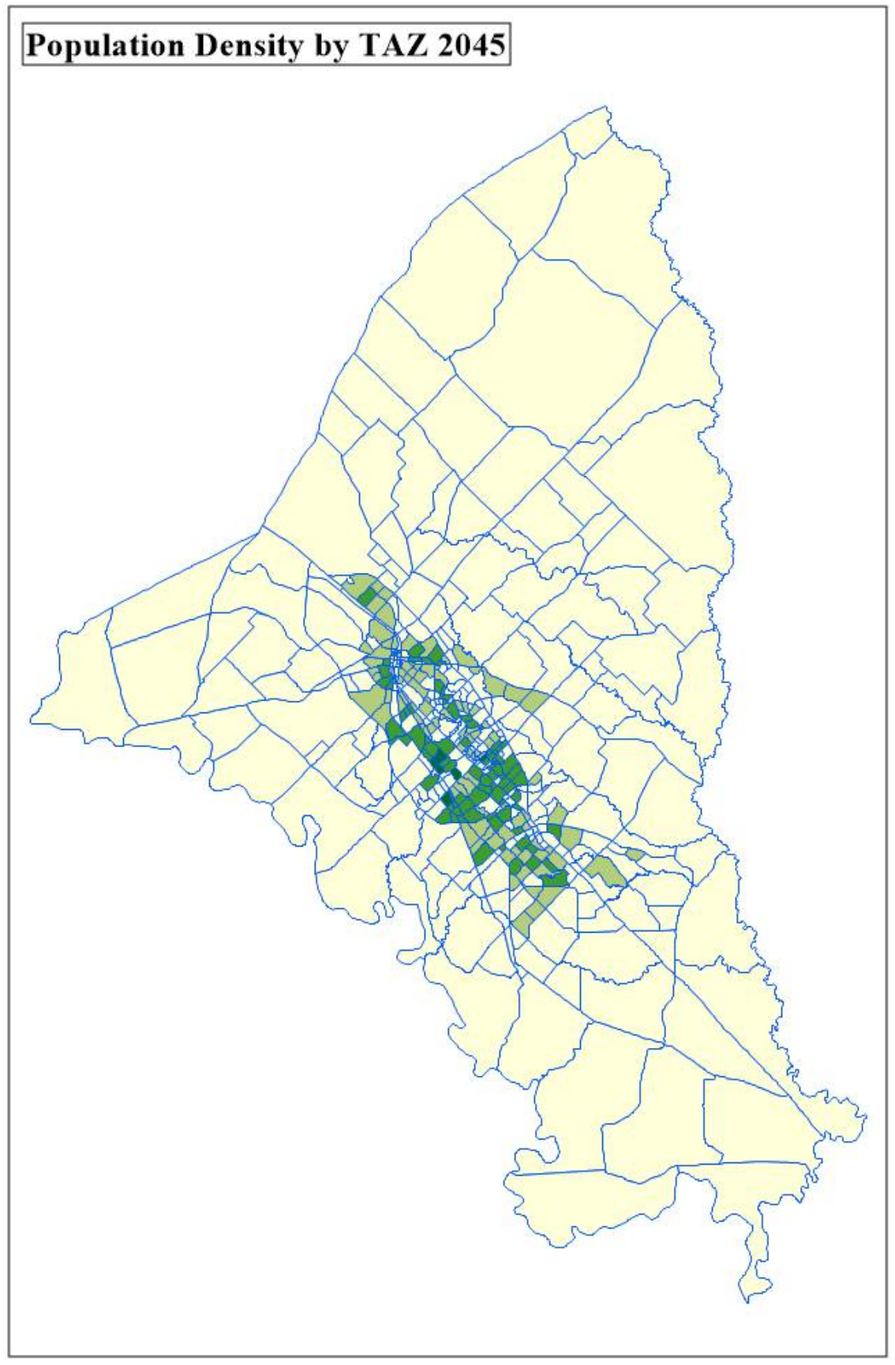
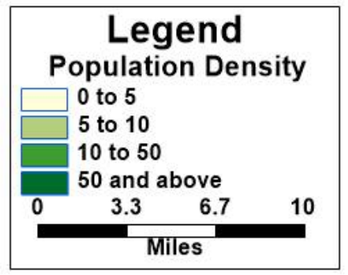


Figure 3.2

Population Density by TAZ 2012 and 2045



BCS MPO
Bryan/College Station Metropolitan Planning Organization

Bryan-College Station MPO
2045 Metropolitan Transportation Plan

Figure 3.3 Brazos County Population Distribution 2010

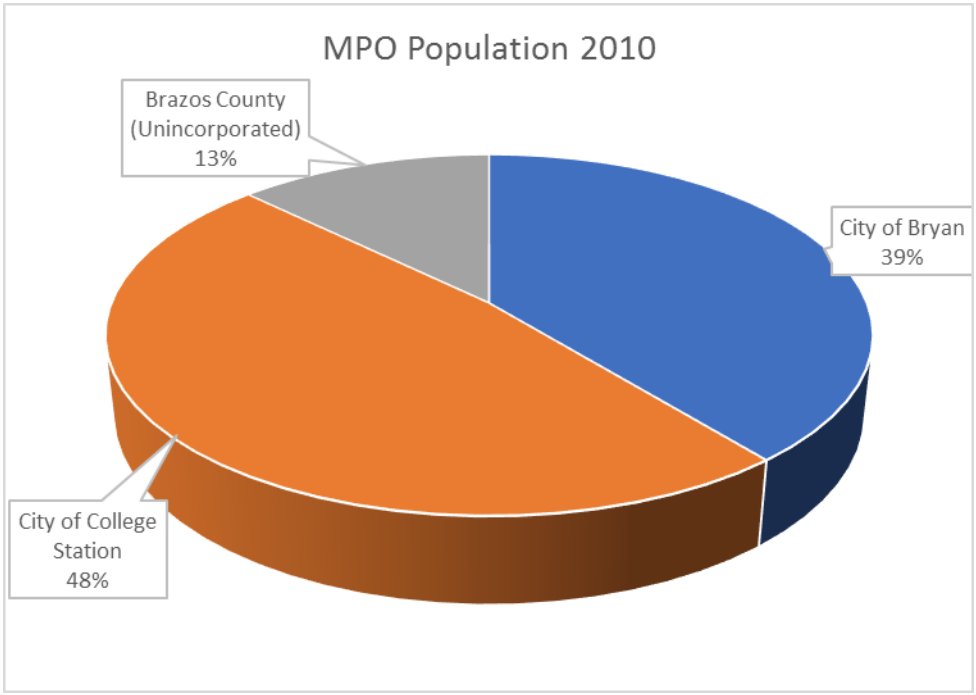
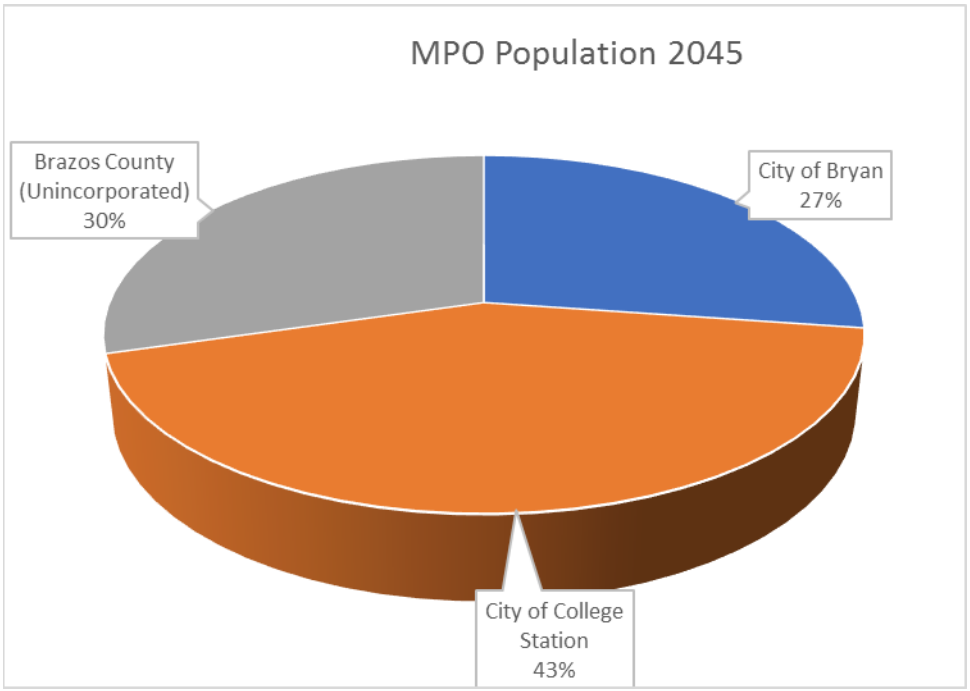


Figure 3.4 Brazos County Population Distribution 2045



In contrast to the changing population distribution between 2010 and 2045, the distribution of households in Brazos County remains relatively stable. College Station increases its share of households from 43% in 2010 to 45% in 2045. At the same time, both Bryan and Unincorporated County see a slight decrease in share of households. Brazos Households decrease from 30% in 2010 to 29% in 2045, while the Bryan share decreases from 27% in 2010 to 26% in 2045.

Figure 3.5 Distribution of Households within Brazos County in 2010

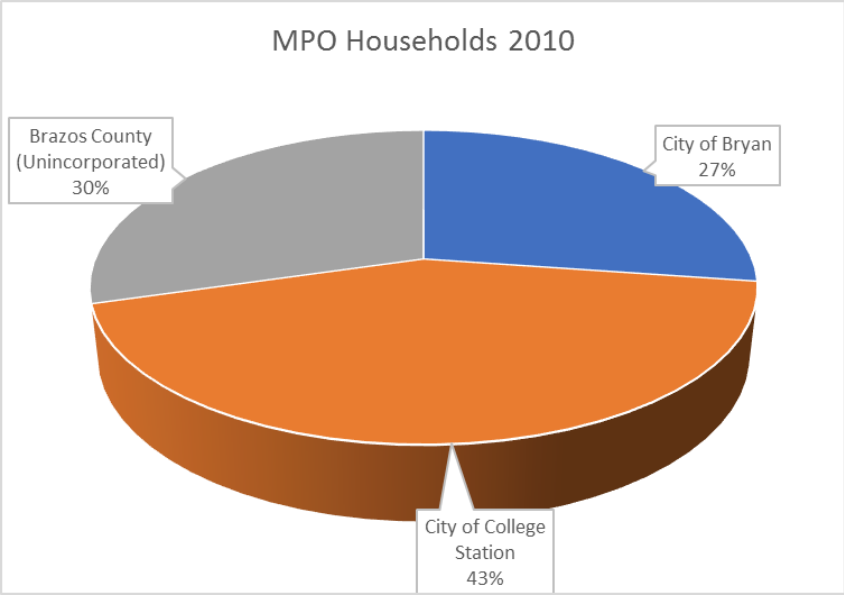
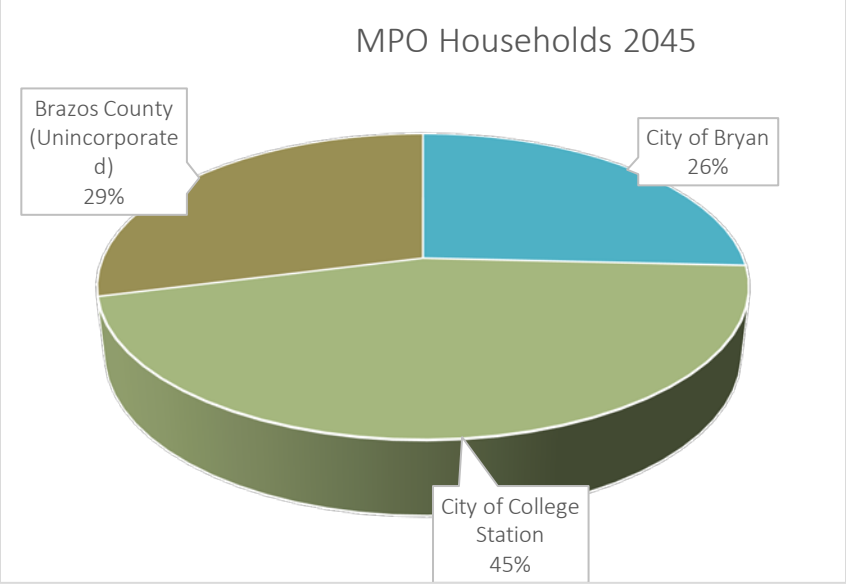


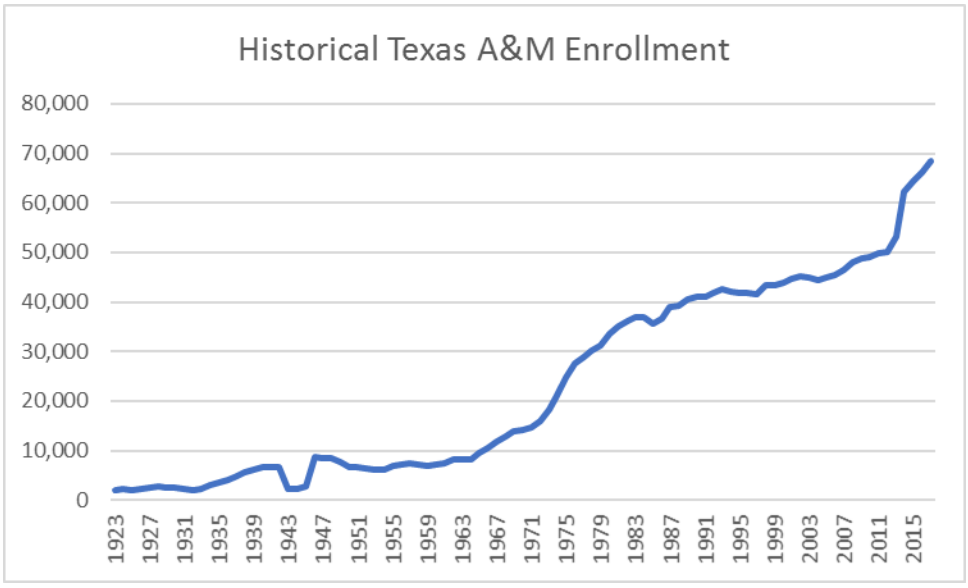
Figure 3.6 Distribution of Households within Brazos County in 2045



STUDENTS

Texas A&M University's effect on the Bryan-College Station area is profound! Not only is it by far the largest source of employment in Brazos County and as such, the largest economic driver, it is also the largest destination in terms of daily trips regardless of mode of travel. The socioeconomic effect of Texas A&M in Brazos County is expected to increase as the university continues to grow. Figure 3.7 illustrates how Fall Enrollment at Texas A&M has increased over the years. It should be noted that the numbers shown are the sum of students enrolled in the Texas A&M University College Station campuses and not the entire A&M System.

Figure 3.7 Historical Fall Semester Texas A&M Enrollment



In the early years, enrollment remained fairly stable with a noticeable dip during the World War II years. In 1963, women were officially allowed to enroll at Texas A&M marking the beginning of a steady increase in enrollment numbers. Post-2010, the rate of enrollment is again increasing due university expansion, notably the opening of the Health Science Center, the 25 X 25 Plan being implemented by the College of Engineering and in recent years, the opening of the RELLIS Campus. The RELLIS Campus saw an enrollment of 1,500 students at its opening in the Fall Semester 2018.

For purposes of the BCSMPO Travel Demand Model, student population and household projections are made at the TAZ level alongside the population and employment projections. Figure 3.8 shows the projections that the MPO is making for the period 2012 thru 2045. The MPO is expecting students to almost double between 2012 and 2035 (80.4%). Student households are projected to grow in a similar manner (77.4%), but the assumption made while creating the projections was that Student Household Size would remain steady at 2.1 Students per Student Household.

Figure 3.8 College Student and Student Household by Jurisdiction 2012 and 2045

Jurisdiction	Student Population		%	Student Households		%
	2012	2045	Change	2012	2045	Change
TAMU (On-Campus)	15,128	26,905	77.8%	7,207	12,815	77.8%
City of Bryan	3,862	6,839	77.1%	1,852	3,273	76.7%
City of College Station	41,892	72,675	73.5%	19,969	34,751	74.0%
Brazos County (Unincorporated)	3,094	8,990	190.6%	1,480	3,273	121.1%
Total Brazos County	**63,976**	**115,409**	**80.4%**	**30,508**	**54,112**	**77.4%**

INCOME

Brazos County contains an estimated 75,797 (2016 Estimate) households. Median household income measures the distribution of income across the total number of households including those with no income. The median household income for Brazos County in 2016 was $41,654, significantly lower than that for the State of Texas ($54,727). Figure 3.9 breaks down household income for the MPO area.

Figure 3.9 Household Income by Jurisdiction within Brazos County

Jurisdiction	Median Household Income		% Change Median Household Income 2010 - 2016
	2010*	2016	
Bryan	$ 40,748	$ 41,587	2.06%
College Station	$ 35,426	$ 36,471	2.95%
Brazos County	$ 41,650	$ 41,654	0.01%

*- In 2016 Dollars

Expressed in 2016 dollars, median household income has remained fairly stable since 2010 especially within Brazos County as a whole. The City of College Station has seen the highest income growth in recent years as a result of growth policies at Texas A&M. Brazos County as a whole has seen little change over the same period.

EMPLOYMENT

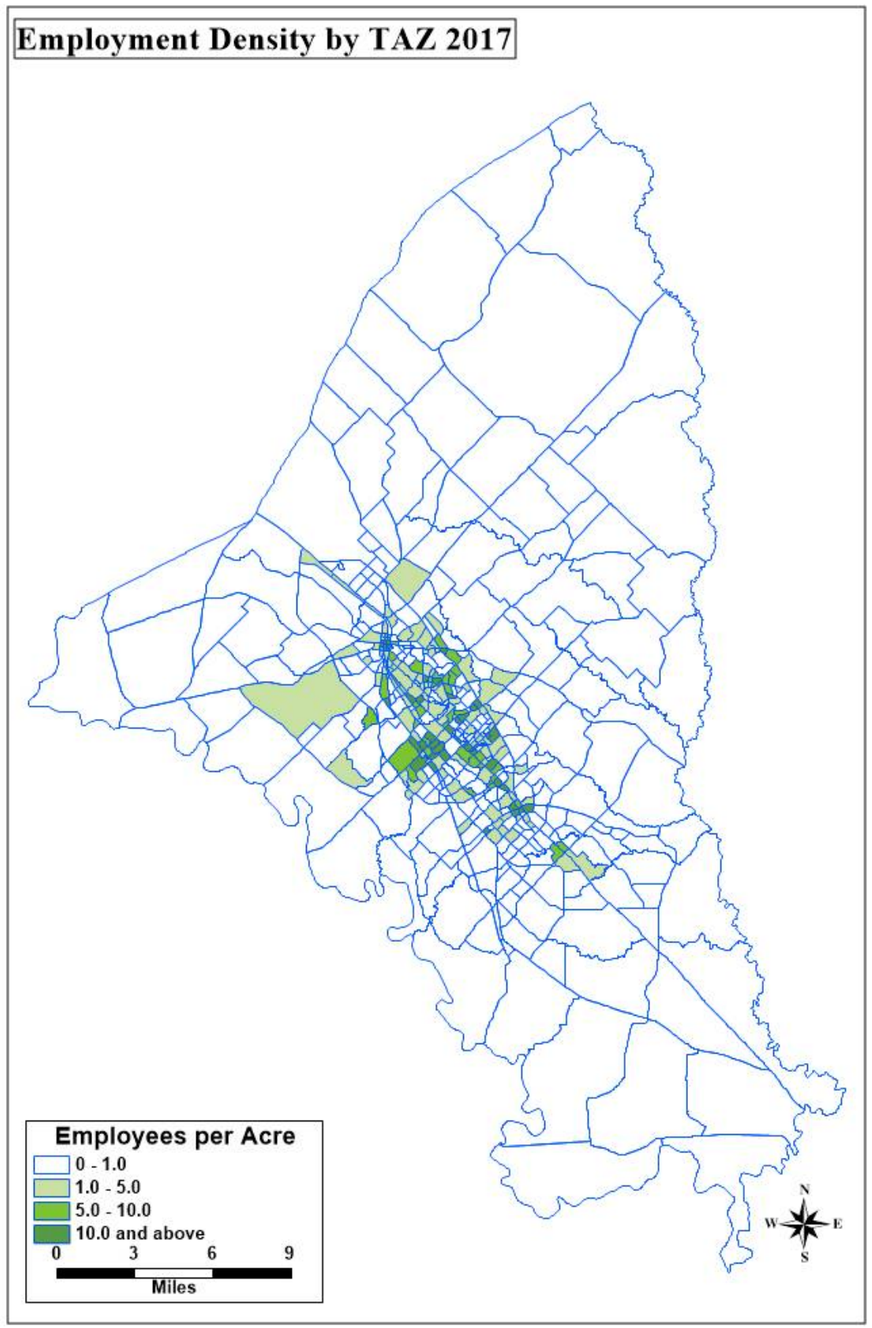
In the year 2017 there were 91,138 employees in Brazos County (Figure 3.10) according to the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW). This number does not include the self-employed. Between the years 2000 and 2017, the industry in Brazos County that saw the greatest growth (48.3%) was Management of Companies and Enterprises (NAICS 55). This is followed by Transportation and Warehousing (NAICS 48 – 49) which grew at an annual rate of 12.6% then Arts, Entertainment and Recreation (NAICS 71) at 6% growth. In contrast, the numbers since 2010 tell a somewhat different story. During this period, the Real Estate, Rental and Housing (NAICS 53) grew at an annual rate of 139.8% after experiencing negative growth of -8.8% between 2000 and 2010. This negative growth can be associated with the recession beginning in 2007. Management of Companies and Enterprises has shown the second highest growth in recent years at 32.2% annual growth.

As one would expect, Education Services (NAICS 61) makes up the largest proportion of employment in Brazos County due to the presence of Texas A&M University with 22,209 employees. Again, this is according to the QCEW conducted by the Bureau of Labor Statistics. This represents 24.4% of the total employment of Brazos County. Accommodation and Food Services, comes in second with 12,197. Adding this to Retail Trade produces a combined total of 22,791 employees or 25% of total employment in the county. These sectors have grown in support of students attending Texas A&M and Blinn College, conferences and special events. Interestingly, the Education Services sector was among the slowest growing sectors from 2000 to 2017.

Figure 3.10 Analysis of Employment Trends, Brazos County, 2nd Qtr 2000 – 2017

Industry	2000	2010	2017	Total Change	Annual Growth Rate 2000 - 2017	2000 - 2010	2010 - 2017
NAICS 11 Agriculture, forestry, fishing and hunting	373	603	696	323	5.1%	6.2%	2.2%
NAICS 21 Mining, quarrying, and oil and gas extraction	700	1,228	1,107	407	3.4%	7.5%	-1.4%
NAICS 22 Utilities	377	489	529	152	2.4%	3.0%	1.2%
NAICS 23 Construction	3,434	4,411	5,144	1,710	2.9%	2.8%	2.4%
NAICS 31-33 Manufacturing	5,794	4,567	5,003	(791)	-0.8%	-2.1%	1.4%
NAICS 42 Wholesale trade	1,095	1,473	1,975	880	4.7%	3.5%	4.9%
NAICS 44-45 Retail trade	8,428	9,784	10,594	2,166	1.5%	1.6%	1.2%
NAICS 48-49 Transportation and warehousing	350	976	1,103	753	12.6%	17.9%	1.9%
NAICS 51 Information	1,666	1,047	1,263	(403)	-1.4%	-3.7%	2.9%
NAICS 52 Finance and insurance	1,728	1,436	1,804	76	0.3%	-1.7%	3.7%
NAICS 53 Real estate and rental and leasing	1,265	155	1,672	407	1.9%	-8.8%	139.8%
NAICS 54 Professional and technical services	2,742	3,461	4,504	1,762	3.8%	2.6%	4.3%
NAICS 55 Management of companies and enterprises	29	82	267	238	48.3%	18.3%	32.2%
NAICS 56 Administrative and waste services	1,959	2,151	3,478	1,519	4.6%	1.0%	8.8%
NAICS 61 Educational services	18,744	21,600	22,209	3,465	1.1%	1.5%	0.4%
NAICS 62 Health care and social assistance	6,824	9,214	9,511	2,687	2.3%	3.5%	0.5%
NAICS 71 Arts, entertainment, and recreation	589	993	1,191	602	6.0%	6.9%	2.9%
NAICS 72 Accommodation and food services	6,663	8,554	12,197	5,534	4.9%	2.8%	6.1%
NAICS 81 Other services, except public administration	2,030	2,160	2,311	281	0.8%	0.6%	1.0%
NAICS 92 Public Administration	4,026	4,495	4,457	431	0.6%	1.2%	-0.1%
NAICS 99 Unclassified	122	122	122	0	0.0%	0.0%	0.0%
Total, All Industries	**68,938**	**79,001**	**91,138**	**22,200**	**1.9%**	**1.5%**	**2.2%**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages



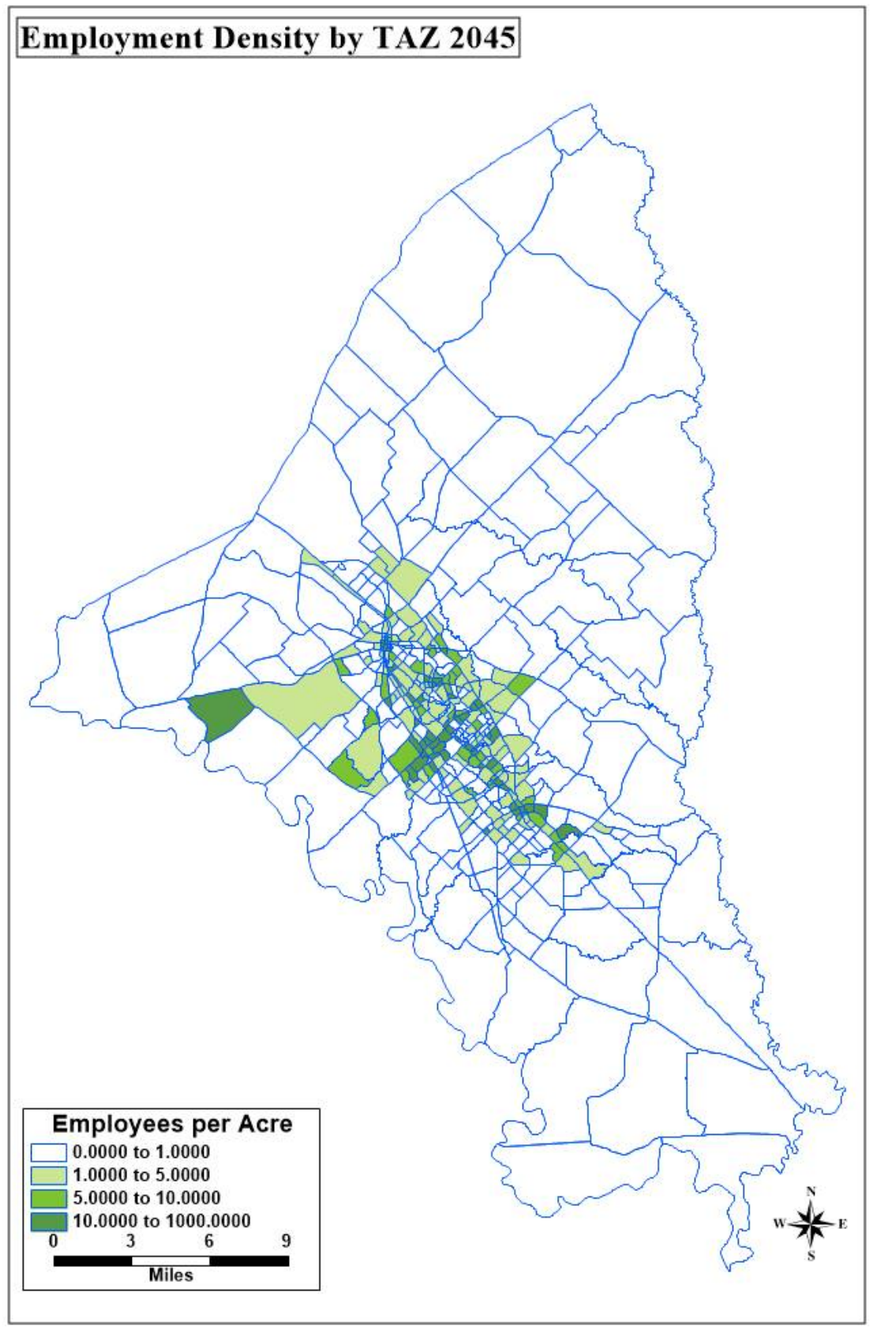


Figure 3.11

Employment Density by TAZ 2017 and 2045

BCS MPO
Bryan/College Station Metropolitan Planning Organization

Bryan-College Station MPO
2045 Metropolitan Transportation Plan

Environmental Justice

INTRODUCTION

Environmental Justice (EJ) is defined as the "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation and enforcement of environmental laws regulations and policies."[3] What it really boils down to in the context of transportation is the equitable distribution of burdens and benefits arising from changes in the transportation system. In 1994 President Clinton issued Executive Order 12898 prompting all federal agencies to identify and address Environmental Justice discrepancies arising from federal programs and projects. This chapter of the 2045 Metropolitan Transportation Plan will look at the history of Environmental Justice, explain just what Environmental Justice is, review the MPOs responsibilities with respect to EJ and the documents produced by the MPO and provide an EJ analysis of the BCSMPO Planning Area. We will identify EJ Populations within Brazos County, locate them using the latest available data from the US Census Bureau and other sources. Then we will identify those transportation facilities that are most likely to be used by local EJ populations to access jobs, goods and services. Finally, we will look at proposed MTP projects that most likely affect EJ populations and determine what, mitigation needs to be considered.

HISTORY OF ENVIRONMENTAL JUSTICE

The Environmental Justice movement in the United States dates back over 50 years to Title VI of the Civil Rights Act of 1964. In the late 1960's as an outgrowth of the Civil Rights movement individuals, primarily members of minority communities, banded together to sound the alarm regarding public health dangers for the families and communities resulting from inequities in environmental protection. These inequities centered around the siting of waste and industrial facilities in and near minority and low-income communities.

In 1982, the General Accounting Office released a study, based on 1980 Census data, which showed that three out of four hazardous waste landfills examined were located in communities with a family income below poverty levels or in which African-Americans made up at least 26% of the population. Galvanized by these findings, Environ-mental Justice groups, many of whom were bipartisan collections of scientists, activists and decision makers, formed and began to lobby both Congress and the Environmental Protection Agency (EPA).

