



SEMPO METROPOLITAN TRANSPORTATION PLAN

2021-2045

Adopted April 21, 2021

Amendments and Updates

None at this time.

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SOUTHEAST METROPOLITAN PLANNING ORGANIZATION

RESOLUTION NO. 2021-06

**A RESOLUTION ADOPTING THE
2021-2045 METROPOLITAN TRANSPORTATION PLAN**

WHEREAS, the Board of Directors is the executive body of the Southeast Metropolitan Planning Organization (SEMPO), designated by the Governor of the State of Missouri and the Governor of the State of Illinois and charged with carrying out the provisions of 23 U.S.C. 134 and 49 U.S.C. 5303 for the Cape Girardeau-Jackson, Missouri Urbanized Area; and

WHEREAS, the federal regulations for metropolitan transportation planning and programming, as specified in 23 CFR 450.300, requires that SEMPO develop a long range transportation plan as part of the continuing, cooperative, and comprehensive transportation planning process; and

WHEREAS, a long range transportation plan covers a planning horizon of at least 20 years, and fosters (1) mobility and access for people and goods, (2) efficient system performance and preservation, and (3) quality of life; and

WHEREAS, SEMPO has developed the 2021-2045 Metropolitan Transportation Plan to serve as its long range transportation plan meeting the foregoing criteria and in accordance with the requirements of the Federal Highway Administration and the Federal Transit Administration; and

WHEREAS, other plans including local land use plans, local capital improvement plans, transit agency plans, regional plans, and statewide plans were consulted and incorporated into the 2021-2045 MTP; and

WHEREAS, the 2021-2045 Metropolitan Transportation Plan has been presented to the public for review and comment; and

WHEREAS, the Technical Planning Committee has recommended adoption of the 2021-2045 Metropolitan Transportation Plan to the Board of Directors.

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the Southeast Metropolitan Planning Organization hereby adopts the 2021-2045 Metropolitan Transportation Plan.

PASSED AND APPROVED THIS 21ST DAY OF April, 2021.


Dwain Hahs, Chairman

ATTEST:


Alex McElroy, Executive Director

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Glossary of Terms

ACS	American Community Survey
ADA	Americans with Disabilities Act
ATF	Aviation Trust Funds
BRO	Off-System Bridge Replacement and Rehabilitation
BRM	On-System Bridge Replacement and Rehabilitation
CMAQ	Congestion Mitigation and Air Quality
CTA	Cape Girardeau County Transit Authority
EPA	Environmental Protection Agency
FAST Act	Fixing Americas Surface Transportation Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY	Fiscal Year
HHS	Health and Human Services
HSP	Highway Safety Plan
IDOT	Illinois Department of Transportation
LOS	Level of Service
MoDNR	Missouri Department of Natural Resources
MoDOT	Missouri Department of Transportation
MAP-21 Act	Moving Ahead for Progress in the 21 st Century Act, predecessor to FAST Act
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NBI	National Bridge Inventory
NEPA	National Environmental Policy Act
NHPP	National Highway Performance Program
NHS	National Highway System
NPE	Non-Primary Entitlement Funds (Airport Discretionary Funds)
SEMPO	Southeast Metropolitan Planning Organization
STIP	State Transportation Improvement Program
STP	Surface Transportation Program
STP-E	Surface Transportation Program - Enhancements
STP-U	Surface Transportation Program - Urban
TAP	Transportation Alternatives Program
TAZ	Traffic Analysis Zone
TDM	Travel Demand Model
TE	Transportation Enhancements
TEAP	Traffic Engineering Assistance Program
TSA	Transportation Security Administration
TIP	Transportation Improvement Program
T-OPS	Transit Operations
UA	Urbanized Area
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled

Section 1: Introduction

Southeast Metropolitan Planning Organization

Southeast Metropolitan Planning Organization (SEMPO) is a metropolitan planning organization (MPO), which is a federally mandated and funded policy-making organization that oversees transportation planning for an urbanized area (UA)¹. As the MPO for the Cape Girardeau – Jackson UA, SEMPO is responsible for meeting the federal metropolitan planning regulations for the specified geographic area that includes the City of Cape Girardeau, the City of Jackson, and portions of Cape Girardeau County and Scott County, Missouri, as well as portions of the Village of East Cape Girardeau and Alexander County, Illinois. SEMPO is comprised of a Board of Directors, a Technical Planning Committee (TPC), and the planning and administrative staff.

The Board of Directors includes appointed representatives, some of whom are voting members and others act as non-voting members. The voting members include appointed representatives of the City of Cape Girardeau, the City of Jackson, Cape Special Road District (Cape SRD), Southeast Missouri Regional Planning and Economic Development Commission (SEMO RPC), and Southeast Missouri State University (SEMO University). The non-voting members include appointed representatives of the Village of East Cape Girardeau, Alexander County, Cape Girardeau County, Scott County, Bootheel Regional Planning Commission (Bootheel RPC), Cape Girardeau County Transit Authority (CTA), Federal Highway Administration-Illinois Division (FHWA-IL), Federal Highway Administration-Missouri Division (FHWA-MO), Federal Transit Administration (FTA) Regions 5 and 7, Illinois Department of Transportation (IDOT), Missouri Department of Transportation (MoDOT), and the SEMO Regional Port Authority (SEMO Port).

The TPC consists of staff representatives from these agencies, Cape Girardeau Area MAGNET (MAGNET), and the Cape Girardeau Regional Airport (Cape Airport), and acts in an advisory capacity to the Board of Directors. The bylaws call for alternate terms on the Board for the Cape Girardeau County representative and the Transit representative. The Cape Girardeau County representative is alternately appointed by Cape Girardeau County Commission and Cape Special Road District every two (2) years. In addition, the Transit representative is alternately appointed by Southeast Missouri State University and Cape Girardeau County Transit Authority every two (2) years.

SEMPO was formally established in February of 2013 with the development of membership, bylaws, and the completion of a Memorandum of Understanding (MOU). The MOU was drafted with cooperation of the organizations comprising the Board of Directors and was approved by the Governors of Illinois and Missouri on February 7, 2013 and March 12, 2013, respectively.

This Metropolitan Transportation Plan (MTP) is the first five (5)-year update to the original SEMPO MTP, which was adopted in 2016. The MTP uses population data, land use data, socio-economic data, traffic data, accident data, and other information that affects the transportation system in an effort to plan for a twenty-year or more timeframe.

Geographic Region Covered by the MTP

The MTP covers the entire planning area of the MPO, known as the Metropolitan Planning Area (MPA). The SEMPO MPA, as delineated by the SEMPO Board of Directors and approved by the Governors of Illinois

¹ <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html>

and Missouri, contains the urbanized area and portions of unincorporated, non-urbanized areas within Cape Girardeau and Scott Counties in Missouri and Alexander County in Illinois. The approximate population of the MPA is 54,808 according to the 2018 American Communities Survey (ACS) five (5)-year estimate. The MPA covers approximately 117 square miles, with 111.7 square miles in Cape Girardeau County, 4.7 in Alexander County, and 0.6 in Scott County. **Figure 1** shows a map of the MPA.

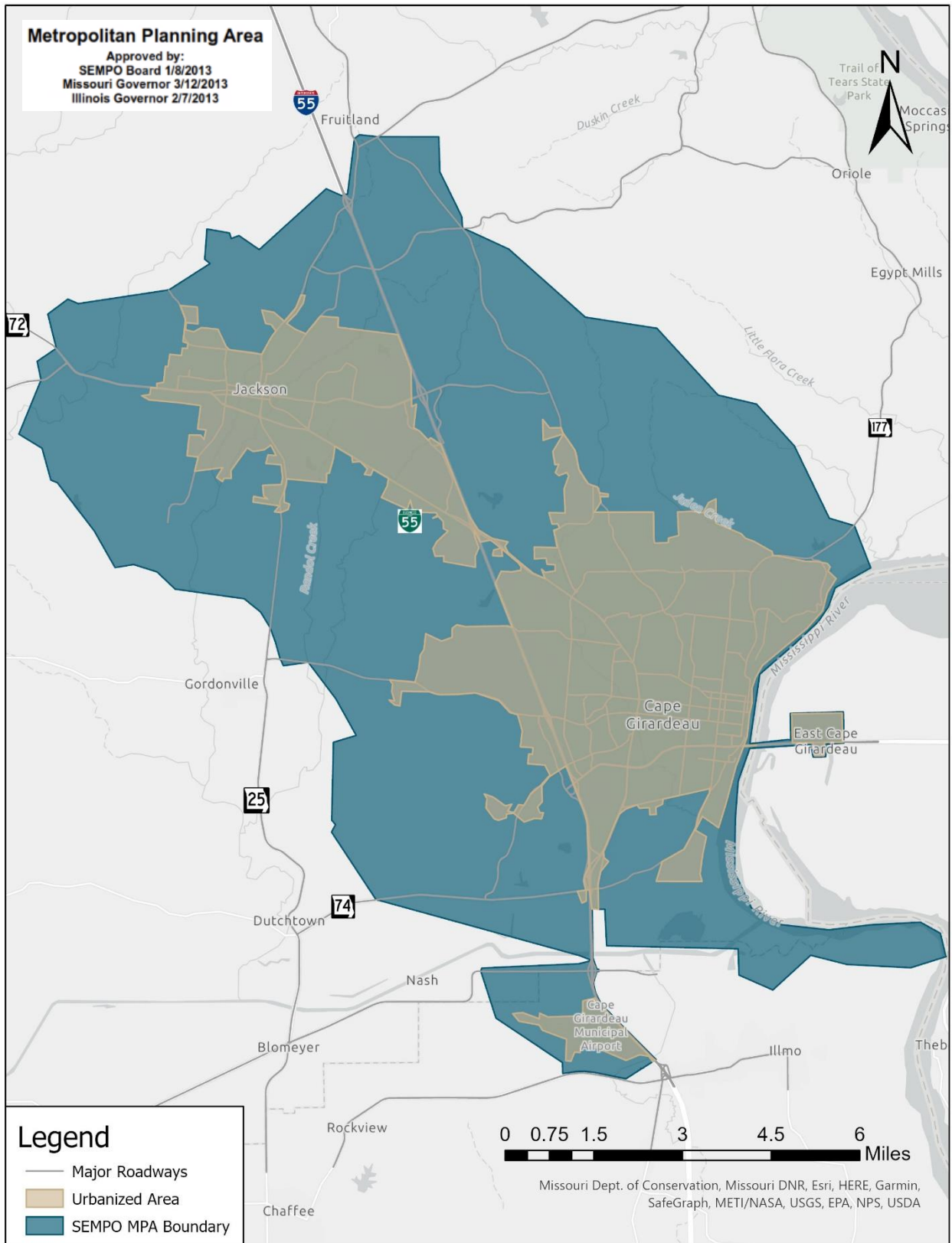


Figure 1. SEMPO Metropolitan Planning Area Boundary

MPO Basics

When an area has been identified as an UA with a population of more than 50,000 individuals by the US Department of Commerce Census Bureau and designated as such by the Office of Management and Budget, an MPO must be formed. It must be formed by agreement of the state governor(s) and “units of general purpose local governments representing 75% of the affected metropolitan population” to coordinate metropolitan transportation planning and transportation related investments².

An MPO is a transportation policy-making body consisting of representatives from local government and transportation agencies with authority and responsibility in metropolitan planning areas. Federal legislation passed in the early 1970s required the formation of an MPO for any UA.

An MPO has six “core” functions³:

1. Establish and manage a fair and impartial setting for effective regional decision making in the metropolitan area.
2. Develop transportation improvement options and use data and planning methods to evaluate whether those options support criteria and system performance targets. Planning studies and evaluations are included in the Unified Planning Work Program (UPWP).
3. Develop and update a long-range transportation plan (LRTP) for the metropolitan area covering a planning horizon of at least 20 years. The MPO's LRTP is called an MTP. MPOs prepare MTPs using performance measures and targets. These are the planning factors that MPOs and departments of transportation consider to guide their planning processes:
 - i) Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
 - ii) Increase the safety of the transportation system for motorized and nonmotorized users.
 - iii) Increase the security of the transportation system for motorized and nonmotorized users.
 - iv) Increase accessibility and mobility for people and freight.
 - v) Protect and enhance the environment.
 - vi) Promote energy conservation.
 - vii) Improve quality of life for the community.
 - viii) Promote consistency between transportation improvements and planned State and local growth and economic development patterns.
 - ix) Enhance the integration and connectivity of the transportation system for all modes.
 - x) Promote efficient system management and operation.
 - xi) Emphasize the preservation of the existing transportation system.
 - xii) Improve the resilience and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.
 - xiii) Enhance travel and tourism.
4. Develop a short-range, four-year program of priority transportation improvements drawn from the MTP. The MPO creates the TIP with spending, regulating, operating, management, and

² Federal Surface Transportation Assistance Act of 1973

³ https://www.fhwa.dot.gov/planning/publications/briefing_book/index.cfm#toc22294541

financial tools. The TIP represents immediate priority actions to achieve the area's goals and associated system performance targets.

5. MPOs coordinate with State and public transportation operators to establish performance targets that address performance measures, as set forth in Federal law, related to surface transportation and public transportation. MPOs prepare the MTPs that include performance targets addressing performance measures and standards. MTPs also include a System Performance Report that tracks progress in meeting performance targets. In addition to Federally required performance measures, MPOs may identify additional, locally significant performance indicators that support decision making.
6. Involve the general public and other affected constituencies related to the essential decision making elements listed above.

An MPA is defined in the Code of Federal Regulations as the geographic area determined by agreement between the MPO for the area and the Governor, in which the metropolitan transportation planning process is carried out⁴. The boundaries of an MPA shall be determined by agreement between the MPO and the state governor(s). At a minimum, the MPA boundaries shall encompass the entire existing urbanized area (as defined by the Census Bureau) plus the contiguous area expected to become urbanized within a 20-year forecast period for the metropolitan transportation plan⁵.

By law, the MTP must be updated at least every five (5) years and have at least a twenty-year planning horizon (meaning that the plan tries to anticipate the needs and required resources twenty years into the future).

Section 2: Planning Process

MTP Development

Development of the MTP update was based on input from SEMPO member agencies and the public. Public participation in the development and future updates of the MTP continues to be a priority for SEMPO.

Open meetings and opportunities to address the TPC and Board of Directors occurred during the public comment period of every TPC and Board meeting from the start of the project in Fall 2020 through completion in Spring 2021. Information about the project was disseminated to the general public using SEMPO's webpage. This MTP update was prepared amidst the COVID-19 pandemic, limiting opportunities for in-person meetings. Public engagement was performed in the way of online surveys, social media, focus groups, steering committee meetings, and virtual public open houses in addition to being available on the website. The steering committee included members from Bootheel RPC, Cape Girardeau County, CTA, Cape Airport, Cape SRD, the City of Cape Girardeau, the City of Jackson, FHWA-IL and FHWA-MO, IDOT, MAGNET, MoDOT, the SEMPO Executive Director, SEMO Port, SEMO RPC, and SEMO University.

It is not ideal to only have virtual engagement, so the consultant team leaned on the steering committee, those participating in the focus groups, and staff of member agencies to help spread word about the MTP update via word-of-mouth and newsletters, and other strategies as outlined in SEMPO's Public Participation Plan. Feedback obtained from these sources was crucial in documenting current status of

⁴ 23 CFR 450.104

⁵ Detailed in 23 CFR 450.312

plan elements, improvements made since the previous iteration of the MTP, and identifying future improvements.

The MTP documents existing conditions for the various modes of transportation occurring in the MPA. Where possible, an attempt was made to document progress since the last iteration of this MTP. The current conditions were reflected in narrative form, but were also used to create SEMPO's first generation Travel Demand Model (TDM). Outputs from the TDM were used to help identify needed regional projects in different growth scenarios for this MTP update, but it also can be used for scenario planning by SEMPO and its member agencies in coming years to assist leaders in their decision-making.

Several data sources were used in order to forecast population and employment growth between the base year (2020) and the horizon year (2045). The original (2016) MTP forecasted growth using two scenarios: "sustained growth" and "enhanced growth". For this update (2021) MTP, it was assumed that growth will be steady (sustained). Instead of conducting scenario analysis based on the pace of growth, this update utilized scenarios that were based on different policy approaches for where the growth should occur. These scenarios, combined with current plans and public input, helped identify future transportation needs within the MPA that will require investments over the next 20 years. These needs were ultimately placed into a fiscally constrained list and an illustrative list of improvements for the MPA.

Relationships between the MTP and Other Local Plans

The MTP takes into consideration the local comprehensive and special purpose plans such as special districts, zoning and land use, transit and roadway plans, airport and aviation plans, water and rail transport, air quality and congestion plans, if available.

In addition, the MTP strives to be consistent with local growth and economic development plans, all of which have public involvement components to their development. Local and regional plans used in the development of this plan include, along with the date or year of adoption:

- Cape Girardeau County Hazard Mitigation Plan – September 2016
- Cape Girardeau County Transit Authority Public Transportation Agency Safety Plan – November 2020
- Cape Girardeau, Missouri Emergency Operations Plan – October 2018
- Cape Girardeau County Emergency Operations Plan – July 2019
- Cape Girardeau Regional Airport Master Plan Update – August 2003
- Cape Vision 2040: City of Cape Girardeau Comprehensive Plan – July 2020
- City of Jackson Comprehensive Plan – December 2009
- IDOT FY 2020 Proposed Highway Improvement Program – August 2019
- Jackson Parks Master Plan – 2014
- Jackson Emergency Operations Plan – July 2018
- Jackson City - Wide Bridge Plan – December 2019, revised June 2020
- Jackson City Wide Transportation Plan – January 2018
- Missouri Highway Safety Plan – FY 2020
- Missouri River Freight Corridor Assessment and Development Plan – October 2011
- Missouri State Airport System Plan Update, Cape Girardeau Regional Airport – February 2019
- Missouri State Rail Plan – May 2012
- Missouri Strategic Highway Safety Plan – Show-Me Zero – 2021-2025
- MoDOT Freight Plan – November 2017

- MoDOT Statewide Transportation Improvement Program (STIP) 2020-2024 – June 2019
- Public Transit – Draft Human Services Transportation Coordination Plan – July 2018
- SEMPO ADA Transition Framework Plan – December 2020
- SEMPO Metropolitan Transportation Plan – February 2016
- SEMPO Regional Bicycle and Pedestrian Plan – April 2018
- Southeast Missouri State University Transit – Public Transportation Agency Safety Plan – December 2020
- Transportation 2030 – Making Missouri A Leading Logistics Hub – 2020

Public Participation

In accordance with 23 CFR 450.316⁶, MPOs⁷ are required to engage in a metropolitan planning process that creates opportunities for public involvement, participation, and consultation throughout the development of the MTP and the Transportation Improvement Program⁸ (TIP). Under this requirement, MPOs must allow for:

- Adequate public notice of public participation activities;
- Review and comment at key decision points in the development of the MTP and TIP; and
- Multiple, accessible participation formats, including electronic and in-person.⁹

SEMPO has adopted a Public Participation Plan that incorporates these requirements. It is available for viewing online¹⁰ or by contacting the SEMPO Executive Director.

Following these guidelines as practically and reasonably as possible, taking into consideration the restrictions and health concerns existing at the time due to the COVID-19 pandemic, as part of the MTP update process, SEMPO:

- Provided information and updates regarding the MTP update and activities on its website and Facebook page;¹¹
- Facilitated nine (9) virtual focus groups where 58 participants (excluding staff and consultants) had the opportunity to provide input relevant to the following topics:
 - Aviation
 - Bicycle/Pedestrian
 - Economic Development & Tourism
 - Emergency Management
 - Freight (Port, Rail, Trucking)
 - Neighborhood Groups
 - Transit

⁶ <https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&rgn=div5&view=text&node=23:1.0.1.5.11&idno=23>

⁷ <https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/metropolitan-planning-organization-mpo>

⁸ <https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/transportation-improvement-program-tip>

⁹ <https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/public-involvement-outreach>

¹⁰ <http://southeastmpo.org/planning-documents/>

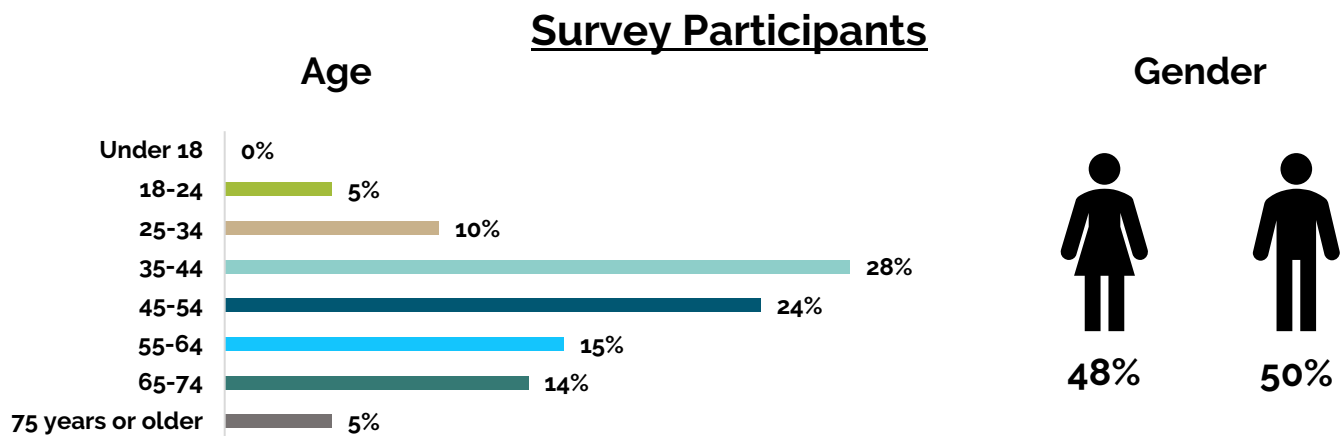
¹¹ <https://southeastmpo.org/>

- Accessibility
- General;
- Hosted an online survey that was made available to the public for five (5) weeks, in which there were 143 respondents. A summary of the responses is presented in the next section. The survey was promoted as follows:
 - Available as a link on the SEMPO website
 - Promoted on social media through SEMPO's Facebook page
 - Sent out in SEMPO's Newsletter
 - Promoted by SEMPO's partner agencies
 - Promoted as part of an article on the MTP Update process in a local newspaper (Southeast Missourian)
 - Shared with all focus group participants to share through their contacts and associated organizations; and
- Held two Virtual Public Open Houses on February 9, 2021 with a total of 30 participants. The meeting presentation included MPO basics and a summary of this MTP update, with opportunity for questions and comments.

Online Survey Results

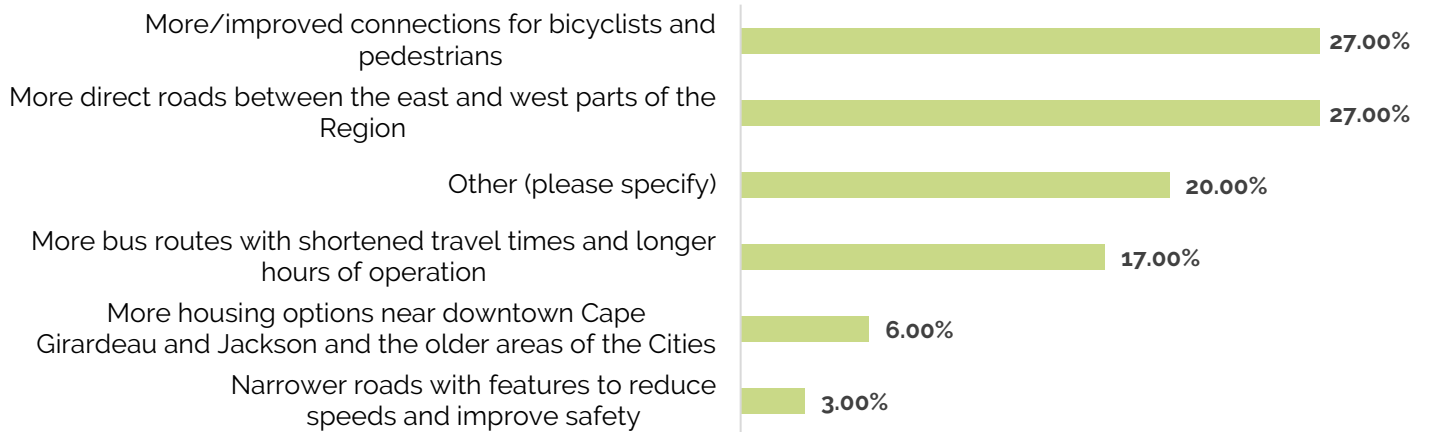
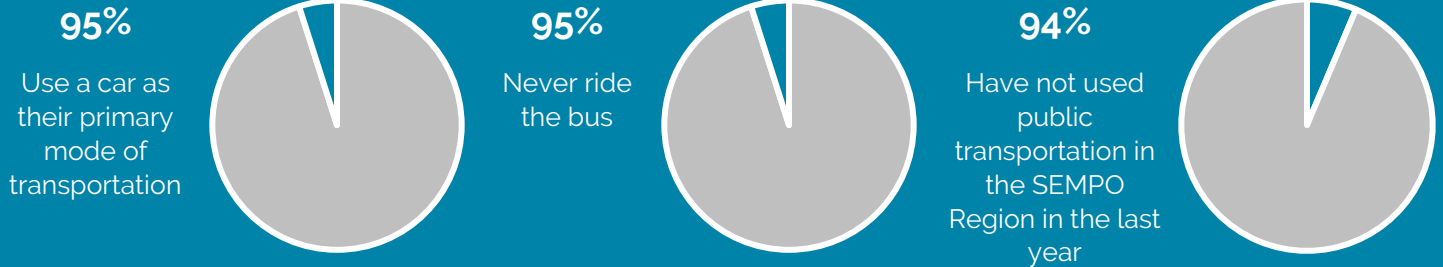
An online community survey took place October 26 through November 30, 2020. The survey was available through a link on SEMPO's website and via social media. The survey was created to capture the sentiment of residents toward various elements in the community (transportation modes, commutes, transportation goals, etc.).

The community survey was an important tool that helped to inform this MTP update. It helped the planning team confirm trends and identify issues that may have been missed during other engagement activities. The survey included 30 multiple choice, ranking, and open-ended questions.

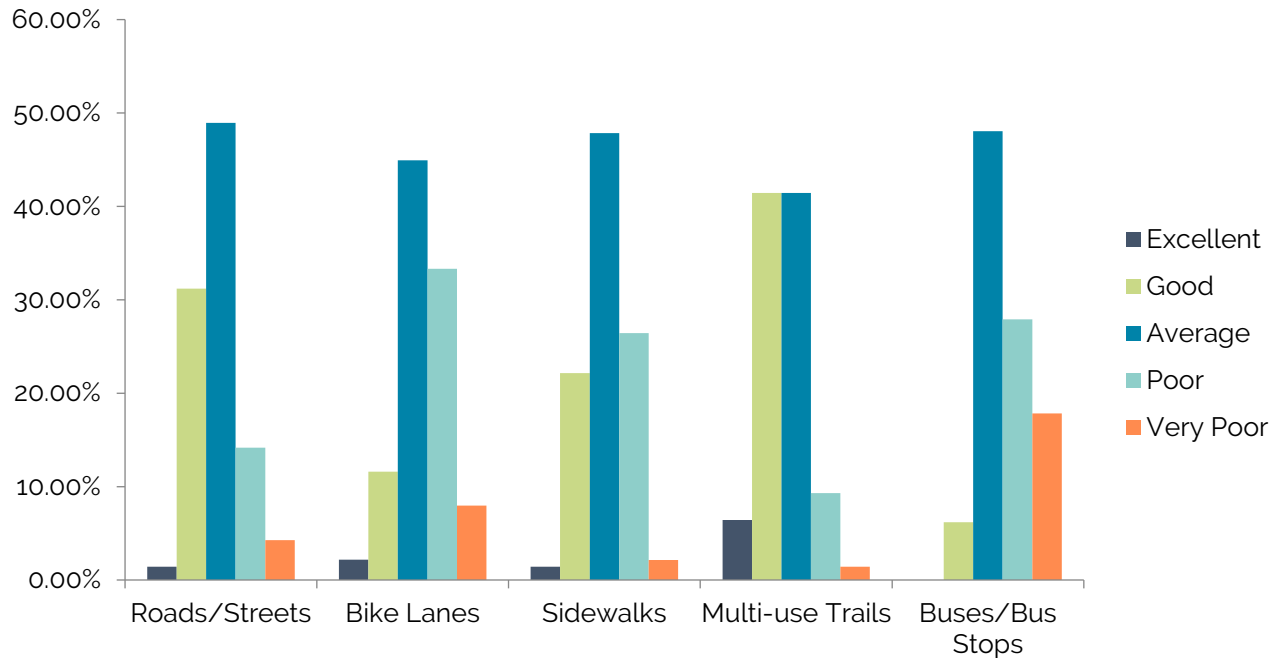


Results from the engagement process revealed that almost all people use a car as their primary mode of transportation (95%). When given the option of other modes of transportation such as biking, walking, and bus transit, and the frequency in which they are used, it was found that 13% of people bike at least once a month, 48% of people walk at least once a month, and 2% of people ride the bus at least once a month.

Of those who responded to the survey, 94% have not used public transportation in the MPA within the last year. However, 86% of respondents use public transportation when traveling in another city. When traveling in another city, 76% of respondents use taxis, 64% use subways, 61% use buses, 53% use light rail, and 40% use trolley/streetcars. It should be noted that 59% of people have never used a ride sharing/ride hailing service such as Uber, Lyft, or the CTA.

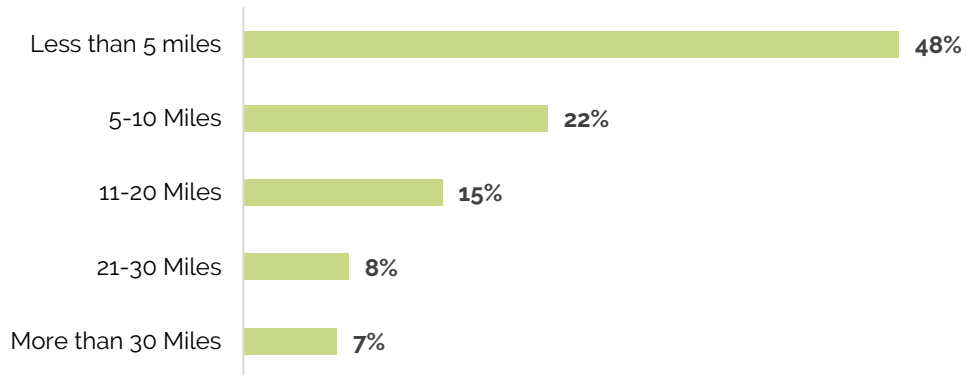


When asked about the condition of existing facilities, approximately 49% of survey respondents found the roads and streets to be average and 31% found the roads and streets to be good. Only 18% of survey respondents found the roads and streets to be below average. This same trend can be seen for sidewalks and multi-use trails; however, 41% and 46% of survey respondents found bike lanes and buses/bus stops to be below average, respectively.



When asked about commuting, 83% of respondents typically work outside the home. This assumes that changes made as a result of the COVID-19 pandemic are not typical. 93% of respondents use their personal car for their commute. Commute distances range between less than 5 miles to more than 30 miles. The vast majority of respondents have a commute less than 5 miles (48%). Only 7% have a commute more than 30 miles. This equates to a commute time of less than 15 minutes for 59% of respondents. Only 5% of respondents have a commute time of more than 45 minutes. It was found that 94% of survey respondents feel that their commute time is acceptable.

Average Commute Distance

**83%**

Typically work
outside the
home

**93%**

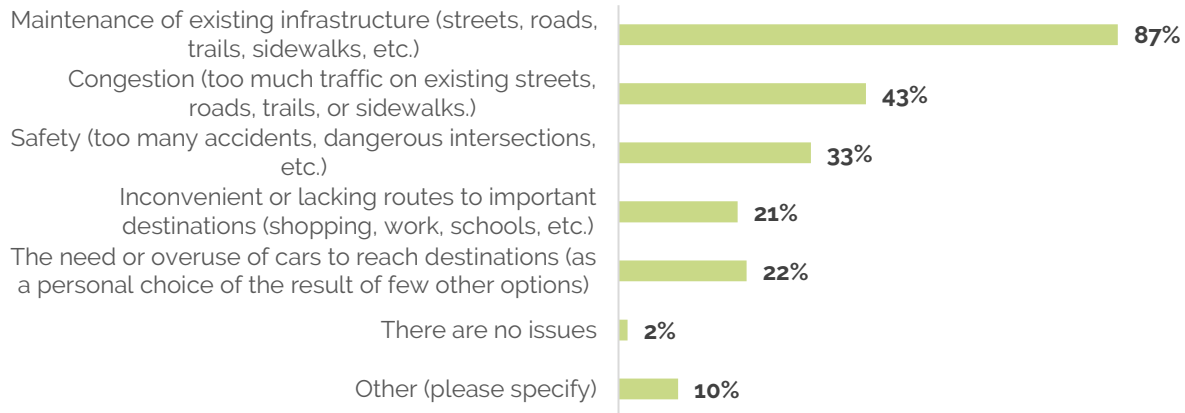
Use their
personal car
for their
commute

**94%**

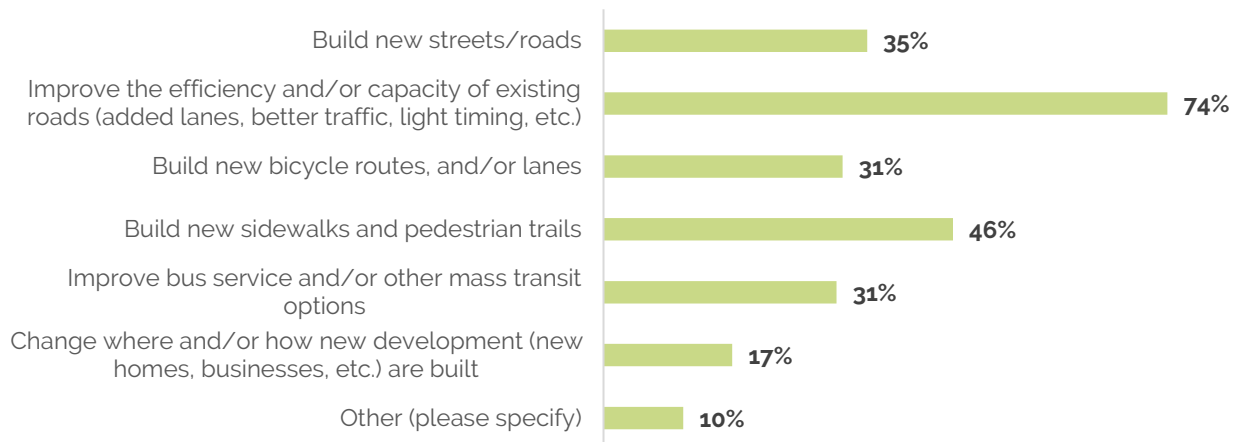
Feel
commute
time is
acceptable



One consistent theme was the desire to focus on road maintenance (87%) as well as congestion (43%). Survey respondents felt that those two transportation issues were the most important issues that need to be addressed in the MPA. Additional transportation issues include safety (33%), the need or overuse of cars to reach destinations (22%), and inconvenient or lacking routes to important destinations (21%).

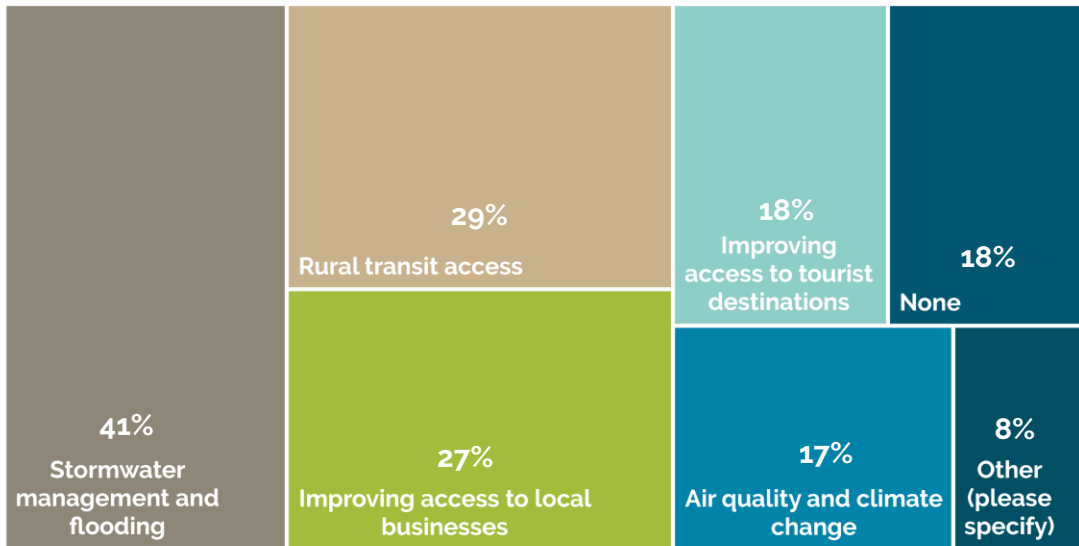


When asked how the challenges should be addressed, there was strong support for improving the efficiency and/or capacity of existing roads (74%). Survey respondents largely agree that the existing infrastructure should be maintained more so than building new streets (35%). However, there is a strong desire to build new sidewalks and pedestrian trails (46%) as well as new bicycle routes and lanes (31%).

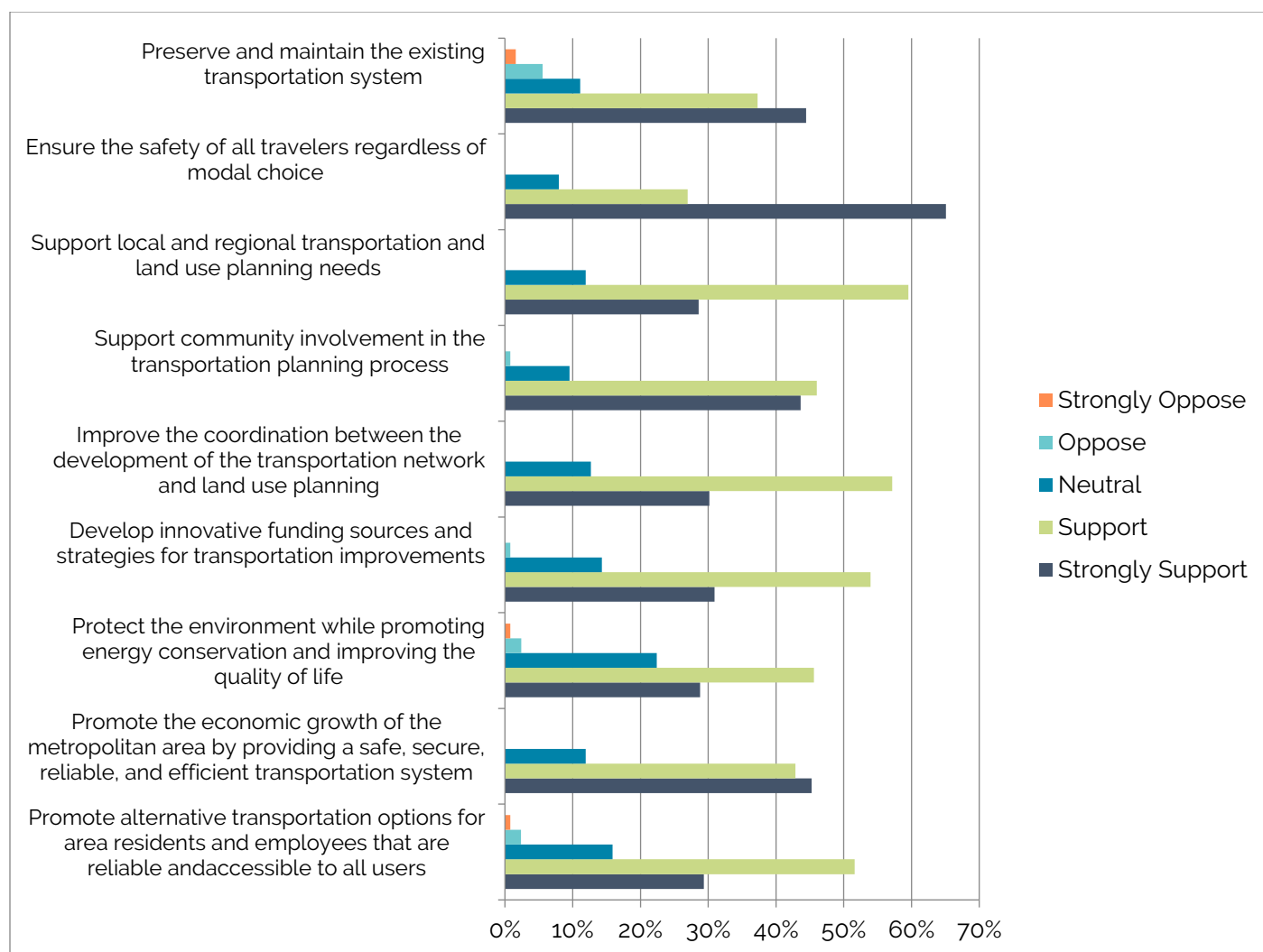


In addition to the above transportation issues, survey respondents stated that they would like the MPA to focus on stormwater management and flooding (41%), rural transit access (29%), improving access to local businesses (27%), improving access to tourist destinations (18%), air quality and climate change (17%), none (18%), and other (8%).

Additional Transportation Issues



Each of the goals from the 2016 MTP for the transportation system was listed in order to determine if survey respondents still felt that the goals apply to the MPA. Overall, it was concluded that each of the goals is still applicable to the MPA with support levels ranging between 93% - 100%. The top priorities identified by the public are ensuring the safety of all travelers regardless of modal choice, supporting local and regional transportation and land use planning needs, improving the coordination between the development of the transportation network and land use planning, and promoting the economic growth of the metropolitan area by providing a safe, secure, reliable, and efficient transportation system.



Environmental Justice and Non-Discrimination in Transportation Services

The Environmental Protection Agency (EPA) defines environmental justice 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.”

Executive Order 12898 and FHWA Order 6640.23A require FHWA, to the greatest extent allowed by law, administer and implement its programs, policies, and activities that affect human health or the environment so as to identify and avoid “disproportionately high and adverse” effects on minority and low-income populations. The orders are also intended to promote nondiscrimination in federal programs that affect human health and the environment. They aim to provide minority and low-income persons access to public information and public participation in matters relating to human health and the environment¹².

¹²<https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>

According to FHWA Order 6640.23A¹³, transportation projects funded by the FHWA will be administered 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, and 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 or environmental impacts and soliciting input from affected minority populations and low-income populations in considering alternatives during the planning and development of alternatives and decisions.

When federal transportation projects and investments are considered, SEMPO is required to ensure that environmental justice requirements and principles are integrated into the processes and plans, taking into consideration positive and negative impacts of projects and programs on areas of high minority and/or low-income populations so that disproportionate negative impacts are not placed on the populations of these areas.

Title VI Nondiscrimination Policies

It is the policy of SEMPO that no person shall be excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, or national origin under Title VI and related nondiscrimination statutes.

To certify compliance with environmental justice, SEMPO incorporates the following activities into the planning process:

1. Enhancement of analytical capabilities to ensure that the MTP and the TIP comply with Title VI.
2. Identify residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed, and the benefits and burdens of transportation investments will be fairly distributed.
3. Evaluate and, where necessary, improve public involvement processes to eliminate participation barriers and engage minority and low-income population in transportation decision-making.

¹³ <https://www.fhwa.dot.gov/legisregs/directives/orders/664023a.cfm>

For the purposes of Title VI and environmental justice, “low-income” is defined by FHWA as “a person whose household income is at or below the Department of Health and Human Services poverty guidelines¹⁴.” The 2020 HHS poverty guidelines are shown in **Table 1**.

Table 1. 2020 HHS Poverty Guidelines

Persons In Family/Household	Poverty Guideline
1	\$12,760
2	\$17,240
3	\$21,720
4	\$26,200
5	\$30,680
6	\$35,160
7	\$39,640
8	\$44,120

Mobility

Mobility, for the purposes of this MTP update, is defined as the ability to move about and carry out ordinary functions such as work, social interactions, shopping, or medical and health care visits.

In the context of performance indicators, mobility refers to the time and costs required for travel. Mobility is higher when average travel times, variations in travel times, and travel costs are low. Indicators of mobility include travel times, travel costs, and variations in time and costs¹⁵.

The most frequently cited mobility measures fall into six major categories: congestion related (e.g., level of service, volume/capacity, delay), trip time, amount of travel (e.g., vehicle miles traveled, vehicle hours traveled), mode share, transfer time, and transit performance¹⁶. The accessibility of the MPA is further detailed in Section 4 of this MTP update.

Consultation with Other Officials and Organizations

MPOs are encouraged to “consult with officials responsible for other types of planning activities that are affected by transportation in the area (including State and local planned growth, economic development, environmental protection, airport operations, and freight movements) or to coordinate its planning process, to the maximum extent practicable, with such planning activities¹⁷.”

SEMPO consults with representatives of municipalities and counties within the MPA, as well as MoDOT, IDOT, FHWA, and FTA on a regular basis, and other agencies such as human service transportation providers, environmental, natural resource, and freight interests on an as needed basis.

¹⁴ <https://aspe.hhs.gov/poverty-guidelines>

¹⁵ Key Transportation Indicators: Summary of a Workshop, Committee on National Statistics, Janet Norwood and Jamie Casey, Editors, Division of Behavioral and Social Sciences and Education, National Research Council, National Academy Press

¹⁶ http://www.nap.edu/openbook.php?record_id=10404&page=19. Key Transportation Indicators: Summary of a Workshop

¹⁷ H.R.3-Section 5303. Metropolitan transportation planning

Section 3: Vision Statement, Goals, Objectives, Strategies and Performance Measures

Overview

An important component of any MTP is the development of a vision statement along with goals, objectives, and strategies for achieving the vision. For this MTP update, a new vision statement was developed and, subsequently, new goals, objectives, and strategies were established. They were developed by the Steering Committee with input from SEMPO's TPC and Board of Directors as well as the public. In developing the new vision statement, goals, objectives, and strategies, the Steering Committee referred to the original MTP as well as the Missouri and Illinois long-range transportation plans.

Vision Statement

The SEMPO MPA is a growing and thriving center for business, education, health care, and culture, which is supported by a safe, efficient, dependable, equitable, and innovative multimodal transportation network that facilitates an integrated approach to land use and development.

Goals, Objectives, and Strategies

The following goals, objectives, and strategies have been established to ensure that the MTP achieves the stated vision. They will serve as the core criteria for evaluating progress in implementing this MTP update.



Safety

Goal: Ensure the safety of all users of the transportation system, regardless of mode.

Top 5 Focus Strategies:

- Increase efforts to enforce traffic laws and educate the public about road safety.
- Prioritize projects that increase safety in high-risk corridors.
- Advocate for stronger seat belt laws.
- Promote the use of buffers between bicycle, pedestrian, and road systems.
- Prioritize projects that make transportation infrastructure serving critical community facilities more resilient.

System Management

Goal: Facilitate efficient management of the transportation system, with an emphasis on preserving the existing system and ensuring reliability.

Top 5 Focus Strategies:

- Prioritize projects that replace roads and bridges having high maintenance costs with ones that are less expensive to maintain.
- Develop a system for evaluating the benefit of a potential project.
- Seek opportunities for partnerships on projects.
- Improve traffic flow at intersections through physical improvements (such as roundabouts) or signal optimization.
- Identify areas suitable for additional modal systems.

Accessibility

Goal: Provide transportation options that are accessible to all users.

