

Chapter 6 - RECOMMENDATIONS

The recommendations presented herein seek to utilize the limited resources we expect to receive through 2040 in the most cost-effective manner. Absent a change in priorities at the Federal and State levels, fiscal constraint dictates that we maintain the existing condition and performance of our most crucial assets as best we can, manage the decline of lesser facilities and structures without compromising safety, and implement limited expansions whenever feasible. Unfortunately, this means that the transformation of our current transportation system to one that fully addresses our needs and preferences will not occur to the degree or at the pace the community deserves.

The Region's basic transportation needs through 2040 will not be able to be met with the reasonably expected revenues.

Transportation Needs

Per the guiding principles of the *L RTP 2035* and *L RTP 2040*, the transportation needs of the Region's residents, businesses, and institutions vary and will continue to do so based on type of place (see "The Region" page 27 for a discussion regarding place types). Transportation needs by type of place were first identified in *L RTP 2035*.

Combined with the reasonably expected revenues discussed previously in the Financial Plan, the needs presented below and their priority by type of place serve as the basis for the recommendations of *L RTP 2040*. The relative priority of each of the needs by type of place is presented in Exhibit 33.

Increase Safety for All Users

Regardless of age, physical ability, or mode, all users need to be assured that they can travel safely. Pedestrian safety needs are more prevalent in the Urban Cores and Rural Centers than other places just as the need for agricultural equipment to traverse public roads safely is primarily applicable to Rural places.

2017-2020 Transportation Improvement Program

Based on the amount of federal-aid-eligible projects for which funding has been solicited from GTC for the *2017-2020 Transportation Improvement Program (2017-2020 TIP)*, GTC's capital program, requests in the amount of \$182 million will go unfunded. This figure does not fully depict the true need for transportation projects as many project sponsors chose only to submit their most urgent requests. Approximately 60 percent of the projects that were submitted will be able to receive funding through the *2017-2020 TIP*.

Preserve and Maintain Existing Infrastructure and Services

The preservation and maintenance of the existing transportation infrastructure and services is a primary need of all users and all places in the Region. Highways, bridges, buses, trails, and sidewalks should, at a minimum, continue to serve residents, businesses, and institutions in a safe, efficient, and reliable manner. While this will be a challenge given deterioration of existing infrastructure and services relative to reasonably expected revenues, it is a challenge that must be met by transportation agencies and organizations at all levels.

Improve Mobility for Vehicles

The primary means of travel for persons and freight is anticipated to continue to be cars, buses, and trucks. Accordingly, improving the mobility of vehicles through improvements that incorporate better design and fuller use of technology will be a primary transportation need for persons, businesses, and institutions. This balance will be different based on place but improved mobility for vehicles will be most needed in the Recent/Emerging Suburban,



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Rural, Employment Centers, Regional and Sub-Regional Retail, Medical/Health, and Airport places. This need (if properly planned, designed, and implemented) can and should be met through improvements that also enhance and expand mobility for bicyclists.

Increase Frequency of Existing Public Transportation Service

Public transportation service is reasonably available to the majority of the Region's residents (excluding Yates County). A reasonable improvement to public transportation in all types of places will consist of increasing the frequency of existing service as opposed to adding new service.

Add New Public Transportation Service

Expanding fixed-route public transportation service represents less of an overall need than increasing the frequency of existing service but is still an identified need through 2040. Specifically, increased public transportation service to the Employment Centers and Medical/Health places should be considered first and foremost. Expansion should be tied to investments from those entities that will gain from the additional service, reflecting the need for all sectors to contribute in a manner relative to the respective benefit obtained.

Enhance and Expand Mobility and Access for Bicyclists

Too often transportation planning combines bicyclists and pedestrians due to the fact that neither utilizes a vehicle. However, the differences in mobility, as measured by the distances able to be traveled, are distinct. Improving conditions for bicyclists provides different (but not necessarily better) opportunities than doing the same for pedestrians. At the same time, both require access – specifically in the Regional and Sub-Regional Urban Cores, Mature Suburbs, Rural Centers, Employment Centers, Local Retail, and Higher Education places.

There is a regional need to improve the conditions that facilitate bicycling as an active transportation mode.