In November 1992 the Office of Environ-mental Equity was formed; its name was later changed to the Office of Environmental Justice (OEJ). This was followed, in 1993, by the establishment of the National Environmental Justice Advisory Council as a federal advisory council holding public meetings to address Environmental Justice issues across the nation. In February 1994 Executive Order 12898[4] was signed by the President. EO12898 directed federal agencies to develop strategies for the

Executive Order 12898

To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental ***effects*** *of its programs, policies, and activities on* ***minority populations and low-income populations*** *in the United States and its territories and possessions…*

[3] https://www.epa.gov/environmentaljustice
[4] https://www.archives.gov/files/federal-register/executive-orders/pdf/12989.pdf

identification and addressing of the disproportionately adverse human health and environmental effects of programs, policies, and activities on minority and low-income populations. Later, under the Title VI Statute, race, color and national origin were added. Recipients of federal funds (such as MPOs) are required to ensure that there are no disproportionate adverse impacts on these communities. Recipients of federal funds are also required to review the benefits and burdens of projects and programs (in this case improvements to the transportation system), to insure a balance between the population at large and those that are traditionally underserved in the planning and programming process. The focus of Environmental Justice is on identifying these impacts and mitigation through alternative solutions. Some examples of potential burdens and benefits arising from transportation projects include:

Burdens:

- Disruption of community cohesion (e.g. access to schools, parks, medical facilities and religious institutions)
- Adverse employment effects
- Decline in tax base or property values
- Displacements
- Increased noise and/or emissions
- Diminished aesthetics
- Disruption to businesses
- Parking/access to transit

Benefits:

- Reduced travel times
- Reduced congestion
- Improved safety outcomes
- Improved travel options

Source:
https://www.fhwa.dot.gov/environment/environmental_justice/publications/reference_guide_2015/fhwahep15035..pdf

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FEDERAL TRANSPORTATION POLICY

Following on EO 12898, on April 15, 1997, the U.S. Department of Transportation (U.S. DOT) issued its first Environmental Justice Order to promote the principles of Environmental Justice in all Department programs, policies and activities. On June 14, 2012 U.S. DOT issued its Final DOT Environmental Justice Order[5], (Departmental Order 5610.2(a) – Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) the Appendix of which provides the following definition of adverse impacts:

Adverse effects means the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader

[5] https://www.fhwa.dot.gov/environment/environmental_justice/ej_at_dot/orders/order_56102a/index.cfm

community; and the denial of, reduction in, or significant delay in the receipt of, benefits of DOT programs, policies, or activities.[6]

This Order also directs FHWA to administer its governing statutes so as to identify and avoid discrimination and disproportionately high and adverse effects on minority populations and low-income populations by:

1. *Identifying and evaluating environmental, public health and interrelated social and economic effects of FHWA programs, policies and activities;*
2. *Proposing measures to avoid, minimize, and/or mitigate disproportionately high and adverse environmental or public health effects and interrelated social and economic effects, and providing offsetting benefits and opportunities to enhance communities, neighborhoods and individuals affected by FHWA programs, policies, activities, where permitted by law and consistent with EO 12898;*
3. *Considering alternatives to proposed programs, policies and activities where such alternatives would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts where permitted by law and consistent with EO 12898; and*
4. *Providing public involvement opportunities and considering the results thereof, including providing meaningful access to public information concerning the human health of environmental impacts and soliciting input from affected minority populations and low-income populations in considering alternatives during planning and development of alternatives and decisions.*

As a recipient of federal funds, BCSMPO is required to meet these same standards in the development of our Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP).

METHODOLOGY

As outlined in the discussion above, Environmental Justice requirements focus on minority and low-income communities. These represent the communities within the general population that have suffered the most from adverse effects due to infrastructure projects and are traditionally underserved by the transportation sector.

Having identified the populations to be included in the EJ analysis it is necessary to determine the location of the communities in order to understand if and how they are affected by the transportation projects proposed elsewhere in this document. This is most easily accomplished through the use of the latest available American Community Survey data at the Block and Block Group level available from the US Census Bureau. Utilizing Caliper Corp's TransCAD 6.0 we have the ability to view and tabulate demographic data in relation to proposed Metropolitan Transportation Plan projects. We will also have the ability to look at the transportation facilities that are most likely to be utilized by these communities and compare this to the proposed lists of projects to determine future improvements.

Determining minority status is not a straightforward process. The US Census Bureau defines minority as any person who reported their race as something other than non-Hispanic White alone. In the 2010 Census, just over one-third of the U.S. population identified as a minority population.

[6] Ibid – Appendix 1, section f

LOW INCOME

Low-income is defined as 200% of the poverty line while a household is considered poor at 100 % above the poverty line. For example, according to the Census Bureau, in 2017 a family of four (two adults, two children) earning $24,858/year is poverty level. This same family making $49,716 would be considered poor and earning less than $74,574 would qualify as low-income. Figure 3.12 shows the Poverty Thresholds as defined by the US Census Bureau by Size of Family and Number of Related Children under 18.

Figure 3.12 Poverty Thresholds as Defined by the US Census Bureau by Size of Family and Number of Related Children Under 18

Size of family unit	Related children under 18 years								
	None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual):									
Under age 65	12,752								
Aged 65 and older	11,756								
Two people:									
Householder under age 65	16,414	16,895							
Householder aged 65 and older	14,816	16,831							
Three people	19,173	19,730	19,749						
Four people	25,283	25,696	24,858	24,944					
Five people	30,490	30,933	29,986	29,253	28,805				
Six people	35,069	35,208	34,482	33,787	32,753	32,140			
Seven people	40,351	40,603	39,734	39,129	38,001	36,685	35,242		
Eight people	45,129	45,528	44,708	43,990	42,971	41,678	40,332	39,990	
Nine people or more	54,287	54,550	53,825	53,216	52,216	50,840	49,595	49,287	47,389

Source: U.S. Census Bureau.

MINORITY POPULATION

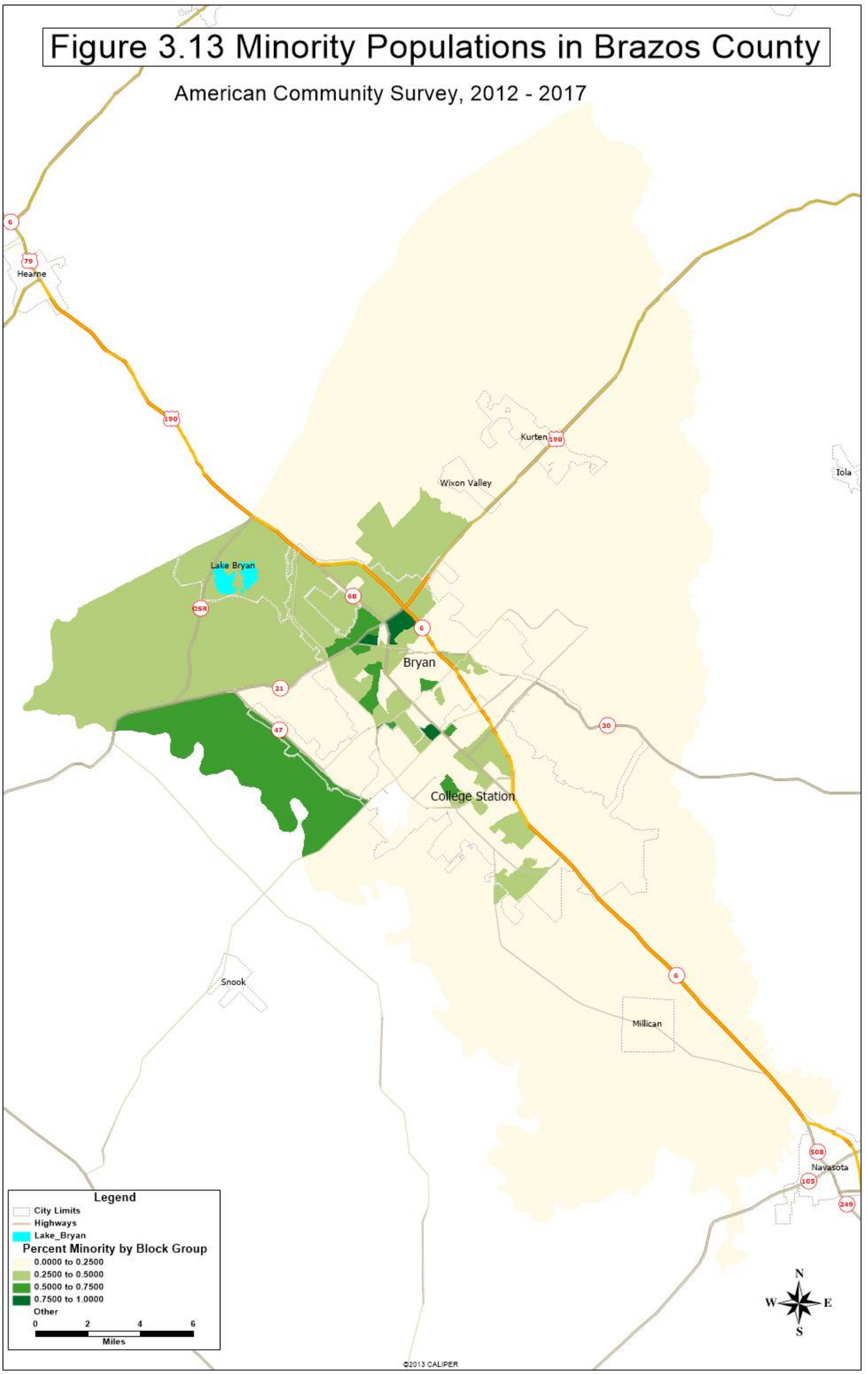
Within Brazos County, the highest concentrations of minority population occur in the vicinity of Texas Avenue and State Highway 21, as is shown in Figure 3.13. There are also concentrations of minority populations associated with Texas A&M University. Many of these are students at Texas A&M, however many are not. Finally, minority populations can be found west of State Highway 47.

Specific projects that could require further consideration to ensure that no disproportionally high and adverse effects are placed on minority populations include:

- Texas Avenue raised medians through downtown Bryan and from SH 21 north to SH 6
- SH 21 improvements (widening, medians, access management and bike/ped facilities from Texas Ave., to SH 6
- Sandy Point Road widening from SH 21 to FM 2818
- Mumford Road widening from SH 21 to FM 2818
- Waco Street realignment
- Texas Avenue raised medians from FM 60 to Villa Maria Road

Figure 3.13 Minority Populations in Brazos County

American Community Survey, 2012 - 2017



Since most of these projects border areas where high concentrations of minority population exist, upon completion, they will provide greater access to the regional transportation system, regardless of travel mode. The realignment of Waco Street with Tabor Road will have no direct, adverse effects upon minority residential areas.

LOW-INCOME POPULATIONS

Low income populations can be problematic in Brazos County given the presence of Texas A&M University. College students typically report an income below poverty level, however their travel behavior is much different from true low-income populations. Most university students own, or have access to, a privately-owned vehicle. Many have access to University based public transportation. Finally, many have financial backing from their families. The travel behavior of college students more closely resembles that of middle class populations than it does low income populations.

As shown in Figure 3.14, high concentrations of non-university related low income populations can be found northeast of the Intersection of Texas Avenue and SH 21. Also, concentrations of low-income populations are found west of Downtown Bryan between 28th Street and Palasota. Other concentrations can be found in Bryan in the vicinity of Villa Maria Road and South College. Low income populations in College Station are primarily large concentrations of university students. However, concentrations of low-income families can be found in the areas east of the intersections of George Bush Drive and Wellborn Road. In addition, there are concentrations east of Wellborn Road between Holleman Drive and Southwest Parkway. Finally, low income populations can be found east of Texas Avenue, south of Holleman Road and west of Dartmouth Street.

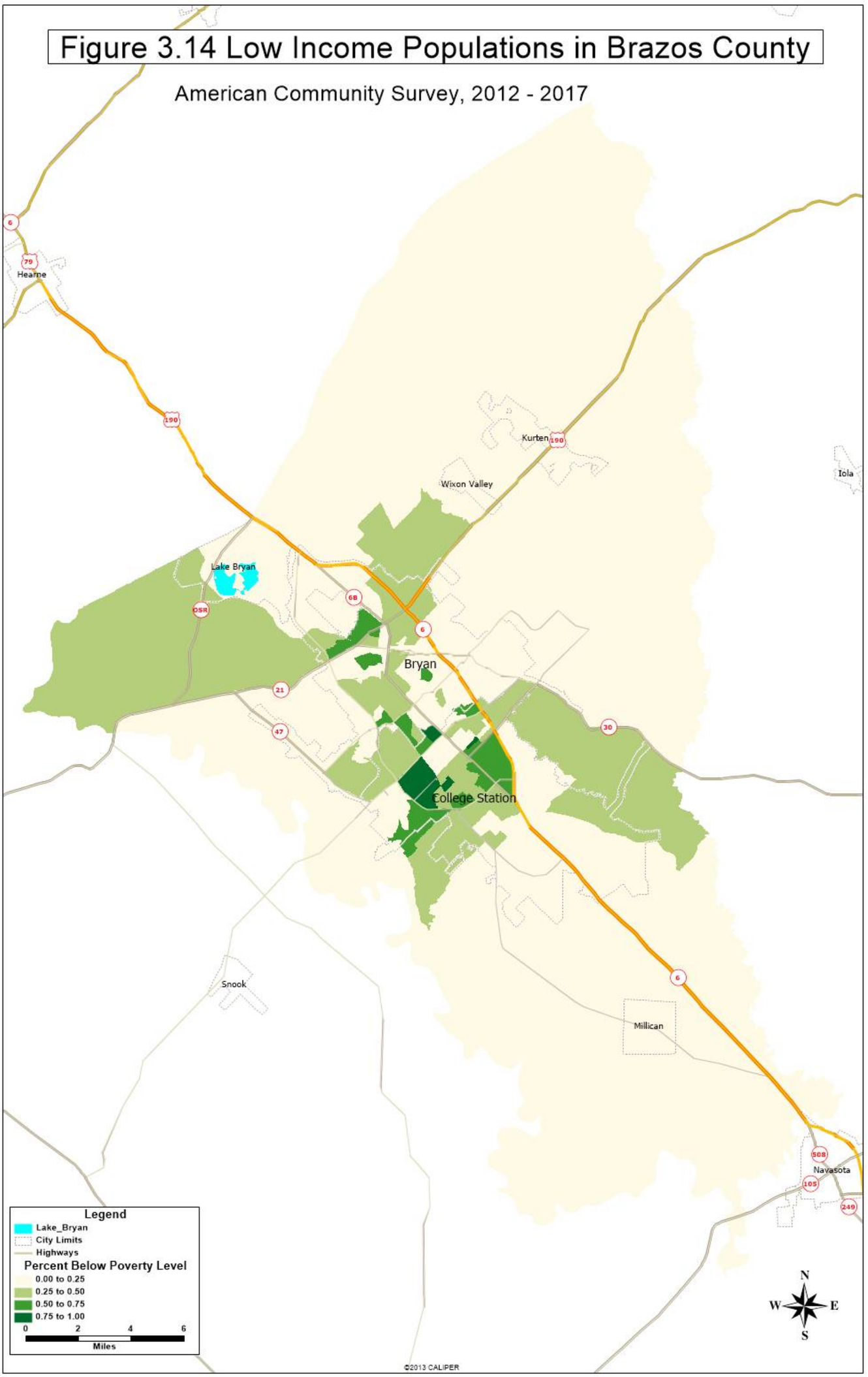
Projects that should be examined at the more detailed level for adverse effects to low income populations include:

- Texas Avenue raised medians through downtown Bryan and from SH 21 north to SH 6
- Sandy Point Road widening from SH 21 to FM 2818
- Mumford Road widening from SH 21 to FM 2818
- Wellborn Road widening from 4- to 6-lanes; George Bush Drive to FM 2818.

As noted above, these projects, upon completion, will provide greater access to jobs, shopping and other activities for the nearby low-income populations.

Figure 3.14 Low Income Populations in Brazos County

American Community Survey, 2012 - 2017



Environmental Considerations

PLANNING AND ENVIRONMENTAL LINKAGES (PEL)

As the built environment expands, there are inevitable adverse effects upon the environment. New development can result in increased storm water runoff leading to pollution of the local water supply. In addition, there can be adverse effects upon wildlife as it interacts with the human world. Interactions can include loss of habitat and vehicle-related mortality. For these, and other, reasons it is important to consider the potential impacts of transportation projects on the environment as early in the planning process as practicable. Doing so allows environmental regulatory and resource agencies to be involved which may help streamline environmental reviews and achieve environmental clearance later in the process. The priority for protecting the environment is first to avoid impacts, second to minimize any impacts and third, if impacts cannot be avoided, to mitigate for those impacts.

Environmental mitigation measures are projects meant to address adverse effects upon the environment that result from development. Potential environmental mitigation activities are shown in Figure 3.15.

IMPACT ANALYSIS

In order to avoid, minimize or plan for the potential need to mitigate for environmental impacts it is important to identify environmentally sensitive areas and natural resources. The Bryan/College Station MPO utilized NEPAssist to identify natural and cultural resources in Brazos County that may be impacted by the transportation projects included in this plan.

INVEST

INVEST is a web-based self-evaluation tool developed by FHWA for use by transportation planning agencies to assess the sustainability of their transportation plans, projects or programs. INVEST transportation agencies identify, prioritize and communicate balanced choices between the different and sometimes competing goals of highway programs. The Bryan/College Station MPO intends to utilize the INVEST tool to conduct a post plan update evaluation to identify opportunities to improve the process for developing future plans and programs.

Figure 3.15 Potential Environmental Mitigation Activities

Resource	Potential Mitigation Activities
Wetlands and Water Resources	Avoid rivers, creeks and other waterways to protect water quality as well as reviewing areas where wetland/stream restoration, enhancement or creation can occur
Floodplain	Avoid or minimize adverse effects to ecological areas through the preservation of land for parks and trails. Establish and use a regional approach to land preservation if direct preservation of a specific resource is not reasonably feasible. Avoid and minimize adverse impacts through project alignment and design.
Wildlife Habitat	Avoid or minimize adverse effects to ecological areas through the preservation of wildlife habitats. Establish and use a regional approach to land preservation if direct preservation of a specific resource is not reasonably feasible. Avoid and minimize adverse impacts through project alignment and design.
Threatened and Endangered Species	Avoid or minimize adverse effects to ecological areas through the preservation of threatened and endangered wildlife. Establish and use a regional approach to land preservation if direct preservation of a specific resource is not reasonably feasible. Avoid and minimize adverse impacts through project alignment and design.
Agricultural Land	Avoid or minimize adverse effects to ecological areas through the preservation of agriculture land and open space. Establish and use a regional approach to land preservation if direct preservation of a specific resource is not reasonably feasible. Avoid and minimize adverse impacts through project alignment and design.
Forested and Other Natural Areas	Avoid or minimize adverse effects to forested areas through landscaping within existing right-of-way, Replacement property for open space easements, replacement of forest lands within existing easements; design exceptions and variances.
Parks and Recreation Areas	Avoid or minimize impacts to parks and recreation areas through design exceptions and variances, on-site screening of facilities, replacement of affected property.
Environmental Justice	Avoid or minimize adverse effects through project alignment and design. Implement other transportation projects or programs that correct or minimize impacts.
Ambient Air Quality	Transportation control measures, transportation emission reduction measures.

VULNERABILITY ASSESSMENT AND SUSTAINABILITY

A new addition to the MTP Planning process as defined in the updated federal requirements within the FAST Act involves ways to consider projects/ strategies to improve the resilience and reliability of the transportation system. Transportation resiliency is determined by how a system can respond to a catastrophic event. The risks associated with extreme weather events such as flooding, severe heat, and intense storms have emerged as significant concerns for transportation system resiliency and reliability. Resiliency may be defined as the ability of the transportation system to return to acceptable operation after an event. Transportation systems are already experiencing costly climate related impacts, causing disruption and damage to roads, bridges, rail systems, and other transportation infrastructure. In the future, these impacts are expected to intensify in magnitude, duration, and frequency. Preparing for the uncertainties in a changing climate is essential to ensure the safety and security of the population which the transportation system serves.

Natural disasters are not uncommon in this part of Texas. In Brazos County, tornadoes, flooding and wildfires caused by drought can cause serious damage to homes and businesses in the region. From a mobility perspective, tornadoes are difficult to anticipate and to prepare for. However, the damage can cause significant delays if damage occurs on freeways and major thoroughfares within the region. There have been two tornadoes touch down in Brazos County in the last 5 years. Flooding, either through severe weather events or tropical cyclones can also cause delays in moving people and

goods through the region. Burn bans are common due to drought and the potential for wildfires to close important travel corridors could reduce mobility and cause economic hardships for freight. The ability for the region to respond to these events is essential.

In December 2017, the Federal Highway Administration (FHWA) published the Vulnerability Assessment and Adaptation Framework, 3rd Edition. The Framework serves as a guide for MPOs and other transportation agencies to evaluate vulnerability of transportation infrastructure and systems to extreme weather. The Framework serves to assist transportation agencies and MPOs to integrate climate adaptation considerations into the decision-making process. The Bryan/College Station MPO has applied the guidelines provided by the FHWA Framework to conduct a high-level evaluation of the region for vulnerability of the transportation system to flooding. The FHWA is currently working to develop tools and collect the necessary data for MPOs and agencies to conduct in-depth, comprehensive vulnerability assessments. The FHWA Framework consists of the following steps:

- Set objectives and define study area
- Compile data
- Assess vulnerability
- Identify, analyze, and prioritize adaptation options
- Incorporate assessment results into transportation decision-making

Objective and Study Area

The objective of this vulnerability assessment is to identify transportation infrastructure vulnerable to flooding within the Bryan/College Station MPO area at a systems-level using a GIS approach.

Compile Data

Using Geographic Information System (GIS) software for this vulnerability assessment, GIS data was compiled for FEMA Special Flood Hazard Areas (SFHA), TxDOT roadways, Brazos County roadways, City of Bryan and College Station roadways, Texas railroads, bridges, and airports.

Assess Vulnerability

This GIS approach provides a big picture understanding of system-wide vulnerabilities and identifies where additional resources could be used to further distinguish asset-specific vulnerabilities. The FEMA Special Flood Hazard Area (SFHA) are areas within the 100-year floodplain. Any transportation assets within the SFHA are at risk for disruption during extreme flooding events. Probable locations in the transportation network that may be vulnerable to flooding were identified. MPO staff then met with the Brazos County Emergency Operations Center (BCEOC) to compare data predicted areas of vulnerability with the BCEOC "real world" observations. No airports within the region are located within the SFHA, however multiple segments of roadways and railroads are located within the SFHA. According to BCEOC the following roadways have flooded at least twice in the past five years as the result of severe weather events:

- State Highway 6 between Tabor Road and Woodville Road
- FM 1179 at Wickson Creek
- FM 974 at Wickson Creek
- State Highway 21 at Wickson Creek
- FM 2776 adjacent to Wickson Creek
- FM 2038 between Saxon Road and Long Trussle Road adjacent to the Navasota River
- FM 1687 at Still Creek
- FM 60 at Carter Creek
- State Highway 30 at Carter Creek

- FM 159 and the adjacent railroad track along the Brazos River

In addition, the following two locations were identified by the GIS data as vulnerable to flooding and the BCEOC confirmed they have each flooded once in the last five years:

- State Highway 30 at the Navasota River
- Business Route 6 at Still Creek

Figure 3.16 shows the location of these transportation facilities.

Identify, Analyze, and Prioritize Adaptation Options

After identifying vulnerabilities through a system-level analysis, adaptation strategies were developed to address vulnerabilities within the region. Potential adaptation strategies to address vulnerabilities to climate change and extreme weather events include:

- Engineer new transportation assets that can withstand environmental conditions expected in the future.
- Retrofit existing assets to accommodate future environmental conditions expected in the future.
- Increase redundancy of the transportation system to avoid disruptions and provide alternative means/routes of travel.
- Relocate transportation assets to avoid damage.
- Program maintenance schedules at a higher frequency.
- Improve operations plans during emergency situations.

Incorporate Assessment Results into Decision-making

The metropolitan transportation planning process provides a key opportunity for transportation agencies to proactively identify strategies that address risk and promote resiliency at the transportation system level. Resiliency to extreme weather events should be considered during the decision-making process, when options are considered for transportation investments. The results of a vulnerability assessment provide the Bryan/College Station MPO with useful information to avoid making investments in particularly vulnerable areas or to build resiliency into project design.

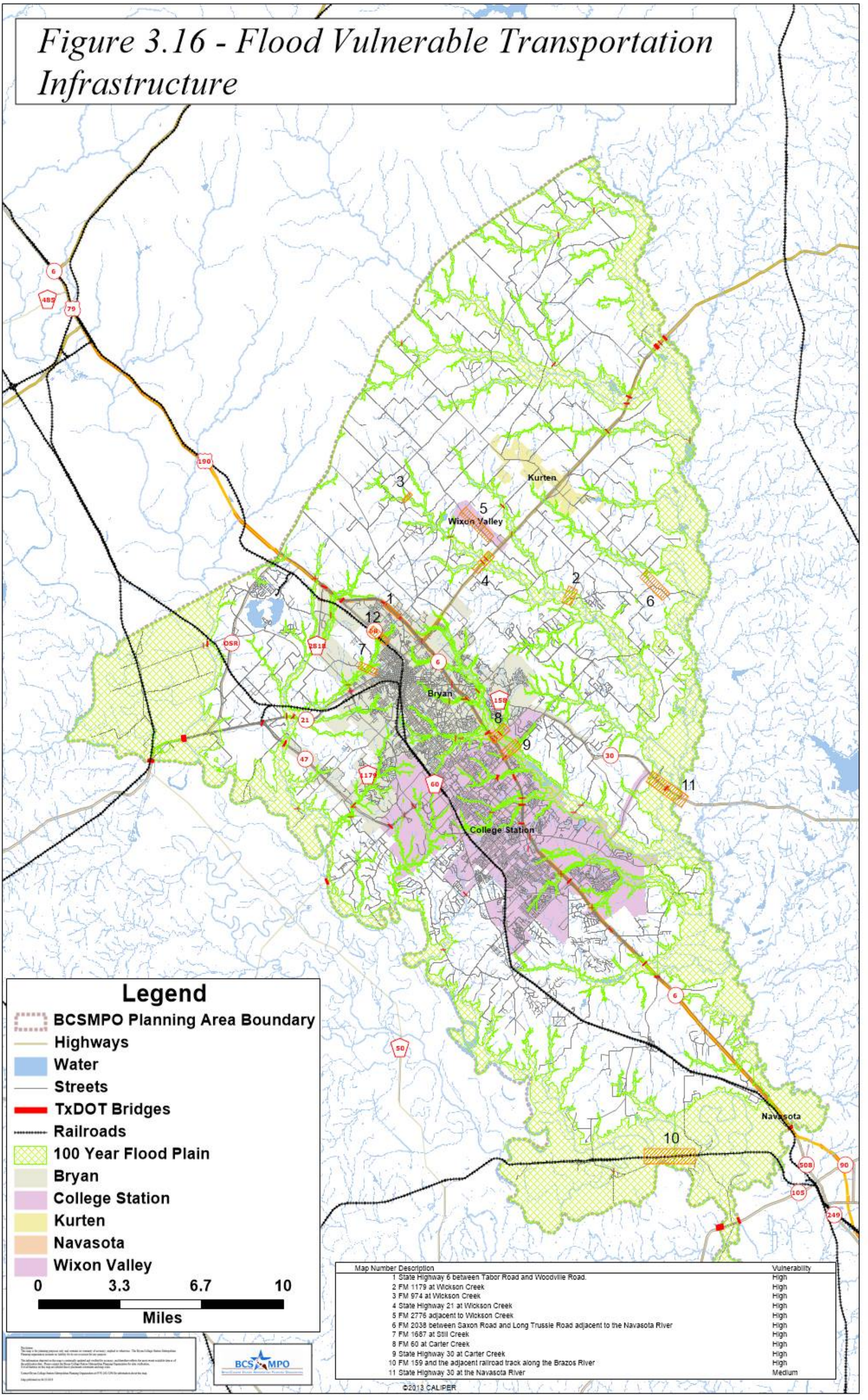
The results inform the evaluation of projects based on the capability of a project to address facilities located in floodplain zones, improve emergency access, or mitigate low water crossings. The projects that move forward from planning to construction should mitigate potential issues that may result from potential events such as weather or others affecting system performance. Keeping the freight network passable will benefit the County and the region financially. Coordination with emergency response in the County and state agencies is necessary for ensuring a quick and appropriate response during natural disasters. The MTP Update will address ways that the MPO can limit these delays and consider improvements to the transportation network in Brazos County.

In Destinations 2045, three projects were selected to assist with resiliency efforts. These are:

- State Highway 30 from State Highway 6 to FM 158. In addition to widening the facility, the project will address flooding issues at Carter Creek.
- New facility (Inner Loop) from State Highway 21 to State Highway 6 at FM 2818. This provides an alternative route around the section of State Highway 6 that has flooded in the past.
- New facility (Inner Loop) from State Highway 21 to Steep Hollow Road. This facility would intersect with FM 1179 just before Wickson Creek and provide an alternative route around the flooded areas along FM 1179.

The BCEOC has developed an implementation plan to re-route traffic when the remaining facilities on the identified list are subject to flooding. The TxDOT Bryan District is also looking at retrofitting existing facilities to mitigate flooding on the State Highway system as part of their bridge program.

Figure 3.16 - Flood Vulnerable Transportation Infrastructure



Map Number	Description	Vulnerability
1	State Highway 6 between Tabor Road and Woodville Road.	High
2	FM 1179 at Wickson Creek	High
3	FM 974 at Wickson Creek	High
4	State Highway 21 at Wickson Creek	High
5	FM 2776 adjacent to Wickson Creek	High
6	FM 2038 between Saxon Road and Long Trussle Road adjacent to the Navasota River	High
7	FM 1687 at Still Creek	High
8	FM 60 at Carter Creek	High
9	State Highway 30 at Carter Creek	High
10	FM 159 and the adjacent railroad track along the Brazos River	High
11	State Highway 30 at the Navasota River	Medium

THE NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) is the basic national charter for protection of the environment. NEPA establishes policy, sets goals, provides means for carrying out policy, and contains provisions to ensure that federal agencies act according to the letter and spirit of the Act. Although the requirements and intent of NEPA are separate from the federal planning requirements that structure this MTP, Federal transportation regulations (23 CFR 450.316 and 23 CFR 450.322) do require MPOs to consider the environment and potential mitigation strategies for environmental impacts from transportation projects included in their plans. NEPAssist is a tool that facilitates the environmental review process and project planning in relation to environmental considerations. The web-based application draws environmental data dynamically from EPA's Geographic Information System databases and web services and provides immediate screening of environmental assessment indicators for a user-defined area of interest. These features contribute to a streamlined review process that potentially raises important environmental issues at the earliest stages of project development. NEPAssist was used in this plan when considering two new roadway projects and it will be used in future plan updates.