Top 5 Focus Strategies:

- Support the development and adoption of ADA transition plans by the City of Cape Girardeau and the City of Jackson.
- Prioritize projects that create or expand bicycle, pedestrian, or transit systems in low-income neighborhoods.
- Prioritize projects that connect transit stops to bicycle and pedestrian systems.
- Seek supplemental funding for transit to cover cost increases.
- Update policies on a regular basis and promote them to the public.

Economic Enhancement

Goal: Support economic resiliency and prosperity with transportation solutions.

Top 5 Focus Strategies:

- Advocate for the Transamerica Corridor.
- Complete a freight plan.
- Interview or survey major employers to understand the transportation needs of their workforce.
- Complete a study on potential uses of drone technology for business.

- Coordinate with tourism agencies on identifying optimal routes for tourism maps.

Environmental Stewardship and Social Equity

Goal: Conduct transportation-related activities in a manner that supports responsible management of the environment and ensures the fair treatment of all people.

Top 5 Focus Strategies:

- Complete an electric vehicle plan.
- Advocate for the conversion of fleets to low-emission and alternative fuel vehicles.
- Promote non-motorized forms of transportation, transit, and ridesharing.
- Promote stormwater best management practices in transportation improvement projects.
- Establish relationships with leaders of under-represented groups and encourage participation in planning and programming activities.

Coordination and Engagement

Goal: Promote the coordination of transportation-related activities and the effective engagement of stakeholders.

Top 5 Focus Strategies:

- Develop a SEMPO document library of standardized forms for procurement and other transportation-related purposes.
- Invite transportation agencies to give a presentation on their agency at local government meetings.
- Host an annual Southeast Missouri Transportation Conference.
- Develop a mobile app or text message service for transportation-related news.
- Host a booth to promote transportation planning and programming at the SEMO District Fair and other exposition events.

Each of the above goals is further detailed with objectives, strategies, and priority levels on the following pages.

Safety

Goal: Ensure the safety of all users of the transportation system, regardless of mode.

Objective	Strategy	Time Frame	Priority
Reduce the number of crashes	Increase efforts to enforce traffic laws and educate the public about road safety	Ongoing	High
Reduce the severity of crashes	Prioritize projects that increase safety in high-risk corridors	Ongoing	High
	Advocate for stronger seat belt laws	Ongoing	High
Reduce the number of modal conflicts	Promote the use of buffers between bicycle, pedestrian, and road systems	Ongoing	Moderate
Support community resiliency	Prioritize projects that make transportation infrastructure serving critical community facilities more resilient	Ongoing	High

System Management

Goal: Facilitate efficient management of the transportation system, with an emphasis on preserving the existing system and ensuring reliability.

Objective	Strategy	Time Frame	Priority
Reduce the cost burden of managing the road and bridge system	Prioritize projects that replace roads and bridges having high maintenance costs with ones that are less expensive to maintain	Ongoing	High
Limit expansion of the road and bridge system to projects that provide a substantial benefit to the community or region	Develop a system for evaluating the benefit of a potential project	Short-term	High
Promote project cost-sharing	Seek opportunities for partnerships on projects	Ongoing	Moderate
Use innovative designs and programs to increase efficiency of the road and bridge system	Improve traffic flow at intersections through physical improvements (such as roundabouts) or signal optimization	Ongoing	Moderate
Increase modal options	Identify areas suitable for additional modal systems	Ongoing	Moderate

Accessibility

Goal: Provide transportation options that are accessible to all users.

Objective	Strategy	Time Frame	Priority
Improve access to transportation for disabled persons	Support the development and adoption of ADA transition plans by the City of Cape Girardeau and the City of Jackson	Short-term	High
Improve access to transportation for low-income persons	Prioritize projects that create or expand bicycle, pedestrian, or transit systems in low-income neighborhoods	Ongoing	High
Integrate transit systems with bicycle and pedestrian systems	Prioritize projects that connect transit stops to bicycle and pedestrian systems	Ongoing	High
Keep transit affordable for low-income persons	Seek supplemental funding for transit to cover cost increases	Ongoing	High
Maintain and enforce non-discrimination policies	Update policies on a regular basis and promote them to the public	Ongoing	High

Economic Enhancement

Goal: Support economic resiliency and prosperity with transportation solutions.

Objective	Strategy	Time Frame	Priority
Support the efficient movement of people and goods	Advocate for the Transamerica Corridor	Long-term	High
	Complete a freight plan	Short-term	High
	Interview or survey major employers to understand the transportation needs of their workforce	Short-term	High
Promote innovative forms of transportation	Complete a study on potential uses of drone technology for business	Short-term	Moderate
Support tourism through transportation-related activities	Coordinate with tourism agencies on identifying optimal routes for tourism maps	Short-term	Moderate

Environmental Stewardship and Social Equity

Goal: Conduct transportation-related activities in a manner that supports responsible management of the environment and ensures the fair treatment of all people.

Objective	Strategy	Time Frame	Priority
Support reducing dependency on fossil fuels in transportation	Complete an electric vehicle plan	Short-term	High
Improve air quality	Advocate for the conversion of fleets to low-emission and alternative fuel vehicles	Long-term	High
	Promote non-motorized forms of transportation, transit, and ridesharing	Ongoing	Moderate
Improve water quality	Promote stormwater best management practices in transportation improvement projects	Ongoing	High
Engage under-represented groups in transportation planning and programming	Establish relationships with leaders of under-represented groups and encourage participation in planning and programming activities	Ongoing	High

Coordination and Engagement

Goal: Promote the coordination of transportation-related activities and the effective engagement of stakeholders.

Objective	Strategy	Time Frame	Priority
Support the sharing of information among transportation agencies and government officials	Develop a SEMPO document library of standardized forms for procurement and other transportation-related purposes	Short-term	High
	Invite transportation agencies to give a presentation on their agency at local government meetings	Ongoing	High
	Host an annual Southeast Missouri Transportation Conference	Ongoing	High
Provide more direct ways of communicating with the public about transportation	Develop a mobile app or text message service for transportation-related news	Short-term	Moderate
	Host a booth to promote transportation planning and programming at the SEMO District Fair and other exposition events	Ongoing	Moderate

Changes in MTP Goals

There are a few differences between the original MTP (2016) and the MTP update (2021) with regard to goals. The previous “Economic Development” goal has been restructured as an “Economic Enhancement” goal. In addition to the objectives in the 2016 MTP, this restructured goal focuses on tourism. The “Regionalism”, “Land Use Coordination”, and “Funding” goals in the 2016 MTP are not shown as goals in the 2021 MTP. Rather, they are incorporated into the new goals as objectives and strategies.

Alignment with Federal and State Goals

The goals in the 2021 MTP are based on the goals in the 2016 MTP, the Missouri and Illinois Long Range Transportation Plans (LRTPs), and other plans, as well as public input.

Overall, the 2021 MTP goals align with the Missouri and Illinois LRTP goals. The goals that overlapped the most were in the areas of accessibility, economic development, safety, and system management.

SEMPO Performance Measures

SEMPO will, to the best of its ability, attempt to monitor the performance of the area’s transportation system, when reasonable, as described below. Much of the data needed for measurement of SEMPO’s system will come from MoDOT and IDOT, as SEMPO does not currently have the capabilities to collect or analyze such data.

SEMPO has chosen to support targets as identified by MoDOT, IDOT, Cape Girardeau County Transit Authority, and Southeast Missouri State University as detailed below. SEMPO will continue to support solutions that assist in achieving the desired trends. It is recommended that SEMPO complete a yearly report card to monitor progress within the MPA. This report card would reflect accomplishments from the year prior that advance the goals SEMPO supported from state and transit agencies.

System Performance Report

As a minimum, SEMPO’s MTP shall include a system performance report and subsequent updates evaluating the condition and performance of the transportation system with respect to the performance targets described in § 450.306(d). This includes progress achieved by SEMPO in meeting the performance targets in comparison with system performance recorded in previous reports, including baseline data.

The following system performance report details the condition and performance of the transportation system with respect to the performance targets for MoDOT and IDOT.

Federal Highway Performance Goals

The FHWA performance goals as established by Congress are¹⁸:

- Safety
 - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- Infrastructure Condition
 - To maintain the highway infrastructure asset system in a state of good repair.
- Congestion Reduction
 - To achieve a significant reduction in congestion on the National Highway System.

¹⁸ <https://www.fhwa.dot.gov/tpm/about/goals.cfm>

- System Reliability
 - To improve the efficiency of the surface transportation system.
- Freight Movement & Economic Vitality
 - To improve the national freight highway network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- Environmental Sustainability
 - To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- Reduced Project Delivery Delays
 - To reduce project costs, promote jobs and the economy, and expediate the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Safety Targets

MoDOT and IDOT both stress safety as one of their main goals. **Table 2** shows the safety performance targets for MoDOT and IDOT, which SEMPO supports. Included in the table is a comparison between a 5-year rolling average between 2015-2019 to the calendar year 2021 target.

Five individual targets comprise the Safety Targets:

1. Number of fatalities;
2. Rate of fatalities per 100 million vehicle miles traveled;
3. Number of serious injuries;
4. Rate of serious injuries per 100 million vehicle miles traveled;
5. Number of non-motorized fatalities and non-motorized serious injuries.

Table 2. Safety Performance Targets

	5-Year Rolling Average (2015 to 2019)		5-Year Rolling Average Statewide Target for CY 2021	
	MoDOT	IDOT	MoDOT	IDOT
Number of Fatalities	910.0	1041.2	871.6	1000.0
Fatality Rate per 100 Million VMT	1.213	0.97	1.119	0.93
Number of Serious Injuries	4,681.2	12,032.9	4,463.9	11,556.4
Serious Injury Rate per 100 Million VMT	6.241	11.23	5.829	10.79
Number of Non-Motorized Fatalities and Serious Injuries	462.2	1,580.2	462.2	1,517.6

Pavement and Bridge Targets

In addition to safety performance targets, pavement and bridge performance targets are measured by State's DOTs. There are four performance targets for pavement and two performance targets for bridges that apply to Interstate and non-Interstate National Highway System (NHS) routes. As shown in **Table 3**, **Table 4**, **Table 5**, and **Table 6**, both MoDOT and IDOT set their goals to maintain current conditions, which SEMPO supports.

Table 3. MoDOT Pavement Performance Targets

Performance Measure	2017 Baseline	2019 Target	2021 Target
Percentage of Interstate Pavements in Good Condition	77.5%	-	77.5%
Percentage of Interstate Pavements in Poor Condition	0.1%	-	0.1%
Percentage of non-Interstate NHS Pavements in Good Condition	61.1%	61.1%	61.1%
Percentage of non-Interstate NHS Pavements in Poor Condition	1.0%	1.0%	1.0%

Table 4. MoDOT Bridge Performance Targets

Performance Measure	2017 Baseline	2019 Target	2021 Target
Percentage of NHS Bridges in Good Condition	34.0%	30.9%	26.4%*
Percentage of NHS Bridges in Poor Condition	7.1%	7.1%	8.2%*

*Target revised from original set in May 2018

Table 5. IDOT Pavement Performance Targets

Performance Measure	2017 Baseline	2020 Target	2022 Target
Percentage of Interstate Pavements in Good Condition	-	-	65%
Percentage of Interstate Pavements in Poor Condition	-	-	<4.9%
Percentage of non-Interstate NHS Pavements in Good Condition	37.6%	27%	27%
Percentage of non-Interstate NHS Pavements in Poor Condition	19.4%	6%	6%

Table 6. IDOT Bridge Performance Targets

Performance Measure	2017 Baseline	2020 Target	2022 Target
Percentage of NHS Bridges in Good Condition	29%	28%	27%
Percentage of NHS Bridges in Poor Condition	11.6%	13%	14%

Travel Time Reliability and Freight Reliability Targets

In addition to safety performance targets and pavement and bridge performance targets, the travel time reliability and freight reliability targets are set by State DOTs. The MoDOT and IDOT system reliability performance targets are shown in **Table 7** and **Table 8**, respectively, which SEMPO supports.

Table 7. MoDOT System Reliability Performance Targets

Performance Measure	2017 Baseline	2019 Target	2021 Target
Interstate Travel Time Reliability Measure: Percent of Reliable Person-Miles Traveled on the Interstate	91.6%	88.9%	87.1%
Non-Interstate Travel Time Reliability Measure: Percent of Reliable Person-Miles Traveled on the Non-Interstate NHS	92.3%	-	87.8%
Freight Reliability Measure: Truck Travel Time Reliability Index	1.25	1.28	1.45*

*Target revised from original set in May 2018

Table 8. IDOT System Reliability Performance Targets

Performance Measure	2017 Baseline	2019 Target	2021 Target
Interstate Travel Time Reliability Measure: Percent of Reliable Person-Miles Traveled on the Interstate	80.8%	79%	77%
Non-Interstate Travel Time Reliability Measure: Percent of Reliable Person-Miles Traveled on the Non-Interstate NHS	87.3%	-	83.3%
Freight Reliability Measure: Truck Travel Time Reliability Index	1.3	1.34	1.37

Transit Asset Management

The transit asset management performance targets are shown in **Table 9**. The transit asset management performance targets were provided by SEMPO in their 2021 performance targets. Both CTA and SEMO University offer transit services within the MPA, and therefore, they should both work towards achieving, at a minimum, the same targets set by MoDOT for the transit safety targets. However, only CTA is required to set transit access management targets.

SEMPO has passed a resolution supporting MoDOT, IDOT, and CTA safety, system conditions, system performance, and transit safety performance measure targets as of December 16, 2020. In addition, SEMPO has passed a resolution supporting SEMO University safety performance measure targets as of January 20, 2021. The transit safety targets for CGTA and SEMO are shown in **Table 10** and **Table 11**, respectively.

There are four transit safety performance measures:

1. Fatalities: Total number of reportable fatalities and rate per total vehicle revenue miles by mode
2. Injuries: Total number of reportable injuries and rate per total vehicle revenue miles by mode

3. Safety Events: Total number of reportable events and rate per total vehicle revenue miles by mode
4. System reliability: State of Good Repair - Mean distance between major mechanical failures by mode

Table 9. Transit Asset Management Performance Targets

Asset Category	Fleet Size	Vehicle Age	FTA's ULB	%> ULB	Target
Automobile	3	3	8	0%	45%
Buses	1	20	14	100%	45%
Cutaways	9	5.9	10	11%	45%
Minivan	25	2.1	8	0%	45%
Vans	7	2.3	8	0%	45%

Table 10: CGTA Transit Safety Performance Targets

Mode of Transit	Fatalities (Total)	Fatalities (per 100,000 miles)	Injuries (Total)	Injuries (per 100,000 miles)	Safety Events (Total)	Safety Events (per 100,000 miles)	System Reliability*
Fixed Routes	0	0	2	2	5	5	100,000
Van Pool	0	0	2	1.22	4	2.45	80,000
Demand Response	0	0	5	0.45	9	0.82	80,000
ADA Complementary Paratransit	0	0	0	0	0	0	0

**This calculation is based on one year of available data*

Table 11: SEMO Transit Safety Performance Targets

Mode of Transit	Fatalities (Total)	Fatalities (per 100,000 miles)	Injuries (Total)	Injuries (per 100,000 miles)	Safety Events (Total)	Safety Events (per 100,000 miles)	System Reliability*
Deviated Fixed Routes	0	0	0	0	0	0	0*

**Prior to the development of the 2020 SEMO Public Transportation Agency Safety Plan, SEMO did not track the distance between major mechanical failures. SEMO's practice is to immediately replace a vehicle if it becomes inoperative in service. In preparation for the annual review and update of the ASP, SEMO will begin tracking and recording system reliability to include in the plan.*

Section 4: Existing Conditions

Overview

This section details the existing conditions and their relationship to transportation within the MPA. Measures such as existing roadways, bridges, transit, bicycle and pedestrian facilities, environmental impacts, accessibility, and more are discussed.

Roadways

The MPA is comprised of a vast network of existing regionally significant roadways that provide connections to communities, cities, and states inside and outside of the MPA's boundaries. These roadways are composed of:

- Interstates
- US Highways
- State Highways
- County Roads
- Municipal Roads/Streets

It should be noted that private roads are not included in the SEMPO network, nor are tribal lands roadways or federal lands roadways that may be included in other MPO areas.

The National Highway System Under the FAST Act

The Fixing America's Surface Transportation (FAST) Act¹⁹ was signed into Law on December 2, 2015 and was set to expire on September 30, 2020. Prior to the expiration of the Act Congress passed a continuing resolution which extends the provisions of the FAST Act to September 2021. The President signed the legislation into law on October 1, 2020. This Act authorized funding for transportation projects and programs in the United States. The FAST Act provided long-term funding for surface transportation. Prior to the FAST Act, the Moving Ahead for Progress in the 21st Century (MAP 21) Act served as the funding and authorization bill which governed the transportation spending in the United States.

In general, for the purposes of 23 USC, the federal-aid system is the NHS, which includes the Interstate System²⁰. For more than 100 years, the government has been providing the states with highways funding. Most funds are apportioned to the states by formula. The implementation of those funds is left primarily to state departments of transportation. In addition to the funding provided by the government, the states are required to provide matching funds. Until the 1950s, each federal dollar had to be matched by an identical amount of state and local money. The federal share is now 80% for non-Interstate System road projects and 90% for Interstate System projects. Third, generally, federal money can be spent only on designated federal-aid highways, which make up roughly a quarter of U.S. public roads.

The NHS consists of roadways important to the nation's economy, defense, and mobility. All principal arterial routes that are not currently on the NHS before October 1, 2012, were automatically be added to

¹⁹ <https://www.fhwa.dot.gov/fastact/summary.cfm>

²⁰ 23 USC Section 103 as of Dec. 27, 2012

the NHS provided the principal arterials connect to the NHS in a one-time addition.²¹ There will be no restrictions on maximum NHS mileage.

The NHS includes the following subsystems of roadways²² (note that a specific highway route may be on more than one subsystem):

1. Interstate: The Eisenhower Interstate Highway System retains its separate identity within the NHS.
2. Other Principal Arterials: Highways in rural and urban areas that provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.
3. Strategic Highway Network (STRAHNET): A highway network important to the United States' strategic defense policy, providing defense access, continuity, and emergency capabilities for defense purposes.
4. Major Strategic Highway Network Connectors: Highways that provide access between major military installations and highways that are part of the Strategic Highway Network.
5. Intermodal Connectors: These highways provide access between major intermodal facilities and the other four subsystems making up the NHS.

For the MPA, NHS Routes consist of I-55, US-61 and MO-72 in Jackson, and I-55, US-61, Route K, and MO-74 in Cape Girardeau, Missouri, and IL-146 in Illinois, as shown in **Figure 2** for Missouri, **Figure 3** for Illinois, and **Figure 4** for the Cape Girardeau UA. MoDOT recently changed the MO-34 route. Previously, it began at the Mississippi River, extended west through Cape Girardeau, shared the same route as MO-72 through Jackson, before MO-34/MO-72 split into two separate routes on the west side of Jackson. Today, the shared route no longer exists, and MO-34 terminates at MO-72 rather than the Mississippi River. NHS route maps have not yet been updated as of the writing of this MTP update.

²¹ 23 USC 103(b) (2)(1)(B) as amended by Section 1104

²² https://www.fhwa.dot.gov/Planning/national_highway_system/

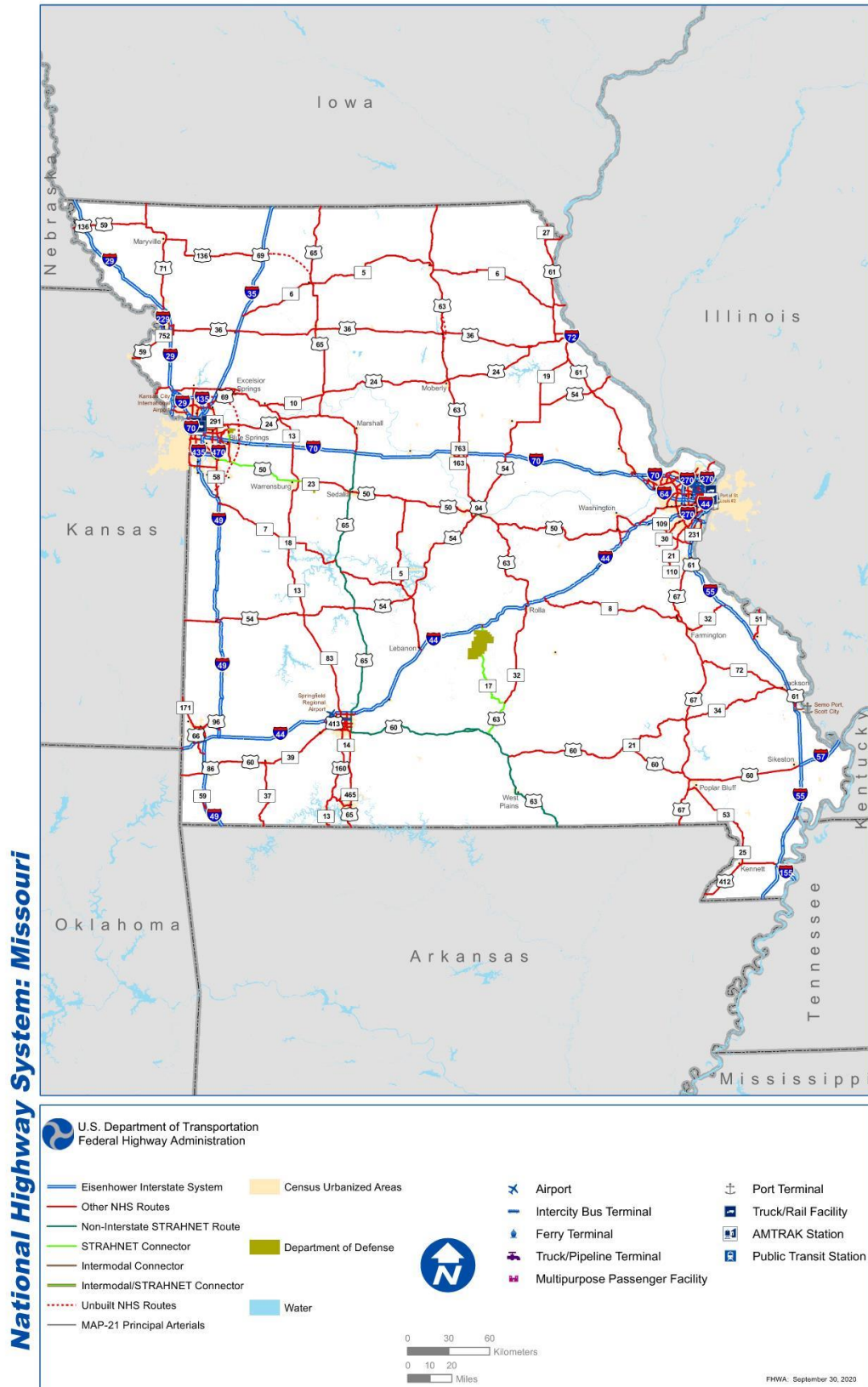


Figure 2. Missouri National Highway System



Figure 3. Illinois National Highway System

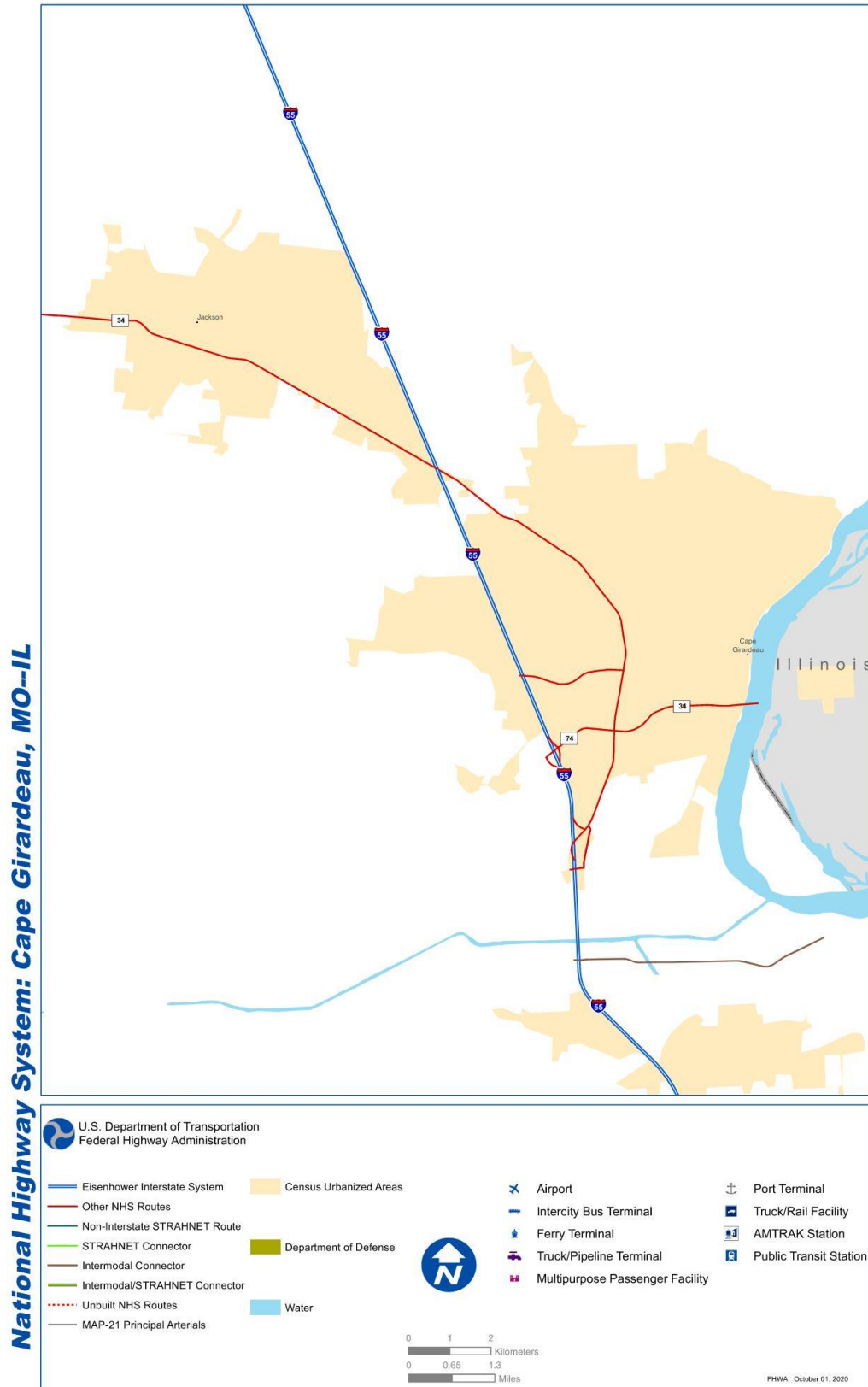


Figure 4. Cape Girardeau Urbanized Area National Highway System

Congressional High Priority Corridors

High priority corridors are designated by Congress throughout the country. Once designated by Congress, the FHWA adds the corridors to the list of high priority corridors. The Congressional High Priority Corridors on the NHS are shown in **Figure 5**.



Figure 5. Congressional High Priority Corridors

Transamerica Corridor

The Transamerica Corridor (shown as Number 3 in **Figure 5**) is a vision for a new national interstate from Virginia to California. Potential alignments for this corridor bring it through the SEMPO region. If built, this modern multimodal corridor with intermodal linkages could have a vast impact on the MPA's population and economy.

The corridor was originally conceived and studied as part of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) passed by the U.S. Congress. Proponents of the connection envision it as being capable of transmitting energy to the nation's electrical grid using green technologies, serving as a high-speed freight rail line, including intelligent highway design, accommodating natural gas and water pipelines, and providing overall support for global trade and transport.

The Transamerica Corridor is a high priority corridor for the MPA as it will provide connections to other major cities across the country and provide opportunities for further economic development. Its designation of number 3 does not reflect priority on the list of Congressional High Priority Corridors. The

FHWA does not rank priorities; it is up to the individual states to determine their own priority for the corridors and are the responsible parties for moving the projects forward on their own timeline.

There are numerous efforts throughout the region to move the Transamerica Corridor forward. The Missouri Chamber of Commerce and Industry *Transportation 2030* Report details the Transamerica Corridor as a high-priority innovative project that will bring additional activity and growth to the region.²³ However, there is currently not enough information to address it in this MTP update beyond adding it to the Illustrative Projects list. Once sufficient information does become available, it should be incorporated into future updates.

Functional Classification

Roadways are usually defined by one of two methods, either design or function. The functional classification of a road details the use and role of the road. MPOs and municipalities in Missouri generally use functional classification to describe or define a roadway. These roadway functional classifications are reviewed periodically by both MoDOT and local representatives. As a first step, roadways are typically identified by whether the road is urban or rural. Then, the roadways are further classified²⁴ as:

1. **Interstate** – This is the highest classification of arterials and were designed and constructed with mobility and long-distance travel in mind. Roadways in this functional classification category are officially designated as Interstates by the U.S. Secretary of Transportation, and all routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways belong to the Interstate functional classification category and are considered Principal Arterials.
2. **Freeway/Expressway** - The roads in this classification have directional travel lanes and are usually separated by some type of physical barrier, and their access and egress points are limited to on- and off-ramp locations or a very limited number of at-grade intersections. Like Interstates, these roadways are designed and constructed to maximize their mobility function, and abutting land uses are not directly served by them.
3. **Principal Arterial** – The roads in this classification serve major centers of metropolitan areas, provide a high degree of mobility and can also provide mobility through rural areas. Unlike their access-controlled counterparts, abutting land uses can be served directly.
4. **Minor Arterial** - The roads in this classification provide service for trips of moderate length, serve geographic areas that are smaller than their higher Arterial counterparts and offer connectivity to the higher Arterial system.
5. **Major Collector** - Collectors serve a critical role in the roadway network by gathering traffic from Local Roads and funneling them to the Arterial network.
6. **Minor Collector and Local Road** - The roads in this classification account for the largest percentage of all roadways in terms of mileage. They are not intended for use in long distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land.

²³ <https://mochamber.com/transportation2030/>

²⁴ https://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section03.cfm

As shown in **Figure 6** by the FHWA, arterials offer more mobility with less land access whereas local roads offer less mobility with more land access. **Figure 7** shows the highway network by Functional Classification, according to MoDOT²⁵.

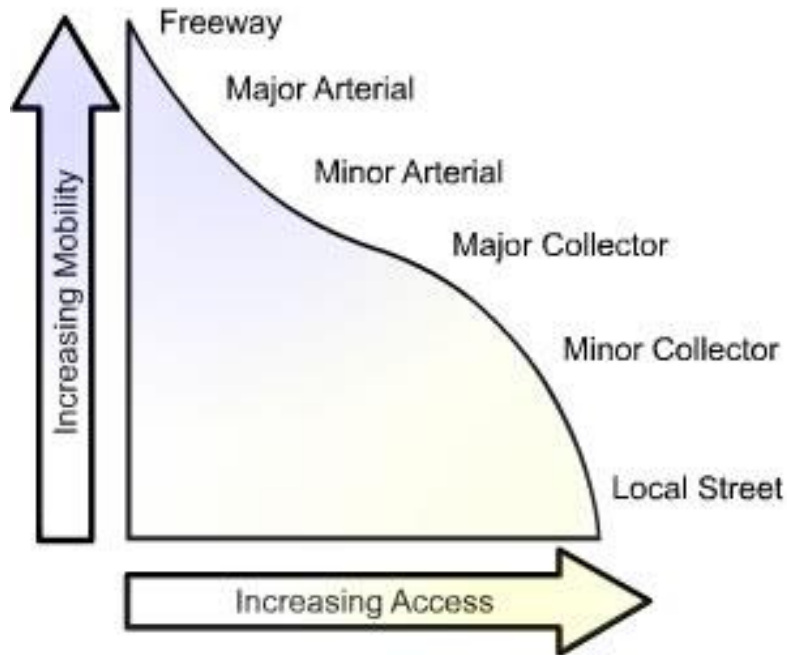


Figure 6. Road Classification and the Relationship between Mobility and Land Access

²⁵ <http://www.modot.org/newsandinfo/functionalclassificationmaps/southeast.htm>

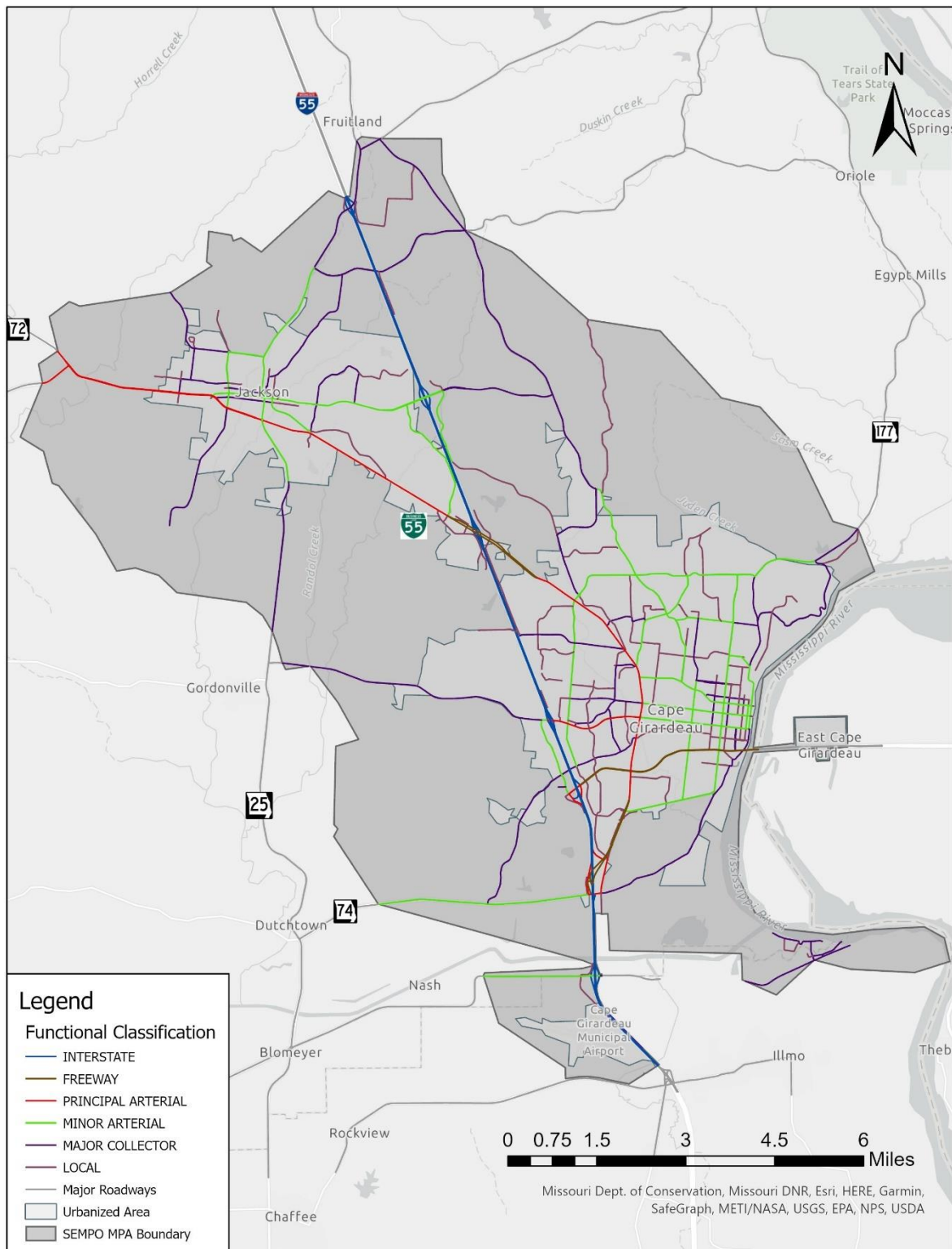


Figure 7. SEMPO Road Functional Classification

Roadway Capacity

The capacity of roadways is a critical element in the flow of people and goods throughout the transportation network. As part of this MTP update, a Travel Demand Model (TDM) was created to evaluate congestion on the MPA's roadway network. A description of the TDM and the method to create it is presented fully in Section 6.

The performance of the regional transportation system is quantified by Levels of Service (LOS), which are measures of traffic flow that consider factors such as speed, delay, interruptions, safety, and driver comfort and convenience. There are six Levels of Service, ranging from LOS A ("free flow") to LOS F ("oversaturated"). LOS C represents a roadway with volumes ranging from 70 percent to 80 percent of its capacity, and is typically what is deemed acceptable in rural areas. In urban and suburban areas, drivers are typically accustomed to longer delays during peak hours. In these areas, LOS D or better is typically considered acceptable. **Figure 8** shows the Levels of Service for the SEMPO MPA in the TDM base year (2018).

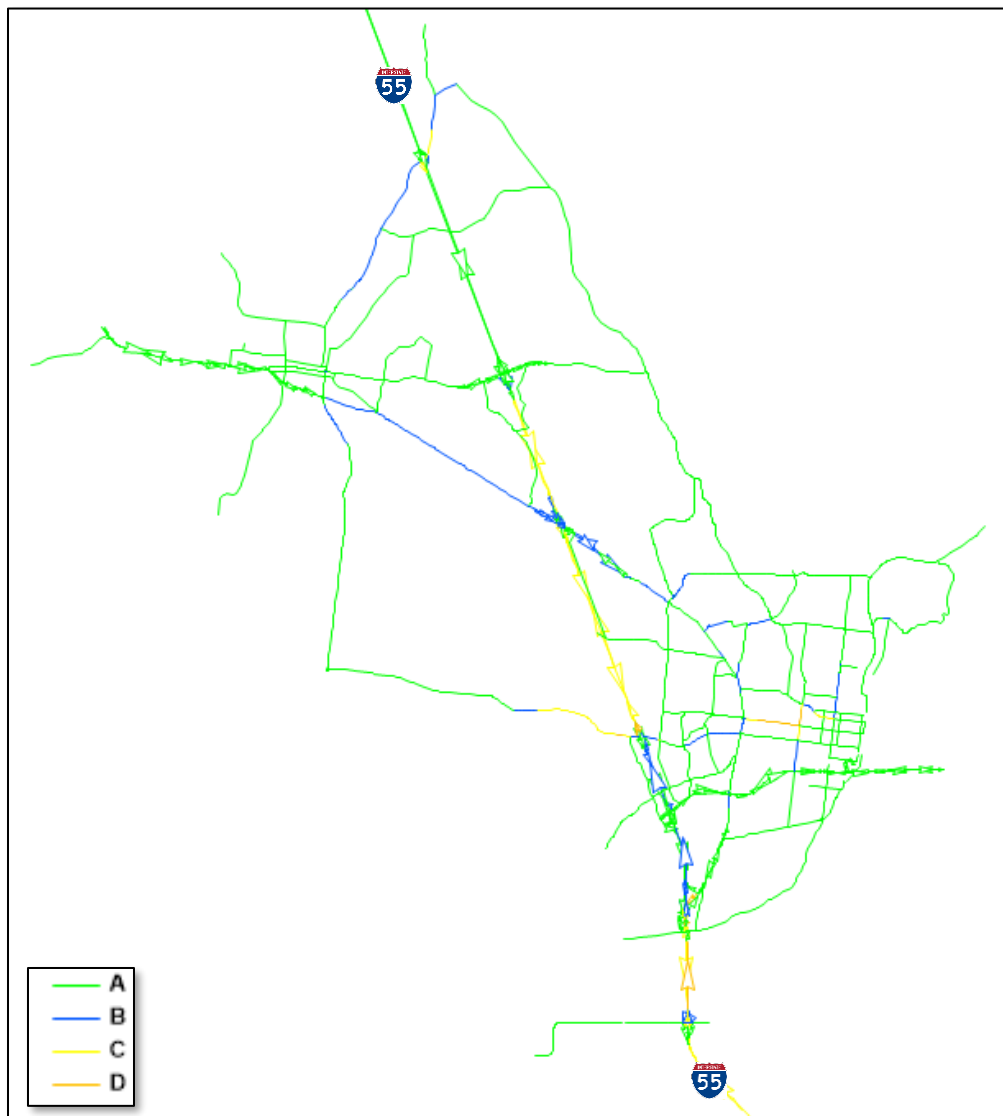


Figure 8. SEMPO Levels of Service – Base Year 2018

Figure 8 shows that all area roadways are experiencing LOS D or better on a daily basis. The TDM is not a peak hour model; delay and congestion may still be experienced during peak commuting times, which may be resolved by intersection-level improvements. However, the model shows that the overall number of lanes is appropriate for the amount of daily traffic experienced in 2018. The segments that experience a poor LOS (LOS D, E, or F), presented in **Table 12**, should be reviewed for potential issues.

Table 12. Road Segments with LOS D, E, or F – Base Year 2018

Road	From	To	LOS
I-55	State Highway 74	Nash Road	D
I-55 SB off-ramp	I-55	State Highway K	D
Independence Street	Clark Street	Northwest Westend Boulevard	D
Northwest Westend Boulevard	Broadway Street	Independence Street	D

Bridges

There were a total of 370 bridges in Cape Girardeau County as of 2019 per the FHWA National Bridge Inventory.

Structurally Deficient and Functionally Obsolete Bridges

Bridges are inspected and maintained on a regular basis, but two terms identify bridges that require attention: “structurally deficient” and “functionally obsolete”. MoDOT generally defines each term as follows:

Structurally Deficient (SD): As of 2018, a structurally deficient bridge is defined by the Pavement and Bridge Condition Performance Measures final rule. To be defined as structurally deficient, the bridge must have any component, such as its deck, superstructure, substructure, or culverts, in Poor or worse condition, which is a code 4 or less.

Functionally Obsolete (FO): As a result of the enactment of MAP-21, FHWA no longer tracks functionally obsolete bridges. As of fiscal year 2015, FO bridges do not qualify for funding from the Highway Bridge Program (HBP). Rather, Good-Fair-Poor bridge condition measures are used to categorize bridges. A bridge is generally considered functionally obsolete if it is unable to properly accommodate traffic due to poor roadway alignment, insufficient width, waterway, low structural evaluation, or inadequate clearances.

SD bridges are not necessarily facing imminent collapse; however, a significant load-carrying element is in poor condition because of deterioration or damage and needs to be addressed. Meanwhile, FO bridges are structurally sound but to some degree unable to accommodate current traffic patterns.

City, County and State transportation agencies actively monitor the condition of bridges in the MPA. As of the 2016 MTP, 28 bridges were listed as either SD or FO. This has been reduced to 20 bridges as of 2020. The SD and FO bridges in the MPA are shown in **Table 13**.

Table 13. Structurally Deficient and Functionally Obsolete Bridges in SEMPO MPA

CLASS	OWNER	County	Bridge #	Fed ID	Place Code Name	Route	Feature Intersection	Fed Aid or Non Fed Aid	Structure NBI Funding	ADT	Year Built	Deficiency Rating	Good Fair Poor
STATE	STATE HIGHWAY AGENCY	SCOTT	L0280	6174	KELSO	IS 55 S	DTCH NO 2	FA	PARTIAL	16,259	1950	FO	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	H0572	5039	CAPE GIRARDEAU CITY	US 61 S	CAPE LA CROIX CR	FA	FULL	17,420	1927	FO	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	J0151	5623	CAPE GIRARDEAU	MO 74 E	JOBS CR	FA	PARTIAL	3,988	1930	FO	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	A0473	316	CAPE GIRARDEAU	BLOOMFIELD RD E	IS 55	FA	PARTIAL	7,415	1961	FO	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	A0513	351	CAPE GIRARDEAU	IS 55 N	MO 74, CST SPRIGG ST	FA	PARTIAL	20,916	1961	FO	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	A0476	317	CAPE GIRARDEAU	IS 55 S	RAMSEY CR	FA	PARTIAL	17,182	1961	FO	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	A0476	318	CAPE GIRARDEAU	IS 55 N	RAMSEY CR	FA	PARTIAL	15,707	1961	FO	FAIR
LOCAL	OTHER LOCAL AGENCIES	CAPE GIRARDEAU	1080010	16062	CAPE GIRARDEAU	COUNTY RD 203	RAMSEY CR	NON FA	PARTIAL	80	1951	FO	FAIR
LOCAL	CITY OR MUNICIPAL HWY AGY	CAPE GIRARDEAU	2150002	19226	JACKSON CITY	E MAIN ST	GOOSE CR	FA	PARTIAL	2,500	1922	FO	FAIR
LOCAL	CITY OR MUNICIPAL HWY AGY	CAPE GIRARDEAU	0695022	28252	CAPE GIRARDEAU CITY	SOUTHERN EXPY	S WYACONDA RVR	FA	FULL	14,744	1948	FO	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	L0277	6171	CAPE GIRARDEAU CITY	US 61 N	RAMSEY CR	FA	PARTIAL	6,144	1949	FO	GOOD
LOCAL	CITY OR MUNICIPAL HWY AGY	CAPE GIRARDEAU	0695004	14529	CAPE GIRARDEAU CITY	INDEPENDENCE ST	WALKER CR	NON FA		1,000	1994	FO	GOOD
LOCAL	CITY OR MUNICIPAL HWY AGY	CAPE GIRARDEAU	0695020	28250	CAPE GIRARDEAU CITY	SPRINT STORE DR	WALKER CR	NON FA		1,000	1997	FO	GOOD
LOCAL	CITY OR MUNICIPAL HWY AGY	CAPE GIRARDEAU	0695021	28251	CAPE GIRARDEAU CITY	MERRIWETHER-PLAZA	WALKER CR	NON FA		1,000	1997	FO	GOOD

CLASS	OWNER	County	Bridge #	Fed ID	Place Code Name	Route	Feature Intersection	Fed Aid or Non Fed Aid	Structure NBI Funding	ADT	Year Built	Deficiency Rating	Good Fair Poor
LOCAL	CITY OR MUNICIPAL HWY AGY	CAPE GIRARDEAU	0695002	14527	CAPE GIRARDEAU CITY	MAIN ST	SLOANS CR	NON FA	FULL	1,500	1972	SD	FAIR
LOCAL	OTHER LOCAL AGENCIES	CAPE GIRARDEAU	0760013	14814	RANDOL	COUNTY RD 621	CAPE LA CROIX CR	NON FA	FULL	300	1953	SD	FAIR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	H0144	5198	BYRD	US 61 S	HUBBLE CR	FA	FULL	9,233	1925	SD	POOR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	A0628	459	CAPE GIRARDEAU	US 61 S	IS 55	FA	FULL	6,247	1961	SD	POOR
STATE	STATE HIGHWAY AGENCY	CAPE GIRARDEAU	A0338	292	CAPE GIRARDEAU	IS 55 S	US 61	FA	PARTIAL	13,589	1961	SD	POOR
LOCAL	CITY OR MUNICIPAL HWY AGY	CAPE GIRARDEAU	2150005	19233	JACKSON CITY	SUNSET DR	HUBBLE CR	NON FA	FULL	1,000	1964	SD	POOR

Transit Services

Transit providers fill a vital need for many of the residents in the MPA. The two primary providers are CTA and SEMO University. These providers assist riders in completing hundreds of thousands of trips for a wide range of reasons including healthcare, shopping, employment, and recreation. Shawnee Mass Transit District (Shawnee MTD) is another transit service which provides transportation between Cape Girardeau and Cairo, Illinois. However, Shawnee MTD is not considered a SEMPO transit provider as its base of operations is not in the SEMPO MPA. Shawnee MTD is a nonprofit transportation dispatch service created through a county-by-county resolution with Alexander, Johnson, Massac, Pulaski, and Union Counties.