Enhance and Expand Connectivity and Access for Pedestrians

All trips begin and end via walking. There is a particular need to enhance and expand connectivity and access for pedestrians in Regional and Sub-Regional Urban Cores, Mature Suburbs, Rural Centers, Employment Centers, Local Retail, and Higher Education places. However, all places will benefit from improved pedestrian facilities which would promote walking as a form of active transportation.

Expand Connectivity and Access for Freight

Connectivity and access for freight transported by truck, rail, air, and water is identified as a primary economic need for the Region now and in the future. This need is critical to the economic development of the Region given the importance of manufacturing and agriculture in Rural, Employment Centers, Regional Retail, and Airport places.

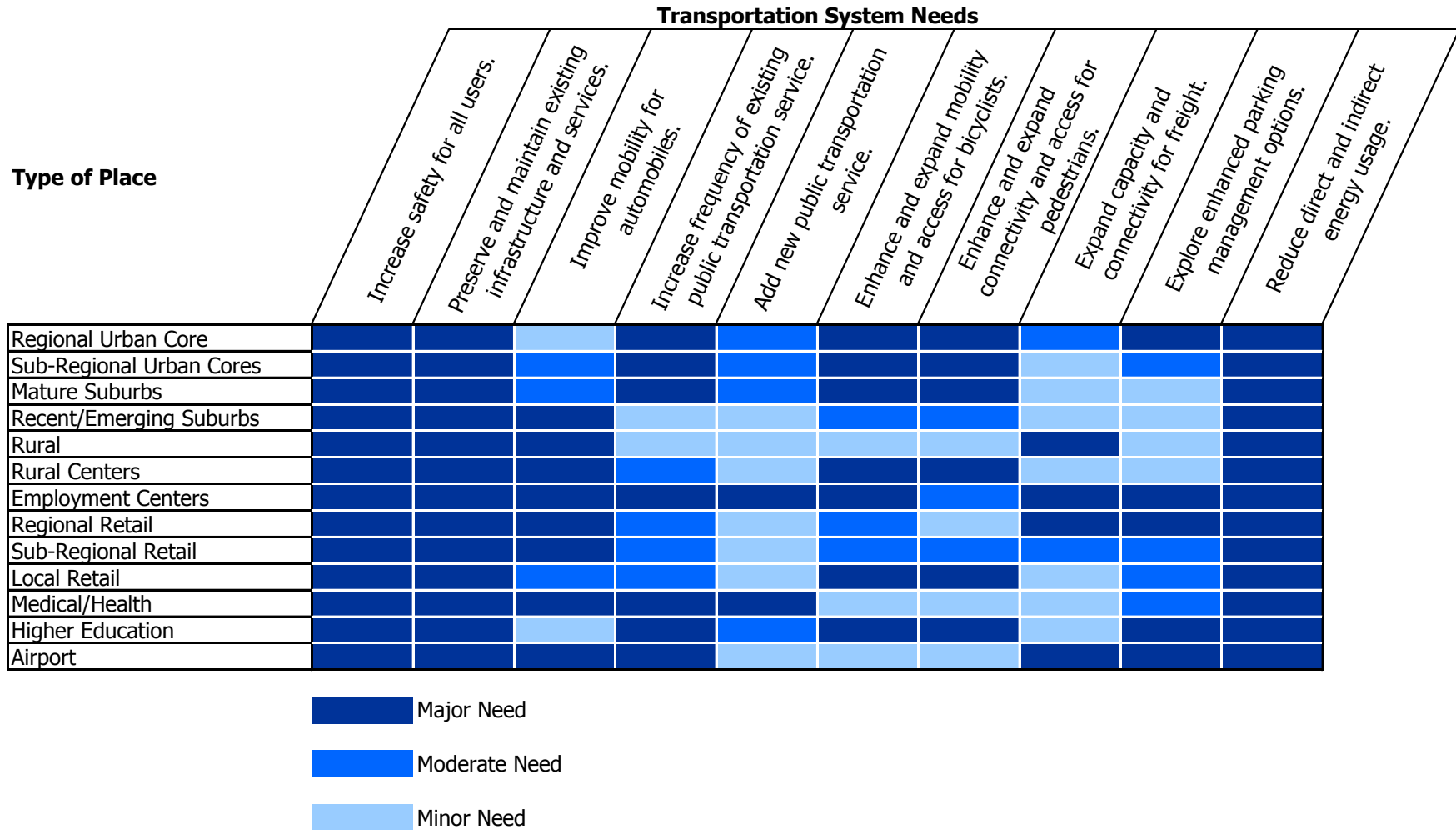
Explore Enhanced Parking Management Options

Better managing parking for both private vehicles, bicycles, and freight trucks allows the existing supply to be better utilized, increasing capacity and ensuring that businesses can accommodate customers and maintain operations. The need for improved parking management is and will continue to be most prevalent in the Regional Urban Core (including the Port of Rochester), Employment Centers, Regional Retail, Higher Education, and Airport places.