AIR QUALITY CONSIDERATIONS

The Clean Air Act Amendments of 1990 requires all metropolitan areas to meet the National Ambient Air Quality Standards established by the Environmental Protection Agency (EPA) for numerous pollutants, including ozone, nitrous oxides, and particulate matter. Metropolitan areas that meet these standards are considered to be in attainment and are not required to establish control measures to improve air quality. If the MPO represents a non-attainment area, then it is required to show mitigation measures and programs that will bring the region back into air quality conformity. Brazos County, including the Metropolitan Areas of Bryan and College Station are considered to be in attainment for all air pollutants by the EPA.

Chapter 4 - Transportation Systems Analysis

Streets and Highways

INTRODUCTION

The primary mode of transportation in Brazos County is the private automobile. Vehicle registration data was obtained to show the growth in dependence on access to a motor vehicle. The historical numbers below are derived by taking total vehicle registrations and subtracting trailers and other non-roadway vehicles. The same number is used in the projections below.

2000: 91,981
2010: 117,592
2017: 135,725

2020: 145,072
2030: 177,492
2040: 212,228

To examine congestion in Brazos County, this plan relies on data provided by the Texas A&M Transportation Institute (TTI). Using a measure called Total Person-Hours of Delay reveals that these figures equate to a 700% increase in delay between 1980 and 2016. Delay per auto commuter went from 5 hours in 1982 to 16 hours in 2016.

1980: 410,000
1990: 969,000
2000: 1,490,000
2010: 2,434,000
2016: 3,298,000

Projecting delay into the future will depend on how the community chooses to address transportation funding shortfalls. A survey developed in cooperation between the MPO and TTI asked respondents to select an acceptable level of congestion based on the amount of additional fees, tolls and other revenue streams they would be willing to pay per household. To determine what local residents thought about congestion and commuting, the MPO administered a survey in 2018. The survey received over 5000 responses. The survey was intended to put a price tag that each household would need to pay in new fees or taxes to achieve a certain level of congestion. The survey document (figure 4.1) is shown on the next page, and the survey results (figure 4.2) follow. As of July 31, 2018 54.7% of respondents were willing to pay an additional $1200 or more per household to hold congestion at current levels or reduce it to 2007 levels. Another 24.1% stated that they would not be willing to pay any additional money and would rather congestion double from its current level.

Figure 4.1 Bryan/College Station Congestion Survey

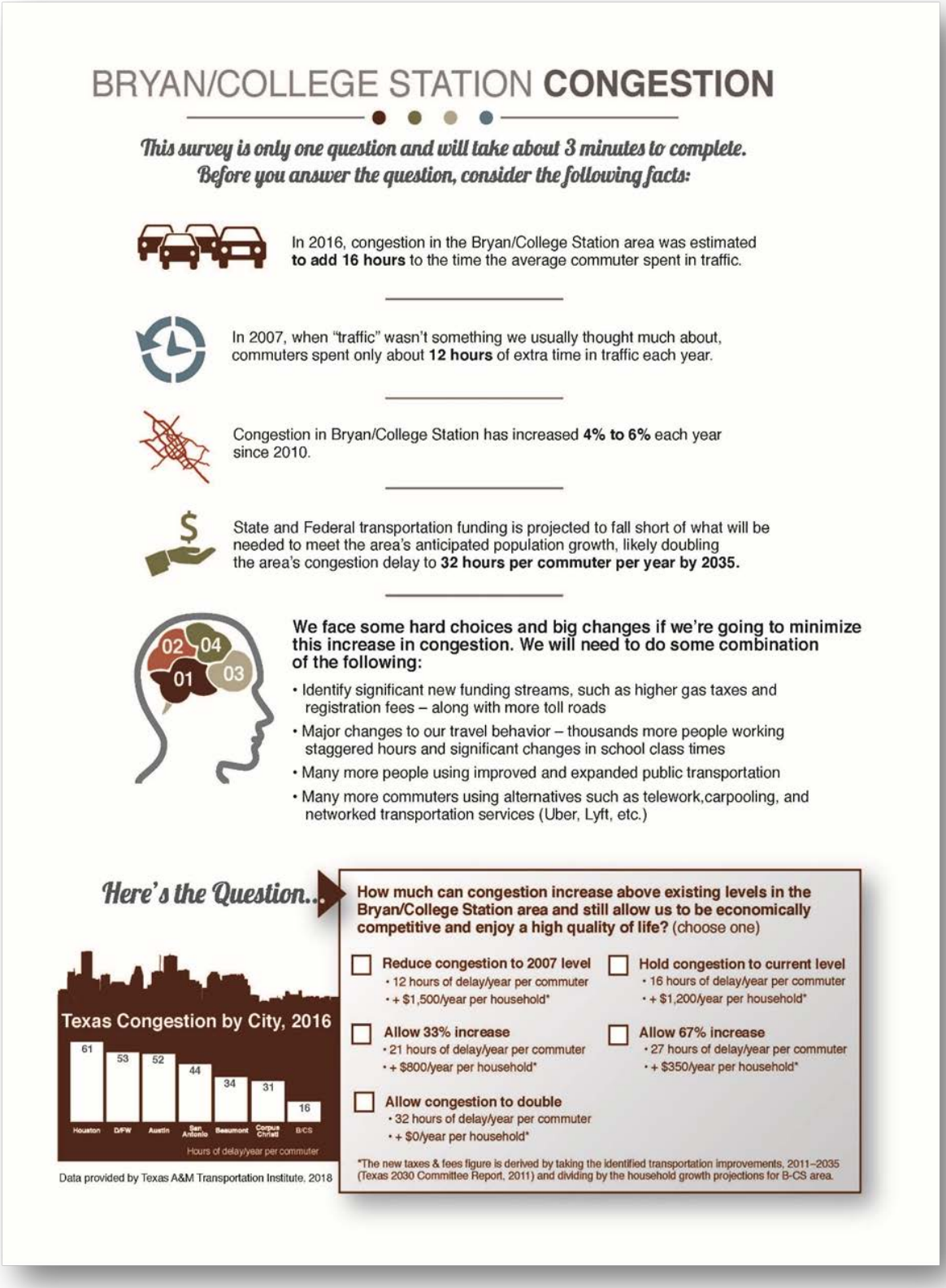
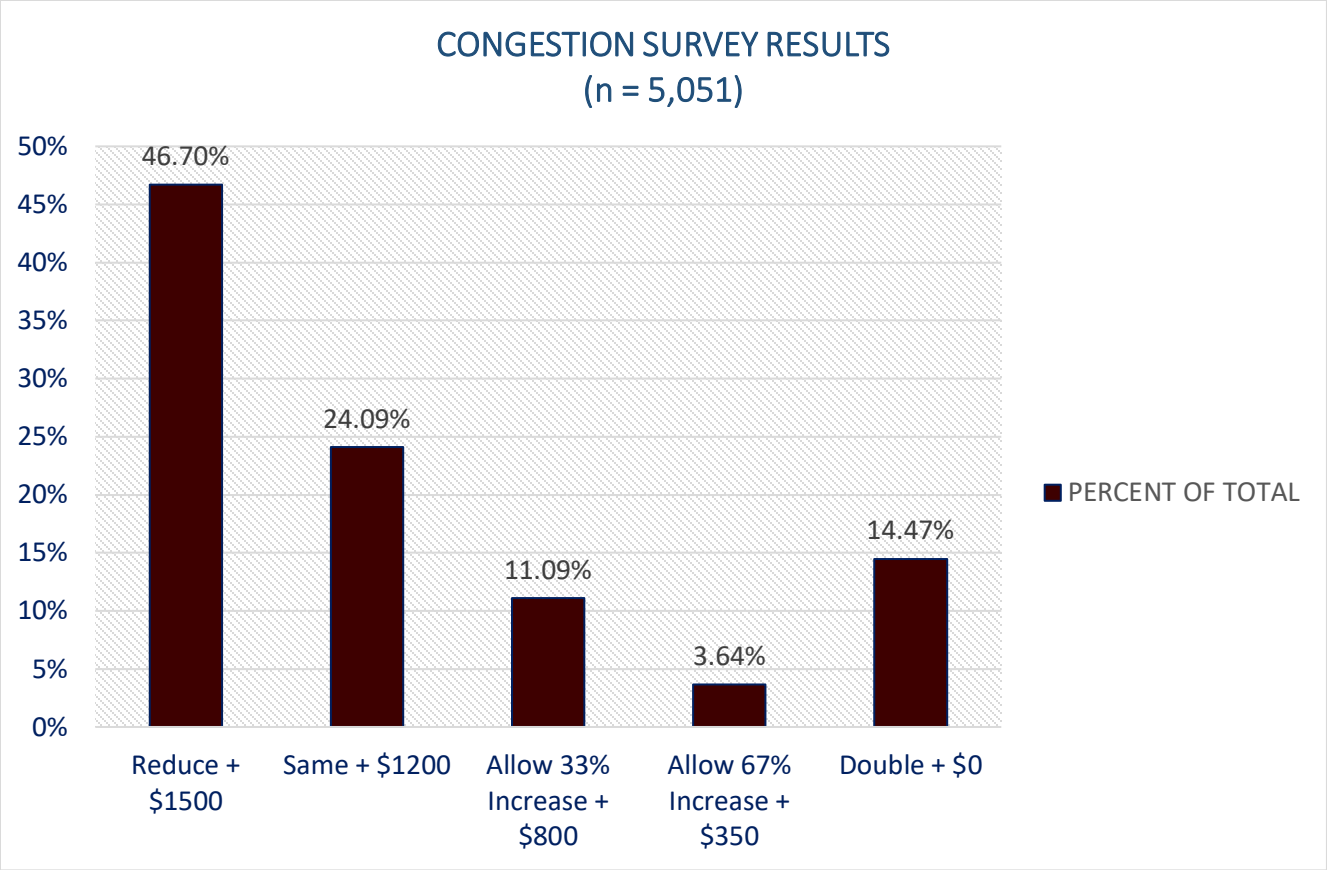


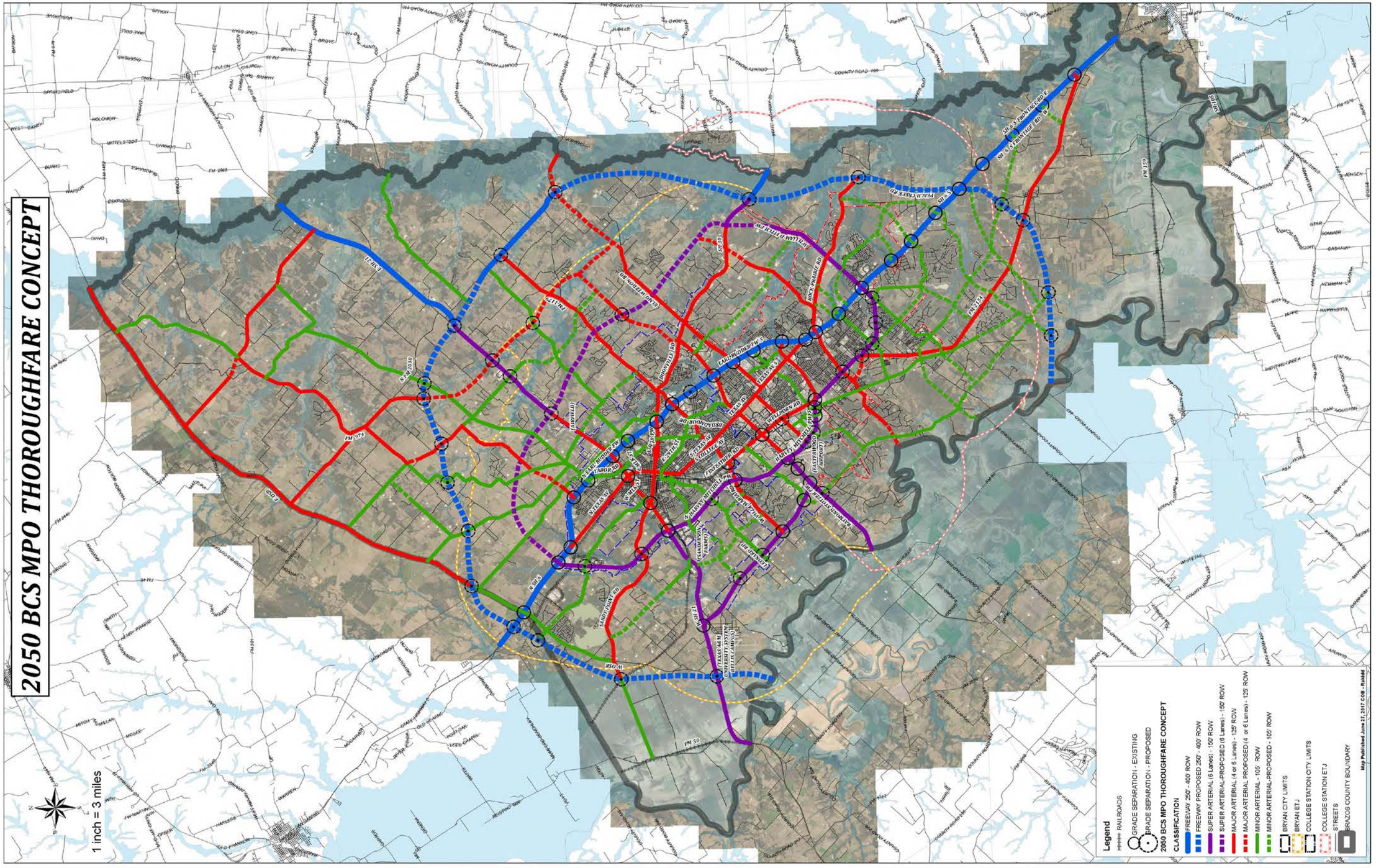
Figure 4.2 Bryan/College Station Congestion Survey Results



The Bryan/College Station MPO spent several months in 2016 and 2017 developing a 2050 Major Thoroughfare Concept through a series of nine open houses and two public meetings. Over 2000 written responses were received from the public and an equal number of verbal responses were provided to the MPO staff and Technical Advisory Committee (TAC) members present at the meetings. With strong public involvement and the response from the MPO and TAC, the Concept was well received by the community. Figure 4.3 shows the final Concept that was approved by the MPO Policy Board and subsequently adopted by Brazos County in 2017.

The first major thoroughfare plan adopted by the MPO was intended to guide future roadway network development in the most efficient and effective manner possible. It also allows the communities in Brazos County to require land be set aside during the development review process so that the roadways depicted on the Concept can be constructed at a later date when enough development occurs to warrant their construction. The Concept uses a roadway classification system and provides guidelines for designing a roadway network that efficiently moves people and goods throughout Brazos County. Roads are placed into categories based on their function or degree to which they provide for adjacent land access versus mobility for through traffic. Street classifications are generally referred to as functional classification according to guidelines established by the Federal Highway Administration. Because of federal and state funding requirements, the MPO generally spends funds on roads classified as arterial and above. To be eligible, a roadway must be part of either the National Highway System (NHS) or be a part of TxDOT's roadway network which is referred to in this document as on-system. In general, NHS and on-system roadways are classified as arterial and above. For this reason, the Major Thoroughfare Concept reflects those requirements and focuses on roads classified as arterial and above. The descriptions below include all local roadway classifications.

Figure 4.3 Brazos County Major Thoroughfare Concept



FUNCTIONAL CLASSIFICATION OF STREETS

Freeway: A fully-controlled access highway with grade separated interchanges at major thoroughfares. Intended for high-volume, high-speed traffic movement between cities and across the metropolitan area, and not intended to provide direct access to adjacent land.

Super Arterial: Is a locally coined term to describe a roadway that has both limited controlled access with some at-grade crossings and signals at major intersections. It is intended for high-volume, moderate to high-speed traffic across the metropolitan area with minimal access to adjacent land.

Major Arterial: A street that is primarily intended to provide for high-volume, moderate speed traffic between major activity centers (i.e. downtown Bryan, Texas A&M campus). Access to abutting properties is subordinate to major traffic movement and is subject to necessary controls of entrances and exits.

Minor Arterial: A street that augments and feeds the major arterial system and is intended for moderate volume and moderate speed traffic. Access to abutting properties is partially controlled.

Collector: A street that collects and distributes traffic to and from local and arterial streets. In some communities a collector may be further divided into major and minor depending on traffic volumes. It is intended for low to moderate volume, low speed, and short length trips while also providing access to abutting properties. At the time a collector street is platted it may also be designated as a residential or commercial/industrial collector depending on the predominant land use it will serve. Commercial/industrial collectors must be built to higher standards in order to serve truck traffic.

Local: A street for low-volume, low-speed, and short length trips to and from abutting properties.

MAJOR STREETS AND ROADWAYS IN BRAZOS COUNTY

The National Highway System (NHS) typically includes routes that serve the function of connecting urbanized areas, allow for efficient movement of intermodal freight, or provide strategic movement corridors for the military. According to the Federal Highway Administration, the following streets and roadways in Brazos County are part of the NHS. (See Figure 4.4)

- State Highway 6 (Bypass and Business Route)
- US 190
- State Highway 21
- Farm to Market 158 (William Joel Bryan and Boonville Road)
- State Highway 30
- Farm to Market 60 (University Drive)
- State Highway 47
- Farm to Market 2818 (Harvey Mitchell Parkway)
- State Highway 40 (William Fitch Parkway)
- Farm to Market 2154 (Wellborn Road) (portions only)

In recent years, the Bryan/College Station MPO has pursued resolutions to encourage the development of Interstate 14 between Interstate 35 and Interstate 45. The United States Congress designated that the Interstate 14 route would "generally follow" the US 190 corridor. (See Figure 4.5) This routing, and others that will be considered as part of the environmental review process, will pass through Brazos County. The MPO adopted a resolution in 2018 that stated the preferred alignment through Brazos County would deviate off the US 190 corridor and instead be a new outer bypass connecting US 190 north of Brazos County to State Highway 30 near the Brazos/Grimes County border.

Figure 4.4 National Highwy System: College Station-Bryan, TX

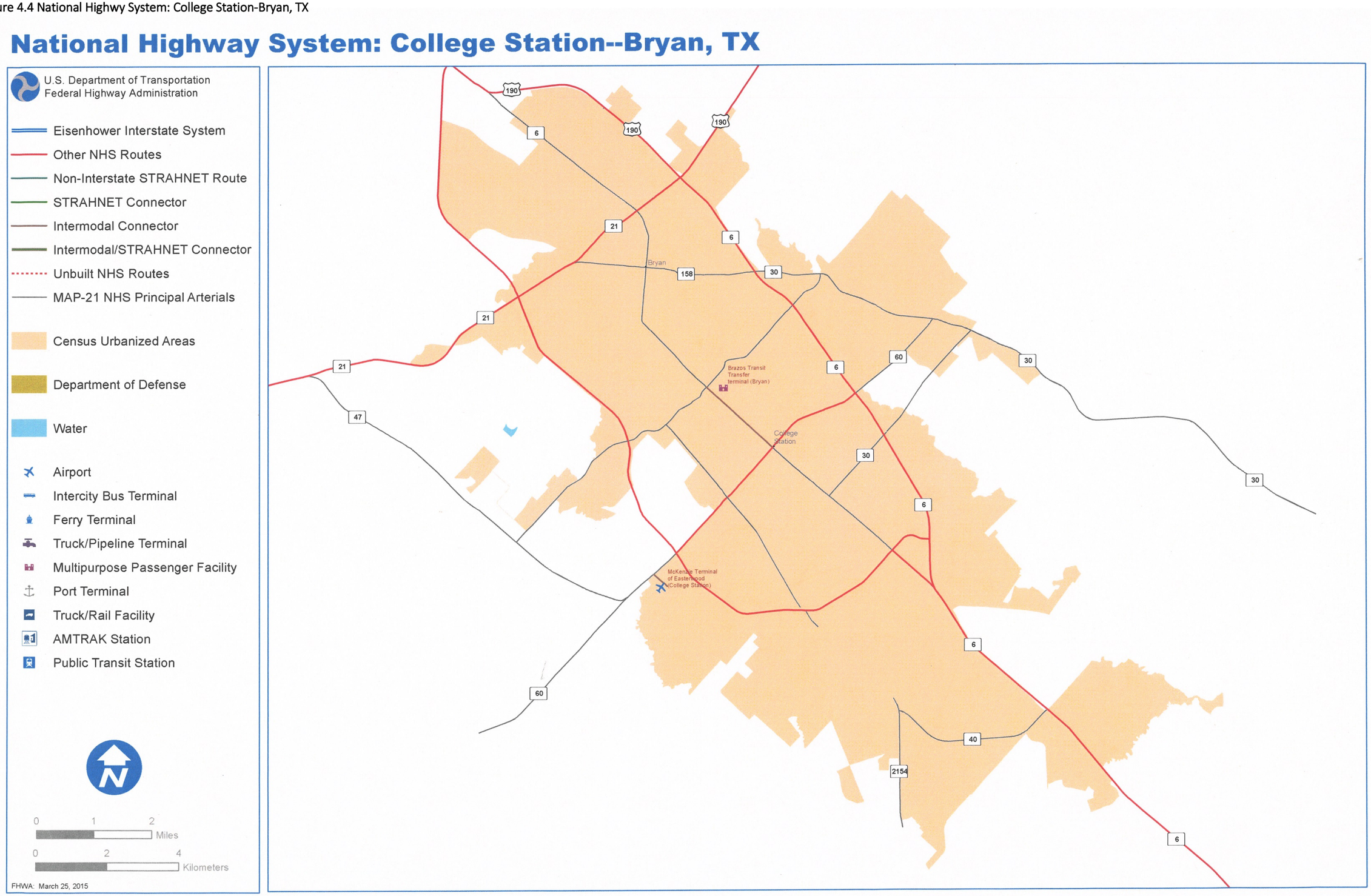
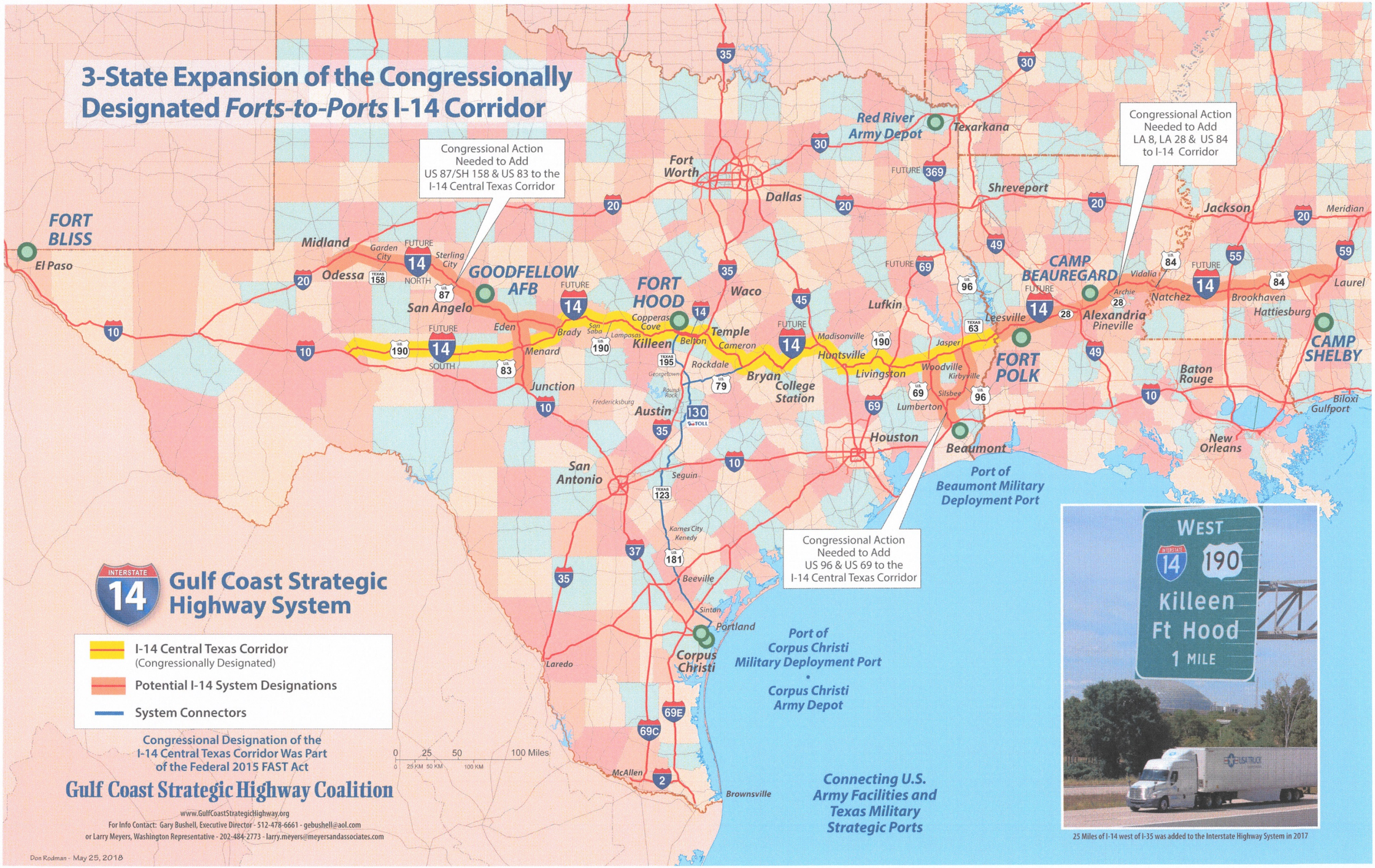


Figure 4.5 Congressionally Designated I-14 Corridor



Public Transit and Paratransit Existing Conditions

INTRODUCTION

There are two transit systems operating within the MPO's planning area: Texas A&M Transportation Services and the Brazos Transit District (BTD). Together these systems provide over 122,000 hours of service annually and eliminate in excess of 20,000 vehicles a day from area roads. The District is a public transportation system offering both fixed-route transit services and paratransit while Texas A&M Transportation Services is funded by student fees. Riders who possess either a valid Texas A&M University ID card or a valid BTD pass are allowed to access buses from either system.

BRAZOS TRANSIT DISTRICT (BTD)

Brazos Transit District began operation in 1974. BTD provides transit services in 16 counties; fixed routes, ADA paratransit and demand and response services are offered in Brazos County. All services in Brazos County are operated from 5:00 AM to 7:00 PM Monday through Friday. BTD does not provide services on weekends or holidays. Figure 4.6 shows the fixed route system operated by BTD in the MPO service area.

BTD AMERICANS WITH DISABAILITIES ACT (ADA) PARATRANSIT SERVICES

- A shared ride, origin to destination service offered to those who cannot access the Fixed Routes due to a disability.
- Have an origin and destination within ¾ of a mile of the Fixed Routes.
- Designed to assist those qualified individuals who are unable to get to or from the system, or to board, ride, navigate, or disembark from the fixed route vehicles, which are fully accessible.
- Appointments can be made up to seven days in advance and up to next day service. Appointments for next day service will be taken until 5 p.m.

DEMAND AND RESPONSE SERVICES

- A shared ride curb to curb service
- Available for everyone
- Do not have an origin OR destination within ¾ of a mile along the Fixed Routes
- No destination restrictions within the BTD service area.

TEXAS A&M TRANSPORTATION SERVICES

Texas A&M University operates a private bus system that serves students, faculty and staff. The system is made up of 6 on-campus routes and 12 off-campus routes including one route that accesses Blinn College- Bryan Campus. The route (Reveille) operates between Texas A&M and Blinn campuses between 7:00 AM and 6:55 PM with half-hour headways. All other off-campus routes serve the Bryan-College Station area roughly south of Villa Maria Rd. and within College Station. A total of 122 miles of routes are provided by TAMU with 42.2 miles on campus and 79.85 miles off-campus. The system has a total of 96 buses of which 65 are used during normal operations. They are currently in the process of

investing $4.5 million in 10 new buses. According to Texas A&M Transportation Services[7] the off-campus system carries on average 30,000 riders per day. Figure 4.7 shows the off-campus routes for Texas A&M Transportation Services.

The on-campus routes serve travel between the various campuses of Texas A&M. These include the main campus, west campus, the Health Sciences campus, and the rapidly expanding RELLIS campus. The on-campus routes have an average daily ridership of 18,000.

It should be noted that the Texas A&M Transportation system is currently paid for by student fees. The system is considered private and is not available for use by the general public unless a special annual pass is purchased through BTD. The pass is good for one calendar year beginning in January and ending in December. All of Texas A&M fixed route buses are also ADA accessible but they operate on fixed route and a fixed schedule that can be found at https://transport.tamu.edu/busroutes.

TEXAS A&M PARATRANSIT SERVICE

- Paratransit service is available to qualified students who live within three-quarters (3/4) of a mile of a fixed-route and qualified faculty and staff who live within ten (10) miles of a fixed-route.
- This service mirrors regular route service, so it operates the same hours as fixed-route service.
    - During Fall and Spring semester, service operates from 7:00am-1:00am Monday through Friday and 9:00am-6:00pm on weekends, during all other times, Texas A&M runs break service which operates 9:00am-6:00pm Monday through Friday.
    - If University is closed there is no service
- This is scheduled pickups and take passengers to and from class or school functions.
- Student and staff fees may apply

Collectively, the two systems provide over seven and a half million rides per year. As a result, Bryan/College Station has the highest number of transit rides per person in the State of Texas.