Cape Girardeau County Transit Authority

CTA serves the entirety of Cape Girardeau County by offering many types of transportation services. CTA receives funding from the FTA, MoDOT, Southeast Missouri Area Agency on Aging (AAA), the Cape Girardeau County Commission, the City of Cape Girardeau, the City of Jackson, and the Cape Girardeau County Senior Citizen Service Fund²⁶. The annual agency profile for CTA between 2014-2018 is shown in **Table 14**.

Table 14. Cape Girardeau County Transit Authority Agency Profile

Fiscal Year	Operating Expenses	Fare Revenue	Annual Unlinked Trips
FY14	\$2,178,220	\$614,704	175,438
FY15	\$2,272,742	\$670,805	180,731
FY16	\$2,177,004	\$658,734	190,106
FY17	\$2,158,872	\$637,522	186,278
FY18	\$2,344,587	\$615,816	193,421

Services provided by CTA include: demand response service 24 hours a day, 6 ½ days per week; fixed bus routes in Cape Girardeau, with service available 12 hours per day Monday through Friday and 8 hours on Saturday; Medicaid transportation; and workforce transportation between Cape Girardeau and Perryville with four trips per day, seven days a week.

CTA operates two fixed bus routes – a Blue/North Route and a Red/South Route, both serving the City of Cape Girardeau. The Blue/North Route is served by one bus and the Red/South Route is served by two buses. The existing routes consist of over 60 stops.

Should funding become available in the future, there is a need for a route between the cities of Cape Girardeau and Jackson. With the development of the Greater Cape Girardeau Business Park, the need for workforce transportation is increased.

CTA currently operates from a leased facility located at 937 Broadway in Cape Girardeau. In 2009, CTA commissioned a new facility feasibility study. At that time, it was estimated the cost for a new facility would be approximately \$3 million and this was beyond the funding means of CTA.

²⁶ <https://www.cgcta.com/about>

CTA offers demand response service to the entire county. This service is available around the clock except from 2 p.m. on Sunday to 5 a.m. on Monday. Paratransit services are available upon request to qualifying individuals.

As shown in **Table 15**, ridership for 2019 exceeded 240,000 trips. Given the COVID-19 pandemic, ridership is expected to decrease during 2020 to approximately 217,735 trips. The impacts of COVID-19 are shown in ridership trends as well. Between 2016-2020, ridership has increased 6%. However, ridership between 2016-2019 increased by 18.5%. Before COVID-19 pandemic, the 2020 estimated ridership was 250,000 trips, resulting in a 22% increase from 2016. The transit authority currently operates a fleet of 41 vehicles with an operating budget for FY 2015 of \$2.5 million.

Table 15. Cape Girardeau County Transit Authority Ridership

Fiscal Year	Demand Response	Bus	Total
FY16	132,328	73,080	205,408
FY17	123,526	78,935	202,461
FY18	120,950	90,091	211,041
FY19	142,616	100,773	243,389
FY20	135,440	82,295	217,735

CTA has developed a Public Transportation Agency Safety Plan (PTASP) approved on November 12, 2020, which uses agency safety practices to meet the Federal Regulations detailed in 49 CFR Part 673. This plan includes safety performance targets, safety management policies, safety risk management, safety assurance, safety promotion, and authorities, accountability, and responsibility. This plan is shared with SEMPO to help coordinate between agencies. An annual review schedule is set with updates to be completed by the CTA staff.

Southeast Missouri State University

The University's Department of Public Safety operates a shuttle service throughout the main campus and between the main campus and the River Campus. The service is funded by the FTA, MoDOT, and SEMO University. The annual agency profile for the University's transit program between 2014-2018 is shown in **Table 16**.

Table 16. Southeast Missouri State University Transit Program Profile

Fiscal Year	Operating Expenses	Annual Unlinked Trips
FY14	\$313,306	332,501
FY15	\$257,018	317,424
FY16	\$244,366	290,082
FY17	\$266,712	311,944
FY18	\$289,586	336,333

SEMO University operates three routes providing repetitive, fixed scheduled service along a specific route, during which passengers are picked up and delivered to specific locations. These routes include the River Campus Route, the Red Route, and the Green Route. Of the three routes, two operate on the main campus

while the third operates between the main campus and the River Campus, approximately 2 miles to the south. This route also makes connect stops with existing stops with CTA.

The River Campus Route provides weekday service to the main campus beginning at 7:00 a.m. and ending at midnight. Weekend shuttle service operates from 10:00 a.m. to midnight. The River Campus Route includes stops at Catapult and Rust Center for Mass Media which are along the CTA Blue Route in the downtown and mid-town areas, providing students transportation off-campus. The River Campus Route also provides stops downtown along Spanish and Independence Streets as well as the River Campus. Additional off-campus transportation is provided through CTA.

The Red Route provides weekday service around the main campus beginning at 11:00 a.m. and ending at 8:00 p.m. Weekend service is not provided on the Red Route. The Green Route provides weekday service around the main campus beginning at 7:20 a.m. and ending at 2:00 a.m. Weekend service is provided beginning at 5:00 p.m. and ending at 2:00 a.m. These routes only provide service within the campus and do not extend off campus.

SEMO University offers an interactive shuttle and route map as well as a shuttle tracking system, entitled Transit Nexus, which estimates the arrival of each bus to their respective stop. Shuttles can be tracked online from a personal computer or through the Southeast Mobile App. In addition to route maps and stops, the Concept 3D interactive map shows the locations of buildings, student housing, campus services, parking, and even points of interest. Transit Nexus provides the interactive shuttle tracking system for each route. All three routes can be accessed from a single point at a commuter parking facility.

SEMO University shuttles are fully accessible. For riders who cannot use the fixed-route services due to a disability, the University offers supplemental paratransit services, including adjusted routes.

Shawnee MTD

Shawnee MTD was created in 2001 by county-by-county resolution (Alexander, Johnson, Massac, Pulaski and Union). Transit operations commenced in 2003. Shawnee MTD provides service between Cape Girardeau and Cairo, Illinois. Inter-city fares are \$3 each way, and monthly passes are available for regular riders. Rides can be requested through Shawnee MTD's dispatch service.

In addition to Cairo, Shawnee MTD offers routes between Cape Girardeau and the Illinois cities of Ana, Carbondale, Marion, and Vienna.

Aviation Services

Cape Girardeau Regional Airport (Cape Airport) is publicly owned and located adjacent to I-55 in Scott County. The airport provides daily round trip flights with two round-trip flights per day excluding Tuesday and Saturday, when there is one flight per day. United is the essential air service for the Cape Airport. The airport currently maintains a two-year Essential Air Service contract with the United States Department of Transportation with a re-bid for the contract in the spring of 2021. The number of annual passengers through Cape Airport are as follows:

- 2016: 5,532 passengers
- 2017: 5,860 passengers
- 2018: 8,891 passengers
- 2019: 11,777 passengers
- 2020: 4,600* passengers (*projected for 2020 decrease due to COVID-19 pandemic)

Cape Airport enplaned 8,891 passengers and deplaned 8,358 passengers out of Cape Girardeau in 2018. This results in 17,249 total enplaned and deplaned passengers in 2018. This was substantially increased in 2019 when the airport enplaned 11,777 passengers and deplaned 12,796 passengers, for a total of 24,573 enplaned and deplaned passengers. Due to the COVID-19 pandemic, passenger numbers are projected to be significantly lower in 2020 with an estimated 3,653 enplaned passengers and 3,653 deplaned passengers, for a total 8,217 enplaned and deplaned passengers.

On-site services include charter flights, full service fixed based operations, aircraft maintenance and avionics services, flight instruction for light sport, rotorcraft, and private pilot's licensing, and an upcoming 4-year pilot degree program through Southeast Missouri State University. Cape Airport has two runways: Runway 10/28 measuring 6,500 feet long x 150 feet wide and Runway 02/20 measuring 4,000 feet long x 100 feet wide. In 2020, the airport had 51 single-engine, 10 multi-engine, 4 jet/turbine, and 8 rotor aircraft based out of the airport for a total of 73 aircraft. Fuel sales on site increased dramatically in recent years with an increase of 92.6% from 307,396 total gallons in 2016 to 592,011 gallons in 2019. Due to the COVID-19 pandemic, there was a projected decrease of 16.8% for the year of 2020, but the total gallons sold is still 60% more than that of 2016. Airport management estimates fuel sales will be down 15% in 2021 as the reverberations of the pandemic continue to hamper air travel.

Freight

The MPA contains access to two Class 1 rail lines, one local switching railroad, and one short line excursion railroad. The Burlington Northern Santa Fe (BNSF) River Subdivision runs along the Mississippi River on the Missouri side and through Cape Girardeau. The Union Pacific (UP) Chester Subdivision travels along the river on the Illinois side before entering into Scott City in the southern portion of the MPA. The SEMP Port Railroad (SE Railroad) is a local railroad that provides switching services between the BNSF and UP lines through the SEMP Port. Lastly, the St. Louis, Iron Mountain, and Southern Railway runs from Jackson, MO to Gordonville, MO.

BNSF Railway

The BNSF Railway provides rail transport to Cape Girardeau as a part of its River Subdivision stretching from St. Louis, MO to Memphis, TN. Outside of the River Subdivision, BNSF serves the area bounded by Chicago, Seattle, Los Angeles, Dallas, Houston, New Orleans, Memphis, and Birmingham. Originally built by the St. Louis San Francisco Railway, it became part of Burlington Northern in 1980 which subsequently became BNSF in 1995.

BNSF is one of two major western rail systems in the nation along with Union Pacific Railroad (UP). BNSF serves 28 states and 3 Canadian provinces with 36,000 employees, 32,500 miles of track, and 8,000 locomotives²⁷. The BNSF railway map is shown in **Figure 9**. BNSF had a total revenue of approximately \$23.5 billion in 2019 and plans to invest \$3.4 billion on infrastructure improvements in 2020²⁸.

Local users of the BNSF lines include Procter & Gamble paper products plant northeast of Jackson, MO, Buzzi Unicem plant in Cape Girardeau, and companies located in the Nash Road Industrial Park.

²⁷ http://www.bnsf.com/bnsf-resources/pdf/about-bnsf/fact_sheet.pdf

²⁸ <https://www.bnsf.com/about-bnsf/financial-information/pdf/performance-update-4q-2019.pdf>

Burlington Northern & Santa Fe Railway



Figure 9. BNSF Railway Map

UP Railroad

The UP Railroad serves the MPA as part of the Chester Subdivision spanning from East St. Louis, IL to Pine Bluff, Arkansas²⁹. The Thebes Bridge provides crossing of the Mississippi River for the UP Railroad line from Thebes, IL into Scott City, MO and was built in 1905. Prior to UP, sections of this rail line were owned by St. Louis Southwestern Railway, Missouri Pacific Railroad, and Iron Mountain Railway. The UP line coming from Chicago joins the East St. Louis line at Gorham, Illinois. Major cities served by UP include Chicago, Memphis, New Orleans, Minneapolis, Dallas, Houston, Phoenix, Los Angeles, Portland, and Seattle among others³⁰.

UP is one of two major western rail systems in the US along with BNSF. UP serves 23 states and all six major Mexico gateways with 37,000 employees, 32,200 miles of tracks, and 7,700 locomotives. The UP Railroad map is shown in **Figure 10**. UP had a total revenue of approximately \$21.7 billion in 2019. UP has invested nearly \$35 billion in rail infrastructure between 2010 and 2019³¹.

²⁹ <https://fragis.fra.dot.gov/GISFRASafety/>

³⁰ <https://www.semoport.com/wp-content/uploads/2018/06/up-map.pdf>

³¹ https://www.up.com/aboutup/corporate_info/uprover/index.htm

Union Pacific Railroad



Figure 10. UP Railway Map

SEMPO Port (SE) Railroad

SEMPO Port (SE) Railroad is an eight-mile local line owned by the SEMO Port. The rail line provides interchange between the two major Class 1 railways, BNSF and UP, along with local switching services.

The line was originally built in 1929-1930 by Missouri Pacific's Cape Girardeau Branch. The line transported 100-car unit coal trains from coal mines in southern Illinois to the Ameren power plant near Crystal City, MO until 1990 when air regulations caused a switch in coal supply³².

SEMO Port purchased a six-mile section of a UP branch line in 1994 to establish the SE Railroad. Following the purchase of the line, SE Railroad built a one-mile extension to the harbor industrial area of the SEMO Port which was completed in 1995.

St. Louis, Iron Mountain, and Southern Railway Passenger Train

This short line railroad is approximately 6 miles long and travels from Jackson, MO to Gordonville MO. The rail line operates as a heritage railway and acts as a living piece of history. Passengers can experience the 95 year old train as they ride along the route for tours, mock train robberies, murder mystery dinners,

³² <https://www.semoport.com/home-railroad/>

holiday themed rides, and other events³³. The name of the railroad is resurrected from a railway by the same name that operated in Missouri and Arkansas in the late 1800's and early 1900's³⁴.

Inter-modal Systems

Located in Scott City, the SEMO Port resides on the Mississippi River, 147 miles downstream from St. Louis, Missouri³⁵. The port is located at the near halfway point between St. Louis, MO and Memphis, TN. The port has readily available access to river, rail, highway, pipeline, and air transportation infrastructure. Highway access is plentiful to the port allowing for ease of access for distribution. I-55 is located less than 4 miles from the port, with I-57 and I-24 in the nearby region. Team tracks are available on-site to facilitate rail-truck transfers. The port has rail access through two Class 1 rail systems in BNSF Railway and UP Railroad. In addition to the Class 1 rail systems, the port owns a local switch rail line, SE Railroad, as discussed above. SE Railroad provides connection between the two major rail lines and facilitates switching services for inbound, outbound, and in-plant movement. There are 10 currently operational terminals in the port area, providing cargo transfer for barge, rail, and truck distribution.

Table 17 shows the net tonnage of cargo brought through the port, by mode of transportation, since 2015. Barge transport accounted for approximately 70% of all cargo moved through the port in 2019 while rail and truck transport accounted for 5% and 25% respectively. The top three commodities from 2015 to 2019 were agricultural products, project cargo (large, heavy, or high value), and dry bulk.

Table 17. Port Tonnage by Mode of Transportation

Tonnage by Mode of Transportation					
	2019	2018	2017	2016	2015
Barge	922,970	1,111,127	1,136,851	1,227,126	1,273,440
Rail	68,260	87,653	72,780	48,574	38,552
Truck	338,915	305,207	255,202	280,443	217,245
Total	1,330,145	1,503,987	1,464,833	1,556,143	1,529,237

In 2018, SEMO Port was awarded a \$19.8 million grant through the U.S. Department of Transportation's Better Utilizing Investments to Leverage Development (BUILD) Grant program. The money from the grant will be used to complete the port loop track terminal, which will increase the efficiency of transfer of cargo between railroad unit trains and river barges.

Bicycle and Pedestrian Systems

SEMPO adopted the Regional Bicycle and Pedestrian Plan in April 2018. The purpose of this plan was to create a comprehensive transportation network that focuses on the accessibility and safety of non-motorized modes of transportation while providing a guide for future investments. Five goals were identified in the plan and are detailed below:

1. Identify existing deficiencies and develop a priority list to improve safety on existing infrastructure and multi-modal crossings.

³³ <https://www.slimrr.com/>

³⁴ <http://www.mopac.org/corporate-history/57-st-louis-iron-mountain-southern-railway>

³⁵ <https://www.semoport.com/>

2. Improve and expand the existing system of on- and off-road facilities connecting local and regional destinations.
3. Promote use of the transit network by providing accessible connections between non-motorized transportation infrastructure and transit routes.
4. Implement education and encouragement campaigns to inform the public of the health, social, and economic benefits of active transportation.
5. Pursue funding opportunities for both multi-modal infrastructure improvements and education campaigns.

Through the adoption of the Regional Bicycle and Pedestrian Plan, SEMPO has invested in and committed to improving the multi-modal network. The plan increases transportation options throughout the region and provides health, economic, and environmental benefits.

In addition to SEMPO's Regional Bicycle and Pedestrian Plan, MoDOT has a bicycle/pedestrian program that works with local governments and regional planning agencies to improve access for bicycle and pedestrian transportation modes, while at the same time improving safety.

SEMPO's member jurisdictions have taken advantage of federal and state funding for sidewalks, trails, and greenways, including the State's Transportation Alternatives Program (TAP), Recreational Trails Program, and other coordinating programs. SEMPO will continue to advocate and assist jurisdictions in plan development and programming.

Sidewalks

The MPA is well connected with sidewalk networks across the region that connect people to residential, commercial, recreational, and institutional destinations. Having a complete sidewalk network provides pedestrians a safe opportunity to travel to and from their destinations.

In 2020, SEMPO completed an ADA Transition Framework Plan for the cities of Cape Girardeau and Jackson. The plan provided a self-evaluation of non-MoDOT Public Rights-of-Way (PROW) within the two cities to assist them in creating a full ADA Transition Plan. A full ADA Transition Plan requires the additional steps of a self-evaluation of all public buildings and properties, the creation of a schedule and implementation plan, adoption of a grievance policy, and a public engagement period. However, the plans funded by SEMPO provides them with a significant step forward. SEMPO member jurisdictions currently maintain their sidewalks through funding sources that include the Transportation Trust Fund (TTF), the Transportation Sales Tax Fund, and the Motor Fuel Tax Fund. However, additional funding opportunities are available and are further detailed in a later section of this MTP update.

Greenways and Trails

Cape Girardeau and Jackson each have a well-developed system of greenways and trails providing recreational opportunities. In Cape Girardeau, the Cape La Croix Recreation Trail is a paved trail approximately 4 miles long and is suitable for walking, running, cycling, rollerblading, skating, or skateboarding. The trail extends from Shawnee Park to Osage Park. This trail includes multiple grade-separated crossings to provide maximum safety for its users. There is also a 1.25-mile-long Riverfront Walkway Trail along the Mississippi River on the river side of the flood wall in downtown Cape Girardeau, which provides scenic views of the river and recreational activity all year long. Other trails in Cape Girardeau include the Bloomfield Road Trail and the sidewalk "trails" at Capaha Park.

Jackson has over 5 miles of greenways and trails, most of which are located in or cross through City Park. Trails also extend along Jackson Boulevard and Main, Independence, Broadridge, and Oak Streets. These multi-purpose trails connect parks, schools, commercial areas, and residential areas.

Both Cape Girardeau and Jackson have plans for the expansion of their systems into new areas of each city as well as the eventual connection of the two cities via multi-purpose trails. Once complete, these trails will provide recreational, greenway corridors throughout the UA while also attracting new visitors to the area.

There are several proposed trails in both Cape Girardeau and Jackson. The proposed trails include:

- Goose Creek Trail
- Football Park Trail
- East Jackson Loop Trail
- North Jackson-Cape Trail
- South Jackson-Cape Trail
- LaSalle/Hwy W Trail
- VMD North Trail
- Old Orchard Trail
- Sportsplex Connector
- County Park Trail
- Lexington Trail
- Drainage Channel Trail
- Old Sprigg Trail
- SEMO Trail
- Cape Rock Loop Trail
- Silver Springs Trail
- Bloomfield Trail
- Shawnee Parkway Trail

A map of the existing and proposed trails is shown in **Figure 11**³⁶.

³⁶<https://mobikefed.org/2017/12/cape-girardeau-area-bicycle-pedestrian-plan-open-public-comment-your-comments-needed-our-rea>

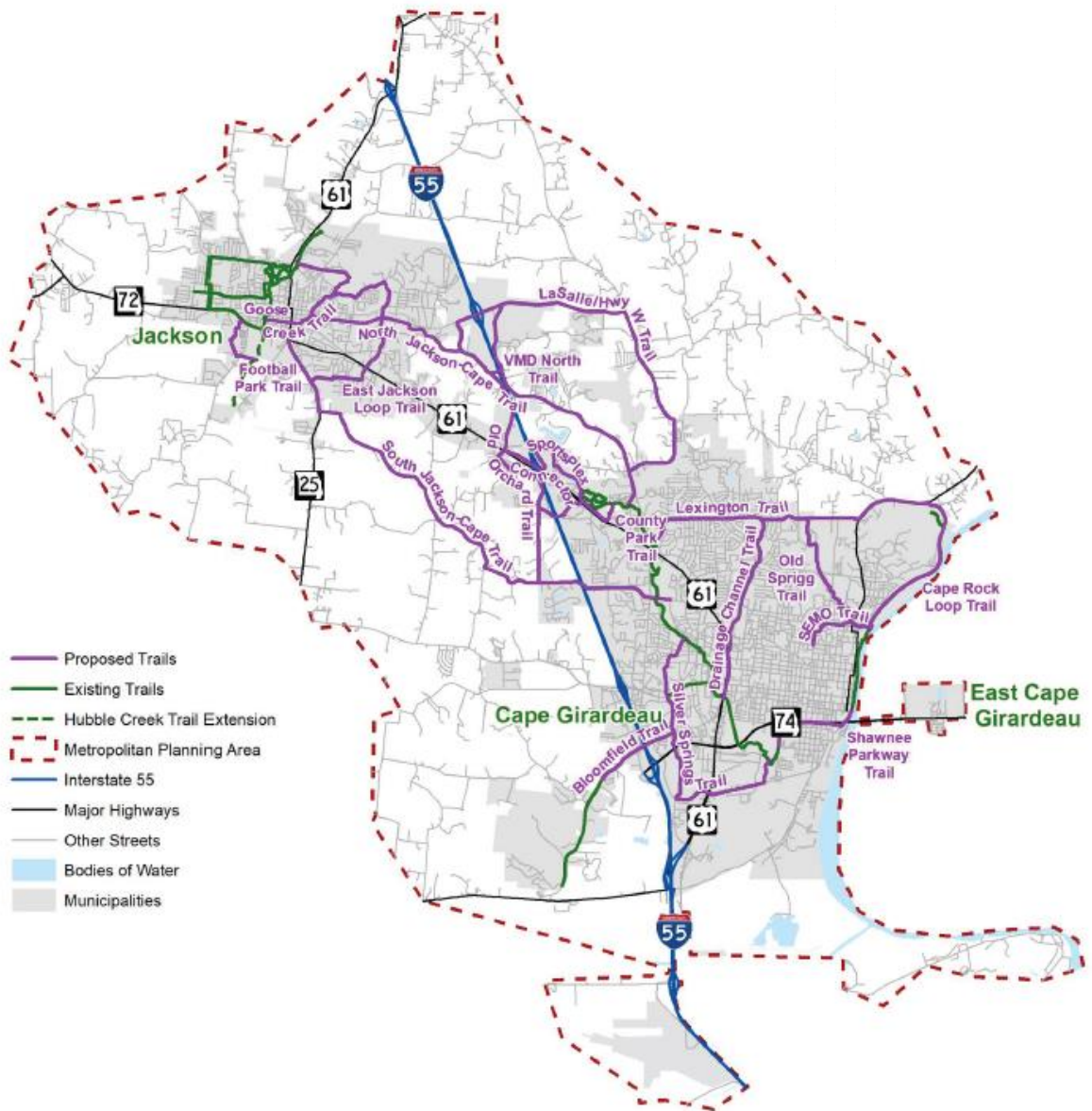


Figure 11. SEMPO Existing and Proposed Trails

Transportation System Safety

Roadway Crash Statistics

Analyzing existing traffic crash patterns is the first step towards understanding the underlying factors of safety issues. Crash data provided by MoDOT and IDOT from the years 2015 to 2019 were used for analysis to provide up-to-date assessments of the safety conditions within the boundaries of the MPA. From the data, the following was revealed:

- 11,838 crashes occurred on the roadway network located within the MPA between 2015 and 2019. Crashes resulting in injury (2,033) accounted for 17.2% of the overall crashes while fatal crashes (30) accounted for 0.25%.
- Disabling injuries (154) accounted for 7.6% of the crashes where injuries were reported.
- Pedestrian and pedalcycle related crashes accounted for only 0.78% of all crashes but 6.7% of all fatal crashes and 14.3% of all disabling injury crashes.
- The fatal crash rates for 2017, 2018, and 2019 were 1.53, 0.34, and 0.50 respectively for every 100 million vehicle miles traveled (VMT).
- The disabling injury crash rates for 2017, 2018, and 2019 were 5.62, 6.25, and 4.13 respectively for every 100 million VMT.

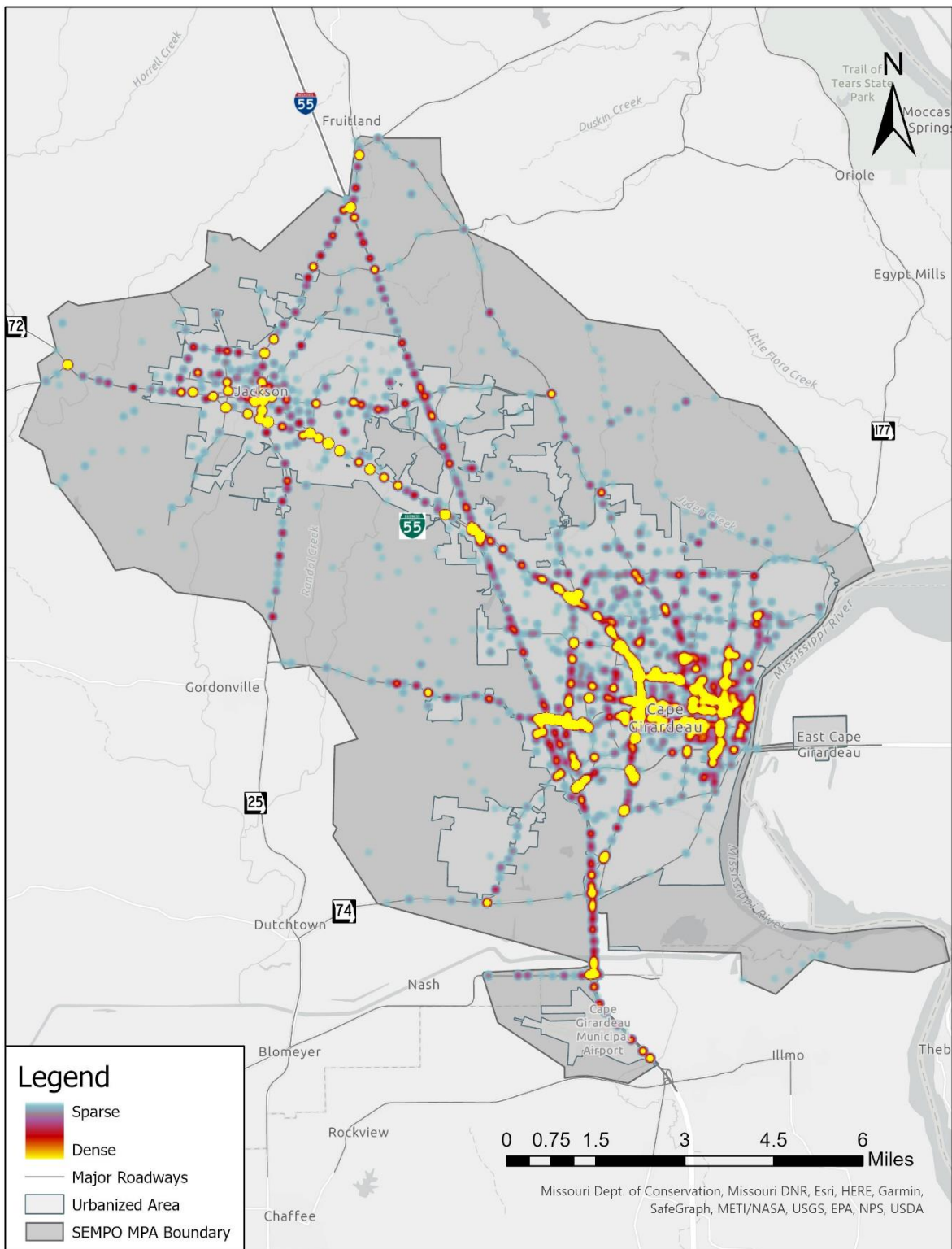
Table 18 shows the crashes by year and severity within the MPA. Crash severity types are defined as follows:

- Fatal – crash resulted in death of one or more persons
- Disabling Injury – crash resulted in non-fatal injury of one or more persons that prevents walking, driving, or continuing activities the person was capable of prior to the crash
- Minor Injury – crash resulted in non-fatal and non-disabling injury of one or more persons who did not require help to leave the scene
- Property Damage Only (PDO) – crash resulted in material damage only with no persons injured

Table 18. Crash Severity by Year

Year	Fatal	Disabling Injury	Minor Injury	PDO	Total
2015	8	31	353	1861	2253
2016	9	28	371	2066	2474
2017	9	33	408	1982	2432
2018	2	37	345	1870	2254
2019	3	25	402	1996	2426
Total	30	154	1879	9775	11839

Figure 12 shows a map of crash density in the MPA, which indicates where crashes are frequently occurring, and **Figure 13** shows the locations of fatal and disabling injury crashes. Many of the crashes occurring in the MPA are located within the UA. There are numerous crash clusters along the major routes through the MPA including I-55, US-61, and Route K as well as in the downtown areas of Jackson and Cape Girardeau. Fatal and disabling injury crashes are also frequent along these major routes, with a particularly high number of fatal crashes on the south segment of I-55.

**Figure 12. Crash Density**

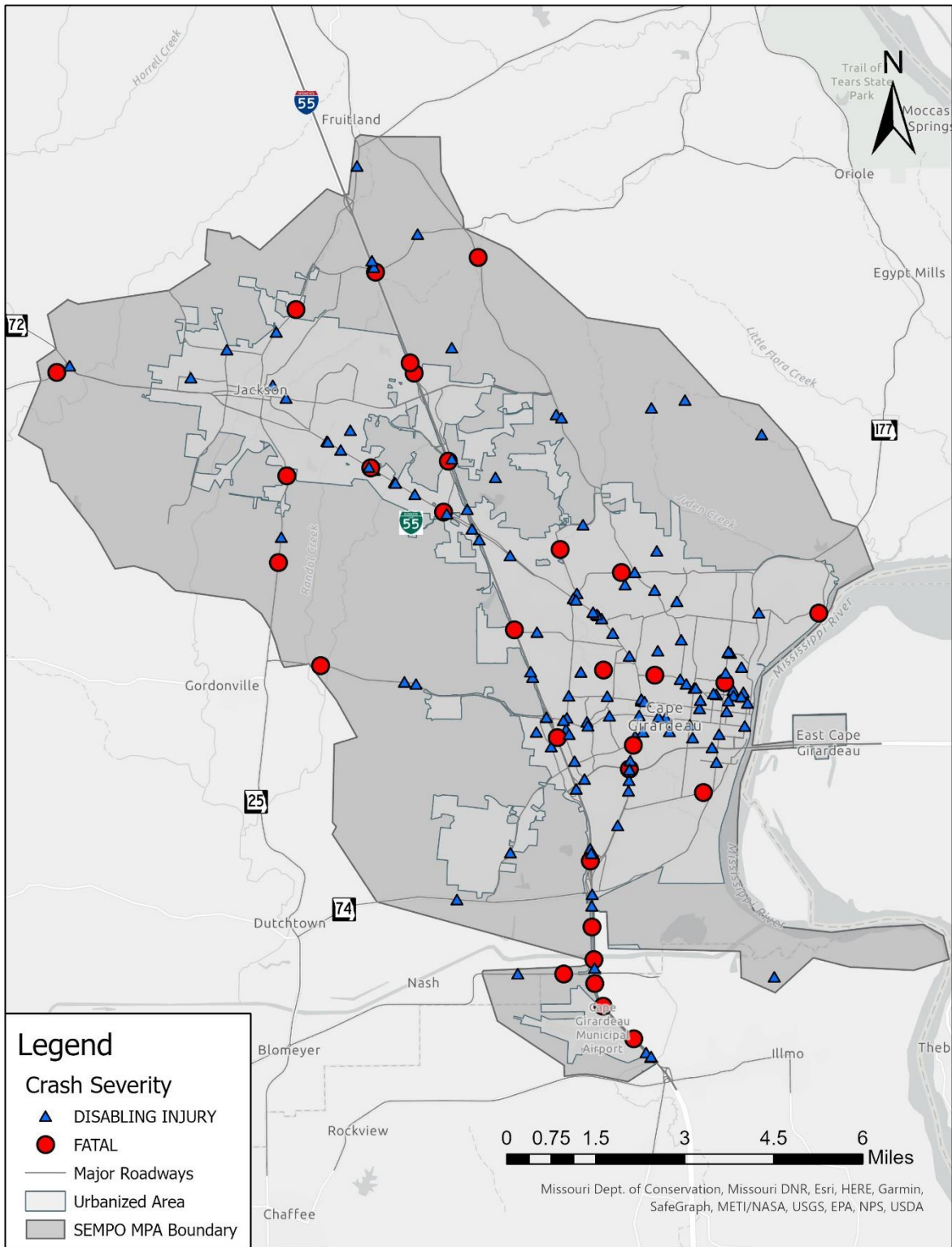


Figure 13. Fatal and Disabling Injury Crashes

Collision Types

Collision types provide insight into the scenarios and factors leading to crashes in the MPA. **Table 19** shows the various collision types by year. Due to the low number of crashes attributed to certain crash types, low frequency collision types from the original database were condensed into broader categories to provide clarity. Classifications with at least 50 occurrences, excluding pedestrian related crashes, were left as standalone categories while the less frequent classifications were included in other, more broad categories. Rear End crashes were the most common collision type that occurred in the MPA, with 4,483 crashes comprising nearly 38% of total crashes between 2015 and 2019. Right Angle and Out of Control were the second and third most common collision types, with 1,953 crashes (16.5%) and 1,575 crashes (13.3%) respectively. **Figure 14** shows the collision types, as a percentage of the overall number of crashes.

Table 19. Collision Type by Year

	2015	2016	2017	2018	2019	Grand Total
PEDALCYCLE	6	8	6	8	4	32
PEDESTRIAN	11	11	13	12	13	60
BACKING	15	13	19	28	31	106
RIGHT TURN	21	19	24	21	26	111
FIXED OBJECT	20	33	26	27	21	127
CHANGING LANE	21	27	38	24	41	151
SIDESWIPE	34	33	30	25	36	158
DEER	55	49	47	47	52	250
HEAD ON	72	82	53	43	59	309
OTHER	56	59	68	46	90	319
LEFT TURN	99	85	140	110	125	559
PASSING	154	170	148	157	163	792
PARKING OR PARKED CAR	160	179	178	161	175	853
OUT OF CONTROL	295	344	321	294	321	1,575
RIGHT ANGLE	316	417	387	427	406	1,953
REAR END	918	944	934	824	863	4,483
Grand Total	2,253	2,473	2,432	2,254	2,426	11,838

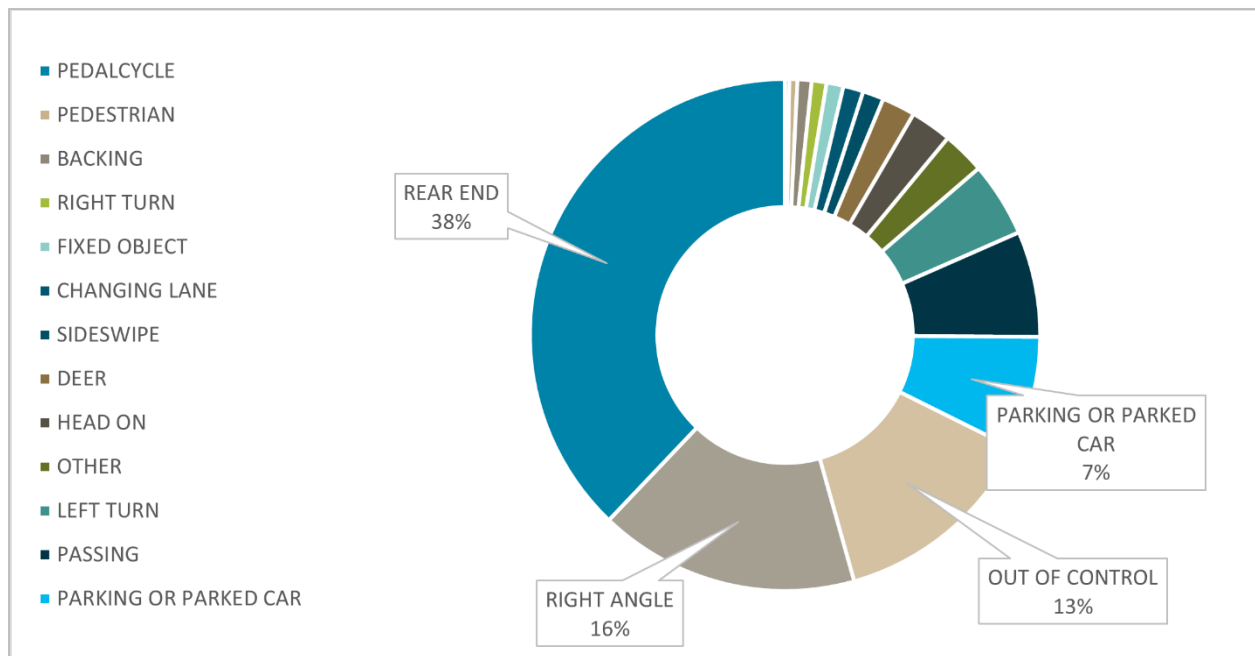
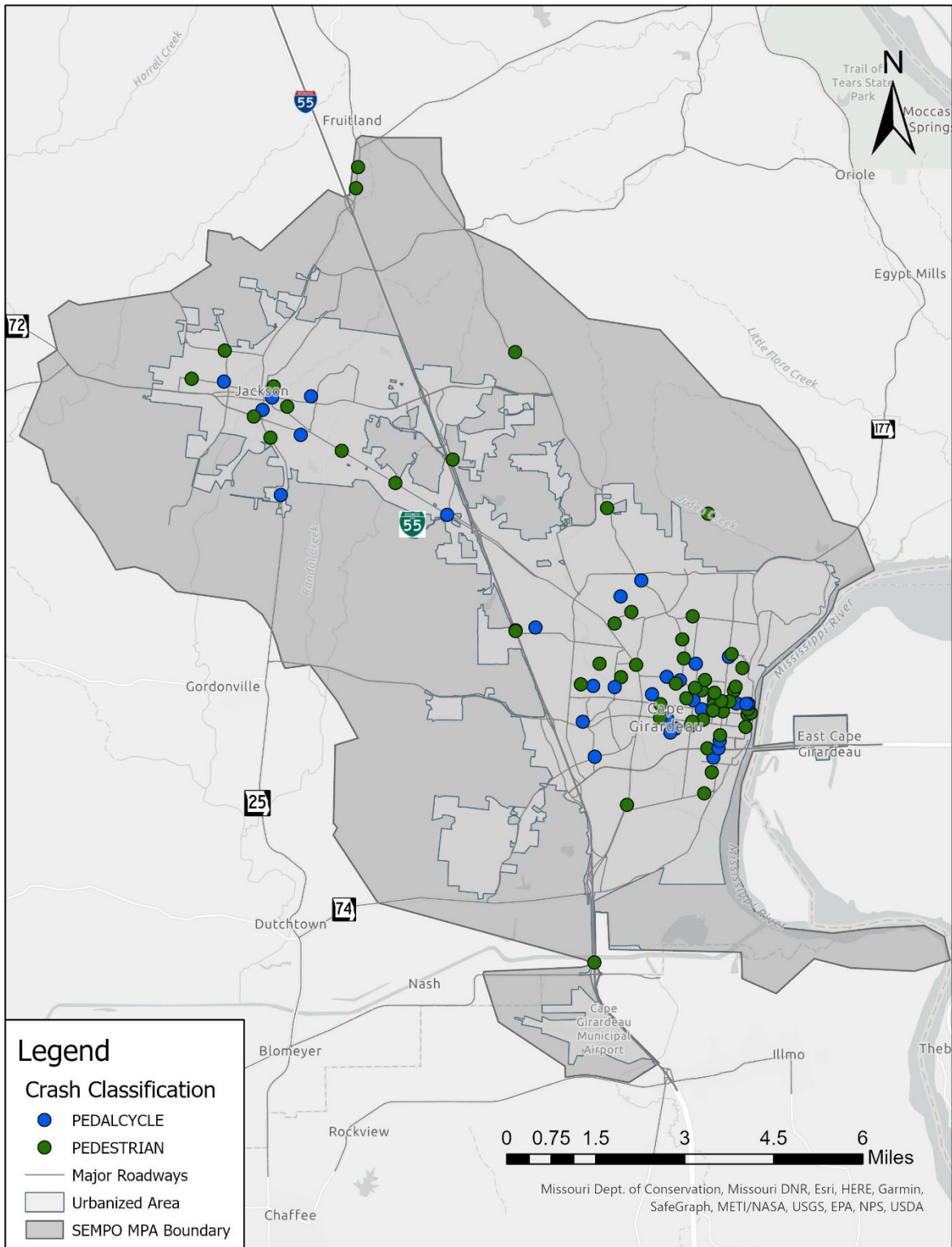


Figure 14. Collision Type by Percentage

Pedestrian and Pedalcycle Safety

Pedestrian and pedalcycle safety are key to promoting biking and walking within the existing and future infrastructure network. A pedalcycle is a vehicle propelled by operating pedals, such as a unicycle, bicycle, or tricycle. Due to high fatality rates of pedestrian and pedalcycle crashes, the safety of those using multi-modal forms of transportation must be a priority in planning a healthy and safe transportation network.

Figure 15 shows the locations of all pedestrian and pedalcycle related crashes from 2015 to 2019. The pedestrian and pedalcycle related crashes have occurred nearly exclusively in the UA of the MPA, particularly near the downtown areas of Cape Girardeau and Jackson. UAs tend to have pedestrian facilities, such as sidewalks, readily available compared to the roadways in rural areas, thus increasing the amount of pedestrians present. SEMO University is also located in the heart of Cape Girardeau, where students are more likely to be traveling by foot or on bike.

**Figure 15. Pedestrian and Pedalcycle Crashes**

The MPA has not experienced a pedestrian related fatality in the last three years, and there were no fatal pedalcycle related crashes over the last five years. One fatal pedestrian crash occurred in both 2015 and 2016, accounting for the two fatal pedestrian related crashes over the last five years. While the overall number of fatal pedestrian crashes is low, these two crashes accounted for 6.67% of all fatal crashes in the MPA. This is a vast overrepresentation, as pedestrian related crashes, on average, comprise only 0.5% of all crashes. This overrepresentation carries over into disabling injuries as well, as pedestrian related crashes account for approximately 13% of all disabling injury resultant crashes. Pedalcycle related crashes are also overrepresented in disabling injury crashes, albeit to a lesser degree. Pedalcycle crashes account for 1.3% of all disabling injuries while only accounting for 0.27% of all crashes. **Table 20** shows the number of pedestrian and pedalcycle crashes by severity for the MPA.

Table 20. Crash Severity of Pedalcycle and Pedestrian Related Crashes

	2015	2016	2017	2018	2019	Grand Total
PEDALCYCLE	6	8	6	8	4	32
<i>FATAL</i>	0	0	0	0	0	0
<i>DISABLING INJURY</i>	0	1	1	0	0	2
<i>MINOR INJURY</i>	4	5	5	8	3	25
<i>PROPERTY DAMAGE ONLY</i>	2	2	0	0	1	5
PEDESTRIAN	11	11	13	12	13	60
<i>FATAL</i>	1	1	0	0	0	2
<i>DISABLING INJURY</i>	3	2	4	3	8	20
<i>MINOR INJURY</i>	6	6	6	8	5	31
<i>PROPERTY DAMAGE ONLY</i>	1	2	3	1	0	7
GRAND TOTAL	17	19	19	20	17	92

Day of Week Factor

Figure 16 shows the number of crashes per year by the day of the week. The graph shows a consistent trend of low number of crashes during the weekend and a high number of crashes during weekdays. There is a significant increase of crashes on Fridays in particular.

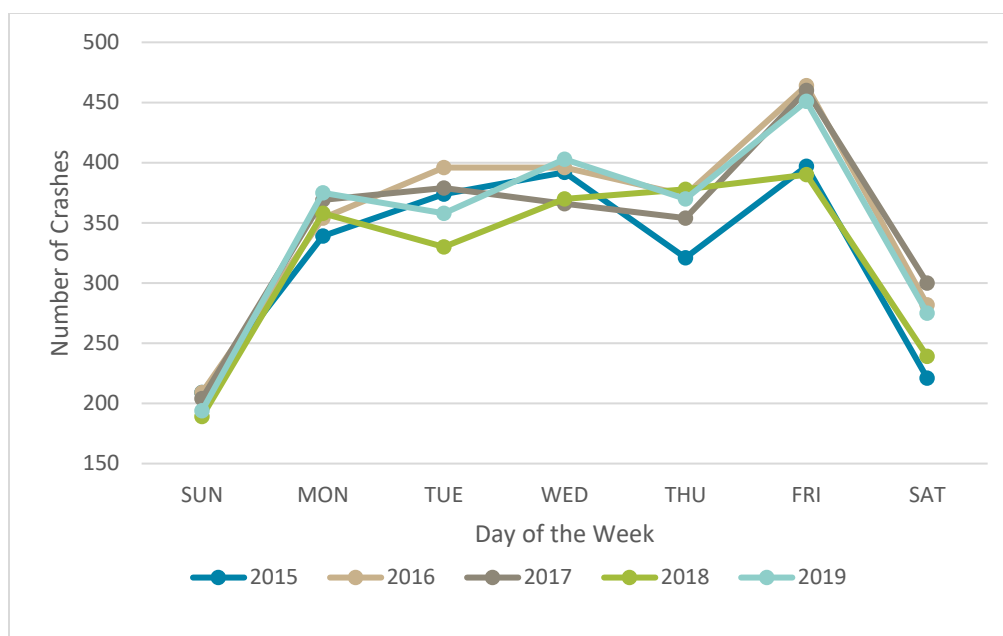


Figure 16. Crashes per Year by Day of Week

Strategic Highway Safety Plan and Emergency Relief/Disaster Preparedness

The Highway Safety Act of 1966, 23 USC, Section 4(a) requires that, “Each State shall have a highway safety program approved by the Secretary, designed to reduce traffic accidents and deaths, injuries, and property damage resulting therefrom.” This is accomplished through the Highway Safety Program, commonly referred to as Section 402³⁷.

In October 2012, Missouri implemented its third Strategic Highway Safety Plan (SHSP), Missouri Blueprint to SAVE MORE LIVES. The goal was to have 700 or fewer fatalities statewide by 2016. However, there was an increase in fatalities in 2016, resulting in a total of 947 fatalities. In 2017, the number of fatalities was slightly lower - 932. Then, between 2017 and 2020, Missouri’s Blueprint – A partnership Toward Zero Deaths became the State’s Strategic Highway Safety Plan. The goal that came out of Zero Deaths was that no lives are lost due to a traffic crash. However, an interim goal of 700 or fewer fatalities was initially set as Missouri works towards the goal of zero deaths.

The current plan expired at the end of 2020. The 2021 MoDOT HSP includes preparation for the 5th SHSP, Show-Me Zero – Driving Missouri Toward Safer Roads³⁸. This plan will serve as the state’s strategic approach to eliminating fatalities for the years 2021-2025. It focuses on four areas of emphasis:

Emphasis Area 1: Occupant Protection

The 12% of Missourians who do not buckle up in a vehicle account for two-thirds of fatalities on Missouri roads. If all Missourians used seat belts, an estimated 240 lives would be saved every year.

³⁷ <https://safety.fhwa.dot.gov/legislationandpolicy/policy/section402/>

³⁸ <https://www.savemolives.com/mcrs/show-me-zero>

Emphasis Area 2: Distracted Driving

Even though the number of distracted driving fatalities has decreased in recent years, much work is required yet to continue that downward trend.

Emphasis Area 3: Speed and Aggressive Driving

Nearly 40% of all traffic fatalities in Missouri involve speeding or driving too fast for conditions, the most commonly cited contributing circumstance in Missouri fatal crashes. Speed is not only a critical factor in the severity of vehicle crashes, but it is usually the determining factor in the outcome of crashes involving pedestrians and bicyclists.

