

6.0 Vision, Goals, and Strategies

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6.1 Regional Goals & Objectives

The development of the 2040 RTP provided an opportunity to identify and document community and regional goals and objectives for transportation decisions and policy for the next 25 years. Working through a comprehensive, continuing and cooperative effort with the Federal Highway Administration, Federal Transit Administration, Tennessee Department of Transportation, local transit operators, the public, and other interested parties, the MPO strives to identify the most appropriate set of short-, mid-, and long-term projects that address the anticipated needs within the region as embodied by a set of guiding principles, regional goals, and major objectives developed through extensive public and stakeholder involvement.

Working through a collaborative effort which included its member governments, area non-profit organizations, the business community, and public citizens, the MPO has adopted four guiding principles to provide a framework for the policies and investment decisions of the MPO and to define how the organization will contribute to overall quality of life of the region.

- **Livability:** Enhance quality of life by prioritizing initiatives that increase opportunities for housing, learning, employment, recreation, and civic involvement while maintaining affordability.
- **Sustainability:** Encourage growth and prosperity without sacrificing the health, natural environment, historical and cultural assets, or financial stability of this or future generations.
- **Prosperity:** Contribute to the region’s economic well-being by targeting solutions that attract talent, connect workforce with jobs, reduce the cost of doing business, and leverage additional investment.
- **Diversity:** Respect the multitude of backgrounds and the variety of perspectives of Middle Tennesseans by pursuing an array of strategies that are customized to local community needs and character.

The following goals and objectives provide further guidance to the MPO as it identifies transportation needs and priorities for federal and state funding opportunities.

Goal 1. Maintain a Safe and Reliable Transportation System for People and Goods	<ul style="list-style-type: none">• Continue with a “fix-it-first” mentality to keep existing infrastructure in a state of good repair.• Reduce the number and severity of crashes by designing roadways to accommodate all users.• Incorporate information technologies to improve traffic operations and help optimize traveler decisions.• Manage the negative impact of traffic congestion by providing alternatives to driving.• Designate and implement a regional freight network to efficiently move goods and minimize negative impacts on local communities.• Ensure the security of transportation assets from natural or man-made disasters and acts of terrorism.
Goal 2. Help Local Communities Grow in a Healthy and Sustainable Way	<ul style="list-style-type: none">• Align transportation decisions with economic development initiatives, land use planning, and open space conservation efforts.• Integrate healthy community design strategies and promote active transportation to improve the public health outcomes of the built environment.• Encourage the deployment of context-sensitive solutions to ensure that community values are not sacrificed for a mobility improvement.• Incorporate the arts and creative placemaking into planning and public works projects to foster innovative solutions and to enhance the sense of place and belonging.• Pursue solutions that promote social equity and contain costs for transportation and housing.

Goal 3. Enhance Economic Competitiveness by Improving Private Sector Performance	<ul style="list-style-type: none"> • Recognize major shifts in demographics and market preferences for transportation and housing and respond with solutions that keep Middle Tennessee an attractive place to live and do business. • Improve the connectivity between workforce and jobs by offering a range of options to manage commuting distances and travel times. • Improve mobility within and between centers of commerce across the region by providing a diversified transportation system, rather than relying solely on roadway capacity. • Keep the region connected to national and global markets by improving travel times on US Interstates, upgrading intermodal connections to water, air, and rail freight systems, and by ensuring Middle Tennessee is included in plans for national high speed passenger rail.
Goal 4. Spend Public Funds Wisely by Ensuring a Return on Investment	<ul style="list-style-type: none"> • Increase public participation in the planning process to help identify the most significant problems. • Foster interdisciplinary collaboration to prioritize the most effective solutions. • Evaluate the full costs and benefits of public investment in infrastructure. • Strive for quality over quantity by implementing all elements of priority projects to maximize value. • Consider public-private partnerships to encourage innovative approaches to project design and delivery. • Accelerate project delivery schedules by involving the public early and often, minimizing bureaucratic delay, and ensuring that funding is available to implement projects once designed. • Monitor and track the performance of public investments to demonstrate accountability. • Find ways to bridge the gap between revenue shortfalls and the growing cost of transportation needs.

6.2 Alignment with National Goals and Emphasis Areas

The *Moving Ahead for Progress in the 21st Century Act* (MAP-21), passed by U.S. Congress and signed by the President in 2012, requires transportation plans which allocate federal transportation funds to address specific planning factors that support goals for the federal transportation program. The eight factors below were identified by MAP-21 as national priorities.

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the security of the transportation system for motorized and non-motorized users
4. Increase the accessibility and mobility options available to people and for freight.
5. Protect and enhance the environment, promotes energy conservation, and improves quality of life, and promotes consistency between transportation improvements and state and local planned growth and economic development patterns
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.

The following figure documents how the MPO's regional goals relate to each of those factors.

Figure 6-1 Alignment of RTP Goals and Map-21 Planning Factors

2040 RTP Goal	Applicable MAP-21 Factors
Maintain a Safe and Reliable Transportation System for People and Goods	1, 2, 3, 7, 8
Help Local Communities Grow in a Healthy and Sustainable Way	1,2, 4, 5, 6, 7
Enhance Economic Competitiveness by Improving Private Sector Performance	1, 4, 5, 6
Spend Public Funds Wisely by Ensuring a Return on Investment	1, 5

In addition to the planning factors required by MAP-21, the MPO has incorporated the national goals outlined in 23 U.S.C. 150(b) and the federal emphasis areas outlined below into its planning process to ensure that long-range investments are accomplishing the goals intended by Congress.