[7] http://transport.tamu.edu/transit/facts.aspx#riders

Figure 4.6
Brazos Transit District Fixed Routes

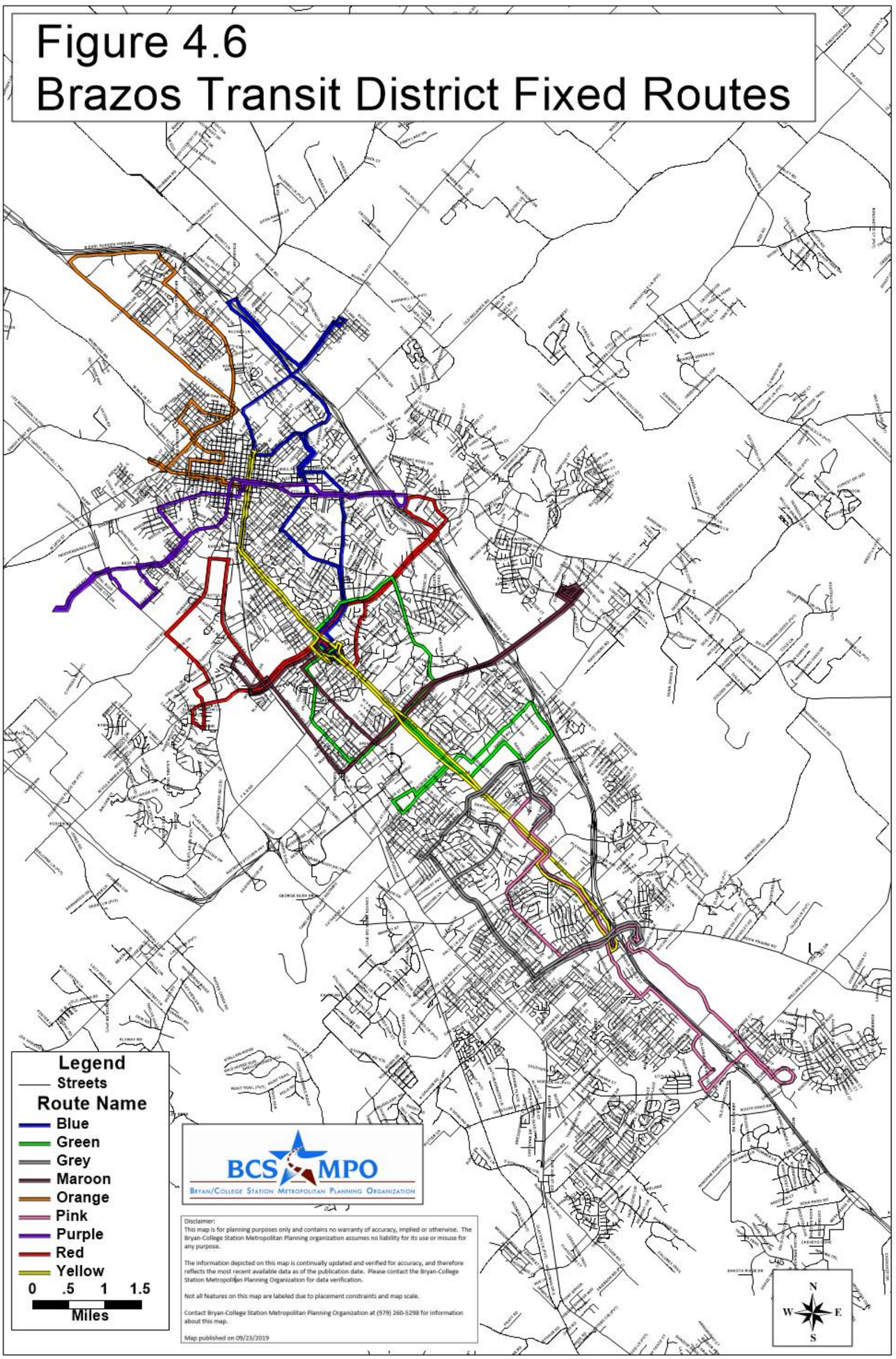
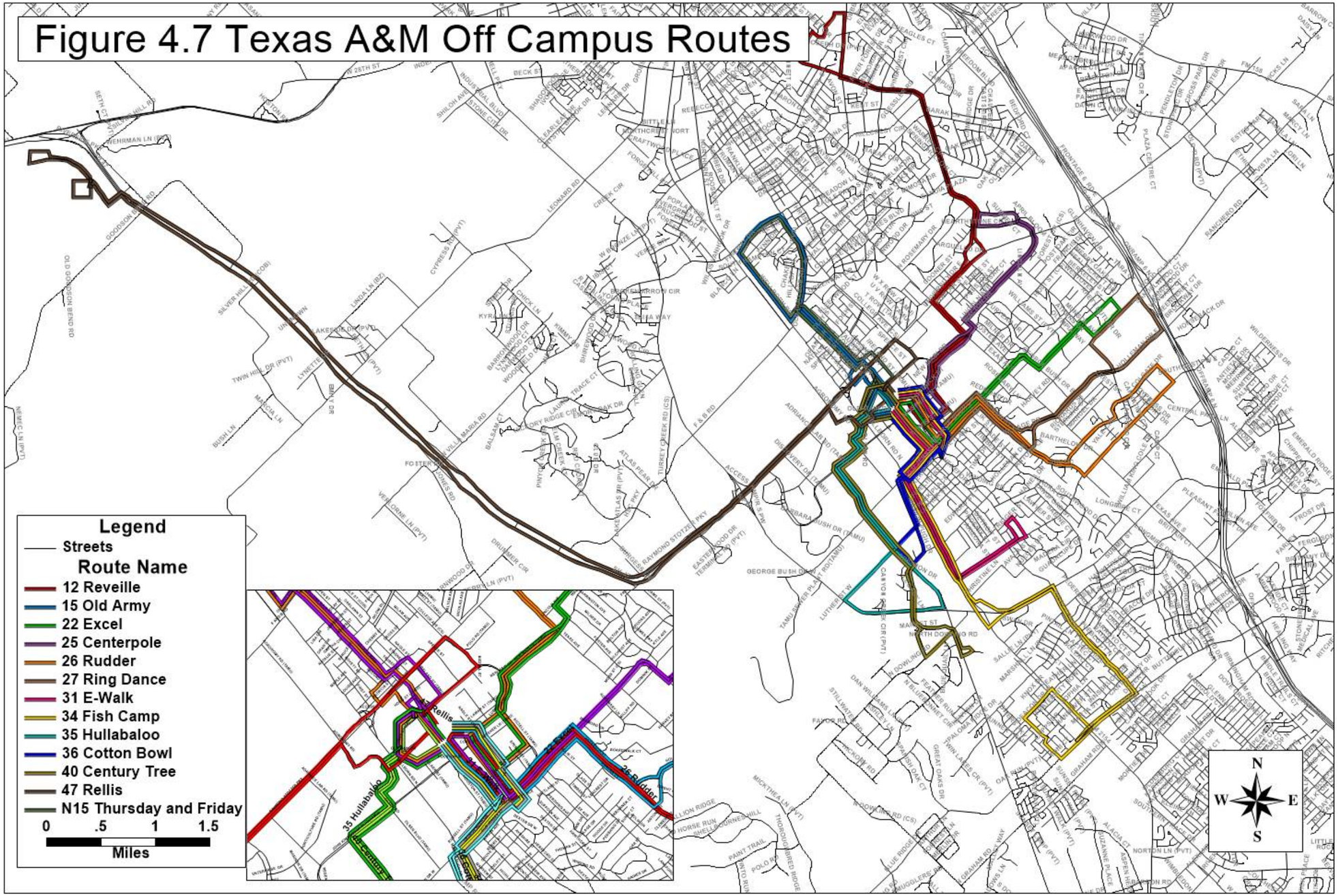


Figure 4.7 Texas A&M Off Campus Routes



Active Transportation Existing Conditions

INTRODUCTION

The Center for Disease Control, as part of its Healthy Community Design Initiative, provides the following explanation of Active Transportation[8]:

> *Active transportation is any self-propelled, human-powered mode of transportation, such as walking or bicycling. Physical inactivity is a major contributor to the steady rise in rates of obesity, diabetes, heart disease, stroke, and other chronic health conditions in the United States. Many Americans view walking and bicycling within their communities as unsafe due to heavy traffic and a scarcity of sidewalks, crosswalks, and bicycle facilities. Improving these elements could encourage active transportation such as children biking to school or employees walking to work. Safe and convenient opportunities for physically active travel also expand access to transportation networks for people without cars, while also spurring investment in infrastructure to increase the comfort of the on-road experience to improve the appeal of active modes to all people.*

Bicycling and walking are often overlooked as viable transportation options in the United States. Within many of the older cities in the U.S. and Europe, active transportation modes are an important part of the transportation system. However, in the suburban environment of "middle America", these modes may seem out of scale at first glance. Distances between residences and activities (work, shopping, etc.) can seem daunting to pedestrians and bikers in this environment; further, these distance barriers are magnified by environmental design factors that either prevent direct paths, or create conflicts with vehicular traffic. Active transportation may seem inappropriate to the motor vehicular environment and has typically not been given great weight in transportation planning and policy schemes.

Transportation Demand Management (TDM) aims to manage the transportation network to the point that it is operating at maximum efficiency through utilizing all travel options to the extent that they can contribute to creating a balanced environment where there are numerous options available. In this regard, there is more potential for active transportation modes than might appear at first glance, both in a direct and in a complimentary fashion. There are four ways in which active transportation modes can be pushed into greater service in transportation programs:

- As Primary Modes: Realistically, more people could use active transportation as a primary mode instead of driving. The advent and rising popularity of electric pedal assist bicycles expands the range of the bicycle well beyond the commonly established two-mile range. The availability of E-Bikes along with standard pedal bikes as ride-share vehicles expands access to a wider economic sector. The only limiting factors today are the less than exemplary safety, functionality and comfort of our active transportation facilities. Given appropriate opportunity and encouragement, many more may choose active transportation as their primary mode.
- As Feeder Mode: Active transportation can be an effective means to connect modes for longer trips, again given appropriate opportunity and encouragement.
- For Circulation: The degree to which a destination site or activity center allows convenient circulation, impacts travelers' decisions on how to reach the site in the first place (i.e. whether they are dependent upon a private vehicle to ensure mobility once at the site). Walking, biking and skateboarding are the only single mode trips that travel to Texas A&M. Those who drive must park on the periphery of campus and walk to their destination. Likewise, transit users are dropped off at a nearby bus stop and must walk to their destination.
- First and Last Mile: Public transportation services are useless to citizens who are unable to access them. Texas A&M Transportation Services and Brazos Transit District provide transportation from off campus to campus. In

[8] https://www.cdc.gov/healthyplaces/transportation/promote_strategy.htm

addition, service is provided to and from West Campus although West Campus service is somewhat limited due to limited resources. The ability of citizens to get to and from public transportation access points can be greatly enhanced by providing facilities for active transportation. Facilities such as connected sidewalks, secure bicycle facilities and bike lanes can provide accessibility enhancing first and last mile trips.

The Bryan-College Station urban area has a vibrant and engaged active transportation community. The Central Texas climate allows for active transportation modes to be utilized throughout the year. The presence of Texas A&M University brings large numbers of students, faculty and staff that choose to walk or bike to campus. There will be increasing reliance on active transportation associated with Texas A&M as parking is relocated further into the periphery of the university and high-density student only areas(e.g. Northgate area) continue to locate near campus. Both cities of College Station and Bryan place emphasis on planning and implementing projects that create a safe and pleasant active transportation environment for local citizens. All three entities and Brazos County have dedicated efforts towards improving and increasing active transportation both at the local and regional level. Additional organizations such as Blinn College, RELLIS Campus and the Chamber of Commerce have expressed interest in participating.

For its part, Bryan-College Station Metropolitan Planning Organization (BCSMPO) has formed an advisory panel to help coordinate active transportation planning in Brazos County. Through the efforts of this Panel, BCSMPO is developing as part of this plan a Regional Bicycle and Pedestrian Master Plan that not only looks to the future on a regional level, but also takes into account the active transportation planning efforts of BCSMPO members. The BCSMPO has instituted funding policy decisions to streamline the implementation and construction of active transportation projects in Brazos County.

STRATEGIES AND CONSIDERATIONS

Increasing the share of active transportation modes contributes to the success of the overall transportation system. This strategy is inherently cost effective from a public investment point of view and would have favorable impacts upon the increasing traffic congestion challenges faced in the Bryan-College Station area. There are a number of technical and policy actions which can be taken to maximize the benefits that can be offered by these modes. To accomplish the implementation of more effective active transportation strategies the Bryan/College Station MPO should consider the following:

- Support access and circulation by modes other than private vehicles. Proactively consider the potential active transportation link while planning for transportation programs Linkages apply not only to connections between residential areas and in the design of activity centers, but between transportation modes.. The requirements of the Clean Air Act Amendments of 1990 (CAAA) provide impetus for increased focus and funding of non-motorized modes in local planning and programming. Active transportation initiatives have historically been championed by interest groups and activists. Greater improvements to the total transportation system may be attained through a rational, comprehensive transportation planning process that recognizes active transportation as an integral component. BCSMPO encourages member governments to require the inclusion of active transportation facilities in new developments.

- Direct limited resources toward settings with the greatest payoff. Research and experience has shown that certain factors help explain where active transportation initiatives are most likely to succeed. These include project locations where travel distances are relatively short between residential locations and centers of activity, areas with high concentrations of people under 40 years of age (such as Northgate and Century Square) and where compatible infrastructure exists and can be modified into appropriate facilities. Areas where auto travel is difficult due to congestion or lack of suitable parking facilities are potentially good candidates as long as facilities safely accommodate active transportation. Facilities in such locations that do not meet safety standards should be quickly modified. Local examples of areas that meet these criteria are Bryan Central Business District, RELLIS Campus and the area surrounding the Blinn College Campus in Bryan.

- Focus efforts on supporting new users. Cyclists can be generalized into two categories. First, there are those that choose to ride a bicycle on a daily basis; the Choice Riders. Second, are those riders for whom no other viable mode exists; the Captives. With respect to the Choice Riders there are four generally accepted types of cyclists[9]: Strong and Fearless, Enthused and Confident, Interested but Concerned and No Way, No How! Surveys have shown that over 50% of cyclists fall into the Interested but Concerned group, that is, people who are willing to bicycle if high-quality bicycle infrastructure is in place. Those cyclists that are Strong and Fearless and Enthused and Confident, are already making use of the bicycle network. With this in mind, safe, attractive and separate bicycle facilities are the best means to attract new users by allowing them the opportunity to grow more competent and confident.

- Consider linkages which promote continuity. In many urban areas where an existing active transportation network exists, gaps may create barriers to connectivity between centers of activity. For example, a regional system of bike paths/trails may not be connected to particular sectors of a metropolitan area because hazardous gaps and general lack of coverage in the given area dissuad potential users. Similarly, pedestrian paths may be truncated, blocked or made circuitous by natural or man-made obstacles. Connectivity can be improved through identification of barriers to travel, planning for their removal and maintenance.

- Think in terms of a package of actions. Discussions with active transportations users demonstrate that there is no one, single factor that looms in the decision to bike or walk. Of the most often mentioned factors in choosing an active mode, safety, accessibility, security (such as lighting), access to a safe and secure place to lock up a bike and the availability of shower facilities at the end of a long, strenuous trip or in extreme weather rank highest. Strategies to enhance active transportation, such as providing lighting and shade for pedestrians are much more likely to succeed as a series of carefully planned packages of actions.

- Consider the linkage with transit. While higher percentages of commuters utilizing active transportation for their primary mode to work offers dividends, the potential improvements to the transportation system in terms of air quality and congestion may be greater if active transportation is given greater emphasis as supporting modes to connect with transit for longer trips. This means that careful thought should be put into the design of transit stops to be able to attract substantial numbers of users from local neighborhoods by walking or biking rather than auto. It also implies working within the formal planning process to create linkages between transit and the community via path/sidewalk connections. Attention should be given to intermodal connections, such as secure bike racks/locker areas for cyclists and shelters and adequate lighting for pedestrians.

- Create opportunities for private sector involvement and support. Developers have an important role to play in active transportation through the design of buildings and subdivisions. How they locate buildings with respect to the street, other buildings, services and transit have a definite impact on how the street functions. Proper incentives used in combination with development review procedures can and have been used successfully to implement higher design standards with respect to incorporating active transportation and transit usage. Encourage employers to increase attention to active transportation use through provision of bike facilities, showers and changing rooms.

- Emphasize education and marketing. Implementing the above strategies make active transportation a more attractive option and amplifies the importance of promoting to existing and potential users the benefits of active transportation. Many auto drivers feel that bicyclists do not have a right to use the roads. While a small percentage of bicyclists feel that they do not feel that the rules of the road do not apply to them. Directing educational program to both bicyclists and auto drivers can increase awareness with respect to users of both modes and create a safer environment for all travelers. Monitoring and evaluation, such as, with collecting appropriate data and tracking the effectiveness of specific technical, policy or marketing/informational approaches will justify program costs and improve future planning and programming efforts.

[9] https://blog.altaplanning.com/understanding-the-four-types-of-cyclists-112e1d2e9a1b

- Consider Active Transportation Safety. Active transportation modes can be safe activities. Safety issues result most frequently from conflicts between active transportation and motor vehicle modes. However, increasing numbers of active transportation users do not equate to an increased number of injuries and fatalities to bicyclists and pedestrians. On the contrary, the increased number of active transportation users serves to increase the awareness and sensitivity of drivers to the presence of non-vehicular travelers. Safety and awareness programs such as "Share the Road" are an important part of an overall safety program. Implementing the construction of safe and attractive facilities proactively increases safety. Safety improvements can be as simple as connecting sidewalks and alerting drivers to the presence of pedestrian crossings with increased visibility and warning signs. Adding island refuges across multi-lane roads improves safety for active transportation users. Protected bike lanes can increase ridership as-well-as attract new ridership away from motorized modes.[10] Bottom line: Increasing the number of active transportation users increases safety and increased safety attracts more users.

While active transportation is a time-honored mode throughout the world, it has fallen into disfavor in our American experience. That experience has been, for almost 100 years, intently focused on personal motor vehicles to the exclusion of active modes. Societal mode choices are conditioned on past experience. Implementing the measures listed in this document can dramatically change that experience so that future choices are based upon safe, efficient and comfortable use of active transportation facilities improved now. In the long-term, the success of active transportation as a viable travel mode option depends on major alterations to current development trends, planning procedures, funding programs and even public tastes and preferences.

ACTIVE TRANSPORTATION PLANNING AT BCSMPO

In 2012, the MPO Technical Advisory Committee (TAC) undertook a series of discussions with the goal of defining a process that would expedite the planning and programming of Active Transportation related projects. As a result of these discussions, the MPO Policy Board adopted Resolution RES 2014-03 at its September 2014 meeting. This resolution made the following items adopted MPO Policies:

1. Proposed bicycle and pedestrian only projects will comprise a minimum of 5% of funds available to the MPO for allocation to projects identified in the Metropolitan Transportation Plan,
2. The creation of a standing regional Bicycle/Pedestrian Committee (now known as the Active Transportation Advisory Panel (ATAP) consisting of regional stakeholders and citizen activists.

The resolution adopted by the Policy Board went on to further define the parameters of these items. In order to be selected for funding, a project must be specifically a Bicycle/Pedestrian project; the Active Transportation set aside cannot be used in conjunction with a roadway project. In addition, the project must be located on a MPO system facility functionally classed as a minor arterial or above. Finally, the project sponsor is responsible for the planning and design of the project. In other words, the project needs to be "shovel ready", leaving the TxDOT Design Engineers free to focus on designing larger projects that are going through the project development process. TxDOT Bryan District, or the local municipality, oversees the construction phase of the project.

In adopting the resolution, the MPO Policy Board also allowed for the creation of ATAP, or Active Transportation Advisory Panel. The Memorandum of Understanding which created the Panel outlined its structure and duties.

- Assist member entities in resolving conflicts related to active transportation projects.
- Recommend individual projects to the MPO Technical Advisory Committee.
- Assistance with public involvement.

[10] Adapted from: Addressing Safety and Health Concerns to Increase Active Transportation, rails-to-trails conservancy, https://www.railstotrails.org/policy/building-active-transportation-systems/addressing-safety-and-health-concerns/

- Assistance in creating a smooth transition in design and contextual detail when crossing from one jurisdiction to another.

ATAP is facilitated by MPO staff and is composed of one stakeholder representative from each jurisdiction and one citizen representative from each jurisdiction (including Texas A&M University).

REGIONAL BICYCLE AND PEDESTRIAN MASTER PLAN

Following on the efforts to create a regional major thoroughfare plan, (The 2050 Regional Thoroughfares Concept), BCSMPO is developing the Regional Bicycle and Pedestrian Master Plan in an effort to facilitate the coordination of active transportation planning efforts and provide a framework for future development of the regional active transportation network on a regional level. The effort began with discussions regarding the types of facilities that should be included in a regional plan. Each entity adheres to accepted design standards for bicycle and pedestrian facilities, but use different classifications within their unique planning framework. Therefore, it was decided by ATAP that a simpler framework depicting three types of facilities would be the most easily understood by the public and still allow the entities some leeway in developing and designing the facilities.

The three types of facilities depicted in the Regional Bicycle Pedestrian Plan are:

- Shared Use Path – Facilities on exclusive right-of-way with minimal cross flow by motor vehicles. Shared use paths are sometimes referred to as trails; however, in many states the term trail means an un-improved recreational facility…Users are non-motorized and may include but are not limited to: bicyclists, in-line skaters, roller skaters, wheelchair users (both non-motorized and motorized) and pedestrians, including walkers, runners, people with baby strollers, people walking dogs, etc. These facilities are most commonly designed for two-way travel, and the guidance herein assumes a two-way facility is planned unless otherwise stated.[11] On average, the paved width of a shared-use path is 3.0 meters (approximately 10 feet), as depicted in Figure 4.8. However, BCSMPO is recommending a design standard of 12 feet for shared-use paths in Brazos County for new construction. Retro-fitting along existing corridors may be as small as eight feet but should, unless constrained by right-of-way, be a minimum of 10 feet.
- Bike Lane – as defined by AASHTO, is "a portion of a roadway which has been designated by striping, signing and pavement markings for the preferential of exclusive use of bicyclists". Typical bicycle lanes are shown in Figure 4.9, taken from the AASHTO Guide for the Development of Bicycle Facilities.[12] The BCSMPO ATAP recommends a minimum bicycle lane width of 6 feet.
- Signed Bike Route – These routes are typically designated along more lightly traveled facilities. Typically, secondary or residential roads and collectors. They may designate a preferred set of roads connecting an school to a neighborhood and provide bicyclists with a safe and appealing way to get around a community.[13]

In addition, the Plan shows each type as existing and proposed.

[11] https://safety.fhwa.dot.gov/saferjourney1/Library/countermeasures/08.htm
[12] https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/ch4.cfm
[13] Adapted from: http://files.www.campo-nc.us/programs-studies/bicycle-and-pedestrian/NCDOT_on_Signed_Bike_Routes.pdf

Figure 4.8 Example Cross-Section of a Two-way Shared-use Path

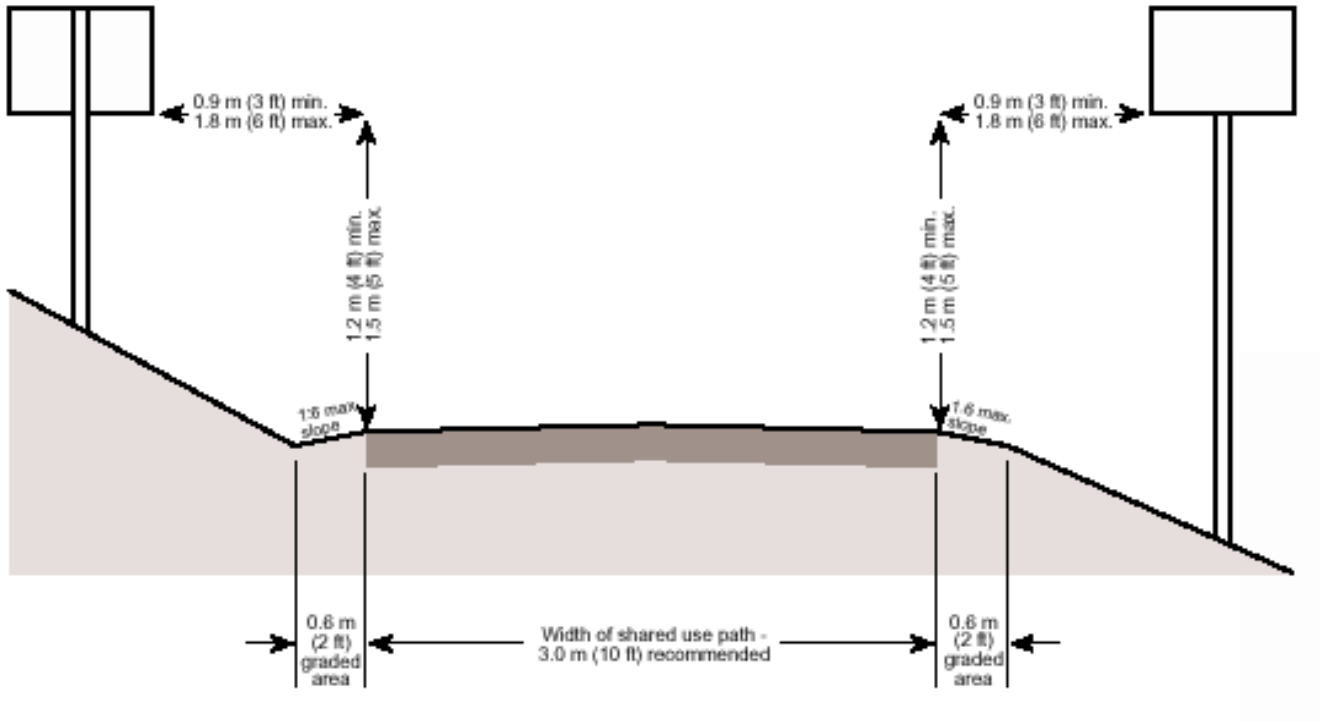
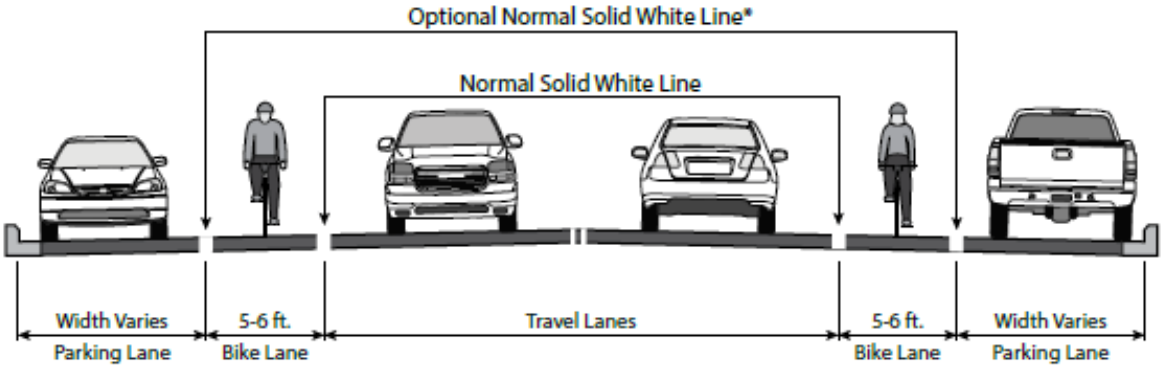


Figure 4.9 Bicycle Lanes Under Varying Conditions



On Street Parking

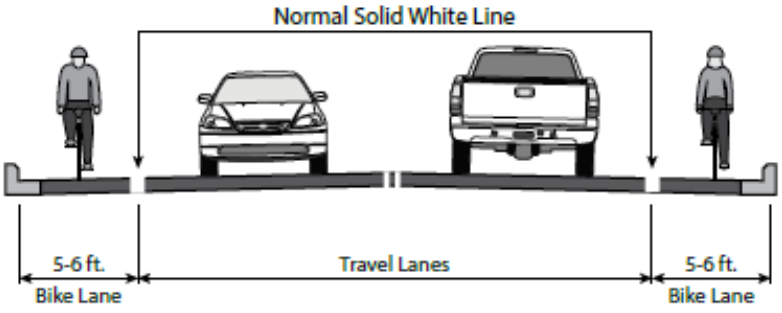
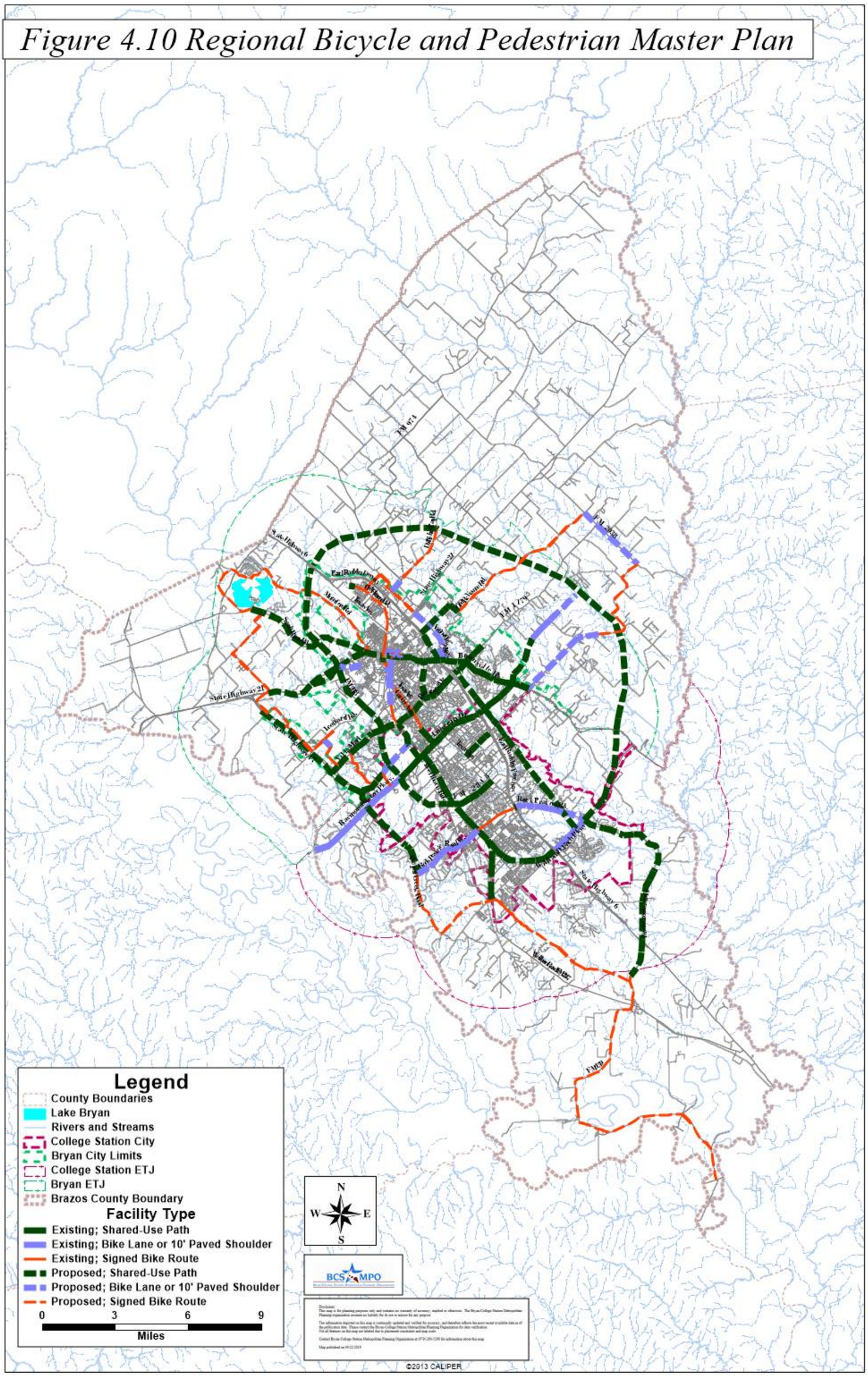


Figure 4.10 Regional Bicycle and Pedestrian Master Plan



Transportation Demand Management

INTRODUCTION

Transportation Demand Management (TDM), or simply demand management, is defined a set of strategies aimed at maximizing traveler choices. Traditionally, TDM has been narrowly defined as commuter ridesharing and its planning application restricted to air quality mitigation (conformity analysis), development mitigation (reducing trip generation rates and parking needs), or efforts to increase multi-modalism in transportation plans. A more contemporary definition of TDM consists of maximizing travel choices, as stated in the definition provided in an Federal Highway Administration report on TDM:

> *Managing demand is about providing travelers, regardless of whether they drive alone, with travel choices, such as work location, route, time of travel and mode. In the broadest sense, demand management is defined as providing travelers with effective choices to improve travel reliability.*[14]

Strategies most familiar to the citizens of Brazos County would include carpools, peak period transit ridership, bicycling and walking. In addition to these mobility options, there are a variety of TDM support strategies, such as showers and lockers at the work site to encourage bicycling to work, or in a less traditional sense, land-use planning methods. This section will examine TDM strategies and consider their effectiveness potential in Brazos County.

