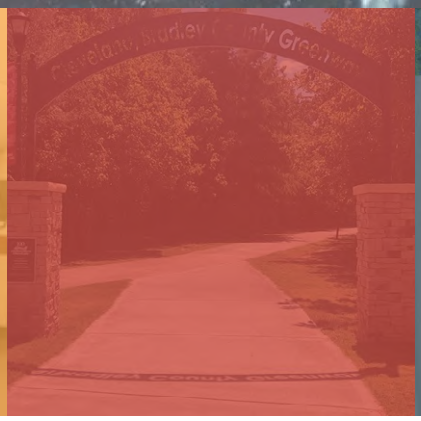

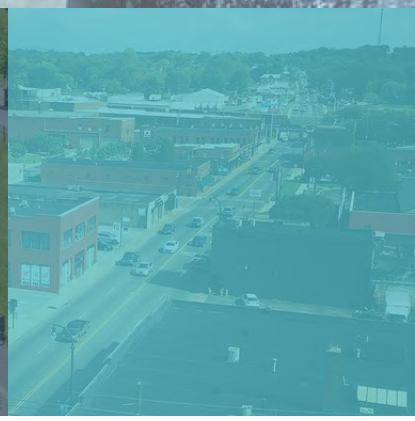

2045 REGIONAL TRANSPORTATION PLAN

2045 Regional Transportation Plan

Cleveland Urban Area
Metropolitan Planning Organization

DATE: May 10, 2021

Stantec

Contents

Tables & Figures

Acknowledgement

Many people have contributed to this report, including staff, local government representatives, and citizens. Special thanks are extended to members of our Technical Advisory Committee (TAC):

- City of Cleveland
- Bradley County
- McMinn County
- Cleveland Urban Area MPO
- Tennessee DOT (TDOT)
- Federal Highways Administration (FHWA)
- Cleveland Urban Area Transit System (CUATS)
- Southeast Tennessee Human Resource Agency (SETHRA)

The Cleveland Urban Area Regional Transportation Plan (RTP) was developed for the Cleveland Urban Area Metropolitan Transportation Plan (CUAMPO).

Production of the RTP was led by Stantec Consulting Services Inc, with assistance from Fairpointe Planning, and Wilmot Inc.

Abbreviations

These abbreviations occur throughout this Plan and are condensed here for your convenience.

CMAQ: Congestion Mitigation Air Quality
CUATS: Cleveland Urban Area Transit System
HSIP: Highway Safety Improvement Program
FHWA: Federal Highways Administration
MMAG: Multimodal Access Grant
NHFP: National Highway Freight Program
NHPP: National Highway Performance Program
NHS: National Highway System
NPMRDS: National Performance Measure Research Data Set
PPP: Public Participation Plan
RTP: Regional Transportation Plan
S-STBG: State Surface Transportation Block Grant
STBGP: Surface Transportation Block Grant Program
TAC: Technical Advisory Committee
TAP: Transportation Alternatives Program
TIP: Transportation Improvement Program
UPWP: Unified Planning Work Program
U-STBG: Urban Surface Transportation Block Grant
UZA: Urbanized Area

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INTRODUCTION 01

01 Introduction

The Regional Transportation Plan is a foundational document for transportation infrastructure, policy, and planning in the Cleveland metropolitan area. Looking 20+ years into the future, the analyses, recommendations, and fiscally-constrained funding plan borne out of this document guides local, state, and federal transportation officials in funding local transportation investments – the RTP bridges the gap between federal funding and local needs.

This chapter introduces the Cleveland Urban Area MPO, the Regional Transportation Plan, and the broader transportation planning process, all of which influence the plans and recommendations culminating in this document.

In this Chapter:

1. What is the MPO?
2. MPO Organization

This Regional Transportation Plan (RTP) provides a 25-year blueprint for transportation investments in the Greater Cleveland area, through the year 2045. It is multimodal, addressing the movement of people and goods by private auto and truck, ridesharing, public transportation, bicycling and walking, rail, and air.

The Cleveland area is recognized for its success in retaining and attracting jobs, particularly in manufacturing, at a time when many other parts of the country are finding it challenging to maintain the vitality of their local economies. Continued success depends on the region's ability to plan for and adapt to the changing demands on its transportation system -- not only its infrastructure, such as roads, sidewalks, rail, ports, and airports, but also its services, such as public transit.

Regional leaders recognize the importance of a comprehensive strategy to actively manage the future, and have adopted various local plans that identify goals for future development, desired services, and quality of life. These plans, discussed further in Chapter 2, have provided guidance for the development of the 2045 RTP so that its proposed transportation investments support these broader community goals.

What is the MPO?

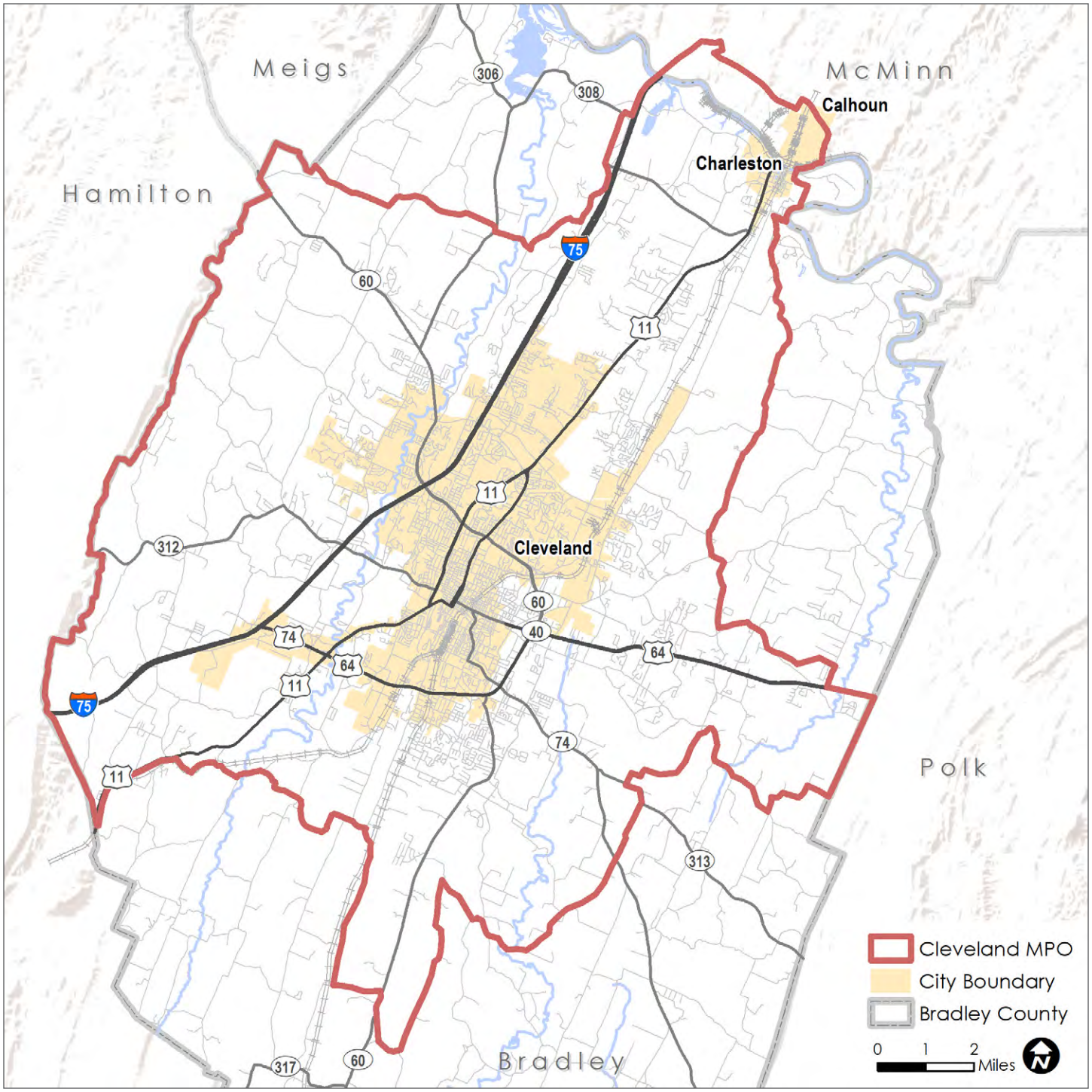
A Metropolitan Planning Organization is a federally-designated agency that coordinates and directs the transportation planning process for defined metropolitan areas of over 50,000 in population. MPOs were first created by Congress in 1962 as part of the Federal Aid to Highways Act, and have grown in importance with successive transportation authorization bills. Our current authorization, Fixing America's Surface Transportation Act (FAST Act), was passed in December 2015, and has been continued each year since. MPOs follow a formal set of regulations, preparing plans and programs, such as this RTP, the Transportation Improvement Program, and the Unified Planning Work Program, designed to ensure that existing and future transportation projects and expenditures are continuing, cooperative, and comprehensive; these regulations are laid out by Congress when authorizing funding for our Nation's surface transportation.

The Cleveland Urban Area MPO (CUAMPO) is one of over 400 such agencies across the United States, which through their structure guide federal transportation funding to local projects, while providing local officials input and oversight into the planning process.

History of the MPO

The Cleveland MPO was formed in 2003 after the U.S. Census defined the Cleveland urbanized area (which includes portions of Bradley County) to have over 50,000 in total population. Cleveland's continued growth in the 21st century led to this area expanding both in size and population, extending along the North Lee Highway corridor to include the City of Charleston, and a small portion of McMinn County. The MPO boundary was updated in 2014 to reflect this growth. Today, the Cleveland MPO includes the cities of Cleveland, Charleston, and Calhoun, as well as a large swath of Bradley County.

Figure 1.1: The current boundary of the Cleveland Urban Area MPO.



MPO Organization

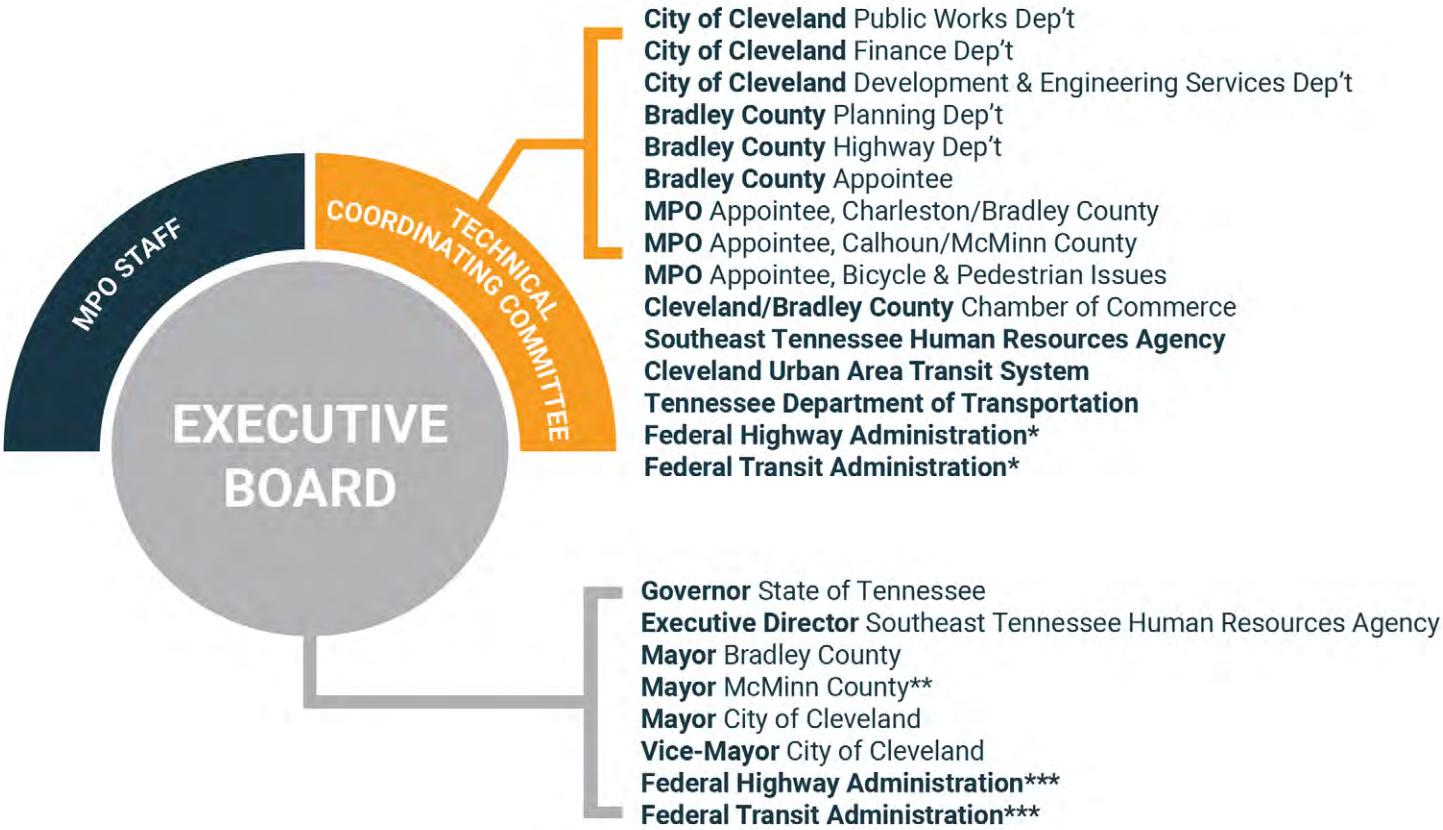
The MPO is an agency governed by its members, which include Cleveland, Bradley County, the State of Tennessee, Southeast Tennessee Human Resources Agency (SETHRA), and rotating representatives from Charleston, Calhoun, and McMinn County. The Federal Highway Administration and Federal Transit Administration have roles in the MPO as non-voting members.

The lead policy board of the MPO is the Executive Board, which is supported by a Technical Coordinating Committee (TCC) and MPO professional staff. The Executive Board is responsible for decision-making functions; it provides administrative and fiscal oversight, review and approval of transportation planning and programming decisions, establishes study committees, and ensures proper allocation of funds.

The TCC is composed of transportation professionals, including engineers, planners, and other professionals from constituent agencies, and assists in the implementation of the Executive Board's policy decisions. It provides input to the planning process, reviews and documents transportation plans and programs, and makes recommendations to the Executive Board for action.

The MPO is also staffed with an MPO Coordinator responsible for carrying out the routine planning and administrative functions. The Coordinator works closely with the TCC and Executive Board, performing many of the day-to-day duties and functions.

Figure 1.2: Cleveland MPO organizational structure.

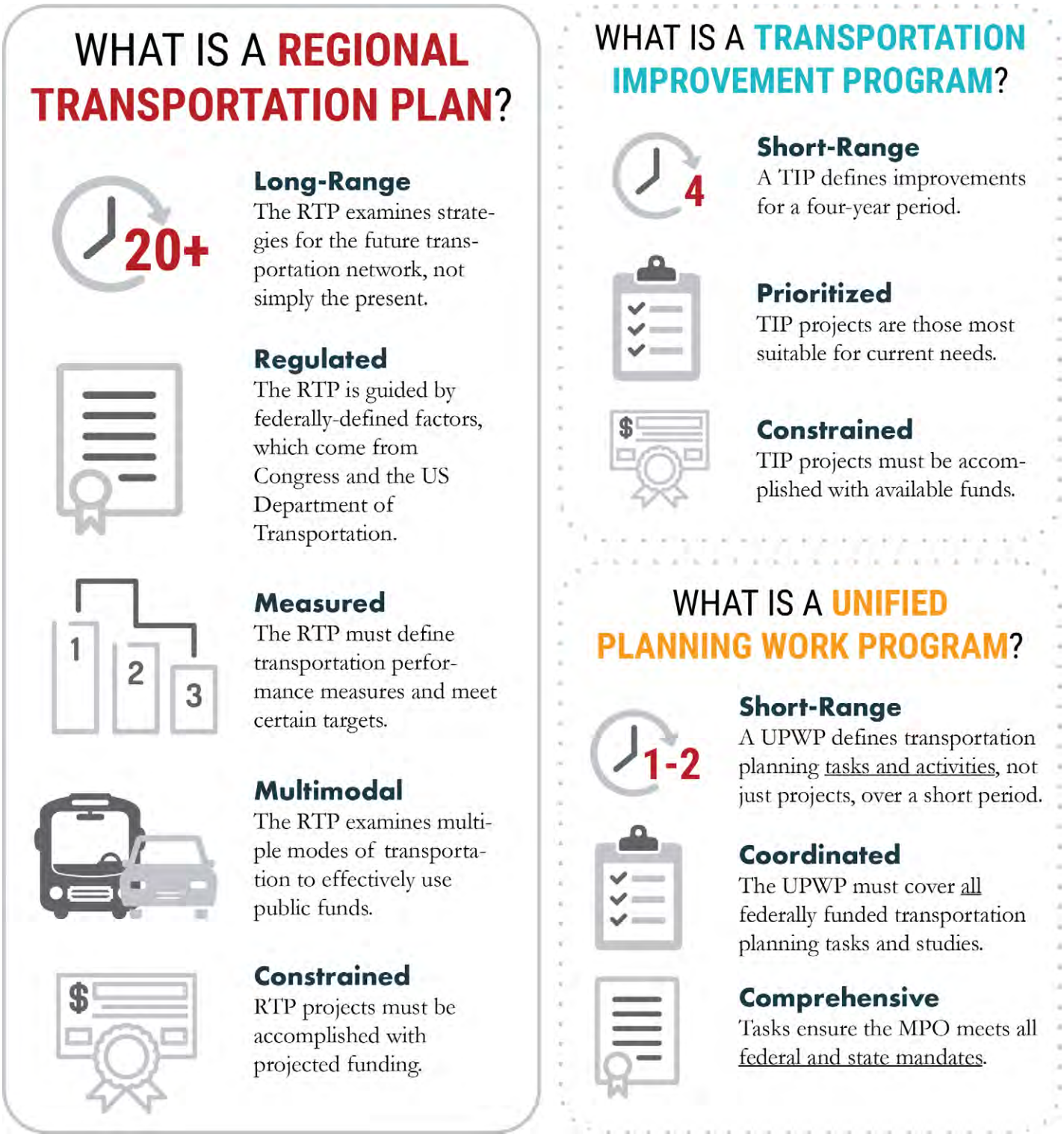


*Ex-officio member
**Rotates annually between McMinn County and the cities of Calhoun and Charleston
***Non-voting member

Activities of the MPO: What is a Regional Transportation Plan?

The Transportation Planning Process is summed up in the four major plans and programs required of every MPO: the Regional Transportation Plan, the Transportation Improvement Program, the Unified Planning Work Program, and the Public Participation Plan (not included below).

Figure 1.3: Core tasks and planning documents that are required of the MPO. Each document serves a different purpose, and applies over a different time period.



PURPOSE, GOALS 02 & OBJECTIVES

02 Purpose, Goals & Objectives

Every good plan has a well-defined purpose, smart goals, and specific objectives that guide a plan from vision to implementation. The Regional Transportation Plan is no different. While many of these goals, objectives, and criteria are defined through federal legislation, the nuances of each are still in the hands of local officials and policy-makers to tailor to their communities' needs. Laying out these goals and objectives, and the performance-based measures by which the plan's success will be judged, helps all to understand the rationale guiding the planning process.

This chapter introduces the performance-based planning framework, including the MPO's goals and defined performance measures, and lays out the goals and objectives guiding the 2045 RTP.

In this Chapter:

WHERE DO THESE FACTORS COME FROM?

Every MPO is required to establish goals, objectives, and performance measures based on these factors. Learn more about how other agencies address these factors and evaluate their transportation systems **HERE** (chapter 3).

Federal Planning Factors

The regulations guiding MPOs define the factors they must consider throughout the planning process. These factors orient transportation funding for projects towards community outcomes, ensuring that projects benefit the communities in which they are built and make the most effective use of limited funds.
The federal factors are listed below; Table 2.1 lists each of this RTP's goals, as well as how each goal of this RTP accomplishes and relates to each factor.

1. **Economic Vitality**
   Enabling global competitiveness, productivity, and efficiency
2. **Safety**
   For all users, not just motorized ones
3. **Security**
   For all users, not just motorized ones
4. **Accessibility & Mobility**
   For both people and freight
5. **Consistency**
   Of transportation improvements with local land use and economic development plans for environmental protection, energy conservation, and quality of life
6. **Connectivity**
   Both across and between modes, for people and freight
7. **Efficiency**
   In system management and operations
8. **Preservation**
   Of the existing transportation system
9. **Resiliency & Reliability**
   Of the overall transportation system--including stormwater impact reduction
10. **Enhancement**
    Of travel and tourism

Federal Planning Factors

2045 RTP Goals	Economic Vitality	Safety	Security	Accessibility & Mobility	Consistency	Connectivity	Efficiency	Preservation	Resiliency & Reliability	Enhancement
Safety Improve the safety and security of all transportation system users and reduce fatalities and severe injuries on the system.		✔		✔	✔	✔			✔	
Equity Provide healthy, convenient, and equitable transportation choices for underserved or traditionally underrepresented communities.	✔		✔	✔		✔				✔
Mobility Choices Enhance the existing network to include a healthy balance of pedestrian, bicycle, transit and roadway connectivity.	✔	✔	✔		✔		✔		✔	✔
Economic Vitality & Reliability Improve reliability of the movement of people and goods across the region in support of time-sensitive freight movement and logistics.	✔	✔		✔	✔	✔	✔		✔	
System Preservation Maintain and enhance existing transportation infrastructure assets in a good state of repair.	✔	✔						✔	✔	

Table 2.1: Each of this Plan's goals directly relates to the federal planning factors, as indicated in the table above. Goals were developed by local stakeholders through the Technical Advisory Committee.

What is our region's greatest asset?

1. **Livability**
2. **Economic Vitality**
3. **Regional Mobility**

— *Virtual Transportation Workshop Polling Results*

Vision Statement

While the federal planning factors guide MPO actions and decision-making, they are intended to be general and high-level. These factors are made actionable through the Vision Statement, Goals, and Objectives, which create the backdrop upon which this Plan is developed.

The Vision Statement reflects a community's values and goals, and guide this RTP planning process. Developed through the outreach process, refined by the many points of input and insight provided by the advisory committee, stakeholders, and community members, this Vision provides the framework by which decisions will be made. Informed by data received both through examination of the region and outreach, the Vision completes the picture for what the final Plan will become.

"With an exceptional quality of life and an affordable cost of living, the Cleveland region must be supported by a transportation system that is safe, reliable, and provides for healthy, equitable choices. More balanced transportation options and better access to all system users, supports greater mobility of people and goods, and preserves our communities' natural and cultural resources."

Figure 2.2: Vision Statement for the 2045 Regional Transportation Plan.

Goals, Objectives & Measures

Every good project has a set of specific, measurable, realistic goals that provide the framework for evaluating and selecting projects as well as determining success. For our RTP, these Goals were developed by local stakeholders through the Technical Advisory Committee. Each goal is accompanied by a set of objectives, representing key action steps to be taken to implement each goal. While these objectives are not exhaustive, they nonetheless provide a set of stepping stones important to addressing the system's issues. These goals, objectives, and measures all inform project prioritization, the crux of this Plan -- which we'll discuss more in Chapter 5.

Performance-Based Planning

Setting performance measures and targets keeps agencies accountable by providing an agreed-upon set of criteria to evaluate success, and the effectiveness by which it achieves its goals. MPOs are required to adopt the federal performance measures and given the option to make them more restrictive or create additional measures. Cleveland MPO has agreed to performance targets set by TDOT for consistency and efficiency in meeting federal requirements. Table 2.3 summarizes the MPO's current transportation system performance based on the selected measures.

PERFORMANCE MEASURES & PERFORMANCE TARGETS

A **PERFORMANCE MEASURE** tells us the metric by which we can evaluate **progress**, like **points** in **darts**.

Transportation examples might include:

- Level of Travel Time Reliability (TTR)
- Population (%) living within 1/4 mile of transit service
- Serious Injury Rate per 100M Vehicle Miles Travelled (VMT)

Measures compare past with present performance.

A **PERFORMANCE TARGET** defines success for a given **measure**, like hitting a score of **501**.

Transportation examples might include:

- Reduce total miles travelled along congested roadways 25% by 2045
- Increase population living within 1/4-mile of transit service 5% by 2030
- Reduce the rate of Serious Injury Crashes 5% by 2025

Targets compare actual with expected performance for a given measure.

System Performance Report

The Cleveland MPO addresses performance by supporting TDOT performance measures and targets. System performance is measured through data collected and reported by TDOT according to the required reporting period. The MPO's system performance reporting consists of reporting historical performance measure data released by TDOT with each successive update of the RTP, tracing performance over time.

Safety performance measures (PM1) set a 5-year performance target for vehicular crashes that result in serious, incapacitating injuries or fatalities. These measures evaluate the safety of the system for all users. Infrastructure Conditions performance measures (PM2) include both 2- and 4-year targets and assess the conditions of pavements and bridges along the National Highway System (NHS) that are in good or poor condition. Finally, Reliability performance measures (PM3) assess roadway reliability with regards to freight movement, congestion, and overall reliability. The MPO includes projects that support TDOT PM1, PM2, and PM3 targets within its planning documents. MPO member jurisdictions collaborate with TDOT efforts in the planning, design, and implementation of PM1, PM2, and PM3 projects.

STATUS KEY:
✓ = current average achieves target
× = average does not achieve target

	Performance Measure	Previous Baseline	TDOT Baseline	TDOT Target	Status
Safety (PM 1) Target (5-Year Average)	Number of Fatalities	994.4	1,005.4	1,021.4	✓
	Fatality Rate per 100 Million Vehicles-Miles Travelled	1.35	1.28	1.337	✓
	Number of Serious Injuries	7,319.4	6,988.8	7,630.8	✓
	Serious Injury Rate per 100 Million Vehicle-Miles Travelled	9.942	9.004	9.982	✓
	Number of non-Motorized fatalities and serious injuries	432.2	495.2	493.2	×
Infrastructure Condition (PM 2) Target (4-Yr Average)	Percentage of interstate pavement in good condition	n/a	72.0%	60.0%	✓
	Percentage of interstate pavement in poor condition	n/a	0.3%	1.0%	✓
	Percentage of non-interstate NHS pavement in good condition	72.7%	70.6%	40.0%	✓
	Percentage of non-interstate NHS pavement in poor condition	6.7%	7.6%	4.0%	×
	Percentage of NHS bridges classified in good condition	39.5%	35.1%	36.0%	×
	Percentage of NHS bridges classified in poor condition	3.5%	4.1%	6.0%	✓
Reliability (PM 3) Target (4-Yr Avg.)	Percentage of reliable person-miles traveled on the Interstate	87.7%	88.2%	83.0%	✓
	Percentage of reliable person-miles traveled on the non-interstate NHS system	n/a	89.4%	87.5%	✓
	Interstate Highway Truck Travel Time Reliability Index	1.35	1.35	1.33	✓

Table 2.3: Cleveland MPO Performance Measures and their comparable TDOT targets. Baseline and targets are from FHWA Transportation Performance Measurement Dashboard, and amended by the State Biennial Performance Report (2018-2021) Mid Performance Progress Report.

Like roadways, transit systems also must adopt and track performance measures over time. The Cleveland MPO supports CUATS' adopted performance measures and targets, summarized below.

Transit Performance Measures			
	Performance Measure	**TDOT Target**	**TDOT Baseline**
Transit Asset Management	Percentage of vehicles that have met or exceeded their useful life benchmark (ULB)	n/a	0%
	Percentage of revenue vehicles within a particular asset class that have met or exceeded their ULB	n/a	0%
	Percentage of track segments with performance restrictions	n/a	n/a
	Percentage of facilities within an asset class rated below 3.0 on the FTA Transit Economic Requirements Model scale	n/a	0%
Public Transportation Agency Safety Plans	Number of reportable fatalities	n/a	0
	Fatality rate per total vehicle-revenue miles by mode	n/a	n/a
	Number of reportable injuries	n/a	0
	Injury rate per total vehicle-revenue miles by mode	n/a	n/a
	Reportable safety events	n/a	9
	Rate of safety events per total vehicle-revenue miles by mode	n/a	Demand-Response: 1:143,000 Fixed-Route: 1:20,000
	Average revenue-miles between major mechanical failures, by mode	n/a	Demand-Response: 1:47,000 Fixed Route: 1:27,000

Table 2.4: CUATS Performance Measures and Targets.
Source: Cleveland Urban Area Transit System.

WHERE CAN I FIND THESE MEASURES?

FHWA maintains a performance dashboard for Tennessee, which you can track online **HERE**.

The National Performance Management Research Data Set (NPMRDS) is a free data source from the FHWA to monitor and report transportation system performance measures.

Progress achieved since the previous RTP

Through the System Performance Report, RTP updates provide an opportunity for each MPO to demonstrate projects completed and other accomplishments since the previous RTP, providing a baseline for successive updates from which new activities can be identified and improvements tracked. As a long-range planning document, the RTP includes within it committed and interim year projects that we expect to construct in the near future, as well as others that are reasonably expected to be built in the future. Plans and studies support these efforts, generating new projects for inclusion in successive updates. Identifying these completed projects and studies demonstrates the MPO's actions in furtherance of improving the regional transportation network.

The Cleveland MPO has agreed to support TDOT's System Performance Measures. In doing so, the MPO agrees to:

1. Work with TDOT and relevant stakeholders to address areas of concern related to travel reliability, freight movement, traffic congestion, and emissions reduction within the MPO area;
2. Coordinate with TDOT and include system performance, freight, and emissions reductions targets for those measures in successive RTP updates; and
3. Integrate into the metropolitan transportation planning process system performance, freight, and emissions reductions goals, objectives, measures, and targets described in other state transportation plans and processes.

Since the adoption of the previous RTP on May 25, 2016, the MPO has completed the following:

1. **Transit Operations: (2017-02):**
Over $5 million dollars was expended in transit operations over the 2017-2020 period, supporting alternative methods of travel to the automobile. CUATS ridership saw successive increases along all routes over this time period (See Chapter 3).

2. **Transit Capital Purchases (2017-03):**
Cleveland Urban Area Transit System (CUATS) acquisitions to replace vehicles exceeding their useful life benchmark.

3. **Cleveland Downtown Traffic Study (2017-05):**
The Cleveland Downtown Traffic Study examined traffic conditions in downtown streets to provide congestion relief and safety improvements in the area. The Study recommended a road diet design along Inman Street complementing streetscaping, in addition to a Midtown Connector.

4. **Ocoee Greenway Connector (2011-03):**
The Ocoee Greenway Connector is a nearly one-mile length of multi-use trail, beginning at Tinsley Park and terminating near the intersection of Ocoee Crossing & Blythe Ferry Road on Ocoee Street. The project included retaining walls, ADA accessibility improvements, curb and gutter, landscaping, pedestrian lighting and signals.

5. **Georgetown Road/25th Street (intersection) (2010-05):**
This improvement at the intersection of two principal thoroughfares for Cleveland saw the installation of left and right turn lanes on Georgetown Road and Westside Drive, sidewalks, and curb and gutter. These improvements benefit pedestrian safety, as well as improved roadway operations at this critical intersection.

Goal #1: Safety.

Improve the safety and security of all transportation system users and reduce fatalities and severe injuries on the system.

Objective	Measure
Reduce risks to motorists and road/utility workers through work zone management.	› Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries › Number of Fatalities › Rate of Fatal Crashes per 100M VMT › Number of Serious Injuries › Rate of Serious Injury Crashers per 100M VMT
Continue to carry out emergency preparedness plans and update them regularly.	
Reduce the number of crashes and serious injuries across all modes.	
Provide safe and comfortable networks for people of all ages and abilities.	
Increase community awareness of vulnerable road users through education and marketing.	

Goal #2: Equity.

Provide healthy, convenient, and equitable transportation choices for those communities that are underserved or traditionally underrepresented.

Objective	Measure
Avoid if possible, minimize or mitigate impacts to environmentally sensitive resources and identified environmental justice communities.	› Number of transportation projects requiring an environmental impact statement or assessment › Number of transportation projects constructed within environmental justice communities › Percent of population residing within ¼ mile of fixed-route transit service › Number of census blocks with environmental justice communities served by fixed-route transit
When designing transportation facilities, purchasing transportation equipment, and providing transportation services, promote economic and environmental sustainability by considering factors such as: • Lifecycle costs; • Energy efficiency; • Opportunities to create redundancy (i.e. backup systems and alternative routes); • Resistance to the potential impacts of climate change; • Potential benefits for other infrastructure, such as stormwater drainage; and • Continue to expand the number of people in the region who have safe and convenient access to multiple modes of transportation.	
Work with industry leaders to provide or subsidize options for workforce transport.	
Improve transit access to jobs/employment centers and to traditionally disadvantaged populations.	

Goal #3: Mobility Choices.

Enhance the existing network to include a healthy balance of pedestrian, bicycle, transit and roadway connectivity.

Objective	Measure
Adopt a Complete Streets plan that considers community context, needs, and design criteria.	› Percent of person-miles travelled on the interstate that are reliable › Percent of person-miles travelled on the non-Interstate NHS that are reliable › Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita › Percent of Non-Single Occupancy Vehicle Travel
Close the gap on network deficiencies, connecting people to places.	
Develop a Collector Street network plan and work with the development community towards its implementation.	
Create more than one option for every Cleveland household to take trips for everyday trip-making needs.	

Goal #4: Economic Vitality & Reliability.

Improve the reliability of the movement of people and goods across the region in support of time-sensitive freight movement and logistics.

Objective	Measure
Improve connectivity with Chattanooga and other parts of the greater metropolitan region.	› Truck Travel Time Reliability Index
Retrofit key corridors to improve safety and reliability through better access management, travel demand management and signal system enhancements.	
Select transportation investments that support and improve freight mobility and job accessibility.	

Goal #5: System Preservation.

Maintain and enhance existing transportation infrastructure assets in a good state of repair.

Objective	Measure
Track and report road, sidewalk, and transit vehicles/infrastructure so that decision-makers have information and can anticipate needs before they become urgent.	› Percentage of pavements in the Interstate System in Good Condition › Percentage of pavements in the Interstate System in Poor Condition › Percentage of pavements in the non-Interstate NHS in Good condition › Percentage of pavements in the non-Interstate NHS in Poor Condition › Percentage of NHS Bridges classified as in Good condition › Percentage of NHS bridges classified as in Poor Condition
Adopt and maintain regular schedules and budgets for maintenance of storm drains, street sweeping, transit vehicle maintenance/replacement, trimming of sidewalk trees, and similar activities.	
Update and continue to implement the Regional Intelligent Transportation Systems (ITS) Architecture.	
Create an inventory and monitoring program to assess bicycle, pedestrian, transit and roadway facility conditions.	
Allocate resources to maintain or improve the system's pavement and bridge conditions.	
Improve traffic management system by incorporating ITS technology, actively monitoring and mitigating non-recurring congestion incidents.	