<i>Regional Planning Cooperation</i>	FHWA and FTA encourage ongoing collaboration among TDOT and MPOs and between MPOs in order to ensure the proper coordination of transportation plans and programs. The Nashville Area MPO is an active participant in TDOT's statewide long range transportation plan update and as a member of the MPO, TDOT was actively engaged in the regional transportation planning process for the Nashville area. In addition, the Nashville Area MPO works closely with the Clarksville Urbanized Area MPO to carry out transit studies on behalf of or in partnership with the Regional Transportation Authority of Middle Tennessee.
<i>Access to Essential Services</i>	The MPO is committed to ensuring that the region's transportation system can be relied upon to connect vulnerable populations to life sustaining services including housing, employment, health care, schools, and recreation. The recommendations of the 2040 RTP incorporate findings from the MPO's "equity atlas" developed in 2015 which identifies the location of traditionally underserved populations along with those essential services. Proposed transportation projects are evaluated for their ability to help make important connections as well as their potential to harm local communities.
<i>Performance-Based Planning</i>	Since the passage of MAP-21 in 2012, the MPO has begun working to expand its approach to performance-based planning. Specifically, the MPO is actively reviewing and commenting on federal rule-making that will shape future transportation planning requirements. In addition, the MPO has identified performance indicators for safety, state of good repair, and mobility for use in evaluating land use scenarios and transportation projects considered for the 2040 RTP.
<i>Climate Change, Extreme Weather, and Disaster Preparedness</i>	Over the past three years, the MPO has increased its focus on activities that promote transportation policies, plans, and programs that lead to cleaner air and help reduce climate-changing greenhouse gas emissions. The UPWP includes air quality public awareness campaigns and regional studies that closely align transportation and land use planning and provide an evaluation of multi-modal transportation options. In addition, the MPO is currently working with TDOT on an extreme weather project that got underway in FY 2014 to consider the resiliency of area transportation infrastructure in the event of a man-made or natural disaster. FY 2016 also includes staff time for the MPO's role in leading Middle Tennessee's participation in the Climate Solutions University that is assisting the MPO and local governments with the development of strategies to mitigate the effects of climate change on the natural environment.

<i>Sustainability and Livability</i>	The MPO has evolved into a strong regional partnership that supports ongoing conversations about issues such as land use, economic development, climate change and the environment, safety and security, and personal health to improve multi-jurisdictional and interdisciplinary cooperation to advance sustainability and livability initiatives. Upon the adoption of the 2040 RTP, the MPO will evaluate the sustainability of its system-level proposals using the Federal Highway Administration's <i>Infrastructure Voluntary Evaluation Sustainability</i> (INVEST) tool which the MPO helped pilot in advance of its full-scale release nationwide.
<i>Safety and Public Health</i>	The MPO is viewed by peers as a national leader in the integration of public health considerations into the transportation planning process. The MPO will continue its efforts to evaluate health impacts of proposed transportation policies, plans, and programs through traditional roadway safety and crash data analyses, emerging Health Impact Assessment practices, and the development of a new regional model that forecasts health savings as a result of changes in travel behaviors and pollution levels.
<i>Traffic Operations</i>	A growing emphasis is being placed on the efficient operation of the transportation network as capital funding for capacity improvements becomes more limited. The MPO plans to follow-up the adoption of the 2040 RTP with a major study to evaluate options for upgrading area intersection signalization technology and to provide real-time roadway, transit, and parking information.
<i>Linking Planning and Environment</i>	In recent years, federal and state agencies have sought to streamline the transportation project delivery process by linking the planning process with the environmental review required by the National Environmental Policy Act (NEPA). To assist in this effort, the MPO has placed an emphasis on integrating analyses of environmental, community, and economic goals into long-range planning. During the development of the 2040 RTP, the MPO conducted a comprehensive screening to identify projects with the potential to harm traditionally underserved communities and the natural environment.
<i>Freight & Goods Movement</i>	The MPO recently completed a regional freight study to provide guidance on how best to route trucks through the region and to identify opportunities to optimize rail operations within the urban core. The study also recommended increased coordination between economic development initiatives and transportation investments. Prior efforts have produced tools that allow the MPO to forecast future freight movements on the region network and evaluate potential transportation improvements for their ability to accommodate goods movement.

6.3 Long-Range Vision

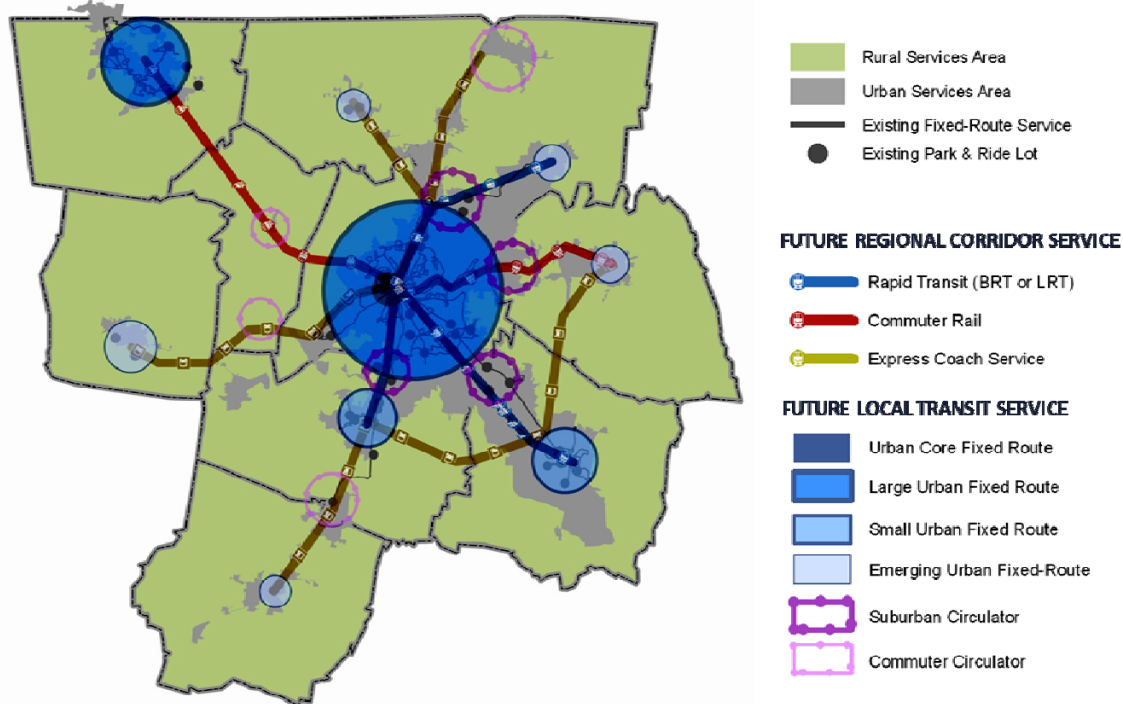
Carrying forward the three key strategies adopted in 2010, the 2040 RTP addresses the region's transportation challenges to position the Nashville area for future prosperity:

<i>Implement the Region's Bold Vision for Public Transit</i>	The transit vision guides the expansion and modernization of the region's public transportation system in preparation for the increasing competitive global economy. This vision will proactively address growing concerns about the health of our environment, worsening congestion, and the sprawling land development pattern that has begun to encroach upon the area's cherished rural countryside.
<i>Create Active and Walkable Communities</i>	Walking and bicycling infrastructure connect people to places within the urbanizing areas of the region, foster healthier activity for the region's citizens, and serve as the backbone of investments in public transit.
<i>Reinvest in Strategic Transportation Corridors</i>	Reinvestment in existing infrastructure will maximize the economic impact of limited transportation dollars and ensure that roadway networks are not overextended beyond the region's ability to maintain their state of good repair and reliability. Emphasis should be placed on the integration of technologies and multi-modal accommodations, to prepare roadways for the needs of future generations.