MOBILITY OPTIONS

Mobility options entail the different modes available to increase vehicle occupancy rates and therefore improve roadway efficiency and reduce congestion. These include:

- Public Transportation
  - Bus (Local, Express, Bus Rapid Transit)
  - Rail (Heavy, Light, Mono)
  - Circulators (rail, bus, tram)
- Private Buspools
- Ridesharing
- Vanpools
  - 15 passenger
  - Nine passenger
  - Mini-vans
- Carpools
  - Zimride
- Bicycles
  - Rider-owned
  - Loaner/donor/shared
- Walking
- Car Sharing
  - Flexcar
  - Zipcar

[14] https://ops.fhwa.dot.gov/plan4ops/trans_demand.htm#_ftn1

- Telework
    - Home-based
    - Remote work center

Given the population of Brazos County, public transportation and carpools would be the most utilized. Buspools are intended for long commutes (typically an hour or more) and are limited primarily to large (over 1,000,000 people) metropolitan areas that have commuters accessing jobs from rural areas.

According to the 2015 American Community Survey, Brazos County journey to work data shows the following:

- Drove Alone 77.8%
- Carpool/Vanpool 11.6%
- Telework 3.2%
- Walk 3.0%
- Transit 2.7%
- Bicycle 1.8%

According to a 2017 survey conducted by Texas A&M, how students traveled to campus is as follows:

- Drove Alone 58%
- Campus Transit 25%
- Bicycle 6%
- Walk 6%
- Carpool/Vanpool 5%

To maintain existing levels of congestion as Brazos County grows, the general population mode split for journey to work will need to more closely match how Texas A&M students currently travel to class.

In terms of public transit, Brazos County is served by Brazos Transit District and the Texas A&M Transit System. A detailed discussion on these two systems is contained in the Transit Chapter of this Metropolitan Transportation Plan. Currently both local and express service operate in Brazos County. Bus Rapid Transit (BRT) service is a potential option but would require roadways to be reconfigured to provide a bus only lane in each direction. The two best candidate roadways for BRT service are Texas Avenue and Wellborn Road given the density of development along the corridors. However, both roadways have significant right-of-way limitations that make adding an additional lane very problematic.

While there is much interest in public rail transportation, the reality is that we do not have the development densities necessary to support a community-based rail network. In addition, the rail lines that bisect Brazos County are owned by Union Pacific and would require that rail line usage would need to be leased. At this time, Union Pacific has shown no interest in this type of arrangement.

Vanpooling is another option for consideration. For vanpooling to work, a regional commuter assistance agency would need to be developed to assist in matching potential riders with each other. Fifteen passenger vans would be utilized for longer distance commutes originating in adjacent counties. Nine passenger vans would be most successful if they were commuters from adjacent counties or from the “edges” of Brazos County into the urban core. Mini-vans would be effective for all areas of Brazos County and would not always need a commuter assistance program to form.

Carpools are probably the most viable option for residents who have readily available access to a vehicle. In the TDM community carpools are called either formal or casual. Formal carpools are arranged through a commuter assistance agency. Casual carpools are family members, friends or neighbors who make the decision to share a ride to work. Nationally, casual carpools make up about 75% of all carpools. Texas A&M Transportation Services has a carpool service called Zimride. Like commuter assistance agencies, once carpoolers are matched, they remain linked to the database but do not respond to rideshare requests.

Bicycling and walking are also viable options in Brazos County. For a more detailed discussion of these options, see the Active Transportation chapter in this Metropolitan Transportation Plan.

Carsharing exists on the Texas A&M campus. Both Flexcar and Zipcar are company names that provide carsharing services. Typically, cars are rented by the hour and are used for short distance trips. Car sharing is most useful for commuting as an emergency back-up for people that use other mobility options to get to work and then find they need a car to run an errand. They are also popular with students who want access to a car for a short period of time.

Telework consists of Brazos County citizens who work from a remote location rather than travel to their worksite. The most common form of telework is an employee who works from their home. Another form of telework is commuting from the home to a telework center away from the place of employment. This type of arrangement is popular in mega-regions where travel into the urban core is time-consuming.

PUBLIC MODE SUPPORT STRATEGIES

These types of strategies are sponsored by state and local governments to try and persuade citizens to consider and utilize other modes of transportation besides driving alone to work. They are also beneficial for helping citizens to not revert back to driving alone to work. These strategies include:

- Commuter Assistance Program
  - Ridematching services
  - Marketing and Education
- Transit Support
  - Fare subsidies
  - Operating expense assistance
- Bicycling and Walking Support
  - Construction of facilities
  - Maintenance of facilities
- High Occupancy Vehicle (HOV) Facilities
  - HOV lanes
  - High Occupancy Toll (HOT) lanes
- Park and Ride Lots
- Telework Technology
- Texas A&M Trip Planner

While a commuter assistance program may have ancillary benefits through marketing and education, most ridematching services see limited results. A commuter assistance program was at one time housed at the Brazos Valley Council of Governments but was discontinued due to lack of funding and a determination that it did not provide an adequate return on the investment.

Transit fare subsidies for Brazos Transit District may provide some opportunity but public subsidies of bus fares are typically seen only in major metropolitan areas (over 1,000,000 residents). After the 2020 census, local governments will be required to provide funding to Brazos Transit District at approximately $600,000 per year just to maintain existing service.

Both Bryan and College Station are in the process of improving bicycle and pedestrian facilities, often leveraging their own funds to obtain state grants. By MPO policy, at least five percent of Category Two funds must be set aside for bicycle and pedestrian projects. After 2020, when it is anticipated that the MPO will be re-designated as a transportation management area (TMA), the MPO will have access to a TxDOT funding category that is solely for use on bicycle and pedestrian facilities.

High Occupancy roadway facilities have limited implementation nationally. They are seen in very large metropolitan areas where there use provides at least a 10 minute time savings over general purpose lanes. Park and ride lots, especially in more rural areas of Brazos County and in adjoining counties may be worth considering. These lots are typically on TxDOT right-of-way on parcels leftover after they were purchased for a roadway improvement project.

The Brazos Valley Council of Governments is undertaking an aggressive fiber optic network project to provide rural broadband to all seven counties they serve. This will allow many to consider teleworking rather than driving to Brazos County for work.

EMPLOYER-BASED SUPPORT STRATEGIES

As the name implies, these are private business options that are offered to their employees to encourage ridesharing and transit use. Of the ones listed here, alternative work schedules on-site amenities and telework are being offered in Brazos County. For a community the size of Brazos County, monetary incentives, parking management (except at Texas A&M), and transportation management associations are not currently necessary nor are they expected to be during the planning horizon.

- Monetary Incentives
  - Transportation subsidies
  - Pre-tax deductions
- Alternative Work Schedule
  - Flex-time
  - Staggered work hours
  - Compressed work weeks
- Commute Support Program
  - Guaranteed Ride Home
  - Amenities (dry cleaning, shops, etc.)
  - On-site daycare
- Parking Management
  - Preferential parking
  - Parking charges
- On-Site Amenities
  - Bike racks and lockers
  - Showers and lockers
- Transportation Management Associations
  - Employee services
  - Pooled resources
- Telework

PRICING STRATEGIES

In the context of this chapter, these strategies are intended to encourage commuters to rideshare or take transit rather than as funding options for transportation projects (though as funding options gasoline taxes, vehicle registration fees and a Vehicle Miles Traveled tax are all under consideration either at the state level or in various locations in Texas).

- Gasoline Tax Increases
  - Federal, State and Local option
- Vehicle Miles Traveled (VMT) Tax

- Congestion Pricing
  - Peak period increases

    - Off-peak incentives
- Parking Tax

Gasoline tax increases must be approved by the Texas legislature at the state and local level. A vehicle miles traveled tax has been under consideration in various states but is influenced by the complexity of tax distribution and the inherent privacy issues associated with the distribution. With its large student population, any registration fees or VMT tax may not have a large impact on Brazos County since student vehicle registrations are typically associated with their parents' home address.

PUBLIC POLICY STRATEGIES

These strategies are requirements established by local governments to either require employers to help manage roadway congestion or to establish areas where pedestrians and bicyclists have priority over motorized vehicles.

- Trip Reduction Ordinances
    - Employer requirement
    - Developer requirement
- Parking Restrictions
    - Based on day and time
- Car Free Zones

Trip reduction ordinances are used in very large metropolitan areas. They either establish a vehicle occupancy rate requirement or a cap on the number of vehicles expected to be generated by a new development. In most cases there is a penalty for not establishing a program but there is no penalty if you don't achieve the requirement. A local government may also restrict parking in certain areas to detract motorists from attempting to drive in those areas. A car free zone is common on university campuses and is used in some city centers in Europe and Asia.

LAND-USE STRATEGIES

These are some of the best TDM strategies as they are attempts to either shorten trip lengths or make them unnecessary altogether. Such strategies are usually enacted by local governments through either zoning requirements or subdivision regulations though new requirements may be mandated for existing businesses or multi-family residential communities.

- Mixed Land-Use
    - Multiple uses in development
    - Vertical change in uses
- Jobs-Housing Balance
    - Home and work in proximity
- Transit-Oriented Design
    - Increase density requirements
- Pedestrian Friendly Design
- On Site Amenities
    - Bicycle and pedestrian accommodations

Both types of mixed land-use have already been developed in Brazos County and more of both types is planned for the very near future. Both cities have, through their zoning ordinance and land development regulations, actively promoted these types of land use. A new "fad" in mixed-use development is having drug stores on the first floor, doctor's offices on the second floor and senior apartments on upper floors.

A Jobs-Housing balance community has been partially developed through the Atlas development, however, a number of higher-end properties in Traditions are home to commuters throughout work sites in Brazos County. There are not any jobs-housing developments for lower income residents.

Transit-oriented design requires higher density development along a corridor. Typically, the higher the density the larger the carrying-capacity of the transit vehicles along the corridor. According to the Lincoln Institute of Land Policy's "Visualizing Density" report a traditional fixed-route transit service requires 10-15 dwelling units per acre, and bus rapid transit service about 15-25 dwelling units per acre in residential areas. For non-residential and mixed-use developments, reports suggest using floor area ratio (FAR), a measure that is the relationship between the total amount of usable floor area that a building has, or has been permitted to have, and the total area of the lot on which the building stands. "A Framework for Transit Oriented Development in Florida" suggests that fixed-route transit requires a FAR of between 1.0 and 1.75. For bus rapid transit the FAR increases to 1.75-2.5 along the corridor and 4.0-6.0 at stations. For light-rail facilities, 55-85 dwelling units per acre or a FAR of 3.0 to 4.0 are needed along the corridor and at stations the key measure switches to employment and residential population of 45,000 to 70,000 within a quarter mile walk of the station. Heavy rail and monorail densities are even higher.

The remaining land use strategies are intended for individual sites and developments. Including shared use paths, bicycle lanes, sidewalks, direct bicycle and pedestrian connections from storefronts to the street, street trees between vehicle lanes and sidewalks, or simple bicycle racks can make bicycling and walking more viable commute options. The key to these options is that bicyclists and pedestrians feel they are in a safe and somewhat protected environment.

Transportation System Management & Operations

OPERATIONAL IMPROVEMENTS

Building new roads and adding capacity to existing roads are not the only means of alleviating congestion. There are a host of other, less costly solutions that in many cases can reduce congestion and improve the flow of traffic through a corridor. One such category of improvements are operation changes in the functioning of the transportation system. This consists mainly of making changes to the operation of traffic signals at intersections. These changes consist of changes to the signal phasing by changing the order or amount of time in which each direction can travel through the intersection. Operational improvements such as these can greatly improve the conditions at a single intersection. In the case of an entire corridor, it is possible to coordinate the operation of traffic signals all along the corridor, allowing traffic to move in a smoother manner over longer distances.

Other categories of operational improvements include transportation system management measures such as changes in the posted speed limit, speed bumps, etc. Any of these measures that change the way in which traffic traverses a facility or corridor constitutes an operational improvement.

KYLE FIELD TRANSPORTATION PLAN

In an effort to reduce congestion on game day and during other events, the Texas A&M Transportation Institute, in coordination with the City of College Station and the City of Bryan, has instituted a Gameday Operations Transportation Management Plan. The plan incorporates several management and operation techniques to reduce congestion on game days. Traffic management is addressed by providing real time information to the public on traffic, available parking, and shuttle routes. This information is available on the Destination Aggieland smartphone application, social media and numerous websites. The plan also addresses changing the direction of lanes to increase capacity as well as scrutinizing signal timing. Multi-modal transportation options are available with off-site parking and shuttle service from the American Momentum Bank Plaza and Downtown Bryan. The plan addresses improvements to both public transit and pedestrian modes as well to reduce congestion.

(Source: TAMU/Handout)

INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent Transportation Systems (ITS) enhance the safety and efficiency of a transportation system through the application of technology. ITS can reduce driver frustration by providing timely information related to traffic congestion caused by heavy volumes or incidents. ITS can also provide alternative route recommendations. In addition, ITS can provide additional data collection capabilities to assist planners in analyzing regional congestion and system needs.

Local efforts include upgrading existing traffic signal components, the use of ITS cameras, dynamic message systems, lane control signage and redundant communications links between the system components and participating agencies.

INCIDENT MANAGEMENT

Federal Highway Administration studies have documented that approximately 25 percent of all delay is caused by traffic incidents. Efficient management of these incidents, such as stalled vehicles, crashes or debris in the roadway, is key to reducing the congestion that results.

(Source: www.marinij.com)

In the Bryan/College Station region the methodology currently in place to address traffic incidents needs to be re-evaluated with the intention of reducing the average clearance time because these incidents can be very distracting and lead to additional crashes. These issues may be addressed through improved coordination/communications among emergency responders and between the transportation focused entities and emergency response personnel as well as the utilization of new technology. The objective should be to improve our ability to evaluate how efficiently incidents are being cleared and developing strategies to improve overall performance. This issue will become more acute as the region grows and traffic flow between surrounding major metropolitan regions increases.

Commuting

INTRODUCTION

Not surprisingly, the National Highway System (NHS) routes are important for traffic movement within Brazos County. During rush hour, the most congested facilities are State Highway 6 (Bypass), Farm to Market 2818 (Harvey Mitchell) and portions of both Farm to Market 158 and Farm to Market 2154 (Wellborn Road). The remaining NHS routes listed are also congested during peak periods with much of the delay being a function of traffic volume, crashes, and signal timing.

For commuters who travel into Brazos County from other counties, the following roadways are important commuting corridors:

- State Highway 21
- State Highway 6 (Texas Avenue)
- Farm to Market 60 (University Drive)
- State Highway 30
- State Route OSR (Old San Antonio Road)

The MPO is developing a Congestion Management Process (CMP) which is covered later in this document. However, congestion caused by commuting is either the number one or number two concern listed by citizens depending on which communities survey you review.

BRAZOS COUNTY COMMUTING CHALLENGES AND LOCAL RESPONSES

The Bryan-College Station area has been attacking the mobility issues with local strategies, projects and funding with help from the Texas Department of Transportation (TxDOT). Our unique attributes provide us more abilities, but also mean we need more assistance to address problems that greatly outsize our ¼ million population.

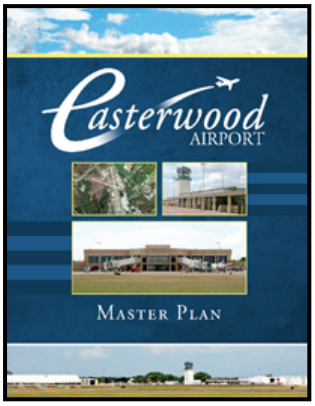
- The Bryan/College Station area is the 15th largest Texas metro area with 250,000 residents and college students, and we are home to the largest University in the state. During a class day, our campus is the 4th largest Texas downtown, with more than 75,000 students, faculty and staff. Our peer cities have dispersed employment patterns that are easier to serve with their street networks.
- There are 414 miles of 6-lane Interstate or other freeways across Texas with daily traffic volume less than the 70,000 that we see on the 4 lanes of State Highway 6. There are another 27 miles of 7-or-more lane freeway with daily traffic less than 70,000 vehicles.
- As a result, the Bryan/College Station MPO used an entire year of its available Category Two funds ($13 million) to leverage an additional $150 million of TxDOT investment on State Highway 6. That still leaves us about $100 million dollars short for all of the improvements on State Highway 6 to complete the MPO's #1 ranked project.
- Bryan and College Station City Councils have approved several housing developments allowing tall, dense student housing in walking distance of campus. A&M has also close to 14,000 students living, working, walking, cycling, and taking transit on-campus.
- The City of Bryan has a local transportation fee levied on home owners and businesses that provides a consistent and sustainable road repair funding source; it raises about $5.5 million each year, in addition to over $200,000 in annual signal, sign, and marking maintenance funding from City general revenue. Over the recent five year period, Bryan will also install $6.2 million in traffic signal improvements. In addition, in the current approved 5 year Capital Improvement Program, the City of Bryan will construct $33 Million worth of roadway widening and extensions, sidewalks, bicycle paths and intersection improvements.
- The City of College Station is in the middle of a five-year program to construct $60 Million worth of roadway widening's, medians, extensions, intersection improvements and traffic signals. The City spent $5 million on their

ITS plan, and combined it with another $1M in capital funding from the Texas A&M University System to support game-day operations.

- Brazos County will spend approximately $9 million on Capital Improvement Projects and an additional $4.795 million on maintenance of existing infrastructure. In addition, $60,050 will be spent on the County's State Lateral Road system in this fiscal year.
- The MPO has a regional thoroughfare concept - the result of nine public open houses, two public meetings, involving over 300 attendees, and resulting in 2,000 written and verbal comments.
- The Regional Intelligent Transportation System Architecture Project, begun with federal funding support, standardized the area's traffic signal communications and brought together the operations elements. It also jump-started activities in the Cities and on-campus to invest in operational improvements on the limited road network around our downtown.
- The region is committed to pedestrian and bicycle improvements as evidenced in the Capital Improvement Programs. The two cities, with TxDOT multi-modal funding support, will invest well over $10 million in sidewalk improvements and a number of the highest priority projects in the MPO Regional Bicycle Masterplan are being implemented.
- The MPO is working with human service agencies to determine a better way to coordinate paratransit trips in our seven-county region. This will reduce duplication of service, allow more trip requests to be filled and improve the overall wellness and quality of life for our disabled residents.
- The Texas A&M Transit Service has the 7th largest ridership in the state – 7.75M rides in 2018. When combined with the Brazos Transit District service, the two have ridership equivalent to the average of US metro areas between 500,000 and 750,000. The 35 transit rides per person (highest in Texas) puts us at about 30th of all metro regions in the US – close to regions like Minneapolis-St. Paul, Denver and San Diego. The next closest Texas areas are San Antonio and Austin at around 25 transit rides per person (ranked 56 and 58). Source: fivethirtyeight.com
- Students fully fund the A&M Transit Service through a student activity fee. All students can ride the bus for free and by showing their student I.D., obtain free rides on the BTD system.
- Likewise, BTD transit pass owners can show their pass and ride the Texas A&M transit buses for free.
- Texas A&M has only about 55% of the 67,000 students who commute to campus by driving alone. About 25% use transit, 6% walk, 6% bike, and 5% carpool.
- Texas A&M developed an award-winning smartphone app for football traffic – now used year-around for campus traffic, bus and parking info. This is something many metros of 1M+ population don't have.
- Texas A&M is looking at ways to implement flexible work hours within a heavily scheduled work environment as a way to even out the traffic load.
- Texas A&M is exploring a range of technology and policy solutions to provide travel options for trips to and around campus. We've had discussions and pilot tests involving automated vehicles, better routing choices and electronic connectivity to provide more rapid information to travelers.

Aviation

EASTERWOOD AIRPORT



(Source: Coffman Associates, Inc.)

Easterwood Airport is designated as a primary commercial service airport under the National Plan of Integrated Airport Systems (NPIAS). As such, it is eligible for federal aid under the Airport Improvement Program. The airport is owned by TAMU and operated, under a contractual agreement, by Aston Limited. The airport is located on the southwest side of College Station, on the main campus of TAMU. The airport sits in the southwest quadrant of the intersection of FM 60 (Raymond Stotzer Parkway) with FM 2818 (Harvey Mitchell Parkway). TAMU has designated approximately 733 acres as airport property. An additional 197 acres are designated for airport use at some point in the near future.

The airport receives service from several different carriers utilizing a mix of regional jets and larger turboprop aircraft. The airport experiences a significant level of charter activity using B-737, MD-83, and B-757 passenger aircraft. Easterwood Airport supports local businesses with several turboprops and business jets based at the airport as well as an active general aviation community. Texas A&M University supports a flying club based at Easterwood.

Easterwood Airport's 2013 Master Plan seeks to determine the projected facility needs of airport users through the year 2031, outline priority projects, and develop land use compatibility planning policies that will protect the airport from future encroachment by incompatible land uses. Some of these key priorities include:

- reconstructing the lower level terminal building entry as well as Taxiways A and D
- overlaying the north airport rescue and firefighting perimeter road
- improving the McKenzie entrance road drainage
- constructing a rental car preparation facility and replacement fuel farm
- expanding passenger terminal building as well as the apron
- acquiring RPZ lands not on airport property
- the eventual closing of Runway 4-22
- extending Runway 16-34 to the south by 500 feet

Terminals

Commercial Air carrier passengers enplane and deplane on the northwest side of the airport at the William A. McKenzie Terminal. The terminal has two levels and contains 32,188 square feet of space. The Terminal is now equipped with two passenger boarding bridges that passengers use to board and deplane from the second (upper) level. Public access is via FM 60 (University Dr./Raymond Stotzer Pkwy.), off of the Turkey Creek Road exit.

A number of tenants are located in the McKenzie Terminal. These include two airlines, American Eagle (2009-present) and United Express (2012-present), three rental car agencies, Avis, Enterprise, and Hertz, a restaurant, a food vending area, and Easterwood Airport Administrative offices. The airport averaged 72,676 enplanements between 2009 and 2013, as shown in Figure 4.11.

The General Aviation (GA) Terminal (the former air carrier terminal building), which was remodeled in 1994, serves

general aviation users. It is located on the east side of the airport and is accessed off of FM 2818 (Harvey Mitchell Parkway) or from FM 2347 (George Bush Drive). The GA Terminal Building has approximately 5,200 square feet of space on a single level. The GA Terminal houses airport administration offices, and provides reception facilities for Avolar Aircraft Maintenance, the Brazos Valley Flight School, the TAMU Flying Club, TAMU System aircraft, and public aircraft.

Figure 4.11 Easterwood Airport Activity
for both international & national flights

	2014	2015	2016	2017	2018
Enplaned	70,685	70,706	69,738	67,519	84,733
Deplaned	68,980	69,689	68,764	67,317	84,114
Total	139,665	140,395	138,502	134,836	168,847

(Source: Easterwood Airport)

Runway Systems

Easterwood Airport has three runways (Figure 4.12):

- Runway 16-34 is the primary runway and is 7,000 feet long by 150 feet wide. This runway is equipped to handle both precision instrument landing systems (ILS) and non-precision instrument approaches.
- Runway 10-28 is 5,160 feet long by 150 feet wide. It is the primary crosswind runway and is most often used by general aviation aircraft during crosswind situations. This runway is equipped to serve non-precision instrument approaches.
- Runway 4-22 is 5,150 feet long by 150 feet wide. It is a secondary crosswind runway, is considered a visual, daylight use only runway, and is typically not eligible for Federal Aviation Administration (FAA) funding.

Figure 4.12 Easterwood Airport

Air Traffic Control Towers (ATCT)

The airport is served by a FAA contract air traffic control tower, which operates from 8:00 AM until 9:00 PM, seven days a week. Easterwood Airport is also serviced by the Houston Air Route Control Center.

Automobile Parking

Automobile parking lots are located at both the McKenzie Terminal and the GA Terminal. The McKenzie commercial parking lot consists of 450 pay parking spaces and 50 spaces reserved for rental cars. The first two hours of parking are free; afterwards it is $1 per hour or $7 per day or $35 per week (5-7 days). The GA parking lot is comprised of 70 total parking spaces for both free public parking and employee parking. They also offer parking passes for 6 or 12 month packages.

Aircraft Storage

Aircraft hangar facilities consist of three corporate hangars, two community hangars (one houses the TAMU aircraft), and nine "Port-a-Port" style T-hangars for storage of GA aircraft. The GA ramp and hangars have parking space for up to 150 GA aircraft, varying in size from small single engine to large corporate jets. The commercial air carrier ramp can also accommodate up to four Boeing 757 aircraft.

COULTER AIR FIELD

The airport is owned by the City of Bryan. Coulter Air Field encompasses 248 acres and has approximately 41 flight operations recorded each day (including weekends). The Texas Flying Club operates at Coulter Air Field and provides flight instruction services. The main entrance to Coulter Field is from State Highway 21, a major arterial leading to and from northeast Bryan.

Figure 4.13 Coulter Field

Coulter Field receives federal funding through TxDOT . Improvements are funded through TxDOT grants or local dollars. Primary revenues are collected through T-Hangar rentals and fuel sales.

Terminals

The City Terminal is a 4000 square foot structure that operates as the main terminal at Coulter Air Field. The City Terminal is appointed with amenities for pilots and guests. This terminal provides administrative services for all incoming and outgoing activities at Coulter Air Field. Its manned hours of operation are from 8:00 AM to 5:00 PM, Monday through Friday; 10:00 AM to 3:00 PM on Saturday and Sunday, and has 24 hour self-service fueling.

Runway System

The airport has one runway, runway 15-33, that is 4000 feet long and 75 feet wide (Figure X.X). There are GPS approaches for each end of the runway.

Air Traffic Control Towers (ATCT)

Coulter Air Field is a non-towered airport. There is a controlled airspace around Coulter Air Field that is the control zone areas of Easterwood Airport. There are also control zones around Rocking 7 and Hilltop Lakes to the north of Coulter Field.

Aircraft Storage

Coulter Field has two types of hangers for aircraft storage. The T-hanger, in which Coulter Field houses 86 aircraft and two community hangers that house a total of 60 base planes and can service any piston and turbine aircraft. The aircrafts based at Coulter Air Field include:

- Aircraft based on the field: 86
- Single engine airplanes: 80
- Multi engine airplanes: 6
- Jet airplanes: 2
- Helicopters: 1

Coulter Air Field Future Developments

Airport Layout Plan (ALP) will be completed in 2020. The ALP will review existing facilities, identify development constraints, consider runway extension, develop future demand forecasts, and identify facility improvements.

Capital Improvement Project (CIP) 2020-2021. In FY20 work will commence on the previously postponed phase two of the airport rehabilitation project. Phase two will include the overlay and marking of Taxiway Bravo, rehabilitation of runway 15-33 and the rehabilitation of Taxiway Alpha.

Intercity Bus

INTRODUCTION

Intercity bus is a form of transportation in which a bus with front doors only, high-backed seats, separate luggage compartments and restroom facilities provide service on regular routes and schedules between metropolitan areas. The Bryan College Station area is served by two carriers, Greyhound Lines, Inc. and Kerrville Bus Company.

GREYHOUND LINES, INC.

Greyhound Lines, Inc, usually shortened to Greyhound, provides twice daily departure service from the Roy Kelly Parking Garage in downtown Bryan. One route is northbound to connect to transfer points in Waco and Dallas. The northbound route departs at 10:15 AM. The second route is southbound to connect to a transfer point in Houston. This route departs from Bryan at 5:30 PM. Those wishing to travel to Bryan will arrive at 5:20 PM if travelling from the Dallas or Waco transfer points or at 10:05 AM if travelling from the Houston transfer point. The Greyhound station at Roy Kelly Parking Garage is open from 7:00 AM to 7:00 PM Monday through Friday. On Saturday, Sunday and Holidays the station is open from 9:00 AM to 11:00 AM and 4:00-6:00 PM.

KERRVILLE BUS COMPANY

Kerrville Bus Company is a subsidiary of Coach USA. Coach USA owns more than 25 bus carriers in North America, operating scheduled bus routes, motorcoach tours, charters, and/or city sightseeing tours. These local carriers are now operating across the continental United States, serving a variety of communities and their needs. These local carries are independently managed and operated. The Kerrville Bus is geared towards Texas A&M students but is open to the general public. Similar to Greyhound, Kerrville Bus provides northbound service to Waco, Grand Prairie and Dallas and southbound service to Houston. Buses depart from the Wisenbaker Research Center on the Texas A&M campus on Fridays (5:45 PM southbound, 6:00 PM northbound) and return service is available on Sunday (arrival at 8:00 PM from the north and 8:25 PM from the south). Connections in Grand Prairie and downtown Houston connect to another Coach USA subsidiary called Megabus.com. Megabus.com provides service to just over 100 cities in North America.

TEXAS CENTRAL RAILWAY

The Texas Central Railway is moving forward with plans to construct a high-speed rail line between Dallas and Houston. There will be only one mid-point stop and that will be in adjacent Grimes County in the vicinity of Roans Prairie. It is anticipated that making connections between the mid-point stop and Bryan/College Station will involve multiple modes including intercity bus routes. The nature of these connections and the role of intercity bus service has yet to be studied. The Bryan/College Station MPO will monitor this situation and become involved in planning as is necessary to ensure the efficient movement of people and goods to and from Brazos County.

Freight

INTRODUCTION

The two primary forms of freight in, through and to Brazos County are the Union Pacific railroad and truck shipments. This section will explore the existing conditions for rail and trucking.

TRUCK TRANSPORT

The motor freight carrier industry contributes substantial economic vitality to the Bryan/College Station area. Traffic congestion, from freight trucks, has been steadily increasing since the creation of the North American Free Trade agreement (NAFTA). There are two primary corridors used by motor carriers. These major routes are along SH 6 (Earl Rudder Freeway) and SH 21. In addition, a road survey conducted by the Texas A&M Transportation Institute (TTI) determined that the roads with the highest volume of motor carrier traffic after SH 6 and SH 21 are:

- Old San Antonio Road
- BS 6R (Texas Avenue)
- FM 60 (University Drive)
- FM 1179 (Briarcrest/Villa Maria)
- FM 2818 (Harvey Mitchell Parkway)
- FM 2154 (Wellborn Road)
- SH 40 (William Fitch Parkway)
- SH 47
- SH 30 (Harvey Road)
- FM 158 (William J. Bryan Parkway/Boonville Road)

Other important routes used by freight carriers are, FM 2038, South College Avenue, Finfeather Road, FM 974, Greens Prairie Road, George Bush Drive, Turkey Creek, Sandy Point Road, and FM 2776.