EXISTING 03 CONDITIONS

03 Existing Conditions

Recommendations come from a robust understanding of community values and objectives, but also from a deep understanding of the current system's problems, opportunities, strengths, and weaknesses.

This chapter examines the Cleveland area holistically, beginning with a review of previous planning studies, followed by a summary of community demographics, and ending with a synthesis of the region's multimodal transportation system. The latter includes a review of existing conditions, system performance, and steps to move forward with implementation.

In this Chapter:

Previous Plans & Policies

The currently adopted plans for the Cleveland area, both those the Cleveland Urban Area Metropolitan Planning Organization (CUAMPO) as well its partner jurisdictions, are summarized below. These plans and studies are an outline, a guiding framework; they have had an influence on the built environment throughout the region, and will continue do so. Each of these plans helps to shape the recommendations contained in this RTP update. With each plan, common themes emerge, which are incorporated into the planning process to guide our long-range recommendations. Though completing and adopting this RTP is only one step in the process of regional growth, it provides a vision and guidance for successful modifications to the built environment that will help increase the mobility, comfort, health, and quality of life of residents throughout Cleveland, Charleston, Calhoun, and Bradley and McMinn Counties.

Plans Reviewed

- Tennessee Strategic Highway Safety Plan (2020)
- Cleveland MPO 2020-2023 Transportation Improvement Program (2020)
- Cleveland MPO 2040 Regional Transportation Plan (2019)
- Connect Cleveland Walkability Action Plan ADA Self-Assessment (2019)
- Cleveland Regional Intelligent Transportation System Architecture and Deployment Plan (2017)
- CUATS Revenue Study (2017)
- CUATS Transit Planning Study (2013)
- Bradley County Northern Corridor Area Plan (2013)
- Cleveland MPO Coordinated Human Services Transportation Plan (2012)
- Bradley County-Cleveland Joint Strategic Plan (2011)

Other Plans Reviewed, But Not Summarized Here:

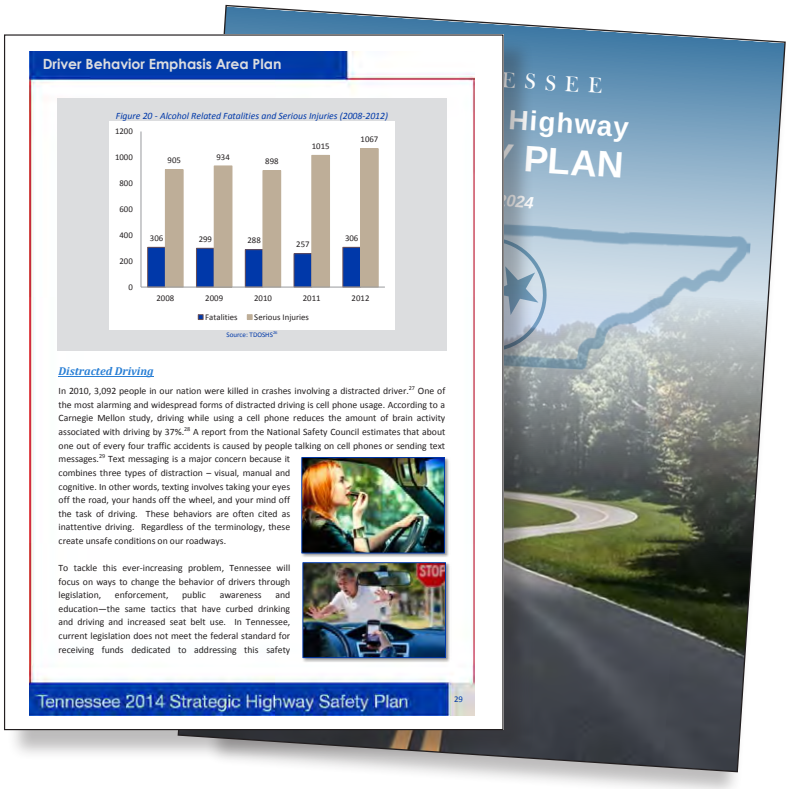
- National Economics Partnership Final Report: Freight Movement along Freight Alley for Greater Chattanooga Region (2020)
- Downtown Revitalization Initiative (2019)
- Connect Cleveland Walkability Action Plan (2017)
- CUAMPO Bicycle & Pedestrian Plan (2008)

Tennessee Strategic Highway Safety Plan (Adopted 2020)

The Strategic Highway Safety Plan is the State of Tennessee's comprehensive transportation safety plan, touching on aspects of road user safety, emergency management and operations, and security, with the vision of **ensuring that improvements in safety continue to result in reductions of serious and fatal crashes** throughout the state roadway network. The Plan creates the benchmark goals of reversing the trend in increasing fatalities, reducing the fatality rate (by 14%), and reducing total serious injuries and the serious injury rate. Strategies are grouped into six emphasis areas (Data Collection and Analysis; Driver Behavior; Infrastructure Improvements; Vulnerable Road Users; Operational Improvements; and Motor Carrier Safety), below is a sampling of strategies:

- Reduce the likelihood and severity of crashes involving roadway and lane departures
- Reduce the likelihood and severity of intersection-related crashes
- Reduce the likelihood of conflict between trains and vehicles at railroad crossings with improvements to geometry, traffic control, and visibility.
- Reduce the lengths of interchange exit ramp queues
- Improve the safety of senior drivers by reducing roadway geometric deficiencies
- Improve infrastructure for bicyclists and pedestrians.
- Increase awareness of vulnerable road users
- Improve safety of vulnerable road users
- Assess growing needs and concerns of vulnerable road users
- Improve incident response and reduce the clearance time for crashes.
- Reduce the severity and number of crashes occurring in work zones.
- Reduce crash severity involving senior drivers.
- Reduce occurrence of CMV crashes.

The Strategic Highway Safety Plan directly influences TDOT's chosen performance measures and targets, which have been adopted by the Cleveland MPO. The goals, strategies, and actions of this plan were considered during the planning process and are reflected in the Goals, Objectives and Measures.



Cleveland Urban Area 2040 Regional Transportation Plan (Adopted May 25, 2016, amended 2019)

The Cleveland MPO 2040 RTP was adopted May 25, 2016 and documents a fiscally-constrained plan for regional transportation improvements through 2040. The 2040 RTP makes project-related recommendations for the area roadways, as well as transit operations and capital asset improvements. Its goals, tied to federal and state-defined performance measures, include the following:

1. Increase access to safe, convenient transportation choices that connect citizens with jobs, essential services, and community activities.
2. Prioritize funding to maintain the existing system of roads, transit, and non-motorized transportation facilities.
3. Select transportation investments that maintain economic vitality by enhancing the character and goals of the areas they serve.
4. Improve the safety and security of all transportation system users.
5. Promote efficient operation and management of the system, including the ability to maintain adequate operations when major incidents occur.
6. Make transportation decisions that are economically and environmentally sustainable and promote equitable access to community resources.

The 2040 RTP was amended in May 2019 to update certain recommended projects based on horizon year. The Amendment spelled out the new listing of projects, which moved RTP 83 (TIP ID #2017-09) to horizon year 2025 and moved RTP 101A (widening of I-75) to the 2040 horizon year.

Cleveland Urban Area 2020-2023 Transportation Improvement Program (Adopted 2020)

The Transportation Improvement Program (TIP) reflects high-priority regional projects for funding transportation improvements over a four year period. These funded improvements include roadways, bicycle and pedestrian facilities, and transit projects. Programmed projects include:

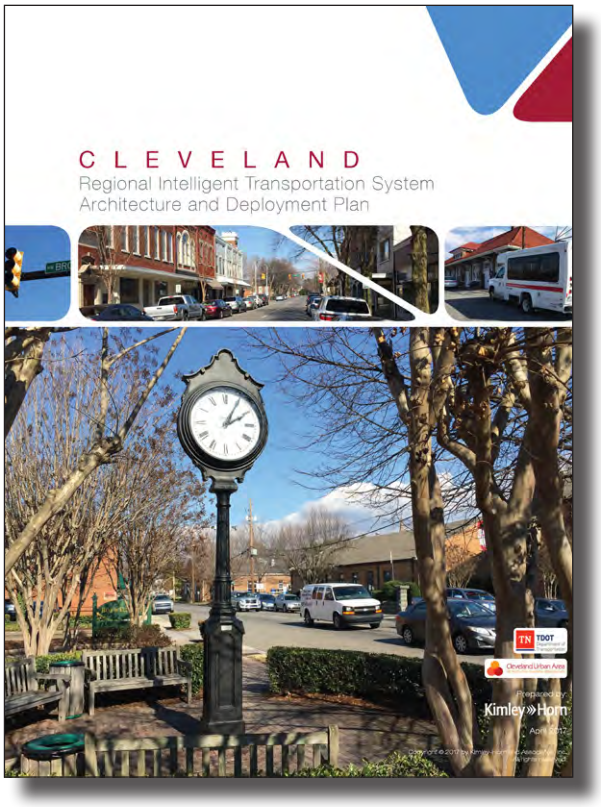
1. Widening of Adkisson Drive to three lanes, with sidewalks, landscaping, and safety improvements. Prioritize funding to maintain the existing system of roads, transit, and non-motorized transportation facilities.
2. Select transportation investments that maintain economic vitality by enhancing the character and goals of the areas they serve.
3. Improve the safety and security of all transportation system users.
4. Promote efficient operation and management of the system, including the ability to maintain adequate operations when major incidents occur.
5. Make transportation decisions that are economically and environmentally sustainable and promote equitable access to community resources.

The TIP also spelled out state and **local performance measures** adopted by the MPO, and their targets. These measures, largely corresponding with FHWA performance measures, including the reduction of crash rates (PM1), maintenance of pavement condition for both interstate and National Highway System (NHS) road networks (PM2), and improvements to travel time reliability (PM3). These performance measures and others have been incorporated into this Plan's goals and measures (see Chapter 2).

Cleveland Regional ITS Architecture & Deployment Plan (Adopted 2016, amended 2019)

The Regional ITS Architecture & Deployment Plan provides a long-range plan for deployment, integration and operation of ITS in the Cleveland region, allowing stakeholders to plan the future system's operation and segment it into implementable projects. The 2017 Plan builds from the 2040 RTP's goals, and identifies ITS-related objectives within each goal. These objectives correlate with the Goals, Objectives and Measures discussed in Chapter 2.

1. Signal System Upgrade and Traffic Management Enhancements: upgrade the traffic signal system and expand traffic management capabilities of the Cleveland signal system. Upgrade traffic signal controllers.
2. Overheight Detection & Warning on SR-40 and US 64: implement overheight detection and warning system to replace current, inadequate static signage.
3. HAWK Beacon Implementation: installation of pedestrian hybrid beacons near Cleveland Community College and other priority locations.
4. Vehicle Detection: implement vehicle detection technology on roadways to monitor speed and volume of traffic and obtain count data for signal timing and transportation planning.
5. Traveler Information: Add real-time traveler information, including incident locations and speeds, to the City of Cleveland website.



These recommendations reflect a multimodal approach to transportation management in the Cleveland region, with solutions in both roadways, bicycle & pedestrian, transit, and traveler information. In analyzing new project needs during development and prioritization of the recommendations, these projects were taken into consideration both as standalone improvement projects or as part of a package of recommendations for appropriate segments of the regional transportation network.

Connect Cleveland Walkability Action Plan & ADA Self-Assessment (Adopted 2017)

Carried out as part of the Action Plan, the Self-Assessment evaluated Cleveland's needs with regards to accessibility throughout the town. The Plan evaluated over 250,000 feet of sidewalk, 990 curb ramps, and identified over 500 obstructions. The Plan laid out two horizon years for accomplishing tasks identified through the self-assessment: 2035 and 2050, and prioritizes tasks accordingly. ADA-compliance tasks for Horizon Year 2035 included:

1. Completing ADA required improvements to 100,000 linear feet of sidewalk, beginning with downtown priority areas;
2. Constructing 3,000 new feet of sidewalk to increase transit accessibility; and
3. Completing multimodal projects already designed and/or funded with TDOT assistance, including Wildwood Avenue/Dalton Pike, Gaut Street, 25th Street, and Central Avenue

Tasks beyond 2035 include:

1. Construct 3,300 feet of new sidewalk (in addition to that under horizon year 2035); and
2. Make required ADA improvements to 100,000 additional feet of sidewalk.

The Connect Cleveland Walkability Action plan, adopted in 2017, set forth a series of action steps to improve community walkability for public health and transportation goals. While the plan did not recommend specific projects or infrastructure improvements, it nonetheless created action items which, if implemented, would result in an itemized, prioritized list of bicycle, pedestrian, and ADA facilities. Broad goals of the Plan included the following:

1. **EDUCATION:** share knowledge within the community about walking and walkability, social-justice dimensions to pedestrian mobility issues, and strategies for improving walkability in neighborhoods.

2. **SERVICE:** service neighborhoods, political districties and corridors with appropriate pedestrian improvements (sidewalks, improved crossings, greenways, traffic calming, shoulders, and walking paths, etc.) to make walking more safe, easy and enjoyable.

3. **CONNECTIVITY:** connect Cleveland neighborhoods to the greenway system, downtown, and schools with pedestrian improvements. Coordinate pedestrian improvements to support transit and bicycle modal connections.

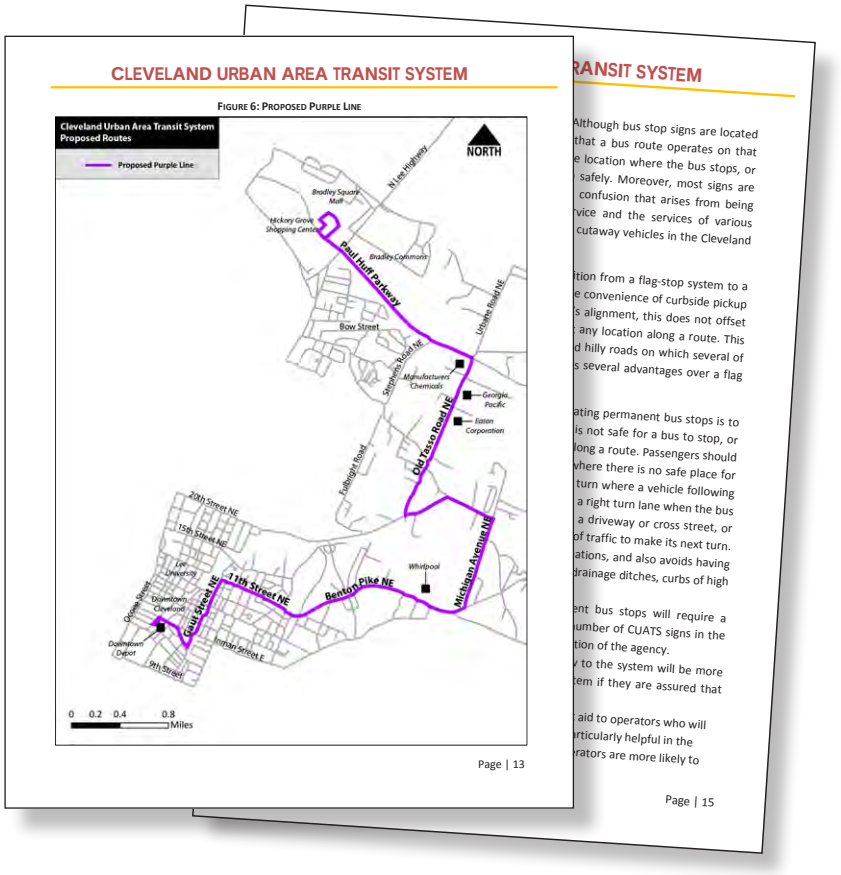
4. **EQUITY:** equitable distribution of pedestrian improvements across the community while attending to low-income, minority, and disabled populations, as well as those dependent on walking, biking and transit.

Cleveland Urban Area Transit System Transit Study & Revenue Study (Adopted 2013)

The 2013 Transit Study, and accompanying Revenue Study, expanded upon the 2012 Coordinated Human Services Transit Plan (CHSTP), and examined CUATS services for potential improvements to routes and amenities to increase ridership and better serve the Cleveland area community. Covering existing routes, as well as operations and general administration, the Study proposed changes to the five existing transit routes, as well as the creation of a sixth route, for service to the Cleveland Urban Area community. The Revenue Study further recommended alternatives to increase revenues for extending service. Recommendations were as follows:

1. Red and Blue Routes were changed to eliminate redundancy and provide better connectivity for transit-dependent populations in south Cleveland.
2. Gold Route was changed to provide more direct north-south connectivity to major commercial destinations in north Cleveland and to eliminate redundancy in routing between the Green, Gold, and Orange Routes.
3. The Green and Orange Routes were shifted off of Keith Street to increase ridership on the Gold Route and increase service area.
4. Creation of the Purple Route would connect transit riders to major manufacturing employers, including the relocated Whirlpool plant, by way of Benton Pike and Old Tasso Road.
5. Transition from flag-stop (wave-down) to a permanent stop system to increase utilization and decrease confusion among ridership.

The studies also recommended creation of a CUATS logo and branding material. Revenue recommendations included modest fare increases, discounted fare for students, and partnership with employers and local organizations to provide workforce transit. Sale of advertising space on and within buses was also recommended.

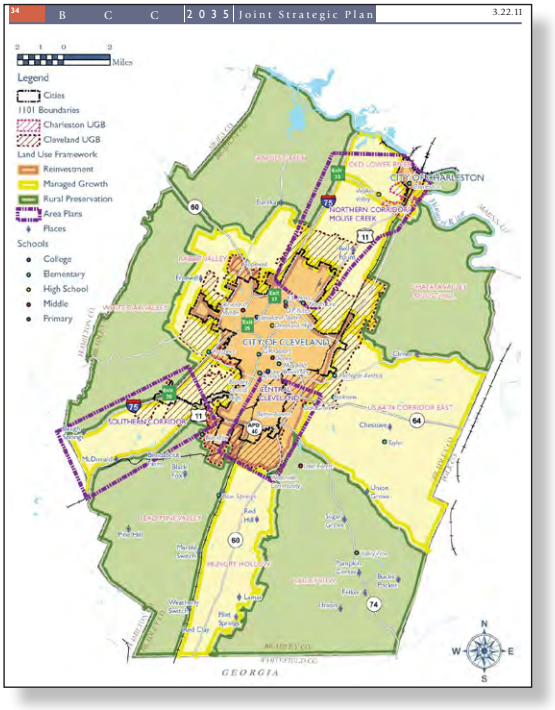


Bradley County-Cleveland Joint Strategic Plan (Adopted 2011)

The Bradley County-Cleveland Joint Strategic Plan laid out a unified strategy for accommodating expected growth due to economic development in the region. The Plan's goals included:

1. Efficient, infrastructure-directed growth;
2. Economic Competitiveness;
3. Fiscal Sustainability;
4. Housing and transportation choices;
5. Natural and Cultural Resource Protection;
6. Livability & Quality of Life;
7. Value Existing Communities and Neighborhoods; and
8. Intergovernmental Coordination.

Importantly, the Strategic Plan established a core focus on infill development in places where infrastructure already exists. The plan also created two Corridor Areas: the Northern and Southern Corridors, and identified twenty locations of regional importance.



Bradley County Northern Corridor Area Plan (Adopted 2011)

Following the Joint Strategic Plan, the Northern Corridor Area Plan sought strategies to accommodate expected growth in the area before 2035. Transportation strategies were wide-ranging, and included:

1. New interchange at I-75 and Hooper Gap Road, and extension of Hooper Gap Road to US 11/ North Lee Highway;
2. New alignment for North Mouse Creek Road;
3. Extension of McBryant Road to Old Lower River Road;
4. Realignment of Walker Valley Road at US 11/ North Lee Highway; and
5. Update to the Major Thoroughfares Plan, specifically functional classifications.

Other strategies recommended within the Plan included reduction of truck traffic through Charleston, coordination of industrial development between Lauderdale Highway and Old Lower River Road.

Community Demographics

Transportation is, fundamentally, about moving people and goods; this puts the people of the Cleveland area at the center of this Plan. Understanding community demographics, and their trends, informs these planning efforts and the decision-making of elected officials and policy makers within the region.

Employment

Manufacturing represents a large portion of total employment within the Cleveland region, many of which are included within the table of major employers. Many of these manufacturers are concentrated in the northeast section of Cleveland, near Michigan Avenue Road, as well as near north of Lauderdale Memorial Highway in Charleston (Figure 3.13). As both freight generators and large employers, these companies influence travel patterns both during peak demand hours and throughout the day through scheduled deliveries and shipments. Proximity to Chattanooga is notable, as a significant number of residents are employed outside of the area.

Major Employers	
› Advanced Photographic Solutions	› Bradley County Memorial Hospital
› Cleveland Community Hospital	› Peyton's Southeastern, Inc
› Charleston Hosiery, Inc.	› MARS, Inc
› Newly Weds Foods, Inc.	› Whirlpool Corporation
› Duracell	› Eaton Corporation
› Georgia-Pacific Corporation	› Schering-Plough Healthcare
› Rubbermaid	› Hardwick Clothes
› Johnston Coca-Cola Bottling Group	› Flowers Baking Company
› Jackson Manufacturing	› Brown Stove Works
› Cleveland Chair Company	› Renfro Brands

Table 3.1: Major Employers in the Cleveland region.

Population Growth

The Cleveland region has added more than 13,000 people over the past six years, and this growth trend is expected to continue (greater than 2% annually). Current estimates (2019) find nearly 118,700 residents in the Cleveland area, with moderate growth projected over the next five years. Some of this growth may be attributable to the growth of the Cleveland MPO boundary, which expanded between 2013 and 2018 to include nearby Calhoun and Charleston. Looking to the future, an estimated population of 137,000 is anticipated by 2045, representing a stable, modest annual growth rate of 0.5%.

	2013	2018	2045*
Cleveland MPO Total Population	105,500	118,700	*137,500*
Growth		+13,200	*+18,800 from 2018*
% Growth		13%	*16%*
Annual Growth Rate		2.4%	*0.5%*

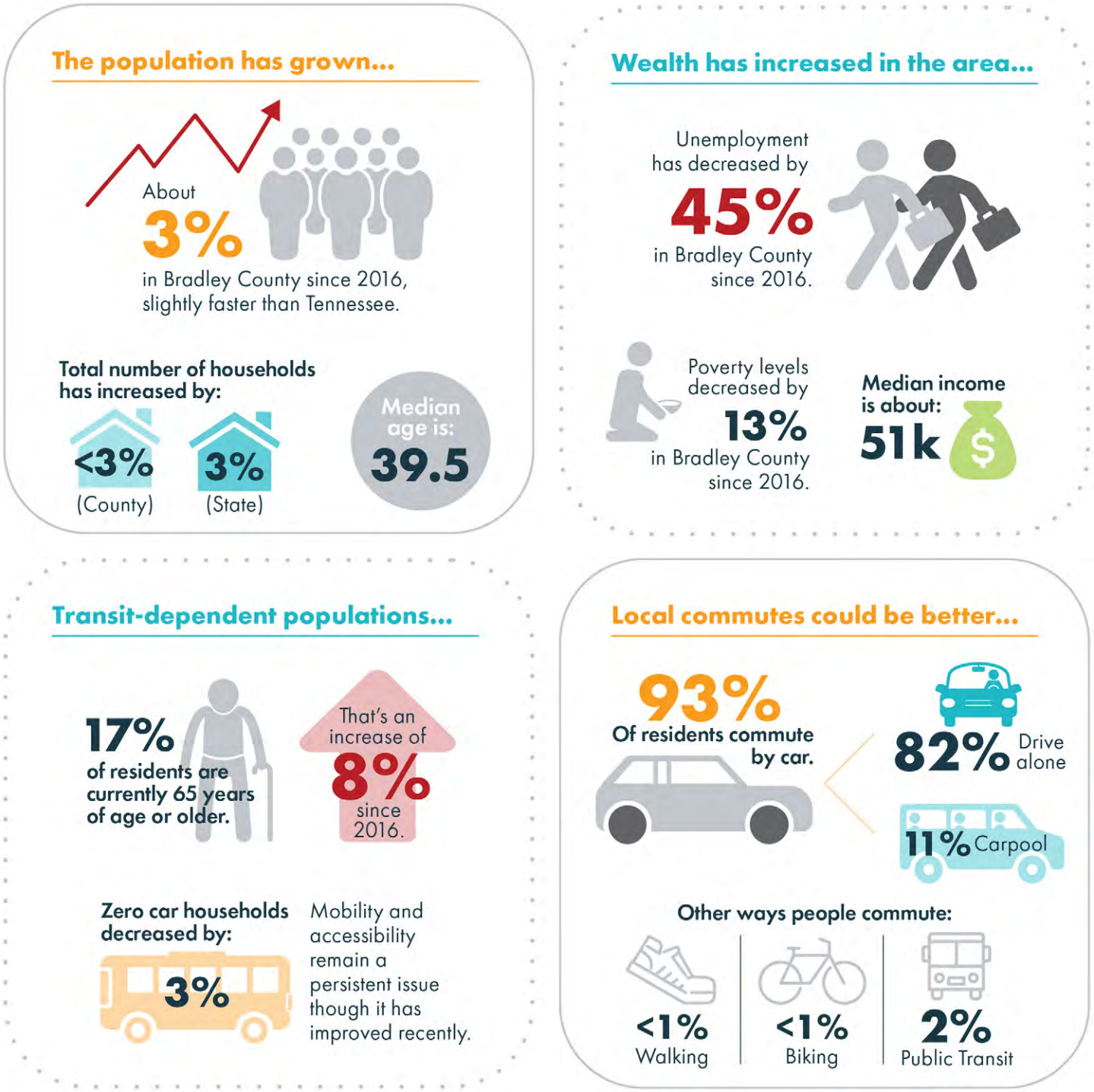
Table 3.2: Population Growth (2013-2018) and Projected Growth (2045).
*Source: Projections provided by Tennessee statewide travel demand model, and aggregated to County/MPO level.

Education

The Cleveland MPO is home to two post-secondary academic institutions: Lee University, located downtown, is a private four-year university, while Cleveland State Community College, a two-year institution on Adkisson Drive, belongs to the State College System. Universities attract daily traffic and congestion, and in many ways function like a downtown, having their own unique traffic patterns and system needs.

Community demographics provide some key insights that relate to mobility (Figure 3.3). Supplementing these insights with stakeholder discussions (next chapter) provides a more complete understanding of community needs and vision.

Figure 3.3: Demographics trends for Bradley County.
Source: American Community Survey 5-Year Estimates, 2015-2019.



Race

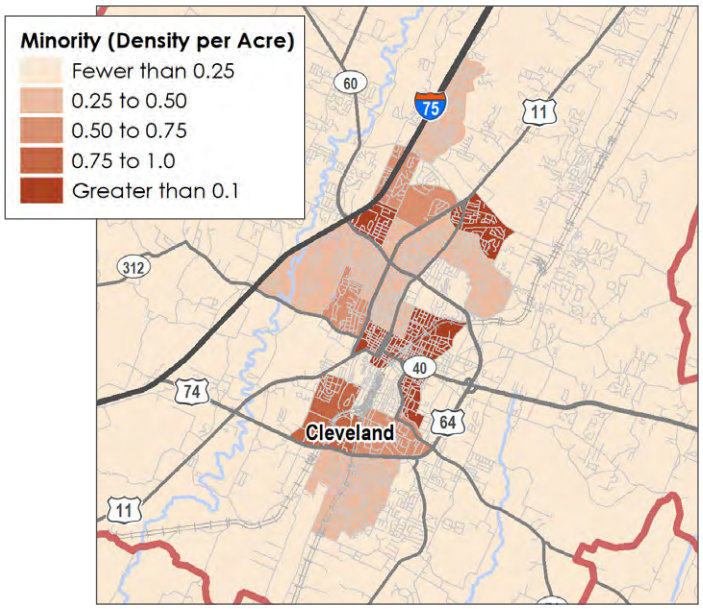
The nonwhite population in the Cleveland MPO area comprises around 10% of the population, a 2% increase from 2016. This change is largely consistent with demographic trends in Tennessee, although the nonwhite population statewide represents a larger proportion of the state (22%) than in the MPO area. Nonwhite populations remain concentrated in the Cleveland area, with census block groups in south and east Cleveland displaying high densities, seen at right.

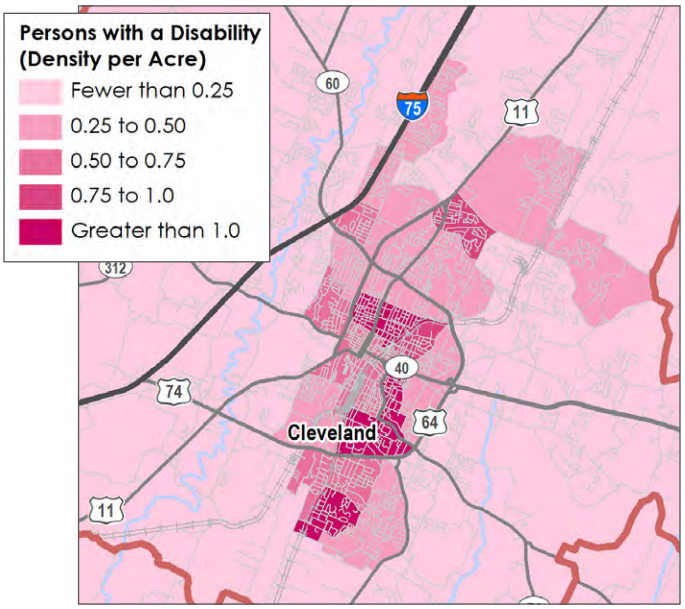
Disability

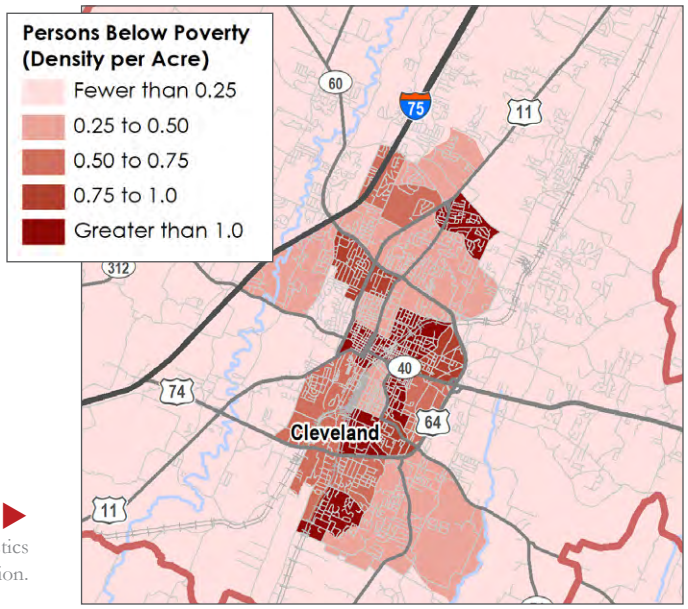
Similarly, the population of persons with disabilities in the Cleveland MPO area has seen modest increases from 2016, with around 18% of the population having some disability. This represents a slightly higher proportion than is seen in Tennessee. Geographically, persons with disabilities are concentrated within the Cleveland urban area; in particular, high densities of persons with disabilities are found in southeast Cleveland, and north of downtown.

Poverty

The Cleveland MPO area has made strides in reducing poverty since the 2016 RTP, although there's still catching up to do. Across the area, approximately 16% of residents live at or below the federal povery guidelines, a decrease of nearly 13%. Median Household Income, an important measure of community wealth, has increased over 17% to $51,000, slightly below the statewide figure of $53,000. Low-income areas of the MPO area include east Cleveland, particularly south of Inman Street, and around Paul Huff Parkway.







Figures 3.4-3.6: Socio-Economic Characteristics for the Cleveland Region.

Land Use & Development

Existing Land Uses & Zoning

The Bradley-Cleveland County Joint Strategic Framework remains the guiding document for all land use and development decision-making in the MPO Area. The MPO area is predominantly agricultural in character, with single-family residential marking the areas outside of the Cleveland municipal jurisdiction. Clusters of intense industrial development are found north of Old Lauderdale Highway near the McMinn County line, as well as along Michigan Avenue in northeast Cleveland.

Development Trends

Geospatial analysis by Cleveland MPO staff of over 48,000 parcels shows changes in land use over the previous decade. From 2010 to 2018, residential land uses grew by nearly 5%, adding over 6,500 acres; over this same period, agricultural and open spaces decreased by 4,600 acres (-3%). Despite these changes, however, the area retains its rural character, with 57% of the MPO area identified as Agricultural/Open Space. While further residential growth is expected, the 2011 Joint Strategic Plan encourages infill development along currently developed corridors, discouraging further greenfield development.