Regional Transit

The long range vision for transit, first adopted by local elected officials in 2010, is a necessary part of the region's preparation for the increasing competitive global economy, and proactively addresses the growing concerns about increased traffic congestion. The vision includes a variety of new and expanded services for regional corridors, urban centers, suburban communities, and even the rural countryside.

Figure 6-2 Regional Transit Vision – Rural, Suburban, and Urban Services



Specifically, the RTP calls for a strategic mix of transit options for future generations of Middle Tennesseans, ranging from high-frequency rapid transit service to the continued provision of rural transit services for those who do not live nearby to fixed-route options. The following describes the various types of services proposed for Middle Tennessee.

Rapid Transit Recommendations

Three corridors are identified for future regional rapid transit service including the region's **northeast, southeast, and south corridors**. These areas are the most densely populated and fastest growing within the region and have a well-established pattern of cross-county travel. The long-range vision for rapid transit in these corridors includes the development of either light rail transit or dedicated-lane bus rapid transit that would operate at high levels of service throughout the day. The specific mode or technology used will be determined by future study and depend heavily on development patterns, anticipated ridership, cost of construction, and public support for funding.

Commuter Rail Recommendations

The long-range vision calls for continued support for the Music City Star's **east corridor** commuter rail service and the development of a new commuter rail line in the region's **northwest corridor** to connect Clarksville and Nashville, two of Tennessee's five most populous cities.

<i>Express Coach Services</i>	In corridors with strong commuting patterns but without the land development patterns or traffic congestion to warrant dedicated-lane transit service, the vision calls for the implementation of premium express coach service. Such service will offer a comfortable and stress-free ride to and from work for commuters, providing enhanced amenities along the way including high-back seats, wireless internet access, on-board televisions, and restrooms.
<i>Urban Fixed-Route Services</i>	By far the most critical piece of the long-range vision, the region must continue to expand the existing urban fixed-route services in Nashville-Davidson County, Clarksville, Franklin, and Murfreesboro . Urban services are the backbone of any regional transit system and must be optimized in order to ensure the success of investments in regional rapid transit or commuter rail. The vision calls for continued investment in existing local bus systems, the eventual introduction of fixed-route service in Springfield, Gallatin, Lebanon, Columbia, and Dickson , and the return of the urban rail or bus rapid transit in downtown Nashville which serves as the central hub for the region.
<i>Suburban and Community Circulators</i>	As the region begins to implement rapid transit, commuter rail, or express coach services in each of the regional corridors, the vision calls for the development of local circulators in markets where a full-fledged urban fixed-route system would not make sense. Such local circulation will be important to customers to access regional services from primary destinations within their community. Suburban circulators, which would operate throughout the day, are envisioned for places like Goodlettsville, Hendersonville, Smyrna, La Vergne, and Brentwood , while commuter circulators, which would operate during peak commuting times, are envisioned for places like Portland, Spring Hill, Kingston Springs, and Ashland City .
<i>Vanpools and Flexible Services</i>	In addition to the geographically defined train, bus, and circulator services described above, the vision also calls for the expansion of the regional vanpool program and rural paratransit services. The regional vanpool program has been proven to be a popular and cost-effective way to provide ride-sharing opportunities to commuters who live too far away from fixed-route lines, and as the region's population continues to grow older, flexible or demand responsive rural services will be needed to ensure older Middle Tennesseans have transportation to and from life-sustaining services. Transit services also should be coordinated, to the extent possible, with the emergence of private-sector peer-to-peer transportation services like Lyft and Uber.

The transit vision seeks to communicate the region's intent for developing mass transit, but more difficult work is needed in order to make the vision a reality including the completion of detailed studies to identify projects and costs, identification of local dedicated revenue to leverage state and federal grants to build and operate new services. All projects must be fully engineered and evaluated for environmental and community impacts prior to construction.

Cost to build out the Vision

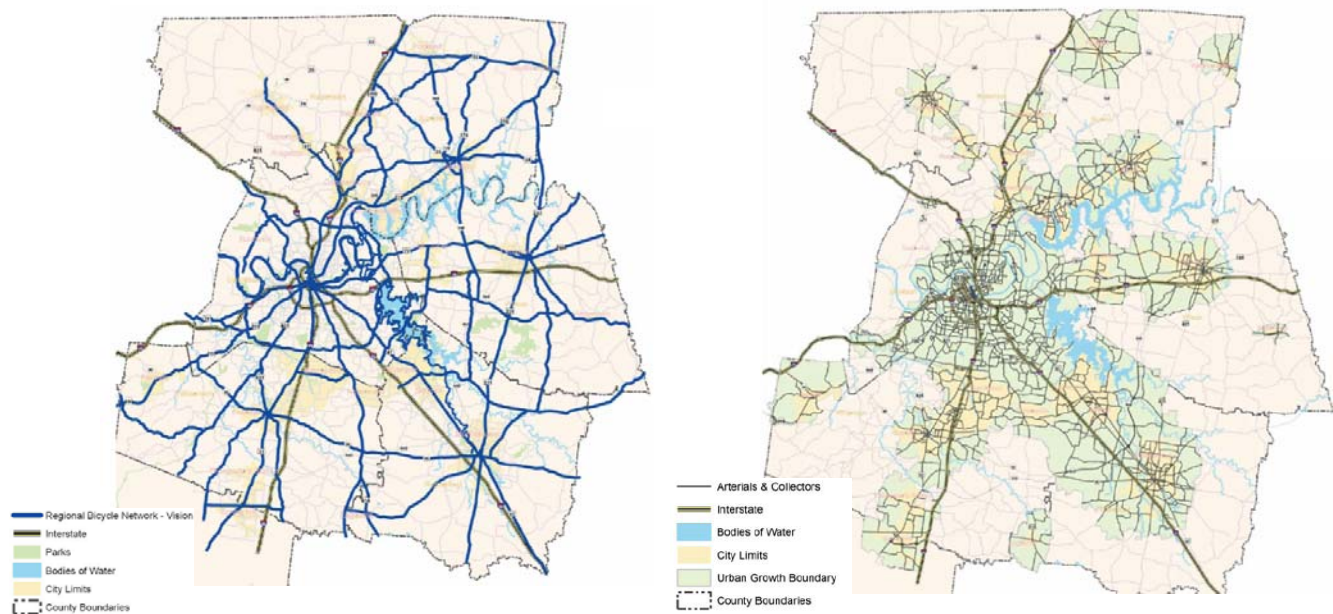
The total estimated capital cost for building out the regional transit vision is between \$3 billion and \$7 billion depending on the selected mode, technology, and alignment for each corridor. The Denver region, which is about the size that the Nashville area is expected to be by the year 2040, has invested billions in their game-changing transit system over the last 15 to 20 years, with a total price tag upon completion surpassing \$7 billion. Much of that funding comes from a dedicated one percent regional sales tax approved by voters across the multi-county area which in turn has leveraged significant federal grant dollars. The process used to decide the mode, technology, and alignment for each corridor involves significant public input through detailed corridor studies which provide an estimate of cost and benefit for each possible option. ***More information about those options is presented in Chapter 7. Tools and Strategies.***