Exhibit 33

Transportation Needs by Place in the Genesee-Finger Lakes Region through 2040



Reduce Direct and Indirect Energy Usage

Providing opportunities to reduce the amount of energy consumed in the use and construction of transportation facilities and services can reduce dependence on foreign oil and decrease harmful fossil fuel and GHG emissions throughout all types of places. Actions to reduce energy use can address both national security and

environmental concerns (including mitigating climate change) by finding a common ground that addresses the other transportation needs of the Region.

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L RTP 2040 Recommendations

Recommendations included in *L RTP 2040* serve as a framework for investment decisions made through future TIPs where proposed projects and programs are evaluated to determine their benefits relative to other proposals. Projects and programs selected to receive federal transportation funds represent the tactics that will realize the strategy of the *L RTP 2040*. It is anticipated that additional planning will be conducted through future UPWPs to further refine and develop proposals for advancement with both federal and non-federal funds.



The existing regional emphasis on extending the useful life of highway and bridges through preventive and corrective maintenance, supporting increased system management and operations, and devoting fiscal resources to public transportation, bicycle, and pedestrian networks has been determined to be the optimal approach given the limited financial resources.



The capacity of the highway and bridge network is currently sufficient for the needs of people and freight and is expected to be so throughout the period covered by the *L RTP 2040*. Accordingly, the need for new highways and bridges for the sole purpose of improving mobility is not warranted. Ensuring the continued structural integrity of existing facilities is paramount. Physical expansion of highway and bridge infrastructure via altogether new through lanes is discouraged. Management of both the existing system across all modes and the demand placed on it is considered the most cost-effective means for improving mobility and access. Expansion of the system will be limited but additional investments in the public transportation as well as the bicycle and pedestrian networks represent the best opportunities to address the needs of an aging population and improve public health through opportunities that promote active lifestyles and reduce emissions.

Not all of the reasonably expected revenues are available immediately. As such, the recommendations have been prioritized based on need and when funds for their implementation are expected. The timeframe for implementation of the recommendations discussed below is as follows:

Ongoing = Federal Fiscal Years (FFYs) 2017-2040
(all FFYs of the *L RTP 2040*)

Immediate = FFYs 2017-2020 (aligns with the TIP)

Near-Term = FFYs 2017-2021

Medium-Term = FFYs 2022-2028

Long-Term = FFYs 2029-2040

Recommendations have been numbered for reference purposes and are not a reflection of priority.

Preservation and Maintenance

Beginning in *L RTP 2035*, Preservation and Maintenance recommendations encompass not only the maximization of existing assets but also improvements to these assets when they are reconstructed or replaced at the end of their useful life, *L RTP 2040* carries this forward. Given the length of time between reconstruction and/or replacement of facilities, simple in-kind replacement of infrastructure and the vehicles that currently serve our transportation needs represents a lost opportunity to improve the system. In addition, these opportunities represent the ability of the transportation system to meet the challenges of sustainability and climate change adaptation through the use of new materials and design elements that were not available when the facilities were first built or last reconstructed. There are two primary initiatives that serve as the basis for the Preservation and Maintenance recommendations of the *L RTP 2040*: Asset Management and Improved Design. These recommendations constitute the majority of projects to which reasonably expected federal transportation funds will be allocated through 2040.

Asset Management

At its core, Asset Management is about maximizing the service life of necessary infrastructure. Effectively applying this approach requires the selection of appropriate treatments at the proper times in the lifecycle of individual assets. A fundamental goal of asset management is to keep assets from deteriorating to a condition where they have to be reconstructed or replaced for as long as possible. Significant savings can be realized by conducting preventive and corrective maintenance on a facility at a fraction of the cost of reconstructing or replacing it. Additionally, asset management projects and programs will inherently consider improving safety for all users.