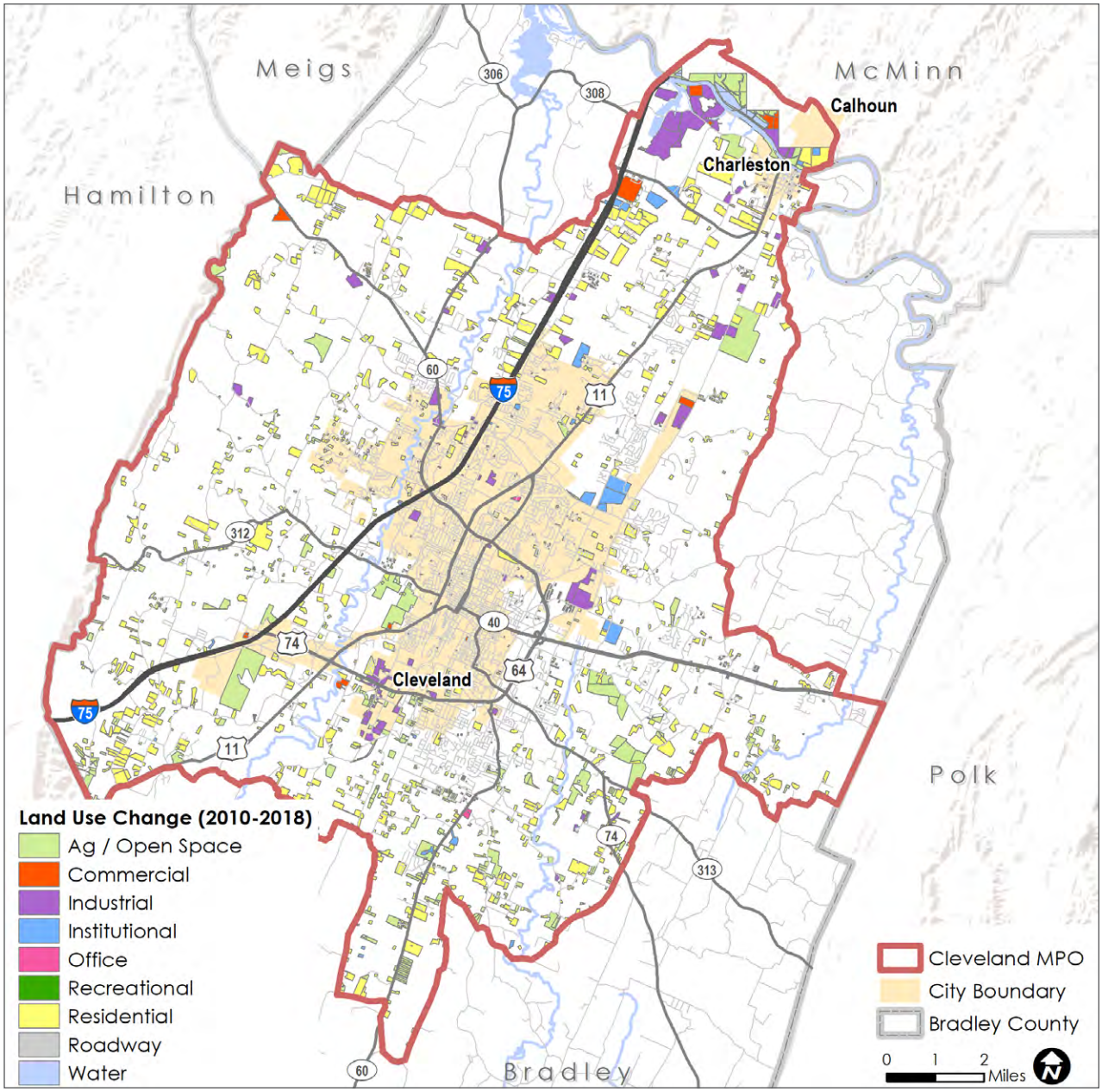


Figure 3.7: Land use change within the Cleveland MPO area, 2010 to 2018. Source: Cleveland MPO.

Existing Conditions

Transportation choices are shaped by their surrounding context; choices of mode and of route are affected by the cost and benefit calculations each individual makes before starting their trip. In order to plan for how present and future Cleveland area residents will travel, the existing transportation network must be well understood.

Roadways & Bridges

The MPO area's transportation network is defined by Interstate 75 and the loop formed by 25th Street (State Route 60) and APD 40 (US 74), which encircles much of the City of Cleveland. Other key thoroughfares include Georgetown Road, US 11 (Lee Highway), Keith Street, Michigan Avenue, Dalton Pike, Paul Huff Parkway, and State Routes 306, 308, and 312.

System Performance

Figure 3.9 depicts current traffic volumes and change in volume over the previous five years. Corridors experiencing highest volume changes are largely east-west connectors, including Paul Huff Parkway, 25th Street, and APD 40 near Dalton Pike. Recent development along Paul Huff Parkway figures prominently, as the corridor has seen the highest AADT growth in recent years. Other corridors experiencing significant change in traffic volumes include an increase on Benton Pike, which may reflect the recent relocation of Whirlpool to its new facility on this corridor.

Crash frequency and severity tell a different story of roadway deficiencies than congestion or volumes. Higher frequency locations, or concentrations of high severity crashes, may indicate poor roadway geometry or other causes of conflicts, which are independent of the road's usage or growth in traffic. Figure 3.8 shows intersections in the MPO area with highest crash frequencies, and several roads figure prominently in the list. US 11, Keith Street, 25th Street, Paul Huff Parkway are all within the Top 10 list of High Crash Intersections, with the US 11/Paul Huff Parkway Intersection experiencing the highest occurrence of crashes of all locations in the MPO area. Roughly corresponding with the area in Figure 3.9 with highest AADT growth, system improvements for crash reduction are needed in the short-term.

1. US 11/Lee Highway @ Paul Huff Parkway/ Stuart Road NE

2. US 11/Keith Street @ 25th Street NW

3. 25th Street @ Ocoee Street

Figure 3.8: High-Frequency Crash Intersections in the Cleveland MPO Area. A handful of roads appear numerous times. Source: TDOT.

Tennessee DOT performs field work every other year to inspect and rate the condition of bridges within the MPO area. The 2019 Bridge Condition Report revealed three structures with a "poor" rating out of a total of 42 structures. Recommendations for repairing these deficient bridges are in progress, with the next Annual Report expected in early 2022.

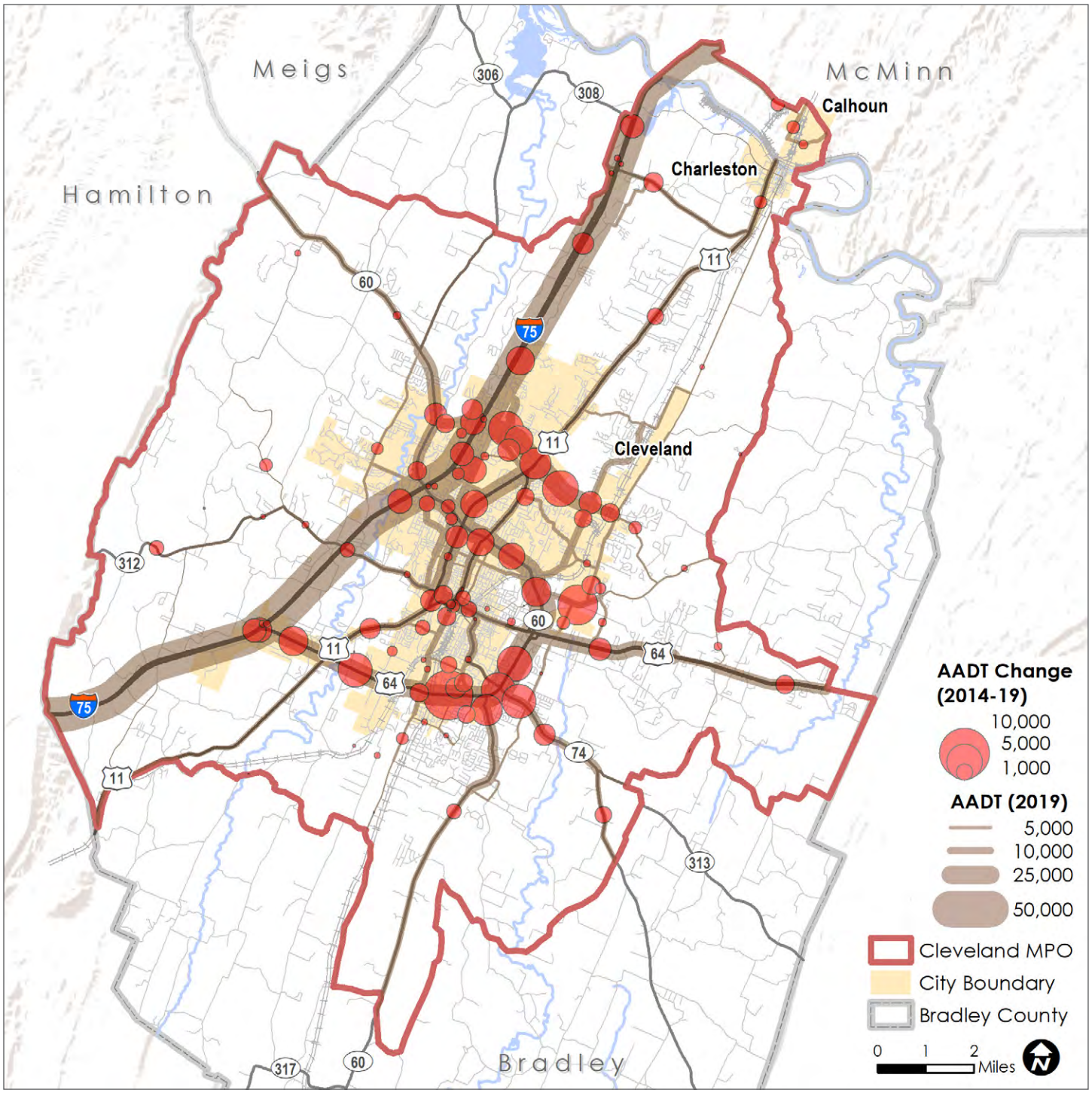


Figure 3.9: Traffic Volumes, and Traffic Volume change, throughout the Cleveland MPO area. Source: TDOT.

Travel Time Reliability, shown in Figure 3.10, is a measure of frequent (or infrequent) traffic congestion, and how much additional delay is experienced. Notably, high-growth corridors, such as Paul Huff Parkway and 25th Street, report lower reliability values (reliability index) than other National Highway System corridors within the region. Performance measures were initially mentioned within Chapter 2, relating to Goal #4, Economic Vitality and Reliability. Travel Time Reliability, which utilizes passive GPS reporting from mobile phones, is one of several data-driven resources that are valuable to identify critical bottleneck locations and prioritize improvements.

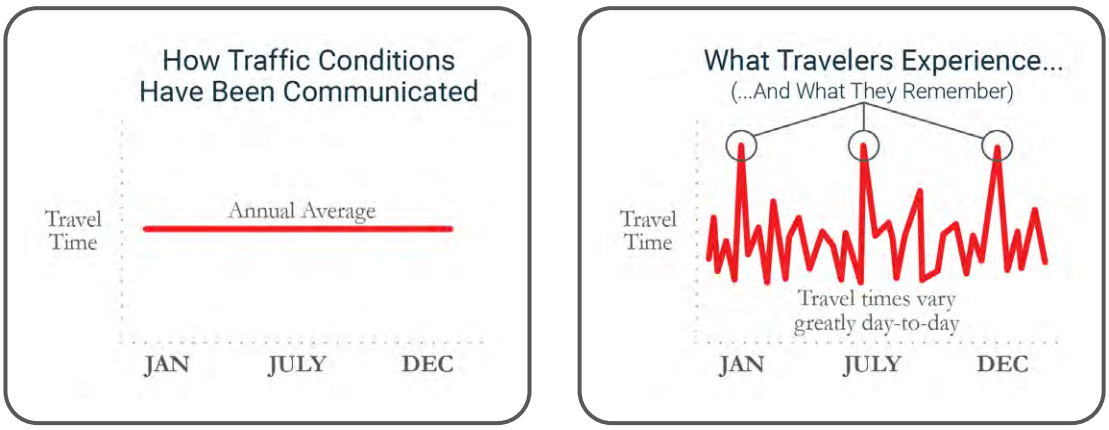


Figure 3.10: Explanation of Travel Time Reliability. Source: Federal Highways Administration (FHWA).

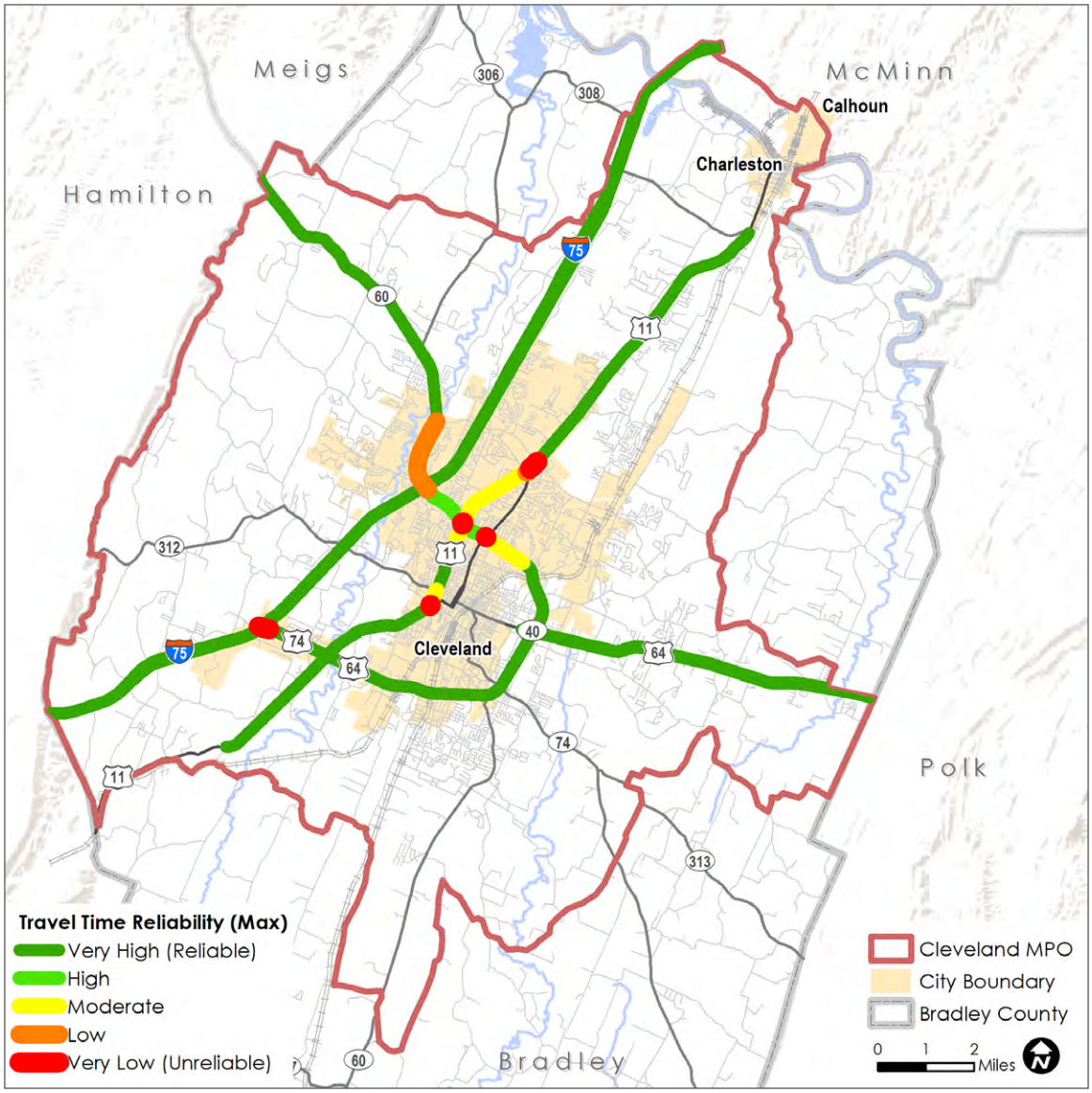


Figure 3.11: Travel Time Reliability throughout the Cleveland MPO Area. These routes represent National Highway System (NHS) Routes for federal funding purposes. The majority of roads are highly reliable.

Source: National Performance Management Roadway Data Set (NPMRDS).

Roadway Functional Classification

For planning purposes, roads are often designated in terms of their functional classification, which is based on the character of the transportation service they are intended to provide. The MPO's functional classification map designates roads as interstates, freeways / expressways, principal arterials, minor arterials, major collectors, minor collectors, and local roads. Functional classifications are updated as necessary by TDOT and the MPO.

National Highway System

The National Highway System (NHS) provides an interconnected system of routes serving major population centers, ports, airports, major travel destinations, and other intermodal transportation facilities. These roads are important to the nation's economy, defense, and overall mobility; regionally, they are critical arteries for both the movement of people and goods and, when improved, draw from a larger pool of resources due to their classification.

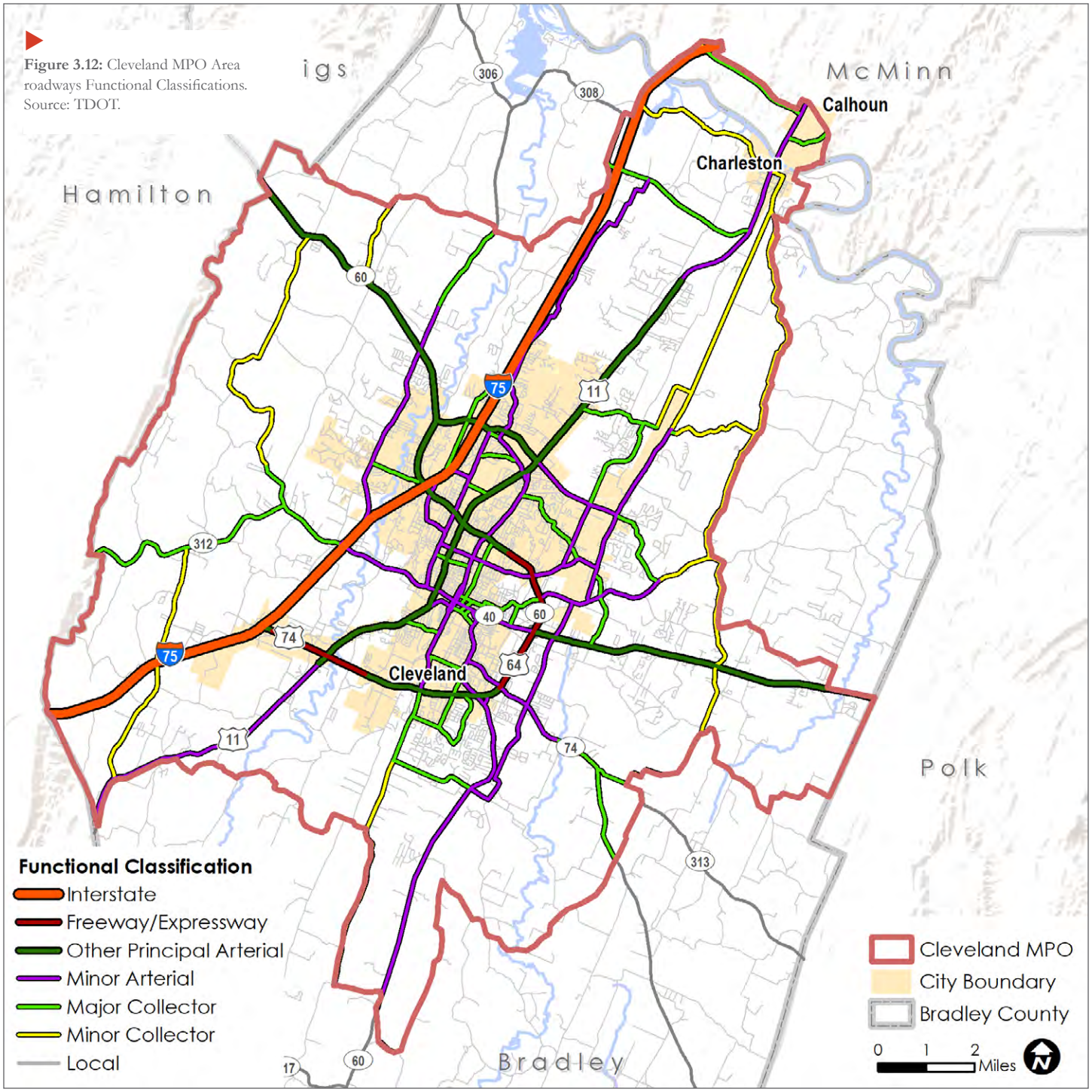


Figure 3.12: Cleveland MPO Area roadways Functional Classifications. Source: TDOT.

Freight

Given Cleveland's proximity to major freight centers such as Atlanta and Chattanooga, it is not surprising that freight movement has a significant influence upon the MPO area's transportation network. 90% of all freight movement in the region is done via truck. Truck traffic, shown brown in Figure 3.13, display truck movements that provide quick access to and from I-75. These trucks account for the overwhelming majority of freight shipments within the MPO area.

Many of these high truck volume corridors are major arterials; however, others are classified as minor arterials or collector streets. Trucks attempting to access major manufacturers and freight generators may encounter narrow shoulders and tight turning radii, contributing to congestion along these routes. Figure 3.13 shows that a number of major freight generators for the region are situated along roadways lacking adequate shoulders. Improvements to roadway cross-sections, shoulder improvements, or wayfinding may all contribute to better freight movement.

System Performance

Freight movement throughout the Cleveland MPO area is generally highly reliable. Travel Time Reliability, a key performance measure for freight movement, shows that nearly all major freight corridors in the area pose little to no challenge for moving goods to and from destinations. Taken as a whole, the percent of person-miles traveled along roads that are 'Reliable' were above their target values for the entire 2019 calendar year.

There are exceptions, however, in key areas where this is not the case. US 11/Lee Highway, Georgetown Road, and 25th Street all show moderate to low reliability, and key intersections are unreliable during peak hours. As these roads and intersections have also experienced significant growth in traffic volume, capacity issues noted above may be driving this unreliability. However, this is not the sole cause of freight unreliability. Traffic signal timing, number of driveways, or frequent crashes are additional contributors to lower reliability index values.

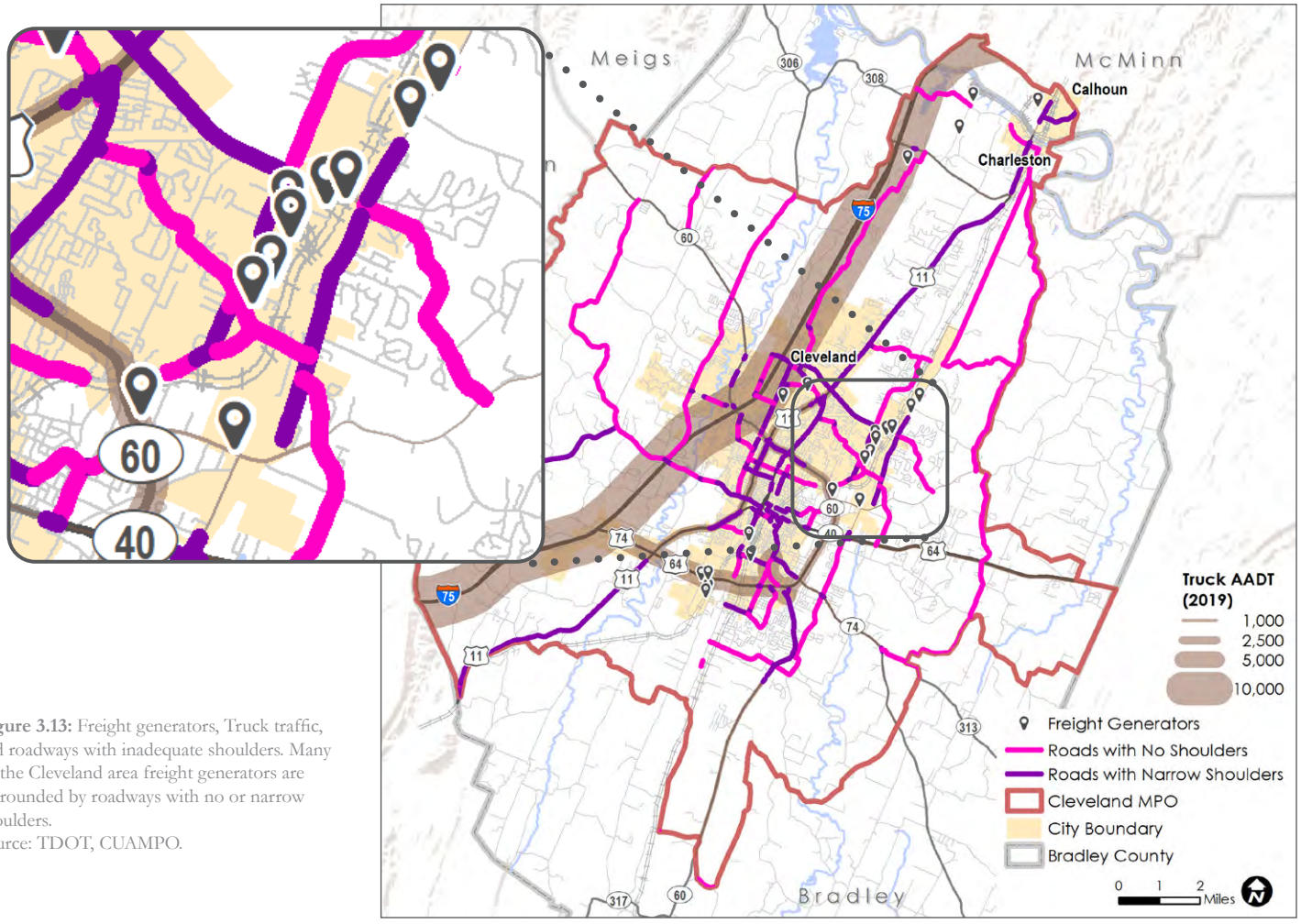


Figure 3.13: Freight generators, Truck traffic, and roadways with inadequate shoulders. Many of the Cleveland area freight generators are surrounded by roadways with no or narrow shoulders.
Source: TDOT, CUAMPO.

Other Multimodal Facilities

Aviation

The Cleveland Municipal Airport Authority constructed and opened the Cleveland Regional Jetport in 2013. With a runway of 6200+ feet and an 8,000 square foot terminal facility, the Jetport primarily serves business jets for major local employers. With its proximity to nearby freight generators, the Jetport offers significant opportunities for growth and development of freight transport. However, this growth is dependent upon local roadways: highlighted through stakeholder discussions was the immediate need for improved connectivity between the Jetport, nearby freight generators, and strategic freight corridors. Current connectivity between the facility and the Interstate/NHS network is limited.

Rail

Freight rail service in the Cleveland MPO area is provided by Norfolk Southern (NS), which operates around 21,000 miles of track in twenty-two states. Within Tennessee, these tracks are primarily in eastern Tennessee, between Chattanooga, Knoxville, and Johnson City. In Cleveland, NS has two lines, converging within the MPO area from the southwest before running northward towards Charleston and McMinn County.

The Appalachian Regional Port, an inland intermodal facility operating in Chatsworth, Georgia, only 22 miles south and east of Cleveland, opened in 2018, with modest truck traffic increases along US-60 and US-74. As activity at the Port grows, increased freight movement in the southern regions of the MPO area is expected. Discussions during stakeholder interviews highlighted the short distance to I-75 and the interchange with APD-40 as a freight corridor of strategic importance in the coming decade.

Waterway Facilities

The Cleveland MPO area accesses inland waterways via the Hiwassee River, a federally-navigable water and tributary of the Tennessee River. The Hiwassee, which forms the boundary of Bradley and McMinn Counties, is maintained by the Tennessee Valley Authority at a navigable depth of ten feet. The Chickamauga Lock, located at Mile 471 of the Tennessee River in Chattanooga, is a strategic link between the Hiwassee River and the rest of the inland waterway system. This lock provides access to 318 miles of navigable waterways upstream of the lock, ultimately connecting to the Mississippi and Ohio River systems.

Six port facilities are currently located on the Hiwassee, two in Bradley County and four in McMinn. Olin Chemical Corporation, which ships and receives liquid caustic soda, chlorine, sulfur, salt, and other chemicals, owns both Bradley County terminals. Resolute Forest Products, which ships and receives pulpwood and related products, owns three terminals on the McMinn County side, while Southern Ionics owns the fourth. Each has access both to I 75 and the Norfolk Southern rail network, both of which converge near the towns of Charleston and Calhoun.

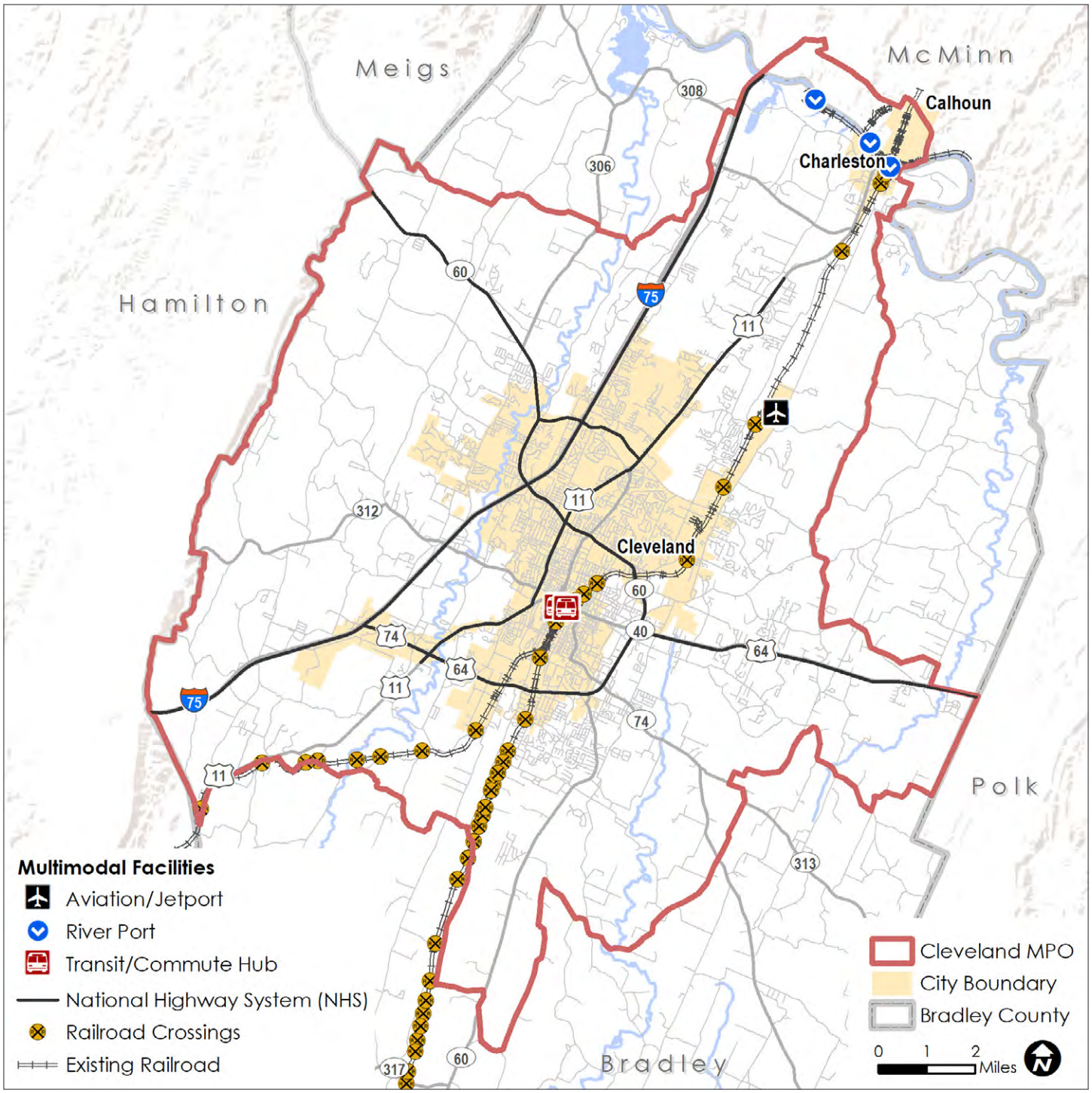


Figure 3.14: Additional transportation facilities in the Cleveland MPO Area. Note the presence of the Cleveland-Chattanooga Commute Hub (proposed) in downtown Cleveland.

Bicycle & Pedestrian

While the vast majority of trips in the region are made via automobile, the ways in which people move continues to change. This section takes a closer look at the bicycle and pedestrian network in the Cleveland area to understand its performance and opportunities for improvement.

Status of the Network

Figure 3.15 depicts the existing bicycle and pedestrian facilities within the MPO area; an estimate of miles per facility type is included. Sidewalk distribution is uneven throughout the MPO area, with most sidewalks concentrated in Cleveland and its downtown. Here, a dense network of existing sidewalks allows for pedestrian travel, although conditions vary. Outside of the downtown, continuous sidewalk segments do exist along Paul Huff Parkway, SR 60/25th Street, and Peerless Road NW. Leaving the city jurisdiction, however, sidewalk facilities decrease dramatically, with only small, disconnected segments found in Charleston and Calhoun. Urban-area schools benefit from the concentration of sidewalks downtown, but those schools located outside of the downtown area are largely disconnected from sidewalks.

Only one roadway in the Cleveland area has existing bicycle facilities, a bicycle lane on Keith Street. The Cleveland Greenway connects downtown Cleveland with residential communities north of downtown and provides some service to schools and other points of interest. However, residents and neighborhoods south of the Greenway lack connectivity to employment centers and other community destinations, including public services such as schools and medical facilities, by means of alternative transportation. Lacking sidewalk and bicycle/pedestrian connections, families with school-aged children (and access to a vehicle) may opt to drive short distances to drop children off at school, rather than allow them to walk in unsafe conditions.

Facility Type	Miles
Sidewalks	26.9
Bicycle Lanes	2.6
Greenways & Shared-Use Paths	10.2

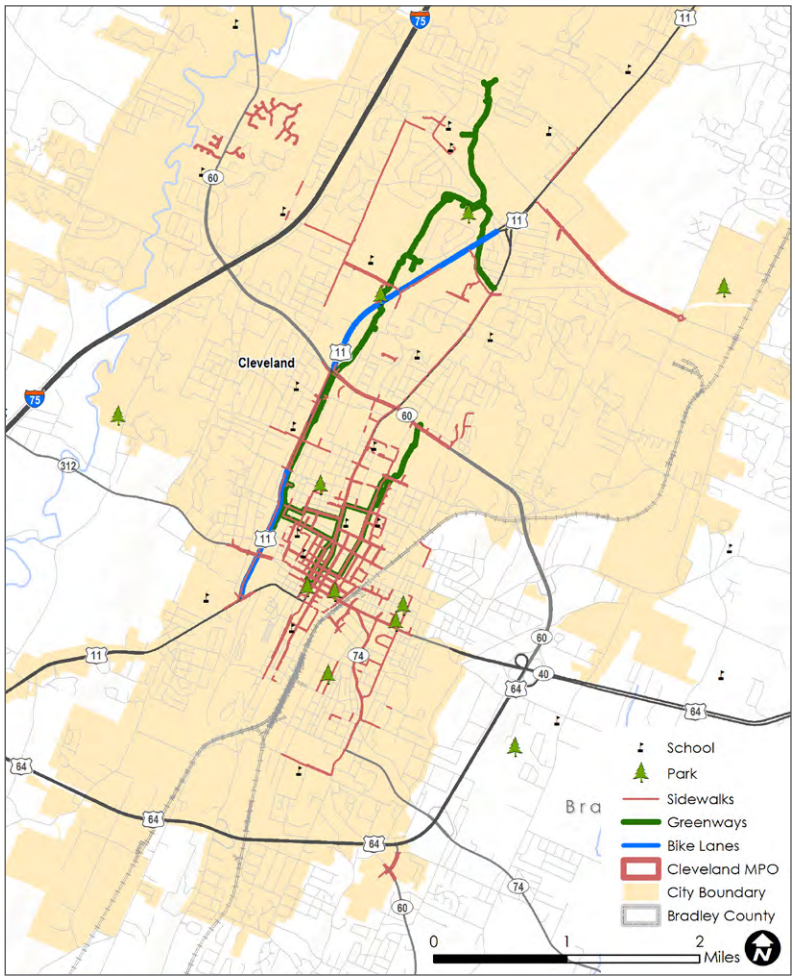


Figure 3.15: Bicycle & Pedestrian network. Source: CUAMPO.