Emphasis Area 4: Impaired Driving

While alcohol impaired fatalities have declined, drug impaired fatalities have been trending upward in recent years. As was done for alcohol, it is important for Missouri to clearly communicate that it's never okay to drive impaired, regardless of the substance.

SEMPO supports MoDOT's SHSP and the intent of the plan to reduce injuries, fatalities, and property damage, with the #1 goal being to reduce fatalities and the #2 goal being to reduce serious injuries.

SEMPO does not legislate, enforce, nor design safety projects or programs. It is a multi-jurisdictional planning organization, promoting safety through the identification and analysis of hazardous locations through crash data. SEMPO members and agencies are included, when appropriate, in the development of plans and studies, including the MTP and TIP, to provide important information and help guide the development of multi-modal systems throughout the MPA.

Best Practices Countermeasures

Missouri's 2020 SHSP identified several strategies that could be undertaken by MPOs as countermeasures. Those strategies are³⁹:

- Establish an interdisciplinary safety committee to lead organizational actions for incorporating safety into all transportation related functions.
- Promote proven engineering countermeasures (see Public Works on page 36) and include safety as a scoring criterion in project prioritization and selection.
- Encourage cities to adopt a Vision Zero (www.visionzeronetwork.org) approach to addressing transportation safety, including Complete Streets or Livable Streets.
- Make safety an overarching theme and core element of transportation plans, including regional Metropolitan Transportation Plans.
- Emphasize safety when prioritizing improvements among various modes of transportation, considering how increased multimodal alternatives and operational projects can reduce the likelihood of crashes.
- Participate in Missouri Coalition for Roadway Safety meetings and activities. Visit www.savemolives.com for more information.

³⁹<https://www.modot.org/sites/default/files/documents/Show-Me%20Zero%20Plan.pdf>

- Educate member agencies on the significance of highway safety and how their agencies can contribute to a safer road system.

State Emergency Relief and Disaster Preparedness Plans and Strategies

The mission of the Missouri State Emergency Management Agency (SEMA) is to “help our fellow Missourians prepare for, respond to and recover from all emergencies. Each step will be guided by the core values of respect, integrity, trust, honesty and compassion.”⁴⁰

SEMA responds to two types of disasters - natural and those caused by man. Natural disasters are major snow and/or ice storms, floods, tornadoes/severe weather, and earthquakes. Man-made disasters, also known as technological emergencies, may include hazardous material incidents, nuclear power plant accidents and other radiological hazards. SEMA is also responsible for developing a State Emergency Operations Plan which coordinates the actions of Missouri state government departments and agencies in the event of any emergency requiring the use of state resources and personnel. SEMA also serves as the statewide coordinator for activities associated with the National Flood Insurance Program⁴¹.

Emergency Preparedness Grants

The Emergency Management Performance Grant (EMPG) Program provides resources to the State Emergency Management Agency and local government emergency management agencies for the sustainment and enhancement of all-hazard emergency management capabilities⁴². An all-hazards approach to emergency response, including the development of a comprehensive program of planning, training, and exercises, means there can be an effective and consistent response to disasters and emergencies, regardless of the cause. It involves building long-term strategic relationships within the emergency management community to ensure that the program meets the needs of Missourians during disasters⁴³.

As of 2004, the Federal Emergency Management Agency (FEMA) requires all cities, counties, and organizations to have a Hazard Mitigation Plan in order to receive funding. SEMA and the Missouri Association of Councils of Government (MACOG) developed a Mitigation Planning Initiative to help cities prepare a Hazard Mitigation Plan. Through their joint efforts, the SEMO RPC and Cape Girardeau County published a Hazard Mitigation Plan in 2016.

Several grants are available through FEMA, such as the Flood Mitigation Assistance Program, Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Repetitive Flood Claims Program, and the Severe Repetitive Loss Program. Funding may be obtained through FEMA/SEMA in the occurrence of a natural disaster.

Up to 50% of allowable costs are eligible for financial assistance through the EMPG. In the FY19 EMPG funding year, Jackson received \$14,245.63 in funding and Cape Girardeau received \$62,325.75 in funding⁴⁴.

⁴⁰ <https://sema.dps.mo.gov/about/>

⁴¹ <https://sema.dps.mo.gov/programs/floodplain/>

⁴² <https://www.fema.gov/grants/preparedness/emergency-management-performance>

⁴³ <https://sema.dps.mo.gov/programs/empg.php>

⁴⁴ <https://sema.dps.mo.gov/programs/empg.php>

Natural Hazards/Emergency Planning

The MPA is subject to natural hazards such as flooding, tornados, winter storms, hail, high winds, fire, drought, heat, sinkholes, and earthquakes.

The 2016 Hazard Mitigation Plan addressed disaster relief and emergency assistance. The plan meets Federal Emergency Management Agency (FEMA) planning requirements and was developed using best practices from the Missouri State Hazard Mitigation Plan and the previous Cape Girardeau County Hazard Mitigation Plan. The plan takes special effort to coordinate between agencies and jurisdictions which will adopt the plan, such as the City of Cape Girardeau, the City of Jackson, Cape Girardeau School District, Jackson School District, SEMO University, and more.

Occasional severe floods are problematic within the MPA, especially major flooding on the Mississippi River and the Diversion Channel. Periodic floods disrupt transportation, damage transportation infrastructure, and pose a threat to people's safety. Included in the 2016 Hazard Mitigation Plan are roads and highways that are prone to flooding. These include routes AB, B, D, F, K, P, U, UU, W, 34, 55, 61, 72, 177, and County Roads 214, 222, 231, 349, 350, 379, and 454, some of which lie outside the MPA. Any emergency routes should take into consideration roads which are prone to flooding.

The MPA is also located in an earthquake impact region, the New Madrid Seismic Zone. The area is in FEMA's D Seismic Design Category with a risk category of 2⁴⁵. This indicates that very strong shaking could occur, causing light damage in specially designed structures, considerable damage in ordinary substantial buildings with partial collapse, and great damage in poorly built structures. A strong earthquake would likely cause substantial damage to the transportation system, especially older bridges. Transportation planning for natural disasters is an activity that includes participants at the most immediately responsive level of government, the local level, supplemented by the state government and eventually, federal government.

There is a clear need to identify emergency routes and to maintain the identified routes. These routes should be developed and coordinated between cities and government entities. In the event that a staging facility for emergency transportation such as the National Guard is needed, the city of Cape Girardeau has identified the Cape Airport to serve as the staging area.

In addition, citizens have the option to take part in the Community Emergency Response Team (CERT). The CERT program provides education and training to prepare people for disasters and hazardous events. The city of Cape Girardeau offers free training with registration available through their website⁴⁶.

Natural Hazard Mitigation

Natural hazard mitigation refers to reducing risk associated with floods, tornadoes, severe winter storms, earthquakes, drought, wildfires, dam failure, sinkholes, and heat waves. The term "mitigation" in this usage refers to planning and modeling for potential hazards. Mitigation activities for areas of the MPA are contained in the Cape Girardeau County and Scott County Hazard Mitigation Plans.

SEMPO advocates for improved coordination and planning of emergency and natural hazard mitigation activities between agencies, related to transportation, and supports the goals of the Cape Girardeau

⁴⁵ <https://seismicmaps.org/>

⁴⁶ https://www.cityofcapegirardeau.org/departments/fire/fire_prevention/CERT_training

County and Scott County Hazard Mitigation Plans and also advocates for and supports continued coordination and planning activities related to the Cape Girardeau County Emergency Operations Plans for transportation safety and emergency response.

Environmental Impact Mitigation

It is critical to consider the natural environment when accounting for the short- and long-term impacts of transportation decisions. In connection with new approaches to how communities maintain and enhance the livability of our region, the FAST ACT reconfirms the need to enhance the performance of transportation systems while protecting and enhancing the natural environment as one of its primary goals for the nation. Managing environmental resources as a group of strategic assets that are crucial to municipal goals, important to ecosystem health, and beneficial to the region is key to successful regional management.

Key environmental assets may be described as follows:

- Clean air: essential to both human and ecosystem health.
- Rivers and water bodies: provide drinking water, recreation, and act as natural pollution filters.
- Biodiversity: essential for food, material, and improved quality of life, and also increases the region's resilience.
- Forests: serve as watersheds, habitats, carbon sinks, leisure amenities, and tourist destinations. If managed sustainably, forests are also a source of energy and building materials.
- Wetlands: filter and process stormwater and waste as well as acting as a nursery for aquatic life.

The natural environment provides the region with several ecosystem services which are fundamental to urban livability. In considering environmental resources, these benefits may be managed and increased by planning transportation networks in a way which preserves, unifies, and invests in these natural systems.

Ecological Framework

In order to track preservation of natural systems over time, land cover acreage should be mapped every five years during the MTP development in order to track environmental maintenance efforts. Wetlands greatly assist in retaining storm water during times of heavy precipitation and work to reduce the effects of regional flooding in addition to providing habitat for specific types of vegetation and animal species not found in other environments. **Table 21** shows the acreage associated with each land cover type identified in the region. **Figure 17, Figure 18, and Figure 19** show where Wetlands, Forestlands, and Agricultural lands are located throughout the MPA. Information on woodlands, urban areas, grasslands, and agriculture uses was obtained from the 2016 U.S. Geological Survey (USGS) National Land Cover Database (NLCD). Wetland information for the Cape Girardeau UA is based on data from the United States Fish and Wildlife Services (USFWS) National Wetland Inventory classification system, as well as from local agencies.

Table 21. Land Cover in SEMPO MPA

	Land Cover	Acreage
1	Barren Land (Rock/Sand/Clay)	454
2	Cultivated Crops	14,589
3	Deciduous Forest	16,426
4	Developed, High Intensity	1,744
5	Developed, Low Intensity	8,883
6	Developed, Medium Intensity	4,279
7	Developed, Open Space	7,076
8	Emergent Herbaceous Wetlands	212
9	Evergreen Forest	4
10	Grassland/Herbaceous	252
11	Mixed Forest	235
12	Open Water	1,591
13	Pasture/Hay	18,492
14	Shrub/Scrub	29
15	Woody Wetland	560
	TOTAL	74,828

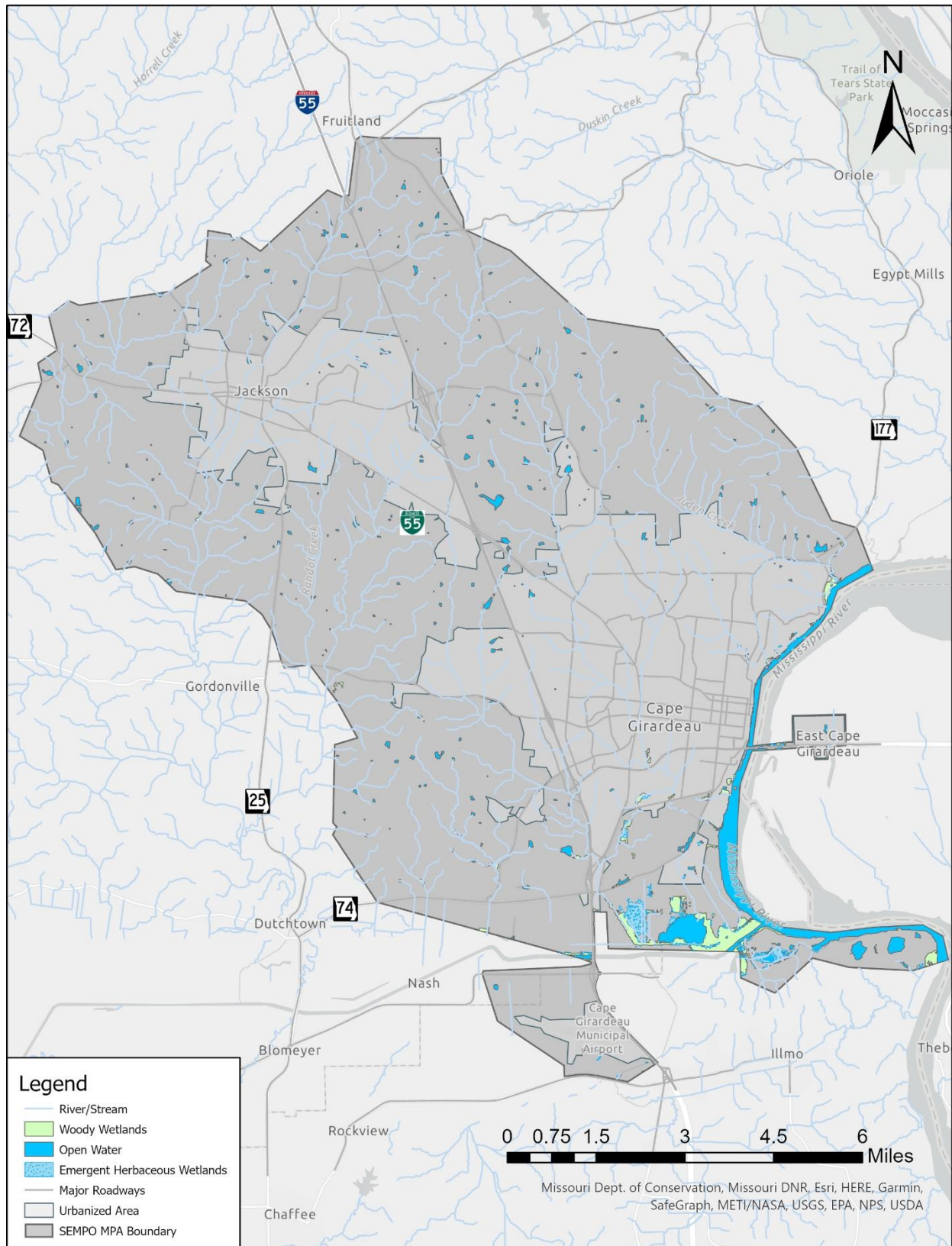


Figure 17. Rivers, Streams, and Wetlands

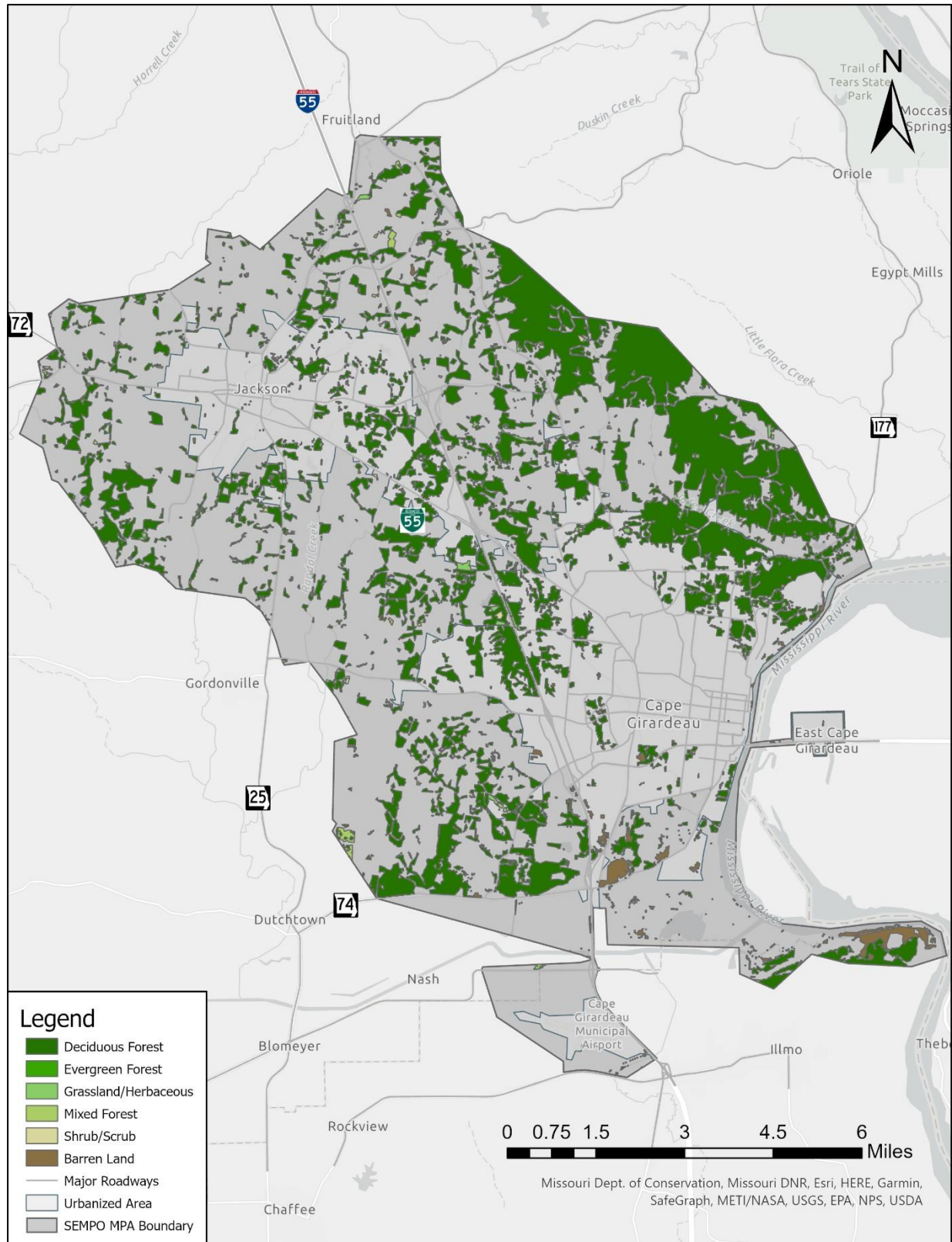
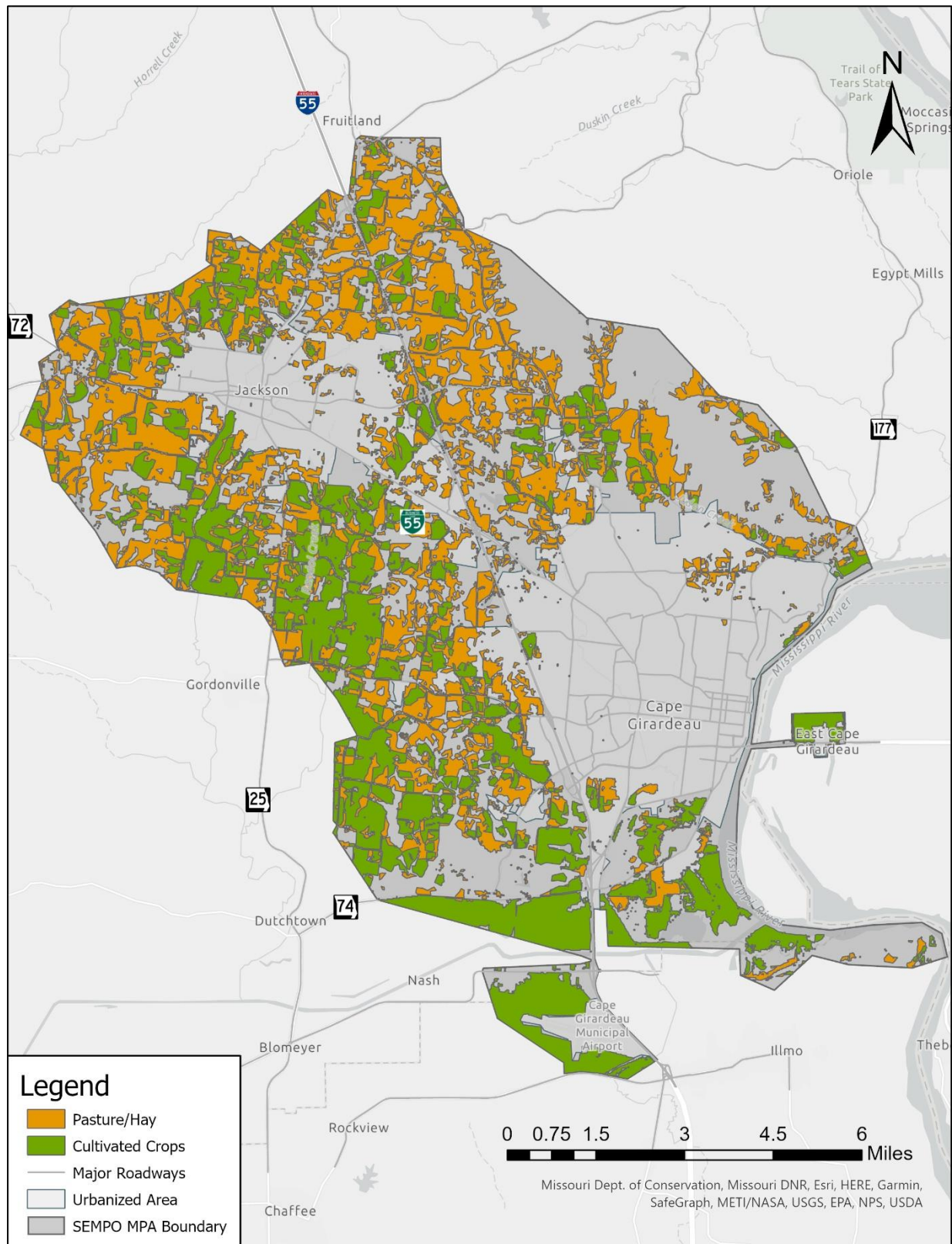


Figure 18. Forest, Grasslands, and Open Space

**Figure 19. Agricultural Land**

As of December 2020, there were 6 endangered species and 2 threatened species identified by the Federal Government living in Cape Girardeau and Scott Counties in Missouri, and Alexander County in Illinois (**Table 22**). These local species often rely on sensitive natural areas like grasslands, woodlands, and wetlands for survival. In 1981, the Nature Conservancy, Missouri Department of Natural Resources (MoDNR), and Missouri Department of Conservation (MDC) created the Missouri Natural Heritage Program (MONHP) to identify species and natural communities of conservation concern in Missouri. The Kelso Sanctuary Natural Area (25.9 acres) is a critical habitat within the Cape Girardeau and Scott Counties. According to the National Land Cover Database, land cover within the MPA consists of approximately 33,081 acres of land for agricultural uses; 21,981 acres of developed land; 16,690 acres of forest; 772 acres of wetlands, and 2,297 acres of other uses including open space and grasslands. The total critical habitat constitutes less than 1% of the total land area in the region. See **Figure 20** for reference.

Table 22. Endangered and Threatened Species in SEMPO MPA

No.	Scientific Name	Common Name	State Status	Federal Status
1	<i>Cyprogenia stegaria</i>	Eastern Fanshell Pearlymussel	Endangered	Endangered
2	<i>Epioblasma rangiana</i>	Northern Riffleshell	Endangered	Endangered
3	<i>Epioblasma triquetra</i>	Snuffbox	Endangered	Endangered
4	<i>Myotis sodalis</i>	Indiana Bat	Endangered	Endangered
5	<i>Pleurobema clava</i>	Clubshell	Endangered	Endangered
6	<i>Villosa fabalis</i>	Rayed Bean	Endangered	Endangered
7	<i>Myotis septentrionalis</i>	Northern Long Eared Bat	Endangered	Threatened
8	<i>Theliderma cylindrica</i>	Rabbitsfoot	Endangered	Threatened
9	<i>Ammodramus henslowii</i>	Henslow's Sparrow	Endangered	--
10	<i>Arabis patens</i>	Spreading Rockcress	Endangered	--
11	<i>Cistothorus platensis</i>	Sedge Wren	Endangered	--
12	<i>Clonophis kirtlandii</i>	Kirtland's Snake	Endangered	--
13	<i>Crataegus iracunda</i>	Illinois Hawthorn	Endangered	--
14	<i>Dichanthelium bicknellii</i>	Panic-Grass	Endangered	--
15	<i>Ixobrychus exilis</i>	Least Bittern	Endangered	--
16	<i>Liatris pycnostachya</i>	Cattail Gay-Feather	Endangered	--
17	<i>Myotis lucifugus</i>	Little Brown Bat	Endangered	--
18	<i>Nycticeius humeralis</i>	Evening Bat	Endangered	--
19	<i>Nycticorax</i>	Black-Crowned Night-Heron	Endangered	--
20	<i>Obovaria subrotunda</i>	Round Hickorynut	Endangered	--
21	<i>Perimyotis subflavus</i>	Tricolored Bat	Endangered	--
22	<i>Tyto alba</i>	Barn Owl	Endangered	--
23	<i>Carex straminea</i>	Straw Sedge	Threatened	--
24	<i>Juglans cinerea</i>	Butternut	Threatened	--
25	<i>Oenothera perennis</i>	Small Sundrops	Threatened	--

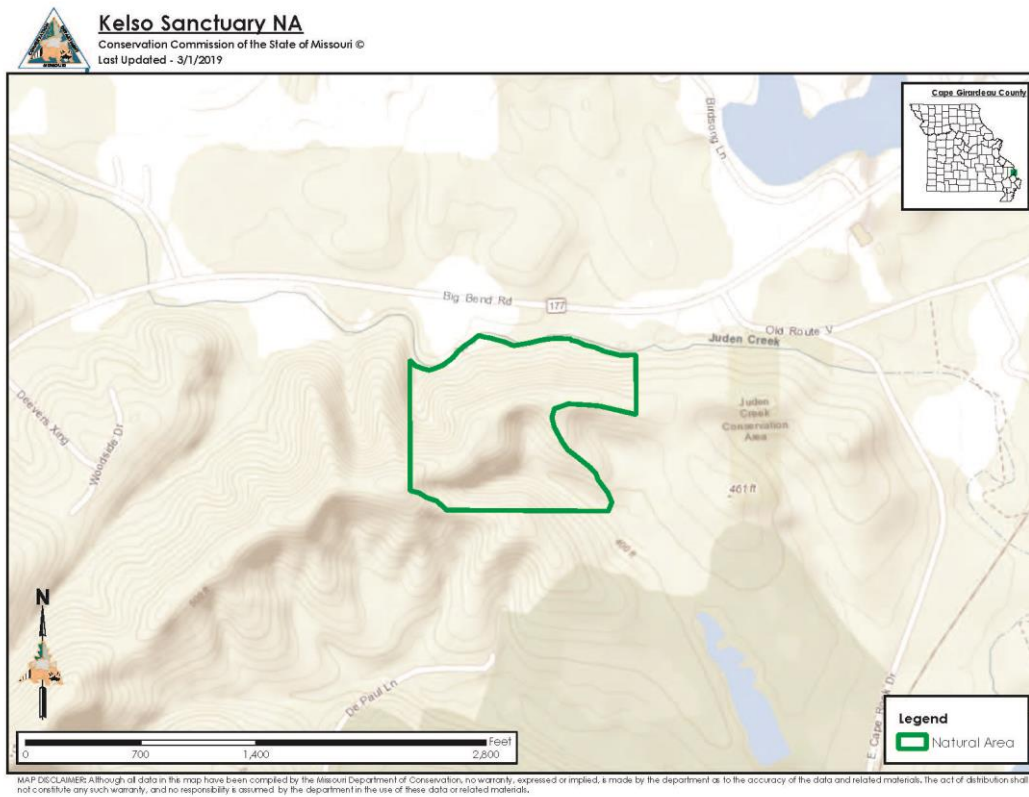


Figure 20. Kelso Sanctuary Natural Area

Cultural and Historic Resources

In addition to natural resources, cultural and historic resources should also be considered, and steps should be taken to minimize damage, destruction, or removal of these features. **Table 20** and **Table 21** show the National Register of Historic Places districts and landmarks in the MPA, respectively.

Table 23. National Register Districts in SEMPO MPA

No.	Name	Location
1	Haarig Commercial Historic District	Cape Girardeau, MO
2	Cape Girardeau Commercial Historic District	Cape Girardeau, MO
3	Jackson Uptown Commercial Historic District	Jackson, MO
4	Main--Spanish Commercial Historic District	Cape Girardeau, MO
5	Big Hill Farmstead Historic District	Jackson, MO
6	Broadway--Middle Commercial Historic District	Cape Girardeau, MO
7	Broadway--Middle Commercial Historic District (Boundary Increase)	Cape Girardeau, MO
8	Courthouse--Seminary Neighborhood Historic District	Cape Girardeau, MO
9	Broadway and North Fountain Street Historic District	Cape Girardeau, MO
10	Warehouse Row Historic District	Cape Girardeau, MO
11	Cape Girardeau Commercial Historic District (Boundary Increase I)	Cape Girardeau, MO
12	Cape Girardeau Commercial Historic District (Boundary Increase II)	Cape Girardeau, MO
13	South Middle Street Historic District	Cape Girardeau, MO
14	Broadway Commercial Historic District	Cape Girardeau, MO

Table 24: National Register Landmarks in SEMPO MPA

No.	Name	Location
1	Bennett-Tobler-Pace-Oliver House	Jackson, MO
2	St. Vincent De Paul Catholic Church	Cape Girardeau, MO
3	Glenn House	Cape Girardeau, MO
4	Thilenius, Col, George C., House	Cape Girardeau, MO
5	Reynolds, James, House	Cape Girardeau, MO
6	Oliver-Leming House	Cape Girardeau, MO
7	McKendree Chapel	Jackson, MO
8	Hanover Lutheran Church	Cape Girardeau, MO
9	Clark, George Boardman, House	Cape Girardeau, MO
10	Klostermann Block	Cape Girardeau, MO
11	House at 323 Themis Street	Cape Girardeau, MO
12	Frizel--Welling House	Jackson, MO
13	Shivelbine, August and Amalia, House	Cape Girardeau, MO
14	Pott, Frederick W. and Mary Karau, House	Cape Girardeau, MO
15	Wichterich, Robert Felix and Elma Taylor, House	Cape Girardeau, MO
16	Marquette Hotel	Cape Girardeau, MO
17	Huhn--Harrison House	Cape Girardeau, MO
18	Himmelberger and Harrison Building	Cape Girardeau, MO
19	Wood Building	Cape Girardeau, MO
20	B'Nai Israel Synagogue	Cape Girardeau, MO
21	Southeast Missourian Building	Cape Girardeau, MO
22	Esquire Theater	Cape Girardeau, MO
23	Kage School	Cape Girardeau, MO
24	St. Vincent's College Building	Cape Girardeau, MO
25	Ponder, Abraham Russell, House	Cape Girardeau, MO
26	Lilly, Edward S. and Mary Annatoile Albert, House	Cape Girardeau, MO
27	Central High School	Cape Girardeau, MO
28	Jefferson School	Cape Girardeau, MO
29	Vasterling, Julius, Building	Cape Girardeau, MO
30	Erlbacher Buildings	Cape Girardeau, MO
31	Cape Girardeau Court of Common Pleas	Cape Girardeau, MO
32	St. James A.M.E. Church	Cape Girardeau, MO
33	Chapman, Dr. Jean, House	Cape Girardeau, MO
34	Old Lorimier Cemetery	Cape Girardeau, MO
35	Broadway Theatre	Cape Girardeau, MO
36	Harrison, William Henry & Lilla Luce, House	Cape Girardeau, MO
37	Wilson, J. Maple & Grace Senne, House	Cape Girardeau, MO

National Environmental Policy Act (NEPA)

When a transportation improvement project is designed, many residents believe that the bulldozers will arrive tomorrow. In contrast, the MTP is often viewed as part of the distant and uncertain future. Linking long range planning and environmental review can help overcome this public confusion and focus stakeholder engagement as well as save time and money.

Linking planning and NEPA is sometimes perceived as requiring additional work of the MPO staff and resource agencies where resources are limited. This demand is often magnified by a lack of understanding of the individual agency processes and requirements. Collaboration, either through formal agreement or informal working relationships, can improve these challenges over time. The NEPA process requires strong documentation; therefore, one essential requirement is for good, standardized documentation of information (data, decisions, and analysis) that are to be passed between the MTP and NEPA in order to avoid revisiting decisions made in planning.

Air Quality

Air quality and transportation are intimately connected through United States Environmental Protection Agency (EPA) regulation. The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. The current standards are shown in **Table 25**. Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$).

Table 25. National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	Primary	8 Hours	9 ppm	Not to be exceeded more than once per year
		1 Hour	35 ppm	
Lead (Pb)	Primary and secondary	Rolling 3-month average	0.15 $\mu\text{g}/\text{m}^3$	Not to be exceeded
Nitrogen Dioxide (NO₂)	Primary	1 hour	100 ppb	98 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and secondary	1 year	53 ppb	Annual Mean
Ozone (O₃)	Primary and Secondary	8 Hours	0.070ppm	Annual fourth-highest daily maximum 8 hours concentrations, averaged over 3 years
Particle Pollution	Primary	1 year	12.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
	PM 2.5 Secondary	1 year	15.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
	Primary and Secondary	24 hours	35 $\mu\text{g}/\text{m}^3$	98 th percentile, averaged over 3 years
	PM 10 Primary and Secondary	24 hours	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	Primary	1 hour	75 ppb	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3 hour	0.5 ppm	Not to be exceeded more than once per years

Of the six pollutants, particulate matter and ozone are most affected by the transportation system. While particulate matter is well under the standard in the Cape Girardeau area, ozone remains a contaminant of concern. The EPA created the Air Quality Index (**Table 26**) to help explain air pollution levels to the public.

Table 26. Air Quality Index

AQI Ranges	Category	Color	Health Effects	Cautionary Statements
0 – 50	Good	Green	--	--
51 – 100	Moderate	Yellow	--	--
101 – 150	Unhealthy for Sensitive Groups	Orange	Increased likelihood of respiratory symptoms and breathing discomfort in sensitive groups.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor activity.
151 – 200	Unhealthy	Red	Greater likelihood of respiratory symptoms and breathing difficulty in sensitive groups.	Active children and adults, and people with respiratory disease, such as asthma, should avoid heavy outdoor exertion; everyone else, especially children, should limit heavy outdoor exertion.
201 – 300	Very Unhealthy	Purple	Increasingly severe symptoms and impaired breathing likely in sensitive groups.	Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
301 – 500	Hazardous	Maroon	Severe respiratory effects and impaired breathing likely in sensitive groups.	Everyone should avoid all outdoor exertion.

Currently, the Cape Girardeau/Jackson UA meets State and Federal air quality standards. There are two air quality monitors in the surrounding region. One monitor is located in the Farrar community in Perry County. The second monitor is located near Bonne Terre within Ste. Genevieve County. In 2019, the SEMO RPC's Environmental Quality Committee completed a report entitled "The "Path Forward" for the Southeast Missouri Region with Regards to Ground-Level Ozone and Other Air Pollutants". According to the report, in the 2015 season, the Farrar monitor showed a design value of 66 parts per billion (ppb) while the Bonne Terre monitor showed a design value of 65 ppb, both lower than the threshold design value of 70 ppb. Both the Farrar and Bonne Terre monitors remained in compliance in 2019 as well, with readings at 64 and 63 ppb, respectively. It should be noted that the 2019 data has not been finalized, however it does indicate a decrease from the 2016 data.

Therefore, at this time, Cape Girardeau County and all jurisdictions are considered compliant/not monitored.

Water Quality

While air pollution is the most visible and studied environmental consequence of transportation systems, water pollution and wetlands issues are also of crucial importance in the transportation and environment nexus. Fuel, particle, and salt-laden runoff from streets, highways, and storage facilities results in damage to public water supplies, ponds, lakes and surface streams, roadside soil, vegetation and trees, and infrastructure and vehicles. The role of wetlands in water purification, management of surface water runoff, and wetlands as habitat preserves for numerous species are all being closely studied.

Roadways tend to bisect watersheds. Water quality impacts attributed to erosion, sedimentation, and polluted runoff associated with highway construction, operation, and maintenance may be limited to the adjacent streams. But in the watershed downstream, the impact from the road may also contribute to other forms of water pollution. Watersheds are therefore both directly and indirectly impacted by transportation. It is for this reason that a watershed approach has become the most widely accepted direction of study of most water and transportation research.

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole-body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs⁴⁷.

At this time, the Mississippi River is the only waterway in the MPA included in the Missouri and Illinois Section 303(d) lists. The Mississippi's primary pollutants are pesticides, dissolved oxygen, and fecal coliform. Additional waterways in Cape Girardeau County, Missouri and Alexander County, Illinois have been identified as impaired; however, they are not located within the MPA.

The City of Cape Girardeau has almost 5,500 storm drain inlets and 200 miles of drainage pipe⁴⁸. The Stormwater Division of the Public Works Department is responsible for maintenance and repair of the storm drain system in the public right-of-way and within drainage easements. Cape Girardeau is one of many Missouri communities that was required to submit a Notice of Intent application to the MoDNR for coverage under the Missouri Phase II MS4 general stormwater permit, as moderated by the EPA Clean Water Act⁴⁹. This program requires that the City develop a stormwater program which addresses water quality issues.

The City of Jackson is also required to submit a Notice of Intent application to the MoDNR for coverage under the Missouri Phase II MS4 general stormwater permit, as moderated by the EPA Clean Water Act. Under this permit, Jackson maintains a Stormwater Management Plant (SWMP) that requires best management practices related to stormwater drainage and the monitoring of known outfalls. These

⁴⁷ <https://dnr.mo.gov/env/wpp/waterquality/303d/303d.htm>

⁴⁸ https://www.cityofcapegirardeau.org/departments/public_works/stormwater

⁴⁹ https://www.cityofcapegirardeau.org/departments/development/engineering_division/stormwater_management

outfalls are known locations where stormwater infrastructure drains into permanent flow streams within the city limits. Currently, Jackson has approximately 200 known outfalls that are monitored on a rotating basis as required under the permit. However, the approximate number of storm drain inlets and miles of pipe within the city are unknown at this time. Jackson continues to work towards completing the mapping of the stormwater system and is currently looking for opportunities for assistance with the completion of this task.

Implications to the Transportation System

According to the EPA, transportation affects water quality directly in four ways: 1) road construction and maintenance, including the creation of impervious surfaces can adversely affect water quality due to faster rates of runoff, lower groundwater recharge rates, and increased erosion; 2) pollutants such as vehicle exhaust, oil, and dirt, and deicing chemicals, are deposited to roadways and other impervious surfaces; 3) leaking underground storage tanks release petroleum to groundwater; and 4) oil spills, especially in the marine sector, affect the water quality of inland waterways and coastal areas.

One method of lessening the impact of stormwater is through green infrastructure. Green infrastructures are strategically planned and managed networks of natural lands, working landscapes and other open spaces that conserve ecosystem values and functions and provide associated benefits to human populations.

Using green infrastructure techniques in the transportation system has many benefits. For example, a road built through the heart of a historically wet area can experience flooding and can deplete the ability for that area to absorb and filter stormwater. However, when these systems are built in concert, a community can effectively build a transportation system while maintaining the vital roles that ecosystems play in community health and well-being.

There are many ways to integrate green infrastructure into roadway projects. Examples of green infrastructure include:

- The use of vegetative bioswales and wetland retention to filter and absorb stormwater from the road system;
- Planting of street trees; and
- The use of porous pavement.

The concept and associated technology of green infrastructure has been evolving for decades, and engineers and scientists are becoming more and more confident in the applicability and effectiveness of these technologies.

Other recommended methods to reduce water pollution from transportation projects include:

- Ensuring the quality of stormwater runoff is protected while roadways in SEMPO are constructed, operated, and maintained;
- Promoting innovative control measures (i.e., best management practices);
- Reducing the amount of herbicides and chemical agents used for road maintenance;
- Managing natural habitat to compensate for lost systems, such as planting native vegetation in swales;
- Providing effective water quality education to SEMPO staff;

- Facilitating cooperation between SEMPO, watershed groups, other Water Quality Program managers, businesses, and the public; and
- Developing a Stormwater Management Program to reduce pollutants in stormwater from area roadways and facilities.

Transportation System Security

SEMPO can participate in improving security by identifying possible emergency routes, identifying alternate routes, encouraging accessibility of emergency vehicles in neighborhood and street design, and through supporting interagency cooperation. SEMPO may explore hazardous materials and truck routing information and data. SEMPO can also assist state and local planning efforts through collection and analysis of crash and infrastructure condition data, and improvements in project selection and investment.

An executive order (05-20) was signed on July 21, 2005 which authorized the Homeland Security Advisory Council (HSAC) to review state and local security plans⁵⁰. In addition, HSAC may review grant funding requests and make recommendations for changes to improve and protect Missourians. To achieve this, the HSAC includes the Director of the Department of Public Safety, relevant Public Safety Division Directors, as well as directors of other state departments. One goal of the HSAC is to coordinate homeland security plans at the state and local level. The Missouri HSAC has 38 members with 3 appointed members. The HSAC meets quarterly in Jefferson City, Missouri.

The Transportation Security Administration (TSA) was created after September 11, 2001 “to strengthen the security of the nation’s transportation systems while ensuring the freedom of movement for people and commerce. Within a year, TSA assumed responsibility for security at the nation’s airports and deployed a federal workforce to screen all commercial airline passengers and baggage.⁵¹” TSA uses a layered, risk-based approach to screening. TSA screens all commercial airline passengers and baggage at the Cape Airport to ensure that travelers are safe for the duration of their flying experience. TSA is commonly seen at airport checkpoints; however, it plays a much larger role protecting aviation. Additional safety measures provided by TSA include:

- Intelligence gathering and analysis
- Checking passenger manifests against watch lists
- Random canine team searches at airports
- Federal air marshals
- Federal flight deck officers

The Public Transportation System Security and Emergency Preparedness Planning Guide, published by the U.S. Department of Transportation in 2003 and last updated in 2016, provides guidance on security assessments, emergency response planning, emergency response drills, security training, research and development, memorandum and understanding with TSA, and transit system protective measures. The guide serves as a resource and builds on FTA’s Transit System Security Program Planning Guide and the Transit Security Handbook.

⁵⁰ <https://dps.mo.gov/dir/programs/ohs/hsac.php>

⁵¹ <https://www.dhs.gov/transportation-security-overview>

Recommendations of FHWA for the role of security in MPO planning is that consideration of security in the planning process should be documented in key planning documents such as the Unified Planning Work Program (UPWP), the State Planning and Research Program, the long-range transportation plan, the statewide transportation improvement program (STIP) or MPO transportation improvement program (TIP), or may be part of a standalone study. Federally funded or regionally significant transportation security should be included in the metropolitan long-range plan, STIP, or TIP. Other activities may include documenting conversations and coordination with groups focused on security or including transportation security as a project selection criterion⁵².

Possible activities for SEMPO include:

- Establish collaborative decision-making opportunities with emergency response stakeholders;
- Collaborate with other state and local agency efforts and/or private sector to enhance security planning for the transportation system;
- Reduce injuries, fatalities, and property damage for all modes of transportation;
- Minimize security risks on roadways and bikeways, at Cape Airport, and on public transportation facilities throughout the MPA;
- Improve disaster, emergency, and incident response preparedness and recovery;
- Assess security vulnerabilities while minimizing redundancies through agency coordination;
- Participate in regional planning for safety and security initiatives, such as evacuation measures and homeland security;
- Assess existing resources while periodically re-evaluating emergency preparedness procedures;
- Improve protection of critical, security-related infrastructure key facilities.

Accessibility

The Americans with Disabilities Act (ADA), enacted on July 26, 1990, is a civil rights law prohibiting discrimination against individuals on the basis of disability. According to Title II of the Act, municipalities are required to have a plan to make accommodations for everyone. If a public agency employs more than 50 people, a formal transition plan is required in addition to a self-evaluation. A self-evaluation is a detail of existing barriers to city communications, programs and services, streets and intersections, and buildings and outdoor areas. The self-evaluation information is ultimately used to create the agency's methods and schedule on these barrier removals.

Implications for the Transportation System

In 2021, SEMPO completed an ADA Transition Framework Plan for the cities of Cape Girardeau and Jackson. The plan provided a self-evaluation of non-MoDOT Public Rights-of-Way (PROW) within the two cities to assist them in creating a full ADA Transition Plan. A full ADA Transition Plan requires the additional steps of a self-evaluation of all public buildings and properties, the creation of a schedule and implementation plan, adoption of a grievance policy, and a public engagement period. The ADA Transition Framework Plan provides a self-evaluation of infrastructure, such as sidewalks and traffic signals, within non-MoDOT PROW, and guides the cities of Cape Girardeau and Jackson in how they will ensure these facilities are accessible to all individuals.

⁵² <http://www.planning.dot.gov/documents/briefingbook/bbook.htm#13BB>

The ADA Framework Plan assessed the following features:

- | | |
|--------------------------------|------------------------------|
| 1. Sidewalks | 9. Vertical Objects |
| 2. Curb Ramps | 10. Bus Stops and Stations |
| 3. Sidewalk Ramps | 11. Crosswalks |
| 4. Blended Transitions | 12. Pushbuttons |
| 5. Grade Breaks | 13. Railroad Crossings |
| 6. Detectable Warning Surfaces | 14. Handrails |
| 7. Openings | 15. Pedestrian Refuge Island |
| 8. Horizontal Objects | |

A total of 12,789 features were surveyed - 10,533 in Cape Girardeau and 2,256 in Jackson. Of the features surveyed, Cape Girardeau had a total of 10,489 non-compliant feature points and Jackson 2,233 had non-compliant feature points. **Table 27** shows the types of non-compliant features found in both cities. An ADA Transition Plan is required to be updated periodically until all accessibility barriers are removed.

No non-compliant sidewalks were found within the MPA for Cape Girardeau County, Scott County, Scott City, and East Cape Girardeau, so no separate plans were prepared for these SEMPO member agencies.

Table 27. SEMPO ADA Non-Compliant Points

Feature	CAPE GIRARDEAU	JACKSON
	Total Non-Compliant Data Points	Total Non-Compliant Data Points
Sidewalk (data points)	4,222	868
Entrances*	1,673	426
Grade Breaks	2,698	395
Curb Ramps	848	236
Crosswalks	488	114
Blended Transitions	170	33
Openings	120	69
Pushbuttons	76	5
Vertical Objects	55	21
Horizontal Objects	49	53
Bus Stops and Stations	60	-
Sidewalk Ramps	8	3
Pedestrian Refuge Islands	15	0
Detectable Warning Surfaces	3	9
Railroad Crossings	2	-
Handrails	2	1
Total	10,489	2,233

Section 5: Factors Affecting Transportation

Overview

Several factors impact transportation within the MPA. In this section, demographics and population projections, economic conditions, and housing and development considerations will be addressed, particularly as it relates to their impacts to transportation.

Demographics

The ACS 5-year estimate for 2018 places the total population of the SEMPO UA at 54,808 residents. This is up from 2012, the first year the Cape Girardeau-Jackson UA became its own Census tract, when the population was 53,079.

Age

The distribution of age in 2018 is very similar to the distribution in 2012, and the distribution of age in 2018 is relatively equal across the various age groups with a few exceptions, as shown in **Table 28**. The group of residents between 20 and 29 years of age is the largest at 20.4%. The older age groups (70 to 79 and 80 and older) are the smallest, at 6.0% and 4.9%, respectively. All other age groups are close in percentage value, ranging from 10.2% to 12.5%.

Table 28. SEMPO Population by Age

Population by Age	2012		2018	
	Population	Percent	Population	Percent
0-9	6,423	12.1%	6,851	12.5%
10-19	6,900	13.0%	6,796	12.4%
20-29	10,722	20.2%	11,181	20.4%
30-39	6,104	11.5%	6,577	12.0%
40-49	6,104	11.5%	5,590	10.2%
50-59	6,582	12.4%	6,193	11.3%
60-69	4,459	8.4%	5,645	10.3%
70-79	2,813	5.3%	3,288	6.0%
80+	2,919	5.5%	2,686	4.9%
Total	53,079		54,808	

In 2018, 10.9% of the population was over 70 years of age, and residents under the age of 20 years represented nearly 25% of the population. These two age groups, which represent a significant portion of the population that either are not allowed or choose not to drive⁵³, account for approximately 36% of Cape Girardeau County's population.