1. Conduct preventive and corrective maintenance treatments on highways and bridges to extend the useful life of infrastructure without requiring more costly rehabilitation and reconstruction before absolutely necessary – Ongoing

Preventive and corrective maintenance treatments can cost in the

hundreds of thousand dollars per lane-mile compared to rehabilitation and reconstruction projects that typically cost upwards of \$1.5 million per lane mile. These treatments maximize previous investments, including not only the roadway but also safety and security related features such as signage, lighting, striping, and guiderails. Communities throughout the Region have embraced preventive and corrective maintenance as the primary means for effectively managing their assets – the current TIP includes projects of this type in both major population centers (Monroe County) and areas where agriculture is the primary industry (Wyoming County).

2. Reconstruct and rehabilitate highways and bridges to accommodate all modes – Ongoing

Not all highways and bridges are candidates for preventive and corrective maintenance treatments. When infrastructure that provides for safe and efficient use by all modes (i.e., is a complete street) reaches the end of its useful life, its replacement should ensure that this functionality is maintained. When infrastructure that does not adequately accommodate all modes reaches the end of its useful life, its replacement should ensure that suitable space for cars, trucks, bicycles, and pedestrians is added within the context of Place (i.e., Context Sensitive Solutions).

For example, communities that wish to provide complete streets should consider low-cost design modifications such as adjusting lane and/or shoulder widths, or adding bicycle space such as bike lanes or curb offsets, simply by changing the location of pavement markings where feasible (i.e., where current and projected traffic characteristics, surrounding land uses, and community interest are compatible with bicycle traffic).

Similar consideration should be given to increasing clearances of bridges that have had multiple incidents involving trucks becoming stuck underneath them.



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3. Increase the use of recycled materials and incorporate green technologies in the rehabilitation and reconstruction of highways and bridges – Ongoing

Opportunities to increase sustainability through the use of reused and recycled materials continue to grow and become more affordable. Use of these materials and technologies reduces the amount of refuse deposited into landfills and can allow for more porous pavements which improve storm water management and have other environmental benefits.



4. Conduct preventive maintenance on public transportation vehicles to ensure reliability and attractiveness of services - Ongoing



As with highways and bridges, preventive maintenance on public transportation vehicles is central to their long-term, cost-effective operation. Users of public transportation expect that services be reliable, taking them where they need to go consistent with published schedules – this is especially true of individuals dependent upon public transportation for daily commuting. Additionally, “choice users” (i.e., individuals who have a choice to either use public transportation or travel via privately-owned automobile) will not utilize public transportation if the service’s reliability is in question. It is therefore essential that the vehicles providing public transportation are properly maintained and not prone to mechanical problems that directly impact reliability and attractiveness of the service. Per the current TIP, RGRTA will invest over one-third of the FTA Urbanized Area (Section 5307) Program funds in vehicle preventive maintenance activities.

5. Explore adjusting the RTS Monroe fleet mix as buses are replaced to take advantage of the operational flexibility provided by the Downtown Transit Center – Ongoing

With through-routing of vehicles no longer necessary, RTS-Monroe has the ability to deploy different types of buses on routes where

they are most suitable. There is an opportunity to optimize the mix of bus types in the fleet with capacity that meets customer demand. The change in fleet mix should occur as buses are replaced at the end of their useful life to maximize the economic value of existing investments.

6. Maintain and improve the condition and functionality of public transportation facilities throughout the Region – Ongoing

The age of public transportation facilities in the Region varies. The RGRTA/RTS East Main Street Campus, originally constructed in 1974, recently underwent an \$18M renovation and expansion project to improve and modernize some campus facilities. The RTS Campus still requires additional renovations to properly service the bus fleet including conducting basic maintenance, expanded bus parking facilities, and bus washing all while providing additional room to expand the fleet in the future. These facilities and others will need not only to be preserved and maintained but also improved with respect to their security, energy efficiency, safety, and operational functionality over the next 25 years.

7. Preserve and maintain dedicated bicycle and pedestrian facilities, including multi-use trails and sidewalks – Ongoing

The more than 500 miles of multi-use trails and the sidewalks in the Region are vital to promoting public health via active transportation. The ability to travel safely by bicycling and walking would be severely compromised if these facilities are not maintained and kept in a state of good repair. While ownership of these facilities is often more diverse than that of highways, bridges, and public transportation services – with local governments and not-for-profit entities playing a larger role in ensuring their continued functionality – providing the necessary resources to preserve and maintain multi-use trails and sidewalks cannot be overlooked in the Region’s comprehensive, multimodal asset management strategy.