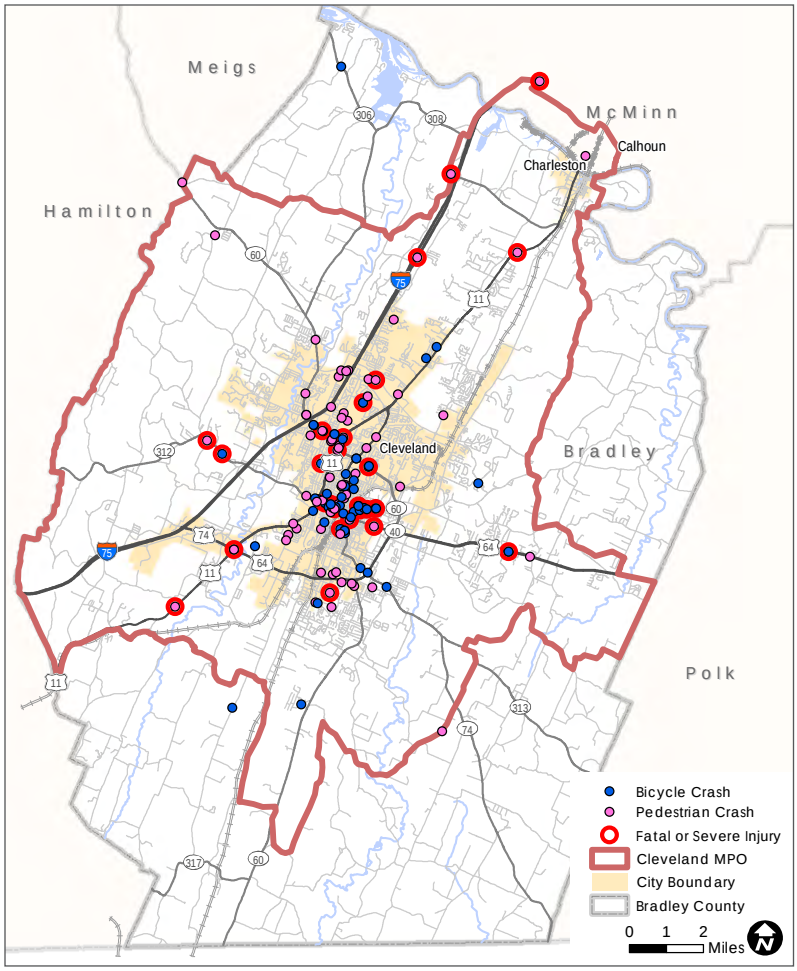
System Performance

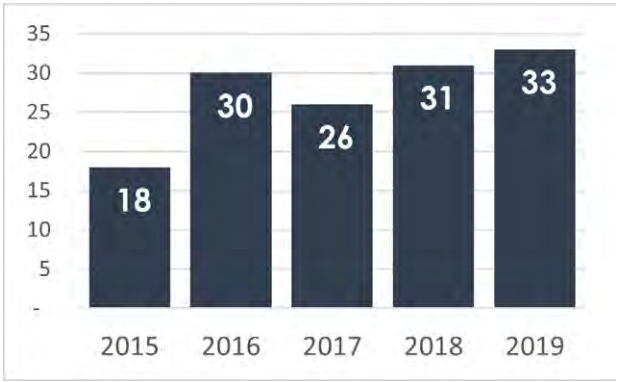
Cleveland's bicycle and pedestrian network is marked by lack of connectivity, which may push these vulnerable users into the roadway to reach their destination. More people are actively walking and biking within the City of Cleveland, which in turn increases exposure and indirectly relates to more frequent crashes, which are seen in Figure 3.16. Crashes are largely clustered in the urbanized areas, particularly in Cleveland's downtown, where walking and biking activity is highest. Key corridors, such as Inman Street, Keith Street, US 11/N Lee Highway, and Georgetown Road all show concentrations, which may indicate insufficient infrastructure, higher levels of bicycling and walking in these areas, or a combination of both factors. Sidewalk gaps between bus routes and nearby employment destinations was a frequently discussed topic by community stakeholders.

Implementation

Implementation of bicycle and pedestrian plans is dependent upon adequate funding opportunities, of which there are several available at both the federal, state, and local level. Federal funding sources include the Surface Transportation Block Grant Program (STPBG), which allocates funding to multimodal transportation projects and which contains the former Transportation Alternatives program, which sets aside certain funds for direct allocation to metropolitan planning organizations. At the state level, Tennessee DOT's Multimodal Access Grant Program provides 95% of funding for bicycle, pedestrian, and transit-related improvements. Likewise, the state's Multimodal Access Policy, Implementation Plan, and Scoping Manual specify design standards, guidance, and procedures for implementing multimodal and Complete streets elements within new and existing roadways projects.

Bicycle and pedestrian facilities can be constructed separately or along with roadways projects, which helps to improve their competitiveness for funding and likelihood of construction. Project recommendations in this Plan for roadways may include bicycle and pedestrian facilities recommendations to help fill in gaps in the existing network. Locally, roadway resurfacing projects may also provide opportunities for MPO staff to fill in gaps in bicycle and pedestrian infrastructure. Multiple TDOT staff reviews opportunities and incorporates accordingly as part of the roadway design process.





Reported crashes involving walking or biking, 2015 to 2019.
Source: TDOT.

Figure 3.16: Bicycle and Pedestrian crashes in the Cleveland MPO area. Fatalities and severe injuries are highlighted with red circles.
Source: TDOT.

Transit

Cleveland Urban Area Transit System (CUATS) and the Southeast Tennessee Human Resources Agency (SETHRA) provide transit services within the Cleveland Area, with CUATS operating fixed-route and paratransit services within the urbanized area while SETHRA provides on-demand paratransit service outside.

Status of the Network

Figure 3.17 depicts the service area and current routes for CUATS. Five routes are operated in total: the Blue, Gold, Green, Orange, and Red lines, covering a service area of approximately 18 square miles and largely uniformly distributed across the urbanized area. Connectivity between the routes is minimal: all routes connect through the downtown Depot at 165 Edwards Street SE; other transfer points include the Dalton Pike Walmart and the Bradley Square Mall. Routes operate thirteen hours per day, from 6:00 AM to 7:00 PM, with approximately 60 minute headways. Fares are $1 per trip, with discounts offered to seniors, students, and those with accessibility needs. Daily and monthly passes are also available.

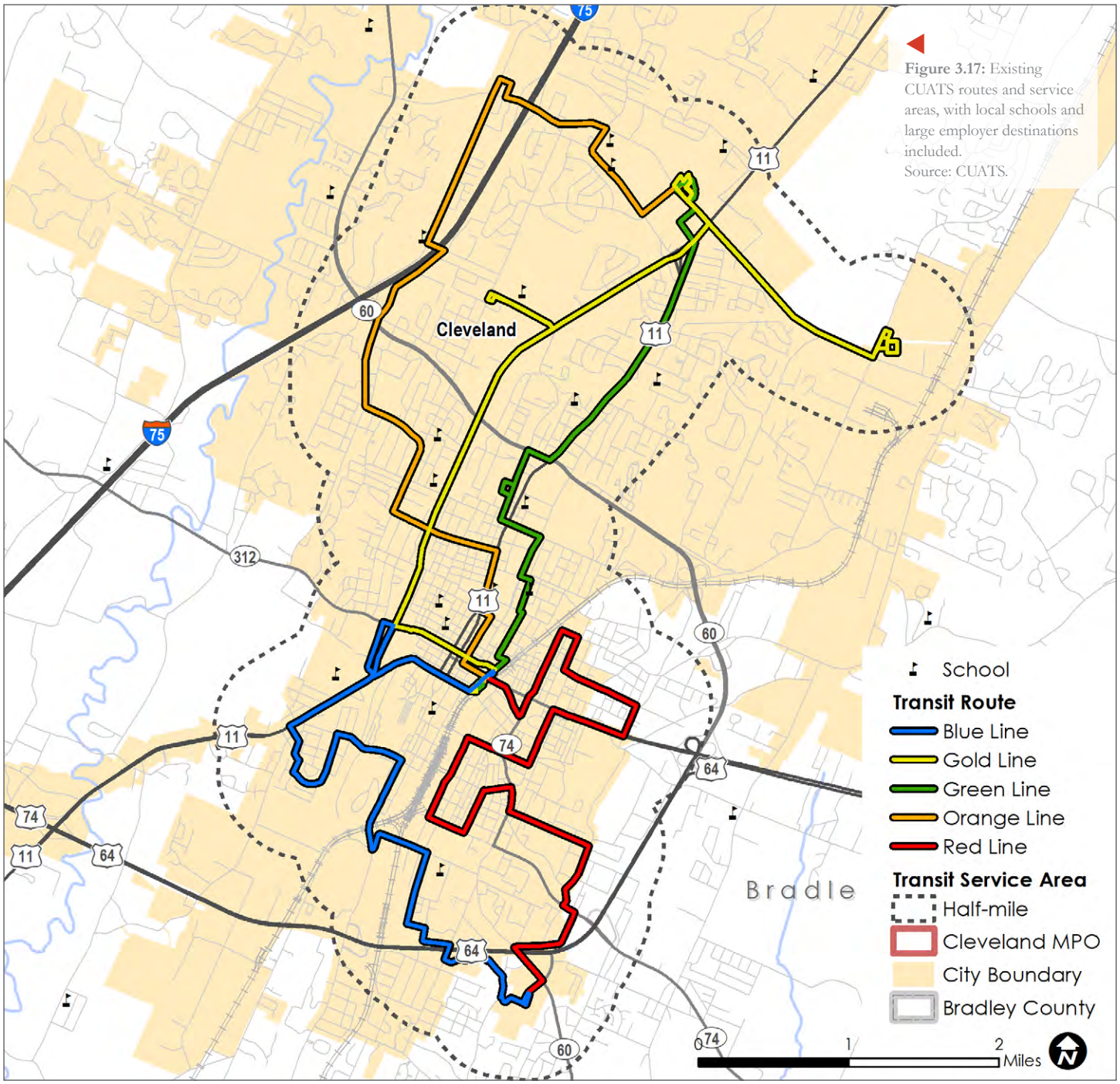


Figure 3.17: Existing CUATS routes and service areas, with local schools and large employer destinations included.
Source: CUATS.

System Performance

Transit ridership has seen steady increases since 2014 (Figure 3.18), with total riders increasing most notably on the Gold Route following implementation of changes recommended in the 2013 Transit Study. Annually, fixed route transit ridership has averaged around 108,000 trips across all routes, with an additional 23,000 trips taken through on-demand transit service. Trends between services differ, however; while fixed-route transit ridership has grown at an average annual rate of nearly eight percent, on-demand transit service ridership has remained flat.

Certain populations, including those living in poverty, elderly, persons with disabilities, and zero-car households, are more dependent on transit service, having limited mobility options. Transit Propensity, an index that captures the population density of these communities within an area, can be used to evaluate existing service. CUATS current service area does an adequate job of reaching these transit-dependent populations; only one block group with high transit propensity lies outside of a ¼-mile radius of fixed-route service. However, routes may not adequately serve desired destinations, such as places of employment and community facilities. Feedback in public engagement highlighted lack of transit service to major employers, as well as the need for longer hours to account for second-shift workers.

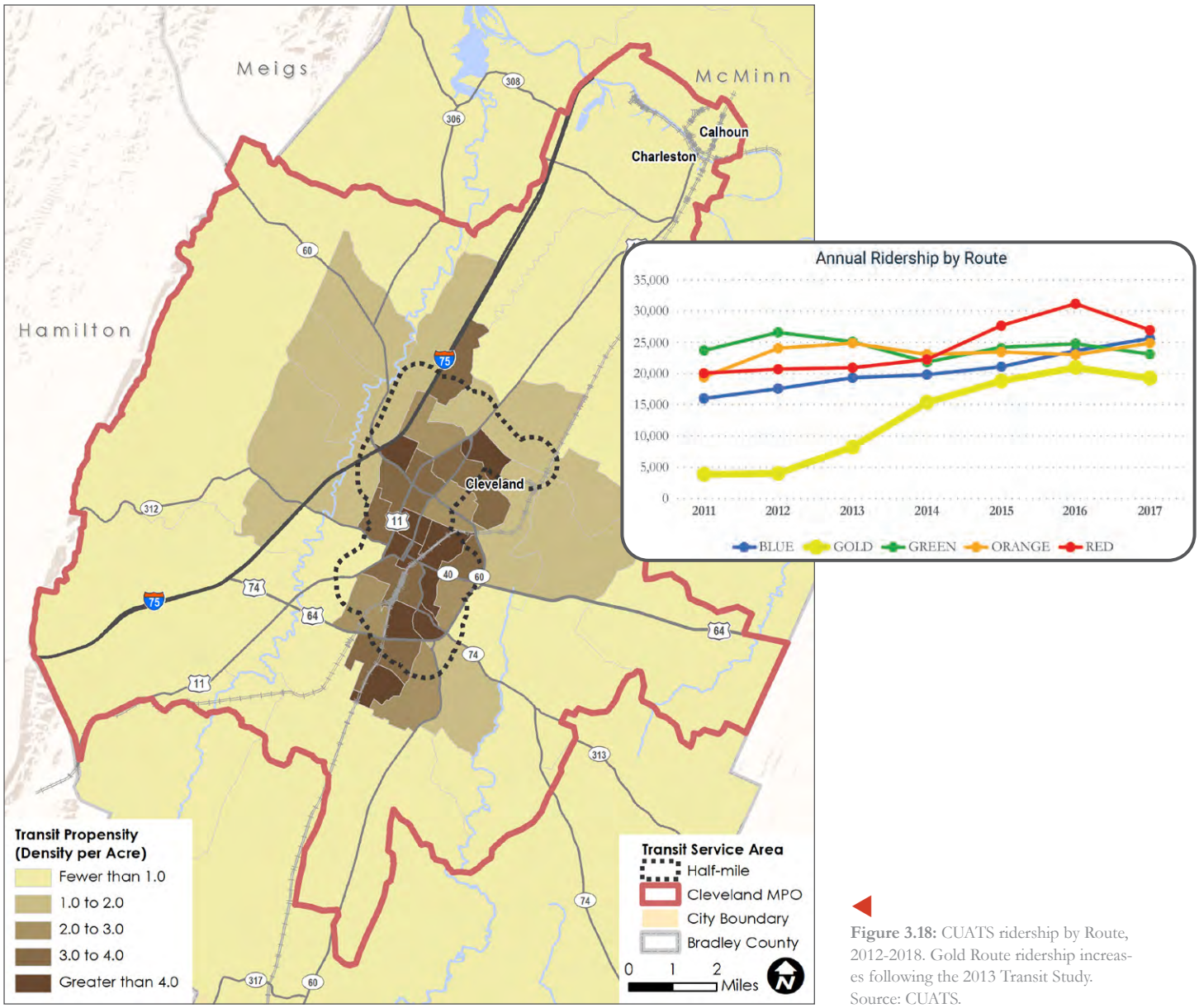


Figure 3.18: CUATS ridership by Route, 2012-2018. Gold Route ridership increases following the 2013 Transit Study. Source: CUATS.

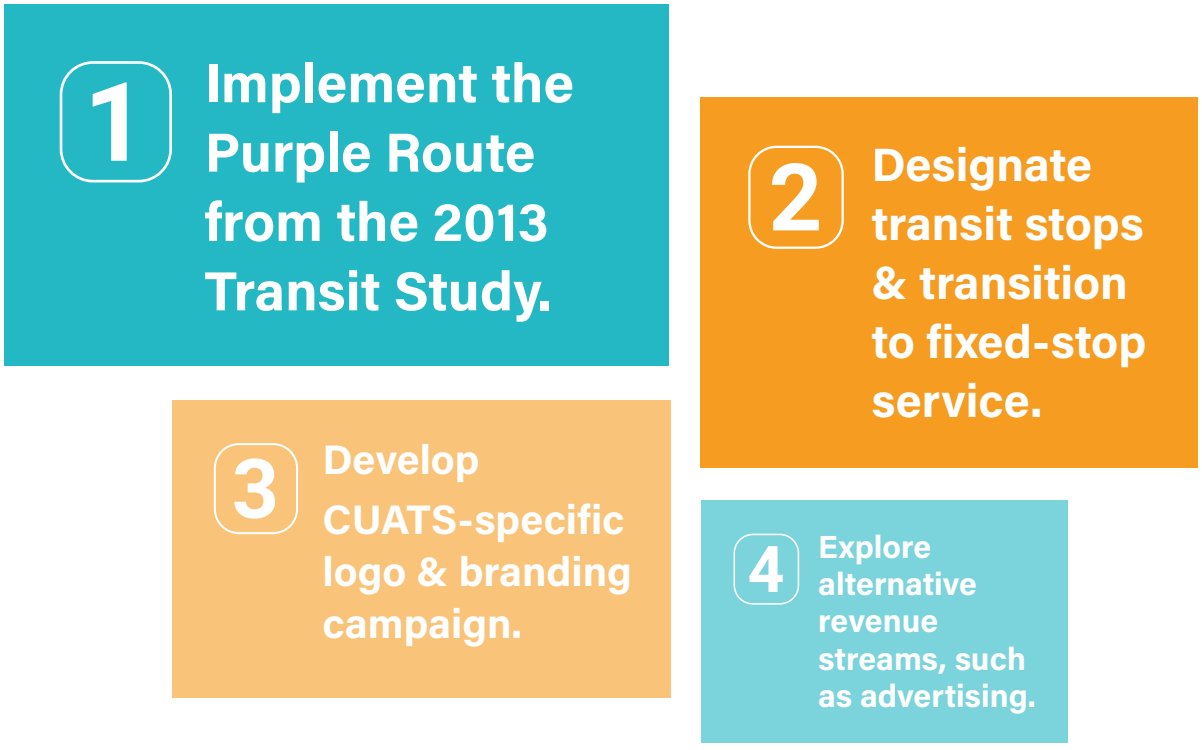
Implementation

The 2013 Transit Study made several recommendations to improve fixed-route transit service in the MPO area, largely consisting of changes to existing routes. While minor changes were proposed and implemented for the Red and Blue Routes, major changes were made for the Gold, Orange, and Green Routes, intended to eliminate route redundancy, improve safety near Lee University, and increase ridership on the then-underperforming Gold Route. Additional recommendations included three major actions that have not been implemented:

1. Creation of the Purple Route, a largely north-south route operating in the northeast Cleveland area connecting residents to growing employment centers, including the new Whirlpool manufacturing facility.
2. Transition to a fixed-stop service, requiring construction of transit stops at identified locations along routes and/or signed locations.
3. Creation of a CUATS logo to increase service visibility.

While the recommended route changes were implemented across all routes, at the present time the three major actions listed above have not been implemented. Funding constraints and labor have all contributed to this delay, although implementation of the Purple Route would enable changes to other routes, increasing connectivity and increasing overall ridership.

The 2017 Revenue Study suggests several ways in which CUATS revenues may be supplemented to support existing and expanded services in the area. Fare increases for both fixed-route and on-demand transit services, as are advertising revenues and partnerships with private entities. The Study also recommends service changes to reduce costs.



PUBLIC 04
ENGAGEMENT

04 Public Engagement

Public engagement plays an integral role in any design or study, as its results will impact the daily lives of community members and local businesses. Planning for a community of any size is not as successful as planning with the community; meaningful engagement means stronger results, tighter community bonds, and its implementation is harder fought for. Furthermore, engagement provides invaluable feedback to planners, engineers, and designers regarding current conditions and problems that might not be fully understood looking at data alone; the human element and a diversity of perspectives helps to reframe the project team's view of the issues and provide better suggestions for improvement.

This chapter describes the processes, strategies and activities used to engage with the Cleveland area community during the 2045 RTP's development. It also summarizes information received from the public, including local, state, and regional agencies, stakeholders, and the community at large.

In this Chapter:

Learn more about our Public Participation Plan **HERE**.

Impacts of COVID-19

During the development of the 2045 RTP, our world, nation, and community continued to grapple with the COVID-19 pandemic, an unprecedented moment in history with profound implications on traditional means of public engagement. Daily routines, around which traditional methods of engagement were devised, have been reformulated to adapt to remote working and social distancing. Social gatherings were restricted with limitations on types of events and attendance, or outright banned, in order to limit the spread of the coronavirus. Large public meetings, such as the Public Workshop, and small gatherings, such as advisory committee meetings and stakeholder interviews, would need to find new formats in order to engage the public meaningfully in the planning process.

Like our community, this Plan adjusted to the new normal and shifted traditionally in-person means of outreach into the virtual realm. Coupling new online capabilities, such as Zoom cloud meeting technology, with familiar methods of online engagement such as interactive web mapping and surveys, virtual public engagement stepped up to meet the needs of this project. While many of the engagement opportunities described herein were initially intended as in-person meetings, innovation borne out of this challenging time provided a virtual format that nonetheless fostered deep engagement and robust participation from a large segment of the community.

Public Participation Plan

While public engagement is a crucial and highly insightful component of planning, in the MPO context it is also a requisite. Federal legislation requires MPOs to develop and use a Participation Plan that defines the process by which residents and stakeholders can become involved in the transportation planning process. This process must include those people who are directly impacted by transportation planning, as well as those from traditionally-marginalized populations. The ultimate goal is to ensure that plans and services reflect community values, and equitably benefit all communities.

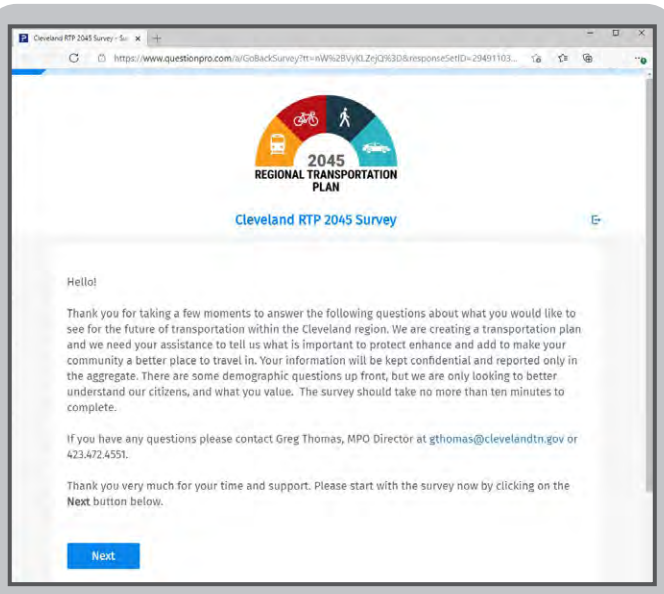
For the Cleveland MPO, the formal participation process begins with Executive Board endorsement of the draft plan for public review. This draft is made available, both online and at the Cleveland Public Library, and the review period is advertised locally. Low-income, minority, and limited-English proficiency populations are additionally notified through written or verbal notice in suitable venues. Following a thirty-day comment period, comments are reviewed and discussed at a second public hearing, after which the Plan is adopted, or the comment period extended to resolve any remaining issues.

Online Engagement

Project Website

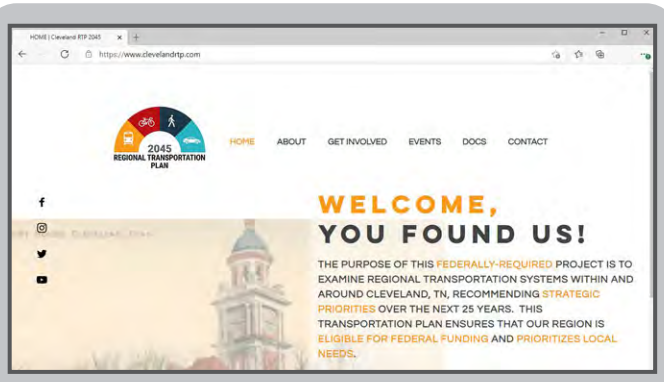
Early in the process, www.clevelandrtp.com -- the 2045 RTP website -- was created so residents, property owners, business owners and other stakeholders could access information and provide input on the discussions surrounding the plan's development. The website featured information on project purpose, dates and locations of upcoming meetings, meeting results, related documents, and ways to get involved with the project. Ahead of major public events, event notices were sent out by email and social media alerting the public and inviting them to attend. When combined with the publicizing efforts by the Cleveland MPO as well as local news organizations, hundreds of people were able to hear about the RTP during its development.

Among the ways to get involved through the website were a comment box, an online survey, and an interactive map tool. The comment box allowed for residents to leave general thoughts or ask questions which the project team could respond to directly. The survey and map were open for interaction for two months and closed when the design recommendations were completed. The results were left viewable on the website and are documented in the digital appendices of this report. Summaries of both are shown in the following pages.



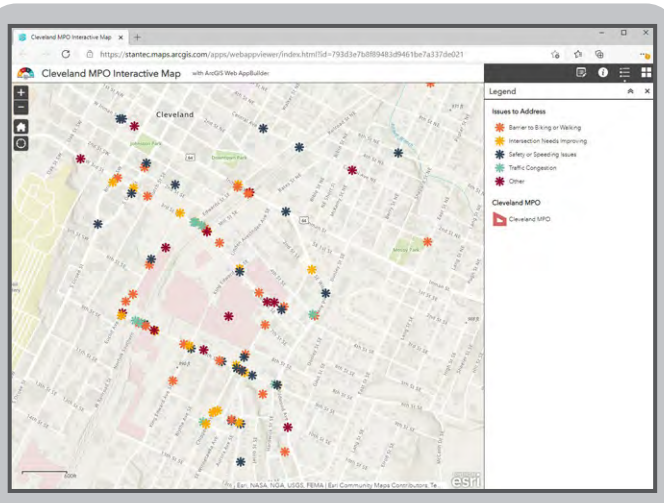
ONLINE SURVEY

The online survey is a key tool for measuring community attitudes and perspectives.



PROJECT WEBSITE

The virtual portal provides opportunities for involvement and documents progress to date.



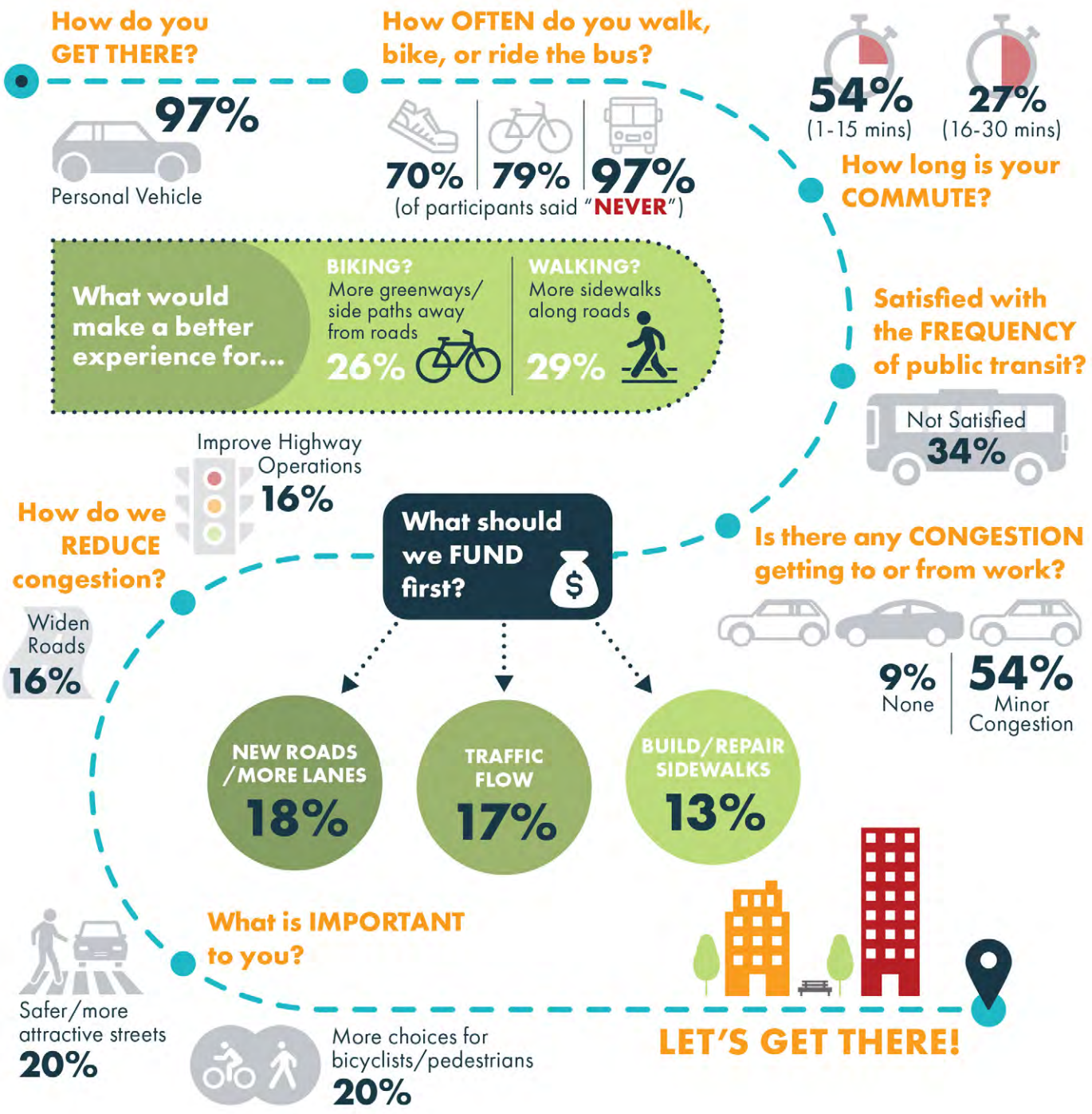
INTERACTIVE MAP

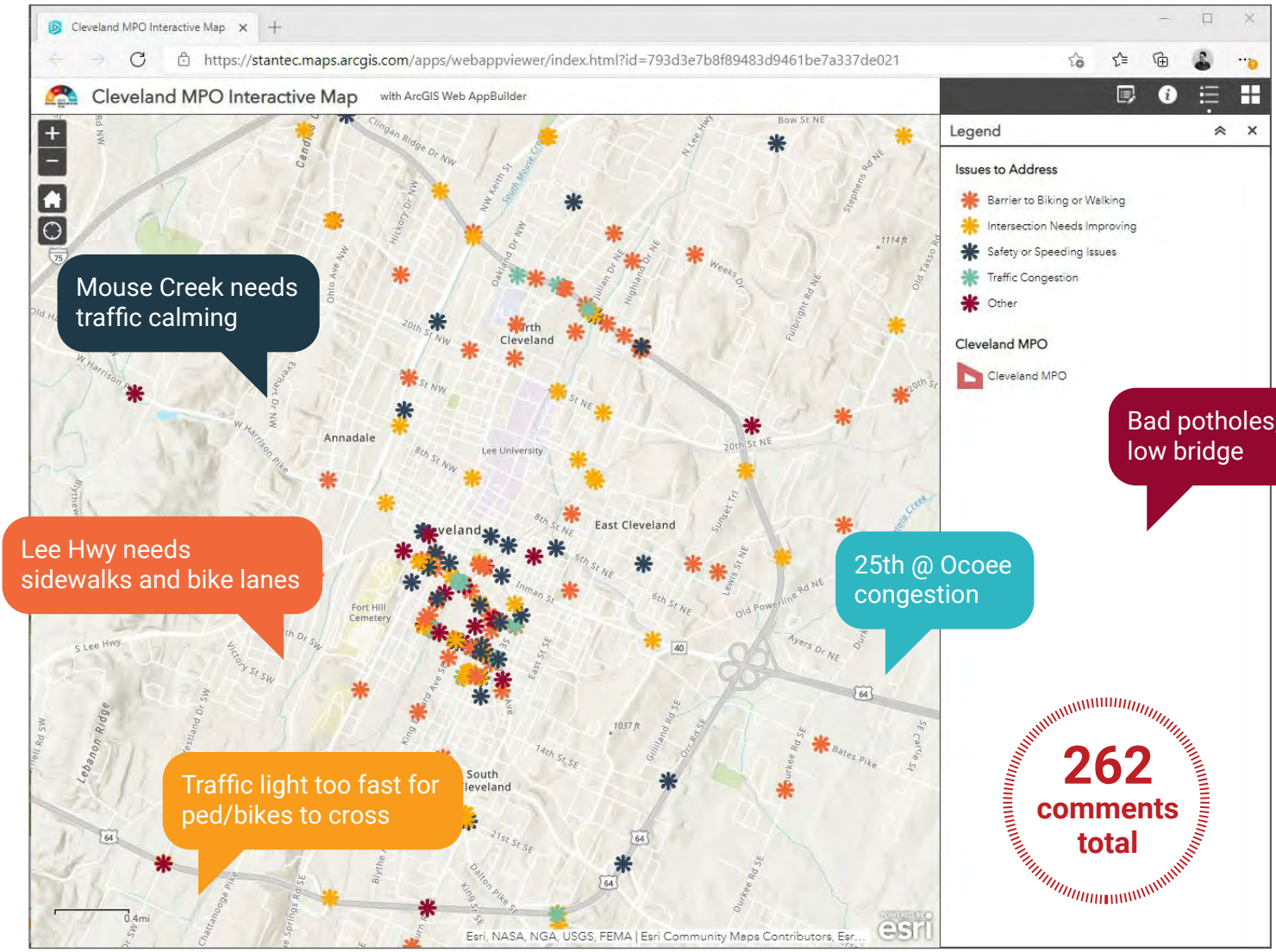
The interactive ArcGIS Online map is critical to identifying where core transportation issues exist.

Online Survey

The online survey measured the pulse of community sentiment regarding the transportation network's present, as well as their expectations of future growth. It featured a set of 15 questions related to traveling conditions, development, and safety. These large-scale responses complemented the first-hand discussions with focus groups and Advisory Committee discussions.

Major takeaways from the survey are summarized below.





Interactive Mapping

The interactive map illustrated the public's collectively-identified problem areas and points of interest within the Cleveland area. Using ArcGIS Online mapping capabilities, respondents identified a variety of features, including needed intersection improvements, safety hazards, and community landmarks, among others, which were portrayed as points and icons on the interactive map. The web map provided a different and needed perspective on corridor-level issues than could not be fully captured through face-to-face discussions or traditional survey methods.