The aging population will have profound societal and policy implications for future residents. It is expected that the aging baby boomers will be more active than previous generations of seniors: they will live and work longer and have more disposable income to spend on activities in the community and within the local economy. This trend of active seniors, along with the overall projected growth, suggests SEMPO area

⁵³<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1447231/#:~:text=These%20%2Dyear%20transition%20rates,will%20die%20within%20the%20year.>

residents will require more transportation alternatives than currently offered. Furthermore, as the percentage of older adults increases there will be a smaller percentage of residents in their prime income years of their working life to support future transportation investments and other community needs.

Disability Status

It is essential to identify segments of the population with limited mobility to guide planning and maintenance of transportation networks that meet the accessibility needs of residents in the UA Planning for transit requires an understanding of the needs of the elderly, those with disabilities, and individuals living below the poverty line. As shown in **Table 29**, over 13% of residents in the UA live with a disability. A majority of those with disabilities are in the 18 to 64 years age group.

Table 29. SEMPO Disability Status by Age

Disability Status	2018		
	Total Population	Population with a Disability	Percent
Total Civilian Noninstitutionalized Population	53,583	7,212	13.5%
Under 18 years	11,266	785	1.5%
18 to 64 Years	34,401	3,853	7.2%
65 years and over	7,916	2,574	4.8%

Education

As shown in **Table 30**, 91% of residents in the UA have at least a high school diploma according to the 2018 ACS Survey. This is a sharp increase of 3.5% from the 2012 ACS survey of 86.5%. There were also increases across the board for the population of residents who have some college experience, an associate degree, bachelor's degree, and graduate or professional degrees. On the other side, there were decreases for the population of residents who hold only a high school diploma or lower. This data indicates an upward trend in education levels in the UA, which is expected to continue in the future.

Table 30. SEMPO Education Attainment

Educational Attainment	2012	2018
Less than 9th grade	5.4%	3.3%
9th to 12th grade, no diploma	8.1%	5.7%
High school graduate (includes equivalency)	29.8%	29.1%
Some college, no degree	23.2%	23.8%
Associate degree	4.6%	5.9%
Bachelor's degree	19.5%	19.8%
Graduate or professional degree	9.5%	12.3%
Percent high school graduate or higher	86.5%	91.0%
Percent bachelor's degree or higher	29.0%	32.1%

Median Household Income & Poverty

The income level of a household directly affects its travel options. **Table 31** shows the median household income in the UA for 2012 and 2018. Both years show median income rises with age until the oldest group of 65 years and older. Retirement translates to lower incomes explaining the drop seen in the older age group. While householders under 25 years made slightly less in 2018 compared to 2012, all other age groups experienced positive growth in median household income over the same time frame.

Table 31. SEMPO Median Household Income by Age

Median Household Income	2012	2018
All households	\$42,727	\$47,379
Householder under 25 years	\$22,350	\$20,840
Householder 25 to 44 years	\$46,956	\$56,260
Householder 45 to 64	\$56,181	\$56,972
Householder 65 years and over	\$31,218	\$40,465

Table 32 shows the number and percent of residents living in poverty in the UA for 2012 and 2018. The numbers decreased slightly for those aged 64 years and younger. Conversely, the numbers increased by nearly 2% for those aged 65 or older.

Table 32. SEMPO Poverty Status by Age

Poverty Status by Age	2012	%	2018	%
Population for whom poverty status is determined	49,548		51,636	
Population below poverty level	9,427	19.0%	10,754	20.8%
Under 18	2,900	27.3%	2,725	24.6%
18 to 64 years	5,879	18.2%	7,456	22.8%
65 years and older	648	9.8%	573	7.2%

Households

Household size can be used as an indicator of density and distribution in an UA. As shown in **Table 33**, household size in the UA changed significantly between 2012 and 2018. The data shows an increase in both 1-person and 2-person households, while 3-person and 4-person households decreased over the same time period. This suggests that residents of the UA are opting to live on their own or with one other person rather than in larger households. Another potential explanation is those with larger households are opting to relocate outside the UA.

Table 33. SEMPO Household Size

Household Size	2012	%	2018	%
Total Occupied Households	21,040		20,888	
1-person household	6,186	29.4%	6,592	31.6%
2-person household	7,616	36.2%	7,745	37.1%
3-person household	3,430	16.3%	2,887	13.8%
4-or-more-person household	3,808	18.1%	3,664	17.5%

Vehicle Access

Automobile dependence is an indicator for the mobility options of residents in the UA. As shown in **Table 34**, the number of workers living in a household with at least two vehicles increased by 4.9% between 2012 and 2018. The data also shows a 0.2% decrease in the number of workers living in a household with no vehicles.

Table 34. SEMPO Access to Vehicles

	2012		2018	
	Population	Percent	Population	Percent
Workers 16 years and over in households	24,602		24,849	
No vehicle available	652	2.7%	615	2.5%
1 vehicle available	5,321	21.6%	4,952	19.9%
2 vehicles available	10,462	42.5%	11,773	47.4%
3 or more vehicles available	8,167	33.2%	7,509	30.2%

Commuting to Work

There was little change in the way residents commuted to work in the UA between 2012 and 2018, as shown in **Table 35**. In 2018, 81.7% of workers drove alone and 10.7% carpooled, meaning 92.4% of workers in the UA relied on automobiles for commuting to work. Only 0.6% of commuters utilized public transportation as their means of reaching their place of work. As shown in **Table 36**, the mean travel time to work increased by about 30 seconds between 2012 and 2018. Both years demonstrate that residents are not traveling very far, as 52% and 84% of commuters experience travel times under 15 and 25 minutes, respectively.

Table 35. SEMPO Means of Commuting to Work

Means of Commuting to Work	2012		2018	
	Population	Percent	Population	Percent
Workers 16 years and over	25,419		25,307	
Car, truck, or van - drove alone	20,691	81.4%	20,676	81.7%
Car, truck, or van - carpooled	2,745	10.8%	2,708	10.7%
Public transportation (excluding taxicab)	76	0.3%	152	0.6%
Walked	966	3.8%	785	3.1%
Bicycle	127	0.5%	76	0.3%
Taxicab, motorcycle, or other means	280	1.1%	228	0.9%
Worked at home	534	2.1%	683	2.7%

Table 36. SEMPO Travel Time to Work

Travel Time to Work	2012	2018
Less than 10 minutes	30%	27.5%
10 to 14 minutes	25%	24.5%
15 to 19 minutes	19%	19.6%
20 to 24 minutes	11%	12.4%
25 to 29 minutes	4%	2.6%
30 to 34 minutes	5%	4.8%
35 to 44 minutes	2%	2.7%
45 to 59 minutes	2%	2.8%
60 or more minutes	3%	3.1%
Mean travel time to work (minutes)	16	16.5

Population Projections

In order to properly forecast travel demand in the horizon year of this MTP update (2045), several population projections were utilized. County-level forecasts are typically most reliable and most readily available, so the process began with a review of projections from the SEMPO 2016-2040 MTP from 1990 through 2040. Based on this information, the 2045 population of Cape Girardeau County was forecasted to be 97,271 with an overall 0.83% annualized population growth rate for the county between 1990 and 2045.

While the overall growth rate for the county was 0.83%, growth in the MPA was sub-allocated to the five major areas based on trend analyses and available planning information from each community. For purposes of the Travel Demand Model, the growth was distributed throughout the major areas according to their individualized growth rate. The following approach was applied to each area:

- The **City of Cape Girardeau** is expected to grow at an annual rate of 0.53%. This follows the general trend of slowly growing suburbs which are already largely developed. The City of Cape Girardeau followed a linear trendline beginning with the initial 1990 population data through the 2045 forecasted population.
- The **City of Jackson** is expected to grow at an annual rate of 1.6% - a significantly higher rate than the City of Cape Girardeau. This reflects a larger amount of growth and available land space with ample opportunities for land development. However, Jackson is less developed and more of a bedroom community than Cape Girardeau. The City of Jackson followed a linear trendline beginning with the initial 1990 population data through the 2045 forecasted population.
- The **Village of East Cape Girardeau** has decreased in population steadily by an annual growth rate of -0.87%. It is also less developed and more of a bedroom community than Cape Girardeau. The Village of East Cape Girardeau followed a linear trendline beginning with the initial 1990 population data through the 2045 forecasted population.
- The **UA** has a forecasted annual growth rate of 0.80%. The UA includes the higher density population within the city limits. It is important to note that the total population of the City of Cape Girardeau, the City of Jackson, and the Village of East Cape Girardeau nearly equals the UA. All three municipalities are within the UA. The remaining population in the UA is located in the

unincorporated portions of Cape Girardeau County, Scott County, and Alexander County in the SEMPO MPA. Like both cities and the village, the UA followed a linear trendline beginning with the initial 1990 population data through the 2045 forecasted population.

- **Cape Girardeau County** has a forecasted annual growth rate of 0.83%. Cape Girardeau County includes the entire population within the county, not just within the MPA boundaries. Cape Girardeau County followed a linear trendline beginning with the initial 1990 population data through the 2045 forecasted population.

The 2016 MTP forecasted population growth using two scenarios: sustained growth and enhanced growth. However, it concluded that the actual growth will most likely resemble the sustained growth scenario. Based on historical data and trends since the adoption of the 2016 MTP, it appears this is still the case. Thus, this MTP update is based on an assumption that the UA will experience sustained growth through the horizon year. **Table 34** shows the population projections using a sustained growth scenario. Additional supporting graphics representing the above trends can be found in **Appendix E**.

Table 37. SEMPO Population Projections - Sustained Growth

Area	Historical		Sustained Growth Projection				
	1990	2000	2010	2020	2030	2040	2045
Cape Girardeau (City)	34,426	35,349	37,941	40,976	42,615	45,172	45,965
Jackson	9,202	11,947	13,758	15,822	18,670	21,470	22,072
East Cape Girardeau	450	437	385	350	333	316	279
UA*	44,783	48,497	52,900	58,063	62,604	68,030	69,323
Cape Girardeau County	61,794	68,693	75,674	81,728	87,449	95,319	97,271

**UA Population for 1990 and 2000 is an estimate.*

Employment Projections

The 2045 employment of Cape Girardeau County was forecasted to be 48,081. When averaged between 2002 and 2020, this results in a 0.81% annualized growth rate for the county, consistent with the projected population growth. The SEMPO growth was sub-allocated to the four major areas based on trend analyses and available planning information. The following forecasting approach was applied to each city:

- The **City of Cape Girardeau** is expected to grow at an annual rate of 0.62%, as its population growth will enable the City to remain steady and become a larger center of employment. The city is mostly developed, but opportunities for land development still exist within its municipal boundaries. The City of Cape Girardeau followed a linear trendline beginning with the initial 2002 employment data through the 2045 forecasted population. Its 2045 employment is projected to be 33,502.
- While the **City of Jackson** has developed extensively in recent years, significant land remains available for commercial development. The City of Jackson followed a linear trendline beginning with the initial 2002 employment data through the 2045 forecasted population. Jackson will remain a small center of employment. However, a steady projected employment at a rate of 1.24% annually is expected, resulting in 9,142 employees in 2045.
- The **UA** has a forecasted annual growth rate of 0.74%. The UA includes the higher density employment within the city limits. It is important to note that the total employment of the City of

Cape Girardeau and the City of Jackson nearly equal the UA. This signifies that the vast majority of the employment within those cities are within the UA. Similarly, the UA followed a linear trendline beginning with the initial 2002 employment data through the 2045 forecasted population. Its 2045 employment is projected to be 42,645.

- **Cape Girardeau County** has a forecasted annual growth rate of 0.81%. Cape Girardeau County includes the entire population within the county. Cape Girardeau County followed a linear trendline beginning with the initial 2002 employment data through the 2045 forecasted population. Its 2045 employment is projected to be 48,081.

The employment projections are shown in **Table 38**. Additional supporting graphics representing the above trends can be found in **Appendix E**.

Table 38. SEMPO Employment Projections - Sustained Growth

Area	Historical			Sustained Growth Projection			
	2002	2007	2012	2020	2030	2040	2045
Cape Girardeau	25,649	29,085	26,031	29,736	30,925	32,780	33,502
Jackson	5,374	5,151	5,891	6,512	7,685	8,837	9,142
UA*	31,023	34,236	31,922	36,248	38,610	41,618	42,645
Cape Girardeau County	34,049	38,058	35,501	40,164	42,975	46,843	48,081

**UA Population for 1990 and 2000 is an estimate.*

Table 39 shows the largest employers in the UA. This information was obtained from the Cape Girardeau Area Chamber of Commerce. The largest employment industries in the area are healthcare, manufacturing, and education. Saint Francis Healthcare Services and SoutheastHEALTH are the two largest employers, with 2,817 and 2,430 employees, respectively.

Table 39. SEMPO Largest Employers

Employer	Industry	Employees
Saint Francis Healthcare Services	Healthcare	2,817
SoutheastHEALTH	Healthcare	2,430
Procter & Gamble Paper Products	Manufacturing	1,200
Southeast Missouri State University	Education	1,107
Cape Girardeau Public Schools	Education	713
Jackson R-2 Schools	Education	479
Century Casino Cape Girardeau	Hospitality/Casino	450
Mondi Jackson, Inc.	Manufacturing	428
City of Cape Girardeau	Government	387

Housing and Commercial Development

Land use decisions directly impact the transportation system. Land use generates vehicle trips, leading to traffic congestion and costly, expansive roadway capacity improvements. By evaluating changes in land use and development, SEMPO can be better prepared to address future needs.

Data indicates that the cities of Cape Girardeau and Jackson have a stable housing market. According to the ACS, the number of residential units in Cape Girardeau increased by 7.4% between 2013 and 2018, while the number of residential units in Jackson increased by less than 1%. This increase in units means more options for homebuyers but coincides with an increase in vacant units (4.2% in Cape Girardeau and 1.1% in Jackson). Vacancies were concentrated in rental properties, as both communities saw a decline in owner-occupied vacancies during the same time period. Further analysis indicated that the diversity of housing choices in the region continues to grow. In both cities, the percentage of multifamily structures increased. Of note, the City of Jackson reported over 4% increase in the number of 3- or 4-unit structures. The higher proportion of multifamily units is encouraging for proponents of mixed-use, walkable development.

Commercial retail has significantly evolved since the 2016 MTP. There has been a substantial change as in-person shopping at brick-and-mortar stores evolves toward e-commerce. The number of store closures that occurred nationally from 2017-2019, totaling more than 23,000, far outpaced the number of store closures that took place during the Great Recession. For comparison, national closings from 2007-2009 only topped 13,000. E-commerce, which now accounts for 11.2% of total retail sales, continues to drive many of these shifts in the marketplace. As fewer new commercial buildings are used to accommodate retail, many are seeing additional demand for distribution and warehousing space. The transportation system likewise must evolve to accommodate these changes in consumer preferences. The competing demands for curb space are increasing between rideshare drop-offs, parking, loading and unloading, curbside dining, and more. Coordinated land use and transportation considerations must be made to accommodate larger numbers of delivery vehicles, new autonomous technologies, and competing demands for curb space.⁵⁴

Existing Zoning

The maps in **Figure 21** and **Figure 22**, with information provided by the City of Cape Girardeau and the City of Jackson, show the existing zoning for the cities of Cape Girardeau and Jackson, serving as an approximation of current land use patterns. As expected, the major commercial and industrial areas are located along major transportation corridors. Cape Girardeau County does not have zoning regulations at this time.

⁵⁴ <https://fred.stlouisfed.org/>

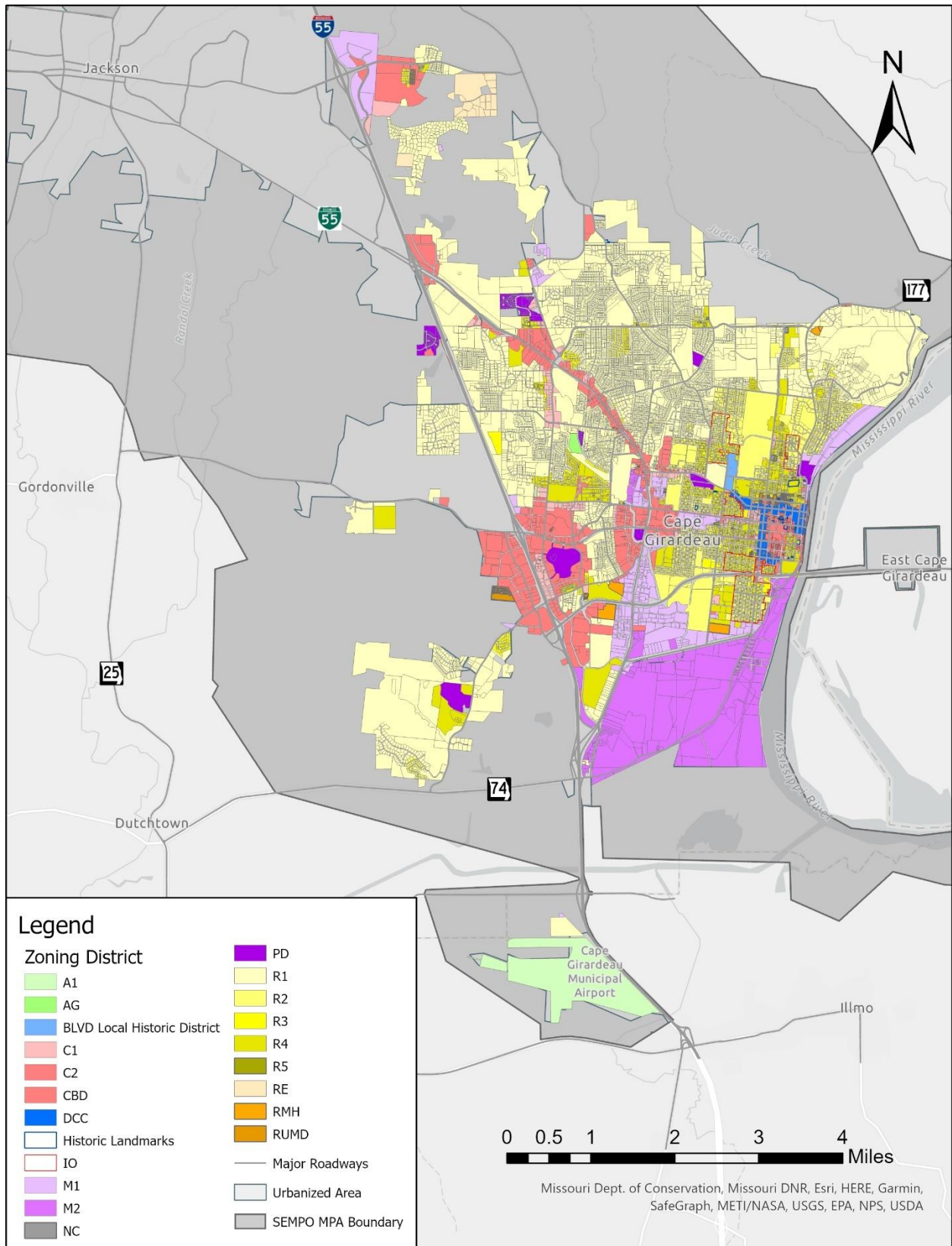


Figure 21. City of Cape Girardeau Zoning

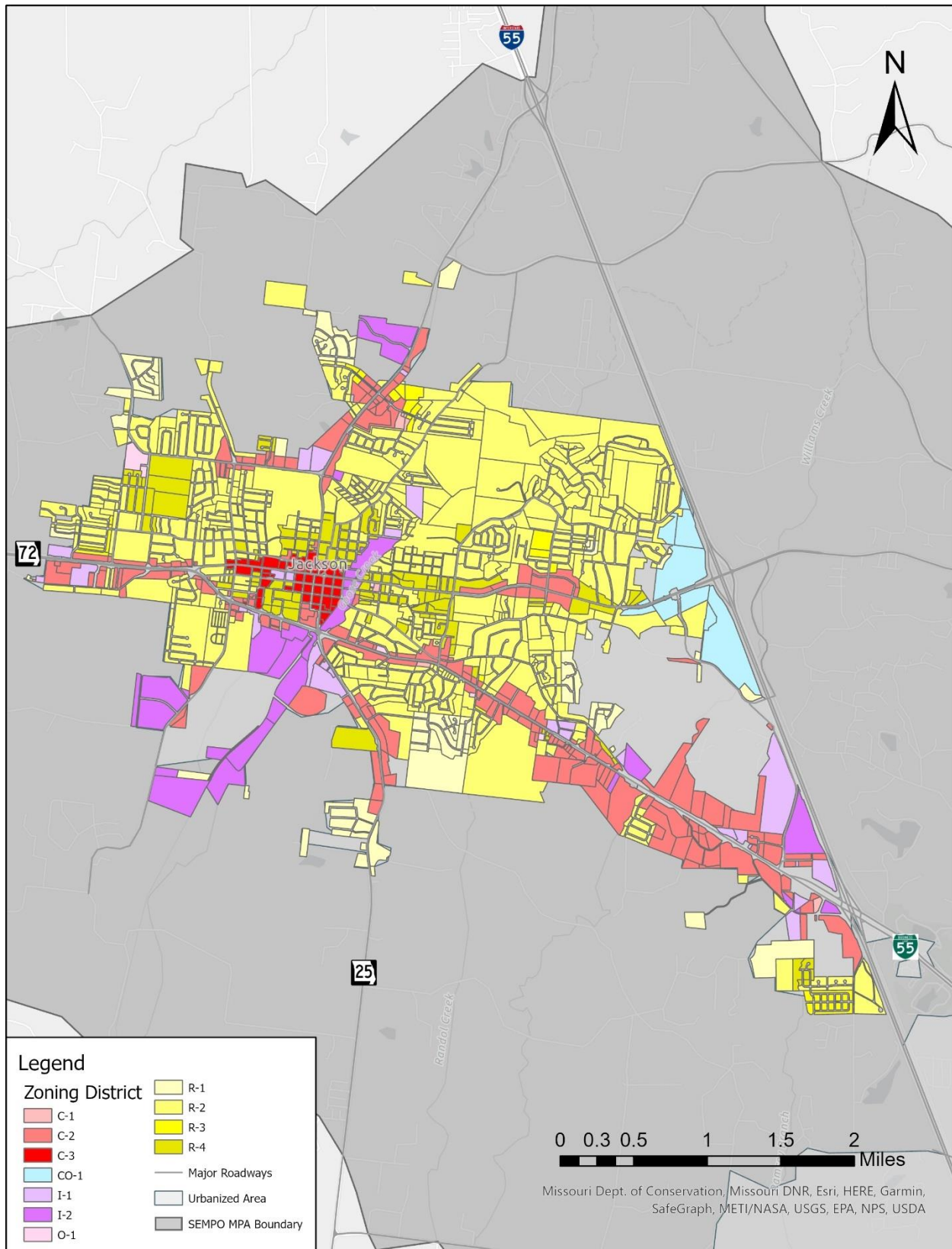


Figure 22. City of Jackson Zoning

Future Land Use

In order to forecast future transportation needs, it is important to understand how land use and development are expected to change in the future. The City of Cape Girardeau and the City of Jackson, as part of their long-range planning efforts, have each adopted a comprehensive plan that includes a map showing how properties should be used and developed in the future. Because a vast majority of development in the MPA occurs in these two cities, these maps provide valuable insight as to what the UA may look like in the future.

City of Cape Girardeau

The Cape Vision 2040 Comprehensive Plan's Future Land Use Map (**Figure 23**) shows the City's Retrofit and Redevelopment approach to growth and development. This strategy supports mixed uses in the downtown district while providing for innovative, mixed use development in strategic locations in the suburban areas. Unlike previous planning efforts which favored expansion of development in the rural fringes, the Retrofit and Redevelopment principles support limiting expansion, particularly in the western direction.

The Cape Vision 2040 Comprehensive Plan recommends that the community focus on the following areas:

- West of Interstate 55
- Kingshighway Corridor
- West Park Mall
- Older Neighborhoods
- Downtown

According to the plan, these areas have the potential to produce a major positive or negative effect on the City's well-being in the future. Proactive planning for these areas can be the impetus for positive changes.

City of Jackson

The City of Jackson Comprehensive Plan builds upon the existing land use patterns of the City, while striving to reinforce and strengthen the traditional character of the community and support economic development. The land use plan also protects and preserves the City's parks and open space system along with its high-quality environmental features.

The plan recommends that new growth in Jackson be focused on the vacant and agricultural land that currently surrounds existing development within the City's current municipal limits. Although most growth will be "green field" type development, redevelopment of older, marginal properties within the Uptown area could occur. Near term residential development should occur within this growth area due to its proximity to existing development and adjacency to existing infrastructure. The City of Jackson Comprehensive Plan's Future Land Use Map is shown in **Figure 24**.

To plan for future development outside the current municipal boundary, the plan includes another map, the Growth Strategies Map, which identifies three types of growth as shown in **Figure 25**. These designations include Primary Growth Areas, Secondary Growth Areas, and Long-Term Growth Areas.

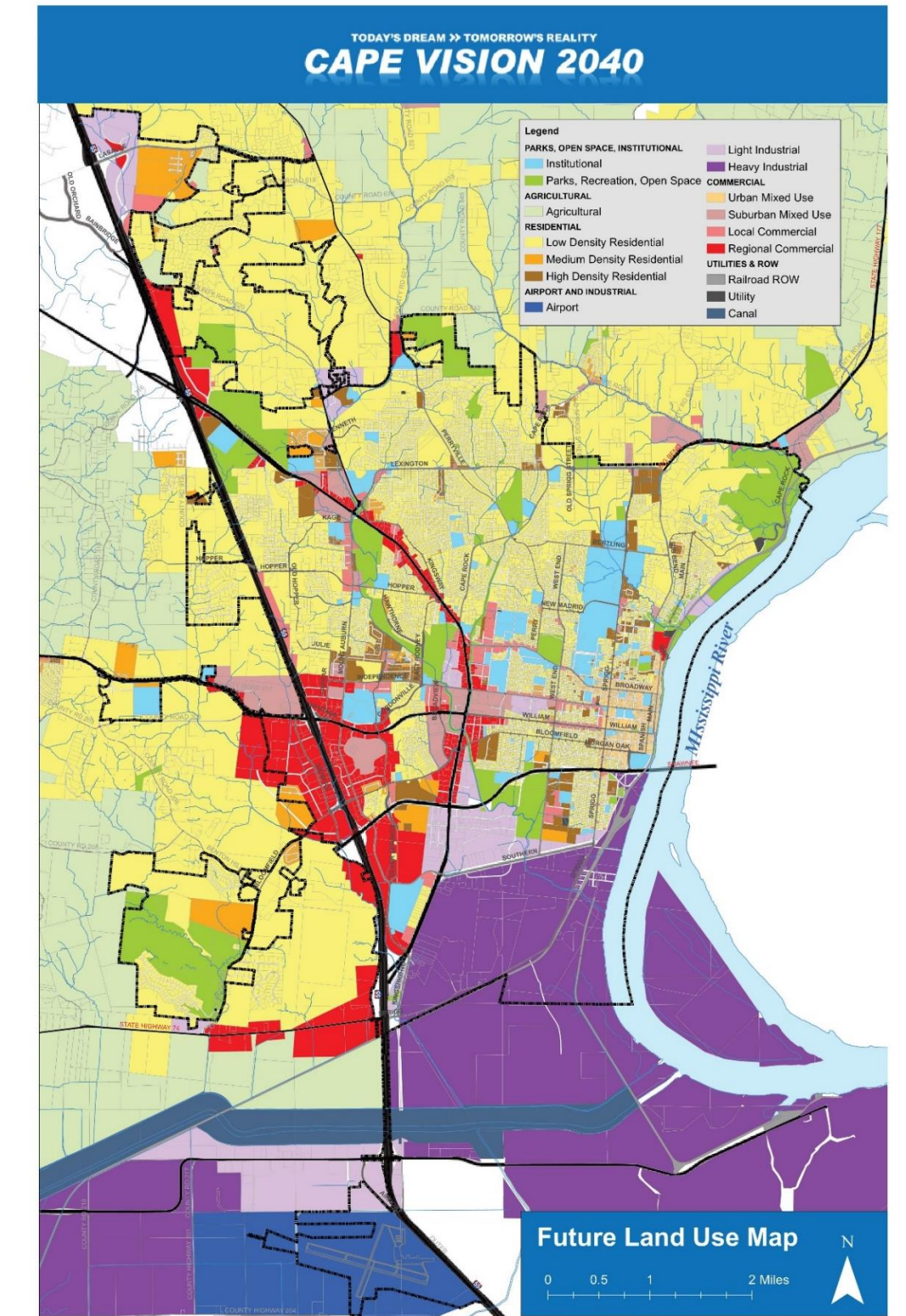
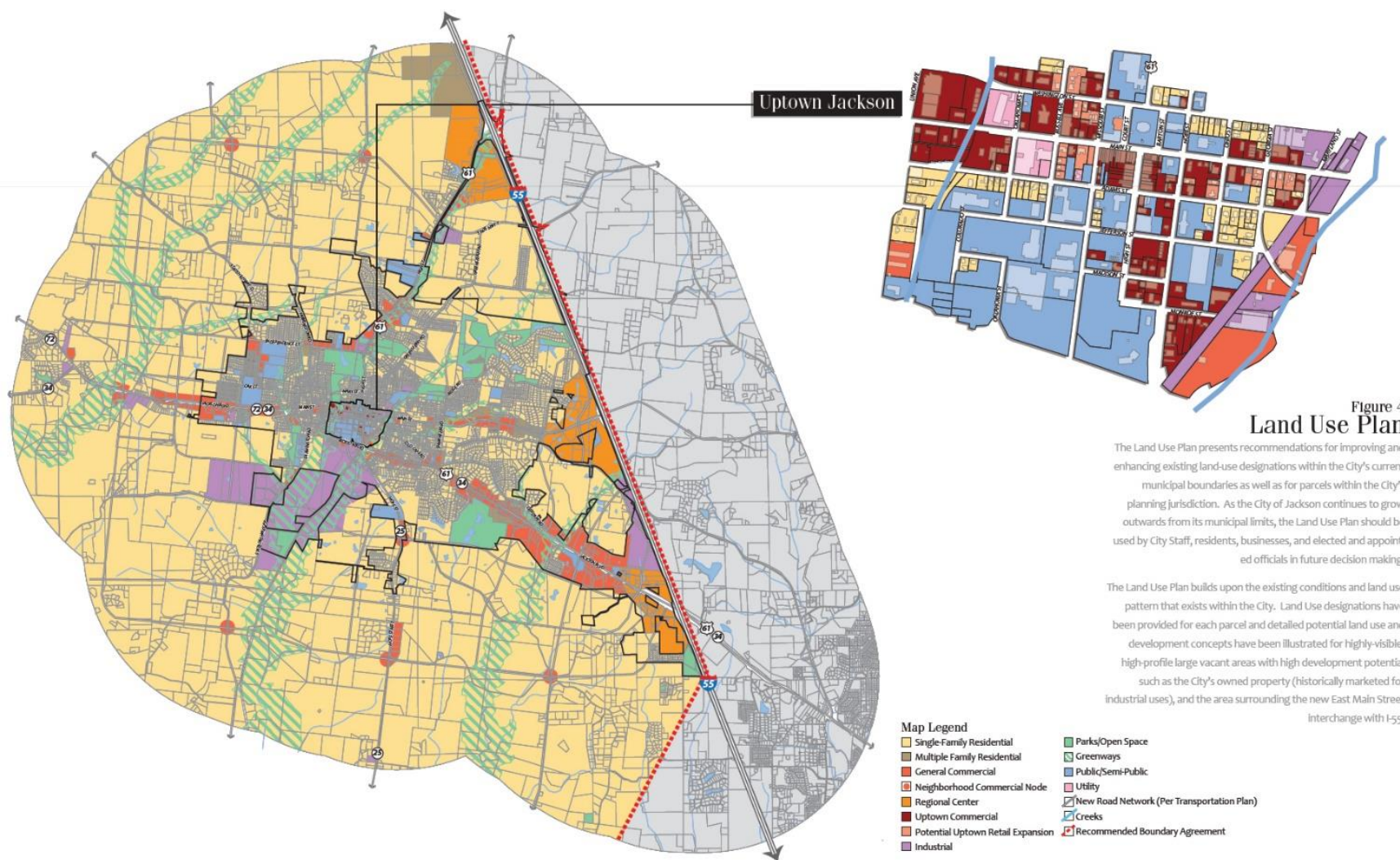


Figure 23. City of Cape Girardeau Future Land Use Map⁵⁵

⁵⁵ https://capevision2040.files.wordpress.com/2020/07/final-comprehensive-plan_07.24.20_low.pdf



City of Jackson Comprehensive Plan
prepared by Housecall Lavigne Associates

Figure 24. City of Jackson Future Land Use Map⁵⁶

⁵⁶ <http://www.jacksonmo.org/FileStream.aspx?FileID=193>

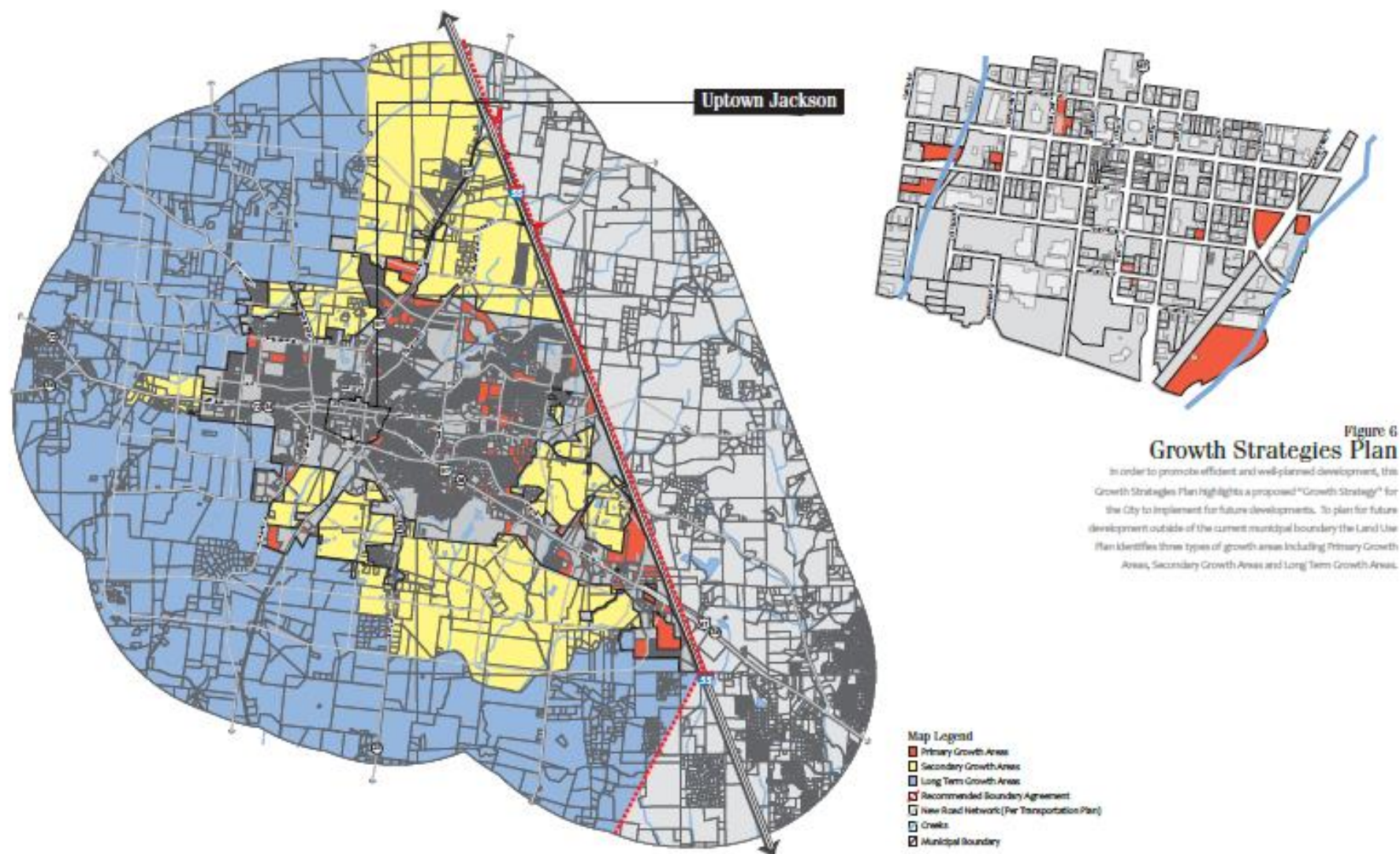


Figure 25. City of Jackson Growth Strategies Map

Additional Factors

In addition to those already discussed, there are other factors affecting transportation in the future. These include environmental goals (such as reducing carbon emissions and achieving a balance between conventional and alternative modes of transportation) and innovations in development, business, and technology. While such factors cannot be modeled for the purposes of this MTP update, they should be considered to the extent possible when planning and programming for transportation.

Emerging Transportation Trends

Several emerging trends and technologies are beginning to affect transportation in Southeast Missouri and throughout the country. These trends can influence the demand for travel, travel patterns, mode choice, and route selection. SEMPO is committed to understanding these trends and staying abreast of how transportation decisions and investments can adapt.

Though some of the technologies may not be seen in Southeast Missouri for a number of years, it is important to follow the development and the possible impact to and opportunity for the SEMPO region. Trends that may affect Southeast Missouri in the future include: a shift from driving everywhere to more walking or cycling; increased demand for on-demand and rideshare services; increased demand for delivery services; increased demand for senior citizen support services; and integration of transportation systems with smartphone. These trends, along with a desire for safety, efficiency, and environmental protection, have resulted in evolving technologies such as smart cars, autonomous vehicles, Mobility as a Service (Maas), delivery drones, connected vehicle (vehicle to vehicle or infrastructure) technology, high speed rail and more⁵⁷.

⁵⁷ <https://cerasis.com/transportation-technologies/>

Section 6: Travel Demand Model and Scenario Analysis

Overview

The Federal Government, under 23 CFR § 450.306, requires that the development of an MPO's MTP take a performance-driven, outcome-based approach to its long-term planning recommendations. To achieve this, SEMPO decided to invest in the development of a TDM for the region to assist community leaders by allowing them to make decisions based on results from a data-driven process. This TDM can be used in the coming years to assist decision-makers in making well-informed decisions regarding the region's future transportation investments. This section describes the development of the TDM and the alternatives presented in this MTP update.

Travel Demand Model Development

A TDM is an essential transportation planning tool for evaluating system performance through the detailed analysis of travel supply (e.g., roadways) and demand (trips). For an MPO, a TDM can provide answers to important long-range transportation planning questions, such as:

- What will be the projected traffic volumes on regionally important roadways for the horizon year?
- What will be the trends in regional Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT)?
- How will new roadways or major developments impact future travel patterns?
- What will be the transportation system deficiencies in the future?

A major task in preparing this MTP update was to develop a TDM for the MPA. The project team developed, calibrated, and validated a three-step TDM. A three-step TDM is an abbreviated version of the widely used traditional four-step TDM. The three-step version is appropriate for small MPOs like SEMPO because the fourth step involves alternate modes of transportation, which typically have a negligible impact on the region's travel demand.

The TDM covers an area larger than the MPA. This was done intentionally in order to include major regional facilities falling outside the MPA, such as the Procter & Gamble production facility, which have an impact on trip attractions and distributions within the network.

The TDM can be used in future years to evaluate any major transportation infrastructure decisions. It proactively addresses anticipated issues due to traffic growth.

Socioeconomic Data

Socioeconomic data (e.g., population, households, employments) for the TDM was obtained from the US Census Bureau's latest American Community Survey (ACS) 5-Year Data (2015-2019) and Longitudinal Employer-Household Dynamics (LEHD) data.

Traffic Analysis Zones (TAZs) are basic spatial units of analysis to help transportation planners tabulate traffic related data, such as changes in commuting patterns, trip volumes, and modes of transportation. When each zone is created, it typically represents no more than 3,000 people. For the SEMPO TMD, socioeconomic data for the TAZs was aggregated to the census block level. TAZs were developed by carefully evaluating the regional land uses, roadway network, and natural barriers, and political boundaries (e.g., county, city boundaries). The TDM contains 215 TAZs and 15 External Stations. **Figure 26** shows the TAZs.

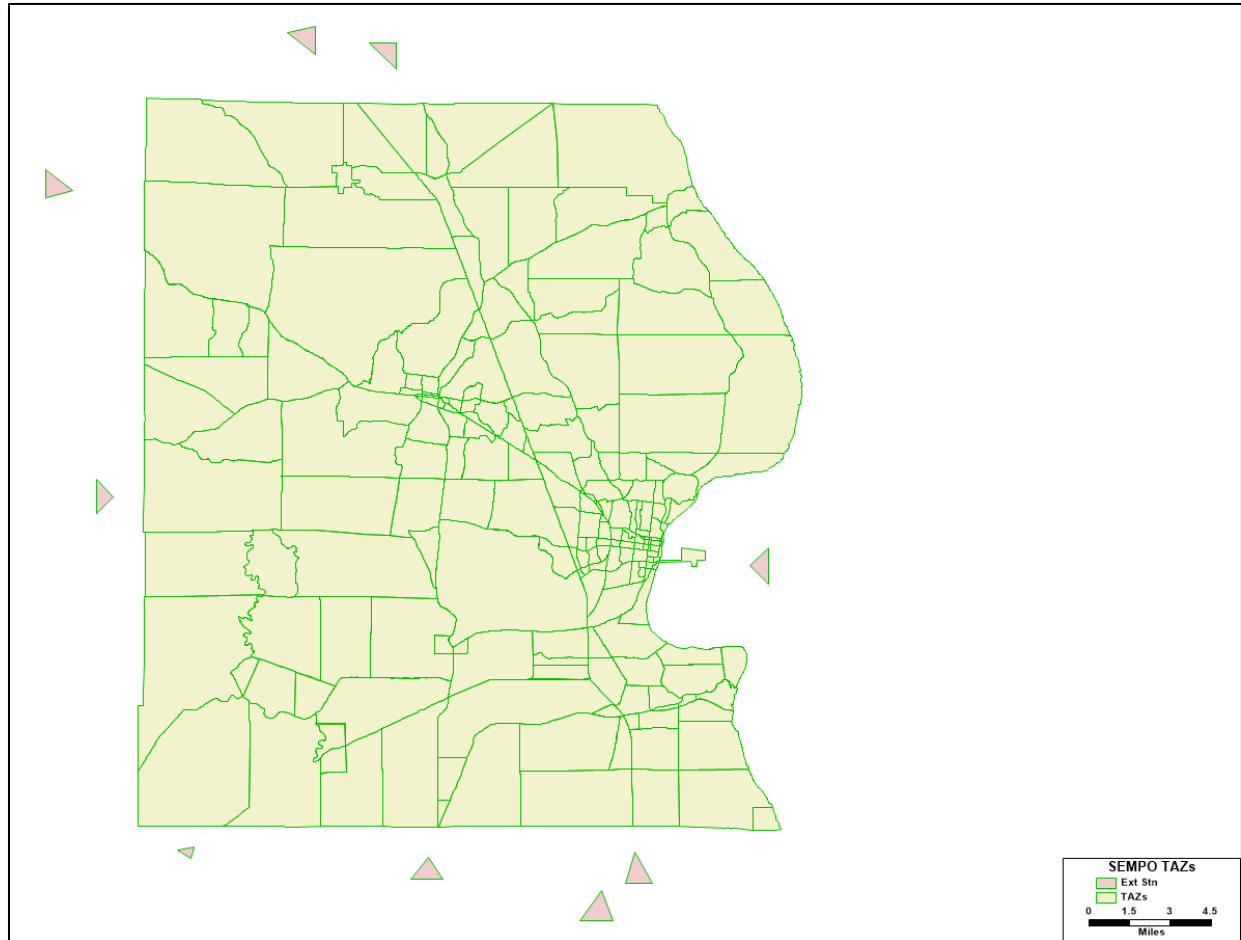


Figure 26. SEMPO TAZs

Roadway Network

The TDM roadway network was developed by utilizing roadway network shapefiles obtained from Cape Girardeau County and SEMPO. Local roads in the TDM are represented by centroid connectors. Centroid connectors are network links that connects TAZ centroids, where the trip generation info is housed for the surrounding land uses, to the actual roadways in the network, similar to a driveway connecting a building to the road network. **Figure 27** shows the TDM roadway network.

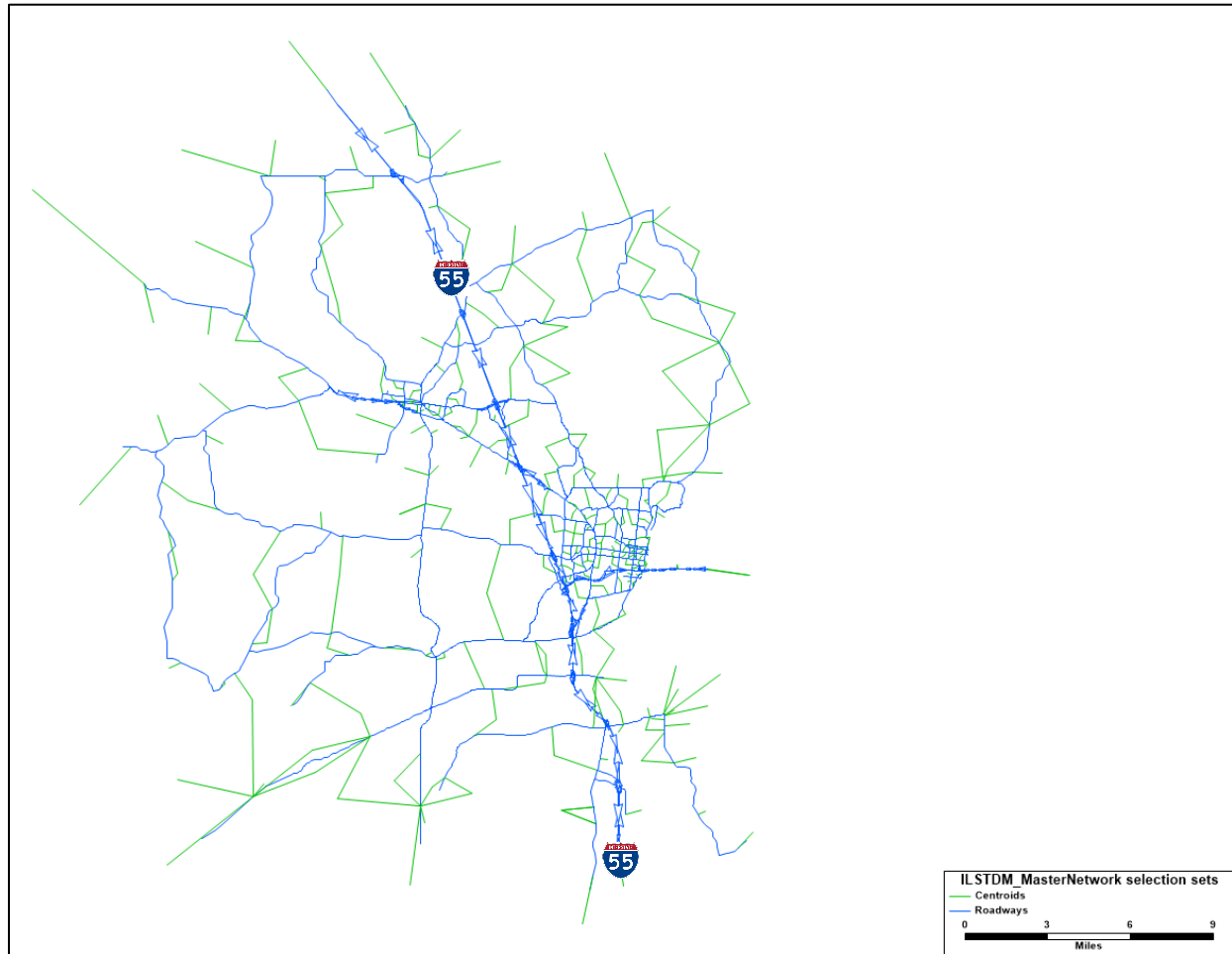


Figure 27. SEMPO TDM Roadway Network

TDM Steps

The following three steps were used for the TDM:

1. Trip Generation – how many trips will be made
2. Trip Distribution – where those trips will go
3. Traffic Assignment – which routes those trips will take

Trip Generation

The Trip Generation step utilized two sets of models: productions and attractions. Both models estimated trips for each TAZ for the following three trip purposes:

- Home-Based Work (HBW)
- Home-Based Other (HBO)
- Non-Home Based (NHB)

Production and attraction trips for each TAZ were estimated utilizing the regression equations based on the *National Cooperative Highway Research Program (NCHRP) Report 365: Travel Estimation Techniques for Urban Planning*.