Active & Walkable Communities

Walking and bicycling are important modes of travel in our region. Nearly everyone is a pedestrian on each trip they make, whether that means walking from the transit stop to work, walking from the parking lot to the store, or walking with children to school. Bicycling, once seen primarily as a form of recreation, is now viewed as an inexpensive, quick and eco-friendly form of travel. Improving walking and bicycling conditions across the Nashville area will provide numerous transportation benefits to the region, but also tremendous personal health benefits as overall levels of physical activity are increased in the process.

The MPO's vision for active transportation places an emphasis on providing facilities and improving safety along all federally-classified arterial roadways within urban areas of the MPO, on which pedestrians or cyclists are not prohibited. These roadways serve as major commuting corridors, commercial corridors and corridors of commerce, and connect communities, activity centers, transit, and major destinations throughout the region. As such, they serve as the backbone to other roadways and streets in the region which, combined with local sidewalks and streets, link neighborhoods, businesses, and other community facilities to one another.

Figure 6-3 Active Transportation Vision



Cost to build out the Vision

The total estimated cost for implementing the regional sidewalk and bikeway recommendations is nearly \$800 million with the regional sidewalk recommendations accounting for \$150 million and the bicycle network accounting for \$650 million.

Major Transportation Corridors

The regional vision for transportation includes significant upgrades to the major transportation corridors throughout the region. These regionally-significant enhancements will maximize the economic impact of limited transportation dollars and incorporate multimodal accommodations and new technologies to help prepare roadways for the needs of future generations.

The following list highlights the major transportation corridor priorities of the region. Some of which have been funded through the RTP's financial plan. Either way, these 9 priority projects provide an illustration of the tremendous need for additional transportation revenue.

Priority Description and Location	Cost Estimate*	Potential Funding**
Reconstruction and Modernization of U.S. Interstate Loop in Downtown Nashville	\$375M to \$650M	NHPP
<p>Planned in the 1950s, the construction of the Interstate highway loop in downtown Nashville began in the mid-1960s. Since then, only modest improvements have been made while the city and region has continued to grow and evolve. The design of the aging structures make for dangerous weaving movements as motorists navigate the maze of interchanges, and the major junctions of I-24, I-40, and I-65 cause major bottlenecks during rush hour periods. The inner-loop should be reconstructed to minimize travel delays due to poor traffic patterns and modernized to include provisions for managed lanes and technology to improve traffic operations. Downtown interchanges, particularly on the East Bank should be redesigned from the current clover-leaf design to a more appropriate, and less land hungry, urban form. Consideration also should be given to the conversion of the East Bank section of the loop to an urban boulevard and to the potential for interstate capping on the below grade section that divides Music Row and Midtown areas from the Gulch and Central Business District. Capping would allow for much needed open space and additional economic and community development.</p>		
Northeast Transportation (NET) Corridor Multi-Modal Capacity Upgrades, Modernization, and Extension in Davidson and Sumner Counties	\$300M to \$750M	NHPP, STP, FTA New Starts
<p>Dubbed the “NET” corridor by economic development officials, this high priority project will help implement the regional transit vision’s call for rapid transit connecting Davidson and Sumner counties. Based on the 2010 Northeast Corridor Mobility Study, the RTP recommends BRT/managed lanes along Ellington Parkway (SR-6) and Vietnam Veterans Parkway (SR-386) to include direct ramp access to potential transit oriented development (TOD) sites at Cleveland Park, Trinity Lane, Indian Lake Village, and Greensboro North. Other improvements include an interchange modification along SR-386 at I-65 and Conference Drive and a new interchange at Forest Retreat and the SR-109 Bypass in Gallatin. SR-386 would be extended to the north of Gallatin as a four-lane highway to connect freight movements to US 31 and US 52 in Westmoreland. The entire corridor would be upgraded with technologies to improve traffic operations and real-time traveler information.</p>		
East Corridor Upgrades for Transit Oriented Development in Davidson and Wilson Counties	\$40M to \$80M	STP, FTA programs
<p>Local government and economic development officials are optimistic about the future of the east corridor commuter rail service between Nashville and Lebanon. The RTP recommends the completion of the Hamilton Springs station, additional passenger train siding along the route, equipment upgrades to diesel multiple unit (DMU) vehicles, and increased frequencies along the route to support more intense transit-oriented development.</p>		
Central Pike Corridor and Mt. Juliet Road Improvements in Davidson and Wilson Counties	\$75M to \$100M	NHPP, STP
<p>Not long ago, Mt. Juliet became the largest city in Wilson County and growth in its Providence Place community has no signs of slowing down. To accommodate that growth and to provide better connectivity between Davidson and Wilson counties, the RTP recommends a series of improvements to the Central Pike and Mt. Juliet Road corridors. Proposed improvements include the reconstruction and widening of Central Pike from Old Hickory Boulevard in Nashville to Mt. Juliet Road in Mt. Juliet, with a new interchange at I-40. Mt. Juliet Road will be enhanced to improve traffic operations and roadway safety for all users including a more appropriate bridge design over I-40 and the extension of progressive signalization technology along the corridor.</p>		