Stakeholder Discussions

Technical Advisory Committee (TAC)

The Technical Advisory Committee (TAC), comprised of technical staff, practitioners and representatives of various groups that implement policy inside the Cleveland MPO planning area, acted as a technical advisory board for the project. The committee reviewed progress, gave direction and input, monitored the project as it developed and provided feedback to the project team. The committee met with the Stantec project team generally on a monthly or bimonthly basis during the timeframe of the study.

Focus Group Meetings

During the initial phase of information gathering, focus group interviews were held with representatives comprised of community stakeholders, including residents, agency representatives, community leaders, advocates, and elected officials. Meetings were held as a series of one-hour interviews and centered on a single subject. Focus group members were identified by members of the Advisory Committee for inclusion based on their ability to provide different perspectives on the topic at hand representing different facets of the community.

Focus group meetings provided an opportunity to obtain qualitative feedback on targeted topics and areas of interest or concern within the study area. In contrast to the volumes of quantitative data produced during the initial investigation phase of the project, these 'listening sessions' with community members in a virtual format allowed the project team to verify data with group perspectives, as well as to supplement the same information with local insight and perspective not captured through data.

FOCUS GROUP CATEGORIES:

1. *Economy/Development*
2. *Equity/Underserved*
3. *Bicycle/Pedestrian*
4. *Transit/CUATS*
5. *Emergency Services/Safety*
6. *Freight/Major Employers*

KEY THEMES DISCUSSED:

Mobility, Economy & Housing

Virtual TAC meetings:

6

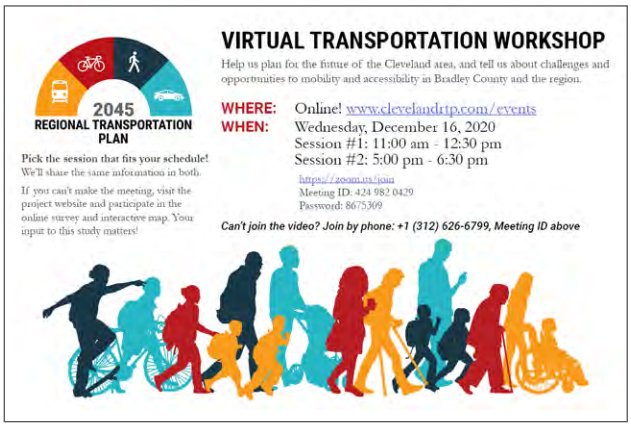
Total # of focus group attendees:

25

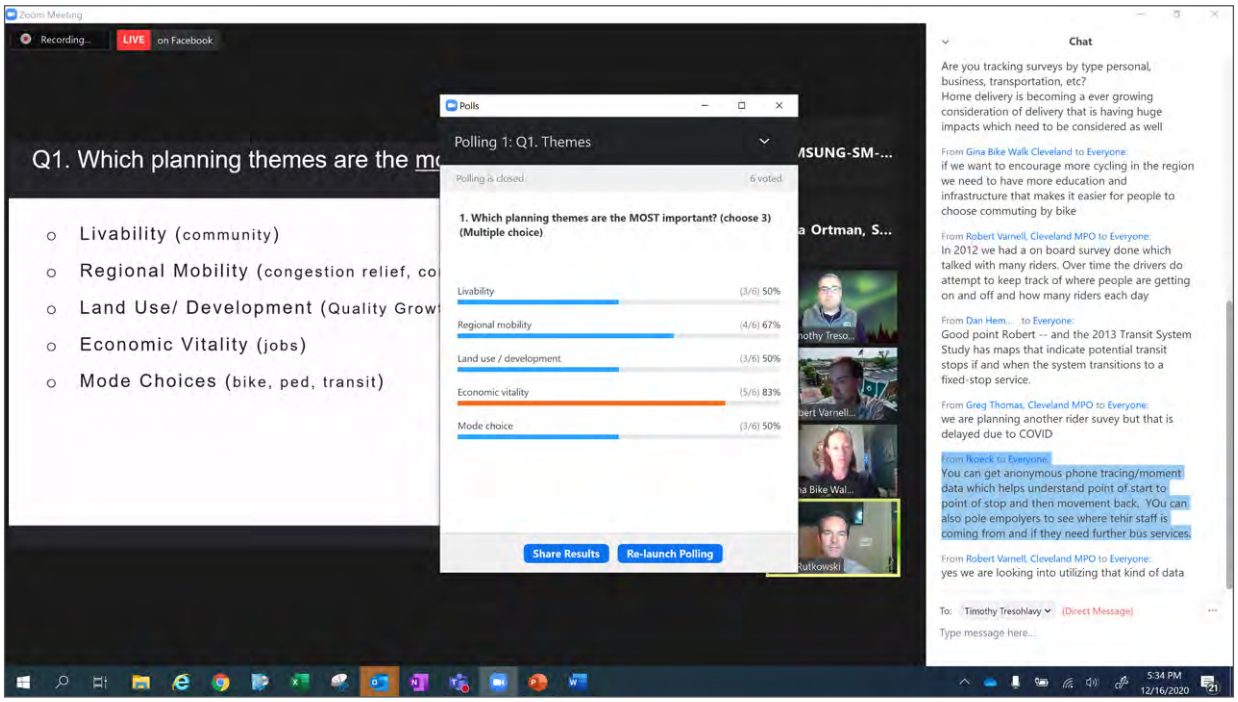
Virtual Meetings

Public Workshop

The Workshop offered the first opportunity for the public to collaborate with the project team. In so doing, the team receives feedback on project principles and objectives, which is then used to refine key themes and guiding principles that will guide subsequent design phases of the planning process. The first Public Workshop was held virtually via Zoom in mid-December. To ensure the greatest public participation, two virtual workshop sessions were held: the first took place December 13th, beginning at 11:00 AM, while the second was that same evening, at 5:00 PM.



Digital flyer for the Public Workshop



View of the Public Workshop in action!

"Need to ***connect*** our bike lanes to more schools, businesses, and the rest of our state."

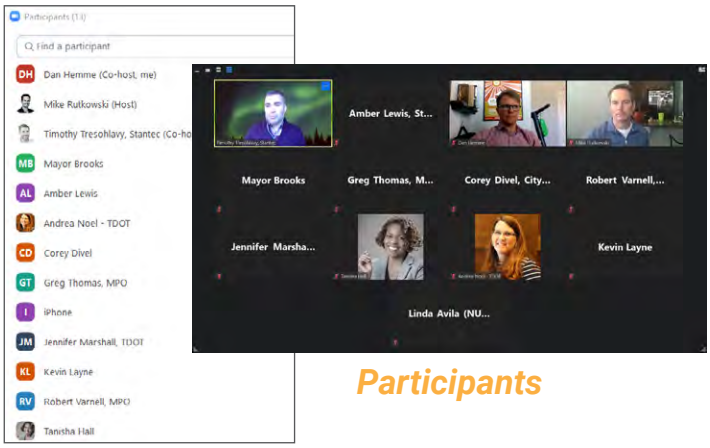
- Public Workshop attendee

"***Home delivery*** is becoming a ever growing consideration of delivery that is having ***huge impacts*** which need to be considered as well."

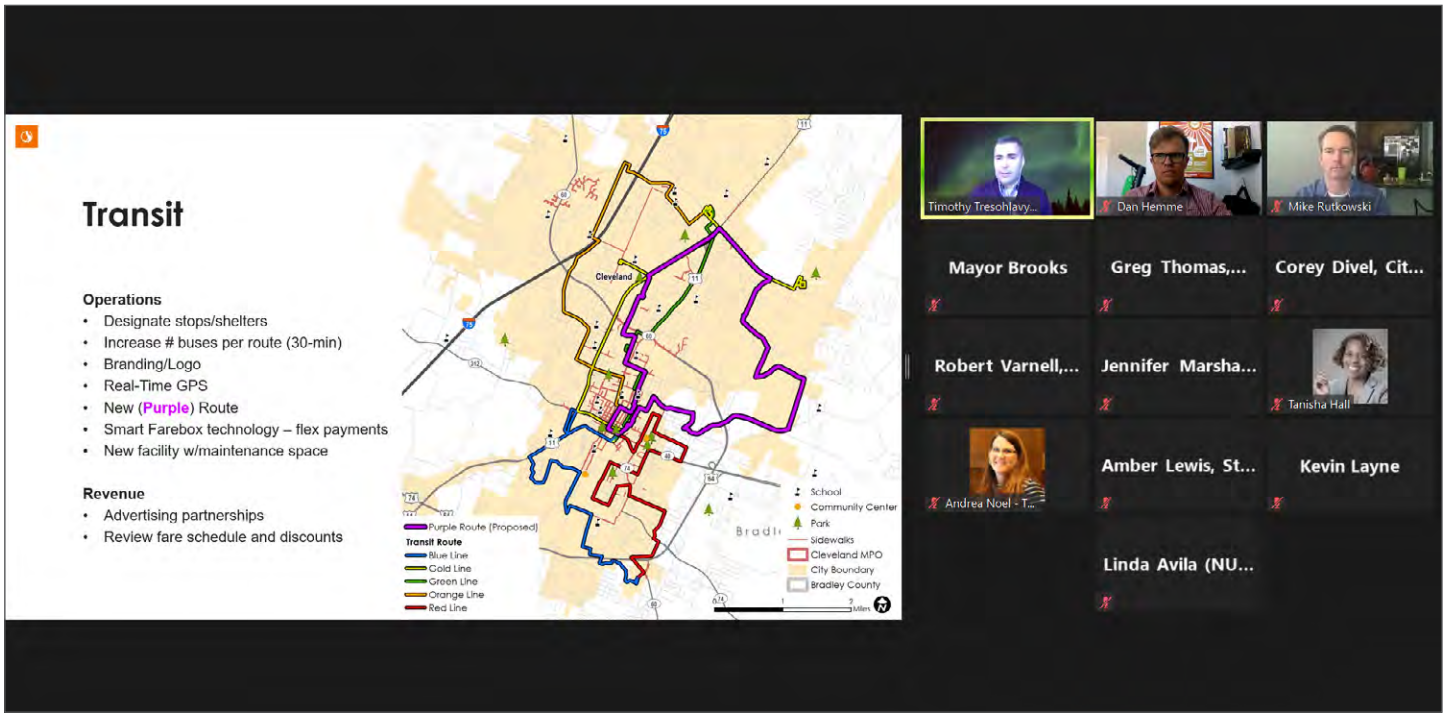
- Public Workshop attendee

Open House

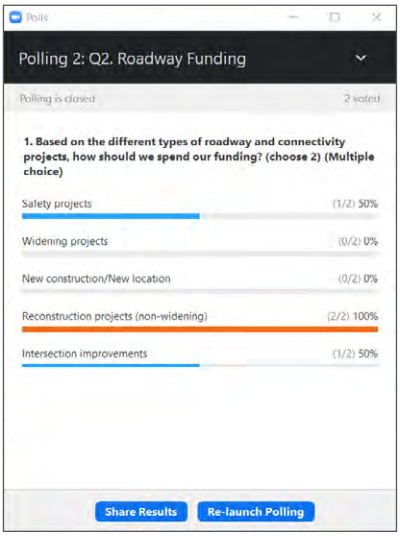
Whereas the Workshop helped to frame the region's issues, The Open House, held March 4, 2021, offered community members an opportunity to review and comment on the draft recommendations developed through the planning process. With the COVID-19 pandemic continuing to restrict social gatherings, the meeting was held over two virtual meeting sessions on the Zoom platform. Strong attendance from the community provided excellent feedback on prioritization, as well as recommendations for implementation and phasing of the project's completion.

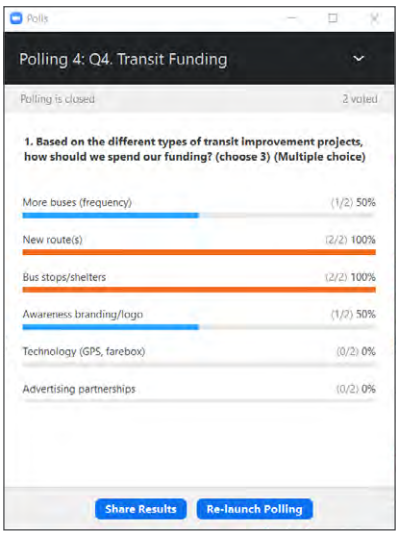


Participants



View of the Open House in action!





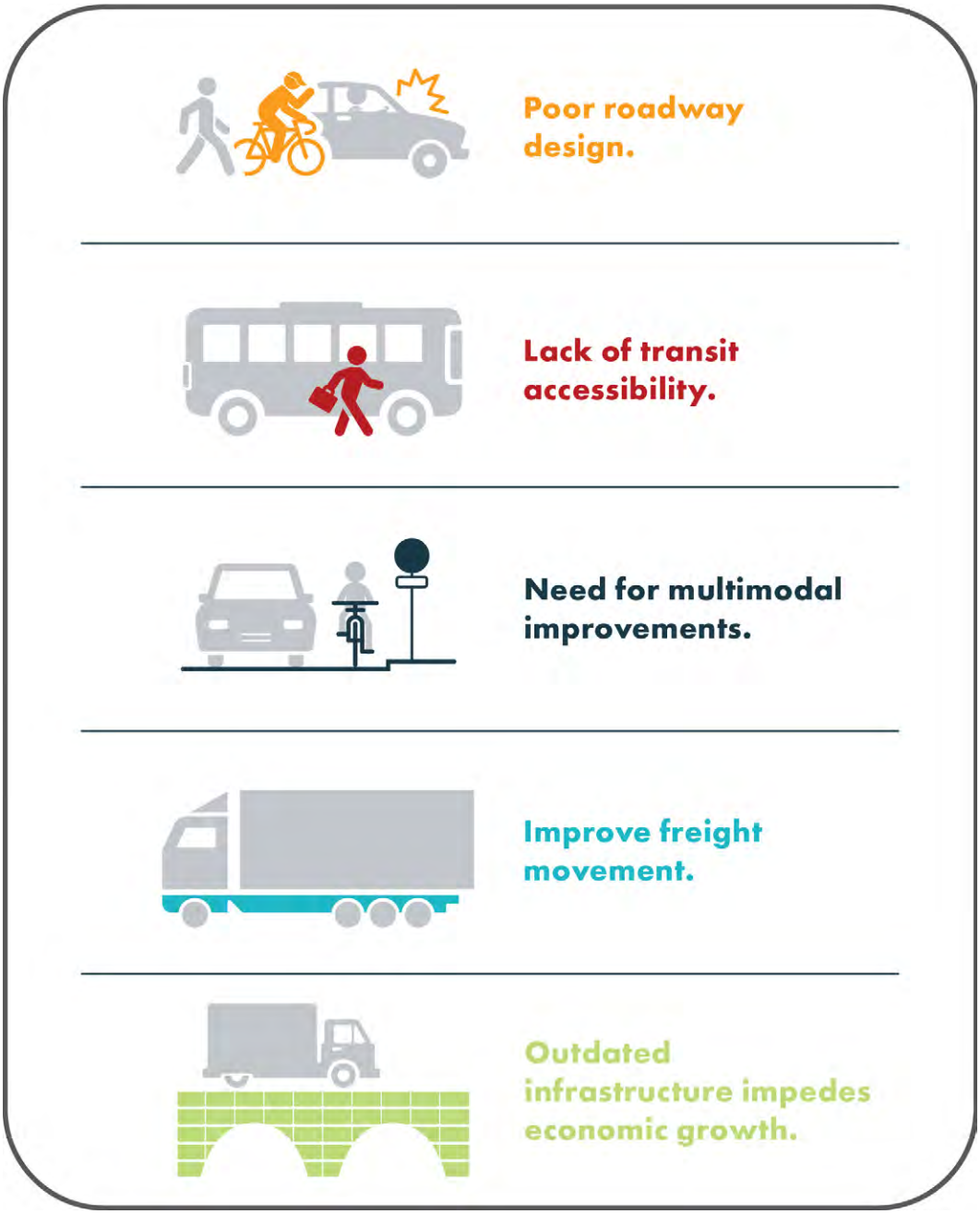
Live polling questions results

Key Takeaways

The process for the Regional Transportation Plan engaged the public throughout all stages both to understand current challenges and opportunities throughout the study area, formulate design concepts and subject them to scrutiny, and refine the Plan's ultimate recommendations. Stakeholder discussions, online engagement, and virtual public meetings created an umbrella of means of participation, which brought together a diverse population of Cleveland area residents and community stakeholders who use and interact with the area's transportation network routinely and know it intimately.

From this engagement, a select number of important issues and observations repeatedly become the subject of conversation, survey response, or map commentary. Identified as critical points to address in the current and future transportation system, these issues helped to define the Plan's Goals, Objectives, and Measures, which defined project evaluation and prioritization (learn more about this in Chapter 5).

These issues, summarized below, represent the key takeaways from public engagement.



RECOMMENDATIONS 05

05 Recommendations

The Cleveland urbanized area is experiencing sustained growth and development, which has brought new prosperity as well as new transportation challenges. Residents of the Cleveland MPO area recognize that an improved, multimodal transportation network not only provides mobility choices to relieve congestion, but also spurs economic opportunity, improves public health, increases security and community resiliency, strengthens community capital, and raises the quality of life for all community members.

The recommendations in this chapter strive to achieve the goals set forth previously in this Plan, improving safety, strengthening economic vitality, fostering equity, preserving and enhancing the system, and expanding mobility choices over the coming years to meet the needs of this growing community. Recommendations are broken out by mode, drawing on existing local, regional, and state plans, as well as the needs identified through the rigorous analysis and robust engagement outlined in previous chapters.

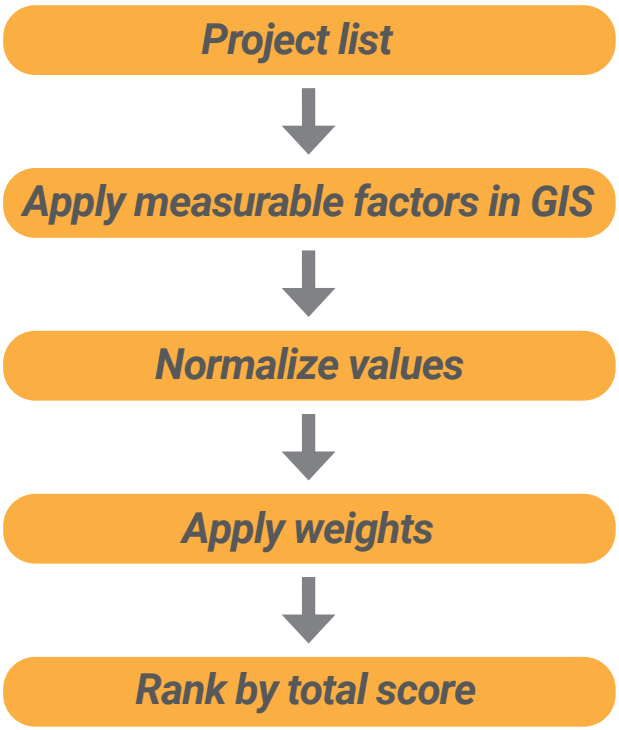
In this Chapter:

Project Prioritization

Many improvements are needed in order to achieve the goals of this 2045 Regional Transportation Plan. However, simply developing a list of all the potential projects is not enough to meet federal requirements for the development of this Plan; **limited funding means that only some projects can be completed.** Because of this, prioritization is critical to developing a Plan that serves the needs of its community. Balancing system performance and need across many evaluation criteria, these project recommendations must be those that are most effective in accomplishing this Plan's Goals.

Project Prioritization involved a multi-stage, data-driven process with guidance from the Technical Advisory Committee as well as the totality of qualitative and quantitative data produced during this process. Seven **Project Factors** were derived from the Plan's Goals, as well as the federal planning factors, and ranked by the Technical Advisory Committee to develop weights of importance for each of the factors (Table 5.1). Using measurable criteria for each factor (Table 5.2), each potential project was analyzed and weighted to produce an overall score, representing that project's effectiveness in accomplishing each of the goals. Finally, all projects by mode were sorted by rank.

For the fiscally-constrained element of this Plan (Chapter 6), committed projects were shifted to the top of the list, regardless of priority rank.



Factor	Weight
Safety & Security	20.750
Economic Development	16.750
Alternative Modes of Transportation	14.917
System Preservation	13.583
Equity/Environmental Justice	13.333
Local Priority	12.497
Consistency with Existing Plans	8.170

Table 5.1: Weight of importance for criteria, as voted on by the Advisory Committee.

Related Goals	Factor*	Measurable Criteria
Safety	Safety & Security	Crashes per mile
		Fatal & Serious Injury crashes per mile
		Bicycle & Pedestrian crashes per mile
Economic Vitality & Reliability	Economic Development	Proximity to Downtown or Major Employers
		Freight Volume
		Freight Connections
Mobility Choices Equity	Alternative Modes of Transportation	Connectivity with Existing Facilities
		School Connections
		Bus Route Connections
System Preservation Economic Vitality & Reliability	System Preservation	Future Year Volume-to-Capacity
		Travel Time Reliability
		Roadway Shoulders
Equity	Equity/Environmental Justice	Transit Propensity
		Minority & Low Income Density
		Environmentally-Sensitive Areas
Economic Vitality & Reliability Mobility Choices	Local Priority	Priority Need (from Outreach)
		Community Center or Park
System Preservation	Consistency with Existing Plans	Previous Planning Effort
		Opportunity Zone

Table 5.2: Relationship of project goals to priority factors and criteria.

Recommendations

Roadway & Freight

The vast majority of trips in the Cleveland urbanized area are made by private automobile, which makes roadways improvements of vital importance to the future network. The recommendations shown in the map and tables below represent projects designed to improve upon the current network's performance, prioritized based upon need and their effectiveness in accomplishing this RTP's goals. Figure 5.4 shows the location of these projects. Table 5.5 on the following page illustrates some of these projects based upon their project type and relative priority (does not reflect the final project list).

Improvement Type	# of Projects	Total Mileage
Intersection	18	--
Safety	1	1.2
Reconstruct / Safety	29	30.1
Widening / Safety	27	56.2
New Roadway	6	6.3

Table 5.3: Roadway & Freight Summary.

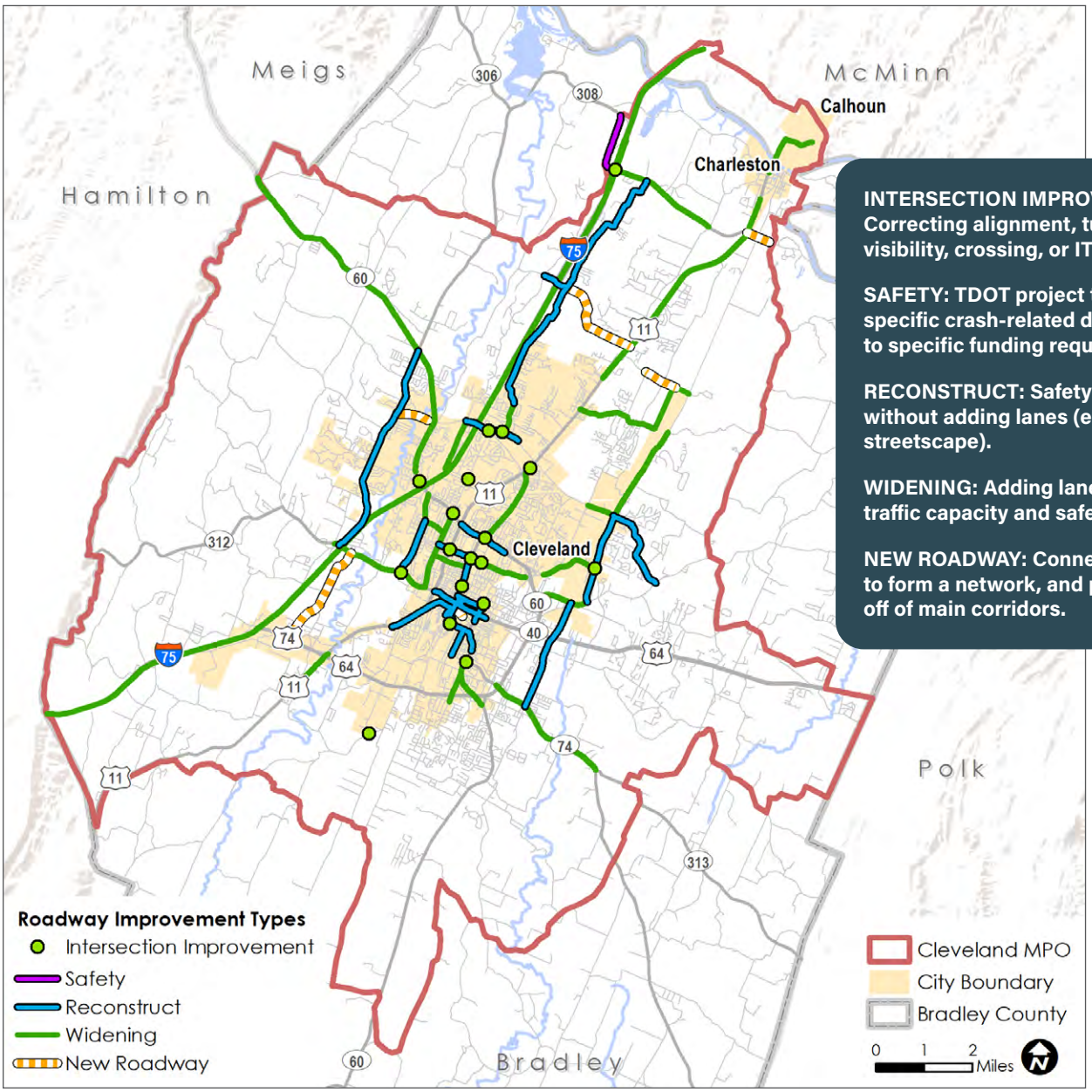


Figure 5.4: Recommended roadways improvements in the Cleveland MPO.

Improvement Type	Project Name	Project Extent (from/to)	Rank*
Intersection	I-75 / SR 308 Interchange (exit 33)	SR-308 / Lauderdale Memorial Hwy	4
	Keith Street (US-11)	20th Street NW	19
	Peerless Road	Norman Chapel Rd NW	20
	Mouse Creek Road	Paul Huff Pwy NW	23
	North Ocoee	20th Street	24
	25th Street	Peerless Rd NW	30
Safety	SR-308 (Lower River Road)	Bowater Logging Road to I-75	79
Reconstruct / Safety	20th Street & Michigan Avenue Road Improvements	Minnis Rd to 20th Street	2
	Inman St Improvements	US 11 Keith St to East St	10
	25th St NE Improvements	US 11 / Keith St to Spring Creek Dr NE	11
	S Ocoee St / SR 40 Alternative Connector	6th St SE to 3rd St SW	12
	3rd St SW	US 11 / Keith St SW to S Ocoee St	13
	Parker St Improvements	TN 40 Inman St E to 2nd St NE	14
Widening / Safety	SR-60 Widening (Georgetown Road)	West Lake Dr to SR 306 Freewill Rd / Eureka Rd	1
	Adkisson Drive Widening and Roundabout	Norman Chapel Rd to Paul Huff Pkwy	3
	SR-2 / US-11 / N Lee Highway	Anatole Lane to Market Street	5
	SR-60 (Georgetown Road)	RS-306 (Eureka Rd) to Rabbit Valley Road	6
	SR-60 (Georgetown Road)	Rabbit Valley Road to Hamilton County line	7
	I-75 south of Exit 20	Hamilton County line to US 74 (Exit 20)	8
New Roadway	Midtown Connector	Edwards Street S.W. to Linden Avenue	17
	Paul Huff Pkwy Ext	Freewill Road to SR-60 (Georgetown Road)	77
	SR 308 Extension	US-11/SR-2 (N. Lee Hwy) to Chatata Valley Dr	78
	Northwest Connector	Mouse Creek Rd to US-11/SR-2 (N. Lee Hwy)	82
	Freewil Rd Extension / Lake Rd	US 74 / APD 40 to SR 312 / Harrison Pike	83
	Tasso Ln NE Extension	Jenkins Rd NE to Tasso Ln NE	84

Table 5.5: Roadways & Freight Prioritization Table.
* Rank followed a data-driven process described at the beginning of this chapter (Project Prioritization)

Strategic Considerations for Roadways & Freight

Quick and reliable freight movement is critical to the economic vitality of the region. To reach this goal, the development of strategic freight corridors and networks is crucial, and the following should be considered.

Local Reliability. During the planning process, a survey was conducted that focused on freight. 90% of respondents rated the freight system as good or average. Other results indicated there is room for improvement, particularly in reliability. More than half (55%) of survey respondents experience a daily delay of over 15 minutes, and one-quarter (27%) are delayed for over 36 minutes. Recommendations in this RTP focus heavily on local reliability and include the following stakeholder input:

- Widen roadway cross sections and shoulders to increase turning radii for large trucks;
- Improve wayfinding to avoid u-turns;
- Improvements such as traffic signal timing to increase overall reliability at key intersections that have capacity issues.
- Improve connectivity between the Jetport, freight generators, strategic corridors and the Interstate system.

Regional Planning. Cleveland lies in the center of an area known as "Freight Alley" that includes Nashville, Knoxville, Atlanta, Birmingham and Chattanooga. I-75 between Cleveland and Chattanooga is already identified as a bottleneck, and freight traffic is forecast to increase 34% by 2045. Because of this, the 2040 RTP and a 2020 TDOT National Economic Partnership study recommend the development of regional strategic networks. These networks promote regional cooperation by strengthening communication between MPOs, RPOs, DOTs and other agencies which to more effective decision making.

THRIVE Regional Partnership

The MPO should continue to participate in and expand upon regional planning initiatives beyond its own boundaries. This includes THRIVE Regional Partnership, which includes 16 counties in Alabama, Georgia and Tennessee that focuses heavily on connectivity and mobility. The MPO should also continue to coordinate with surrounding MPOs and RPOs. One major recommendation from the THRIVE partnership is an I-75 bypass from Dalton to Cleveland that avoids Chattanooga congestion. It also identifies a need for more truck parking. Both the truck parking and bypass could present an economic opportunity.

Multimodal Connectivity. Freight is also transported by rail, air, and waterway into the region. Reliable connection of these ports and terminals to the Interstate network is important for continued economic growth. One opportunity identified is the **Regional Jetport's** potential to serve larger aircraft. Currently it primarily serves small business jets. Stakeholder discussions revealed an immediate need for connectivity between the jetport, freight generators and the Interstate. The recommendations include projects that increase this connectivity. Activity at the Appalachian Regional Rail Port is also expected to grow over the next decade and should be accounted for.

Bicycle & Pedestrian

Bicycle and Pedestrian projects represent opportunities to correct deficiencies identified during the development of this Plan and in the MPO's previous efforts, creating more and better options for all users of the transportation network. The recommendations shown in the map and tables below represent projects designed to improve connectivity and expand upon the existing bicycle and pedestrian network, creating more and better options for all modes and users. Like roadways, these projects have been prioritized based upon need and their effectiveness in accomplishing this RTP's goals. Figure 5.7 shows the location of these projects. Table 5.8 on the following page illustrate some of these projects based on type.

Proposed Improvement Type	# of Projects	Total Mileage
Sidewalk	110	84.9
Greenway	5	6.3

Table 5.6: Bicycle & Pedestrian Summary Table.

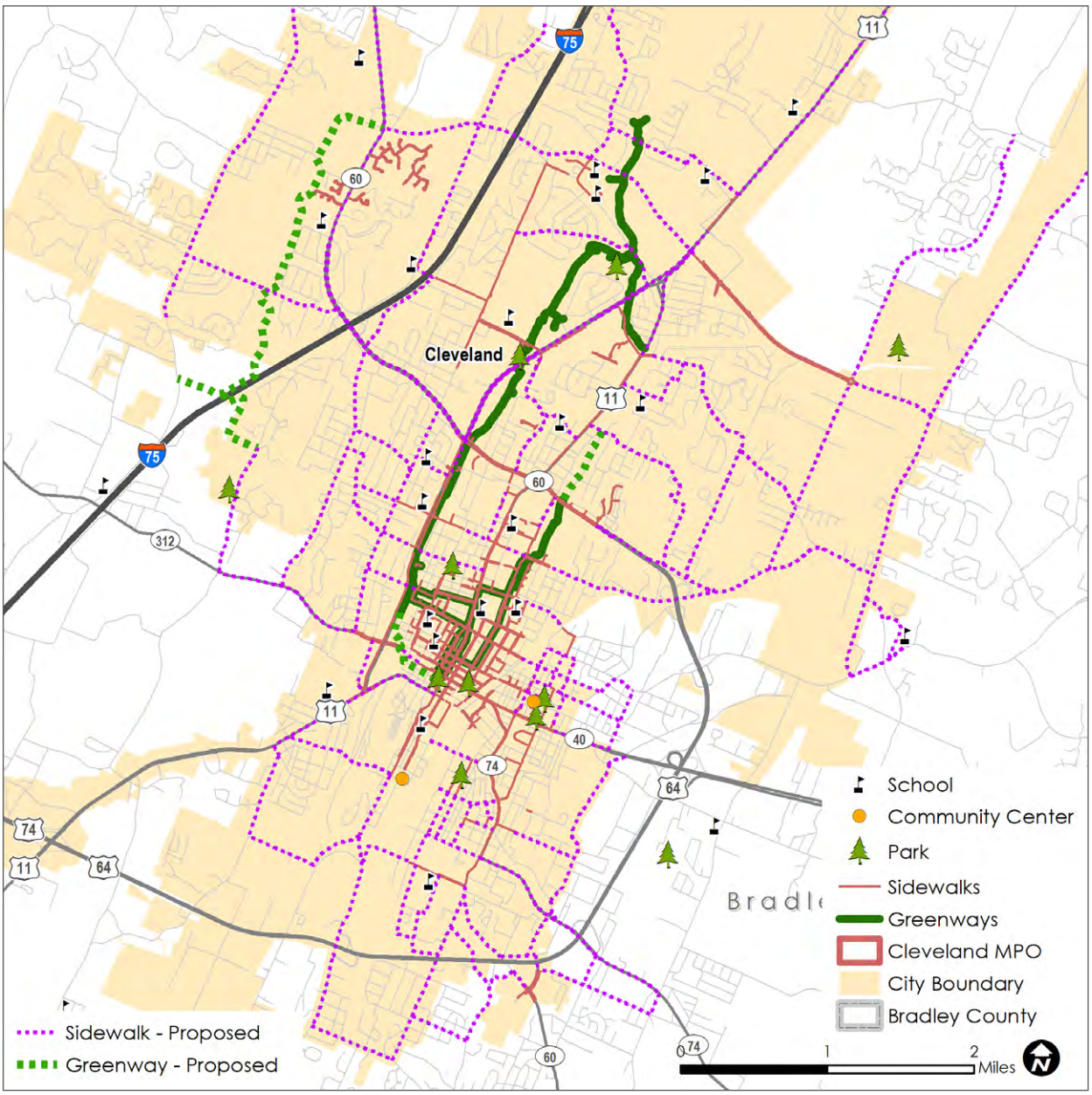


Figure 5.7: Recommended Walking & Biking improvements in the Cleveland MPO area.