Trip Distribution

The Trip Distribution step utilized what is known as a doubly-constrained gravity model, as shown in **Figure 28**. Inputs included productions and attractions along with an impedance matrix reflecting travel times between each pair of TAZs. Friction factors representing other influences on trip destinations (beyond travel times) served as a distribution scaling parameter. Friction factors for each pair of TAZs were obtained using a gamma function. This resulted in origin-destination trip flows.

$$T_{ij} = P_i \cdot \frac{A_j \cdot f(d_{ij})}{\sum_{\text{all zones } z} A_z \cdot f(d_{iz})} \quad (\text{constrained to productions})$$

$$T_{ij} = A_j \cdot \frac{P_i \cdot f(d_{ij})}{\sum_{\text{all zones } z} P_z \cdot f(d_{zj})} \quad (\text{constrained to attractions})$$

where:

- T_{ij} = the forecast flow produced by zone i and attracted to zone j
- P_i = the forecast number of trips produced by zone i
- A_i = the forecast number of trips attracted to zone j
- d_{ij} = the impedance between zone i and zone j
- $f(d_{ij})$ = the friction factor between zone i and zone j

Figure 28. Gravity Model Formulation

Traffic Assignment

The Traffic Assignment step converted the origin-destination person trips from trip distribution into vehicular trips using average vehicle occupancy rates from *NCHRP Report 716: Travel Demand Forecasting Parameters and Techniques*. The assignment of daily trips to the network was based on a User Equilibrium (UE) assignment using the n-conjugate descent Frank-Wolfe method in TransCAD.

Once completed, the model went through a validation process, comparing base year outputs (in this case, 2019) from the model with known historical traffic counts to ensure trips were appropriately being assigned.

The TDM steps and inputs are shown graphically in **Figure 29**.

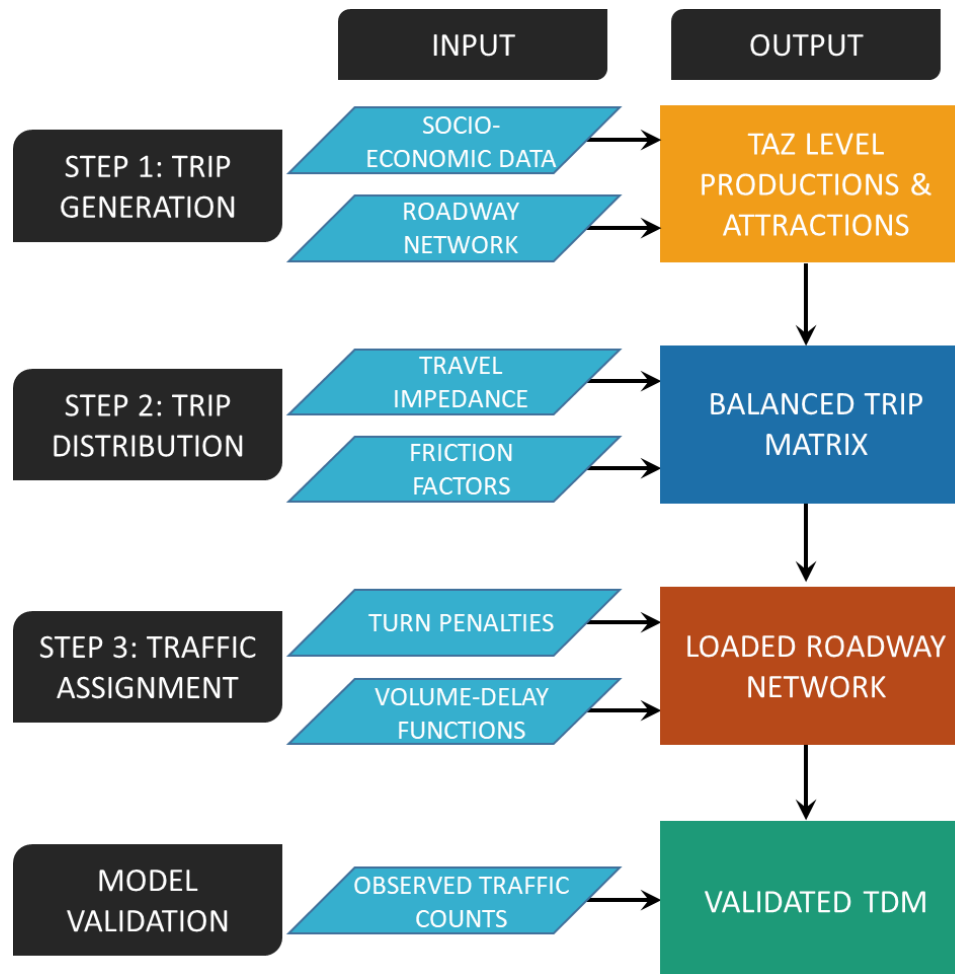


Figure 29. SEMPO TDM Steps and Inputs

Once validated, the model was ran to produce the Baseline 2018 LOS results presented previously in **Figure 8**. After the baseline model was established, the TDM was ready to be adjusted in order to analyze future scenarios. **Appendix E** contains a detailed technical document for the TDM.

Scenarios

Growth Assignments

The original MTP traffic projections were based on two growth scenarios. The first scenario, sustained growth, assumed a gradual and steady growth pattern for the MPA over the planning period. The second scenario, enhanced growth, assumed a more aggressive growth pattern. The original MTP concluded that the sustained growth scenario was more likely to occur. This appears to be supported by historical data and trends.

In addition to reviewing historical data and trends, this MTP update also involved a review of the Cape Girardeau and Jackson comprehensive plans. The Cape Girardeau comprehensive plan, Cape Vision 2040, identified three approaches to planning for the future growth and development of the city. Two of these approaches were used to develop the scenarios for this MTP update's TDM. The scenarios/approaches are described below.

SCENARIO 1: CONVENTIONAL APPROACH

This approach continues the current development patterns and emphasizes development in the less-developed areas of the city, mostly near the fringes. It perpetuates auto-dependent sprawl development patterns, requiring heavy infrastructure investments to maintain an expanding system.

SCENARIO 2: RETROFIT AND REDEVELOPMENT APPROACH

This approach emphasizes infill development and redevelopment of older areas, including retrofitting existing conventional developments. It relies heavily on development incentives and upgrading existing infrastructure.

Section 5 described the anticipated overall population and employment growth within the MPA. The population and employment growth percentages presented previously were applied to the MPA for each of the above scenarios. The distribution of growth was based on the Cape Girardeau and Jackson comprehensive plans and other reference documents, such as the Jackson Citywide Transportation Plan (2018). The resulting distribution of growth for the scenarios, as applied in to the TDM, are shown in **Figure 30, Figure 31, Figure 32, and Figure 33.**

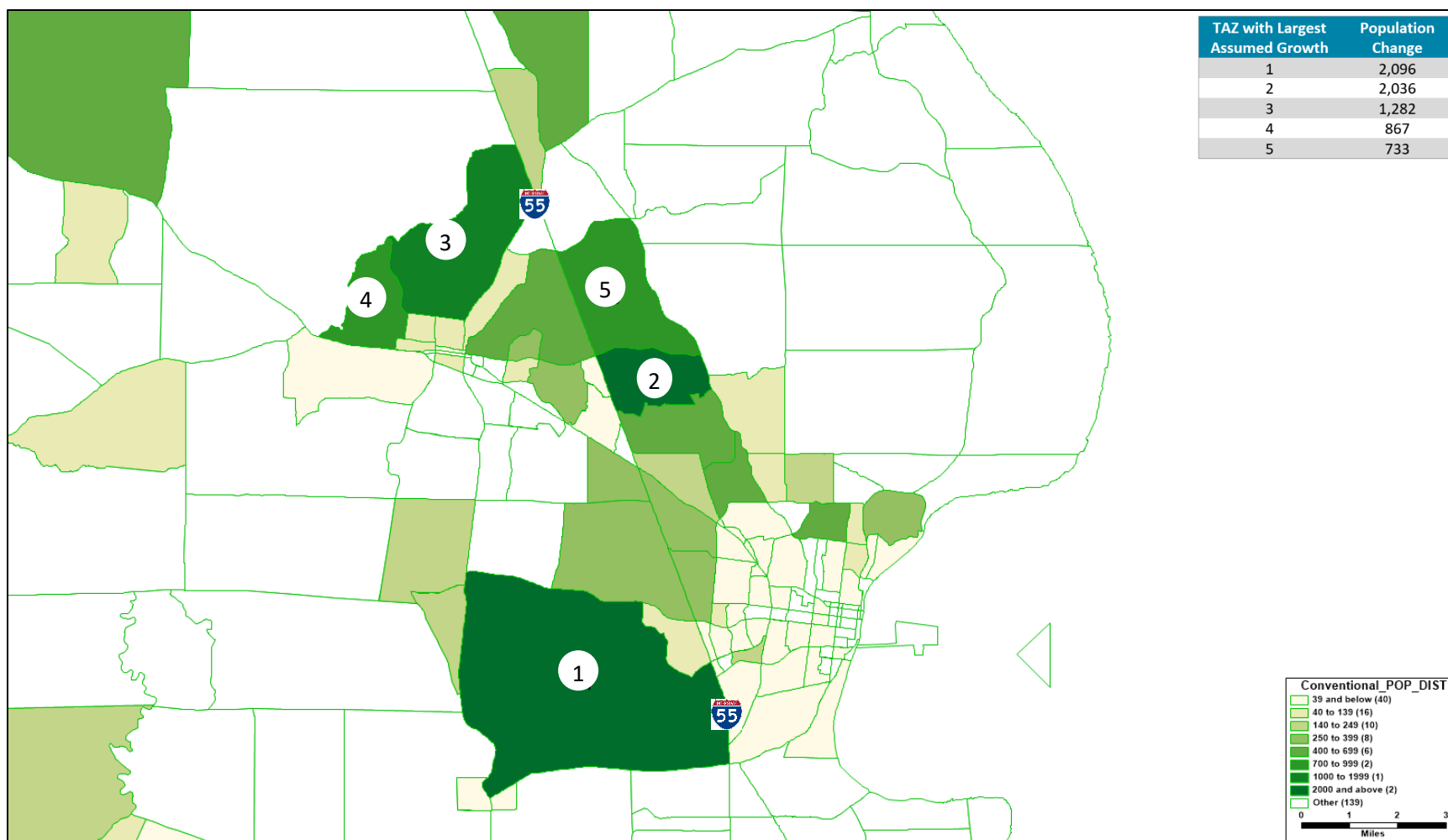


Figure 30. Conventional Distribution of Growth for Population

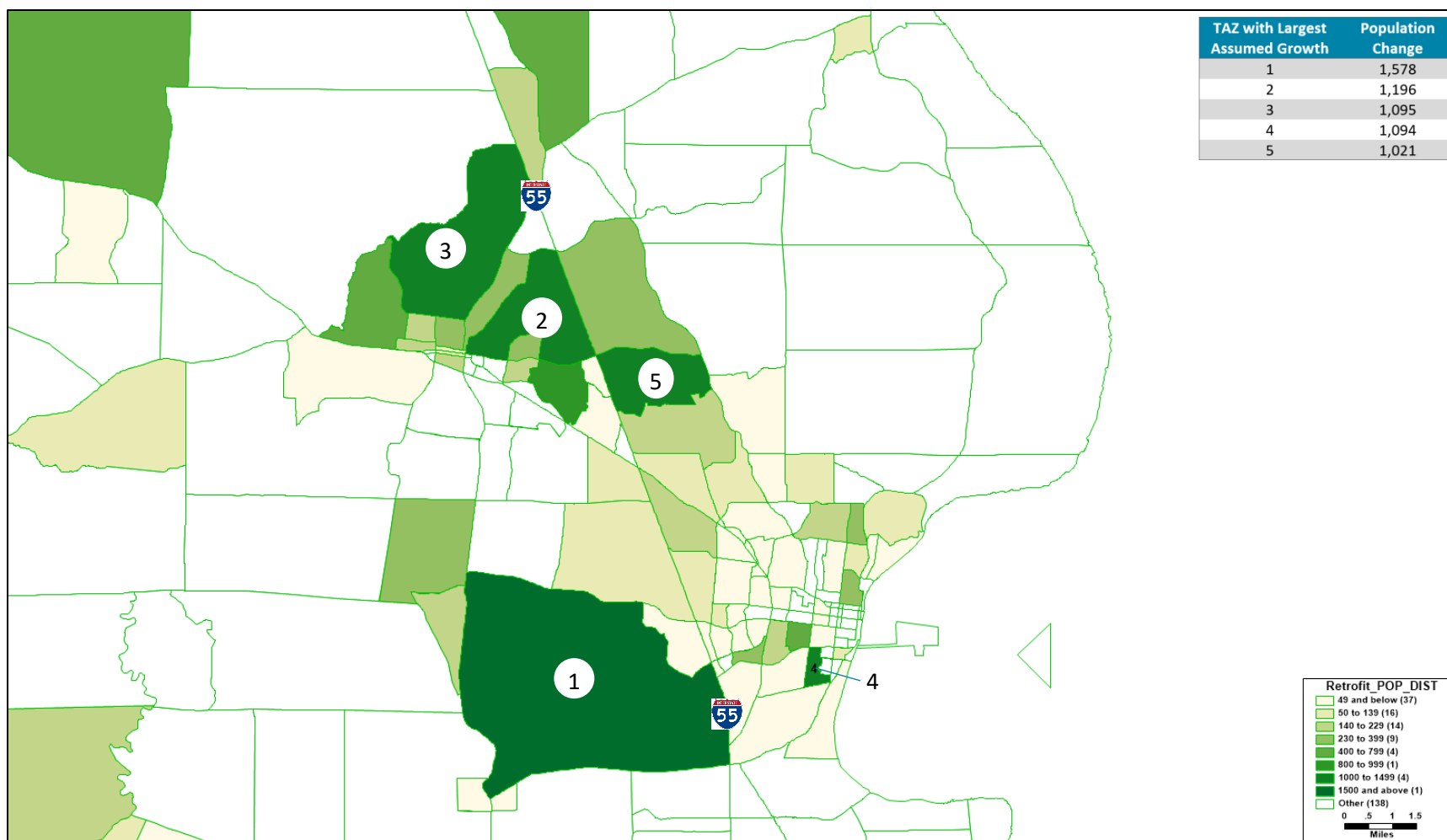


Figure 31. Retrofit and Redevelopment Distribution of Growth for Population

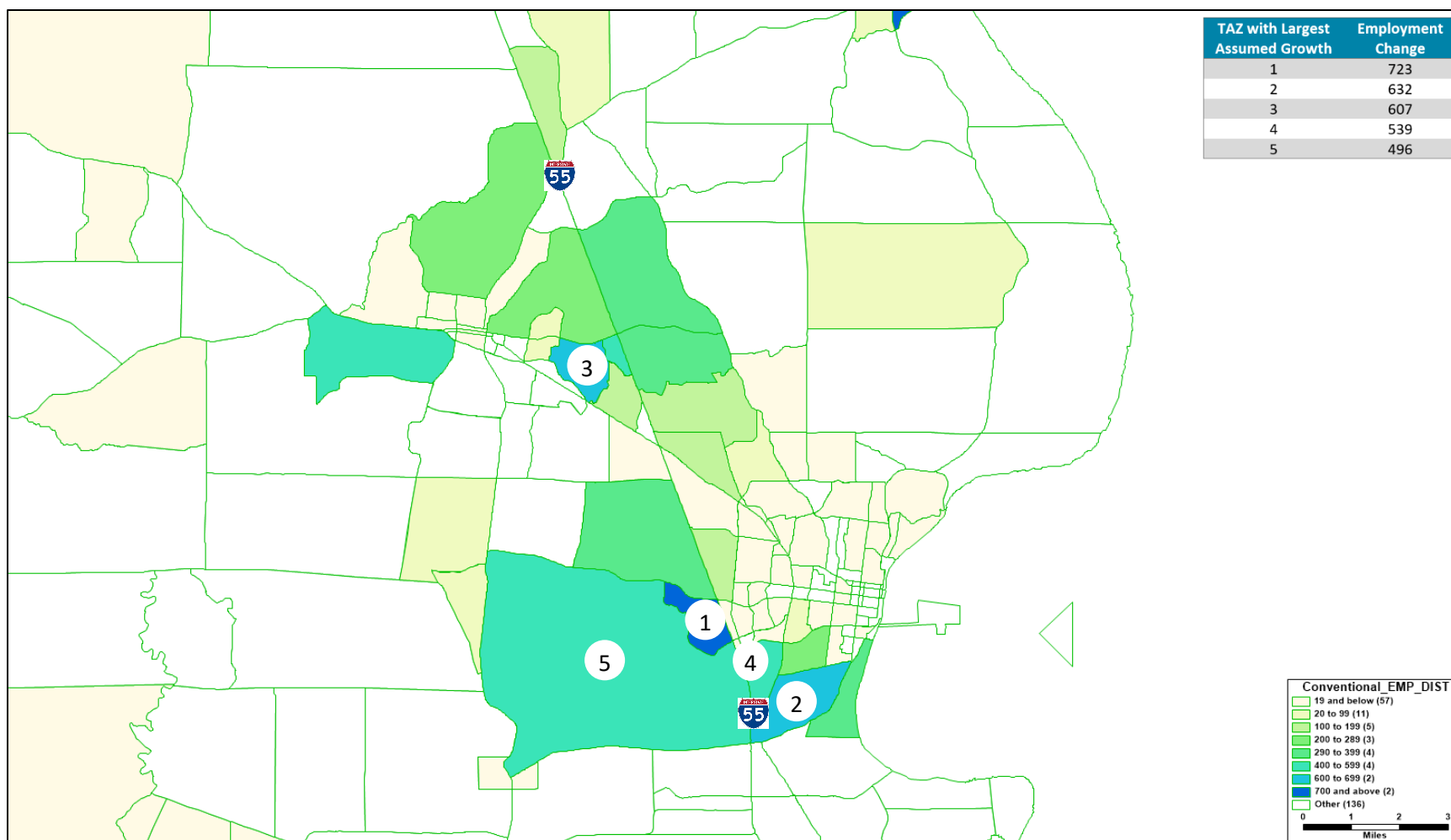


Figure 32. Conventional Distribution of Growth for Employment

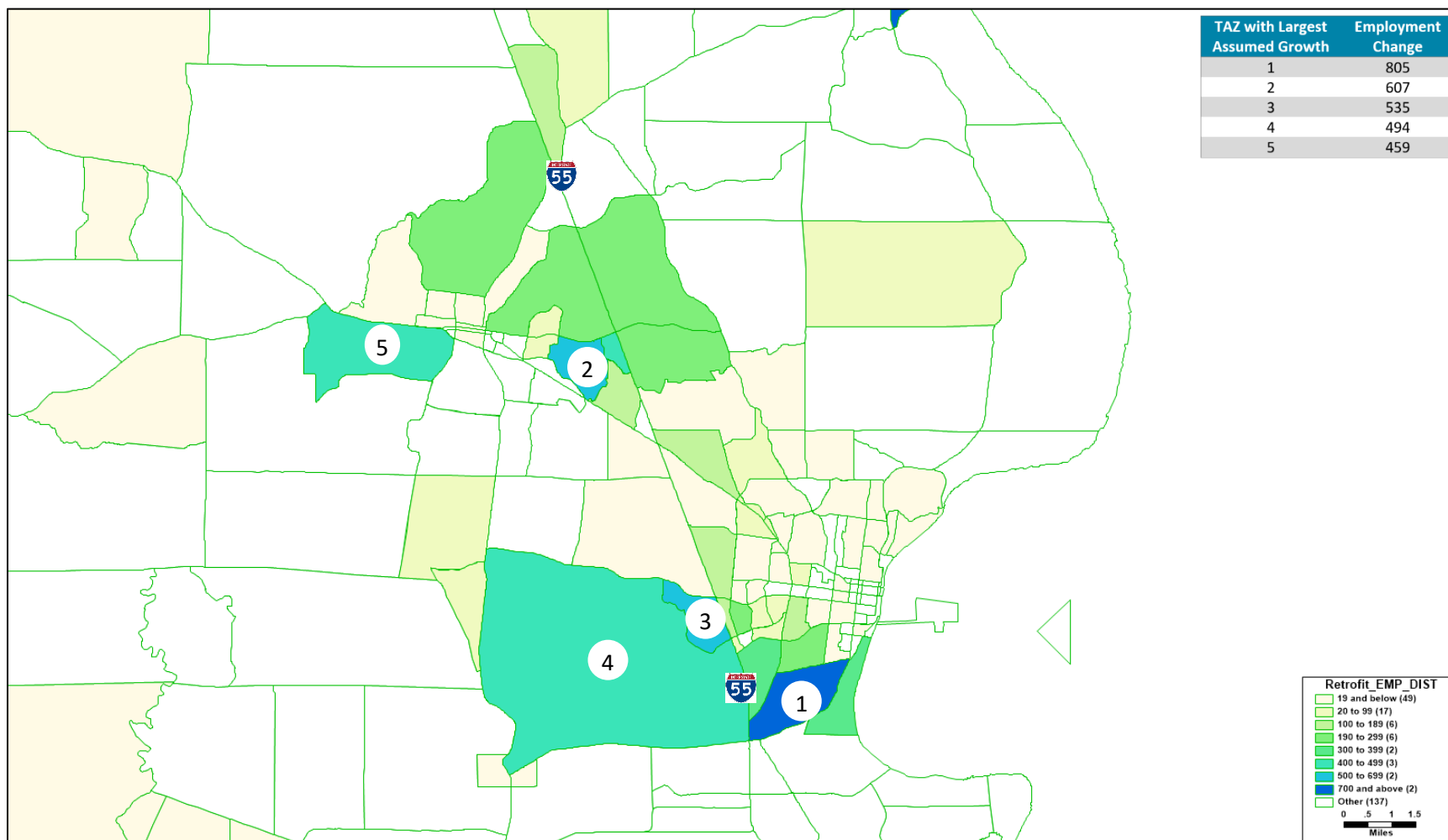


Figure 33. Retrofit and Redevelopment Distribution of Growth for Employment

Network Assumptions

The TDM was based on certain assumptions, such as the assumption that population and employment growth will be sustained (steady) rather than enhanced (accelerated). In addition, a network assumption was made. The assumption was that fiscally constrained roadway capacity enhancement projects and new roadway projects not yet implemented will, in fact, be implemented by the horizon year (2045). These projects were identified by SEMPO and were included in the TDM. Other types of roadway projects, such as those not increasing capacity or not fiscally constrained, were not included.

Analysis

The growth and network assumptions were input into the TDM, and the two scenarios were run in the model. The resulting increase in daily traffic volume is presented in **Figure 34**.

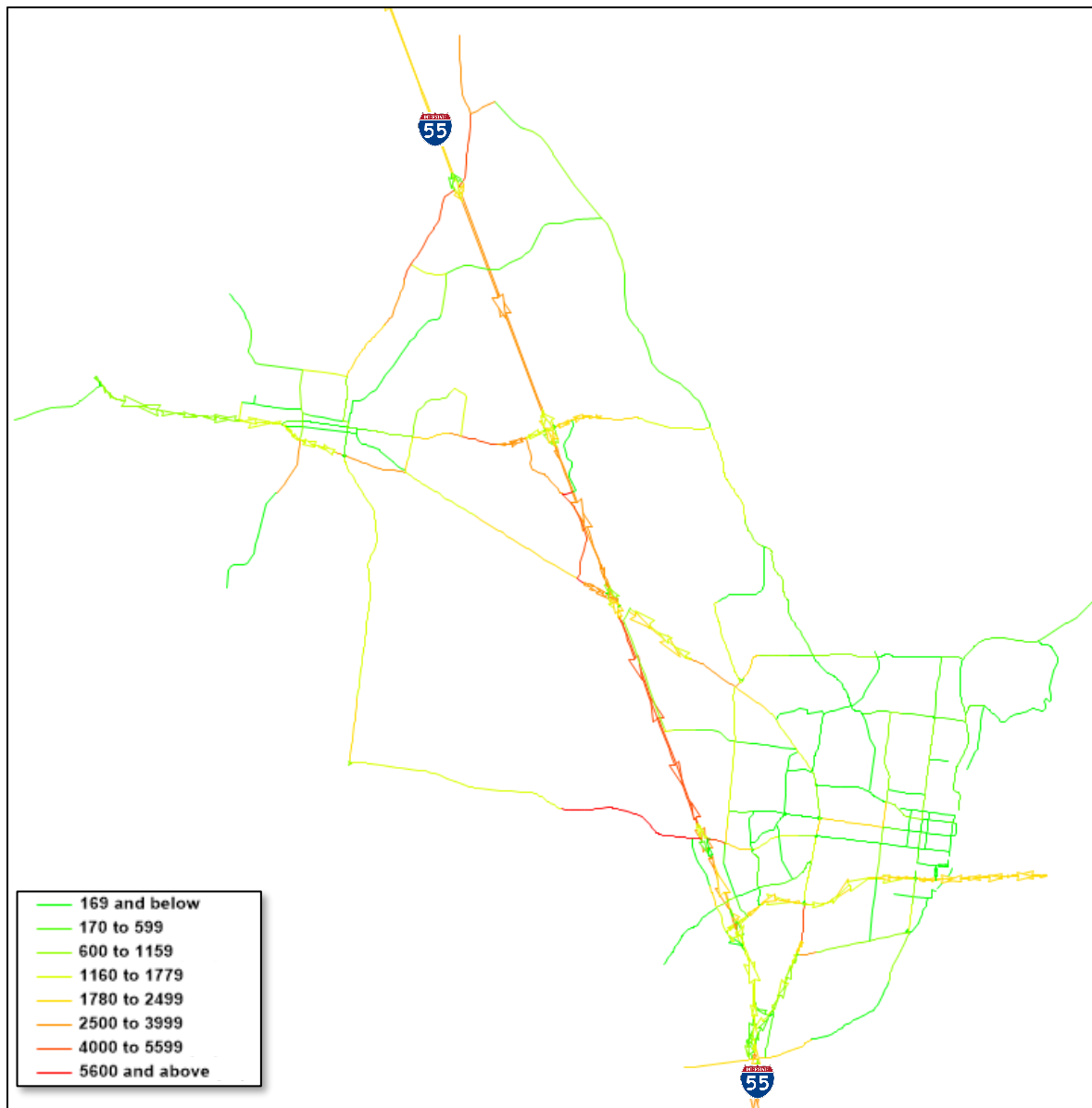


Figure 34. Incremental Daily Traffic Volume Increase (2018-2045)

The results of the TDM scenario analysis reveal that in either scenario, there is an expected 26-28% increase in VMT on regionally significant roads in 2045 compared to the 2018 baseline, which translates to a 33-35% increase in VHT. On a per household basis, this equates to a 4-6% increase in VMT/HH and a 9-12% increase in VHT/HH. **Table 40** presents the results of the two growth scenarios as they compare to the Baseline 2018 condition.

Table 40. TDM Performance Results

Scenario	Daily VMT	Daily VHT	VMT/HH	VHT/HH
Base (2018)	1,143,957	23,402	41.72	0.85
Conventional (Current Trend) (2045)	1,462,877	31,434	44.26	0.95
Retrofit/Redevelopment (2045)	1,448,478	31,059	43.40	0.93

Comparing the two scenarios, the retrofit and redevelopment growth approach showed only nominally improved operational performance over the conventional growth approach.

As discussed in Section 4, Levels of Service (LOS) are used to quantify the performance of the regional transportation system. The performance of the regional transportation system is quantified by LOS, which are measures of traffic flow that consider factors such as speed, delay, interruptions, safety, and driver comfort and convenience. There are six levels of service ranging from LOS A (“free flow”) to LOS F (“oversaturated”). LOS C represents a roadway with volumes ranging from 70 percent to 80 percent of its capacity and is typically what is deemed acceptable in rural areas. In urban and suburban areas, drivers are typically accustomed to longer delays during peak hours. In these areas, LOS D or better is typically be considered acceptable.

The resulting LOS graphic showing future traffic operational conditions on the transportation network due to 2045 projected traffic volumes is presented in **Figure 35**, along with the total number of roadway segments that are anticipated to have that LOS rating. Both scenarios presented with similar, if not same, LOS results. This is not surprising considering the nominal increases shown in **Table 40**.

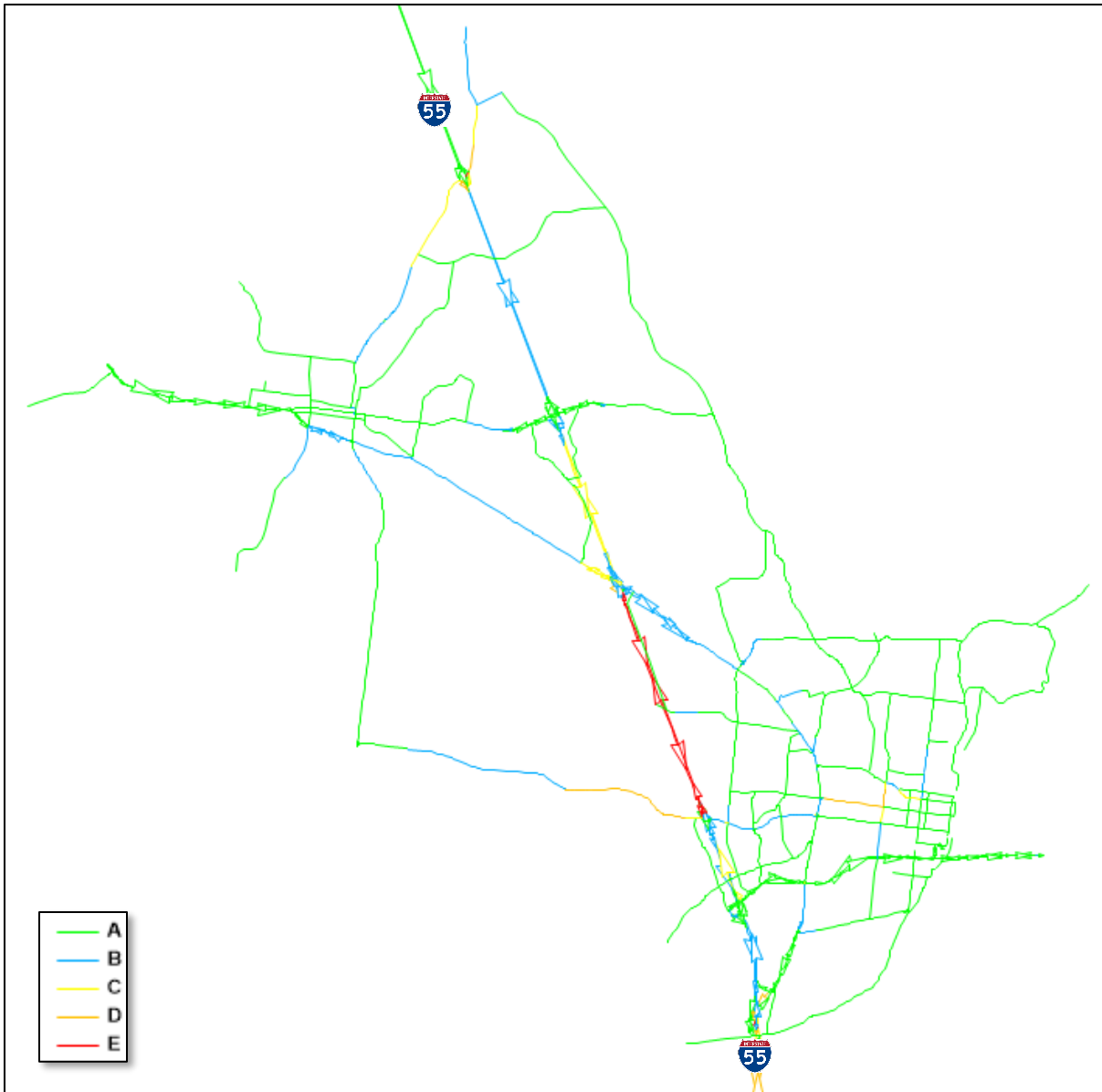


Figure 35. 2045 Levels of Service

As shown in the previous figure, I-55 would be operating near capacity between Shawnee Parkway and Exit 99 (US 61) within the MPA. A list of road segments nearing capacity is presented in **Table 41**.

Table 41. Road Segments with LOS D, E, or F (2045)

Road	From	To	LOS
US 61	I-55	0.5 miles north of I-55	D
State Highway K	I-55	2 miles west of I-55	D
Independence Street	N Kingshighway	Northwest Westend Boulevard	D
Northwest Westend Boulevard	Broadway Street	Independence Street	D
I-55	State Highway 74	0.75 mile south of State Highway 74	D
I-55	State Highway K	N Kingshighway	E

Findings

In reviewing the results of the TDM scenario analysis, the following findings were made:

- I-55 will be at or near capacity in 2045. This underscores the importance of the interstate to the region as well as the need to improve traffic flow through a combination of capacity expansion (such as additional lanes) and alternate routes (such as outer roads).
- Certain sections of Route K and Independence Street in Cape Girardeau will experience capacity issues in 2045. The City of Cape Girardeau, as part of Transportation Trust Fund 5, will be making capacity enhancements to the section of Independence Street between North Broadway Street and Caruthers Avenue. While this project will increase capacity and traffic flow on this section, efforts should also be made to reduce the through traffic on Independence Street.
- Sections of US 61 immediately east and west of the I-55 interchange at Exit 105, will be at or near capacity in 2045. These roads primarily serve the Jackson area and continue to experience increased traffic as the city's population and employment bases grow.
- Downtown Cape Girardeau will experience capacity issues in 2045. The ability to expand capacity in this area is severely limited, so it is critical that other measures be taken to reduce traffic, such as bicycle and pedestrian improvements and the promotion of alternative modes of transportation (walking, biking, transit, etc.).
- Generally, crashes become more frequent as traffic volumes increase. Road sections shown by the model to have high traffic increases should be prioritized for safety enhancements.
- There are nominal differences in VMT and VHT between the two scenarios. SEMPO members can be assured that identified transportation improvements are needed in general and are not dependent on a specific growth trend. SEMPO should continue to address capacity issues in its planning and programming.

Section 7: Financial Analysis and Project Lists

Overview

This section identifies the need to strengthen existing transportation infrastructure by implementing future transportation improvements to enhance overall regional mobility. The MTP includes an updated fiscally constrained list of transportation improvements and an illustrative (fiscally unconstrained) vision for the SEMPO area.

Funding Future Transportation Investments

Federal

The Fixing America's Surface Transportation (FAST) Act⁵⁸ was signed into Law on December 2, 2015 and was set to expire on September 30, 2020. Prior to the expiration of the Act Congress passed a continuing resolution which extends the provisions of the FAST Act to September 2021. It authorized over \$305 billion for Federal highway, safety, transit, and rail programs for five years from federal fiscal year (FY) 2016 to 2020. For details on Federal funding opportunities, see Appendix B.

State⁵⁹

The State of Missouri generates its transportation revenue primarily from vehicle registration fees and motor vehicle fuel and sales taxes. The largest source of non-federal transportation revenue is the state motor fuel tax. Set at a rate of 17-cents per gallon, the tax generated \$692 million in 2020, accounting for 37.1% of MoDOT's non-federal revenue. Motor vehicle sales and use taxes generated \$419 million for MoDOT in 2020 (22.5% of state/non-federal funding). Vehicle and driver licensing fees and multimodal fees generated \$324 million in state revenue, or 17.4% of total non-federal revenue. Other funding sources accounted for \$427 million in revenue, or 23% of non-federal funding. Federal funding totaled \$1.026 billion, accounting for 35.5% of the total \$2.888 billion in revenue for MoDOT for all operations, maintenance, and construction. This 2020 budget may be atypical compared to other years, as Missouri had the Focus On Bridges program, which borrowed \$201 million to fund about 45 bridge projects⁶⁰.

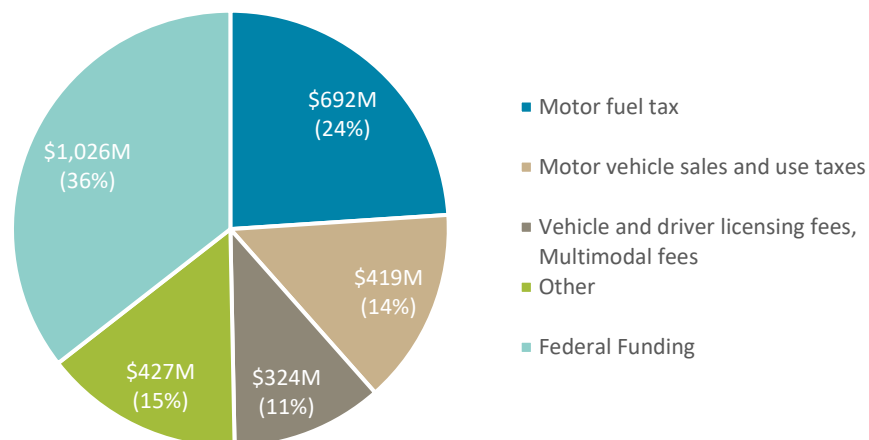


Figure 36. MoDOT Revenue Sources (2020)

⁵⁸ <https://www.fhwa.dot.gov/fastact/summary.cfm>

⁵⁹ <https://www.modot.org/citizens-guide-transportation-funding-missouri>

⁶⁰ <https://www.modot.org/sites/default/files/documents/transportation%20funding%20in%20mo.pdf>

Fiscally Constrained Investment Plan 2021-2045

The fiscal constraint requirement is intended to ensure that the MTP reflects realistic assumptions about future revenues. Compliance with the requirement entails that estimated revenues (Federal, State, local, and private) cover both the estimated construction costs and the estimated operation and maintenance costs.

When developing the revenue and cost estimates, it is necessary to use an inflation rate to reflect the “year of expenditure dollars” based on reasonable financial principals developed cooperatively with the MPO, States, and public transportation operators. SEMPO has determined a 2% rate of annual inflation is the most reasonable figure to estimate both revenues and expenses.

Some of SEMPO’s member agencies have received funding revenues as part of the federal Coronavirus Aid, Relief, and Economic Security (CARES) Act. The SEMO Regional Port Authority was recently awarded a significant Better Utilizing Investments to Leverage Development (BUILD) Grant. In addition, the Cape Girardeau Regional Airport recently received CARES funding. These funding mechanisms have altered typical financial plans. Therefore, a reduced investment plan is seen in future years.

Table 42 shows the revenues and expenses in the SEMPO MPA in five-year increments through the year 2045.

Table 42. SEMPO Financial Summary

Metropolitan Planning Area					
	2021-2025*	2026-2030	2031-2035	2036-2040	2041-2045
Revenues	\$152,694,099	\$114,497,136	\$126,414,090	\$139,571,370	\$154,098,070
Expenses	\$152,694,099	\$114,497,136	\$126,414,090	\$139,571,370	\$154,098,070

*2021-2025 does not reflect typical funding cycles

Anticipated Revenues

Table 43 through **Table 49** show the anticipated revenues, by source, for each of SEMPO’s members.

Table 43. City of Cape Girardeau Anticipated Revenues

City of Cape Girardeau					
Revenues	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Transportation Sales Tax	\$25,000,000	\$27,602,020	\$30,474,860	\$33,646,708	\$37,148,685
Motor Fuel Tax	\$7,625,000	\$8,418,616	\$9,294,832	\$10,262,246	\$11,330,349
Capital Improvement Sales Tax	\$2,500,000	\$2,760,202	\$3,047,486	\$3,364,671	\$3,714,868
Total	\$35,125,000	\$38,780,838	\$42,817,179	\$47,273,625	\$52,193,902

Table 44. City of Jackson Anticipated Revenues

Revenues	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Transportation Sales Tax	\$6,705,780	\$7,403,723	\$8,174,308	\$9,025,097	\$9,964,436
Road Use Tax	\$2,680,000	\$2,958,937	\$3,266,905	\$3,606,927	\$3,982,339
Total	\$9,385,780	\$10,362,660	\$11,441,213	\$12,632,024	\$13,946,775

Table 45. Cape Girardeau County Transit Authority Anticipated Revenues

Revenues	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
FTA 5307 - Operations & Preventative Maintenance	\$6,383,701	\$7,048,122	\$7,781,696	\$8,591,621	\$9,485,844
FTA 5307 - Capital - Vehicle Replacement	\$448,000	\$494,628	\$546,110	\$602,949	\$665,704
FTA 5311 - Operations	\$2,464,879	\$2,721,426	\$3,004,674	\$3,317,403	\$3,662,681
FTA 5311 - Capital - Vehicle Replacement	\$565,070	\$623,883	\$688,817	\$760,510	\$839,664
FTA 5339 - Capital Bus & Bus Facility (Formula Grant)	\$1,318,566	\$1,455,803	\$1,607,325	\$1,774,616	\$1,959,320
FTA 5339 - Capital Bus & Bus Facility (Competitive Grant)	\$2,400,000	\$0	\$0	\$0	\$0
Fare Revenue	\$3,301,812	\$3,645,467	\$4,024,890	\$4,443,804	\$4,906,319
Local & State Matching Funds	\$6,003,061	\$6,627,864	\$7,317,698	\$8,079,330	\$8,920,233
Escrow & In Kind Matching Funds	\$889,790		\$0	\$0	\$0
Total	\$23,774,879	\$22,617,194	\$24,971,209	\$27,570,233	\$30,439,765

Table 46. Cape Special Road District Anticipated Revenues

Cape Special Road District					
Revenues	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Portion of Cape Girardeau County Sales Tax	\$10,840,000	\$11,968,236	\$13,213,900	\$14,589,213	\$16,107,670
Total	\$10,840,000	\$11,968,236	\$13,213,900	\$14,589,213	\$16,107,670

Table 47. SEMO Regional Port Authority Anticipated Revenues

Revenues	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
State and Local Funds	\$23,232,090	\$18,109,194	\$19,994,013	\$22,075,006	\$24,372,591
Federal Funds	\$21,340,000	\$0	\$0	\$0	\$0
Total	\$44,572,090	\$18,109,194	\$19,994,013	\$22,075,006	\$24,372,591

Table 48. Southeast Missouri State University Anticipated Revenues

Revenues	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
FTA 5307	\$805,835	\$805,835	\$889,707	\$982,308	\$1,084,548
CARES ACT	\$530,695	\$0	\$0	\$0	\$0
State and Local Funds	\$574,820	\$718,525	\$793,310	\$875,878	\$967,040
Total	\$1,911,350	\$1,524,360	\$1,683,017	\$1,858,186	\$2,051,588

Table 49. Cape Girardeau Regional Airport Anticipated Revenues

Revenues	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Airport Improvement Program	\$5,000,000	\$5,520,404	\$6,094,972	\$6,729,342	\$7,429,737
Capital Improvement Sales Tax	\$4,250,000	\$4,692,343	\$5,180,726	\$5,719,940	\$6,315,276
CARES ACT	\$17,000,000	\$0	\$0	\$0	\$0
State Funds	\$835,000	\$921,907	\$1,017,860	\$1,123,800	\$1,240,766
Total	\$27,085,000	\$11,134,655	\$12,293,559	\$13,573,082	\$14,985,779

Anticipated Expenditures

Table 50 through Table 56 show the anticipated expenditures, by category, for each of SEMPO's members.

Table 50. City of Cape Girardeau Anticipated Expenditures

Expenditures	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Operations & Maintenance	\$7,610,810	\$8,402,949	\$9,277,535	\$10,243,148	\$11,309,263
Capital Projects	\$27,514,190	\$30,377,889	\$33,539,644	\$37,030,477	\$40,884,639
Total	\$35,125,000	\$38,780,838	\$42,817,179	\$47,273,625	\$52,193,902

Table 51. City of Jackson Anticipated Expenditures

Expenditures	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Operations & Maintenance	\$3,747,100	\$4,137,101	\$4,567,694	\$5,043,103	\$5,567,993
Capital Projects	\$5,638,680	\$6,225,558	\$6,873,519	\$7,588,921	\$8,378,782
Total	\$9,385,780	\$10,362,660	\$11,441,213	\$12,632,024	\$13,946,775

Table 52. Cape Girardeau County Transit Authority Anticipated Expenditures

Expenditures	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Operations & Maintenance	\$18,055,666	\$19,934,914	\$22,009,756	\$24,300,549	\$26,829,770
Capital Projects	\$5,719,213	\$2,682,280	\$2,961,454	\$3,269,684	\$3,609,996
Total	\$23,774,879	\$22,617,194	\$24,971,210	\$27,570,234	\$30,439,766

Table 53. Cape Special Road District Anticipated Expenditures

Cape Special Road District					
Expenditures	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Operations & Maintenance	\$10,840,000	\$11,968,236	\$13,213,900	\$14,589,213	\$16,107,670
Capital Projects	\$0	\$0	\$0	\$0	\$0
Total	\$10,840,000	\$11,968,236	\$13,213,900	\$14,589,213	\$16,107,670

Table 54. SEMO Regional Port Authority Anticipated Expenditures

Expenditures	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Operations & Maintenance	\$9,609,074	\$10,609,194	\$11,713,408	\$12,932,548	\$14,278,578
Capital Projects	\$34,963,016	\$7,500,000	\$8,280,606	\$9,142,458	\$10,094,013
Total	\$44,572,090	\$18,109,194	\$19,994,014	\$22,075,007	\$24,372,591

Table 55. Southeast Missouri State University Anticipated Expenditures

Expenditures	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Operations & Maintenance	\$1,734,350	\$1,524,360	\$1,683,017	\$1,858,186	\$2,051,588
Capital Projects	\$177,000	\$0	\$0	\$0	\$0
Total	\$1,911,350	\$1,524,360	\$1,683,017	\$1,858,186	\$2,051,588

Table 56. Cape Girardeau Regional Airport Anticipated Expenditures

Expenditures	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045
Operations & Maintenance	\$5,000,000	\$5,520,404	\$6,094,972	\$6,729,342	\$7,429,737
Capital Projects	\$22,085,000	\$5,614,251	\$6,198,587	\$6,843,741	\$7,556,043
Total	\$27,085,000	\$11,134,655	\$12,293,559	\$13,573,082	\$14,985,780

Fiscally Constrained Projects

SEMPO's Fiscally Constrained Projects list is shown in **Table 57**. This list only includes projects for which a funding commitment has been made or there is a reasonable expectation that funding will be committed in the future, based on previous funding history. Projects not falling under this category are included in the Illustrative Projects list, which is discussed in the next section.