Southeast Corridor/ I-24 Multi-Modal Capacity Upgrades and Modernization in Davidson and Rutherford Counties	\$350M to \$750M	NHPP, STP, FTA New Starts
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The southeast corridor between Murfreesboro and Nashville contains some of the most congested stretches of highway in the entire state. A transit alternatives analysis completed in 2007 recommended the enhancement of regional bus service along the corridor. However, given the rapid growth in Rutherford County and in the Antioch area of Davidson County, the corridor should be re-evaluated for possible fixed-guideway investments within the next five to ten years. In the short-term, RTA and TDOT should explore bus-on-shoulder transit service. In the mid- to long-term, the RTA and TDOT should look to possible fixed-guideway lane BRT or light rail transit service that uses the interstate right-of-way with deviations as necessary to serve existing communities and new TOD. A less likely solution could involve the use of the CSX corridor for passenger rail services.

South Corridor/ I-65 Multi-Modal Capacity Upgrades and Modernization in Davidson and Williamson Counties	\$350M to \$750M	NHPP, STP, FTA New Starts
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The south corridor stretches 15 plus miles between Nashville and Franklin, TN and another 20 miles to Columbia. Currently served by express bus service during peak commuting periods, the corridor is a top candidate for more significant transit investment over the next decade. Williamson County is expected to more than double its population by the year 2040 and high-capacity rapid transit may be one of the most effective ways to keep this part of the region moving efficiently as Cool Springs and the Carothers Parkway corridor build out. Within a year of the RTP's adoption, the MPO should work with the RTA and local governments in Davidson and Williamson Counties to conduct a corridor study to evaluate the feasibility of light rail and bus rapid transit investments. The service should be integrated with local transit services in Franklin and Nashville and provide a catalyst for new local circulation in the Brentwood area.

US 31/ SR-6 Improvements between Franklin and Columbia in Williamson and Maury Counties	\$75M to \$100M	NHPP, STP
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Spring Hill and southern Williamson County have been one of the fastest growing parts of the state for the last decade. That growth has organized largely around a US 31/ SR-6 corridor which has seen little expansion since its construction as a rural two and three-lane cross-section. The RTP recommends reconstruction of several sections of the route to an urban cross-section with progressive signal technologies and bicycle and pedestrian accommodations. Improvements to the more mature sections of the route will focus on intersection safety, particularly as the route enters Columbia.

Northwest Corridor Transit Upgrades in Davidson, Cheatham, and Montgomery Counties	\$150M to \$300M	NHPP, STP, FTA New Starts
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The regional transit vision calls for commuter rails services between Clarksville and Nashville over the long-term. The Northwest Corridor Transit Study is currently evaluating various transit and highway improvements along the corridor to identify which options are the most viable to move forward in the short-term, and to establish a plan of action to implement the preferred vision as opportunities emerge. The RTP recommends that the corridor be developed to include rail service using DMU vehicles which could use the existing freight alignment or operate in new track built along dedicated right-of-way (ROW) or down the center of an existing street. While the service would be oriented to commuters along the corridor, it could also provide a rapid transit option to residents within Davidson County with destinations in North Nashville, and could be used to connect Tennessee State University (TSU), Meharry, Fisk, with the North Gulch and downtown.

Robertson and Sumner Counties Connector	\$75M to \$150M	NHPP, STP
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At one time, SR-840 was planned to be constructed as a complete ring around the region, providing a less congested alternative for heavy trucks and other pass-through traffic and new economic development opportunities for communities in the counties surrounding Nashville. While the southern half is open to travelers today, the northern half was never constructed as planned. Instead, SR-109 was upgraded to accommodate through-traffic on the northeast side of the region, connecting I-65 to I-40 and SR-840. To compensate for the loss of SR-840 in the northwest quadrant of the region, the RTP recommends the reconstruction and widening of SR-76 between White House and Springfield, tying into the W.A. Batson Parkway to serve existing and future industrial development.

** 2015 dollars. A range is provided to account for the various design/alignment options **Potential Federal grant programs described in Chapter 8. Additional local and state funding will likely be necessary.*

6.4 Core Strategies

The RTP identifies more than 300 individual transportation needs derived from local plans of cities, counties, and transit agencies, as well as TDOT, those projects come together to advance the following core strategies. Additional transportation strategies and investment options are provided in Chapter 7 and serve as a toolbox to guide project scoping, design, and local land use strategies.

- Maintain the safety and reliability of the existing system;
- Increase coordination between transportation decisions and economic and community development decisions;
- Focus short- and mid-term investments on “complete streets” and the deployment of new technologies to improve roadway safety, traffic operation, and customer information;
- Pursue a combination of projects, incentives, and regulations to reduce transportation costs for freight carriers, and minimize the impacts of heavy truck and rail operations on the urban core and surrounding communities;
- Establish consensus to fund and implement projects of regional significance including multi-modal upgrades to key corridors and major reconstruction of the aging interstate loop around downtown Nashville; and
- Engage the public in new and innovative ways, including creative placemaking, to enhance buy-in and minimize impacts of construction on neighborhoods.

Strategy 1: Maintain the Safety and Reliability of the Existing System

First and foremost, local and state governments have a shared responsibility to ensure the safety and reliability of the existing transportation system. At its core, that means a commitment to funding the necessary maintenance of the more than 26,000 roadway lane miles, nearly 1,600 bridges, 500 roadway miles of sidewalks, and hundreds of transit vehicles that deliver more than 12 million trips per year.

Indeed, there is a growing sense of urgency around system maintenance as bridge collapses and commuter train incidents headline national news on a more frequent basis. But, even without a major disaster, one only needs to be observant on their daily commute to see visible signs of deteriorating infrastructure. The challenge is enormous, but must be met as millions of miles of roadways and tens of thousands of bridges across the nation begin to reach the limits of their designed lifespan. The American Society of Civil Engineers (ASCE) estimates that \$1.6 trillion is needed over the next five-years to bring the nation's infrastructure to a state of good condition. Establishing a long-term development and maintenance plan must become a national priority as poor road conditions cost U.S. motorists \$67 billion a year in repairs and operating costs.