Currently, there are nine motor freight carriers in the Bryan/College Station area, three of which provide service outside of Texas. At any given time, these nine providers have up to one hundred tractor-trailers in combined operation.

The Bryan/ College Station MPO ranks #145 out of 365 metropolitan planning organizations within the continental United States concerning freight growth, with an annual growth rate of .34%. All MPO's within the state of Texas average 0.44 The ranking was developed using IHS Global Insight's proprietary Transearch database of U.S county-level freight movement.

Rank	MPO	State	Tons 2007	Tons 2017	CAGR
145	Bryan-College Station MPO	Texas	5,296,281	5,476,453	0.34%

The Intermodal Surface Transportation Efficiency Act (ISTEA) along with the follow up legislation found in the Transportation Equity Act for the 21st Century (TEA-21), the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act have expressly linked the transportation of goods to the planning process. Specifically, motor freight carriers are to be included in the planning process. In particular, plans should *"…identify the projected transportation demand of persons and goods…"*

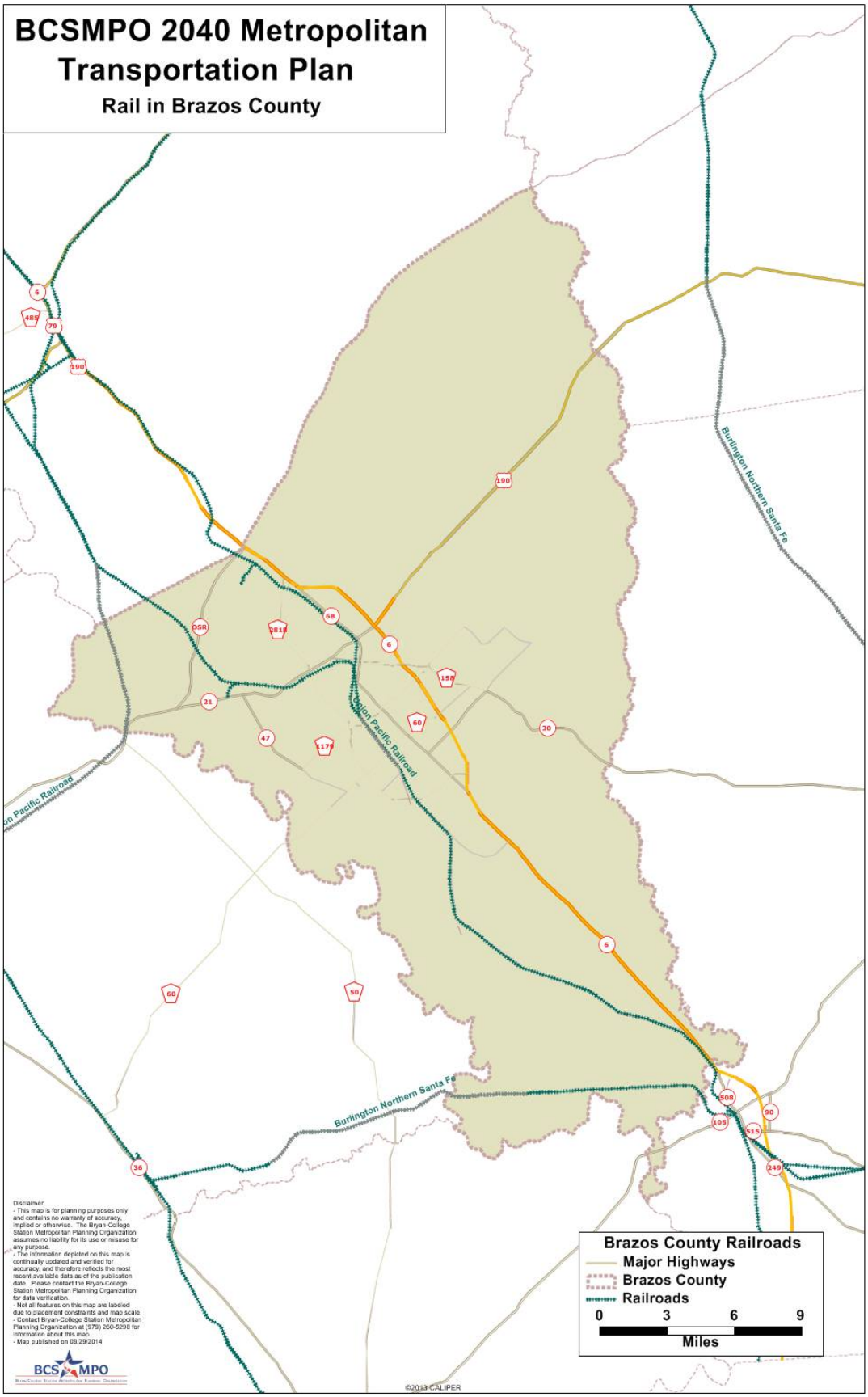
The intermodal path that products take from raw materials to consumer consumption illustrates the implications of commodity movement on the local community. Raw materials, component parts or foodstuffs are shipped to manufacturers or processors, and at times they change vehicles and methods of shipment. The manufacturer ships finished products to distributors, which in turn ship to retailers or wholesale establishments. Consumers at this point may obtain products through vehicular travel, parcel delivery, pedestrian or bicycle travel. The sum of these different modal travels adds to the total traffic within the community, and must be considered in the planning process. Actual motor freight traffic within the Bryan/College Station area is difficult to verify because little research of this type has been completed. Consideration should be given in the planning process so that the transportation accommodates motor freight carriers and the inter-modal aspect of interfacing of motor freight with other modes of transportation

Access for freight trucks depends on the type of vehicle. A Commercial Vehicle Survey completed by TxDOT in 2014, found that the most common freight trucks in the Bryan/College Station area were semis, single 2 axle trucks, and single 3 axle trucks.

RAIL TRANSPORT

The Union Pacific (UP) Class I railroad company is currently providing freight service to the Bryan/College Station planning area. The existing train track passes through the cities of Bryan and College Station, through urban and rural areas. UP operates a main freight line, the UP Houston Division (Navasota Subdivision and Bryan Subdivision line), from Houston throughout Bryan/College Station to Dallas/Fort Worth and beyond. Service to the Bryan/College Station are is primarily on the Houston Local route, which originates in Houston, stops in Bryan/College Station then proceeds north for other connections. Every other day, this route is reversed. Figure 4.14 shows the location of rail service in Brazos County.

Figure 4.14 Rail Service in Brazos County



The merger of Southern Pacific Railroad and the Missouri Pacific Railroad with UP, removed operational and competitive obstacles to rail planning. Burlington Northern Santa Fe Railroad also operates through the southern tip of Brazos County but provides no service to the urbanized area. The UP mainline track links the Houston region with the Dallas/Fort Worth region.

The UP train enters the Bryan/College Station area from the south on a rail line from Navasota and diverges into two routes just north of Villa Maria Road in Bryan. Until the tracks diverge, this route is called the Navasota subdivision. At this point, the former Southern Pacific route to Hearne and Dallas continues north along Finfeather Road, through downtown Bryan, and follows Texas Avenue and SH 6 out of town. This route is named the Bryan Subdivision. The former Missouri Pacific route to Waco and Fort Worth diverges and runs to downtown Bryan where it crosses the other line and follows West 27th and West 28th Streets and SH 21 out of town. This route is the continuation of the Navasota Subdivision. A passing track, approximately 8,276 feet in length, is located between University Drive and Villa Maria Road and is long enough to allow north/south passage for trains up to 140 average-sized cars in length.

A public team track, approximately 480 feet in length, is located in Bryan just south of F&B Road. The team track, adjacent to the passing track, is used by some businesses in Bryan and College Station and has capacity to hold 8 cars. UP trains also have a passing track, 3,678 feet long, located south of downtown Bryan, and two-yard tracks paralleling the passing track, at 3,482 feet and 2,067 feet.

There are six grade separated rail crossings, FM 2818 (north of Bryan), SH 21 (San Jacinto Avenue), Villa Maria, FM 60 (University Drive), FM 2818 at FM 2154 (Wellborn Road), and Old Main at Wellborn Road (see photo on next page). A grade separation at FM 2347 (George Bush Drive) and FM 2154 (Wellborn Road) is being developed, but funding has not been identified. The remainders are at grade with and without signalization. There are several private sidings in the Bryan/College Station area, primarily associated with industrial parks. Safety at these crossings is an important concern.

UP currently operates 25 trains a day through Bryan/College Station. The average length of each train is 6,000 feet. The average speed is 30 mph. While it would be difficult to accurately forecast the change in this freight traffic over time, the expectation is that the rail service will continue to expand as the population and business increases in future years.

FREIGHT MOVEMENT INFLUENCES OUTSIDE BRAZOS COUNTY

In recent years, Union Pacific Railroad has purchased property in Robertson County near Mumford where seven rail lines converge to construct the Brazos Yard. This property was originally intended to serve as a railroad classification yard to bring rail cars from the seven different lines and construct trains based on destination to depart along these seven lines. However, in late 2018 Union Pacific suspended construction works to consider what type of yard should be constructed at the site. This “pause” occurred at about the same time when TxDOT announced that they were considering an extension of Interstate 14 between Belton (Interstate 35) and Huntsville (Interstate 45) which would pass through the Bryan/College Station area. Given the Brazos Yards location near the proposed Interstate 14 and the fact that seven rail lines converge at the yard, consideration is being given to make this property an intermodal facility.

To the south of Brazos County, the Houston area is developing plans that could have a major impact on freight movement through Brazos County. The deepwater Port Freeport plans to deepen the entrance and jetty channel under an Army Corps of Engineers Approved General Reevaluation and Review. The Harbor Channel will be deepened from 46 feet to 56 feet making it the deepest port in Texas. Alongside Berth 7 of the Velasco Container Terminal is 46 feet of water. As a part of the deepening and widening project, the depth will be increased to 51 feet alongside. Additionally, two future berths will be constructed to achieve a minimum of 2,200 linear feet for the berthing of Panamax to Post-Panamax class vessels.

In 2017, Port Freeport handled approx. 100,000 truckload equivalent units (TEUs). The port is also developing property adjacent to the existing Berth 7 in an area they refer to as back land. Once phase one of the back-land development is complete, there will be 90 acres available for container operations. This area is estimated to have a capacity of 800,000 TEUs annually. The final phase of the Velasco Container Terminal expansion is to develop and additional 130 acres of back land in order to achieve 1.5-2.0 million TEUs per year.

Truck access to the port is somewhat restricted by a lack of sufficient roadway to handle a large increase in truck traffic. While the TxDOT Houston District is investing to improve roadways in the area there is not good connectivity to a high-speed multi-lane freeway facility to expedite truck movements. The Port, in conjunction with several public and private sector partners, moved to create the Highway 36 A Coalition. The coalition's mission is to facilitate the movement of freight from the Port of Freeport by improving both rail facilities, owned and operated by Union Pacific, and freeway facilities to bypass downtown Houston. Their approach is two-fold.

From the rail side, the Coalition seeks to construct a new double track rail line from the Port to Rosenberg, Texas to connect to existing UP and Burlington Northern Santa Fe (BNSF) track. At Rosenberg, the existing track would be double tracked to Hempstead where it connects with the UP Navasota Subdivision and then the Brazos Yard which would then provide routes to Dallas, Memphis and St. Louis. All three cities have inland ports. The BNSF track would continue to Caldwell, Texas using the line which ultimately connects to the Alliance yard in Fort Worth, a major intermodal facility, rail classification yard and an inland port.

On the highway side, existing State Highway 36 would be widened from the Port to Rosenberg. At Rosenberg, a new freeway termed 36A would be created and connect to State Highway 6 in Hempstead. State Highway 6 passes through Brazos County and connects to Interstate 35 in Waco. This would allow all truck traffic to avoid downtown Houston and then provide truck freight carriers a route to bypass downtown Dallas via Interstate 35 West or connect to Dallas via Interstate 35 East.

If the two ventures are successful a substantial percentage of the 1.5 – 2 million TEUs would pass through Brazos County. At this point in time, we do not know the percentage nor how much of the additional traffic would be by rail or truck. MPO staff has included a subtask in its Unified Planning Work Program to address this issue.

Figure 4.15 Multimodal Grade Separation at FM 2154 (Wellborn Road) and Old Main

Safety & Security

The Bryan/College Station MPO strives to improve the safety of all modes of transportation in the region with the goal of every user arriving at their destination alive. Safety may be defined as expectation of protection from unintended harm. Safety and Security programs provide data that indicate areas of concern and provide ways to ensure the safety of the system users.

The Bryan/College Station MPO coordinates with the Brazos Valley Council of Governments (COG), TxDOT's Bryan District and other local agencies in regards to Safety & Security.

The Public Safety Planning Department of the Brazos Valley COG is involved in several aspects of public safety, including: Emergency Communications, Hazard Mitigation, Homeland Security, Criminal Justice, Emergency Management, planning and training, and grant management for several major grant programs. The Public Safety Planning Department liaisons with statewide and regional emergency management coordinators, federal government, state government, local & county government, law enforcement, fire fighters, emergency medical services, public & educational officials, and emergency communications organizations.

(Source: ntxe-news.com)

TxDOT's Bryan District coordinates with the MPO to implement safety and security planning tasks. The Bryan District also partners with other agencies to enhance safety on the regional roadway system through a variety of programs. TxDOT utilizes crash data collected from law enforcement agencies to evaluate the cause of crashes in order to develop projects to improve the safety of the transportation system.

The Highway Safety Improvement Program (HSIP) was established by SAFETEA-LU in 2005 and focuses on reducing traffic fatalities and serious injuries on all public roads. The HSIP requires all state DOTs to develop a Strategic Highway Safety Plan (SHSP) to identify safety issues and needs and to guide planning decisions. The original Texas SHSP was approved in 2006 and last updated in 2017.

TxDOT's SHSP and its related HSIP provide a framework for reducing highway fatalities and serious injuries on public roads. The SHSP establishes strategic statewide goals, objectives, and key emphasis areas developed in consultation with federal, state, local, and private sector safety stakeholders. The Texas SHSP roadway safety emphasis areas, shown in Figure 4.7, help to focus the analysis of safety data.

The Brazos County Department of Emergency Management operates a comprehensive, risk-based emergency management program of mitigation, preparedness, response, and recovery. The BCSMPO was a partner in the development of the 2019 Inter-jurisdictional Emergency Plan to protect the citizens of Brazos County. The plan addresses incidences of fires, flooding, tornadoes, energy/fuel shortage, water system failure, electric system failure, droughts, hurricanes, winter storms, Hazmat spills, civil disorder and terrorism.

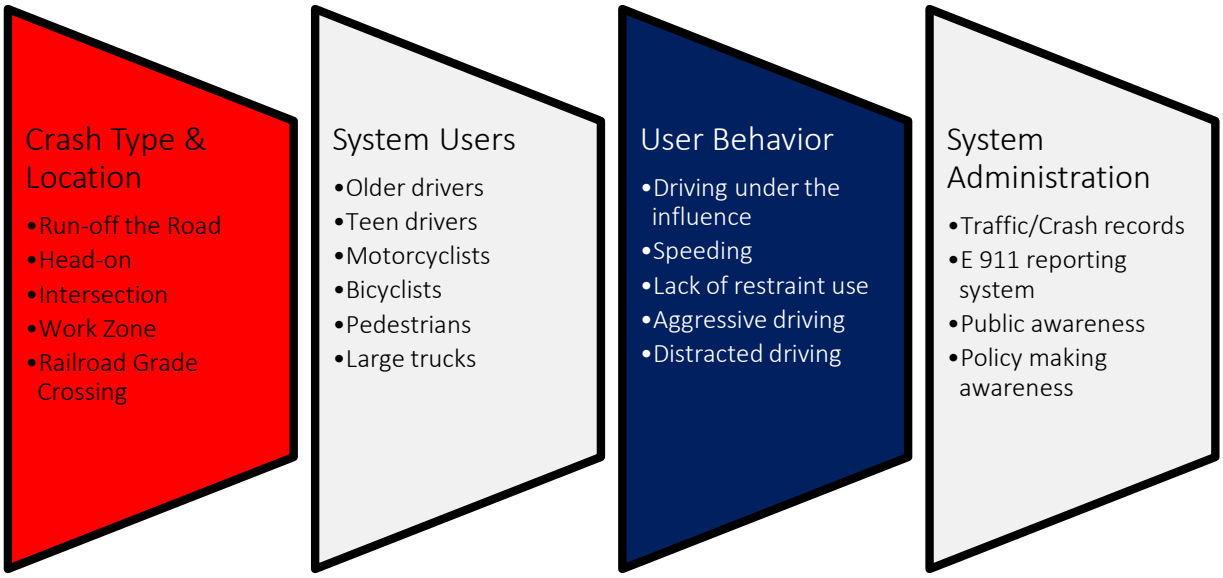


Figure 4.16: Texas SHSP Emphasis Areas

The Emergency Management Plan outlines the approach to emergency operations, and is applicable to the County and Cities. It provides general guidance for emergency management activities and an overview of the methods of mitigation, preparedness, response, and recovery. State law provides a county judge or mayor with the authority to order the evacuation of all or part of the population from a stricken or threatened area within their respective jurisdictions. The Incident Commander (County Judge and/ or Mayor) or, for large-scale evacuations, the Emergency Operations Center (EOC) shall assess the need for evacuation, plan evacuations, and coordinate support for the evacuation effort. Potential Evacuation Areas are listed in appendices of the Brazos County Inter-jurisdictional Emergency Plan. Those areas listed include the Brazos River Floodplain, the Navasota River Floodplain, the Honeywell Facility and Texas A&M University.

CRASHES

The Bryan/College Station MPO uses data from TxDOTs Crash Records Information System (CRIS) database. The data in CRIS is compiled from local law enforcement agency reports that are completed at the time of all reported motor vehicle crashes. The most recent five years of data were utilized in the development of this MTP in order to be consistent with the other performance measure data being used. Of those traffic incidents over the last five years, two involved hazardous materials. An analysis of traffic crashes in Bryan and College Station shows that most incidents coincide with high traffic volume locations. Both crash rate and total crashes using CRIS data were used in the safety data sets in Decision Lens.

Actions that may be taken to reduce the number of crashes may include:

- Upgrade existing infrastructure
- Modification or implementation of safety infrastructure
- Creation or improvement of alternative routes to alleviate congestion
- Public campaigns to promote a particular safety issue
- An assessment of the transportation system or a portion of it to determine driver decisions

Chapter 5 - MPO Principles and Performance Objectives

The MTP must be financially constrained to available resources and unfortunately Brazos County does not have enough resources to fund all mobility needs by 2045. As a result, many important needs cannot be included in this plan unless a significant change in available resources occurs. Since resources are limited, the MPO Policy Board uses the following principles to allocate funds to the most important regional priorities:

MPO POLICY BOARD PRIORITY PRINCIPLES

1. Maintain existing transportation facilities
2. Address serious safety and security problems
3. Maximize the use of existing transportation facilities
4. Support the region's economic development efforts

PERFORMANCE OBJECTIVES

The Bryan/College Station MPO has adopted several objectives to measure the success of the MTP in meeting the guiding principles of the Policy Board. The intent of these objectives is to develop a multi-modal transportation system that provides better service for more community members and visitors. The extent to which these objectives can realistically be met, however, will be determined by the availability of adequate resources, which are beyond the control of the Policy Board. It should be noted that several of the objectives identified below will require resources that are beyond current financial forecasts.

PRINCIPLE 1: MAINTAIN EXISTING TRANSPORTATION FACILITIES

Objective 1.1: Rehabilitate all roadways rated with a condition of 'poor'.

Objective 1.2: Perform adequate preventative maintenance on all other roadways.

Objective 1.3: Replace or rehabilitate all structurally deficient bridges.

Objective 1.4: Replace public transportation rolling stock when the reach the end of their useful life.

Objective 1.5: Reconstruct all sidewalks which cannot accommodate wheelchairs and add accessible sidewalks where appropriate.

PRINCIPLE 2: ADDRESS SERIOUS SAFETY AND SECURITY PROBLEMS

Objective 2.1: Reduce total crashes by 10%.

Objective 2.2: Reduce fatal, incapacitating and non-incapacitating injury crashes by 20%.

Objective 2.3: Provide safe pedestrian connections within one mile of all elementary, intermediate and middle schools and adjacent residential neighborhoods.

Objective 2.4: Provide safe, well-lit shelters along Brazos Transit District's fixed route system.

PRINCIPLE 3: MAXIMIZE THE USE OF EXISTING TRANSPORTATION FACILITIES

Objective 3.1: Implement the congestion management process by utilizing transportation system management techniques (synchronized signal timings, adding turn lanes, constructing medians, etc.) before considering roadway expansion.

Objective 3.2: Minimize to two hours a day the amount of time major commuter routes operates in stop and go conditions.

Objective 3.3: Improve clearing time for 90% of incidents on expressways and arterials to 30 minutes or less.

Objective 3.4: Retrofit all arterial highways to meet TxDOT access management standards.

Objective 3.5: Adopt regional ITS architecture and deploy ITS systems on major streets within Brazos County.

PRINCIPLE 4: SUPPORT THE REGION'S ECONOMIC DEVELOPMENT EFFORTS

Objective 4.1: Employers with more than 100 employees should have direct access to a minor arterial or larger facility and that facility should not have more than two hours a day when it operates in stop and go conditions.

Objective 4.2: All transit operators that have a fixed route system should provide accessible access within 0.5 miles to 80% of all transit stops.

Objective 4.3: Employers with more than 100 employees should have accessible pedestrian infrastructure connecting their location with the Brazos Transit District's fixed route system.

Objective 4.4: Brazos County's transportation system should be developed in such a way to encourage most future urban development to occur within existing nodes of development and provide accessible access between new residential development and most basic municipal and commercial services.

Chapter 6 – Planning Recommendations

Congestion Management Process

The steps below are required as part of federal transportation legislation and are in progressive order.

Develop CMP Goals and Objectives: It is important to understand and state within Bryan/College Station MPO documents, "What is the desired outcome?" and "What does the BCSMPO want to achieve with its CMP efforts?" It may not be feasible or desirable to eliminate all congestion, and therefore it is important to define objectives for congestion management that achieve the desired outcome.

Define the Congestion Monitoring Network: This process involves answering the question, "Which roadways will be monitored for current and future congestion (including non-auto)?" and involves defining both the metropolitan area boundary and system elements (e.g. freeways, major arterials, transit routes) that will be analyzed in the CMP.

Develop Performance Measures: The CMP will address, ''How does the BCSMPO define and measure congestion?" This process involves developing performance measures that will be used to measure congestion on both a regional and local scale. These performance measures should relate to, and support, regional objectives.

Determine Data Types/Sources and Collect Data/Establish Baseline Database: The CMP will consider numerous types of data as well as data sources including crash data (frequency and duration), travel time data, intersection and corridor congestion data, Bluetooth data, total vehicle and vehicle classification data. After performance measures are defined, data should be collected and analyzed to determine, "How does the transportation system perform?" Data collection may be on-going and involve a wide range of data sources and partners.

Identify Congestion Problems and Needs: Using data analysis techniques, results from public workshops, and staff and Technical Advisory Committee (TAC) input, the CMP should address the question, "What congestion problems are present or anticipated in the region?"

Identify and Assess Strategies: Working together with its partners, the CMP should address the question, "What strategies or best practices may be incorporated to mitigate congestion?" This action involves identifying and assessing potential strategies, including project selection.

Program and Implementation Strategies: This process involves answering the question, "How and when will solutions be implemented?" It typically includes strategies and project selection in the MTP, determining funding sources, prioritizing strategies, allocating funding in the TIP, and ultimately, implementing these strategies.

Monitor Strategy Effectiveness: Finally, efforts should be undertaken to assess, "What has the BCSMPO learned about implemented strategies?" and "How have they affected the transportation system?" This process will be closely tied to the monitoring system performance and is designed to inform future decision makers about the effectiveness of transportation strategies.

Brazos Transit District Asset Management Plan

BTD HISTORY AND CURRENT SERVICE PROVIDED

In 1989, Brazos Transit District (BTD) received the first Federal Transit Administration and TxDOT grants to operate general public transportation service in the cities of Bryan/College Station (B/CS). BTD provides general public transportation service in the B/CS Urbanized area as well as the surrounding 16 counties in Central and East Texas. The areas are: the cities of Diboll and Lufkin in Angelina County, and the city of Nacogdoches in Nacogdoches County. Counties of Brazos, Burleson, Grimes, Houston, Leon, Liberty, Madison, Montgomery, Polk, Robertson, San Jacinto, Trinity, Walker, and Washington. Service is provided Monday through Friday, excluding holidays. All of our vehicles are accessible and are in compliance with the Americans with Disabilities Act (ADA). Fixed Route Service: Currently, in the B/CS area BTD operates ten fixed routes and two of the routes serve the Roy Kelly Terminal and Parking Garage which is located in Downtown Bryan. BTD and TAMU have an agreement that allows BTD customers that purchase an identification card (ID) can board and ride all TAMU bus routes. BTD allows TAMU staff/students to ride the buses by showing their current TAMU ID. Seniors and persons with disabilities can ride BTD fixed routes for half fare. In Lufkin there are two fixed routes with an additional route connecting Lufkin and Diboll. In Nacogdoches there are two fixed routes, then there is a circulator route serving Liberty, Dayton and Ames. In Cleveland there is one fixed route. ADA Paratransit Service: Paratransit service is offered to ADA eligible clients who have an origin and destination within ¾ mile of a fixed route. With no trip type restrictions, trips may be made for any purpose. Appointments can be made up to seven days in advance. One individual and approved Personal Care Attendant (PCA) may ride with the ADA eligible client to the same origin and destination. ADA trips are not denied. Demand Response (D&R) Service: D&R is a shared ride curb to curb service, appointments are taken up to seven days ahead as space is available. D&R is in the counties of: Brazos, Burleson, Grimes, Houston, Leon, Liberty, Madison, Montgomery, Polk, Robertson, San Jacinto, Trinity, Walker, and Washington, and cities of Lufkin and Nacogdoches.

USEFUL LIFE BENCHMARK – REVENUE VEHICLES

BTD has a fleet of 94 Cutaways, 9 Heavy Duty Buses, 6 Trolley's, 13 Minivans and 23 Transit Vans. These vehicles are used for Fixed Route, ADA Paratransit and Demand & Response service in 16 counties.

Target's for Revenue Vehicles

Vehicle Type	FY 2019 Target
HD Bus Target	55%
Cutaway Target	50%
Minivan Target	100%
Van Target (Transit)	0%
Other Target (Trolley)	0%

The ULB that are set for the Cutaways is very low, BTD has found that they can generally stretch the cutaways past their useful life by about 3-4 years with proper maintenance and care. This is the same with the 12-year HD Bus, BTD is typically able to keep them in service longer than the useful life benchmark.

How has BTD made progress toward its target?
BTD completed the procurement process to replace all the medium duty buses that were past useful life in years and miles. The contract was awarded to New Flyer for 35-foot heavy duty buses. The initial order of four buses was received/delivered to BTD in July 2019 and the next order of three additional units will be here in January 2020. There are 11 buses that will be replaced/retired with 11 new buses over the next 2 years through funding from TxDOT and FTA.

BTD has also completed the procurement process for raised roof vans. The contract was awarded to Alliance Bus Group for Ford Transits. The initial order of 21 units was placed in February 2019 and BTD accepted delivery in October of 2019 for the initial order. These units will replace all cutaways that are past useful life.

What challenges face BTD in making progress toward the targets?
BTD has faced the challenge of not being able to get the replacement buses fast enough. BTD recieved the BUILD grant PGA in October of 2019 and eight additional HD buses were ordered. These are needed to replace the medium duty cutaways that are past their ULB

USEFUL LIFE BENCHMARK – NON-REVENUE VEHICLES

BTD has a mixed fleet of non-revenue vehicles to support the bus system in 16 counties.

More than 72% of non-revenue automobiles and trucks have exceeded their useful life benchmark of 4 years (default).

How did BTD calculate these targets?
BTD prioritizes the rehabilitation and replacement of our revenue vehicles, generally non-revenue vehicles forego replacement when we have significant revenue vehicle capital costs.

How has BTD made progress toward its target?
BTD has received funding to replace one of the operations vehicles this year in the rural area, we have also programmed capital into the Small Urban 5339 grant to replace four of the maintenance trucks.

What challenges face BTD in making progress toward the targets?
Funding remains a major challenge for BTD, we actively apply for any and all funding available.

FACILITIES – CONDITION

BTD has three transit centers with passenger facilities serving the fixed route bus system, one of which is a parking garage. BTD has three maintenance facilities, an administrative and operations building, and a bus wash building.

TERM Scale is a 1-5 scale with 5- excellent, 4- very good, 3- good, 2- fair, 1- poor.

Less than 15% of passenger and parking facilities under 3 on TERM scale.
Less than 25% of administrative and maintenance facilities under 3 on TERM scale.

How did BTD calculate these targets?
After assessing BTD facilities with each category, we have found that approximately 15% of them are at a 3 or higher on the TERM scale. The two facilities that need repairs done are a passenger facility and a maintenance shop, these are a top priority. BTD received partial funding for the maintenance shop and is awaiting the remainder of the funds. The target BTD would like to reach for passenger facilities is less than 15% and for administrative and maintenance we would like to achieve less than 15% under a 3 on the TERM scale.

How has BTD made progress toward its target?
BTD has not had any additional facilities fall below a 3 on the TERM scale since implementing the asset management program, we remain within the targets for this measure. BTD has programmed funding in the next two years of 5307 funding to rehabilitate the Bryan Transfer Point, a passenger facility.

What challenges face BTD in making progress toward the targets?
For the 25% of BTD facilities that are under a 3 on the TERM scale, we are seeking funding to rehabilitate the existing facilities. Lack of funding is the major challenge BTD faces in setting and achieving a more aggressive target.

EXTENUATING CIRCUMSTANCES

What are extenuating circumstances that impact BTD's transit asset management?
This year there has been no extenuating circumstances this year that impact our transit asset management

INVESTMENT PRIORITIZATION

Revenue Vehicles

1. Replacement of Bryan/College Station Fixed Route buses, currently have 11 units needing replaced.

Plan to replace three by January 2020, and eight more by the end of 2020, estimated cost is $450,000 per unit.

2. Replacement of 11 LD cutaways that are 2007 and 2009 models.

Non-Revenue Vehicles

1. Replace 8 maintenance/support trucks that are all 2010 models.
2. Replace 8 vans that are support vehicles and are all 2010 models.

Facilities

1. Rehabilitation of the Livingston Facility which is estimated at additional rehab needed is $300,000.
2. Rehabilitation of the Transfer Point in Bryan which is estimated to be around $800,000.

Financial Analysis

Federal regulations require the MTP to be financially constrained, meaning that the estimated cost for the projects selected for implementation cannot exceed the funding that is reasonably anticipated to be made available to the MPO.