Table 57. Fiscally Constrained Projects 2021-2045

Project Sponsor	Project Type	Route (if applicable)	Description	Cost Estimate (all sources) and Year of Anticipated Construction					Cost Estimate (all sources) and Year of Anticipated Construction					Funding Source	Notes
				2021	2022	2023	2024	2025	2021-2025	2026-2030	2031-2035	2035-2040	2041-2045		
Cape Girardeau Regional Airport	Aviation	NA	Taxiway A and D Reconstruction			\$9,600,000			\$9,600,000					AIP (Airport Improvement Program) & CARES Act	
Cape Girardeau Regional Airport	Aviation	NA	Construct new T-Hangars (26 Units)	\$1,900,000					\$1,900,000					CARES Act	
Cape Girardeau Regional Airport	Aviation	NA	Construct new Passenger Terminal	\$8,000,000					\$8,000,000					CARES Act	
Cape Girardeau Regional Airport	Aviation	NA	Taxiway B Reconstruction	\$1,900,000					\$1,900,000					CARES Act	
Cape Girardeau Regional Airport	Aviation	NA	Fuel Farm Expansion/Replacement	\$990,000					\$990,000					CARES Act	
Cape Girardeau Regional Airport	Aviation	NA	Relocate and Construct new Air Traffic Control Tower					\$5,000,000		\$5,000,000				CIST	
Cape Girardeau Regional Airport	Aviation	NA	Operate air traffic control tower	\$600,000	\$600,000	\$600,000			\$1,800,000					MODOT: 167,000/year for 5 years (assistance grant)	FY 20 STIP - Scheduled FY 21-24
City of Cape Girardeau	Road/Capacity	Veterans Memorial Drive	TTF6 funds Design, acquisition, and grading only from Hopper Rd to Percy Dr. TTF7 would potentially fund construction.					\$2,300,000	\$2,300,000					TTF6	MODOT mapped Major Collector
MoDOT/City of Cape Girardeau	Road/Safety	Rte K	Safety improvements from Notre Dame High School Entrance on Rte K to Eagle Ridge School Entrance				\$1,000,000 - \$2,000,000		\$1,000,000 - \$2,000,000					\$500,000 for TTF6 and MoDOT	Partially Fiscally Constrained
MoDOT	Road/TCOS	MO 177	Raising the road in two locations from County Rd 651 to County Rd 643		\$2,915,000				\$2,915,000						
MoDOT	Road/TCOS	MO 72	Pavement Resurfacing from Rte 34 to Rte 25/61 intersection in Jackson			\$1,224,000			\$1,224,000						FY 20 STIP - Scheduled FY 23
MoDOT	Road/TCOS	MO 74	Bridge rehabilitation over Mississippi River "Emerson Bridge". Project involves bridge A5076. \$1,000,000 from IDOT				\$2,427,000		\$2,427,000						
MoDOT	Road/TCOS	Rte AB	Pavement resurfacing from County Road 217 to I-55	\$1,201,000					\$1,201,000						
City of Cape Girardeau	Road/TCOS	Bertling	Concrete Repair from Perryville Rd to Big Bend Rd				\$1,000,000		\$1,000,000					TTF6	MODOT mapped Minor Arterial
City of Cape Girardeau	Road/TCOS	Lexington	Concrete Repair, Overlay, sidewalk repair from Carolina Lane to Sherwood Drive			\$1,200,000			\$1,200,000					TTF6	MODOT mapped Minor Arterial
City of Cape Girardeau	Road/TCOS	Lexington	Concrete Repair, Overlay, sidewalk repair from West Cape Rock Drive to Sprigg Street			\$1,200,000			\$1,200,000					TTF6	MODOT mapped Minor Arterial

Project Sponsor	Project Type	Route (if applicable)	Description	Cost Estimate (all sources) and Year of Anticipated Construction					Cost Estimate (all sources) and Year of Anticipated Construction					Funding Source	Notes
				2021	2022	2023	2024	2025	2021-2025	2026-2030	2031-2035	2035-2040	2041-2045		
City of Cape Girardeau	Road/TCOS	Sprigg Street	Overlay, sidewalk repair from Shawnee Parkway/M74 to Southern Expressway		\$2,950,000				\$2,950,000					TTF6	MODOT mapped Minor Arterial
CTA	Transit	NA	Operating assistance for rural public transportation - 5311	\$440,800	\$440,800	\$440,800	\$440,800		\$1,763,200					Federal: 1,102,000 and Local: 1,102,000 - over 5 years	FY 20 STIP - Scheduled FY 20-24
CTA	Transit	NA	5339 - Small urban and statewide allocation transferred to Cape Girardeau County Transit 5307 program	\$176,800	\$176,800	\$176,800	\$176,800		\$707,200					Federal: 707,000 and Local: 177,000 - over 5 years	FY 20 STIP - Scheduled FY 20-24
CTA	Transit	NA	State Transit Operating assistance for urban public transportation	\$18,000	\$18,000	\$18,000	\$18,000		\$72,000					State: 45,000 and Local: 45,000 - over 5 years	FY 20 STIP - Scheduled FY 20-24
CTA	Transit	NA	State Transit Operating assistance for rural public transportation	\$13,200	\$13,200	\$13,200	\$13,200		\$52,800					State: 33,000 and Local: 33,000 - over 5 years	FY 20 STIP - Scheduled FY 20-24
SEMO	Transit	NA	MEHTAP - Operating assistance for transportation services for elderly and individuals with disabilities	\$7,000	\$7,000				\$14,000					State: 7,000 and Local 7,000	FY 20 STIP - Scheduled FY 20-24
CG Community Sheltered Workshop DBA VIP Industries	Transit	NA	MEHTAP - Operating assistance for transportation services for elderly and individuals with disabilities	\$32,200	\$32,200				\$64,400					State:32,200 and Local 32,200	FY 20 STIP - Scheduled FY 20-24
Community Counseling Center	Transit	NA	MEHTAP - Operating assistance for transportation services for elderly and individuals with disabilities	\$18,800	\$18,800				\$37,600					State:18,800 and Local 18,800	FY 20 STIP - Scheduled FY 20-24
SEMO Alliance for Disability Independence, Inc.	Transit	NA	MEHTAP - Operating assistance for transportation services for elderly and individuals with disabilities	\$4,600	\$4,600				\$9,200					State:4,600 and Local 4,600	FY 20 STIP - Scheduled FY 20-24
Southeast Missouri Area Agency on Aging	Transit	NA	MEHTAP - Operating assistance for transportation services for elderly and individuals with disabilities	\$211,800	\$211,800				\$423,600					State:211,800 and Local 211,800	FY 20 STIP - Scheduled FY 20-24
SEMO	Transit	NA	State Transit Operating Assistance for public transportation services	\$10,600	\$10,600	\$10,600	\$10,600		\$42,400					State: 26,500 and Local: 26,500	FY 20 STIP - Scheduled FY 20-24
SEMO Port	Waterways/Rail	NA	Loop Tracks Terminal	\$33,000,000					\$33,000,000					BUILD Grant \$19,800,000 and Local \$13,200,000	
SEMO Port	Waterways/Rail	NA	Railroad Mainline Improvements	\$1,913,000					\$1,913,000					EDA \$1,530,400 and Local \$382,600	
Total				\$50,437,800	\$7,398,800	\$14,483,400	\$4,086,400	\$7,300,000	\$78,706,400	\$5,000,000	\$0	\$0	\$0		

Illustrative Projects

The future transportation needs of SEMPO far exceed the projected revenue as forecast through the year 2045. Increasing construction, maintenance, and operating costs have significantly limited the ability of agencies to implement large transportation infrastructure projects. While it is not possible to implement all the transportation projects included in this plan, the Illustrative Projects list is still a critical part of the vision of the MTP. The Illustrative Projects list is important because it:

- Defines the long-term vision for future transportation investments;
- Allows for better land use planning, informed development decisions, and better policy making; and
- Positions SEMPO to have “shovel ready” projects should additional funding become available.

SEMPO’s Illustrative Projects list is shown in **Table 58**.

Table 58. Illustrative Projects 2021-2045

Project Sponsor	Project Type	Route (if applicable)	Description	Cost Estimate (2021, all sources)
Cape Girardeau Regional Airport	Aviation	Airport Road	Airport Road needs to be extended south to connect to Rte M in Scott City	\$1,000,000
Cape Girardeau Regional Airport	Aviation	NA	Construct Extension of Taxiway F to provide Access to NW Quadrant	\$1,323,000
Cape Girardeau Regional Airport	Aviation	NA	Construct Maintenance/ARFF Facility and necessary access roads	\$2,500,000
Cape Girardeau Regional Airport	Aviation	NA	Runway 10-28 Extension	To be determined
City of Cape Girardeau	Bike/Ped	Broadway St	Broadway St Sidewalks from US 61 to Clark Ave	\$50,000
City of Cape Girardeau	Bike/Ped	LaSalle Ave and Rte W	LaSalle Ave and Rte W Trail	\$8,385,000
City of Cape Girardeau	Bike/Ped	N Cape Rock Dr	N Cape Rock Dr Sidewalks from US 61 to Perryville Rd	\$210,000
City of Cape Girardeau	Bike/Ped	Rte K	Pedestrian Crossing at Rte K and Farrar Dr	\$250,000
City of Cape Girardeau	Bike/Ped	Rte K	Pedestrian Crossing at Rte K and South Mt. Auburn Rd	\$275,000
City of Cape Girardeau	Bike/Ped	US 61	Pedestrian Crossing at US 61 and N Cape Rock Dr	\$300,000
City of Cape Girardeau	Bike/Ped	US 61	Pedestrian Crossing at US 61 and Broadway St	\$300,000
City of Cape Girardeau	Bike/Ped	US 61	Pedestrian Crossing at US 61 and Rte K	\$300,000
City of Cape Girardeau	Bike/Ped	NA	Shawnee Parkway Trail - Connects the south end of the Riverfront Trail to the Cape LaCroix Trail	\$2,420,000
City of Cape Girardeau	Bike/Ped	US 61	US 61 Sidewalks from Silver Springs Rd to Cape LaCroix Trail	\$405,000
City of Cape Girardeau	Bike/Ped	NA	Walker Creek Trail - Adds a Trail along Kingshighway	\$3,950,000
City of Cape Girardeau	Bike/Ped	William St	William St Sidewalks from Cape LaCroix Trail to S Sunset Blvd	\$105,000
City of Jackson	Bike/Ped	MO-72	Pedestrian Crossing at MO-72 and West Ln	\$250,000
City of Jackson	Bike/Ped	Rte D	Pedestrian Crossing at Rte D and Broadridge Dr	\$250,000
City of Jackson	Bike/Ped	Rte D	Pedestrian Crossing at Rte D and North Farmington Rd	\$150,000
City of Jackson	Bike/Ped	US 61	Pedestrian Crossing at US 61 and Deerwood Dr	\$150,000
City of Jackson	Bike/Ped	US 61	Pedestrian Crossing at US 61 and S Donna Dr	\$250,000
City of Jackson	Bike/Ped	US 61	Pedestrian Crossing at US 61 and S Shawnee Blvd	\$275,000
City of Jackson	Bike/Ped	Rte D	Rte D Sidewalks from Cambridge Rd to Broadridge Dr	\$105,000
City of Jackson	Bike/Ped	Shawnee Blvd	Shawnee Blvd Sidewalks from Highland Dr to Litz Park	\$165,000
City of Jackson/City of Cape Girardeau	Bike/Ped	US 61	US 61 Sidewalks from Old Cape Rd to Bessie St	\$1,030,000
City of Jackson	Bike/Ped	NA	Hubble CreekTrail – Connects Jackson High School to Jackson Soccer Park	To be determined
IDOT	Bike/Ped	IL 146	IL 146 Bike Lanes - Connects existing bike lanes and proposed trails on the west side of the River to Illinois. Popular bike route between Cape Girardeau and Shawnee National Forest.	\$280,000
IDOT	Bike/Ped	IL 146	IL 146 Sidewalks from Comanche Dr to Virginia Dr	\$45,000
City of Jackson	Bike/Ped	East Main St	Sidewalk installation between Bellevue St and Shawnee Blvd (minor arterial)	\$250,000

Project Sponsor	Project Type	Route (if applicable)	Description	Cost Estimate (2021, all sources)
	Rail	NA	Provide passenger rail service to Cape Girardeau to enable non-driving adults in our area to have rail access to other parts of the country and region.	To be determined
MoDOT	Road/Capacity	I-55	Add a lane in each direction from Scott City to Fruitland	\$161,000,000
MoDOT/City of Cape Girardeau	Road/Capacity	I-55	The Bloomfield Road overpass in Cape Girardeau needs to be replaced with a 4-lane bridge to reduce congestion	\$6,000,000
FHWA/MoDOT/IDOT	Road/Capacity	New Rd	A new road is needed as part of an East-West route through southeast Missouri. The road would connect to an existing road in Cape Girardeau and extend to the western boundary of the MPO.	To be determined
MoDOT/City of Cape Girardeau	Road/Capacity	New Rd	A new road is needed connecting Rte K and the I-55/MO-74 interchange.	To be determined
MoDOT	Road/Capacity	Old US 61	Need two-lane bridge over Diversion Channel so old US 61 can be reactivated as a frontage road by I-55 for slow moving vehicles and non-Interstate traffic.	\$8,000,000
City of Cape Girardeau	Road/Capacity	Veterans Memorial Drive	Construction only from Hopper Rd to Percy Dr. TTF7 would potentially fund construction.	\$3,700,000
MoDOT/City of Jackson	Road/Capacity	US 61	Scoping for capacity improvements from I-55 at Fruitland to MO 25. Improvements to increase safety, improve access, and reduce congestion. Needs include pavement resurfacing, bridge replacements, additional lanes, access improvements, lighting improvements, and pedestrian/bicycle lanes.	\$5,000,000- \$10,000,000
MoDOT	Road/Safety	MO 25	Include bridge replacement and adding full shoulders, bike/ped lanes, and lighting from MO 72 to Rte K. Intersection improvements, especially at Rte K, are also needed.	\$14,000,000
MoDOT/City of Cape Girardeau	Road/Safety	MO 74	Lighting is needed from Kingshighway to I-55	\$500,000
MoDOT/SEMO Port	Road/Safety	Rte K/Rte N	Rte K/Rte N/CR 305 Intersection improvements	\$1,000,000
MoDOT/City of Jackson	Road/Safety	US 61	Intersection improvements at Donna Dr/Shawnee Blvd. Right turn movement difficult due to pavement width restrictions and steep grade.	\$1,000,000- \$2,000,000
MoDOT/City of Jackson	Road/Safety	US 61	Roundabout at US 61 and Deerwood Drive in Jackson	\$1,500,000
MoDOT/City of Jackson	Road/Safety	US 61	Roadway lighting, center median and access management, and other safety issues are needed from I-55 to K-Land Drive	\$1,000,000
City of Jackson	Road/Safety	West Main St	Intersection improvements at W Main St and Farmington Rd	\$250,000
City of Jackson	Road/Capacity	Emma St/Vera Wagner Dr	Connect Emma St to Vera Wagner Dr in Litz Park to reduce congestion on E Main St	To be determined
MoDOT/City of Cape Girardeau	Road/TCOS	US 61	Scoping for bridge improvements over I-55 at Exit 93. Project involves bridge A0628	\$1,000,000 - \$2,000,000
MoDOT/City of Cape Girardeau	Road/TCOS	US 61	Scoping for drainage improvements from Rte W to Southern Expressway	\$300,000 - \$1,000,000
CTA	Transit	NA	Replace vehicles on an annual basis (10/year)	\$250,000
CTA	Transit	NA	The Cape Girardeau County Transit Authority needs bus stop shelter facilities along current bus routes.	To be determined
CTA	Transit	NA	Extension of bus routes to the northern and southern areas of Cape Girardeau County.	To be determined

Project Sponsor	Project Type	Route (if applicable)	Description	Cost Estimate (2021, all sources)
CTA	Transit	NA	An improved metro mass transit service utilizing park and ride running via I 55 from Scott City or the airport running to Fruitland/P&G.	To be determined
CTA	Transit	NA	Rail or commuter service connecting Southeast Missouri with the St Louis metro Amtrak station	To be determined
CTA	Transit	NA	Land and new transit facility	To be determined
SEMO Port	Waterways/Rail	NA	Storage Track Along Main Line	\$1,000,000
SEMO Port	Waterways/Rail	NA	Storage Tracks - Inside Loop	\$2,500,000
SEMO Port	Waterways/Rail	NA	Dock Rail Spurs	\$500,000
SEMO Port	Waterways/Rail	NA	Dolphins - Harbor North Side	\$2,200,000
SEMO Port	Waterways/Rail	NA	Bridge Upgrades at SEMO Port	\$500,000
SEMO Port	Waterways/Rail	NA	SEMO Port Rail Park	\$1,500,000
SEMO Port	Waterways/Rail	NA	Grain 5 Track	\$600,000
Total				\$314,679,400

Appendix

Appendix A: Federal Requirements

Appendix B: Potential Funding Sources

Appendix C: Supporting Policies

Appendix D: Expanded Goals, Objectives, and Strategies for Future Use

Appendix E: Travel Demand Model Development and Validation Report

Appendix A: Federal Requirements

Federal Requirements

The MTP is mandated by the Federal Government through a series of federal statutes accompanied by a host of regulations. This first section identifies the national objectives of metropolitan transportation planning and directs the reader to additional reading in the Appendix to review the Federal purposes of the Public Transportation Program.

National Policy Statement of the FAST Act, Metropolitan Transportation Planning Section

a. Policy – It is in the national interest:

1. To encourage and promote the safe and efficient management, operation, and development of surface transportation systems that will serve the mobility needs of people and freight, foster economic growth and development within and between States and urbanized areas, and take into consideration resiliency needs while minimizing transportation-related fuel consumption and air pollution through metropolitan and statewide transportation planning processes identified in this chapter; and
2. To encourage the continued improvement and evolution of the metropolitan and statewide transportation planning processes by metropolitan planning organizations, State departments of transportation, and public transit operators as guided by the planning factors identified in subsection (h) and section 135(d).

National Objectives – Metropolitan Transportation Planning

The FAST Act continues the Metropolitan Planning program. The Program establishes a cooperative, continuous, and comprehensive framework for making transportation investment decisions in metropolitan areas. Program oversight is a joint Federal Highway Administration/Federal Transit Administration responsibility.

The FAST Act continues to require MTPs and TIPs to provide for facilities that enable an intermodal transportation system, including pedestrian and bicycle facilities. It adds to this list other facilities that support intercity transportation (including intercity buses, intercity bus facilities, and commuter vanpool providers). The FAST Act also requires that the metropolitan long-range plan include identification of public transportation facilities and intercity bus facilities.

The contents of the MTP and also the TIP “...for each metropolitan area shall provide for the development and integrated management and operation of transportation systems and facilities (including accessible pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system for the metropolitan planning area and as an integral part of an intermodal transportation system for the State and the United States.”

Also included in this same federal legislation is a section stating that this “scope of the planning process should be based on the scale and complexity of many issues, including transportation system development, land use, employment, economic development, human and natural environment, and housing and community development.” This is an important statement since there are significant resources dedicated to do metropolitan planning and MPOs are not the same, SEMPO is one of many small MPOs and has extremely limited resources.

Factors and Requirements Considered in the Metropolitan Transportation Planning Process

Federal legislation identifies several factors that must be considered to fulfill the FAST ACT planning process requirements⁶¹. The following section describes the newest regulatory items that SEMPO must consider in the development of the MTP.

The Scope of the Planning Process: The Ten Planning Factors

The ten planning factors are identified as the process to achieve one of four national objectives detailed in the Metropolitan Transportation Planning National Objectives section included in the plan.

- (h)(1) The metropolitan transportation planning process shall be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address the following factors:
 - (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.⁶²

Subsection h2 describes the continued linkage from the initial Metropolitan Transportation Planning Objectives and the planning factors above, to the performance-based approach intended to produce a performance-based outcome to federal transportation planning:

- (h)(2) Performance-based approach:
 - (A) In general, the metropolitan transportation planning process shall provide for the establishment and use of a performance-based approach to transportation decision making to support the national goals described in section 150(b) of this title and in section 5301(c) of title 49.

⁶¹ Section 134, 23 U.S.C., subsection h1 and h2 for national performance goals

⁶² Or, comparable 23 U.S.C. Section 135(d)

23 U.S.C. Sec. 150. National Goals and Performance Management Measures⁶³

- a. Declaration of Policy – Performance management will transform the Federal-aid highway program and provide a means to the most efficient investment of Federal transportation funds by refocusing on national transportation goals, increasing the accountability and transparency of the Federal-aid highway program, and improving project decision-making through performance-based planning and programming.
- b. National Goals – It is in the interest of the United States to focus the Federal-aid highway program on the following national goals⁶⁴:
 - 1. Safety – To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
 - 2. Infrastructure condition – To maintain the highway infrastructure asset system in a state of good repair.
 - 3. Congestion reduction – To achieve a significant reduction in congestion on the National Highway System.
 - 4. System reliability – To improve the efficiency of the surface transportation system.
 - 5. Freight movement and economic vitality – To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
 - 6. Environmental sustainability – To enhance the performance of the transportation system while protecting and enhancing the natural environment.
 - 7. Reduced project delivery delays – To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

SEMPO is addressing these national goals by anticipating the future integration into the metropolitan transportation planning process, by reference, the goals, objectives, performance measures, and targets described in MoDOT's state transportation plans and transportation processes, when developed, as well as any plans developed under Chapter 53 of Title 49 by providers of public transportation, required as part of a performance-based program.

Rulemaking by the FHWA regarding the establishment of performance measures and standards shall be completed no later than 1 year after rulemaking to establish performance targets that reflect these measures and standards. Upon the establishment of these targets and measures by MoDOT and FHWA, SEMPO will either adopt MoDOT's targets or establish alternative measures.

General Federal Requirements of the Metropolitan Transportation Plan

- a. General Requirements:
 - 1. Development of long-range plans and TIPs: To accomplish the objectives in subsection (a), metropolitan planning organizations designated under subsection (d), in cooperation with the State and public transportation operators, shall develop long-range transportation plans and

⁶³ Section 150 of Title 23

⁶⁴ Appropriated out of the Highway Trust Fund (other than the Mass Transit Account)

transportation improvement programs through a performance-driven, outcome-based approach to planning for metropolitan areas of the State.

2. Contents: The plans and TIPs for each metropolitan area shall provide for the development and integrated management and operation of transportation systems and facilities (including accessible pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system for the metropolitan planning area and as an integral part of an intermodal transportation system for the State and the United States.
3. Process of development: The process for developing the plans and TIPs shall provide for consideration of all modes of transportation and shall be continuing, cooperative, and comprehensive to the degree appropriate, based on the complexity of the transportation problems to be addressed.

Appendix B: Potential Funding Sources

Potential Funding Sources

Local

City of Cape Girardeau Transportation Trust Fund

Federal⁶⁵

Federal funding comes primarily from the FAST Act, the current Federal transportation act. These are the main source of funding that will be used in future project and program funding through FY 2021.

- 1) **National Highway Performance Program (NHPP)** - The purposes of the NHPP are:
 - a) to provide support for the condition and performance of the NHS;
 - b) to enable the construction of new facilities on the NHS; and
 - c) to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward achieving performance targets established in a State's asset management plan for the NHS.

Projects must be on an "eligible facility" which includes only those facilities located on the NHS, be identified in the STIP/TIP and be consistent with the Statewide LRTP and the MTP(s).

- 2) **Surface Transportation Block Grant Program (STBG)** - The FAST Act converts the long-standing Surface Transportation Program into the STBG, acknowledging that this program has the most flexible eligibilities among all Federal-aid highway programs and aligning the program's name with how FHWA has historically administered it. The FAST Act provides an estimated annual average of \$11.7 billion for STBG, which States and localities may use for projects to preserve or improve conditions and performance on any Federal-aid highway, bridge projects on any public road, facilities for nonmotorized transportation, transit capital projects, and public bus terminals and facilities.

The STBG program under the FAST Act continues all prior Surface Transportation Program (STP) eligibilities and adds a few new ones. A State may now use STBG funds to create and operate a State office to help design, implement, and oversee public-private partnerships (P3) eligible to receive Federal highway or transit funding, and to pay a stipend to unsuccessful P3 bidders in certain circumstances. DOT may also, at a State's request, use the State's STBG funding to pay the subsidy and administrative costs for TIFIA credit assistance for an STBG-eligible project.

The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of STBG funding for transportation alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.

⁶⁵ <https://www.fhwa.dot.gov/fastact/summary.cfm>

- 3) **Congestion Mitigation and Air Quality Improvement Program (CMAQ)** - SEMPO receives no CMAQ funding since the area meets the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) as well as former nonattainment areas that are now in compliance (maintenance areas).
- 4) **Highway Safety Improvement Program (HSIP)** - Safety throughout all transportation programs remains DOT's number one priority. The FAST Act continues the successful HSIP, with average annual funding of \$2.4 billion per state, and reserving a portion of that funding for the Rail-Highway Crossings Program. The Act also reserves \$3.5 million annually from HSIP for work zone and guardrail safety training, Operation Lifesaver, and safety clearinghouses.

Every State is required to develop a Strategic Highway Safety Plan (SHSP) that lays out strategies to address these key safety problems. The SHSP remains a statewide coordinated plan developed in cooperation with a broad range of multidisciplinary stakeholders and includes the following targets and actions:

- a) States will set targets for the number of serious injuries and fatalities and the number per vehicle mile of travel. If a State fails to make progress toward its safety targets, it will have to devote a certain portion of its formula obligation limitation to the safety program and submit an annual implementation plan on how the State will make progress to meet performance targets.
 - b) High Risk Rural Roads - a State is required to obligate funds for this purpose if the fatality rate on such roads increases.
 - c) The Secretary is required to carry out a study of High Risk Rural Road "best practices."
 - d) States are required to incorporate strategies focused on older drivers and pedestrians if fatalities and injuries per capita for those groups increase.
 - e) Railway-Highway Crossings (set-aside from HSIP)
 - f) Metropolitan Planning
- 5) **Metropolitan Planning** – Continued funding from FHWA and FTA at an 80/20 formula.
 - 6) **National Highway Freight Program (NHFP)**
The FAST Act establishes a new National Highway Freight Program to improve the efficient movement of freight on the NHFN and support several goals, including—
 - investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity;
 - improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;
 - improving the state of good repair of the NHFN;
 - using innovation and advanced technology to improve NHFN safety, efficiency, and reliability;
 - improving the efficiency and productivity of the NHFN;
 - improving State flexibility to support multi-State corridor planning and address highway freight connectivity; and
 - reducing the environmental impacts of freight movement on the NHFN. [23 U.S.C. 167 (a), (b)]

A proportionate share of each State's NHFP funds is set aside for the State's Metropolitan Planning program. This occurs prior to apportionment, and the set-aside funds are combined with the State's regular Metropolitan Planning program funds. 2% of a State's NHFP funding is set aside for State Planning & Research (SPR).

Discretionary programs:

The FHWA administers discretionary programs through its various offices. These discretionary programs represent special funding categories where FHWA solicits for candidates and selects projects for funding based on applications received. Each program has its own eligibility and selection criteria that are established by law, by regulation, or administratively.

- [Bridge](#)
- [Corridor Planning and Development and Border Infrastructure \(Corridors & Borders\)](#)
- [Delta Region Transportation Development Program](#)
- [Ferry Boats](#)
- [Highways for LIFE](#)
- Innovative Bridge Research and Construction
- Innovative Bridge Research and Deployment Program
- [Interstate Maintenance](#)
- [National Historic Covered Bridge Program](#)
- [Public Lands Highways](#)
- [Scenic Byways](#)
- [Transportation and Community and System Preservation Program](#)
- [Transportation Infrastructure Finance and Innovation Act \(TIFIA\)](#)
- [Truck Parking](#)
- [Value Pricing Pilot Program](#)

Set Asides under FAST ACT:

Once each State's total Federal-aid apportionment is calculated, amounts are set aside for Metropolitan Planning and CMAQ via a calculation based on the relative size of the State's FY 2016 apportionment of those programs.

To enhance flexibility, a State may transfer up to 50 percent of any apportionment to another formula program. However, no transfers are permitted of Metropolitan Planning funds, funds suballocated to areas based on population (under either STBG or Transportation Alternatives), or funds set aside for the Recreational Trails Program.

The FAST Act maintains the majority of MAP-21's process for apportioning Federal-aid highway funds but makes a few modifications. The apportionment process under the FAST Act is as follows:

- 1) Step one: Authorize lump sum for apportioned programs.
 - a) As under MAP-21, the FAST Act authorizes a single amount for each year for all the apportioned highway programs combined. This includes the NHPP, the STBG, formerly Surface Transportation Program, HSIP (including Railway-Highway Crossings), CMAQ, and Metropolitan Planning, plus a new NHFP.
- 2) Step two: Reserve funds for supplemental NHPP and STBG.

- a) Of the lump sum apportionment, the FAST Act reserves specified “supplemental” amounts for NHPP (only in FY 2019 and FY 2020) and STBG (each of FY 2016-2020). The remainder is referred to as the “base apportionment.”
- 3) Step three: Calculate each State’s share of each of these categories.
 - a) FHWA calculates an initial amount for each State for each of these three categories (base apportionment, plus supplemental NHPP and supplemental STBG, as appropriate). The calculation is based on the State’s share of apportionments in FY 2015.
- 4) Step four: Adjust initial amounts if necessary to ensure “95 cents on the dollar.”
 - a) As necessary, FHWA adjusts each State’s initial amounts to ensure that no State receives—cumulatively across the three categories—less than 95 cents of every dollar it contributed to the HTF.
- 5) Step five: For each State, divide these amounts among apportioned programs.
 - a) FHWA then divides the State’s base apportionment—plus any supplemental NHPP and/or STBG funds—between the various apportioned programs, based on procedures specified in statute.

Generally Federal funds provide 80% of a capital improvement while the local entity provides the 20% local match.

Some Federal programs provide full funding, and other, competitive programs may prompt local project sponsors to provide more than 20%.

TIFIA:

The Transportation Infrastructure Financing and Innovation Act (TIFIA) program provides Federal credit assistance to eligible surface transportation projects. The FAST ACT reduces funding available for TIFIA, compared for MAP-21, authorizing approximately \$1.44 billion over five years. Of that \$1.44 billion, \$275 million in funding was offered in 2016 and 2017, \$285 million was offered in 2018, and \$300 million in funding was offered in 2019 and 2020. The FAST Act also calls for a number of program reforms, including: new eligibilities for public infrastructure associated with transit-oriented development, a tighter definition of rural projects, the elimination of the MAP-21 requirement to redistribute uncommitted TIFIA funds, and authority for States to use NHPP and STBG funds to support subsidy and administrative costs of TIFIA credit assistance for projects eligible under those programs.⁶⁶

The Transportation Infrastructure Finance and Innovation Act of 1998 provides Federal credit assistance to major transportation investments of critical national importance, such as: transit oriented development projects, rural infrastructure projects, and local infrastructure projects. The TIFIA credit program is designed to fill market gaps and leverage substantial private co-investment by providing supplemental and subordinate capital.

The TIFIA credit program offers three distinct types of financial assistance⁶⁷:

- Secured loans are direct Federal loans to project sponsors offering flexible repayment terms and providing combined construction and permanent financing of capital costs.

⁶⁶ <https://www.fhwa.dot.gov/fastact/summary.cfm>

⁶⁷ <https://www.fhwa.dot.gov/fastact/factsheets/tifiacs.cfm>

- Loan guarantees provide full-faith-and-credit guarantees by the Federal Government to institutional investors, such as pension funds, that make loans for projects.
- Lines of credit are contingent sources of funding in the form of Federal loans that may be drawn upon to supplement project revenues, if needed, during the first 10 years of project operations. [23 U.S.C. 603 and 604]

Note: The amount of Federal credit assistance may not exceed 33 percent of total project costs.

Federal Transit Administration

UA Formula Grants (Section 5307 & Section 5340)⁶⁸

This program provides grants to Urbanized Areas for public transportation capital, planning, and operating expenses in certain circumstances. These funds constitute a core investment in the enhancement and revitalization of public transportation systems in the nation's UA, which depend on public transportation to improve mobility and reduce congestion.

Eligible Recipients - Funding is made available to designated recipients, which must be public bodies with the legal authority to receive and dispense Federal funds. Governors, responsible local officials and publicly owned operators of transit services are required to designate a recipient to apply for, receive, and dispense funds for urbanized areas pursuant to 49 U.S.C. 5307(a)(2). The Governor or Governor's designee is the designated recipient for urbanized areas between 50,000 and 200,000.

Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310)⁶⁹

This program (49 U.S.C. 5310) provides formula funding to states for the purpose of assisting private nonprofit groups in meeting the transportation needs of older adults and people with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs. The program aims to improve mobility for seniors and individuals with disabilities by removing barriers to transportation service and expanding transportation mobility options. This program supports transportation services planned, designed, and carried out to meet the special transportation needs of seniors and individuals with disabilities in all areas – large urbanized (over 200,000), small urbanized (50,000-200,000), and rural (under 50,000).

Eligible Recipients - States and designated recipients are direct recipients; eligible subrecipients include private nonprofit organizations, states or local government authorities, or operators of public transportation.

Transit Asset Management (Section 5326)⁷⁰

This regulation continues requirements for transit asset management by FTA's grantees as well as new reporting requirements to promote accountability. The goal of improved transit asset management is to implement a strategic approach for assessing needs and prioritizing investments for bringing the nation's public transit systems into a state of good repair.

⁶⁸<https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/funding/grants/37961/fast-act-section-5307-fast-sheet.pdf>

⁶⁹<https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310>

⁷⁰ <https://www.congress.gov/114/bills/hr22/BILLS-114hr22enr.pdf>

Eligible Recipients & Activities - Not applicable; no grants are established under this section. This section establishes cross-cutting requirements across FTA's grant programs.

State

Partnership Funding Programs: Programs that bring money to the project and does not have to be repaid.

Missouri Transportation Finance Corporation (MTFC) – A non-profit lending corporation established to assist local transportation projects, and to administer the Statewide Transportation Assistance Revolving Fund (STAR Fund).

State Transportation Assistance Revolving Fund (STAR Fund) – STAR Fund created to assist in the planning, acquisition, development, and construction of transportation facilities other than highways in the state.

State Infrastructure Bank (SIB) - A SIB is an investment fund at the state level with the ability to make loans and provide other forms of credit assistance to public and private entities to carry out transportation projects.

Partnership Debt-Financing Programs: Programs that bring money to the project and must be repaid.

Cost Sharing Program – Projects where MoDOT commits a portion of project costs for projects not on the department's right-of way and construction program, but that will benefit the state highway system.

Economic Development Program – A method of funding projects that will significantly impact the economic development in a given area.

Transportation Corporations – Specialized, temporary, private, not-for-profit corporations that can be organized to plan, develop, and finance a particular transportation project.

Transportation Development Districts – A temporary, local, political subdivision that can be authorized by a vote of the public or all owners of real property affected by the district to plan, develop, finance, and levy taxes for a particular transportation project.

Other innovative finance techniques identified by MoDOT include:

- Congestion Pricing
- Private Activity Bonds
- TIFIA loan
- Grant Anticipation Revenue Vehicle (GARVEE)
- Grant Anticipation Notes (GANS)
- SIB, and
- Toll Credits

Congestion Pricing - High performance highways involve the application of variable tolls on all lanes of existing toll ways and toll-free limited-access facilities to manage traffic flow. Tolls vary by level of demand, either on a fixed schedule by time of day or in real time to reflect changes in congestion levels and are charged on congested highway segments to manage traffic flow. The concept also involves promotion of carpools and vanpools, park-and-ride facilities, and provision of express bus services, to provide travel alternatives to transportation system users.

Private Activity Bonds (PABs) - PABs allow the bonds to retain tax-exempt status despite a greater level of private involvement than is ordinarily allowed for these types of bonds. This allows public-private partnerships (PPPs) to obtain lower financing rates, eliminating one barrier to private sector participation in transportation finance⁷¹.

Grant Anticipation Revenue Vehicle (GARVEE) Bonds - A GARVEE is a designation applied to a debt financing instrument that has a pledge of future Federal aid for debt service and is authorized for Federal reimbursement of debt service and related financing costs. This financing mechanism generates up-front capital for major highway projects that the state may be unable to construct in the near term using traditional pay-as-you-go funding approaches. The issuer may be a state, political subdivision, or a public authority⁷². GARVEE bond issues are used in conjunction with advance construction to enable using Federal-aid funds for future debt service payments.

Grant Anticipation Notes (GANS) - Transit agencies also use similar mechanisms to borrow against future Federal-aid funds (Federal Transit Administration Title 49 grants) that are allocated by formula (Section 5307) or by project (Section 5309). These transit debt mechanisms are known as GANs but are not officially termed GARVEEs because they utilize Federal-aid funding under Title 49, not Title 23, and do not include debt-related financing costs such as interest and issuance costs.

State Infrastructure Banks - Missouri Transportation Finance Corporation is the SIB for Missouri. AN SIB does the following:

- Loans (primary and subordinated)
- Standby lines of credit
- Debt service reserve financing
- Bond security
- Limited financial planning assistance
- Grant Anticipation Notes
- Gap financing
- Credit enhancements

*Toll Credits*⁷³ - The FAST Act supports and follows-up on the larger changes MAP-21 made to the statutory provisions that govern tolling on highways constructed or improved with Federal funds. Changes include provisions requiring the same treatment of over-the-road buses and public transportation vehicles on certain toll facilities. The FAST Act requires a public authority that operates a high-occupancy toll (HOT) or low emission and energy-efficient vehicle toll lane that is located on the Interstate System and within a metropolitan planning area to consult with the MPO for the area regarding the placement and amount of tolls on the HOT lane. Finally, the FAST Act allows a waiver of sanctions for degraded high-occupancy vehicle operation under certain conditions.

In addition, the FAST Act modifies some requirements of the Interstate System Reconstruction and Rehabilitation Pilot Program, which allows tolling an existing Interstate highway to finance needed

⁷¹ http://www.fhwa.dot.gov/ipd/finance/tools_programs/federal_debt_financing/private_activity_bonds/

⁷² http://www.fhwa.dot.gov/ipd/finance/resources/federal_debt/garvee_guidance_2014.aspx

⁷³ <https://www.fhwa.dot.gov/fastact/summary.cfm>

reconstruction or rehabilitation. Specifically, it sets new time limits for an applicant to move from a provisionally-approved application to a complete application that fully satisfies the program's eligibility and selection criteria, complete the environmental review and permitting process under the National Environmental Policy Act, and execute a toll agreement with the Secretary. States for which FHWA had provisionally approved an application prior to enactment of the FAST Act have a one-year time limit, while provisional approvals subsequent to enactment of the FAST Act will have a three-year time limit. The FAST Act also gives FHWA the authority to extend either of these limits by an additional year if certain conditions in the statute are met.

Appendix C: Supporting Policies

Supporting Policies & Programs

Complete Streets Policy

Complete Streets is an important design concept that considers people of all ages and abilities. Designers are encouraged to consider all modes of transportation when planning, designing, operating, and maintaining access for all users. A Complete Streets policy has the potential to end the project-by-project struggle to design better facilities by requiring all road construction and transportation improvement projects to begin with evaluating how the street serves all users – pedestrians, bicyclists, public transportation vehicles and passengers, trucks, and automobiles. Implementing a Complete Streets policy may require changing existing policies and practices of local communities and/or transportation agencies. In some cases, it may be difficult to adopt a new procedure or to modify design guidelines. Furthermore, implementing a Complete Streets policy may require additional training for planning and engineering staff which will take time and cost money but will result in a more comprehensive regional transportation system with additional capacity and flexibility to accommodate the travel needs of all users.

Ultimately, the desired outcome of a Complete Streets policy is one in which a multi-modal street becomes the default design and only after a formal exception process is a noncompliant design allowed. The following are general exceptions where roadways can lack non-motorized facilities:

- Roads where bicyclists and pedestrians are prohibited.
- A clear absence of need.
- Roadway or corridor is clearly not part of, or in close proximity to, the existing or planned non-motorized network.

Some additional challenges for implementing a Complete Streets policy may include:

- Lack of right-of-way in cramped thoroughfares may make multi-modal improvements difficult, costly, or impossible.
- Overcoming the misconception that Complete Streets cost more to build than traditional streets when in fact Complete Streets often cost less to construct. By fully considering the needs of all non-motorized travelers (pedestrians, bicyclists, and persons with disabilities) early in the life of a project, the costs associated with including non-motorized facilities are minimized.
- Ensuring accurate transportation analysis as current methodologies for studying traffic may result in misleading results. For example, some current traffic methodologies may fail to consider how the presence of transit in a mixed-use corridor could potentially lower trip generation rates and thus reduce traffic volumes and congestion.
- Coordination of current transportation projects with planned transportation improvements. It is important that current transportation projects consider the impacts on planned or future improvements. For example, the reconstruction of a bridge commonly takes place before future roadway improvements (within the same corridor). The bridge improvements should be coordinated with future roadway designs to ensure that non-motorized accommodations are included in the bridge reconstruction and provide a safe and convenient transition with future roadway improvements.

An Ideal Complete Streets Policy

A Complete Streets policy should include the following:

- A vision for how and why the community wants to build and re-build its streets.
- Specifies that ‘all users’ includes pedestrians, bicyclists, and public transportation passengers of all ages and abilities, as well as trucks, buses, and automobiles.
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- Provides for transit accommodations including sidewalks, shelters, and bus turnouts.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards while recognizing the need for flexibility in balancing user needs.
- Directs that complete streets solutions compliment the context of the community.
- Establishes performance standards with measurable outcomes.
- Specific next steps for implementation of the plan.

In 2018, the City of Cape Girardeau passed a resolution adopting a complete streets policy. Per the resolution, the purpose of the complete streets program is to “create an equitable, balanced, and effective transportation system where every street user can travel safely and comfortably and where sustainable transportation options are available to everyone.” Not all member agencies have adopted such programs, although such consideration is encouraged.

Transit Oriented Design (TOD)

Transit Oriented Development (TOD) is high-density, multi-family housing and mixed-use development designed to encourage accessible, active, pedestrian oriented areas within walking distance of transit. The purpose of implementing TOD is to encourage the use of public transit and reduce trips on freeways, expressways, major collectors, and arterials. TOD includes many of the same principles as Complete Streets in that the policy is intended to strengthen alternative transportation modes. As a result, a corridor can move more people with fewer vehicles.

TOD design focuses on the following:

- Locating housing near transit;
- Locating neighborhood-serving retail and office uses near transit and housing;
- Connecting streets and paths for pedestrians and cyclists to and through the TOD; and,
- Creating viable retail spaces for various tenants.

In order for TOD to be successful, a strong relationship between development and transit and an understanding of how transit works in tandem with surrounding development is necessary. This understanding begins with:

- Defining locations and sites with land use designation where TOD should occur;
- Describing a conceptual framework in which existing and prospective development and transit can relate and complement each other;
- Understanding the challenges to implementing those concepts; and,
- Defining the components of TOD.

TOD Benefits to SEMPO

As documented in earlier chapters, transit is an important element of the comprehensive transportation system. While transit currently represents a relatively small percentage of trips within the SEMPO planning area, it is possible that this transportation mode may become more important as the area approaches the 2045 planning horizon. As the area population ages it will likely see increased reliance on public transportation as a primary transportation mode for many individuals. TOD emphasizes transit in the planning and design process, thus making it easier for individuals to access public transportation. Furthermore, TOD creates a pedestrian friendly environment that encourages individuals to walk and remain active which can be a benefit for the entire community.

Bike Share Programs

There are multiple bike share systems available to choose from and the technologies are continuing to advance. Many riding options are available from standard bicycles, electric assisted bikes, scooters, ADA handbikes, and ADA compliant trikes. Other options of bike sharing systems are station-based, while others are dockless. These systems are typically programmed with geo-fenced service area so that the user is required to keep the bike within a specific area. This type of program may be of interest particularly for traveling along and between Southeast Missouri State University campuses.



















Access Management

Access management is the process of managing the connections between public highways and roadways and adjoining land. Transportation officials must balance the need for land development with the need for safe and efficient travel. MoDOT's and IDOT's existing access management regulations require an application process for all new access points for new developments on roadways in their respective jurisdictions. The City of Jackson also has access management guidelines in their Citywide Transportation Plan. Proactively managing access points is best, planning access points along corridors. Therefore, when new development or redevelopment opportunities present themselves, a plan is in place that sets expectations for property owners. If none exist already, adopting interparcel access policies to be applied to new development and redevelopment is recommended.

Appendix D: Expanded Goals, Objectives, and Strategies for Future Consideration

Safety

Goal: Ensure the safety of all users of the transportation system, regardless of mode.

Objective	Strategies	Performance Measure	Goal	Suggested Priority
Reduce the number of crashes	Improve visibility through improved lighting, striping, signage, visibility triangles, and access control	Total Number of Crash, Crash Type, Crash Locations	↓	
	Increase enforcement in priority safety areas (e.g. Click It or Ticket/Distracted Driving)	No. and Duration of Safety Awareness Programs	↑	
	Prepare and submit applications for Highway Safety Program funding	No. of HSTP submittals, No. of projects funded	↑	
Eliminate traffic fatalities and serious injuries	Prioritize funding for projects that address safety issues or are located on high crash corridors	Rate of Fatalities per 100 MVT, Total Number of Fatalities, Rate of Serious Injuries per 100 MVT, Total Number of Serious Injuries, Total of Non-Motorized Crashes resulting in fatalities and injuries	↓	
	Adopt a Vision Zero Strategy	Strategy Adopted	—	
	Shift regionwide standards to Multimodal Level of Service and prioritize Vision Zero goals in the Infrastructure Design Manual (IDM)	Type of Number Standards adopted	↑	
	Use design as a tool to support and enforce pedestrian right-of-way at intersections and crosswalks	No. of crosswalk/intersection improvements implemented	↑	
	Identify high-risk roadway features and develop templates to simplify consistent safety redesigns	Features ID's and redesigns implemented	↑	
	Evaluate roadway reconstruction project for multimodal safety needs and opportunities at project inception	No. of reconstruction projects annually, no. that include safety improvements	↑	
Reduce modal conflicts	Encourage the development of safety education programs to inform the public of bicycle/pedestrian rules and regulations	Bike Safety Programs, Frequency, Host Duration	↑	
	Reduce physical obstructions/barriers that impede safe bicycle/pedestrian travel	Barriers removed annually	↑	
	Increase pedestrian signal crossing time	No. of signals with crossing times increased, % of total signals	↑	
	Where feasible, utilize railroad right-of-way, levees, and parkways for alternative transportation routes to avoid traffic conflict, including adequate grade separation at intersections	No. and Miles of off-road multimodal projects completed	↑	
	Utilizing established evaluation criteria, identify "bicycle friendly" streets that will accommodate on-road bicycle travel	Miles of bike friendly streets as percent of network	↑	
Eliminate system vulnerability to risks and hazards	Implement Recommendations of the Hazard Mitigation Plan	No. of recommendations implemented annually	↑	
	Prioritize transportation infrastructure projects that protect key facilities and services	No. of projects that protect key facilities and services	↑	
	Emphasize mitigation techniques during new and renovation construction of critical facilities	No. of mitigation techniques applied to projects	↑	
	Whenever possible, implement green infrastructure to reduce or minimize stormwater issues and flooding	No. of projects with green infrastructure. Gallons of stormwater removed/diverted from sewer system	↑	

System Management

Goal: Facilitate efficient management of the transportation system, with an emphasis on preserving the existing system and ensuring reliability.