Locally, the direct cost of maintaining area roadways and bridges is significant. In July 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law. Based on MAP-21 provisions and draft regulations, states will be required to maintain minimum thresholds for bridges on the National Highway System (NHS): no more than 10 percent of the total NHS bridge deck area may be on structurally deficient bridges. The seven county MPO has a total of 490 bridges on the NHS and currently meets these standards. In order to continue to meet these standards over the horizon of the RTP, it will take an average investment level of \$44 million per year, or approximately \$1.1 billion over the life of the plan in terms of today's dollars.

The issue of bridge maintenance is even bigger than that, as only 30 percent of all bridges in the region are located on the NHS. The seven-county area has a total of 1,589 bridges. TDOT owns and maintains 60 percent of those or 948 bridges, local agencies own 38 percent or 608 bridges, and the remaining 33 bridges are owned by other agencies. As of 2012, the average age of bridges in the area is 40 years. Today, 31 percent of the existing bridges exceed the 50-year average design life and by 2040, 74 percent of the bridges will be over 50 years old.

In estimating the full cost of maintenance for area bridges, the MPO used the FHWA's National Bridge Investment Allocation System (NBIAS) tool. NBIAS is designed to minimize maintenance costs by generating an optimal set of preservation actions for bridge elements based on life-cycle user and agency costs, and engineering standards of bridge maintenance needs. The results of that analysis yields an estimated need for \$140 million in annual funding which adds up to about \$3.5 billion over the life of this plan. Those costs are in 2013 dollars and represent needs for current bridges only.

Figure 6-4 Funding Needs for Bridge Repair and Replacement

Highway System**	Number of Bridges	Annual Funding Need for Maintenance	25-Year Cumulative Funding Needed for Maintenance
National Highway System	490	\$44 Million	\$1.1 Billion
State Route System	948	\$115 Million	\$2.8 Billion
All bridges on Federal-Aid Network	1,589	\$140 Million	\$3.5 Billion

*Source: FHWA NBIAS analysis by Cambridge Systematics for MPO. **Bridge systems are not mutually exclusive, several state route bridges are also on the NHS. Funding needs shown in 2013 dollars.*

Maintaining bridges is a heavy burden on the state and local governments, but that cost only represents a small share of the total maintenance cost of the existing roadway system. Those costs grow substantially when general roadway maintenance and repair is added. Roadway pavement condition across the MPO area were determined using the latest available Highway Performance Monitoring System (HPMS) data submitted by Tennessee DOT to the Federal Highway Administration (FHWA). The HPMS is a national level highway information system that includes data on the extent, condition, performance, and use and operating characteristics of the nation's highways. HPMS data is sample data, collected across the entire Federal-aid eligible system, for interstate, arterial and collector networks.

Pavement condition is reported as percent of lane miles in good/fair/poor condition based on the International Roughness Index (IRI), consistent with the expected pavement condition performance metric to be required via MAP-21. Of the 7,611 lane-miles in the Federal-aid network, 73 percent are in good condition, 24 percent are in fair condition, and 3 percent are in poor condition, for a total of 97 percent of the system in good/fair condition.

Future pavement condition was forecast using FHWA's state version of the Highway Economic Requirements System (HERS-ST). HERS-ST is a computer model used to estimate investment requirements for pavement preservation and system expansion, and to evaluate alternative highway investment levels based on performance objectives. HERS-ST is designed to minimize maintenance costs by generating an optimal set of preservation actions based on life-cycle user and agency costs, and engineering standards of maintenance needs.

Based on MAP-21 provisions and proposed regulations, states will be required to maintain a minimum condition level for the Interstate system: no more than 5 percent of lane-miles may be classified as "Poor" (95% in "Good/Fair" condition). While interstate system in the MPO region currently meets the MAP-21 standard, in order to maintain the network condition in good standing, an annual investment equivalent to \$40 million will be required. The following figure summarizes the annual and cumulative funding needs to maintain the Interstate system, NHS, state-route system, and the entire federal-aid network.

Figure 6-5 Funding Needs for Maintenance of Roadways

Highway System**	Approximate Lane Miles	Annual Funding Need for Maintenance	25-Year Cumulative Funding Needed for Maintenance
U.S. Interstate System	1,200	\$40 Million	\$1.0 Billion
National Highway System	2,800	\$97 Million	\$2.4 Billion
State Route System	5,700	\$160 Million	\$4.0 Billion
Entire Federal-Aid Network	7,500	\$220 Million	\$5.5 Billion

*Source: FHWA HERS-ST analysis by Cambridge Systematics for MPO. **Highway systems are not mutually exclusive, Interstates and several state routes are also on the NHS. Funding needs shown in 2013 dollars.*

Proposed Actions:

- A. The RTP recommends that state and local agencies prioritize maintenance activities over capital expansion projects and budget sufficient funding for the ongoing maintenance of the system. It is likely that current funding levels will need to be increased to meet new federal standards, and to address aging facilities.

- B. RTP capital projects should contribute to the safety and reliability of area infrastructure. Roadways should be reconstructed to meet design standards or improved to include accommodations for pedestrians and bicyclists. Roadway projects should include resurfacing as part of the scope of work, and bridges should be repaired or replaced as appropriate.

Strategy #2: Increase Coordination between Transportation Decisions and Economic and Community Development Efforts

Economic development and transportation infrastructure have a symbiotic relationship. Development locations influence regional travel patterns and infrastructure investments, and in turn, the degree of access provided by the transportation system can influence land development trends. Given the area's rapid growth and limited transportation funding, it is becoming increasingly important that development decisions do not place demand in areas where infrastructure is not planned. It is also important that transportation facilities are built to appropriately serve their markets.