Improvement Type	Project Name	Project Extent (from / to)	Rank*
Sidewalk	20th St SE	Blue Springs Rd to Bythe Ave	1
	SR-2 Keith St NW	SR-60 / 25th St to Paul Huff Parkway	2
	S Lee Hwy / 3rd St SW	Keith St to S Ocoee St	3
	Mouse Creek Rd NW	Mimosa Dr to US 11 / Lee Hwy	7
	Inman St W	Highland Ave to Oak St	8
	Georgetown Rd NW	1st St NW to SR-60 25th Street NW	9
	Michigan Avenue Rd NE	Benton Pike to Royal Oaks Dr	10
	9th St SE	Euclid Ave to Wildwood Ave	11
	Gaut Street sidewalk extension	Central Ave to 1st St	12
	Gaut Street area sidewalks and bus stops	Construct or replace sidewalk along Dooley St and Gaut St between SR-74 (Wildwood Ave) and Central Ave. Construct or replace sidewalks on Central Ave from Gaut St to College Hill Recreation Center, and on Inman St from Gaut St to Sheppard St. Install bus shelters on Dooley St near Wildwood Ave, and on Central Ave near Gaut St.	13
	15th St NE	People St NE to Gaut St NE	14
	Georgetown Rd NW	Candies Ln to SR-306 constructed by roadway improvement projects	16
	Old Tasso Rd NE	20th Street to Stuart Rd	17
	Blue Springs Rd S	SE Dockery Ln to S Ocoee St	18
	Ocoee St S	Blue Springs Rd to 14th St	19
	Westside Dr NW	SR-312 / 1st St NW to Norman Chapel Rd	20
	Smith Dr SW	S Lee Hwy to S Ocoee St	21
	Mouse Creek Rd NW	Paul Huff Pkwy to Singletree Dr / Soccer Park	22
	Mimosa Dr NW	Peerless Rd to Mouse Creek Rd	23
	Baldwin Rd and McGrady Dr SE	SR-311 / Dalton Pike to Young Rd	24
Greenway	Paul Huff Pkwy NW	SR-60 / Georgetown Rd to US 11 / Lee Hwy	4
	Cleveland Greenway Phase VI	Construct multi-modal greenway adjacent to SR-2 (Keith St) and near S Mouse Creek from Willow St to the south side of Inman St. Include ADA, landscaping, pedestrian bridge, elevated crosswalks, steps, sidewalk, retaining walls, and pedestrian signals	5
	Keith St to Johnston Park	US 11 / Keith St to Johnston Park	6
	S Mouse Creek Greenway Extension	End of existing greenway to Creek Bend Cir	15
	Candies Creek Greenway	Tennessee Nursery Rd to SR-60 / Georgetown Rd	86

Table 5.8: Bicycle & Pedestrian Prioritization Table.
* Rank followed by a data-driven process described at the beginning of this chapter (Project Prioritization)

Strategic Considerations for Bicycle & Pedestrian Improvements

When people get into a car, they rarely give much thought to whether the road can get them to their destination. However, bike networks rarely function the same way, with large gaps between bike lanes, greenways, or trails and destinations. A connected bicycle network provides safe, comfortable experiences for people of all ages and abilities, enabling greater access to destinations by bike, and can be accomplished with different types of bike facilities depending upon the street, project, and context. While the recommendations contained in this RTP help build critical connections in the existing network, they are part of a larger, overall vision for mobility.

Figure 5.9 identifies a **network of bike facility improvements** within the Cleveland MPO. As funding becomes available, this network serves as a reference to potential types of bike facilities that are suitable for all users. Where volumes and speeds are low enough, Shared Streets (orange) are appropriate. As traffic volume or speed increases, more separation from vehicles is needed to ensure that safe, convenient infrastructure may be available for all. Roadways in blue represent traditional On-Street facilities (e.g., bike lanes or buffered bike lanes). Separated facilities (green) represent the most appropriate bike facilities for most users, because they provide additional separation from vehicles.

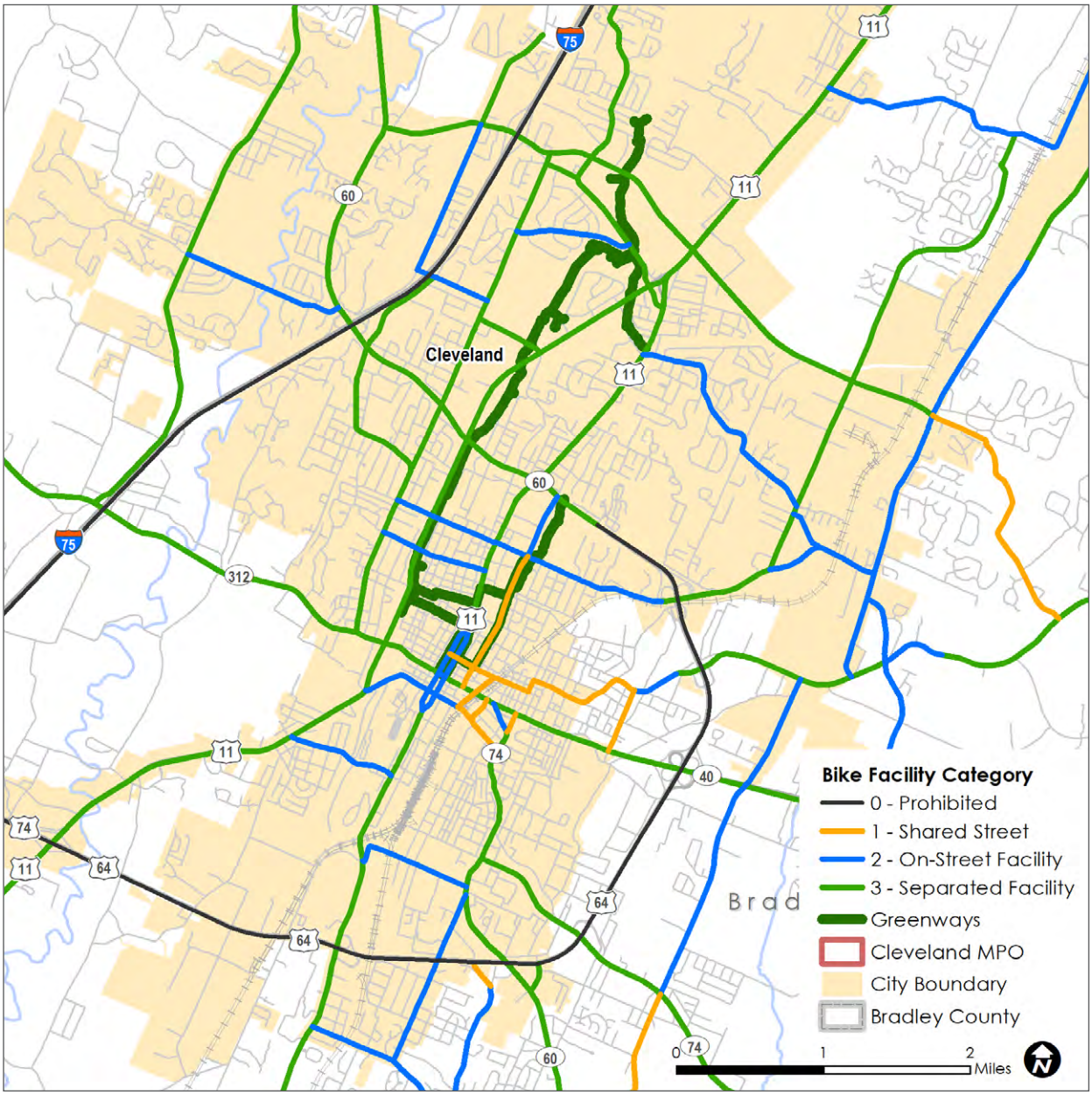


Figure 5.9: Proposed Bicycle Facility Network for the City of Cleveland and surrounding areas.

Transit

Cleveland Urban Area Transit System (CUATS) has built a stable base with ridership improvements year over year prior to the current COVID-19 pandemic. To build upon this base, this RTP proposes both near-term and long-term strategies, both for operations and capital assets, in response to needs identified through the planning process. The recommendations below document these strategies, with near-term strategies detailed further below.

Number	Category	Improvement	Description of Improvement
1	Operations	Fixed Stop locations	Designate transit stop locations along all existing routes (stops or shelters)
2	Operations	Reduce Headways	Increase number of buses per route to reduce headways to 30-minutes
3	General	Branding / Logo	Develop a unique CUATS logo & branding campaign to raise awareness
4	General	Real-Time Location	Investigate technology partners to add GPS to buses and view locations in real-time
5	Revenue	Fare	Review plausible options for schedule of fare increases, and programs for reduced fares that increase ridership
6	Revenue	Advertising	Investigate partnership opportunities to add advertising space on/within buses or shelters
7	Operations	New Route	Implement the **Purple Route** with fixed transit stops
8	Operations	Workforce Options	Explore options for adding extended evening service, including third-party providers, and partnerships
9	General	New Facility	Build or Lease new facility space for expanded service and/or fleet maintenance
10	General	Technology	Acquire smart farebox technology for more flexible payment system

Table 5.10: Transit Recommendations.

Near-Term Improvements

(1) Create fixed-transit stops along all existing routes. Stops must, at a minimum, have signage indicating its location for both transit riders and operators; additional transit stop amenities include benches, shelters, and trash receptacles. Stops should be regularly spaced along corridors, with an established minimum distance to avoid unnecessary delay.

(2) Reduce headways by increasing number of buses per route. Increasing rolling stock to permit at least two buses per route, whether operating in the same direction (both inbound) or in opposite directions (inbound and outbound). Multiple buses reduce headways and passenger miles from origin to destination,

(3) Develop CUATS Logo. Creating a CUATS-specific logo distinguishes CUATS transit service from SETHRA on-demand service. Particularly for signed transit stops, this logo dramatically increases visibility and helps riders identify stop locations.

(4) Investigate real-time transit information services. Explore real-time transit information services, including strategies for payment and necessary modifications to the existing bus fleet, if any, to eliminate information gaps between CUATS and the public.

(5) Develop schedule of fare increases. Fares should, at a minimum, maintain the existing recovery ratio and account for increasing operational costs and inflation, however, transportation-depended populations are least-likely to absorb increased fare costs for daily transportation needs.

(6) Permit and sell advertising space on buses. Advertising revenues present an additional revenue stream using existing capital assets. Pricing must balance agency need and market demand for space.

Corridor Concepts

Traditional regional and long-range transportation plans were typically focused on broadbrush, very long-term and usually very costly recommendations that addressed basic capacity shortfalls, usually through roadway expansions. Today, however, these plans also consider or examine *more localized or location-specific problem areas, sometimes called "bottlenecks" or "Hot Spots",* in an effort to address transportation issues through more low-cost, quick-to-implement improvements or mitigation strategies that improve mobility.

Cleveland MPO's RTP planning process recognizes the benefits gained from studying specific problem areas throughout the planning area. These benefits include developing more detailed design solutions at key locations and creating more interest and activity in the public realm. The need for this type of assessment is supported indirectly by recent federal emphases on developing practical, innovative solutions that yield measurable performance improvements.

Corridor locations were chosen by considering traffic, crash, and public input data gathered during the planning process. The Technical Advisory Committee reviewed and suggested location, and staff considered if project locations had recent design or reconstruction work performed that might reduce the benefit from further conceptual levels of study. The resulting four corridors were conceptually redesigned, and the same concepts may be applied to similar corridors within the MPO.

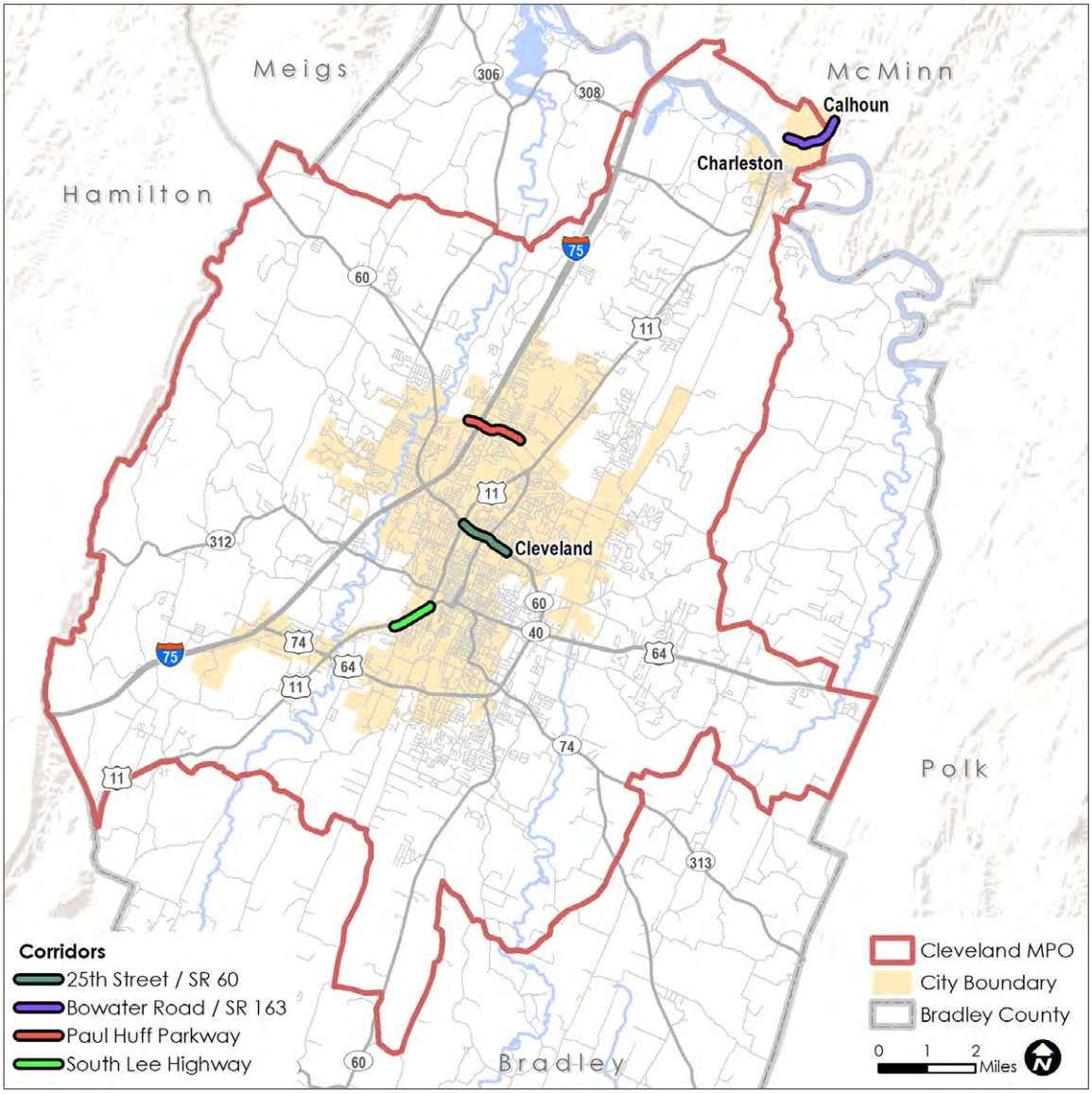


Figure 5.11: Corridor Concept locations within the Cleveland MPO.

Paul Huff Parkway

Problem Statement:

Paul Huff Parkway is a highly traveled, 5-lane major thoroughfare carrying 28,300 vehicles per day on average. The extent of this concept redesign runs from Frontage Road Northwest to Bradley Square (1.2 miles).

Problems affecting this corridor include: increased traffic growth, congestion, safety, and lack of access management and multimodal facilities. The goals of this concept are to provide better facilities for pedestrians, while improving traffic flow and access management to make vehicle movements more predictable.

Considerations
Traffic growth
Congestion and delay at signals
Safety of all users
Lack of multimodal facilities
Greenway connection
Lack of cross-access between businesses

Recommendations
10’ Multiuse path (southside)
Planted pocket medians
High-quality intersections
Signal retiming to allow for U-turns
Greenway connection at Freedom Parkway
Possible driveway consolidation west of I-75
Cross-access locations to connect businesses internally
Remove free-flow right turns at Bradley Square Mall

Figure 5.12: Concept design for Paul Huff Parkway.

25th Street

Problem Statement:

This 25th Street concept extends from North Lee Highway to Spring Creek Drive, approximately 1.1 miles. Carrying close to 28,000 vehicles per day, this section of 25th Streets runs through a highly developed commercial area with some pockets of residential homes. Problems along this corridor include congestion, speeding, safety of pedestrians, lack of multimodal features, and no transit amenities at transit stops.

Ocoee Street intersects 25th Street in the middle of the corridor. This intersection is currently being redesigned by TDOT. There are also future plans for extending the right turn lane at Keith Street and incorporating a multiuse path on the southwest corner of Keith and 25th Street. The Cleveland Greenway runs parallel to Keith Street and runs underneath 25th Street; providing connectivity to the greenway is essential.

Considerations
Speeding issues
Safety issues
Lack of multimodal facilities
Lack of cross-access between businesses

Recommendations
10’ Multiuse path (southside)
Planted pocket medians
Cross-access
Greenway connection to Cleveland Greenway
High-visibility crosswalks at key intersections
Pedestrian bridge/Cantilever SE quadrant of Keith and 25th Street
Pedestrian/Cyclist bridge via “Alley” connection to Keith Street from Cleveland Greenway
Potential redevelopment site NW quadrant of Keith Street and 25th Street

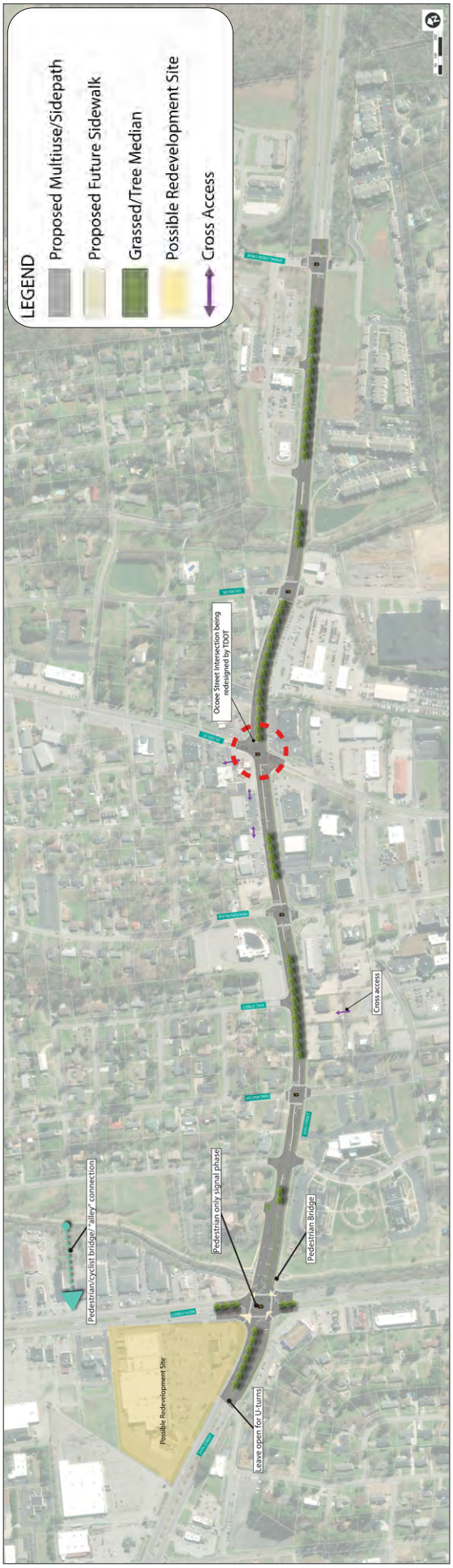


Figure 5.13: Concept design for 25th Street.

South Lee Highway

Problem Statement:

South Lee Highway is a 0.9 mile corridor in the northern area of Cleveland. The extent of the corridor runs from Grove Avenue to the median-divided section to the west on South Lee. South Lee Highway has approximately 11,000 vehicles per day. This corridor lacks many features: pedestrian facilities, transit amenities and safe crossings. The corridor has many driveways and speed issues to consider, in addition to high levels of underperforming development.

The steering committee and project team agreed a road diet to reduce from 5-lanes to 3-lanes would be an appropriate treatment for this corridor.

Considerations
Bradley Central High School
Multiple areas for potential redevelopment
Transit route along corridor
Lack of pedestrian facilities
Notable speeding along corridor
Lack of gateway feature into City

Recommendations
Roundabout with slip lanes at Grove Street
Midblock crossing at high school exit with RRFB
Midblock crossing at Smith Drive
Planted median with canopy street trees
Recommended points of cross-access
Designated potential redevelopment sites
10' Multiuse path (southside)
5' Sidewalk (northside)
Road Diet (11' lanes with center-turn lane/median)
No Right-of-Way takings
Dedicated right-turn lane into high school

Figure 5.14: Concept design for South Lee Highway.

CONCEPTUAL DESIGN ONLY (Not for construction)

Figure 5.15: Photo simulation for South Lee Highway.

Bowater Road

Problem Statement:

Bowater Road is a rural road within the Town of Calhoun, and near the MPO northern boundary. The extent of this concept runs from N. Lee Highway to South Brittan Road (1.2 miles), a stretch which sees around 6,000 vehicles per day. Bowater Road passes under the Norfolk Southern railroad here, and runs adjacent to a local park and small neighborhood amenities, such as the post office and auto services. Calhoun Elementary is just a quarter-mile from the corridor. Recently a Multimodal Access Grant (MMAG) was awarded to Calhoun by TDOT, which called for a crossing at Main Street to Hiwassee Meadowlands Park.

Local stakeholders helped guide the project team toward key crossing locations along the corridor. The project team also heard that this area suffers from stormwater drainage issues and a drainage study would be beneficial to assess the water issues in the area.

Considerations
Hiwassee Meadowlands Park access and parking
Drainage issues
Lack of pedestrian facilities
Low traffic volumes
Railroad is a barrier to pedestrians

Recommendations
Crosswalk at Main Street with RRFB
Midblock crossing at Lynncrest Avenue
10’ Multiuse path (southside)
Sidewalk in key locations (northside)
Planted pocket medians
Potential future park parking locations
Potential pedestrian tunnel under railroad
Future drainage study needed
High-quality intersection at Lee Highway

Figure 5.16: Concept design for Bowater Road.

Potential Impacts

Environmental and Cultural Screening

Federal legislation calls for MPOs to consider potential impacts of the regional transportation plans and planning-level strategies for mitigating those potential impacts. Incorporating environmental considerations early in the transportation planning process helps to streamline project development by providing realistic assumptions about potential environmental considerations, impacts and costs.

For the purposes of RTPs, "environmental" encompasses historical and cultural resources as well. MPOs must identify projects that may impacts wetlands, floodplains, and environmental resources, but they must *also* consider impacts to historic districts, both local and national, historic structures on the National Register, and other historic sites.

During the planning process, the team gathered natural, cultural, and historic resources (GIS format) and overlayed funded transportation recommendations to screen for potential impacts (Figure 5.17). Roadways projects identified in this Figure correspond with Table 5.18.

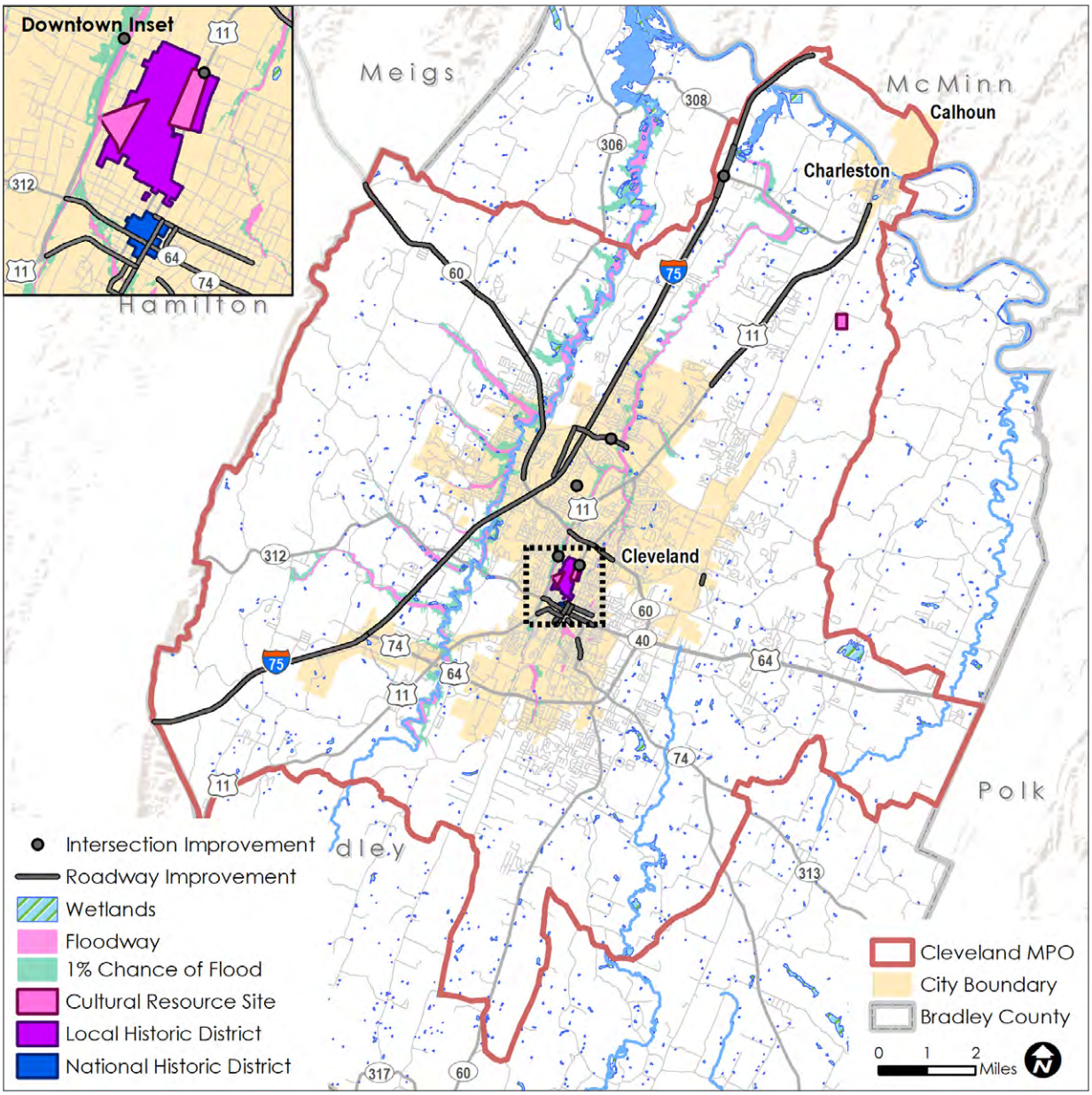


Figure 5.17: Environmental and Cultural Screening of funded RTP projects. Note: Illustrative (unfunded) roadway projects are excluded.

While minimal impacts are anticipated,This RTP update contains some projects with the potential to impact environmental or cultural resources. Project types vary, from intersection improvements to construction along new alignments. Locations shown are still at a planning level of detail, and do not necessarily represent the final limits of design or construction. All federally-funded transportation projects must follow a more detailed review of potential impact required by the National Environmental Policy Act (NEPA). As a project develops, its footprint will continue to be refined and impacts better known. This screening satisfies federal requirements for long-range transportation plans.

Map ID	Improvement Type	Project Name	Project Extent (from/to)	Hydro/ Wetland	Cultural/ Historical
14	Intersection Improvement	North Ocoee	20th Street	--	Yes
20	Reconstruct	3rd St SW	US 11 / Keith St SW to S Ocoee St	Yes	--
23	Reconstruct	25th St NE Improvements	US 11 / Keith St to Spring Creek Dr NE	Yes	--
25	Reconstruct	Central Ave NE	Lee Hwy to Berry St NE	--	Yes
27	Reconstruct	Church St Improvements	6th St SE to Central Ave NE	Yes	Yes
28	New Roadway	Dalton Pike SE	14th St SE to 9th St SE	Yes	--
34	Widening	Inman St Improvements	US 11 Keith St to East St	Yes	Yes
43	Reconstruct	Paul Huff Parkway	Adkisson Dr NW to Bradley Square Mall shopping center	Yes	--
47	Reconstruct	S Ocoee St / SR 40 Alternative Connector	6th St SE to 3rd St SW	Yes	--
60	New Roadway	I-75	US 74 (Exit 20) to Bradley/McMinn county line	Yes	--
61	Widening	I-75	Hamilton County line to US 74 (Exit 20)	Yes	--
70	Widening	SR-60 (Georgetown Road)	Rabbit Valley Road to Hamilton County line	Yes	--
77	New Roadway	Midtown Connector	Edwards Street S.W. to Linden Avenue	Yes	--

Table 5.18: Potential impact to Environmental or Cultural resources from recommended roadway improvement projects.

Underserved Populations

Title VI of the Civil Rights Act requires that MPOs use federal funds fairly and without discrimination. Executive Order 12898 requires *greater involvement of minority and low-income populations in the planning process*, as well as identifying and addressing disproportionately high burdens of the transportation system upon these populations.

Outreach

The best way to ensure underserved populations benefit from the RTP is to include them in the conversation. The MPO goes to great lengths to "seek out and consider the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services." These efforts are detailed in the MPO's Public Participation Plan (PPP), a binding resolution that the MPO must adhere to.

The PPP focuses on increasing transportation equity and promoting environmental justice for low-income and minority populations. Households in low-income areas typically own fewer vehicles, have longer commutes, and have higher transportation costs. These communities are also likely to be located near pollution producing transportation infrastructure and suffer from related health affects like asthma. In short, transportation is an economic and environmental justice issue.

The RTP addresses these issues in three ways.

Outreach to underserved populations during the planning process. The best way to ensure the RTP benefits everyone is to include everyone in the planning process.

Focus on transit improvements for transportation dependent populations. Current routes provide good access to low-income and minority populations which are more likely to be transit dependent. They also run close to major manufacturing and freight sites. Where they fall short is in "last mile" connectivity. As noted, many roads lack pedestrian and biking infrastructure, making it unsafe for commuters to get from a transit stop to the front door of their home or workplace. Also, transit ends service at 7pm, leaving this option unavailable to second shift workers.

These barriers to access are remedied by the proposed "Purple Route." This new route would run closer to employers that have moved further from the downtown core in recent years. It is also recommended to increase service hours to benefit second shift workers.

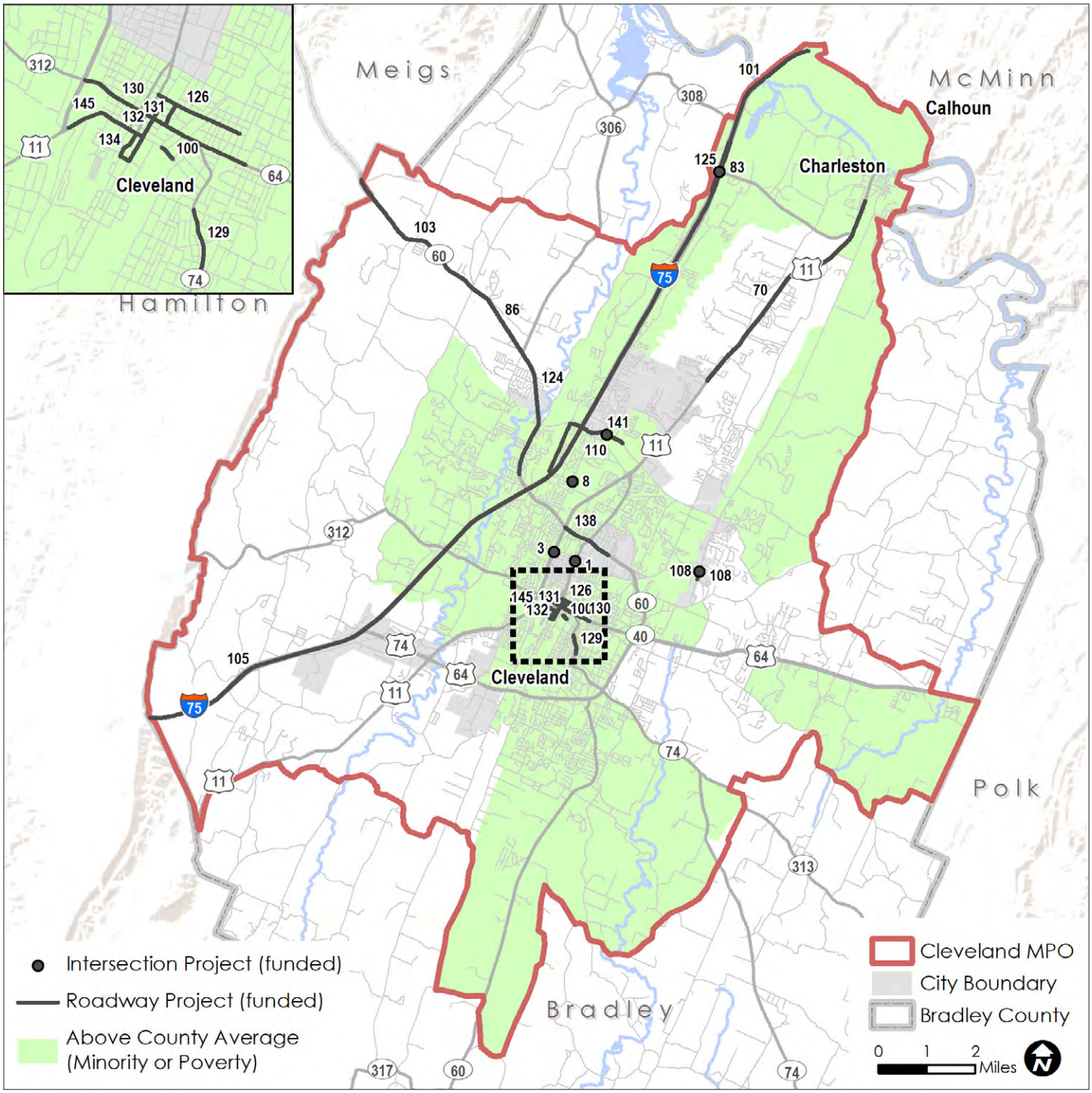
Environmental Justice. This RTP recommends expanding the successful Cleveland greenways network and general biking and pedestrian improvements. Walking and biking improvements have many important co-benefits. Providing options for quality multimodal transport:

- Increases access to transit by providing safe and convenient "last mile" connectivity.
- Improves health and wellbeing of the entire community through exercise and recreation opportunities.
- Greenways and complete streets often contain sustainable features such as trees and green infrastructure. These enhance the livability and overall environmental health of the community.