This section presents sources of revenues, the revenue forecasting methodology and the funding that the Bryan/College Station MPO can reasonably anticipated being available to address the needs of the region's transportation system over the next 25 years. Actual funding for transportation projects over the next 25-years will largely depend on future decisions at the national and state levels regarding how and at what level we will provide funding for our transportation needs.

REVENUE SOURCES

There are two principle sources of funds available to implement projects and programs in the Bryan/College Station MPO region: federal transportation funds and state transportation funds.

Neither of these funding sources kept up with the increased demand for services and the effects of inflation. The two major contributors to the current funding crises are federal and state motor fuels taxes (a flat fee per gallon regardless of the actual cost of the fuel) that have not been increased in over 20 years and the ever-improving fuel-efficiency of vehicles (See Figure 6.1). To be sure, more fuel-efficient vehicles are good for the environment and have benefitted the automobile manufacturers. However, the result is less revenue to expand and maintain the transportation system those vehicles drive on.

Figure 6.1 Gasoline Prices vs. Gasoline Tax (1990's – 2010's)

Federal Fuel Tax = $0.184/gallon, Texas Fuel Tax = $0.20/gallon

ROADWAY/BICYCLE/PEDESTRIAN FUNDING

TxDOT has twelve funding categories it uses to allocate funds toward the various activities that provide for our state transportation system. Federal funds allocated to the state through various funding programs that are eligible for reimbursements are combined with state revenue from the State Highway Fund and other non-traditional funds. The TxDOT funding categories are presented in Figure 6.2.

Figure 6.2 TxDOT Funding Categories (1 of 2)

FUNDING CATEGORY	DESCRIPTION	USUAL FUNDING SHARE		
		FEDERAL	STATE	LOCAL
1 Preventive Maintenance and Rehabilitation	Provides for preventive maintenance and pavement rehabilitation on the existing state highway system, including installation and rehabilitation of traffic control devices and the rehabilitation and maintenance of operational traffic management systems.	90%	10%	
		80%	20%	
			100%	
2 Metropolitan and Urban Area Corridor Projects	Address mobility needs in all metropolitan areas throughout the state.	80%	20%	
			100%	
3 Non-Traditional Funded Transportation Projects	Addresses mobility needs throughout the state using funding sources not traditionally part of the state highway fund. The projects in this category include Proposition 12, Proposition 14, Pass-through Toll Financing, Texas Mobility Fund, Concession, Regional Toll Revenue, comprehensive Development Agreement, Local Participation, and unique federal funding.	80%	20%	
			100%	
4 Statewide Connectivity Corridor Projects	Addresses mobility and added capacity project needs on major state highway system corridors which provide statewide connectivity between urban areas and corridors which serve mobility needs throughout the state. The highway connectivity network is composed of the: Texas Truck System; National highway System (NHS); and connections from Texas Trunk system or NHS to major ports on international borders or Texas waterports.	80%	20%	
			100%	
5 Congestion Mitigation and Air Quality Improvement	Addresses the attainment of national ambient air quality standards in the non-attainment areas of the state. Projects are for congestion mitigation and air quality improvement in the non-attainment area of the state.	80%	20%	
		80%		20%
		90%	10%	

Figure 6.2 TxDOT Funding Categories (2 of 2)

FUNDING CATEGORY	DESCRIPTION	USUAL FUNDING SHARE		
		FEDERAL	STATE	LOCAL
6 Bridges	Addresses the replacement or rehabilitation of deficient existing bridges located on public highways, roads and streets in the state; the construction of grade separations at existing highway-railroad grade crossings; and the rehabilitation of deficient railroad underpasses on the state highway system.	90%	10%	
		80%	20%	
		80%	10%	10%
7 Metropolitan Mobility/Rehabilitation	Addresses transportation needs within the metropolitan area boundaries of Metropolitan Planning Organizations habing urbanized areas with populations of 200,000 or greater.	80%	20%	
		80%		20%
			100%	
8 Safety	Addresses safety needs on and off the state highway system, and includes the Safe Route to School Program, the High Risk Rural Roads program, and Railway-Highway Safety program.	90%	10%	
		90%		10%
		100%		
			100%	
9 Transportation Enhancements	Addresses projects that are above and beyond what could normally be expected in the way of enhancements to the transportation system, including the cultural, historic, aesthetic, and environmental aspects of transportation infrastructure.	80%	20%	
		80%		20
10 Supplemental Transportation Projects	Addresses projects that do not qualify for funding in other categories, such as state park roads, landscaping, and handicap accessible curb ramps at on-system intersections.		100%	
		80%	20%	
		100%		
11 District Descretionary	Addresses projects selected at the District Engineer's discretion.	80%	20%	
		80%		20%
			100%	
12 Strategic Priority	Addresses needs related to statewide economic development, military deployment routes, and man-made and natural emergencies.	80%	20%	
			100%	

PUBLIC TRANSPORTATION FUNDING

Figure 6.3 shows the funding categories from the Federal Transit Administration for use by the Brazos Transit District and other public transportation providers in the Brazos County region.

Figure 6.3 Federal Transit Funding Programs

FUNDING CATEGORY		DESCRIPTION	USUAL FUNDING SHARE	
			FEDERAL	LOCAL
5307	Urbanized Area Formula Grant Program	Program subsidizes the operating and/or capital cost of transit services. Eligible expenses include planning, engineering, most administration, preventive maintenance, fuel, parts, and operating costs.	90%	10%
			80%	20%
5309	Capital Investment Program	Divided into three categories: modernization of existing rail systems, new rail systems, and new and replacement buses and facilities. The bus category is the only one from which the Brazos County region is eligible to receive funds. Funds are used to subsidize the purchase of buses, bus-related equipment, paratransit vehicles, and construction of bus-related facilities.	80%	20%
5310	Transportation for Elderly Persons and Persons with Disabilities	Capital expenses that support transportation to meet the special needs of older adults and persons with disabilities.	80%	20%
5316	Job Access and Reverse Commute Program	Capital, planning, and operating expenses for projects that transport low income individuals to and from jobs and activities related to employment and for reverse commute projects.	80%	20%
			50%	50%
			100%	
5317	New Freedom Program	Capital and operating expenses for new public transportation services and new public transportation alternatives beyond those required by the Americans with Disabilities Act of 1990 that are designed to assist individuals with disabilities.	80%	20%
			50%	50%
5337	State of Good Repair	Program is limited to fixed guideway systems (including rail, bus rapid transit, and passenger ferries) and high intensity buses. Projects are limited to replacement and rehabilitiation, or capital projects required to maintain public transportation systems in a state of good repair.	80%	20%
5339	Bus & Bus Facilities	Provides funding to replace, rehabilitate, and purchase buses and related equipment, and to construct bus-related facilities.	80%	20%

REVENUE FORECAST

The reasonably anticipated funding estimate for highway and bicycle/pedestrian projects was developed for this plan using TxDOT's Unified Transportation Program, their 10-year plan to guide transportation project development, the Transportation Revenue Estimator and Needs Determination System (TRENDS). TRENDS is a tool used to forecast revenues and expenses related to transportation projects in Texas through the year 2045. The MPO staff also consulted with the TxDOT-Bryan District and TxDOT Transportation Planning and Programming Division on the expected levels of funding identified.

Between 2020 and 2022 the Bryan/College Station MPO can only anticipate receiving funding from Category 2: Metro Corridor Projects. However, based on our current growth rate, the MPO anticipates being designated as a Transportation Management Area, an urbanized area with a population of 200,000 or more, during the 2020 census. Under this assumption, the MPO will begin to receive Category 7: Surface Transportation Program – Metropolitan Mobility (STPMM) and Category 9: Transportation Alternatives Program funds in 2022. These are the only anticipated sources of revenue that the MPO Policy Board anticipates having allocation authority over during the life of this plan.

The Bryan/College Station MPO, in conjunction with the TxDOT-Bryan District determined that only those funds that the MPO has allocation authority over would be utilized in complying with the fiscal constraint requirement for this plan. As shown in Figure 6.4A, the Bryan/College Station MPO can reasonably anticipate having allocation authority over $399 million between 2020 and 2045. Ultimately the implementation of any transportation projects will depend on the actual amount of available funds and any timing constraints associated with the funding.

In addition to funds for new projects, the MPO is also required to determine how much money will be available for the maintenance and operation of the existing system. This includes TxDOT Category One funds (Preventive Maintenance and Rehabilitation), Brazos Transit District funds for Maintenance and Operations, and maintenance funds from the three localities in the MPO service area that have budgets for road maintenance and rehabilitation. These localities are Brazos County, the City of Bryan and the City of College Station. Total funding for maintenance and operations over the 25-year life of the MTP is shown in Figure 6.4B and totals almost $1.2 billion dollars.

Figure 6.4A 2040 MTP Reasonably Anticipated MPO Funding
(Values are in 2019 constant dollars and inflation is not accounted for)

Scenario	Worst Case	Best Case			Reasonably Anticipated			Subtotals
Year	Cat. 2 ($M)	Cat. 2 ($M)	Cat. 7 ($M)	Cat. 9 ($M)	Cat. 2 ($M)	Cat. 7 ($M)	Cat. 9 ($M)	
2020	10.00	13.00	-	-	11.00	-	-	
2021	10.00	13.00	-	-	11.00	-	-	
2022	10.00	13.00	5.00	0.50	11.00	4.14	0.27	68.39
2023	10.00	13.00	5.00	0.50	11.00	4.19	0.27	
2024	10.00	13.00	5.00	0.50	11.00	4.25	0.27	
2025	10.00	13.00	5.00	0.50	11.00	4.30	0.27	
2026	10.00	13.00	5.25	0.50	11.00	4.35	0.27	
2027	10.00	13.00	5.25	0.50	11.00	4.39	0.27	78.31
2028	10.00	13.00	5.25	0.50	11.00	4.43	0.27	
2029	10.00	13.00	5.50	0.50	11.00	4.49	0.27	
2030	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2031	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2032	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2033	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2034	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2035	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2036	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2037	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2038	10.00	13.00	5.50	0.50	11.00	4.50	0.27	252.32
2039	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2040	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2041	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2042	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2043	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2044	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
2045	10.00	13.00	5.50	0.50	11.00	4.50	0.27	
Sub-Totals	260.00	338.00	129.25	12.00	286.00	106.54	6.48	399.02
Totals ($M)	**260.00**	**479.25**			**399.02**			

Under the worst-case scenario Category 2 funds available beginning in 2020, the MPO is not designated as TMA in 2022 so Category 7 and Category 9 funds will not be available. In addition, two new MPOs will be created in Texas as a result of the 2020 Census as TxDOT anticipates. In the best-case scenario Category 2 funds available beginning in 2020, the MPO is designated as TMA in 2022 so Category 7 and Category 9 funds are available and no additional TMAs in Texas are added after 2020 Census. Finally, the approved reasonably anticipated funding forecast used for this plan assumes that Category 2 funding will be available in 2020, the MPO is designated as a TMA in 2022 so Category 7 and Category 9 funds are available, new MPOs are added in Texas and two other MPOs are designated as TMAs besides the Bryan/College Station MPO.

Figure 6.4B Estimated Operations and Maintenance Revenues and Expenditures for 2020-2045

Figure 6.4B Estimated Operations and Maintenance Expenditures

Jurisdiction	FY 2020 - 2045 Estimated Revenues	FY 2020 - 2045 Estimated Expenditures
TXDOT Bryan District - Category 1*	$287,284,000	$287,284,000
City of Bryan	$310,700,000	$310,700,000
City of College Station	$328,600,000	$328,600,000
Brazos County	$169,225,000	$169,225,000
Brazos Transit District	$100,600,000	$100,600,000
Total Estimated Expenditures	$1,196,409,000	$1,196,409,000

*Calculated by using actual revenues through FY 2023, then developing a previous 10-year annual average for FY 2024. From FY 2024 to 2045 a 3% annual inflation factor was applied.

All remaining estimated revenues and expenditures were calculated using a local formula. A five-year running average of actual expenditures was determined and then inflated 3% per year for the 25 year life of the Metropolitan Transportation Plan.

In addition to reasonably anticipated MPO funding, TxDOT, the Texas A&M University System, The City of College Station and the newly formed Brazos County Regional Mobility Authority (RMA) are exploring innovative financing techniques for the University Boulevard Concept project. Cost estimates on the project currently range from $450 million to $700 million and easily exceed total MPO funding for the entire 25-year life of the plan. The innovative financing techniques under review include:

- General Obligation Bonds/Certificates of Obligation. Local governments may issue general obligation or revenue bonds. Voter approval is required through a public referendum, and the bonds may be paid back through anticipated revenues from the property or a facility, or via sales taxes.
- Development Impact Fees. Impact fees are intended to ensure that developers pay their part of improvements where their developments are anticipated to impact the local transportation system. As growth happens in the area, impact fees to fund corridor improvements ensures that facilities are able to support growth.
- Chapter 380/Chapter 381 Economic Development Corporations. Non-profit corporations authorized by the Texas Local Government Code which promote the creation of new or increased investment in the community which generates new jobs. A powerful development tool that may be exercised by the 380/381 development corporations (municipal/ county, respectively) following a public referendum are Type A and Type B sales taxes. These taxes are made part of the applicable municipal or county budget and are earmarked for projects that generate job growth.
- Tax Increment Reinvestment Zones (TIRZ). A tax increment financing tool authorized by the Texas Tax Code which allows local governments to publicly finance infrastructure improvements (including transportation projects) within defined reinvestment zones by utilizing increased tax assessments on property. TIRZ areas may be established in unproductive, underdeveloped, or blighted areas, and require the appointment of a Board. Revenues can be used to repay municipal bonds.
- Transportation Reinvestment Zones (TRZ). A more recent tax increment financing tool authorized by the Texas Transportation Code that cities, counties, and port authorities may use to finance transportation projects utilizing increased tax assessments on property. A TRZ allows a local government to capture an increment of increased property and sales tax revenues resulting from new development in a defined project area. Funds are applied directly to transportation projects and may be combined with other funding sources to provide match for the overall cost of the project.
- Public-Private Partnerships (P3s). The various MPO area jurisdictions and institutions are empowered to enter into public-private partnerships with other entities to fund development and redevelopment activities that include supporting transportation infrastructure. The other funding mechanisms in this list are often leveraged to provide such partnerships though development agreements.

- **Texas Department of Transportation (TxDOT) Funds.** The MPOs collectively receive funding from a limited number of TxDOT's 12 funding categories. There are other funding categories that TxDOT allocates on a state-wide basis which may be accessed to provide additional funding for proposed Concept development.
- **State Infrastructure Bank (SIB).** SIBs provide direct loans with attractive interest rates, through revenues from repayment and interest to fund additional loans. SIBs require a local sponsor to act as a guarantor for the funding agreement, and may be secured by TIRZ or TRZ collections, or other local revenue stream.
- **Federal Grants.** Examples include the Transportation Investment Generating Economic Recovery (TIGER) grant program, and Infrastructure for Rebuilding America (INFRA) grant program. Federal appropriations for these competitive grant programs occur on annual basis and funding for a new grant cycle from year-to-year is not guaranteed. These grants require a local match.

Since the feasibility of the University Drive Concept is still under review and construction will not occur prior to the next MTP update, the MPO Policy Board chose to not include innovative financing in establishing financial constraint into the planned projects. So, for the purposes of financial constraint, only TxDOT Category 2, Category 7 and Category 9 were programmed.

BICYCLE & PEDESTRIAN FUNDING POLICY

On September 3, 2014, the MPO Policy Committee adopted Resolution 2014-04 which established the Bicycle and Pedestrian Only Projects Funding Policy for use in updating the MTP with the following
requirements for funds that may be available through the BCSMPO and the federal multimodal transportation planning process:

- Proposed bicycle and pedestrian only projects will comprise a minimum of 5% of funds available to the MPO for allocation to projects identified in the Metropolitan Transportation Plan.
- Bicycle and/or pedestrian infrastructure only projects must be able to meet financial and time constraint requirements associated with funds as they become available.
- The Bicycle and Pedestrian funds are not available for use as matching funds for grants received by local governmental or non-profit entities.
- Bicycle and Pedestrian funds are only available for use along on-system (State owned, operated or maintained) facilities unless a local entity provides matching funds equal to at least 20% of the total project costs.
- Projects will be recommended to the MPO TAC by the Active Transportation Advisory Panel (ATAP). Project recommendations will be based on a project identification process using performance metrics identified in the MPO Bicycle and Pedestrian Project Prioritization Process.

Project Identification

On February 8, 2019, the MPO issued a public call for projects that was carried by local media outlets. The same call for projects was sent to each of the local jurisdictions, Texas A&M University and the Texas Department of Transportation. Received through website comment forms, six projects were submitted by the public and the remaining projects came from local planning partners represented on the Technical Advisory Committee (TAC) and Active Transportation Advisory Panel (ATAP). A total of 56 projects were received for on-system highway projects, 67 off-system highway projects and 181 bicycle and pedestrian projects. Working with the submitting agencies and TxDOT, MPO staff developed cost estimates for all of the highway projects and the majority of bicycle and pedestrian projects. Once initial cost estimates were developed, TxDOT staff reviewed all highway project cost estimates to ensure accuracy. All on-system highway projects will be discussed later in this chapter. Off-system highway projects are shown in Figure 6.5 and bicycle and pedestrian projects in Figure 6.7.

PROJECT SELECTION PROCESS

Before beginning the project selection process, the TAC determined that projects already programmed in the statewide TxDOT Unified Transportation Program (UTP) would be considered the region's highest priorities and not subject to the prioritization process. Seven Bryan/College Station MPO are in the UTP and are shown as MPO Number's 1-7 in Figure 6.8 later in this chapter.

For highway projects, the Technical Advisory Committee initially chose to use TxDOT's Decision Lens software and scoring criteria. The TxDOT adopted Decision Lens, a software program that allows the user to make multiple categories that include customized criteria in each category, was made available to each Texas MPO for use in ranking projects for their Metropolitan Transportation Plan. For Decision Lens, there are six categories:

- Safety
- Preservation
- Congestion
- Environment
- Economic Development
- Connectivity

Under each of these categories are a series of criteria that are based on data sets available to TxDOT. For example, under the safety category, data related to crashes make up four criteria.

To determine how to weight the importance of each of the categories, Decision Lens develops a series of questions in which scoring participants are given either two categories or two criteria and are asked to choose if one is more important than the other. If they think one is more important, they must then decide if it is slightly more important all the way up to much more important. After all participants have answered all questions, Decision Lens then develops weighted values for each of the categories. When projects are then scored the weighted values for each category impact the total Decision Lens score for each project. For example, the participants may have answered the questions so that the final Decision Lens score is based on a 44% weight on safety, 32% weight on congestion, etc. If a submitted project does not improve safety as much as another project then the project's total score will reflect the lower safety score.

The Technical Advisory Committee met in July to begin the Decision Lens process. After answering Decision Lens paired criteria questions to determine appropriate weights for each category the on-system projects were scored. The results were disappointing. While TxDOT's tool is useful in ranking projects across an entire state with multiple funding categories, many of the criteria are geared to comparing projects that are not selected by MPOs. This would include projects for pavement management, bridge rehabilitation, statewide connectivity and in the case of the Bryan/College Station MPO, air quality. However, Decision Lens is a suitable platform for transportation decision-making if an MPO can develop their own criteria and data sets.

Given the results of the first iteration of Decision Lens, the TAC and ATAP determined that the Decision Lens platform would be used but the MPO staff and localities would develop the criteria and underlying data sets. The TAC chose to eliminate two of the six categories, preservation and environment but for differing reasons. Preservation was removed because funds that will be available for the MPO to program directly do not include Category One funds which are intended for preventive maintenance and rehabilitation. The environmental category was considered, but research by MPO staff could find no data sets, (the Bryan/College Station MPO is in attainment for air quality and other data sets are relevant during a NEPA process) that were applicable in scoring projects for funding. The TAC selected the following categories and criteria for use in Decision Lens.

- Economic Development (Weight of 12.79%)
  Using travel demand model data, MPO staff produced a map showing employment totals by traffic analysis zone and then broke those down into four groups. Zones with the highest employment were given four points, the next highest group three points, etc. If a submitted project was adjacent to any zone it received the points for that zone. If the project was adjacent to multiple traffic analysis zones with points it received those points. The highest scoring project touched multiple high employment traffic analysis zones and received a score of 17 points. The lowest received one

point. Each submitted project was run, one at a time, through the travel demand model. This allowed MPO staff to determine the projected average daily traffic for that project in 2045. The higher the average daily traffic the more points the project received.

- Safety (Weight of 38.33%)
  The safety category used four criteria. The first was the change from 2017 CRIS crash data to the 2045 model run in crash rate. The second was the change from 2017 CRIS data to 2045 model runs in crash count. The third was the project type as submitted in the TxDOT system. As an example, installing medians or developing a grade separation at an intersection score well for safety improvements. The final criteria was whether the project attempted to shift trips to other modes by incorporating significant/new bicycle and pedestrian facilities into the project.

- Congestion (Weight 35.46%)
  As stated earlier, each project was added then removed to the travel demand model and run in the base year model and the 2045 network. Projects were then scored for each of the three criteria that were derived from the model runs. Those criteria were change in vehicle miles travelled, change in vehicle hours of travel and change in volume/capacity ratio.

- Connectivity (Weight 13.42%)
  There are three criteria in the connectivity category. The first is whether the roadway is on the National Highway System (NHS) or is a designated truck route. The second criteria is lane miles of new connectivity. This could be expansion of a roadway from two lanes to four lanes or a brand new roadway. The final criteria is termed access and reliability. It is a combination of three factors. The first is facility type; the second is change in vehicle hours of travel from the model runs, and; the third is changes in the volume to capacity ratio from the model runs.

The ATAP used GIS software to develop their own categories for use in decision lens. The categories were:

- Population density in 2017 (Weight 5.93%)
- Population density in 2045 (Weight 7.83%)
- Retail/Service Employment Density in 2017 (Weight 6.67%)
- Retail/Service Employment Density in 2045 (Weight 9.02%)
- Proximity to Texas A&M University or Blinn College (Weight 17.4%)
- Proximity to a school (Weight 11.89%)
- Proximity to a park (Weight 7.11%)
- Proximity to a bus route (Weight 10.75%)
- Crashes within 175 feet (Weight 23.4%)

PROJECT PRIORITIZATION

The TAC met in October of 2019 to prioritize submitted projects. Using the new categories and criteria, Decision Lens developed a series of questions in which scoring participants are given either two categories or two criteria and are asked to choose if one is more important than the other. If they think one is more important, they must then decide if it is slightly more important all the way up to much more important. After all participants have answered all questions, Decision Lens then develops weighted values for each of the categories. When projects are then scored the weighted values for each category impact the total Decision Lens score for each project. The resulting weights were:

- Economic Development – 12.79%
- Safety – 38.33%
- Congestion Reduction – 35.46%
- Connectivity – 13.42%

In addition to Decision Lens, the TAC also wanted to incorporate public survey comments into the decision-making process. The cities of Bryan and College Station have recently conducted citizen surveys about what issues are most

important to residents. Choices range from parks to drainage to transportation. In both communities, the number one or number two issue was traffic/congestion. These results are also reflected in MPO public participation activities in which comment forms request that the MPO focus primarily on congestion reduction.

To address these public concerns, a Regional Priority Factor was developed. Each TAC voting TAC member was given 100 points. The TAC member could give points to as many different projects as they deemed appropriate, with the maximum points allowed to be given to any one project was 20 points. The TAC members selected and scored projects based on their regional priority for addressing congestion locations. The points were then totaled, and scores given based on a normalized point system.

Finally, the TAC discussed how the Decision Lens score and the Regional Priority Factor score should be weighted. After considering multiple scenarios, the TAC chose to weight the Regional Priority Factor at 60% and the Decision Lens score at 40%. The results are shown in Figure 6.7. Please note that there are seven projects already programmed in the statewide UTP. Those projects were given priority rankings of 1-7. So a column in Figure 6.7 shows the highest scoring project re-ranked as Revised Rank eight.

The ATAP also met in September of 2019 to work through the Decision Lens process. In September, the ATAP completed the Decision Lens paired question exercise to establish criteria weights. Those were:

- Population density in 2017 – 5.93%
- Population density in 2045 – 7.83%
- Retail/Service Employment Density in 2017 – 6.67%
- Retail/Service Employment Density in 2045 – 9.02%
- Proximity to Texas A&M University or Blinn College – 17.4%
- Proximity to a school – 11.89%
- Proximity to a park – 7.11%
- Proximity to a bus route – 10.75%
- Crashes within 175 feet – 23.4%

Figure 6.5 Unconstrained On-System Highway List

TxDOT CSJ Number	Facility	From	To	Description	Decision Lens	Regional Priority Factor	60/40	60/40 Rank	Revised Rank	TxDOT Approved Cost Estimate
3138-01-020	FM 2347 (George Bush Dr)	FM 2154 (Wellborn Rd/UPRR)		Construct multimodal Single Point Urban Interchange (SPUI)	0.61	1.00	0.84	1	8	$ 60,000,000
0917-29-143	New Facility (Inner Loop)	SH 21	SH 6 N at FM 2818	Construct as Major Arterial cross section	0.62	0.63	0.63	2	9	$ 39,000,000
0049-12-124	US 190	BS-6R NORTH	SH 21	Widen 4-lane freeway section to 6-lanes with grade separation improvements	0.66	0.58	0.61	3	10	$ 84,000,000
0917-29-142	New Facility (Inner Loop)	Steep Hollow	US 190/SH 21	Construct as Major Arterial cross section	0.56	0.62	0.59	4	11	$ 21,000,000
1316-01-076	FM 1179 (West Villa Maria Rd)	Galindo Pkwy	SH 47	Widen road to 5 lane section (w/or w/o medians) and convert from rural open ditch to urban with storm sewer and curbs. Includes shared use path and 3 traffic signals	0.86	0.38	0.58	5	12	$ 11,000,000
0540-04-084	FM 2154	FM 2347	FM 2818	Widen 4-lane w/CTWLT to 6-lane divided with bicycle & pedestrian facilities	0.64	0.50	0.56	6	13	$ 17,000,000
2446-01-032	SH 30	SH 6	FM 158	Widen 2-lane w/CTWLT to 4-lane divided with bridges and bicycle & pedestrian facilities	0.58	0.52	0.54	7	14	$ 13,000,000
0506-01-117	FM 60	SP 308	FM 2154	Construct grade separated FM 60 thru lanes and other improvements (University Boulevard concept)	0.69	0.42	0.53	8	15	$ 450,000,000
2851-01-046	FM 2818	SH 21	F&B Rd	Widen from 4 lanes to 6 lane divided w/ Shared Use Path	0.85	0.28	0.51	9	16	$ 53,000,000
1316-01-077	FM 1179	FM 158	Planter's Loop (Eastern Intersection)	Widen road to 5 lane section (w/or w/o medians) and convert from rural open ditch to urban with storm sewer and curbs, includes shared use path and 3 traffic signals	0.58	0.42	0.48	10	17	$ 10,000,000
1560-02-019	FM 1688 (Leonard Rd)	SH 47	FM 2818	Widen road to either 3 lane section and convert from rural open ditch to urban with storm sewer and curbs. Includes bike lanes or shared use path.	0.49	0.43	0.46	11	18	$ 15,000,000
0540-08-010	SH 40	at Arrington Road		Construct grade separated interchange	0.71	0.20	0.40	12	19	$ 18,000,000
2399-01-080	FM 2818	FM 2154	BS 6R	Widen 4-lane divided to 6-lane divided with bicycle & pedestrian facilities	0.49	0.32	0.38	13	20	$ 17,000,000
2399-01-082	FM 2818	FM 60	FM 2154	Construct freeway section with grade separated interchanges at FM 2347, Luther Street West, and Holleman Drive	0.57	0.25	0.38	14	21	$ 69,000,000
0540-08-012	SH 40	at Barron Road		Construct grade separated interchange	0.82	0.07	0.37	15	22	$ 18,000,000
0049-09-081	US 190	OSR	BS-6R NORTH	Widen 4-lane freeway section to 6-lanes with grade separation improvements	0.55	0.25	0.37	16	23	$ 72,000,000
0540-08-013	SH 40	at FM 2154		Construct grade separated interchange to connect to new arterial west of railroad	0.50	0.25	0.35	17	24	$ 51,600,000
2851-01-045	FM 2818	SH 6	SH 21	Widen 2 lane undivided to 6 lane divided with Shared Use Path	0.87	0.00	0.35	18	25	$ 66,000,000
1560-01-042	FM 1687 (Sandy Point Rd)	At FM 2818		Grade Separation of the intersection	0.86	0.00	0.34	19	26	$ 9,200,000
0917-29-141	New Facility (Extension of University Dr)	FM 158	Steep Hollow Rd	Construct as Major Arterial cross section	0.59	0.17	0.34	20	27	$ 12,330,000
2851-01-043	FM 2818	Shiloh Ave/Beck St		Grade Separation of the intersection	0.80	0.00	0.32	21	28	$ 9,200,000
0540-08-011	SH 40	at Victoria Avenue		Construct grade separated interchange	0.67	0.07	0.31	22	29	$ 18,000,000
0050-01-089	BS 6R	FM 2818	SH 6	Widen 4-lane divided to 6-lane divided with bicycle & pedestrian facilities	0.64	0.08	0.30	23	30	$ 8,000,000
3138-02-015	SH 47 (Riverside Pkwy)	at FM 1688 (Leonard Rd)		Grade Separation of the intersection	0.69	0.00	0.28	24	31	$ 9,000,000
0917-29-140	New Facility (East inner Loop S)	William D. Fitch Pkwy	Hardy Weedon Rd	Construct 2 lane roadway & bridge w/ROW for 4 lane divided	0.54	0.10	0.28	25	32	$ 9,900,000
0917-29-144	New Facility (Inner Loop)	Steep Hollow	Hardy Weedon Rd	Construct as Major Arterial cross section	0.54	0.10	0.27	26	33	$ 9,215,000
0506-01-118	FM 60	FM 2818	UPRR	Improvements (widening, access management & bike/ped facilities)	0.50	0.08	0.25	27	34	$ 14,600,000
0540-04-085	FM 2154	at Rock Prairie Road		Construct grade separated interchange	0.62	0.00	0.25	28	35	$ 51,600,000
3138-02-016	SH 47	at SH 21		Reconstruct and Improve Interchange	0.59	0.05	0.25	29	36	$ 15,000,000
0116-04-107	SH 21	At FM 2818		Construct Diverging Diamond Interchange	0.49	0.08	0.25	30	37	$ 21,000,000
0917-29-135	New Facility (West Loop)	West Loop South (#147)	FM 60	Construct 2 lane roadway & bridge w/ROW for 4 lane divided	0.60	0.00	0.24	31	38	$ 24,000,000
0917-29-139	New Facility (East Loop N)	SH 21	SH 6 N	Construct 2 lane roadway & bridge w/ROW for 4 lane divided	0.48	0.08	0.24	32	39	$ 25,800,000
0917-29-138	New Facility (East Loop Central)	SH 30	SH 21	Construct 2 lane roadway & bridge w/ROW for 4 lane divided	0.47	0.08	0.24	33	40	$ 28,100,000
0917-29-136	New Facility (West Loop)	SH 6	Brazos River	Construct 2 lane roadway & bridge w/ROW for 4 lane divided	0.58	0.00	0.23	34	41	$ 18,200,000
0917-29-134	New Highway	FM 60 Extension (#41)	FM 1179	Construct urban 4 lane w/15' wide median, bike lanes and 6' sidewalks.	0.58	0.00	0.23	35	42	$ 17,800,000
0049-12-134	SH 6	At Oak Hill/East Oak Hill		Construct grade separation structure	0.55	0.00	0.22	36	43	$ 14,000,000
0540-08-009	SH 40	at SH 6		Construct direct connect from eastbound SH 40 to northbound SH 6	0.49	0.03	0.22	37	44	$ 34,400,000
2851-01-044	FM 2818	at Mumford Rd		Grade Separation of the intersection	0.51	0.00	0.20	38	45	$ 9,200,000
0917-29-137	New Facility (East Loop S)	SH 6	SH 30	Construct 2 lane roadway & bridge w/ROW for 4 lane divided	0.49	0.00	0.20	39	46	$ 16,400,000
2851-01-042	FM 2818	At FM 1688		Construct grade separation structure	0.47	0.00	0.19	40	47	$ 11,500,000
0050-01-092	BS 6R	At FM 1179		Install Traffic Signals	0.46	0.00	0.18	41	48	$ 700,000
0049-12-128	SH 6	at FM 2818		Install traffic signals; or construct roundabouts on frontage roads; or construct diverging diamand intersection	0.33	0.08	0.18	42	49	$ 7,150,000
0050-01-090	BS 6R	At FM 2818		Construct intersection improvements such as continuous flow intersection	0.32	0.08	0.18	43	50	$ 7,150,000
0049-09-086	BS 6R (Texas Ave)	SH 21 (San Jacinto Ave)	SH 6 N	Widen existing and convert to 5 lane, install c & g, sidewalks and controlled access medians	0.32	0.08	0.18	44	51	$ 11,700,000
1560-01-043	FM 1687 (Sandy Point Rd)	FM 2818	SH 21	Widen road to either 3 or 5 lane section and convert from rural open ditch to urban with storm sewer and curbs. Includes bike lanes or shared use path.	0.43	0.00	0.17	45	52	$ 8,970,000
0050-01-091	BS 6R	at FM 60		Construct intersection improvements such as 3 thru lanes on BS 6R southbound approach	0.42	0.00	0.17	46	53	$ 1,100,000
0117-01-056	US 190/SH 21	At FM 2776		Construct grade separation structure	0.41	0.00	0.16	47	54	$ 28,120,000
0506-01-119	FM 60	SH 47	Brazos River	Reconstruct 4-lane facility with Bicycle and pedestrian facilities	0.40	0.00	0.16	48	55	$ 42,000,000