Proposed Actions:

- A. Establish Corridor Management Committees for key state routes to coordinate access management and land development decisions.
- B. Commission a study to review best practices for land development impact fees for transportation.
- C. Conduct a comprehensive review of local parking policies, pricing, and management.
- D. Convene periodic meetings among state and local ECD officials and transportation planners to evaluate potential sites for development.
- E. Implement right-of-way preservation strategies to protect future transportation corridors from escalating land acquisition costs
- F. Update local comprehensive plans, zoning ordinances, and design guidelines to enable transit oriented development
- G. Adopt Regional or Corridor Level Access Management Standards

Strategy #3: Focus Short- and Mid-Term Investments on “Complete Streets” and the Deployment of New Technologies to Improve Roadway Safety, Traffic Operations, and Customer Information

Complete streets not only improve safety and promote healthier activity, but also increase access to local commerce. With decades of auto-oriented investments behind us, the time is now for retrofitting roadways to include options for all. Reinvestment in streets also should include the deployment of technology to upgrade traffic signals, improve parking management, and provide real-time information about transportation choices to customers.

Complete Streets

In recent years, both the federal government and the State of Tennessee have issued policies that encourage the construction of bicycle and pedestrian facilities on roadways to ensure the safety of the traveling public. At the federal level, the U.S. DOT issued the Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations on March 11, 2010, to reflect the Department's support for the development of fully integrated active transportation networks. It states:

‘The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.’

The FHWA guidance on bicycle and pedestrian provisions, updated in September 2015, also establish that improving the conditions and safety for bicycling and walking creates an integrated, intermodal transportation system that provides travelers with a real choice of transportation modes. New and improved transportation facilities should be planned, designed, and constructed with this in mind. Bicyclists and pedestrians have the same origins and destinations as other

transportation system users, and it is important for them to have safe and convenient access to airports, ports, ferry services, transit terminals, and other intermodal facilities as well as access to jobs, education, health care, and other essential services.

The guidance further states that almost every transportation improvement is an opportunity to enhance the safety and convenience of walking and bicycling. Bicycle and pedestrian needs must be given “due consideration” under Federal surface transportation law Title 23 of United States Code (U.S.C), Part 217(g)(1)), and this should include, at a minimum, a presumption that bicyclists, pedestrians, and persons with disabilities will be accommodated in the design of new and improved transportation facilities. In the planning, design, and operation of transportation facilities, bicyclists, pedestrians, and persons with disabilities should be included as a matter of routine, and the decision to not accommodate them should be the exception rather than the rule. There must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling (23 U.S.C. 217(g)(1)).

At the state level, the Tennessee Department of Transportation issued its “Multimodal Access Policy” on July 31, 2015 under the authority granted by Tennessee Code Annotated (TCA) 4-3-2303. It commits TDOT and its employees, consultants, and contractors to collaborate with local government agencies and regional planning agencies through an established transportation planning process to ensure that multimodal accommodations are addressed throughout the planning, design, construction, maintenance, and operation of new construction, reconstruction, and retrofitted transportation facilities. A few exceptions are allowed, but must be documented and approved by TDOT’s Chief Engineer and Chief of Environment and Planning.

Intelligent Transportation Systems

Over the next few years, the region should accelerate investments in Intelligent Transportation Systems (ITS). ITS is the application and integration of advanced technologies, information processing, communications technologies, and advanced control strategies for the efficient and effective operation of the existing transportation system. In the next year, the MPO will seek consultant assistance to evaluate current intelligent transportation systems across the region to develop recommendations for how to upgrade traffic signals, parking management, transit customer information, and real-time construction information, and to prepare for emerging technologies such as connected vehicles and integrated communications systems.

Proposed Actions:

- A. Encourage the adoption of local complete streets policies and design guidelines.
- B. Continue the MPO Active Transportation grant program to assist with the implementation of projects.
- C. Commission a study to inventory existing technology and evaluate options for implementing “smart cities” innovations.
- D. Establish an MPO fund to help accelerate the deployment of technology upgrades.
- E. Coordinate with FHWA, TDOT, and local agencies to establish the necessary agreements for the sharing of data and communications systems to improve traffic operations and real-time information

Strategy #4: Pursue a Combination of Projects, Incentives, and Regulations to Reduce Transportation Costs for Freight Carriers, and Minimize the Impacts of Heavy Truck and Rail on the Urban Core and Surrounding Communities

Middle Tennessee benefits tremendously from freight transportation related assets and infrastructure. Nashville is at the nexus of three major Interstate highways, Interstate 24, 40, and 65, and three major limited access bypasses, Interstate 440, Briley Parkway, and State Route 840. The Cumberland River provides barge access to the Mississippi River system and the Gulf of Mexico. One Class I (CSX) and two Class II rail carriers operate within the region along with a major rail classification yard, an intermodal ramp, an automotive ramp, and bulk and break bulk terminals. It is important that the MPO balances freight movement and quality of life concerns.

Proposed Actions:

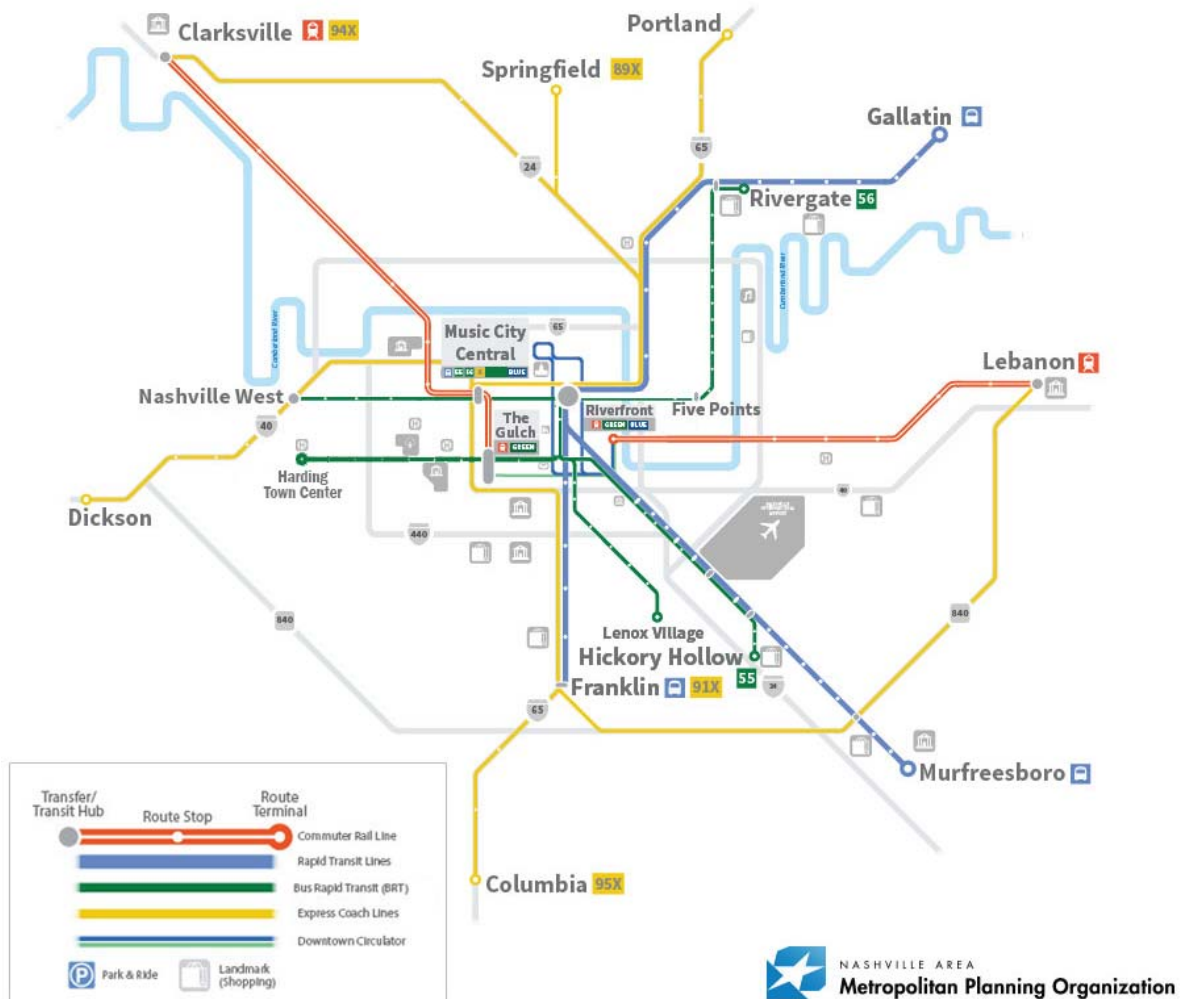
- A. Formally adopt a regional truck network and design standards to ensure ease of movement for freight and to minimize conflicts with adjacent land uses.
- B. Upgrade existing routes to meet design standards and expand capacity to accommodate increased heavy truck traffic

- C. Commission a study to explore the benefits and costs of restricting truck movements on less desirable routes including the Interstate loop during rush hour periods.
- D. Commission a study to evaluate opportunities to realign freight rail lines and relocate Radnor Yard Intermodal Facility to ease congestion in the urban core and to cluster freight operations.
- E. Establish criteria to improve site selection for freight intensive development.
- F. Update local land use policies, zoning ordinances, design guidelines to minimize conflicts between intensive freight operations and residential neighborhoods or incompatible commercial centers

Strategy #5: Establish Consensus to Fund and Implement Projects of Regional Significance including Multi-Modal Upgrades to Key Corridors and Major Improvements to Aging Interstate Loop around Downtown Nashville

The region is served by seven major corridors connecting downtown Nashville with traditional town centers and emerging activity centers. Each serves a significant role in Middle Tennessee's overall economic development strategy. The implementation of the region's vision for transit and pursuit of the major capacity projects identified at the end of section 6.3 will require a commitment and focus as the region pursues major projects over the long-term.

Figure 6-6 Regional Transit Vision – Schematic, Tube-Style Map



Proposed Actions:

- A. Support the completion of the RTA and MTA strategic planning process (nMotion) which will identify a program of projects and service standards and strategies.

- B. Commission detailed corridor studies or an “alternatives analysis” to identify the most effective mode, technology, and alignment for each proposed fixed guideway transit corridor.
- C. Establish local/regional dedicated funding and pursue competitive federal grant programs to fund the construction and operation of high capacity transit projects.
- D. Begin design work on major capacity projects including upgrades to the downtown Nashville Interstate loop.

Strategy #6: Engage the Public in New and Innovative ways, including Creative Placemaking, to Enhance Community Buy-In and to Minimize Impacts of Construction on Neighborhoods

The regional transportation plans adopted by the MPO represent one of the earliest stages of any major transportation project. In most cases, the RTP offers only a conceptual proposal and best estimate of costs for transportation projects, especially those identified for the mid- and long-term horizons of the plan. To assist members of the public who are interested in following a project’s progress towards implementation, the MPO has identified a sponsor or lead agency for each. The implementation of transportation projects can take several years and members of the public shall be afforded the opportunity to continue to ask questions and present concerns during each stage of the process including subsequent planning efforts, preliminary engineering and design work, and environmental review.

Creative placemaking proved its value as a way to enhance community buy-in and minimize disruption during a high-profile project in the Minneapolis-St. Paul region. The Irrigate program in Minneapolis-St. Paul leveraged the creativity of community members to transform the narrative of the lengthy construction period for the Green Line (light rail transit) from one of struggling businesses to a thriving, vibrant corridor. Irrigate is a nationally recognized local artist-led creative place-making initiative. The program provided funding to hundreds of artists, (which they defined as anyone living or working in the corridor with a creative idea) to partner with local organizations in bringing positive attention to the corridor through activities from murals to dances to a giant dog puppet. Artists received up to \$1,000 to do a creative place-making project after attending a workshop to initially engage community members and inform them about the Green Line project and Irrigate’s creative place-making goals. Irrigate projects generated over 100 positive media stories, and the program’s success has spread to other communities.

During the Green Line’s construction, civic groups held visioning sessions to determine what the community wanted to see. Creative events helped businesses stay afloat during construction. Community organizers helped ensure the line would serve all communities, and local government worked closely with local artists to develop robust civic arts programming at the opening. Not only was the line built without the acrimony and negative outcomes of previous projects, but dozens of artists and community collaborators also participated in hundreds of projects large and small that have left a powerful civic legacy.

The MPO and project sponsors can improve the methods used to communicate with the public during the planning process and find creative ways of offsetting the potentially negative impacts of construction projects. The MPO recommends the following actions to help communities get the most out of their transportation improvements.

Proposed Actions

- A. Simplify opportunities for the public to provide input on transportation problems through the development of mobile applications to document issues and concerns.
- B. Improve access to information about programmed projects including budgets, schedules, proposed improvements, and progress.
- C. Establish a creative placemaking program to employ an artist-in-residence during the design/engineering and construction phases of projects.
- D. Improve real-time information to construction projects and street closures.