Projects with Potential Impacts

Using demographic data for the Cleveland MPO area, the project team identified census block groups in which minority, low-income, and other underserved populations resided in greater proportion. The team then overlaid fiscally-constrained project recommendations onto these locations to identify those projects that *may have an impact* on these census block groups (Figure 5.19).

Figure 5.19: Blockgroups with percentage of transportation-dependent populations that are above County average.



Mitigation Strategies

Merely reporting on potential impacts to environmental and cultural resources isn't enough, however; MPOs must also discuss how these potential impacts can be avoided or mitigated in future planning and construction activities. While not every project will have impacts, and among those that do, not all will have the same impacts or require the same mitigation, steps can be taken up front with regards to protecting these communal resources:

1. **Avoid the impacts:** The first strategy in the environmental process is to avoid adverse impact altogether. To do this, the project team identified natural, cultural, and historic resources early in the process, and factored these potential impacts into the prioritization process.
2. **Minimize impacts:** Minimizing a proposed activity / project size or its involvement may be an option. Exploring alternative routes for a new road construction to minimize distance through a wetland, or considering access management as an alternative to widening, may reduce impacts to these resources.
3. **Mitigate impacts:** Precautionary, special operational management features or abatement measures may be used to reduce construction impacts and repair or restore existing resources. Where necessary, compensation for environmental impacts by providing suitable substitute resources of value, whether on-site or off-site, may be considered.

The Cleveland MPO has identified and developed the following strategies over time to identify, evaluate, and address environmental impacts related to its decisions both in the planning process and during subsequent project development:

- Minimize the construction of transportation investments that would impact wetlands;
- Consider greenways as a means of preserving environmentally sensitive lands from inappropriate development;
- Use the region's GIS to identify natural and cultural resources early in the process to avoid impacts or establish action plans prior to construction;
- Partner with resource agencies early in the process to identify potential issues for planned projects, and devise solutions before project development;
- Embrace **Context Sensitive Solutions (CSS)** as a means of developing transportation facilities that fit their, context, and preserve community resources while maintaining safety and mobility.

› What do MPOs need to consider for climate change? How can our transportation network become more resilient? See our **POLICY** section in Chapter 06 to learn more.

Environmental Consultation

As part of the RTP planning process, MPOs must consult with State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation. This consultation must allow for comparison of the proposed RTP with State conservation maps, plans, and inventories of existing resources. TDOT has developed a method of consultation that the Cleveland MPO uses as the guidelines for this stage of environmental review. Federal, State, and local agencies are identified and asked to comment on the draft Plan in relation to their respective plans and inventories. Comments received are then addressed in the final Plan.

In the RTP's development, the following agencies were invited to review and comment on the draft Plan:

Federal Agencies

- Environmental Protection Agency (EPA)
- National Parks Service (NPS)
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- U.S. Forest Service

State Agencies & Local Agencies

- City of Cleveland Historic Preservation Commission (HPC)
- TN Department of Economic & Community Development (ECD)
- TN Department of Environment and Conservation (TDEC)
- TN State Historic Preservation Office (SHPO)
- TN Wildlife Resources Agency (TWRA)

Comments were received and aggregated by TDOT and forwarded to the Cleveland MPO, and addressed accordingly in this Plan.

IMPLEMENTATION 06

06 Implementation

This final chapter describes how projects are scheduled in the RTP, based in part on a data-driven scoring method and the insights of the Transportation Advisory and Policy Committees that form the working structure of the Cleveland MPO.

The first section describes this "fiscally constrained" planning element, and identifies anticipated revenues for transportation projects (based on past revenue collections) as well as planning-level project cost estimates.

The second section describes how the Cleveland MPO and its partners can potentially improve their planning process and even project delivery. MPOs are evolving organizations that are rare example of formalized, inter-governmental cooperation to guide services and infrastructure to meet the needs of more than just one local government. Therefore, they are in a position to not only see the "big picture," but to work with their members, the public, and partner agencies to take real action to meet the future needs of the communities that each MPO serves.

In this Chapter:

1. Fiscal Constraint
2. Funding Strategies
3. Policy

Fiscal Constraint

Simply developing a list of all possible transportation projects, while daunting in its own right, does not meet the requirements of the federal regulations governing the development to the metropolitan transportation plan. Two things need to happen to satisfy the fiscal constraint element of the RTP: (1) revenues, typically from past expenditures, are developed through the plan horizon year - 2045, in this instance, and (2) planning-level project costs have to be developed for every project in the RTP. These two elements - forecasted revenues and forecasted project costs - are created in year of expenditure (YOE) dollars for the horizon years of 2030 and 2045. Specifically, project costs within the Interim Year (2030) include a 1.05 YOE factor, and projects within the Horizon Year (2045) include a 1.31 YOE factor.

As noted in the US Federal Code of Regulations, projects that cannot be incorporated inside of the fiscal constraint portion of the RTP are still able to be included as "illustrative projects" that can proceed should more funding become available for their completion.

	Total Projects	Projected Revenues	Total YOE Project Costs
Committed & Interim Year (2030)	9 roadway 7 walk/bike	$261,646,000	$786,033,800
Horizon Year (2045)	15 roadway 14 walk/bike	$524,957,000	
Illustrative	59 roadway 93 walk/bike	--	$1,472,185,000

Table 6.1: Demonstration of fiscal constraint.
Note: projected revenues represent total funds (Federal & Local).

As this RTP was in development, the impending expiration of the FAST Act, the current transportation authorization bill, created some uncertainty in forecasting transportation funding. Although funding programs can and will change over the course of such a long-range planning document, techniques to reduce uncertainty can be applied to provide direction in planning new projects. Assuming that overall revenues—and project costs—would follow existing trends, the Team used ten-year (State, Federal and Local funding programs) rolling averages to forecast revenue growth, as well as inflation factors to project costs, over the 25-year period. Any changes to funding programs may affect allocation among projects, and should be revisited accordingly. With this in mind, we consider this RTP to be a living document for project recommendations, prioritization and funding programs.

Revenues

Projected Roadway Revenues

Revenues projections shown here may be used for Capital Improvements Projects, and *includes funding for bicycle and pedestrian facility upgrades.* Revenues were developed from summary report information obtained from TDOT, MPO, and City/County staff, covering the most recent 10-year period. A floating trend calculation was used to project expenditures into future revenues, which were adjusted to account for the effects of inflation to produce YOE estimates used in the funding tables in this report (Table 6.2).

Additional discretionary funding programs may be pursued by the MPO in the future, such as BUILD grants (now RAISE grants), GARVEE Bonds, or Municipal Fuels taxes; however, these potential sources are not included within revenue projections. **The Cleveland MPO has consulted with TDOT on these assumptions, and will revisit them with each RTP amendment or update.**

Reporting Period	Avg. Ann'l Base Funds	Projected Funding*	Avg. Ann'l Projected Funds
Previous 10-yr Trend (2010-2019)	$10,332,317	--	--
Current TIP (2020-2023)	$28,379,332	$113,517,000	$28,379,000
Projected Interim Year (2024-2030)	--	*$148,129,000*	*$21,161,000*
Projected Horizon Year (2031-2045)	--	*$525,000,000*	*$35,000,000*

Table 6.2: Projected Funding for Roadways Improvements Projects, 2021-2045.
* Reflects a 2.5% annual inflation adjustment applied to projected interim year and horizon year.

Operations & Maintenance Revenues

In addition to roadway improvement projects that add capacity, the region's roadway system will need ongoing operations and maintenance for things like road paving and sidewalk repair, as well as maintenance of streetlights, signs and striping, traffic signals, mowing and street sweeping. The City of Cleveland and Bradley County typically spend about $3 million on an annual basis for basic roadway operations and maintenance activities. Using the same 10-year period and floating trend calculation described previously, projections through 2045 are reported in Table 6.3.

Reporting Period	Avg. Ann'l Base Funds	Projected Funding*	Avg. Ann'l Projected Funds
Previous 10-yr Trend (2010-2019)	$3,021,245	--	--
Projected Interim Year (2021-2030)	--	*$38,115,000*	*$3,811,500*
Projected Horizon Year (2031-2045)	--	*$52,056,000*	*$3,470,400*

Table 6.3: Projected Funding for Roadways Operations & Maintenance, 2021-2045.
* Reflects a 2.5% annual inflation adjustment applied to projected interim year and horizon year.

Transit Revenues

Capital and operating revenue projections for public transit were developed in consultation with the Cleveland Urban Area Transit System (CUATS) using the trend forecasting method discussed earlier, and are presented in Table 6.4.

Recent revenue history was established through consultation with CUATS and budget information in the MPO's Transportation Improvement Programs (TIP). The same floating trend calculation was used to project expenditures into future revenues, which were adjusted to account for the effects of inflation.

Reporting Period	Avg. Ann'l Base Funds	Projected Funding*	Avg. Ann'l Projected Funds
Previous 10-yr Trend (2010-2019)	$1,426,800	--	--
Current TIP (2020-2023)	$1,565,800	$6,263,400	--
Projected Interim Year (2021-2030)	--	*$12,566,600*	*$1,795,200*
Projected Horizon Year (2031-2045)	--	*$22,207,000*	*$1,480,500*

Table 6.4: Projected Funding for Transit Capital, Operations & Maintenance, 2021-2045.
*Reflects a 2.5% annual inflation adjustment applied to projected interim year and horizon year.

Costs

The costs of individual projects were estimated by applying best-available unit costs (per foot, mile, or quantity), either from the most-recent Transportation Improvement Program (TIP) or recently completed projects involving similar improvement types. *However, caution should be used when reviewing these planning-level cost figures outside of their intended, aggregate purpose in this RTP* since they would be subject to escalation during subsequent design, right-of-way acquisition, and construction process. Simply stated, projects constructed later will cost more than if they were built today. A Year of Expenditure (YOE) factor was applied to Interim (1.05) and Horizon (1.31) Year project costs.

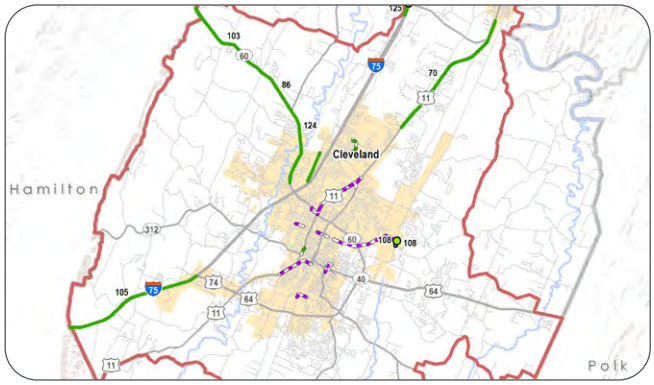
Projects by Horizon Year

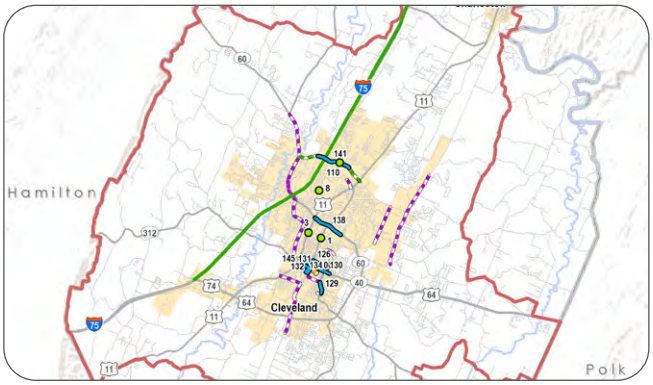
Initial chapters of this RTP covered the overall goals, objectives, and targets for regional mobility, as well as our strategy for public outreach to guide their development. The previous chapter presented recommendations by mode and a method for prioritization. This chapter describes how we've projected future revenues that would go toward implementation by 2045.

The figures and tables that follow represent our best vision for the future, as we stand here in 2021, and will certainly be revised over the next five years until the next RTP update.

Committed (TIP) and Interim Year (2030) Projects

These projects represent the highest priority transportation improvements for the Cleveland MPO area and can reasonably be funded with the revenues projected to be available during this time period.



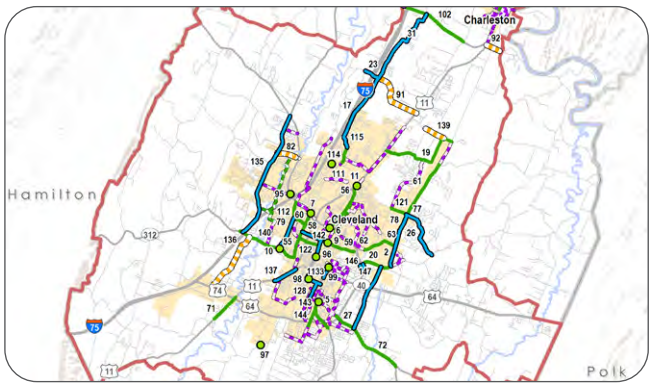


Horizon Year (2045) Projects

These projects represent medium-priority transportation improvements for the Cleveland MPO area that can reasonably be funded during the time period of this plan.

Illustrative (Unfunded) Projects

These projects represent lowest-priority transportation improvements that cannot reasonably be funded during the time period of this plan, based on current projections.



COMMITTED (2020-2023 TIP) PROJECTS					
RTP ID	Project / Location / Description	Category	Length	Funding Source(s)	Remaining Project Cost
124	**SR-60 Widening (Georgetown Road)** West Lake Drive to SR 306 Freewill Road / Eureka Road Widen to 5-lane cross section along SR-60 (Georgetown Rd); Widen to 4-lanes at 12' lanes with 12' continuous center turn lane with 10' paved shoulder, bike lanes, and 5' sidewalks	Widening/ Safety	2.69	AC-NHPP	$57,000,000
108	**20th Street & Michigan Avenue Road Improvements** Reconstruct Michigan Avenue Road from Minnis Road to 20th Steet and improve intersection with 20th Street. Includes safety improvement and bridge replacement over Little Chattata Creek.	Reconstruct/ Safety	0.20	U-STBG	$1,057,841
125	**Adkisson Drive Widening and Roundabout** Norman Chapel Rd to Paul Huff Pkwy Widen to 3-lanes, with sidewalks, drainage, landscaping, and safety improvements; add roundabout	Widening/ Safety	1.32	U-STBG	$5,232,609
83	**I-75 @ SR 308 Interchange (exit 33)** SR-308 / Lauderdale Memorial Hwy Ramp improvements at SR-308 interchange (exit 33), extent ramps	Intersection	1.06	AC-NHPP	$5,633,000
70	**SR-2 / US-11 / N Lee Highway** Widen to 5-lanes from Anatole Road to SR-308 Widen to 3-lanes north of SR-308 to Market Street	Widening/ Safety	5.40	S-STBG	$94,400,000
86	**SR-60 (Georgetown Road)** RS-306 (Eureka Rd) to Rabbit Valley Road Corridor improvements including 3-lane sections, passing lanes, 12' travel lanes, 8' shoulders, and resurfacing	Widening/ Safety	1.71	NHPP	$8,103,711
103	**SR-60 (Georgetown Road)** Rabbit Valley Road to Hamilton County line Corridor improvements including 3-lane sections, passing lanes, 12' travel lanes, 8' shoulders, and resurfacing	Widening/ Safety	4.79	NHPP	$22,671,289
105	**I-75 south of Exit 20** Hamilton County line to US 74 (Exit 20) Widen to 6-lanes from APD-40/SR 31 (exit 20) to Hamilton County line. Coordinate with Chattanoga / Hamilton County / North Georgia TPO.	Widening/ Safety	5.20	NHPP NHFP	$112,630,000
-	**Cleveland MPO - Safety - Urban Grouping** Various location within MPO Any strategy, activity, or project that is consistent with State Strategic Highway Safety Plan (SHSP) and corrects or improves a hazardous road location or feature.	Safety	-	HSIP HSIP-R PHSIP	$63,075
543	**Gaut Street area sidewalks and bus stops** Construct or replace sidewalk along Dooley St and Gaut St between SR-74 (Wildwood Ave) and Central Ave. Construct or replace sidewalks on Central Ave from Gaut St to College Hill Recreation Center, and on Inman St from Gaut St to Sheppard St. Install bus shelters on Dooley St near Wildwood Ave, and on Central Ave near Gaut St.	Sidewalk	0.53	U-STBG TAP	$728,293
704	**Cleveland Greenway Phase VI** Construct multi-modal greenway adjacent to SR-2 (Keith St) and near S Mouse Creek from Willow St to the south side of Inman St. Include ADA, landscaping, pedestrian bridge, elevated crosswalks, steps, sidewalk, retaining walls, and pedestrian signals	Greenway	0.40	TAP	$1,761,335
611	**25th Street NW and Peerless Road Sidewalks** New sidewalks, sidewalk improvements, bus stop improvements on 25th Street and Peerless Road NW, near old 25th Street	Sidewalk	0.25	U-STBG TAP	$507,000

Table 6.5: Committed (TIP 2020-2023) Projects.

INTERIM YEAR (2030) PROJECTS					
RTP ID	Project / Location / Description	Category	Length	Funding Source(s)	Est. Cost* (planning-level)
Various	Greenway Projects / Various locations Various Greenway projects	Greenway	0.57	TAP	$966,000
Various	Sidewalk Improvement Projects / Various locations Various Sidewalk Improvement Projects	Sidewalk	8.61	TAP MMAG	$7,518,000
Various	Pavement Rehabilitation (O & M) Projects / Various locations Pavement Rehabilitation	Pavement	--	O & M	$38,115,000

Table 6.6: Interim Year (2030) Projects. Select projects have been submitted as part of a BUILD Grant (now RAISE grant) application, yet to be submitted.
* Reflects Year of Expenditure (YOE) planning-level cost estimates, and are subject to project escalation.

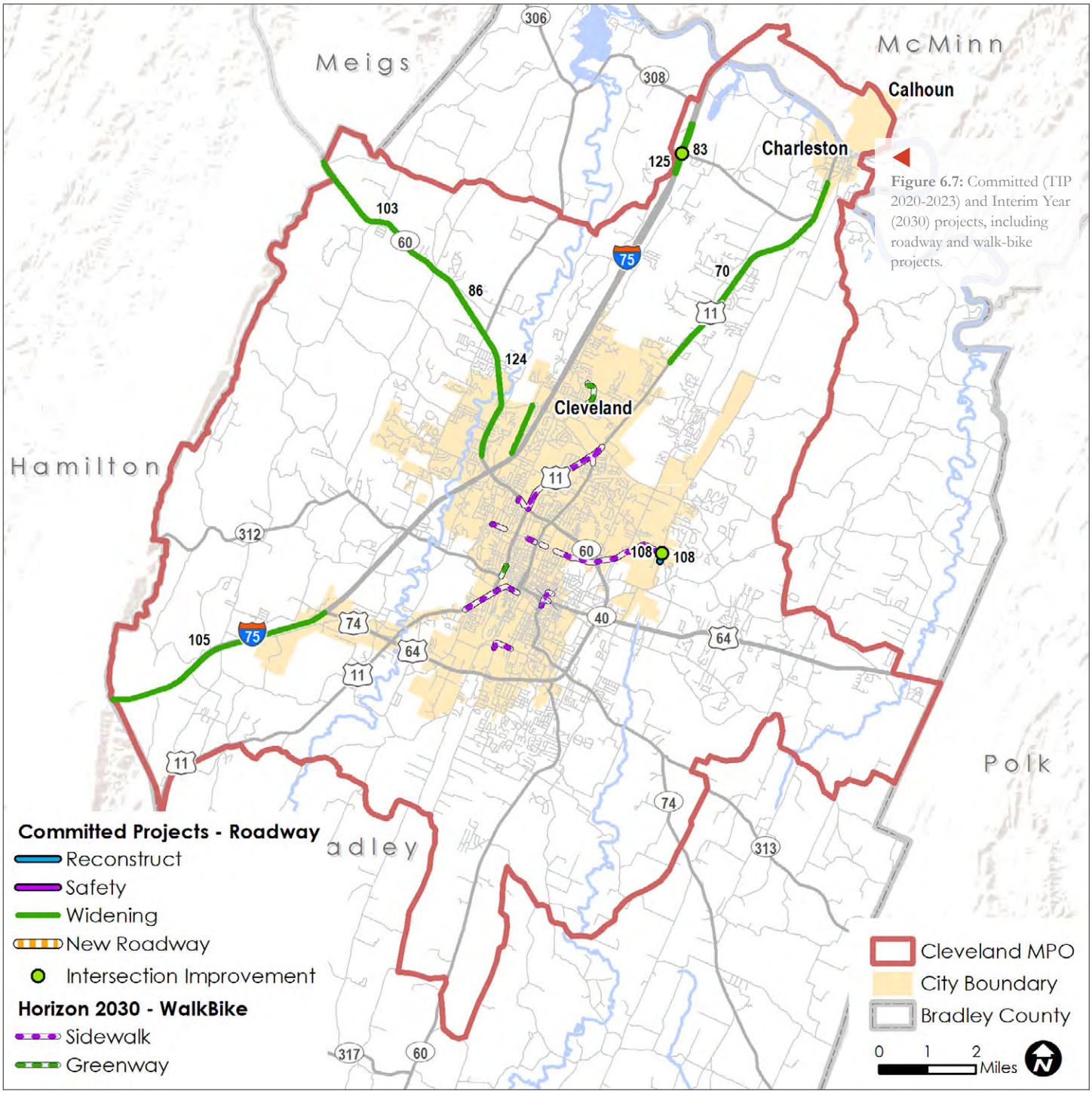


Figure 6.7: Committed (TIP 2020-2023) and Interim Year (2030) projects, including roadway and walk-bike projects.

HORIZON YEAR (2045) PROJECTS

RTP ID	Project / Location / Description	Category	Length	Funding Source(s)	Est. Cost* (planning-level)
130	**Inman St Improvements /** US 11 Keith St to East St Safety improvement to reduce speed; streetscape improvements to add sidewalks and bicycle facilities	Reconstruct/ Safety	1.20	S-STBG U-STBG	$17,776,700
138	**25th St NE Improvements** US 11 / Keith St to Spring Creek Dr NE Safety improvement; Access Management to consolidate driveways, reduce speed, and connect sidewalks	Reconstruct/ Safety	1.08	NHPP U-STBG HSIP	$16,047,500
134	**S Ocoee St / SR 40 Alternative Connector** 6th St SE to 3rd St SW Safety improvement; Reconstruct to add streetscape improvements including sidewalks and street trees	Reconstruct/ Safety	0.26	U-STBG	$3,799,000
145	**3rd St SW / US 11** Keith St SW to S Ocoee St Safety improvement to reduce vehicle speed; add center turn lane, and sidewalks	Reconstruct/ Safety	0.55	U-STBG	$8,187,500
131	**Parker St Improvements /** TN 40 Inman St E to 2nd St NE Multimodal streetscape improvements to add street trees, connect sidewalks, and improve crossings	Reconstruct	0.15	S-STBG U-STBG	$2,266,300
141	**Paul Huff Parkway /** Adkisson Dr NW to Bradley Square Mall Safety improvement; Access Management to add pocket medians, intersection crossings, and multiuse path along south side	Reconstruct/ Safety	1.19	NHPP U-STBG	$17,737,400
101	**I-75 /** US 74 (Exit 20) to Bradley/McMinn county line Widen Interstate 75 to 6-lanes; improve safety near interchanges	Widening/ Safety	15.58	NHPP HSIP NHFP	$342,067,200
100	**Midtown Connector /** Keith Street / S Lee Highway to Wildwood Avenue Improve connection between State Routes. May include grade separation, and pedestrian improvements.	New Roadway	0.40	U-STBG Local	$3,104,700
126	**Central Ave NE** / Lee Hwy to Berry St NE Multimodal streetscape improvements add sidewalks, street trees, improve crossings	Reconstruct	0.59	U-STBG Local	$8,763,900
3	**Keith Street (US-11) @ 20th Street NW** Add turn lanes at intersection, and relocate existing signal	Intersection	--	NHPP S-STBG HSIP	$2,816,500
8	**Peerless Road @ Norman Chapel Rd NW** Widen W approach to 3-lanes and relocate existing signal	Intersection	--	U-STBG Local	$2,816,500
129	**Dalton Pike SE** 14th St SE to 9th St SE Reconstruct for standard 12' lanes, curb, and repair sidewalks	Reconstruct	0.40	S-STBG Local	$5,934,300
132	**Church St Improvements /** 6th St SE to Central Ave NE Reproportion pavement for traffic parking, and bicycles. Improve sidewalks and crossing locations	Reconstruct	0.47	U-STBG Local	$6,995,400
110	**Mouse Creek Road @ Paul Huff Pwy NW** Add NB approach lane	Intersection	--	S-STBG Local	$2,816,500
1	**North Ocoee @ 20th Street** Widen to add turn lanes, and relocate existing signal	Intersection	--	S-STBG Local	$2,816,500
	Greenway Projects Various locations Various Greenway projects	Greenway	2.95	TAP	$6,261,800
	Sidewalk Improvement Projects / Various locations Various Sidewalk Improvement Projects	Sidewalk	15.28	MMAG TAP	$17,554,000
	Pavement Rehabilitation (O & M) Projects / Various locations Pavement Rehabilitation	Pavement	--	O & M	$52,056,000

Table 6.8: Horizon Year (2045) Projects.

* Reflects Year of Expenditure (YOE) planning-level cost estimates, and are subject to project escalation.

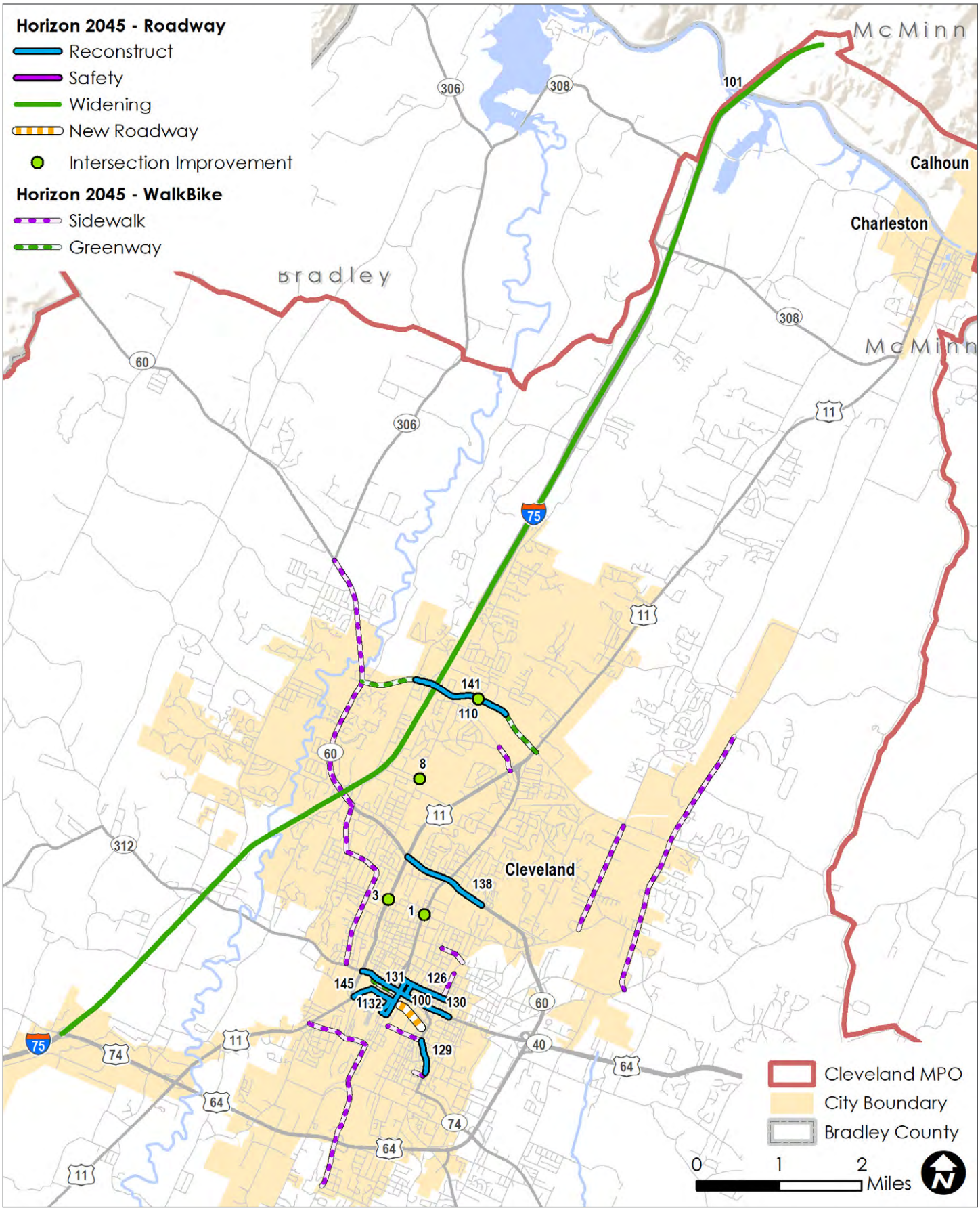


Figure 6.9: Horizon Year (2045) projects, including roadway and walk-bike projects.

ILLUSTRATIVE (UNFUNDED) PROJECTS			
RTP ID	Project Location	Category	Length
56	N Ocoee Street / Keith Street (US 11) to 25th Street Safety improvement; widen to 5-lanes, add sidewalk and bicycle facilities	Widening	1.53
59	20th Street / By-Pass to Ocoee Street Safety improvement; Widen to 3-lanes, add sidewalks and bicycle facilities	Widening	1.21
58	20th Street / Ocoee Street to Georgetown Road Reproportion lane widths, shoulders to standard; add left turns at US 11 intersection	Reconstruct	0.73
60	Peerless Road / 25th Street to Georgetown Road Safety improvement; Widen to 3-lanes, add curbs and sidewalks	Widening	0.53
7	25th Street / Peerless Rd NW Widen N/S approaches to add turn lanes, and relocate existing signal	Intersection	-
143	Dalton Pike / 18th St / Spring Place Rd SE to McGrady Dr SE Safety improvement; Widen to 4-lanes, extend existing sidewalk, add bicycle facilities	Widening	1.09
6	25th Street / N Ocoee St Widen N/S approach lanes, add dual left-turn lanes	Intersection	-
137	S Lee Highway / US 11 / Victory St SW to US 11 / Keith St SW Reconstruct as Complete Street with lane-diet, pocket medians, and multi-use path	Reconstruct	0.87
122	Lee Highway / N Ocoee St / Bowman Ave NW to 20th St NE Safety improvement; Reconstruct as Complete Street similar to Parker St	Reconstruct	0.54
112	Georgetown Rd NW / 25th Street to 20th Street Widen to 3-lanes, including roundabouts at major intersections	Widening	1.26
133	9th St / Wildwood Ave Improvements / Church St SE to Wildwood Ave / Dalton Pike SE Reconstruct as Complete Street with curbs, sidewalks, and improved crossing locations	Reconstruct	0.64
127	Dooley St St SE / Gaut St NE / TN 311 Wildwood Ave to Central Ave NE Reconstruct with curbs, sidewalks, and improved crossing locations	Reconstruct	0.33
99	6th Street NE / Gaut Street Safety Improvements, realign intersection, and move utility lines	Intersection	-
11	Keith Street (US-11/SR-2) / N Ocoee St Construct flyover; remove traffic signals and add lanes	Intersection	-
144	Blackburn Rd SE / Linda Drive to Dalton Pike SE Widen to add center turn lane, shoulders, and sidewalks	Widening	0.63
121	Stuart Rd NE / Old Tasso Rd NE / Urbane Rd NE to Michigan Ave Rd NE Widen to address future capacity deficiency and freight vehicle traffic. Add sidewalks	Widening	0.60
111	Peerless Road / Paul Huff Pwy NW Improve NB approach from intersection back to Valleyhead Rd	Intersection	-
142	17th Street / Georgetown Rd NW to Ocoee St N Widen to add center turn lane, sidewalks, and bicycle facilities	Widening	0.74
98	9th Street SE / Euclid Avenue Align offset intersection near Euclid Ave SE	Intersection	-
5	Spring Place Road / Wildwood Ave SR-74/311 Widen to 4-lanes on all approaches; modify existing signal	Intersection	-
77	Peach Orchard Road / Michigan Avenue Road to Chip Drive Reconstruct for freight vehicle traffic, and improve intersection turn lanes	Reconstruct	0.35

Table 6.10: Illustrative (Unfunded) Projects.