Objective	Strategies	Performance Measure	Goal	Suggested Priority
Manage the transportation system efficiently	Implement a Dig Once policy	Adopt Dig Once policy	—	
	Increase investments in ITS to better manage traffic incidents, special events, construction, and logistics	Number of projects using latest technologies (Intelligent Transportation Systems) to improve system capacity and efficiency	↑	
Reduce transportation demand	Coordinate land use development and transportation	Reduction in land used for new projects	↑	
	Increase access to high-speed internet to residents across the SEMPO region	No. of residences with access to high-speed internet	↑	
Improve system capacity as needed	Plan for efficient system expansion as needed to support anticipated travel demand	System congestion and delay	↓	
	Address system capacity constraints and operational bottlenecks through system expansion when necessary	Study road inventory to provide a reduction in bottlenecks	—	
	Improve engineering and design standards for road design and construction	Coordinate design standards with State and ADA design standards	—	
Reduce the cost of roadway maintenance	Educate municipalities and individuals about the benefits of Road Diets	No. of meeting, promotional materials, and public surveys	↑	
	Encourage non-motorized travel, transit, and carpooling	Implement SEMPO Regional Bike Plan	—	
	Explore public-private partnerships (P3s) to address infrastructure and funding deficiencies	Increase public-private partnerships to reduce roadway maintenance costs	↑	
	Prioritize funding for regionally significant projects and programs	Develop a list of high priority projects	—	
	Coordinate utility upgrades with transportation infrastructure upgrades	Coordinate meetings with utilities to align projects	↑	
	Promote regional coordination through the use of mutual-aid agreements	Contract with outside entities	↑	
Improve Traffic Flow	Consider traffic circles and roundabouts at intersections	No. of traffic circle projects completed	↑	
	Synchronize traffic signals to improve the movement of traffic	No. of traffic signals coordinated	↑	
	Adopt access management policy	Policy adopted	—	
	Increase investments in ITS to better manage traffic incidents, special events, construction, and logistics	Number of projects using latest technologies (Intelligent Transportation Systems) to improve system capacity and efficiency	↑	
















Accessibility

Goal: Provide transportation options that are accessible to all users.

Objective	Strategies	Performance Measure	Goal	Suggested Priority
Improve the public transportation experience and options	Improve bus shelters and bus pads (standing pads)	No. of improved bus shelters and bus pads	↑	
	Provide additional routes to communities outside the metropolitan area	Connectivity Index score	↑	
	Improve availability and timeliness of passenger information	Update and post transit schedule and map at each transit stop	—	
	Provide more reliable service	Average delay of public transportation	↓	
	Improve perceptions of public transportation	Transit ridership	↑	
	Complete a study that analyzes the feasibility of different funding options for expanding mass transit service	Adopt study	—	
	Integrate local transit serviced data into Google Transit	No. of transit stops and routes on Google Transit	↑	
	Provide real-time transit data at bus stops and/or on mobile devices	Establish transit data on Google Transit	—	
	Establish regional transit services by providing intra-regional service to metropolitan area communities and inter-regional service to areas outside the metropolitan area	Establish additional routes to connect intra-regional and inter-regional areas	↑	
	Conduct a feasibility study of microtransit service	Adopt study	—	
Improve and expand pedestrian and bicyclist accommodations	Complete recommendations from the SEMPO Regional Bike Plan	No. of recommendations implemented from SEMPO Regional Bike Plan	↑	
	Establish a regional sidewalk inventory	Regional sidewalk map	—	
	Require all new subdivisions in the urban area to have sidewalks	Mileage of new or added sidewalks in residential areas	↑	
	Provide a framework to local jurisdictions that encourages the incorporation of bicycle and pedestrian accommodations in new and existing transportation infrastructure and development initiatives	No. of coordinated new bicycle and pedestrian accommodations	↑	
Increase the options for alternative modes of transportation	Increase the availability of bike racks	No. of bike racks	↑	
	Adopt Complete Streets Policy	No. of complete streets implemented	↑	
	Explore feasibility of passenger rail services	Develop a rail service feasibility study	—	
	Provide incentives for alternative commuting	Reduction in VMT per capita	↓	
Improve transportation access for the transportation disadvantaged including the elderly and low-income residents and people with disabilities	Complete recommendations from the SEMPO ADA Transition Plan	No. of ADA compliant points in region	↑	
	Prioritize bicycle and pedestrian improvements in environmental justice zones	No. bicycle and pedestrian improvements in environmental justice zones compared to other locations	↑	
	Prioritize bicycle and pedestrian improvements around bus stops	No. bicycle and pedestrian improvements around bus stops compared to other locations	↑	
	Improve parking enforcement (cars ticketed for parking or idling in bus stops), especially in downtown Cape and Jackson.	Reduction in vehicles parking or idling in bus stops	↑	
	Create and adopt ordinances for the removal of snow and ice from sidewalks, bus stops, and driveway entrances	Adopt ordinance	—	
	Research the feasibility of instituting a “universal rider’s card” for persons with disabilities traveling outside of the region	Study “universal rider’s card”	—	
	Support training programs for disability sensitivity	No. of programs for disability sensitivity	↑	
	Develop a Human Services Transportation Plan (HSTP)	Complete and implement HSTP	↑	


























Economic Enhancement

Goal: Support economic resiliency and prosperity with transportation solutions.

Objective	Strategies	Performance Measure	Goal	Suggested Priority
Promote the efficient movement of people and goods by linking the various modes of transportation	Increase capacity and availability of intermodal transportation facilities	Reduction in vehicle delay	↑	
	Advocate for the East West TransAmerica Corridor	Promotional material available to public and government agencies	↑	
Promote connections between transportation modes that support the effective shipment of freight	Research and develop a freight plan	Develop a regional freight plan	—	
	Study conflicts between passenger and freight transportation, specifically freight and passenger rail	No. of delays caused by right-of-way conflicts	↓	
	Maintain or improve the current farm-to-market road system and ensure they are not being degraded at a faster than normal pace	Reduction of trucks on farm-to-market road system	↑	
	Explore policies to support integration of autonomous vehicles	Adoption of autonomous vehicle policies	—	
	Increase multi-modal freight options	No. of multi-modal freight options	↑	
	Study drone delivery solutions	Adoption of drone delivery study	—	
	Explore and implement curb management policy to improve first-last mile service	Reduction in distance between first/last stop to destination	↑	
Focus transportation system improvements to support and promote tourism	Provide comfort stations at destinations and attractions	No. of comfort stations	↑	
	Provide bicycle and sidewalk accommodations at destinations and attractions	No. of bicycle and sidewalk accommodations	↑	
	Ensure attractions are ADA accessible	No. of ADA compliant locations	↑	
Reduce transportation cost burden for SEMPO residence	Favor policies and projects that encourage greater fuel efficiency	No. of fuel-efficient vehicles	↑	
	Support projects that improve commute options for disadvantaged workers	No. and availability of commute options	↑	
	Provide transportation mode choices including public transit, bicycling, walking, and ridesharing	Reduction in household commuting cost	↑	













Environmental Stewardship and Social Equity

Goal: Conduct transportation-related activities in a manner that supports responsible management of the environment and ensures the fair treatment of all people.

Objective	Strategies	Performance Measure	Goal	Suggested Priority
Avoid disproportionate adverse impacts on low income and minority communities	Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process	Representation of communities present in meetings and project planning	↑	
	Identify environmental justice communities	Survey demographics	—	
	Prioritize policies, programs, and resource investments to improve economic, social, and health outcomes for environmental justice communities	No. of programs available and the dollars invested for the policies implemented	↑	
Improve air quality Reduce modal conflicts	Reduce emissions from city, municipal, and state operated vehicles	No. of fuel-efficient state operated vehicles	↑	
	Encourage improved engine efficiency in rolling stock, airplanes, and water freight vehicles	No. of fuel-efficient rolling stock, airplanes, and water freight vehicles and amount of fuel used	↑	
	Encourage carpooling and provide park and ride facilities	No. of park and ride facilities	↑	
	Reduce emissions from sanitation vehicles (garbage trucks and sanitary sewer fleet) by using ultra-low sulfur diesel (ULSD) fuels	No. of vehicles who use ULSD fuels	↑	
	Reduce idling through projects such as traffic signal synchronization and creating idling policies for loading zones, school zones, etc.	No. of coordinated traffic signals and adoption of anti-idling policy	↑	
	Reduce emissions from non-road vehicles such as construction equipment by upgrading to ultra-low sulfur diesel (ULSD) vehicles	No. of ULSD vehicles	↑	
	Create an inventory of municipal owned fleets and construction equipment to track progress	Inventory of municipal owned fleets and construction equipment	↑	
Reduce reliance on fossil fuels in transportation	Encourage public agencies and businesses to install Electric Vehicle Charging Stations at their parking facilities	No. of electric vehicles charging stations	↑	
	Encourage Transit Services to acquire hybrid buses	No. of hybrid buses	↑	
	Encourage public entities to install LED street and parking lot lighting and utilize the Illinois Energy Now rebate program	No. of LED lights installed	↑	
Preserve and enhance scenic views of an access to historic, cultural and other attractive features	Explore Transfer of Development Rights for properties identified as historic, culturally significant, or scenic	No. of properties enrolled	↑	
	Support the creation of conservation easements	No. of conservation easements	↑	
	Establish design guidelines and design review that limit the impact of development on scenic vistas and viewsheds	Type of design guidelines adopted	—	
	Enact strict billboard controls	Develop billboard policy	—	
	Implement zoning and land use ordinances for view protection.	Develop ordinance	—	
Minimize negative impacts to the environment	Avoid sensitive environmental features and identifying relevant mitigation measure when possible and feasible	Identify and protect environmentally sensitive areas	↑	
	Use recycled materials in road construction.	Reduction in construction waste	↑	
	Construct noise barriers where appropriate to prevent noise pollution in neighborhoods	Reduction in noise pollution	↑	
	Encourage the installation of International Dark Sky Association compliant light features in new roadway projects	No. of Dark Sky Association features installed	↑	
Improve water quality	Minimize land disturbance during construction, particularly on steep slopes	Reduction in acres conserved	↑	
	Aim for zero run-off from road projects by utilizing best management practices (BMP's)	Reduce BMP violations	↑	
	Reduce the water quality impacts of herbicide, de-icing, and other chemical agents used for road maintenance	Establish use of environmentally friendly products	↑	

Coordination & Engagement

Goal: Promote the coordination of transportation-related activities and the effective engagement of stakeholders.

Objective	Strategies	Performance Measure	Goal	Suggested Priority
Increase coordination between key stakeholders	Explore shared procurement contracts for standardized supplies, equipment, software, and materials	Standardize contract language	—	
	Ask for SEMPO representative to participate/liaison in planning activities of member organizations (non-voting/coordination purposes)	Identified representation by member organizations	↑	
	Provide joint training for staff of all member agencies on relevant topics and programs	No. of training events, number of participants from various agencies represented	↑	
	Provide agency-sanctioned and informal social gatherings to help members get to know each other in a more relaxed and enjoyable setting	No. of gatherings	↑	
	Ask member organizations to include in their report to SEMPO (Board and TPC) any information that would be relevant to public	Creation of a reporting outline identifying what member organizations should be reporting	—	
Increase education and awareness of general public	Actively encourage better coordination of public transportation information	No. of coordination meetings	↑	
	Support local, state, and national public awareness campaigns	No. of SEMPO communications showing support	↑	
	Incorporate engagement activities that are child friendly and remotely accessible	No. of engagement activities	↑	
	Establish an advisory group to meet semi-annually and made up of representatives of groups/organizations identified in SEMPO's Public Participation Plan to discuss transportation activities, issues, and ideas for improvement/planning (identifying meeting forum and schedule)	Formation of advisory group per signed agreements outlining purpose and expectation of group.	—	
Increase public input on and participation in transportation related activities	Provide meeting materials in multiple languages	No. of meeting materials provided in multiple languages	↑	
	Engage under-represented groups through specific targeted activities	Formation of under-represented groups	—	
	Utilize advisory group in all SEMPO public notice processes	Advisory group representatives are added as contacts for public notice	—	

Appendix E: Travel Demand Model Development and Validation Report

SEMPO Travel Demand Model Development and Validation Report

Introduction

As part of the MTP update, Lochmueller Group developed, calibrated, and validated a three-step TDM for the MPA. A three-step travel model is an abbreviated version of the widely used traditional four-step travel demand model. The three-step version of travel models are appropriate for small metropolitan areas like SEMPO where automobile is the key mode of transportation for the foreseeable future and users of other travel modes (e.g., walking, biking, and transit) are very small.

The model utilizes a study area roadway network and land use (socioeconomic data) data to estimate existing travel conditions. Once the existing travel pattern is validated against observed travel conditions, the model is used to predict future travel patterns in the region based on changes to the roadway network and/or land-use data. The model area includes almost entirety of Cape Girardeau County and some areas from Scott County in Missouri and a small area from Alexander County, Illinois. **Figure A-1** shows the SEMPO TDM area.

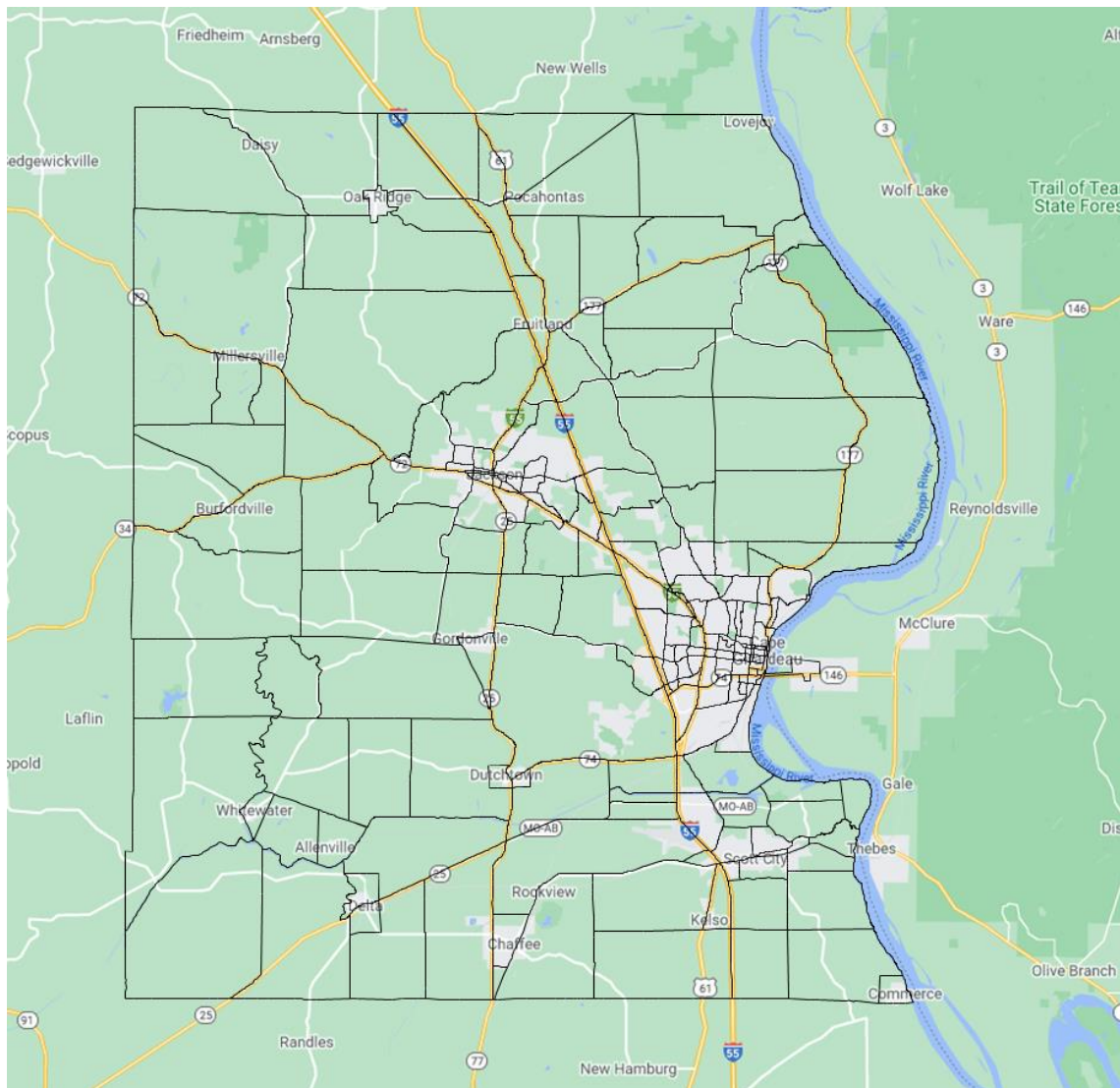


Figure A-1. SEMPO TDM Boundaries

TDM Inputs and Steps

Figure A-2 shows the TDM inputs and steps. Key inputs are socioeconomic data and the roadway network.

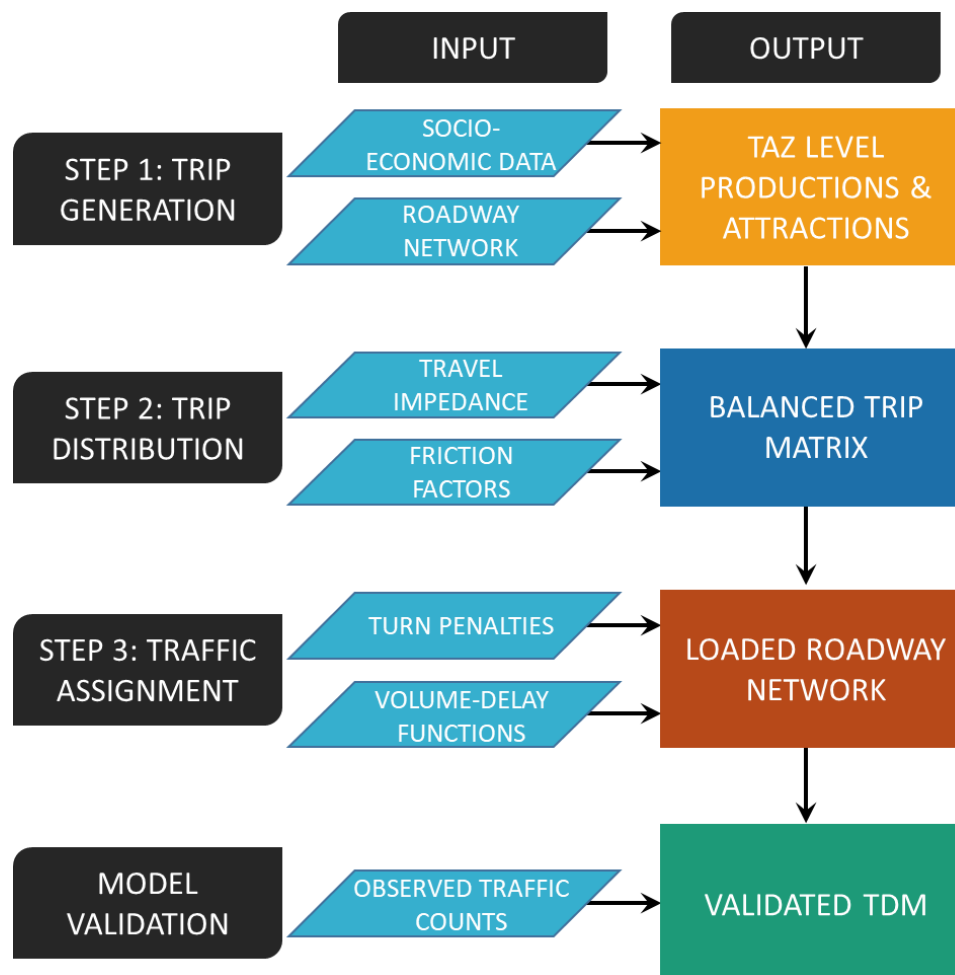


Figure A-2. SEMPO TDM Structure

Traffic Analysis Zones (TAZs)

Socioeconomic data (e.g., population, households, employments, etc.) for the model area were reported at the Traffic Analysis Zones (TAZ) level. TAZs are the locations where trips begin and end. Socioeconomic data for the SEMPO TDM was obtained from the US Census Bureau's latest American Community Survey (ACS) 5-Year Data (2015-2019) and Longitudinal Employer-Household Dynamics (LEHD) data.

Census block level socioeconomic data was aggregated to SEMPO Traffic Analysis Zones (TAZ) levels. TAZs were developed by carefully evaluating the regional land uses, roadway network, and natural barriers, and political boundaries (e.g., county, city boundaries). SEMPO TDM contains 215 TAZs and 9 External Stations. **Figure A-3** shows SEMPO TDM TAZs and External Stations.

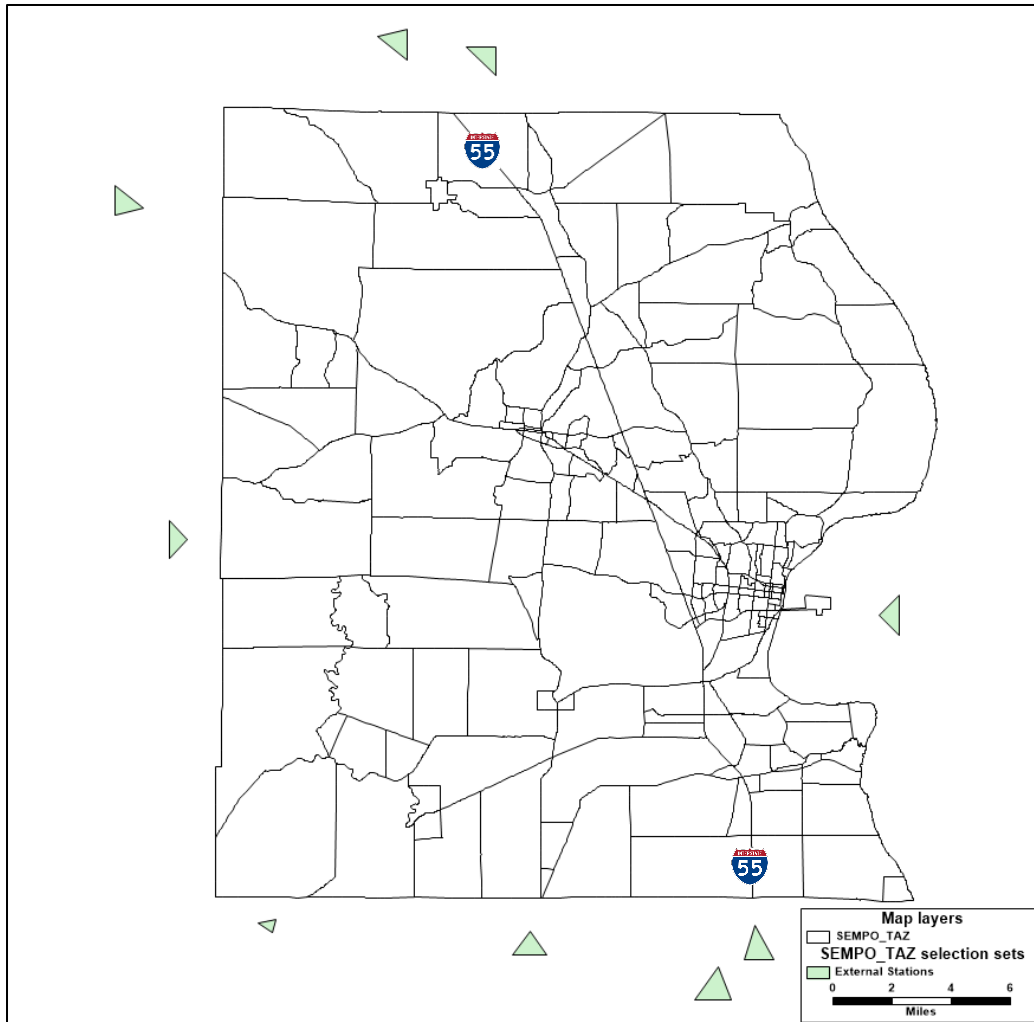


Figure A-3. SEMPO TDM TAZs and External Stations

Each TAZ contains socioeconomic data including total population, total number of households, total employment, and employment types. **Figure A-4** and **Figure A-5** show total population and total employment for each TAZs within the SEMPO TDM boundary.

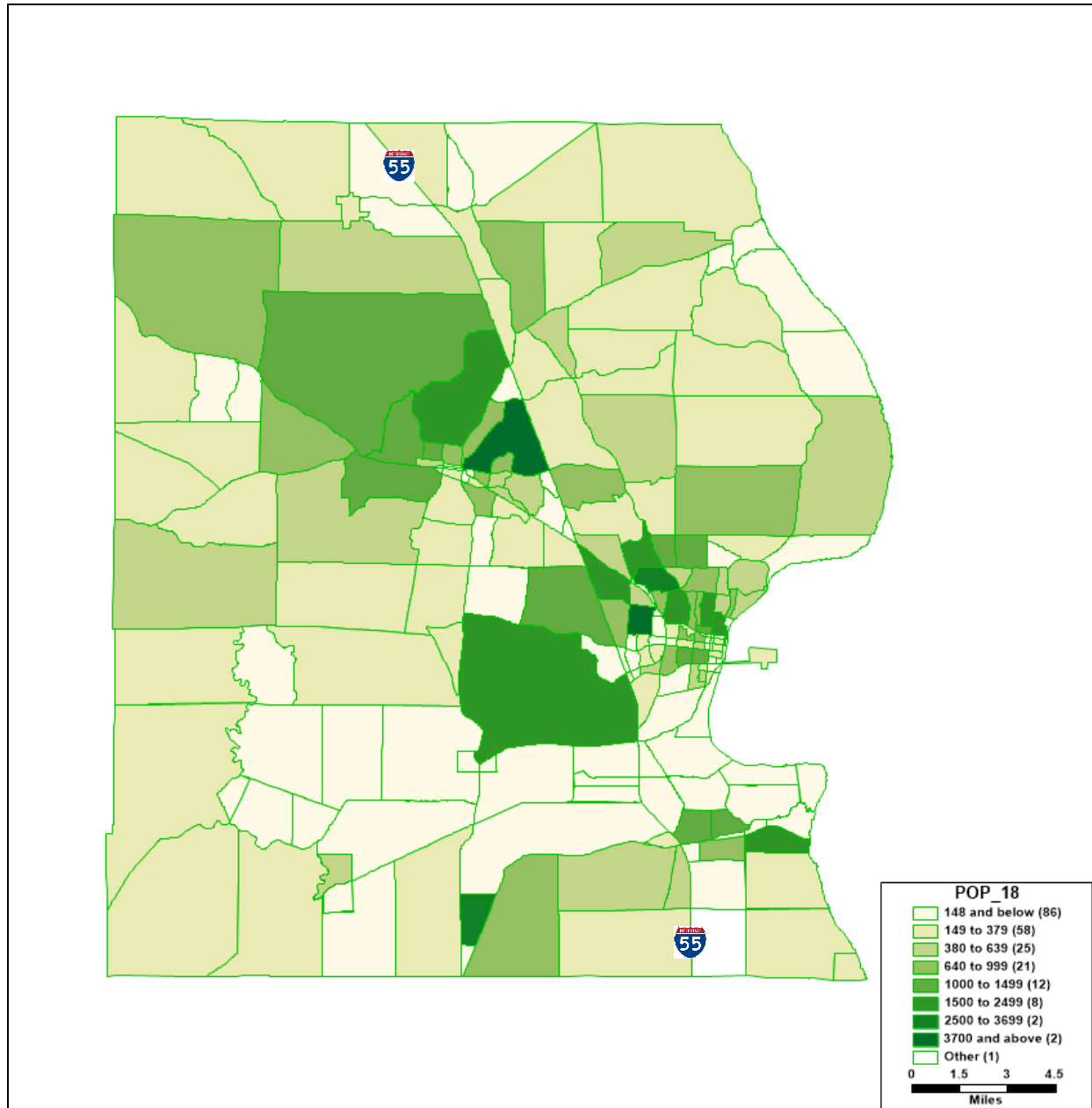


Figure A-4. Base Year Population Distribution

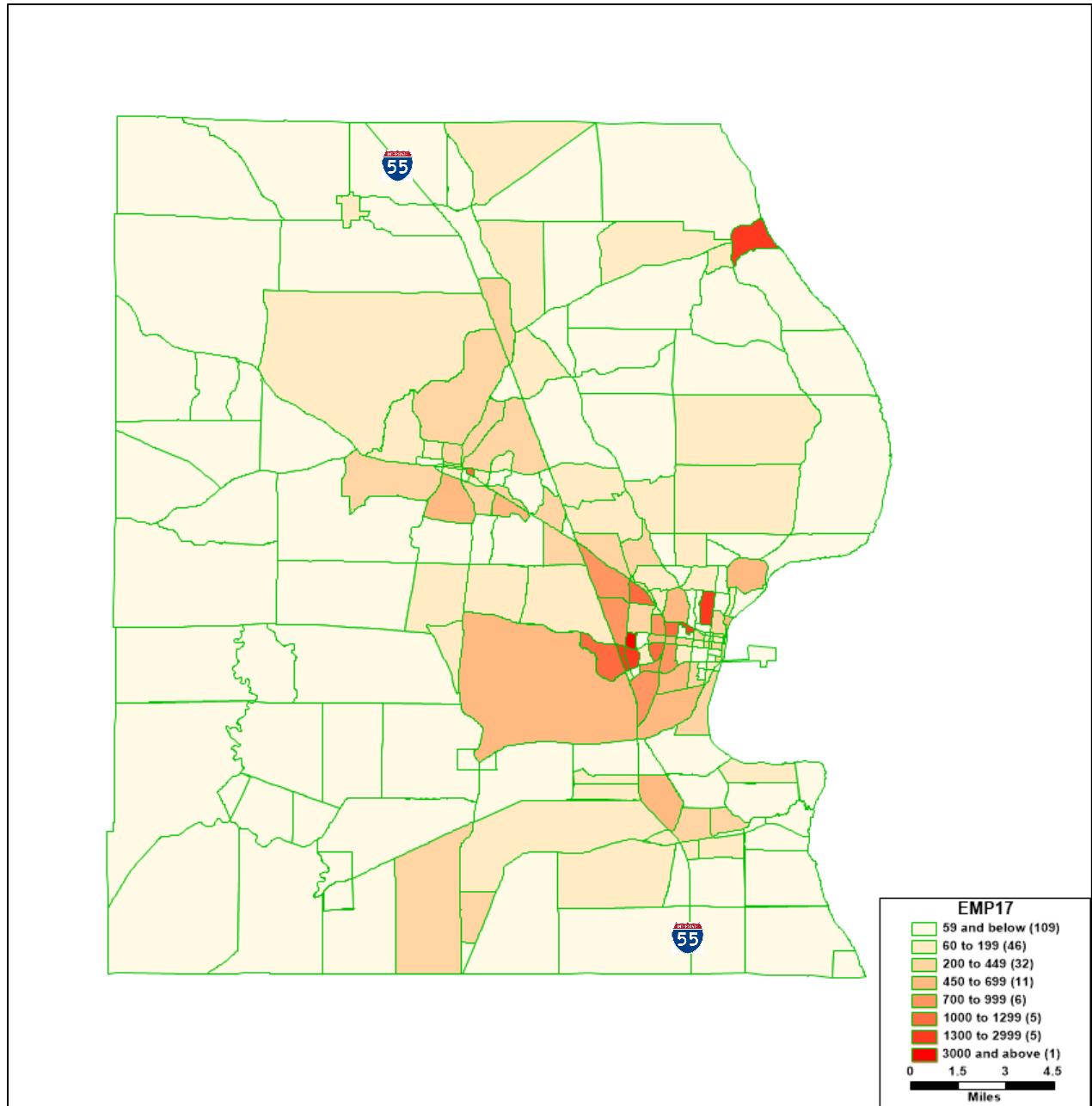


Figure A-5. Base Year Employment Distributions

Roadway Network

The TDM roadway network was developed by utilizing the roadway network shapefile obtained from the Cape Girardeau County and SEMPO. Local roads in the SEMPO TDM are represented by centroid connectors. Centroid connectors are network links that connects TAZ centroids to the actual roadways in the network. SEMPO network consists of links representing roadway segments and nodes representing intersections. **Table A-1** shows major link attributes and brief descriptions for SEMPO roadway network.

Table A-1. Major Network Attributes

Attribute	Description	Values
DIR	Direction	1 or -1 for One-way Links
		0 - Two -way links
FUNCCLASS	Functional Class	1- Interstate
		2- Freeway or Expressway
		3- Other Principal Arterial
		4- Minor Arterial
		5- Major Collector
		6- Minor Collector
		7- Local Road or Street
		8- Ramp (All Ramps)
SPD_LMT	Posted Speed Limit	Numeric Integer Value
THRU_LANES	Total Number of Lanes	Numeric Integer Value
REGION	Type of Area	Urban
		Rural
AB_LANES	Lanes in AB Direction	Numeric Integer Value
BA_LANES	Lanes in BA Direction	Numeric Integer Value
MSFFS	Base Free Flow Speed	Numeric Integer Value
MSHRCAP	Base Hourly Lane Capacity	Numeric Integer Value
AADT	AADT Values from DOT	Numeric Integer Value

Figure A-6 shows roadway functional class within the TDM roadway network.

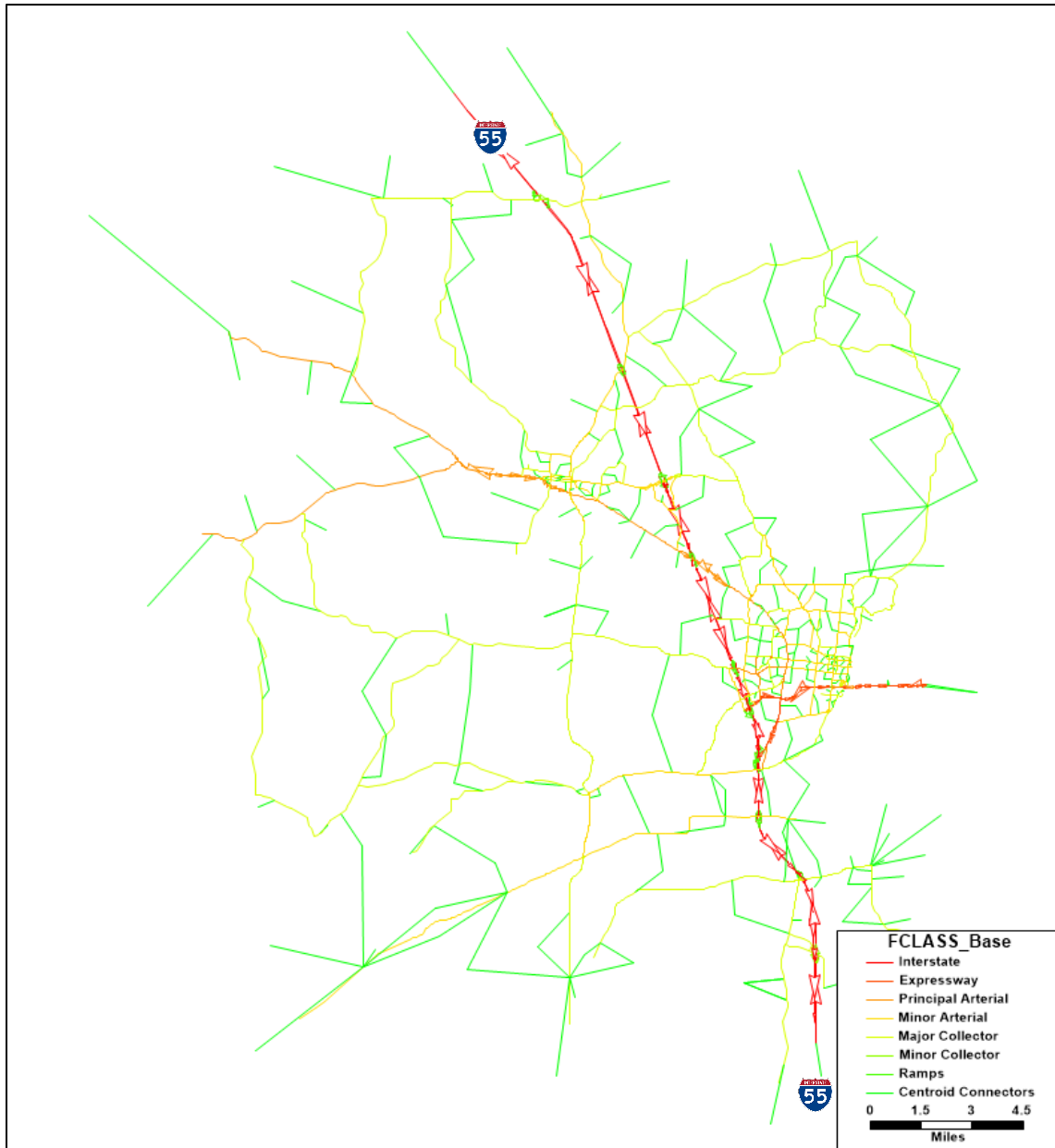


Figure A-6. SEMPO Network Roadway Functional Class

Speed-Capacity Estimation

Speed-capacity estimation methodology for the SEMPO TDM was adopted based on review of recently completed Illinois Statewide Travel Model (2020) to populate free-flow speed and capacity in the roadway network links. Link speed and capacity are very important attributes and typically depends on roadway functional class and area types. **Table A-2** shows free flow speed adjustment from posted speed limits. **Table A-3** shows link capacity (vehicle per hour per lane) for the roadways in the TDM network.

Table A-2. Free Flow Speed Adjustments by Functional Class

Functional Class	Urban	Rural
1- Interstate	4	2
2 - Freeway or Expressway	4	2
3 - Other Principal Arterial	-1	-4
4- Minor Arterial	-3	-3
5- Major Collector	-1	-2
6- Minor Collector	-1	-1
7- Local Road or Street	0	-1
8- Ramp (All Ramps)	0	0

Table A-3. Hourly Capacity by Functional Class

Functional Class	Urban	Rural
1- Interstate	1,800	1,700
2 - Freeway or Expressway	1,700	1,700
3 - Other Principal Arterial	1,500	1,600
4- Minor Arterial	1,300	1,500
5- Major Collector	1,100	1,200
6- Minor Collector	400	500
7- Local Road or Street	500	600
8- Ramp (All Ramps)	1,300	1,300

TDM Steps

SEMPO TDM is a 3-step model. A three-step TDM is an abbreviated version of the widely used traditional four-step TDM. The three-step version of TDM is appropriate where automobile is the key mode of transportation for the foreseeable future and users of other travel modes (e.g., walking, biking, and transit) are very small. SEMPO TDM steps include:

- Trip Generation
- Trip Distribution
- Traffic Assignment

Trip Generation

Trip Generation step consists of two sets of models: Production and Attraction. Three trip purposes were considered in Production and Attraction models. These include:

- Home-Based Work Trip
- Home-Based Other Trip
- Non-Home-Based Trip

The SEMPO MPA population is less than 100,000 and designated as a small urbanized area. There was no travel survey data showing travel behavior of the residents available. Thus, for production trip estimation, average daily person trips per household-by-household size was utilized. Production trips are trip ends associated with the traveler's home for home-based trips and origins of non-home based trips. **Table A-4** shows trip production rates by household size for Urbanized Area with population less than 200,000 obtained from the Transportation Research Board's NCHRP Report 365: Travel Estimation Techniques for Urban Planning. These rates were used to estimate production trips for each TAZs.

Table A-4: Trip Production Rates for Urbanized Area with less than 200,000 Population

Household Size	Average Daily Person Trips per Household	Trip Purpose (% of Total)		
		HBW	HBO	NHB
Two Person	7.6	22	54	24
Three Person	10.6	19	56	25
Four Person	13.6	19	58	23
Five Person	16.6	17	62	21
Weighted Average	9.2	20	57	23

Attraction trips for each TAZs were estimated based on the following regression equations obtained from the NCHRP Report 365:

$$HBW \text{ Attractions} = 1.45 * Total \text{ Employment}$$

$$HBO \text{ Attractions CBD} = 2.0 * CBD \text{ RE} + 1.7 * SE + 0.5 * OE + 0.9 * HH$$

$$HBO \text{ Attractions NCBD} = 9 * NCBD \text{ RE} + 1.7 * SE + 0.5 * OE + 0.9 * HH$$

$$NHB \text{ Attractions CBD} = 1.4 * CBD \text{ RE} + 1.2 * SE + 0.5 * OE + 0.5 * HH$$

$$NHB \text{ Attractions NCBD} = 4.1 * NCBD \text{ RE} + 1.2 * SE + 0.5 * OE + 0.5 * HH$$

Where,

CBD = Central Business District Zones

NCBD = Non-Central Business District Zones

RE = Retail Employment

SE = Service Employment

OE = Other Employment

HH = Number of Households

Trip Balancing

Trip balancing is the last step in trip generation modeling. The estimated total trips produced at the household level should be equal to trips attracted in different attraction centers. However, in reality, total

estimated production trips and attraction trips for the study area would not be equal because of degrees of uncertainties included in each trip rates or equations. Trip balancing for SEMPO region followed the steps specified in the NCHRP Report 365 and appropriate trip balancing factor for each trip purposes were estimated. Production and Attraction trips were balanced using these factors.

Trip Distribution

Trip Distribution model was based on a doubly constrained gravity model as shown in **Figure A-7**. The inputs to trip distribution include the pivoted outputs from Trip Generation model and an impedance matrix based on shortest travel times between each pair of TAZs.

$$T_{ij} = P_i \cdot \frac{A_j \cdot f(d_{ij})}{\sum_{\text{all zones } z} A_z \cdot f(d_{iz})} \quad (\text{constrained to productions})$$

$$T_{ij} = A_j \cdot \frac{P_i \cdot f(d_{ij})}{\sum_{\text{all zones } z} P_z \cdot f(d_{zj})} \quad (\text{constrained to attractions})$$

where:

- T_{ij} = the forecast flow produced by zone i and attracted to zone j
- P_i = the forecast number of trips produced by zone i
- A_j = the forecast number of trips attracted to zone j
- d_{ij} = the impedance between zone i and zone j
- $f(d_{ij})$ = the friction factor between zone i and zone j

Figure A-7. Trip Distribution Formula

The impedance matrix was used to estimate friction factors, which represent the impact of travel time on the likelihood of travel. The friction factor for travel between each pair of zones for different trip purposes were obtained using the gamma function shown in **Figure A-8**.

Gamma Function: $F_{ij} = a \times t_{ij}^b \cdot e^{c \cdot t_{ij}}$

Where,

F_{ij} = Friction factor between zones i and j ,

a , b , and c = Model coefficients: both b and c should in most cases

be negative: a is a scaling factor and can be varied without changing the distribution,

t_{ij} = travel time between zones i and j , and

e = the base of natural logarithms

Figure A-8. Gamma Function

Table A-5 shows Gamma Function coefficients for friction factors utilized in the SEMPO Trip Distribution model.

Table A-5. Gamma Function Coefficients (Source: NCHRP Report 365)

Trip Purpose	Coefficients		
	a	b	c
HBW	28,507	-0.02	-0.123
HBO	139,173	-1.285	-0.094
NHB	219,113	-1.332	-0.1

Traffic Assignment

Daily Traffic Assignment step started by converting daily production-attraction person trip tables for each trip purposes into Origin-Destination vehicle trip tables. Vehicle occupancy rates for this process were obtained from the NCHRP Report 365 and are shown in **Table A-6**.

Table A-6. Vehicle Occupancy Rates (Source: NCHRP Report 365)

Trip Purpose	Person/Vehicle
Home Based Work	1.11
Home Based Other	1.67
Nonhome Based	1.66

Traffic Assignment process was based User Equilibrium (UE) assignment procedure. In this step, an alternative and more rapidly convergent method for computing user equilibrium known as the n-

conjugate descent Frank-Wolfe method was used, as this method was incorporated in TransCAD Traffic Assignment process.

Assigned traffic volumes in the roadway network were utilized in the Traffic Assignment validation process.

TDM Validation

TDM validation was performed for each model step. However, for purposes of efficiently summarizing overall validation, this section details the traffic assignment validation, which was based on daily automobile volumes. Assignment validation compares base year assigned traffic volumes on the roadway network to observed traffic counts. Traffic volumes along some major regional roadway were obtained from the Missouri Department of Transportation's (MoDOT) only traffic volume maps.

Table A-7 compares Vehicle Miles Traveled (VMT) from the base year TDM with observed VMT from counts. As shown, the percent difference between observed and modeled VMT is between 6 and 13 percent depending on the functional classification. The values are within acceptable ranges for each classification established by FHWA.

Table A-7. VMT Validation Comparison by Functional Class

Facility Type	# of Segments	VMT		Difference	% Difference	FHWA Target
		Observed	Model			
Interstate	15	275,282	292,879	17,597	6.39%	±7%
Principal Arterial	14	57,105	60,907	3,802	6.66%	±10%
Minor Arterial	9	71,480	80,559	9,079	12.70%	±15%
Collector	3	4,679	4,399	-280	-5.99%	±25%

Figure A-9 shows a scatterplot of modeled traffic volumes versus observed traffic counts. As shown, the modeled volumes are closely distributed around observed traffic counts. The co-efficient of determination (R^2) of 0.94 is indicative of a well-validated TDM.

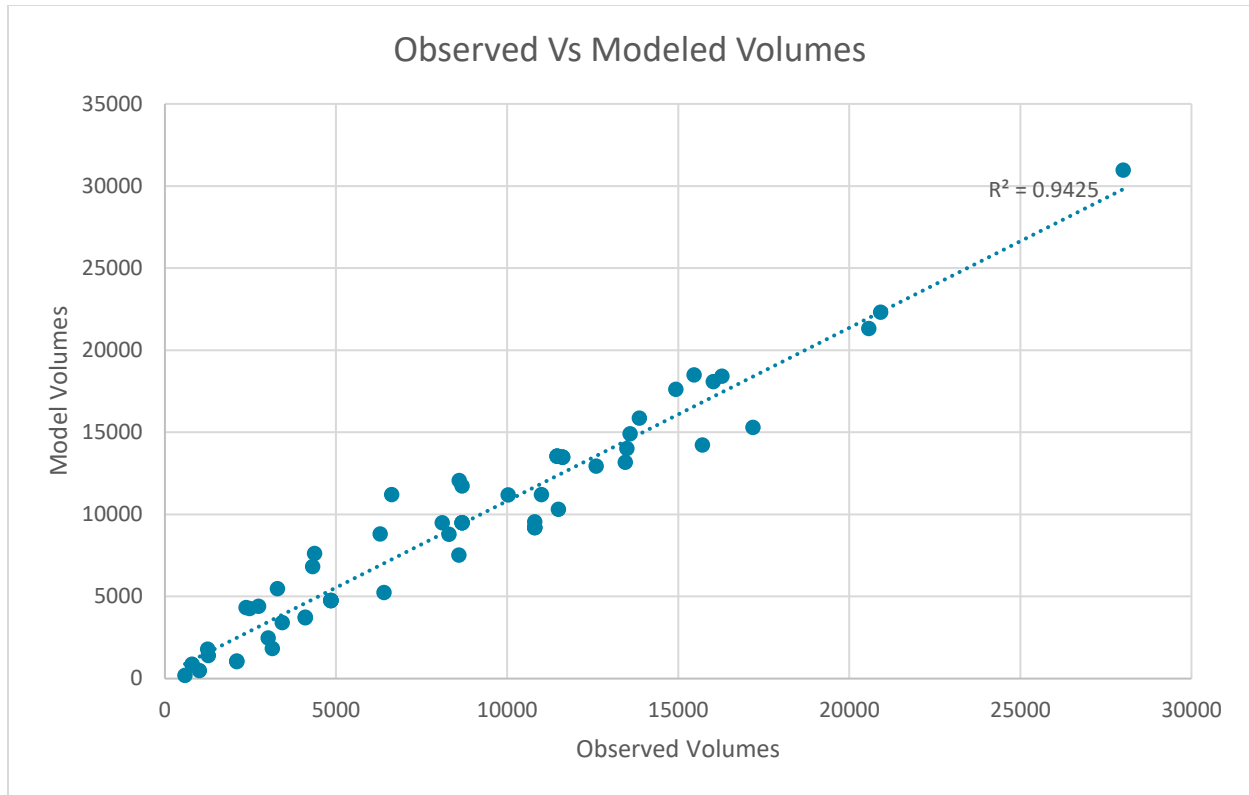


Figure A-9. Observed and Modeled Volumes Comparison



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