Figure 6.5 Unconstrained On-System Highway List

TxDOT CSJ Number	Facility	From	To	Description	Decision Lens	Regional Priority Factor	60/40	60/40 Rank	Revised Rank	TxDOT Approved Cost Estimate
0117-01-057	SH 21	BS 6R S (Texas Ave)	SH 6	Improvements (widening, medians, access mgmt., & bike/ped)	0.39	0.00	0.15	49	56	$ 3,040,000
0050-01-093	BS 6R	At New Main Drive/Walton Drive		Upgrade traffic signals w/improved pedestrian access, bicycle detection & bicycle lanes	0.38	0.00	0.15	50	57	$ 800,000
2851-01-047	FM 2818	At SH21		Construct Frontage Roads at SH 21	0.37	0.00	0.15	51	58	$ 4,900,000
2399-01-081	FM 2818	BS 6R	SH 6	Widen 4-lane w/CTWLT to 6-lane divided with bicycle & pedestrian facilities	0.34	0.00	0.14	52	59	$ 7,900,000
0116-05-021	FM 158	BS 6R	FM 158/SH 21 W	Construct raised medians, sidwalks and midblock crossings	0.34	0.00	0.13	53	60	$ 11,500,000
1316-01-078	FM 1179	FM 2038	Planter's Loop (Eastern Intersection)	Widen road to 3 lane section w/ wide shoulders.	0.33	0.00	0.13	54	61	$ 21,000,000
0050-02-115	SH 6	at Barron Road		Install traffic signals on frontage roads	0.30	0.00	0.12	55	62	$ 600,000
3138-02-016	SH 47	At SH 21		Reconstruct Interchange	0.33	0.08	0.18	56	63	$ 15,000,000

The ATAP met again in October of 2019 to discuss how the projects scored and which projects would be selected for funding. Because of the MPO Policy requiring that 5% of all MPO funds for projects be dedicated to bicycle and pedestrian projects, the ATAP selected only those that are considered on-system. If other funds become available, the ATAP will move to off-system projects. The results of the ATAP process are shown in Figure 6.6.

Figure 6.6 Bicycle and Pedestrian Projects

Alternative Name	MPO ID	TPC	Value	MPO Rank
FM 60 Bike/Ped Grade Separation Stucture	388	$60,000,000	0.79	1
SH 30 Shared Use Path on the north side (Texas to SH 6)	313	$4,615,000	0.62	2
FM 2347 (George Bush Drive) shared use path	477	$1,750,000	0.61	3
BS 6R (Texas Ave) pedestrian facilities & consolidate drives	386	$5,000,000	0.55	4
FM 1179 Shared Use Path (FM 2818 to Texas Ave.)	354	$3,000,000	0.54	5
FM 60 Shared Use Path on the south side	311	$3,840,000	0.52	6
SH 308 Shared Use Path	380a	$3,000,000	0.51	7
BS 6R (Texas Ave) 5' sidewalk on east side	389	$300,000	0.49	8
BS 6R Grade Separation	320	$60,000,000	0.48	9
FM 158 6' sidewalks on south side	397	$140,000	0.47	10
FM 2347 Shared Use Path on north side	304	$4,187,000	0.47	11
FM 60 Shared Use Path on south side	310	$3,345,000	0.44	12
FM 158 6' sidewalks at back of curb	396	$1,000,000	0.44	13
SH 6 NB Frontage Road 6' sidewalks with 3' buffer	390	$1,000,000	0.43	14
FM 60 Grade Separation	321	$60,000,000	0.42	15
FM 60 Grade Separation	323	$60,000,000	0.40	16
FM 2818 Shared Use Path on south side	305	$2,460,000	0.38	17
FM 2818 Service Road Sidewalk on south side	306	$130,000	0.38	18
FM 2818 12 foot Shared use path	475	$2,300,000	0.38	19
FM 2818 Service Road Sidewalk on south side	307	$188,000	0.37	20
FM 60 Construct Grade Separation	322	$60,000,000	0.36	21
W Villa Maria Rd Shared Use Path and Pedestrian Lighting	345	$10,000,000	0.33	22
SH 6 Bicycle and Pedestrian Facilities	327	$378,000	0.31	23
SH 40 Bicycle and Pedestrian Facilities	326	$90,000	0.30	24
SH 6 Shared Use Path westside	479	$0	0.30	25
FM 60 Shared Use Path on north side	302	$1,530,000	0.29	26
FM 974 Sidewalks	382	$2,600,000	0.28	27
SH 6 Shared Use Path eastside	480	$0	0.28	28
FM 2818 Bicycle and Pedestrian Facilities on both sides	308	$601,000	0.28	29
SH 6 Shared Use Path on east side	316	$263,000	0.28	30
FM 2818 Shared Use Path	361	$2,075,000	0.27	31
SH 21 6' sidewalks at right-of-way line	402	$2,300,000	0.26	32
SH 47 Shared-Use Path	301	$18,000,000	0.25	33
SH 6 Shared Use Path on west side	318	$6,574,000	0.25	34
SH 40 Shared Use Path on both sides	315	$10,000,000	0.25	35
US 190/SH 21 6' sidewalks at right-of-way line	395	$3,000,000	0.24	36
SH 6 10' shared use path	394a	$200,000	0.24	37
SH 47 Shared Use Path	378	$15,400,000	0.23	38
Leonard Road Widen with bike lanes	359	$12,000,000	0.21	39
FM 2154 Shared Use Path on east side	303	$2,530,000	0.16	40
SH 21 Shoulder Widening	379	$5,100,000	0.16	41
SH 30 Shared Use Path	384	$3,300,000	0.06	42

In addition to on-system highway and bicycle and pedestrian projects, the TAC ranked the off-system projects using the Regional Priority factor scoring system. Rather than numerically rank each project, the TAC directed MPO staff to sort the projects into high priority, medium priority and low priority rankings. Data to use in Decision Lens is not readily available and since the TAC chose not to select off-system projects for financial constraint it was decided that MPO staff should not attempt to develop data sets for these projects. The resulting project list is shown in Figure 6.7.

Figure 6.7 Off- System Highway Projects

Project Identifier	Roadway Name	Limits From	Limits To	Description	COST	RANK
21	Woodville Rd.	Old Hearne Rd.	BS 6-R	Reconstruct & widen to 3 lanes with 6 ft. sidewalks	$5,512,000	High
25	East Oak Hill Extension	SH 6	East Oak Hill	Major Collector Roadway section w/ sidewalks	$1,880,000	High
20	Waco Street	Ursaline	Cole	Extend existing facilities, 2 lane w/ CTWLT	$1,132,000	High
33	S. College Ave.	Villa Maria Rd.	Carson St.	Reconstruct to 5 lane urban w/ Shared Use Path and sidewalk	$4,032,000	High
90	Royder Road Extension	FM 2154 (Wellborn Rd.)	I&GN Road	Relocate S. Dowling Rd railroad crossing to Royder Rd at FM 2154 and construct 4-lane divided with bicycle & pedestrian facilities	$3,171,116	High
93	New Facitility/Arterial	SH 40	Rock Prairie Road West	Construct 4-lane divided with bicycle & pedestrian facilities to connect to grade separated interchange at FM 2154	$12,000,000	High
96	William D. Fitch Pkwy	Rock Prairie Road	SH 30	Widen 2-lane undivided to 4-lane divided with bridges and bicycle & pedestrian facilities	$45,150,000	High
123	Jane Long Middle School	At Jane Long Middle School		Operational improvements for student pick-up queue	$3,125,000	High
127	Greens Prairie Road	Arrington Road	FM 2154	Widen 2 lane undivided to 4 lane divided w/ bike lanes & sidewalks	$44,000,000	High
139	F&B Road	Turkey Creek Road	FM 2818	Widen 2 lane undivided to 4 lane divided w/ bike lanes & sidewalks	$5,210,000	High
17	Waco Street	Old Kurten Road	SH 21	Realign Waco St. to intersect w/ SH 21 at Tabor Rd. Construct sidewalks	$1,768,000	High
7	Woodville Rd.	SH 6	Old Hearne Rd.	Reconstruct & widen to 3 lane with 6 ft. sidewalks and Roundabouts at Old Hearne and TXDOT Bridge	$4,056,000	High
22	RR Crossing	25 locations, Downtown Bryan		Install quad directional gates, signals, and raised medians	$5,824,000	High
85	E. 29th St.	At Barak Ln.		Upgrade existing traffic signals	$364,996	High
89	E. 29th St.	At Still Meadow		Upgrade existing traffic signals	$364,996	High
87	E. 29th St.	At Carter Creek Pkwy.		Upgrade existing traffic signals	$364,996	High
86	E. 29th St.	At Broadmoor		Upgrade existing traffic signals	$364,996	High
88	E. 29th St.	At Memorial Dr.		Upgrade existing traffic signals	$364,996	High
92	Town Lake Drive Extension	SH 6	Midtown Drive	Construct 4-lane divided with bridge and bicycle & pedestrian facilities	$3,780,947	High
95	Luther Street West Extension	FM 2818	North Dowling Road	Construct 4-lane divided with bicycle & pedestrian facilities	$13,000,000	High
117	South Coulter Drive	East 29th Street	South College Avenue	Reconstruct w/ CTWLT, bike lanes and 6' sidewalks	$8,330,000	High
118	Barron Road	SH 40	FM 2154 (Wellborn Rd.)	Widen 2 lane undivided to 4 lane divided w/ bike lanes & sidewalks	$5,280,000	High
131	Rock Prairie Road	SH 6	Medical Drive	Widen 2 lane undivided to 4 lane divided w/ bike lanes & sidewalks	$5,210,000	High
132	Rock Prairie Road West	FM 2154 (Wellborn Rd.)	Holleman Drive	Widen 2 lane undivided to 3 lane w/ CTWLT, bike lanes & sidewalks	$10,500,000	High
136	Royder Road Extension	Backwater Drive	FM 2154 (Wellborn Rd.)	Widen 2 lane to 4 lane divided w/ bike lanes & sidewalks	$9,400,000	High
140	Deacon Drive	Old Wellborn Road	FM 2154 (Wellborn Rd.)	Relocate RR crossing from Cain Rd. to Deacon Dr.	$3,125,000	High
26	Marino Rd.	FM 1179	SH 21	Extend Marino Road from SH 21 where it exists to FM1179 where it does not. Minor Arterial section per 2050 Tfare Plan.	$11,400,000	Medium
28	Wallis Rd.	Old Reliance Rd.	SH 21	Widen road to 3 lane section w/ curbs and storm sewers.	$5,040,000	Medium
65a	E. 29th St.	Joseph Dr.	De Lee St.	Construction of controlled access medians	$486,661	Medium
65b	Villa Maria Rd.	Joseph Dr.	Osler Blvd.	Construction of controlled access medians	$486,661	Medium
35	Mumford Rd./Saunders	FM 2818	SH 21	Widen Road - 3 lane with wide shoulders and shared use path	$14,080,000	Medium
101	I&GN Road	N. Graham Road	Greens Prairie Road	Widen 2-lane undivided to 4-lane divided with bicycle & pedestrian facilities	$27,600,000	Medium
102	Capstone Drive	FM 2154 (Wellborn Rd.)	I&GN Road	Widen 2-lane undivided to 4-lane divided with bicycle & pedestrian facilities	$39,030,000	Medium
103	Arrington Road	Greens Prairie Road	Indian Lakes Drive	Widen 2-lane undivided to 4-lane divided with bicycle & pedestrian facilities	$25,620,000	Medium
104	Arrington Road Extension	Indian Lakes Drive	FM 2154	Construct 4-lane divided with bicycle & pedestrian facilities	$29,300,000	Medium
108	Southern Pointe Pkwy Extension	Pipeline Road	Rock Prairie Road	Construct 4-lane divided with bicycle & pedestrian facilities	$3,470,000	Medium
109	Royder Road Extension	Greens Prairie Road	Arrington Road Extension	Construct 4-lane divided with bicycle & pedestrian facilities	$19,520,000	Medium
110	Royder Road Extension	I&GN Road	Koppe Bridge Road	Construct 4-lane divided with bicycle & pedestrian facilities	$29,270,000	Medium
23	Woodville Rd. Extension	BS 6-R	Mumford Rd.	Extend minor arterial road section across UPRR tracks with 6 ft sidewalks and urban road section	$2,680,000	Medium
15	Groesbeck St.	Bryan Ave/Finfeather Rd.	Main St.	Widen existing and add turn lanes, bike lanes, sidewalk & signals	$2,600,000	Low
11	Missouri Ave	Just past Yellowstone Dr.	Wilkes St.	Extend existing local street to close gap	$100,000	Low
12	Old Reliance Rd.	Austin's Colony Pkwy	Wallis Rd.	Widen 2 lane undivided to 4 lane with 15 ft. raised median/turn lanes and shared use paths	$8,466,977	Low
19	Austin's Colony Pkwy.	Old Reliance Rd.	SH 21	Extend exist. w/4 lanes, controlled access median, & 6 ft. sidewalks	$8,466,977	Low
14	Villa Maria Rd.	FM 158	Ursaline @ Osborne	3 lane urban road w/ buffered bike lanes and sidewalks both sides - roundabout at Ursuline.	$7,235,434	Low
31	Waco Street	Dansby	Old Kurten	Widen to 3 lane urban w/ sidewalks	$1,994,000	Low
63	E. 29th St.	S. Coulter Dr.	Garden Lane	Reconstruct w/ CTWLT, bike lanes and 6 ft. sidewalks	$6,069,002	Low
16	Old College Ave.	FM 2154 (Wellborn Rd.)	SP 308 (S. College Ave.)	Reconstruct as 3 lane section, bike lanes and 6 ft. sidewalks both sides w/ new roundabout at North Ave.	$2,737,469	Low
64	E. 29th St.	BS 6-R (Texas Ave.)	S. Coulter Dr.	Reconstruct as 3 lane w/ buffered bike lanes and 6 ft. sidewalks	$5,867,688	Low
13	Bryan Ave.	24th St.	Martin Luther King	Reconstruct w/ on-street parking, sidewalks, and raised medians	$10,160,397	Low
39	Shiloh St. Extension	End of Shiloh St.	SH 47	Construct Minor Arterial Road section	$10,960,000	Low
41	University Dr.	FM 158	Steep Hollow Rd.	Construct as Major Arterial cross section	$10,350,000	Low
97	Rock Prairie Road	Medical Avenue	William D. Fitch Pkwy	Widen 2-lane undivided to 4-lane divided with bicycle & pedestrian facilities	$30,370,000	Low
98	Rock Prairie Road	William D. Fitch	Future Highway	Widen 2-lane undivided to 4-lane divided with bicycle & pedestrian facilities	$41,850,000	Low
99	Rock Prairie Road W	Holleman Drive S	N. Dowling Road	Widen 2-lane undivided to 4-lane divided with bicycle & pedestrian facilities	$13,050,500	Low
100	Luther Street W	FM 2818	Jones Butler Road	Widen 2-lane undivided to 4-lane divided with bicycle & pedestrian facilities	$8,300,000	Low
105	WS Phillips Pkwy Extension	Greens Prairie Road	Arrington Road	Construct 4-lane divided with bicycle & pedestrian facilities	$18,800,000	Low
106	Nantucket Drive Extension	SH 6	Pebble Creek Pkwy Extension	Construct 4-lane divided with bicycle & pedestrian facilities	$13,200,000	Low

Figure 6.7 Off- System Highway Projects

Project Identifier	Roadway Name	Limits From	Limits To	Description	COST	RANK
107	Pebble Creek Pkwy Extension	Royal Adelaide Drive	SH 6	Construct 4-lane divided with bicycle & pedestrian facilities	$42,700,000	Low
130	Sam Rayburn Junior High School	At Sam Rayburn Junior High School		Operational improvements for student pick-up queue	$2,100,000	Low
133	Bryan Avenue	East 24th Street	East 28th Street	Reconstruct w/ on-street parking, sidewalks, and raised medians	$19,800,000	Low
146	New Facility (HSC Pkwy Extension)	SH 47	FM 60	Construct 4-lane facility with medians, bike and Pedestrian facilities and grade separation interchange at FM 60	$61,550,000	Low

FISCAL CONSTRAINT

As required under federal law, the list of Metropolitan Transportation Plan projects must be fiscally constrained. Based on Figure 6.4 in Section 6C a reasonably anticipated funding forecast was developed and then projects selected based on their rankings after being scored. While original project estimates were in 2020 dollars, for the 2025-2029 time band, estimates were inflated at 3% per year to reflect a 2025 construction date. For the final time band, all projects were inflated at 3% per year and given a 2040 construction date. Figure 6.8 shows these projects.

Figure 6.8 Fiscally Constrained Project List

2020 - 2024

MPO Project	TxDOT Project	Facility & Project Length	Project Limits	Project Description	Funding Source(s)	2020 Construction Estimate	2020 Construction Estimate	MPO Funding Allocation	Funding Provided By Others	CAT 2 Funding Running Balance	Fiscal Constraint Running Balance
301	0917-29-133	Coulter Drive -	From South College Avenue To FM 158 (William J. Bryan)	Installation of 6-foot-wide sidewalks on both sides of Coulter Drive. Install bicycle lanes along Coulter from South College Ave. to 29th Street to match existing ones in places from South College Ave. to 29th Street.	Local & TxDOT	$ 1,373,150	$ 1,373,150	$ -	$ 1,373,150	$ 286,000,000	$ 399,000,000
302	0049-12-115	SH 6 Northbound Frontage Road -	From Old Reliance Road To FM 158 (Boonville Road)	Installation of a 12-foot-wide shared use-path on east side.	Local & TxDOT	$ 1,242,900	$ 1,242,900	$ -	$ 1,242,900	$ 286,000,000	$ 399,000,000
1	2399-01-074	FM 2818 - 2.25 miles	From FM 60 To FM 2154	Widen and develop arterial super street and add bicycle and pedestrian facilities	TxDOT & MPO	$ 39,822,000	$ 39,822,000	$ 38,710,000	$ 1,112,037	$ 247,290,000	$ 360,290,000
303	0599-01-009	SH 308 (College Ave) - 0.75 miles	From Brookside Drive To FM 60	Construct sidewalks and shared-use path	MPO	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ -	$ 246,290,000	$ 359,290,000
2	0212-03-050	FM 158 - 1.85 miles	From BS 6-R To SH 6	Construct raised medians, decel. lanes, add traffic signals and pedestrian facilities	MPO	$ 13,000,000	$ 13,000,000	$ 13,000,000	$ -	$ 233,290,000	$ 346,290,000
3	0049-12-110	SH 6 - 14 miles	From SH 21 To SH 40	Widen freeway facility from 4 to 6 lanes, improve frontage roads, add local access lanes and add bicycle/ped. facilities	TxDOT & MPO	$ 174,320,000	$ 174,320,000	$ 12,000,000	$ 162,320,000	$ 221,290,000	$ 334,290,000
4 & 386	0049-09-087 & 0049-09-076 & 0050-01-083	BS 6-R - 5.2 miles	From Old Hearne Road To FM 60	Convert continous center turn lane to controlled access raised median w/ landscaping, shared-use path and signals	TxDOT & MPO	$ 29,374,110	$ 29,374,110	$ 21,000,000	$ 8,374,110	$ 200,290,000	$ 313,290,000
5	0540-04-074	FM 2154 - 3.2 miles	From SH 40 To Greens Prarie Road	Widen 2 lane divided to 4 lane divided w/ bike lanes and sidewalks	MPO	$ 29,000,000	$ 29,000,000	$ 29,000,000	$ -	$ 171,290,000	$ 284,290,000
				Subtotal 2020 to 2024 Projects		**$ 289,132,160**	**$ 289,132,160**	**$ 114,710,000**	**$ 174,422,197**	**$ 171,290,000**	**$ 284,290,000**

2025 - 2029

MPO Project	TxDOT Project	Facility & Project Length	Project Limits	Project Description	Funding Source(s)	2020 Construction Estimate	2025 Construction Estimate	MPO Funding Allocation	Funding Provided By Others	CAT 2 Funding Running Balance	Fiscal Constraint Running Balance
6	0050-02-106	SH 6 - 14 miles	From SH 21 To SH 40	Improvements at various interchanges	TxDOT & MPO	$ 36,000,000	$ 42,000,000	$ 15,000,000	$ 27,000,000	$ 156,290,000	$ 269,290,000
7	0117-01-051	SH 21 - 0.88 miles	From BS 6-R To SH 6	Acquire ROW, widen 4 to 6 lanes, access management and bike/ped improv.	MPO	$ 11,000,000	$ 12,800,000	$ 12,800,000	$ -	$ 143,490,000	$ 256,490,000
313	2446-01-034	SH 30 1.32 miles	From BS 6-R To SH 6	Construct shared-use path on north side	MPO	$ 4,400,000	$ 5,160,000	$ 5,160,000	$ -	$ 138,330,000	$ 251,330,000
8	3138-01-020	FM 2347 - 1 mile	At FM 2154 & Union Pacific Railroad	Construct multimodal Single Point Urban Interchange (Grade Separation)	TxDOT & MPO	$ 60,000,000	$ 69,000,000	$ 5,000,000	*$ 64,000,000*	$ 133,330,000	$ 246,330,000
17	1316-01-077	FM 1179 - 3 miles	From FM 158 To Eastern Intersection of Inner loop (near Planter's Loop)	Widen road to 5-lane section (w/or wo medians) and convert from rural open ditch to urban wth storm sewer and curbs. Includes shared-use path.	TxDOT & MPO	$ 12,000,000	$ 14,000,000	$ 11,000,000	$ 3,000,000	$ 122,330,000	$ 235,330,000
354	1316-01-XXX	FM 1179 - 2 miles	From FM 2818 To BS 6-R	Construct shared-use path on north side	MPO	$ 2,150,000	$ 2,500,000	$ 2,500,000	$ -	$ 122,330,000	$ 232,830,000
14	2446-01-032	SH 30 2.3 miles	From SH 6 To FM 158	Widen 2 lane w/CTWLT to 4 lane divided with bicycle and pedestrian facilities	MPO	$ 11,000,000	$ 12,800,000	$ 12,800,000	$ -	$ 109,530,000	$ 220,030,000
				Subtotal 2025 to 2029 Projects		**$ 136,550,000**	**$ 158,260,000**	**$ 64,260,000**	**$ 94,000,000**	**$ 109,530,000**	**$ 220,030,000**

2030 - 2044

MPO Project	TxDOT Project	Facility & Project Length	Project Limits	Project Description	Funding Source(s)	2020 Construction Estimate	2040 Construction Estimate	MPO Funding Allocation	Funding Provided By Others	CAT 2 Funding Running Balance	Fiscal Constraint Running Balance
9	0917-29-143	New Facility (Inner Loop) -7.65 miles	From SH 6 N at 2818 To SH 21	Construct new facility as major arterial cross section, initially with 2 lanes	MPO	$ 39,000,000	$ 65,000,000	$ 65,000,000	$ -	$ 44,530,000	$ 155,030,000
11	0917-29-142	New Facility (Inner Loop) -3.45 miles	From SH 21 To FM 1179	Construct new facility as major arterial cross section, initially with 2 lanes	MPO	$ 21,000,000	$ 36,000,000	$ 36,000,000	$ -	$ 8,530,000	$ 119,030,000
12	1316-01-076	FM 1179 - 2 miles	From Galindo Parkway To SH 47	Widen road to 5 lane section (w/or w/o medians) and convert from rural open ditch to urban with storm sewer and curbs. Includes shared-use path and 3 traffic signals	MPO	$ 11,000,000	$ 20,000,000	$ 20,000,000	$ -	$ 2,645,890	$ 99,030,000
477	3138-01-XXX	FM 2347 - 1.15 miles	From 2818 To new Wellborn Road Interchange	Construct shared-use path	MPO	$ 1,000,000	$ 1,750,000	$ 1,750,000	$ -	$ 2,645,890	$ 97,280,000
13	0540-04-084	FM 2154 - 1.35 miles	From FM 2347 To FM 2818	Widen 4-lane w/CTWLT to 6-lane divided with bicycle & pedestrian facilities	MPO	$ 17,000,000	$ 31,000,000	$ 31,000,000	$ -	$ 2,645,890	$ 66,280,000
18	1560-02-019	FM 1688 (Leonard Rd.) 2.9 miles	From SH 47 To FM 2818	Widen road to 3 lane section, convert from rural open ditch to urban with storm sewer and curbs and include bicyle/pedestrian Facilities	MPO	$ 15,000,000	$ 27,000,000	$ 27,000,000	$ -	$ 2,645,890	$ 39,280,000
19	0540-08-010	SH 40 - .5 miles	at Arrington Road	Construct grade separated interchange	MPO	$ 17,000,000	$ 31,000,000	$ 31,000,000	$ -	$ 2,645,890	$ 8,280,000
380a	0599-01-XXX	SH 308 - .75 miles	Brookside Drive To FM 60	Construct shared-use path on West Side/convert to urban section	MPO	$ 1,375,000	$ 2,500,000	$ 2,500,000	$ -	$ 2,645,890	$ 5,780,000
				Subtotal 2030 to 2044 Projects		**$ 122,375,000**	**$ 214,250,000**	**$ 214,250,000**	**$ -**	**$ 2,645,890**	**$ 5,780,000**
				Total 2020 to 2044 Projects		**$ 548,057,160**	**$ 661,642,160**	**$ 393,220,000**	**$ 268,422,197**	**$ 2,645,890**	**$ 5,780,000**

The MPO is working with TxDOT Bryan District to secure the balance of funds needed to complete this project. Funding will come from a category other than CAT 2, CAT 7 or CAT 9 and is subject to Texas Transportation Transportation Commission approval as part of the annual Unified Transportation Program Update process in the Summer of 2020.

PUBLIC PARTICIPATION

The Bryan/College Station MPO provided three opportunities for public engagement as part of the development of this plan. The first was a public call for suggested projects in March of 2019. The second was a series of three open houses in April of 2019 to share the results of the transportation system analysis and ask for citizen priorities in selecting projects. The third opportunity was a set of open houses in November of 2019 to discuss the overall plan with a focus on project selection and programming. This included a presentation to the Chamber of Commerce Transportation Committee at their public open house

The call for projects led to five citizens submitting a list of projects. All the projects submitted were either off the TxDOT system or on local streets that are not within the MPOs purview. Those projects that were off-system were added to the list shown in Figure 6.7 and were eligible for project ranking. Local street projects were disseminated to the appropriate jurisdiction for consideration in the Capital Improvement Programs.

The open houses in April were not well attended but the public did participate via the MPO website. A total of 35 comments were received and stressed that the limited amount of transportation funds should be focused on maintain or expanding existing facilities and not on building new roadways. In particular, there was a plurality of submissions that requested better attention to safer bicycle and pedestrian facilities. A separate survey was also made available through the website in which citizens were made the transportation budget director for the day, given $100 dollars and asked to recommend how that $100 should be allocated across eight distinct transportation solutions. Eighty unique internet addresses participated in that survey and, much like the written comments, suggested that the majority of funding be spent on maintaining existing roadways or existing bicycle and pedestrian facilities.

The final set of meetings received significant media interest. Both the local newspaper, The Eagle, and the local television station, KBTX, ran stories announcing the events. In addition, the MPO Executive Director made an on-air appearance on KBTX to discuss the plan, the need for citizen feedback, and how the feedback would be incorporated into the final document. While public meeting participation was minimal, the Chamber event drew 25 participants in which a 15-minute participation was made by the Executive Director. Of those participating in the Chamber event, two comments were received. Both suggested that the MPO focus on how to bring additional transportation funding to the area. Participation through the MPO website elicited 15 comments. Five of these comments suggested projects on local streets and were shared with the affected local jurisdiction. Five comments were complimentary of staff for a very detailed document and that they concurred with the projects selected for fiscal constraint. The remaining five comments requested further clarification on some items contained in the text of the document. Staff contacted these five individuals to answer their questions and the document revised to provide better clarity to the issues the citizens requested more information.

The MPO did not receive any requests for a Spanish translation of the document and no requests were received for Spanish language accommodations.