ILLUSTRATIVE (UNFUNDED) PROJECTS			
RTP ID	Project Location	Category	Length
128	Chippewa Ave SE / 18th St SE to 9th St SE Reconstruct to typical lane width, add shoulders, and sidewalks	Reconstruct	0.59
96	8th Street NE / Ocoee Street Construct roundabout and improve safety at this akward intersection	Intersection	-
55	Georgetown / 20th Street to Harrison Pike (SR 312) Widen to add center turn lane, shoulders, and sidewalks	Widening	0.94
113	Mouse Creek Road / Robin Hood Dr to Wedgewood Dr Widen to add center turn lane, shoulders, and sidewalks	Widening	0.11
78	Michigan Avenue Road / 20th Street to Stuart Road/Peach Orchard Hill Rd Reconstruct to add shoulders, improve drainage, and provide safe intersection crossings	Reconstruct	1.16
9	20th Street NE / Parker Street NE Widen E/W approaches to 5-lanes; Widen N/S approaches to 3-lanes	Intersection	-
71	US-11 / Lee Highway / Black Fox Road to APD 40 Widen to five lanes further south from interchange. Design for freight traffic	Widening	1.07
114	Mouse Creek Road / Wedgewood Dr to East Circle Dr Widen to add center turn lane, shoulders, and sidewalks	Widening	0.44
2	Michigan Avenue Road / Benton Pike NE to 20th Street Reconstruct 2-lane roadway to improve safety, add shoulders, and sidewalk	Reconstruct	0.73
27	Durkee Road / SR-74/19th/Spring Place Road to US-74/SR-40/Waterlevel Highway Reconstruct to typical lane width, add shoulders, and sidewalks	Reconstruct	1.56
61	Michigan Avenue Road / Tasso Lane N.E. to Stuart Road/Peach Orchard Hill Road Widen to add center turn lane, shoulders, and sidewalks	Widening	2.08
146	APD 40 NE / Benton Pike NE exit ramps Reconstruct ramp curves and add decelleration lanes. Improve safety and accommodate freight traffic	Reconstruct	0.75
140	Harrison Pike W / New Murraytown Road NW to Keith Street SW Widen to accommodate freight traffic. Investigate new I-75 interchange	Widening	2.14
62	20th Street / Shady Lane to Old Tasso Road Widen to 3-lanes to accommodate freight traffic; add shoulders	Widening	0.40
148	US 11 Lee Highway / Cass Ln NW to SR 163 Bowater Rd Widen to accommodate future capacity deficieincy. Add sidewalks and improve crossing locations	Widening	0.78
95	Georgetown Road NW / Candies Lane Safety improvement to realign intersection	Intersection	-
72	Spring Place Road / APD 40 to Ladd Springs Rd SE Widen to address future capacity deficiency, and add shoulders	Widening	2.79
20	Benton Pike / APD 40 Bypass to Michigan Avenue Road Widen to add lanes and shoulders to accommodate freight traffic	Widening	1.17
63	20th Street / Old Tasso Road to Michigan Avenue Road Widen to add center turn lane and accommodate freight traffic	Widening	0.79
17	Mouse Creek Road / Hunters Run to Hoopers Gap Rd Reconstruct 2-lane roadway; add turn lanes at Hoopers Gap; improve intersection alignment	Reconstruct	2.38

Table 6.10: Illustrative (Unfunded) Projects.

ILLUSTRATIVE (UNFUNDED) PROJECTS			
RTP ID	Project Location	Category	Length
104	SR-163 (Etowah Road) / US-11/SR-2 (N. Lee Highway) to Lynncrest Avenue Widen to add center turn lane and pocket medians; improve RR underpass, and add sidewalk along south side	Widening	0.60
19	Tasso Lane / Lee Highway/US-11 to Michigan Avenue Road/Dry Valley Widen to add center turn lane and improve freight vehicle access to Jetport	Widening	2.97
79	Westside Drive / Georgetown Road to SR 312/Harrison Pike Reconstruct to typical lane width, add shoulders, and sidewalks	Reconstruct	1.20
10	Harrison Pike SR-312 / Westside Dr NW Widen approaches; consider traffic signal	Intersection	-
26	Peach Orchard Hill Road / Benton Pike to Chip Drive Reconstruct to typical lane width, and add shoulders	Reconstruct	1.53
102	SR-308 (Lauderdale Mem Hwy) / Mouse Creek Road N.W. to US-11/SR-2 (N. Lee Highway) Widen to add center turn lane and shoulders for freight vehicle traffic	Widening	2.43
147	Durkee Rd Reconstruction / US 64/74 Waterlevel Highway to Benton Pike NE Reconstruct to typical lane width and shoulders to accommodate freight vehicles	Reconstruct	0.81
135	Freewill Rd Corridor / SR 312 / Harrison Pike to Georgetown Rd NW Reconstruct to improve safety, typical lane widths, drainage, and intersections. Add sidewalks in residential areas	Reconstruct	4.56
31	Mouse Creek Road / Hoopers Gap to SR-308/Lauderdale Memorial Highway Reconstruct to improve safety, typical lane widths, and drainage	Reconstruct	3.00
115	Mouse Creek Road / East Circle Dr to Hunters Run Reconstruct to improve safety, lane widths, and shoulders. Add sidewalks	Reconstruct	0.46
82	Paul Huff Pkwy Ext / Freewill Road to SR-60 (Georgetown Road) Extend roadway over Candies Creek and connect with Freewill Rd	New Roadway	0.67
92	SR 308 Extension / US-11/SR-2 (N. Lee Highway) to Chatata Valley Drive Extend as 3-lane roadway, including RR overpass	New Roadway	0.50
93	SR-308 (Lower River Road) / Bowater Logging Road to I-75 Safety Improvements along curve and shoulders to accommodate freight vehicles	Safety	1.18
23	Hoopers Gap / Frontage Road to Mouse Creek Road Upgrade lane width, shoulders; add left turns	Reconstruct	0.54
97	Old Chattanooga Pike / Industrial Drive SW Realign and improve RR crossing	Intersection	-
91	Northwest Connector / Mouse Creek Road to US-11/SR-2 (N. Lee Highway)Extend roadway to connect with US 11 for freight vehicle traffic	New Roadway	2.02
136	Freewill Rd Extension / Lake Rd / US 74 / APD 40 to SR 312 / Harrison Pike New roadway connection at part of Freewill Road Extension	New Roadway	2.29
139	Tasso Ln NE Extension / Jenkins Rd NE to Tasso Ln NE New roadway connection over railroad to serve as freight vehicle access to Jetport	New Roadway	0.71

Table 6.10: Illustrative (Unfunded) Projects.

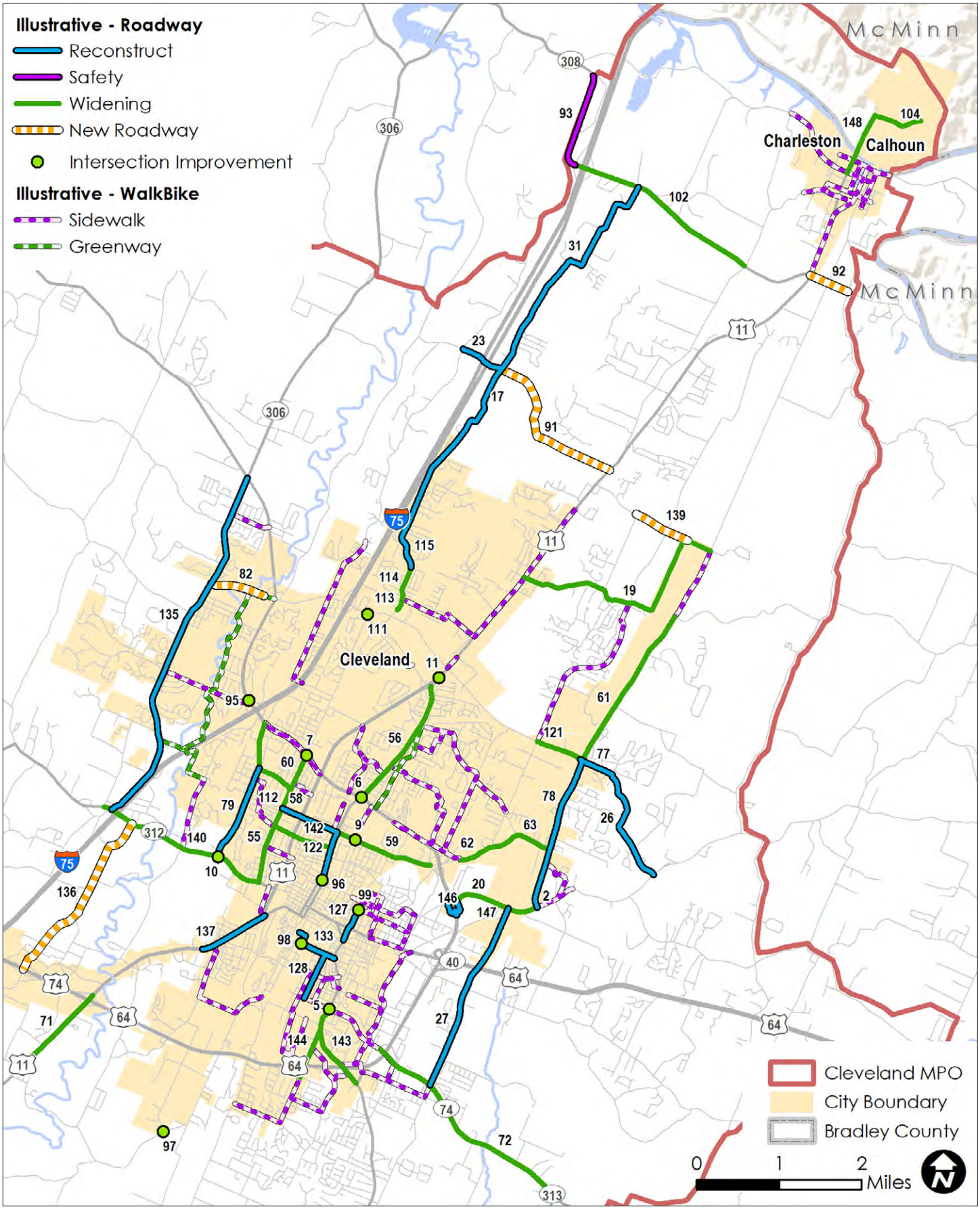


Figure 6.11: Horizon Year (2045) projects, including roadway and walk-bike projects.

Funding Strategies

Funding by program was approximated utilizing the relative proportions from the prior 10-years, and applying to future years accordingly. Certain projects may be eligible for more than one funding source, and it may be necessary to combine multiple funding sources in order to complete large highway projects within the given timeframe.

Funding Source	Mode	Relative Proportion	Interim Year (2030)	Horizon Year (2045)
National Highway Performance Program (NHPP)	Roadways	43%	$112,507,780	$225,731,510
State Surface Transportation Block Grant (S-STBG)	Roadways	34.5%	$90,267,870	$181,110,165
Highway Safety Improvement Program (HSIP)	Roadways	5%	$13,082,300	$26,247,850
Urban Surface Transportation Block Grant (U-STBG)	Roadways	8%	$20,931,680	$41,996,560
Transportation Alternatives (TAP)	Roadway or Bike/Ped	3%	$7,849,380	$15,748,710
State 100% funds	Roadways	5%	$13,082,300	$26,247,850
Multimodal Access Grant (MMAG)	Bike/Ped	1.5%	$3,924,690	$7,874,355

Table 6.12: Relative Proportion of Funding Revenues by Funding Program, 2021-2045.
Note: Revenues represent *total* funds, including Federal, State, and Local.

There are several funding types for varying transportation projects within the state of Tennessee. The funds include a variety of different sources such as local, state, and federal funding. They also cover a wide range of project types including surface transportation, transit, and funding that supports alternative transportation modes.

Federal Funding

National Highway Performance Program (NHPP)

NHPP provides funding for capacity, operational, or maintenance improvements to highways and bridges on the National Highway System (NHS). Federal share for eligible projects is capped at 90% of net project costs, with the remaining 10% coming from state or local sources. For non-interstate projects, NHPP funds are limited to 80% of project costs, requiring approximately 20% of project costs be matched with non-federal dollars.

Surface Transportation Block Grant (STBG)

S-STBG provides funding for roads functionally classified as rural major collectors and above. Funds can be utilized on projects in rural and urbanized areas. TDOT administers these funds, typically used for transportation projects on state and federal routes. Other activities include bicycle and pedestrian facilities and environmental mitigation.

Highway Safety Improvement Program (HSIP)

HSIP, administered by TDOT, provides funds to improve high hazard locations on eligible roadways, including highway-rail grade crossings. Projects are selected based on crash rate and frequency. This program is funded at 90% federal share, with a 10% local match but may vary depending on the type of improvement.

Urban Surface Transportation Block Grant

U-STBG funds are provided to MPOs based on a population-based formula set by the State of Tennessee. This funding is available for all roads not functionally classified as local or rural minor collectors. Transit capital projects and bicycle/pedestrian projects are also eligible under this program. Projects are funded through a competitive selection process, and federal share is limited to 90%. Funding is also eligible for some types of projects regardless of classification, including bridges and tunnels, pedestrian and bicycle facilities, and transit capital projects. The federal share for most projects is 80%, requiring a 20% local match. Certain projects, including traffic signals, pavement markings, rumble strips, and carpooling/vanpooling, may receive 100% federal funding.

Transportation Alternatives

Transportation Alternatives funds, formerly its own program under previous legislation, are now allocated as a portion of U-STBG funds. These set-aside funds include all projects and activities from the previous program and are smaller-scale transportation projects, such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects. It also includes community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity. Projects are funded through a competitive selection process, and federal share is typically 80% of net costs.

National Highway Freight Program (NHFP)

NHFP provides funding for projects that contribute to the efficient movement of freight on the National Highway Freight Network. This could include ITS, railway/highway grade crossing improvements, traffic signal optimization, and efforts to reduce environmental/community impact of freight. Freight improvements that are funded will also help to meet the investment goals identified in the Statewide Freight Plan.

Congestion Mitigation and Air Quality (CMAQ)

CMAQ is a flexible funding program for State and local governments for transportation projects that help meet Clean Air Act requirements. For the Cleveland MPO area, CMAQ funds are available for projects resulting in emissions reductions, so long as 50% of those reductions occur in neighboring Hamilton County. Federal share for CMAQ funds is typically 80% of net project costs.

Transit Funding

FEDERAL

FTA Section 5307

Urbanized Area Formula Grants: funds to urbanized areas with populations of more than 50,000 for transit operating and capital assistance and for transportation-related planning. Funds are apportioned on the basis of population and population density. Federal share must not exceed 80% of the net project cost for capital projects, or 50% for operating projects.

FTA Section 5310

Elderly & Persons with Disabilities Grants: transit capital assistance for private non-profit organizations and public bodies that provide specialized transportation services to elderly and/or disabled persons. Funds are appropriated annually based on a formula considering the number of elderly individuals with disabilities in each State. Federal share must not exceed 80% of net project costs for capital projects (50% for operating projects).

FEDERAL

FEDERAL

FTA Section 5339

Bus & Bus Facilities Grants: federal resources, by formula and grants, to states and designated recipients to replace, rehabilitate and purchase buses/related equipment, and construct bus-related facilities. This includes changes to modify or accommodate low and zero-emission vehicles. A sub-program provides competitive grants for bus and bus facility projects that support low and zero-emission vehicles.

IMPROVE Act Transit Capital Grant

A State-funded grant program investing in transit projects and improvements supporting ridership, congestion relief, local economies and community resilience. Projects focus on providing public-facing benefits, increasing mobility, and delivering long-term value for residents. Public transit providers currently receiving FTA 5307 or 5311 program funds are eligible. Projects are funded at a 75% state match and 25% local match.

STATE

State Funding

State Transportation Funding

In 2017 Tennessee General Assembly passed the IMPROVE Act which provided funding for the state to fund 962 transportation projects. The legislation increased the state fuel taxes for the first time in over 25 years. Funding is spent on a variety of transportation project types and is often used to match the federal share on projects. Funded projects that are within the Cleveland MPO area are included in the RTP and TIP.

Multimodal Access Grant

The state's Multimodal Access Grant is a state-funded program created to support the transportation needs of pedestrians, bicyclists, and transit users through infrastructure projects that address existing gaps along state routes. Multimodal facilities play an important role in providing transportation choices for people across Tennessee. Multimodal Access Grant projects are state-funded at 95% with a 5% local match. State match portion of an awarded project does not exceed $950,000.

Urban Transportation Planning Grant (UTPG)

UTPGs are a new state sponsored funding option that assists urban jurisdictions with transportation-related solutions that strengthen multimodal cohesiveness of the transportation system. These funds provide jurisdictions with planning resources in order to achieve the community transportation and land use visions and future economic growth. Projects can be funded up to a maximum of $200,000 for planning services. Consultants services are funded 90% by TDOT while the remainder of the project cost must be a local cash match on behalf of the awarded jurisdiction.

Project award types for UTPGs include transportation plans that include analysis to determine multimodal transportation needs; plans that better coordinate transportation and land-use decisions; plans that support a Corridor Management Agreement including curbside management in more urban environments to enhance the integration and connectivity of the transportation system; and plans that address parking management and Transportation Demand Management (TDM) strategies that support the use of transit, reduce private automobile demand, or promote alternative and/or shared modes.

Grant Anticipation Revenue Vehicles (GARVEE) Bonds

GARVEE Bonds are a type of debt instrument which has a pledge of future Title 23 Federal-aid funding. In its broadest sense, a GARVEE bond is backed by future Federal-aid highway funding to advance the upfront funding of a particular project. These bonds enable a state to accelerate construction timelines and spread the cost of a transportation facility over its useful life rather than just the construction period.

Local Funding

The City of Cleveland and Bradley County both receive a share of the fuel tax annually collected by the State of Tennessee. In addition to these funds, there are several exclusive local taxes collected by cities and counties that provide revenue that can be used for improvements to the transportation system. These sources include:

- Property Taxes
- Beer and Liquor Taxes
- Hotel/Motel Taxes
- In Lieu of Tax Payments
- Business Taxes
- Sales Taxes

A portion of property taxes are dedicated for transportation purposes in Bradley County (0.14304 cents per $100 of assessed value). While other revenue sources are not dedicated solely for transportation, they can be used to fund various transportation maintenance, operations, and capital expenditures. This can include providing a local match to the various federal and state funding programs that require a match.

In the City of Cleveland, state-shared revenue, as well as property tax and other revenue are used to fund transportation projects. The city also makes use of a stormwater fee for city residents that can be used to make improvements to drainage systems along and near roadways within the city limits. See Resiliency under the Policy section of this chapter for more.

Finally, transportation projects can also be funded through issuance of municipal bonds. These bonds, which can be either revenue-backed (in the case of tolling projects or other revenue-generating projects) or general obligation, backed by the municipality's full faith and credit, can be used to finance all of a transportation project, or provide the local share with matching state or federal funds. For projects with significant community interest or support, bonds can be a means of accelerating development and construction.

> For more on funding sources for regional transportation planning:
>
> **www.fhwa.dot.gov/specialfunding/**
>
> **www.fhwa.dot.gov/planning/invtvfnc.cfm**

Policy

Over the lifetime of a 25-year plan in a growing and dynamic area like the Cleveland region the most important component of success is not an individual project or program, but rather the way in which transportation and other public infrastructure is - or is not - designed in tandem with new developments of homes and businesses. In many places a mindset of "development first" has translated into longer-term problems associated not only with traffic congestion, but also with a loss of community character. Fortunately there is still time to *create a policy framework that values the existing communities as much as the new neighbors* and opportunities that the future will bring.

The following pages describe policies that communities can undertake to preserve a road's primary function - and avoid costly improvements later. These recommendations also improve safety (and delays from crashes) and enhance other community objectives like economic vitality and aesthetics.

Complete Streets

Complete Streets is the umbrella term that has come to represent transportation networks that support every type of user and mode of travel. Complete Streets are known for bringing transportation choices to vulnerable users, spurring economic development, reducing traffic fatalities and injuries, providing recreation options for people, and improving public health outcomes.

The development of a Complete Streets policy should consider existing policy, practice, and politics and take time to better understand how decisions regarding transportation projects are made in the community. But Complete Streets can be implemented in a variety of ways besides a dedicated policy.

Ten elements of a successful Complete Streets Policy

The National Complete Streets Coalition notes the following ten elements of a successful Complete Streets Policy:

1. **Vision:** The policy establishes a motivating vision for why the community wants Complete Streets: to improve safety, promote better health, make overall travel more efficient, improve the conve-nience of choices, or for other reasons.

2. **All users and modes:** The policy specifies that "all modes" includes walking, bicycling, riding public transportation, driving trucks, buses and automobiles and "all users" includes people of all ages and abilities.

3. **All projects and phases:** All types of transportation projects are subject to the policy, including design, planning, construction, maintenance, and operations of new and existing streets and facilities.

4. **Clear, accountable exceptions:** Any exceptions to the policy are specified and approved by a high-level official.

5. **Network:** The policy recognizes the need to create a comprehensive, integrated and connected network for all modes and encourages street connectivity.

6. **Jurisdiction:** All other agencies that govern transportation activities can clearly understand the policy's application and may be involved in the process as appropriate.

7. **Design:** The policy recommends use of the latest and best design criteria and guidelines, while recognizing the need for design flexibility to balance user needs in context.

8. **Context sensitivity:** The current and planned context—buildings, land use, transportation, and community needs—is considered in when planning and designing transportation solutions.

9. **Performance measures:** The policy includes performance standards with measurable outcomes.

10. **Implementation steps:** Specific next steps for implementing the policy are described.

FIVE ACTIONS TO TAKE RIGHT NOW TO IMPLEMENT COMPLETE STREETS:

1 **EDUCATION:**
Encourage communities to offer workshops and other educational opportunities to staff, community leaders, and the general public so that everyone understands the importance of the Complete Streets vision and how they can aid implementation.

2 **DESIGN STANDARDS:**
Encourage communities to review current design standards, including subdivision regulations that apply to new roadway construction, to ensure that they reflect the best available design guidelines, and effectively implement Complete Streets.

3 **INCENTIVES:**
Local jurisdictions can also require complete streets design to be incorporated as a part of private developments through economic development incentives and other funding assistance/partnerships.

4 **COORDINATION:**
Promote project coordination among municipal departments and outside agencies with an interest in the activities that occur within the public right-of-way.

5 **EQUITY:**
Encourage communities to adopt complete streets policies to reflect National, State, TDOT, and Cleveland MPO's complete streets design guidelines/current best practices. This would incorporate a Complete Streets approach into all transportation projects as routine practice by allowing for Federal and State funding for complete streets projects.

Vision Zero

Metropolitan Planning Organizations have an opportunity to create, support, and implement measures to reduce injuries, fatalities, and expenses from crashes. An important resource for the Cleveland MPO in this effort is the Vision Zero Network, which contains resources for both municipal and MPO entities to implement safety objectives in their work.

The Vision Zero movement, which began in the 1990s and has since spread to a number of U.S. cities and counties, posits safety as the number-one goal in planning, design, operation, and maintenance of transportation facilities. It's important to understand that Vision Zero is not simply a single program, but a fundamental shift of mindset to incorporating safety at every stage of the transportation planning and design process.

TRADITIONAL APPROACH		VISION ZERO
Traffic deaths are INEVITABLE		Traffic deaths are PREVENTABLE
PERFECT human behavior	VS	Integrate HUMAN FAILING in approach
Prevent COLLISIONS		Prevent FATAL AND SEVERE CRASHES
INDIVIDUAL responsibility		SYSTEMS approach
Saving lives is EXPENSIVE		Saving lives is NOT EXPENSIVE

The Vision Zero Network identifies nine components of a strong commitment to Vision Zero:

1. **Political Commitment:** make an official, public commitment to a goal to achieve zero traffic fatalities and severe injuries among all road users (including people walking, biking, using transit, and driving) within a set timeframe. Include passage of a local policy laying out goals, timeline, stakeholders, and a commitment to community engagement, transparency, and equitable outcomes.

2. **Multi-Disciplinary Leadership:** Create a Vision Zero Taskforce to lead this effort and include, at a minimum, high-ranking representatives from the Office of the Mayor, Police, Transportation, and Public Health. Bike-Walk Cleveland, a local nonprofit has also demonstrated an interest in forming a local Vision Zero Committee.

3. **Community Engagement:** Opportunities are created to invite meaningful community engagement. Select community representation on the Taskforce, broader community input through public meetings or workshops, online surveys, and other feedback opportunities.

4. **Transparency:** Include regular updates on the progress on the Action Plan and performance measures, and an annual report (at minimum) to the local governing board.

5. **Action Plan:** Vision Zero Action Plan (or Strategy) is created within 1 year of initial commitment and is implemented with clear strategies, owners of each strategy, interim targets, timelines, & performance measures.

6. **Data-Driven:** Gather, analyze, utilize, and share reliable data to understand traffic safety issues and prioritize resources based on evidence of the greatest needs and impact.

7. **Equity:** Establishing inclusive and representative processes, as well as equitable outcomes by ensuring measurable benchmarks to provide safe transportation options for all road users in all parts of the city.

8. **Cooperation & Collaboration:** Encourage meaningful cooperation and collaboration among relevant governmental agencies & community stakeholders to establish a framework for multiple stakeholders to set shared goals and focus on coordination and accountability.

9. **Systems-based Approach:** Prioritize a systems-based approach to Vision Zero, focusing on the built environment, systems, and policies that influence behavior, as well as adopting messaging that emphasizes that these traffic losses are preventable.

FIVE ACTIONS TO TAKE RIGHT NOW TO IMPLEMENT VISION ZERO:

1. **BUILD A ROBUST CRASH DATA FRAMEWORK:**
To understand where, how, and why crashes are occurring in the Cleveland MPO. Even without a Vision Zero policy, this data can be used to make safety improvements in areas of greatest need and drive an implementation strategy that allocates resources to locations where they are most needed.

2. **SET MEASURABLE GOALS:**
With a clear timeline for implementation. By adopting TDOT's targets for safety performance measures, the Cleveland MPO has taken an important step in incorporating safety into project development processes. Developing a short- and mid-term goals to achieving these targets, combined with actionable steps from local governing bodies, creates a framework that is achievable, and easier to evaluate and fund.

3. **EDUCATE THE POLICYMAKERS AND THE PUBLIC:**
While roadway design and speed management are core to Vision Zero, education can bolster its success. This includes both the public and policy makers, and it's not just about safe road behaviors--it should also cover strategies proven to be most effective. Safe Routes to Schools, Safe Routes for Seniors, and Safe Routes for People with Disabilities are all core examples of such educational programming.

4. **CREATE A NEIGHBORHOOD TRAFFIC PROGRAM:**
Such programs can be designed to allow communities to identify their own problems and nominate themselves for projects. Traffic Calming programs have been shown to reduce both frequency and severity of crashes on residential streets.

5. **PRIORITIZE ROADWAY DESIGN:**
It's the most important factor influencing speed and safety. Considering and planning transportation systems to protect the most vulnerable road users will make all road users safer. By prioritizing safety in its evaluation of projects, Cleveland MPO has taken a significant step in investing its funding strategically to address accident-prone areas. Low-cost, near-term improvements, such as painted sidewalk extensions and post-protected bike lanes, can bring interim relief in particularly vulnerable areas.

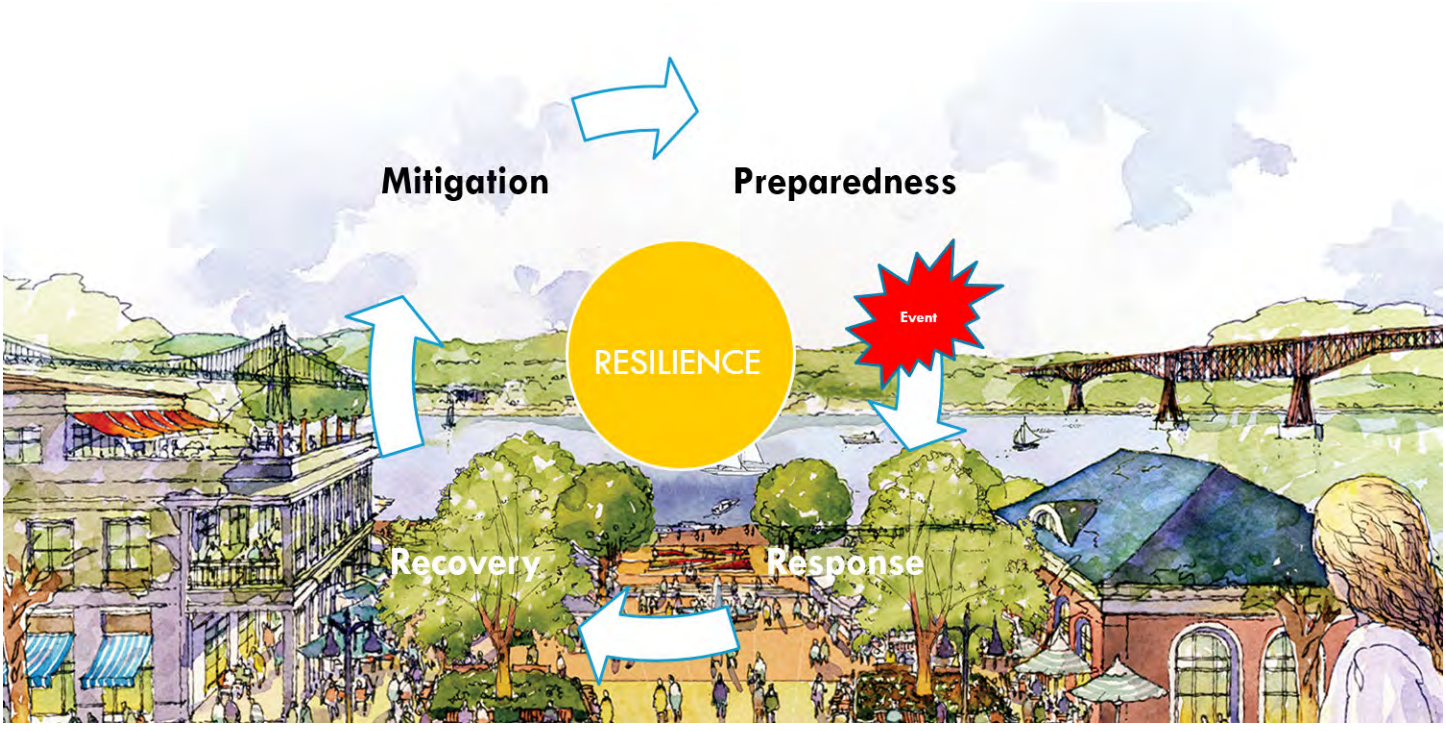
Resiliency

While the Cleveland MPO area may not be as vulnerable as coastal communities, it is nonetheless subject to the effects of ongoing climate change. Climate change impacts our transportation infrastructure through increases in days with excessive heat, intense rainfall, flooding events (identified as the most significant hazard for the Cleveland MPO area), winter storms, fog, wildfires, drought, and other effects. These naturally occurring events cause shocks to the transportation network, which can cripple mobility of people and goods without a resilient network in place. Building resilient transportation networks, and making decisions that increase the system's resiliency, helps to mitigate these impacts by anticipating beforehand and adapting during disruptions.

Under the FAST Act, as well as the Biden Administration's proposed infrastructure plan, MPOs are charged with planning ways to make transportation infrastructure more resilient. This can involve large-scale efforts to rebuild a critical facility that could be impacted by climate change, or build a new road or bridge as an alternative to that facility. However, there are also relatively small decisions that can be made by individual agencies to increase system resiliency as they replace or upgrade equipment.

To combat the effects of natural hazards, the MPO has identified and/or developed strategies for disaster preparedness and emergency relief, to mitigate impacts to the transportation system. These include:

- Aligning transportation system improvements to support the Bradley County Natural Hazard Mitigation Plan;
- Encouraging adoption of low-carbon fuels and alternative fuels, such as biodiesel, liquefied petroleum gas, and electricity (e.g., electric vehicles);
- Reducing carbon-intensive travel activity by influencing road users' modal decisions and travel patterns through improvements to transit, bicycle and pedestrian facilities, and support for ridesharing, vanpooling and carpooling with park and ride lots;
- Restricting development within floodplains along creeks and rivers for open space, greenways, and other purposes;
- Use of stormwater best management practices (BMPs), dependent upon the project's context, to control the flow and volume of stormwater during rainfall events;
- Expanding regional ITS architecture to better monitor roadway disruptions, and provide real-time information for travelers.



FIVE ACTIONS TO TAKE RIGHT NOW TO CREATE A RESILIENT NETWORK:

1. Open and Promote the Cleveland-Chattanooga Commute Hub.
2. Construct new bike lanes, sidewalks, and greenways to expand active transportation options and reduce vehicle dependence for short trip purposes.
3. Explore workforce transit options, including microtransit, to improve CUATS system competitiveness to cars.
4. Continue to implement the Regional ITS Architecture Deployment Plan.
5. Seek opportunities for stormwater infrastructure upgrades or green infrastructure projects along streetscape improvement projects.

Connected & Autonomous Vehicles

Connected and Autonomous Vehicles (CAVs) may feel like a far-off, futuristic transportation concept; however, CAVs are already a part of our transportation network and figure prominently in planning and project development efforts for the future. Given the long-range nature of this RTP, it is conceivable that advanced CAV technologies will be deployed within the time frame of this plan. While much remains uncertain about CAV deployments, and their impacts on land use and transportation, the following implications are clear:

1. **Traffic patterns will change,** and bring new issues for the streetscape. New demands on curb space will need to be regulated; furthermore, as AVs are capable of traveling more closely together, pavement widths may be reduced, freeing up space in the pedestrian zone as well as within the right-of-way.

2. **The curb will be in higher demand.** Ridesharing and the growth of shared mobility services, including Uber and Lyft, have already increased demand for space at the curb. New competition for this right-of-way space from AVs will be both passenger vehicle, as well as freight and goods delivery. Passengers, no longer needing to be with the vehicle when it parks, can be dropped off at their destination, increasing the need for drop-off areas at the curb.

3. **Freight movement will change considerably.** Indeed, it already has. Vehicle platooning with humans is already an emerging practice within the freight industry; while automated trucks may soon be operating on highways, larger automated trucks may not be seen off highways in urban settings for some time. However, where large vehicles may not be seen, smaller vehicles, including UAVs, are already in testing by large freight companies, including Amazon, for small goods delivery.

Autonomous vehicles, including shuttles as seen here, will increase demand for curb space. However, they open up new opportunities for the existing transportation system.

FIVE ACTIONS TO TAKE RIGHT NOW TO PREPARE FOR AUTONOMOUS VEHICLES:

1. **POLICIES:**
Review zoning language to determine whether current definitions are adequate for new uses, such as AV staging, support services, and electric recharging. Land use regulations should begin to incorporate guidance for locating and designing on-street drop-off and pickup areas.

2. **KNOW YOUR NEEDS:**
Every community has different transportation needs, and CAVs can be applied to solve numerous problems. Understanding the current weaknesses of your transportation system, from addressing transit connections to relieving congestion, will help accommodate automated technology as it grows in your town.

3. **ENGAGE:**
Autonomous vehicles will best suit a community when their implementation accomplishes shared values and aspirations of the community. Engaging residents and the business community to understand how CAV technology fits within the larger community vision underpins future strategic steps in its integration.

4. **EDUCATE:**
Limited applications of CAVs are already operating in cities, but they require particular conditions for their success. Public officials, policymakers, and the public can prepare for where and how CAVs can first be introduced in their community by learning what it takes for CAVs to thrive, and where these conditions may exist in their towns.

5. **KNOW THE BENEFITS:**
Aside from knowing your community's needs and what it takes for CAVs to successfully operate, it's important to know the benefits CAVs can bring to the community. While research on their applications continues, Federal, State and Local agencies have provided guidance on these benefits, which include improved roadway safety, reduction in roadway fatalities, decreased energy consumption, improved supply chain management, and greater mobility for all citizens.

> Learn more about ongoing CAV research, automated vehicle benefits, and policy considerations **HERE**.