8. Evaluate the need to replace bridges that carry low-traffic volumes – Ongoing

Many bridges in the Region carry significantly less traffic than can be accommodated with minimum design standards. Given the limited financial resources to properly maintain all public bridges in the Region, bridge owners should evaluate the need to replace a bridge if the traffic it carries can be accommodated on nearby bridges without significant impact to public safety or economic vitality. GTC has developed a Bridge Prioritization Screening Tool that can assist with this evaluation. Any impact to emergency response time should be evaluated against recognized standards.

Portageville Bridge

The 2012 Regional Goods Movement Strategy and *L RTP 2035* fully supported reconstructing the Portageville Bridge, identified as one of the top ten statewide rail bottlenecks in the 2009 New York State Rail Plan. Built in 1875 the bridge crosses the Genesee River Gorge in Letchworth State Park and is a critical component of NS's Southern Tier Line. The bridge has been in need of replacement to remove weight and speed restrictions that negatively impact freight movements between the Midwest and Northeast along the NS corridor. Construction on the new, \$70 million, bridge alignment began in the summer of 2015 and is expected to be completed in the winter of 2017/2018. Realigning and replacing the Portageville Bridge is a critical step to enhance safety and bring the Southern Tier Line's capacity up to the current industry standard of 286,000 pounds. The rail line represents an important connector for intermodal container traffic going to and from the Port of the New York and New Jersey. The new rail bridge is a vital connection along the corridor.

9. Reconstruct and rehabilitate rail infrastructure to allow for the efficient movement of freight into, out of, and within the Region – Ongoing

While privately owned, operated, and maintained, rail infrastructure is an important component of the regional transportation system. The maintenance and upgrades (via reconstruction and rehabilitation) to tracks, ties, ballast, and bridges along with signaling, switching, and crossing equipment should be continued and increased as private and public resources allow. Representative projects in the Region include rehabilitation and improvements to both Class I and Shortline infrastructure to allow maximum weights at the highest operating speeds allowed.



CSX Mainline in Lyons



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Improved Design

The physical design of transportation infrastructure can appreciably improve the safety, efficiency, and reliability of the transportation system. Access management, interchange reconfigurations, and provision of space for public transportation and non-motorized travelers (i.e., complete streets) can enhance the existing system and better serve regional transportation needs now and in the future. Specifically, physical measures that improve mobility, safety, and predictability for vehicles (including freight) and non-motorized modes, when and where appropriate, increase economic opportunities and quality of life. These improvements require coordination and cooperation with local governments who have land use planning and decision making authority.



10. Adapt the design of transportation infrastructure to integrate security and resiliency considerations – Ongoing

When reconstructing, rehabilitating, or otherwise upgrading and improving transportation assets, agencies should consider the vulnerabilities of these assets to anticipated hazards and include features that improve resiliency and recovery (e.g., the ability of existing highway and bridge designs to handle rising sea levels and extreme weather events). Given the large costs of reconstruction and rehabilitation projects, federal aid will continue to be the primary source for these types of projects and it is expected that this will be reflected in future TIPs.

The *Genesee-Finger Lakes Regional Critical Transportation Infrastructure Vulnerability Assessment*, currently underway, will include recommendations for strengthening the security and resiliency of transportation system infrastructure (e.g., highways and bridges) as well as facilities (e.g., operations centers, highway garages, fuel storage) to natural and human-caused hazards.



Storm clouds over Medina

11. Improve the function of interchanges on major roadways through design that reduces delay and enhances safety and mobility – Immediate/Near-Term

Interstate highways and other expressways have the greatest impact on regional mobility. Recurring delay that results where highways intersect with one another has significant implications including increased emissions and reduced productivity. Improving the design of these interchanges through reconstruction when they reach the end of their useful life will result in benefits to mobility, air quality, and safety.

The operational performance of major interchanges along identified freight corridors and at congestion hot spots should continue to be monitored and the implementation of congestion management strategies should be advanced as necessary.

Representative projects in the Region include the reconstruction of the I-490/I-390/NYS Route 390 interchange and the current western terminus of NYS Route 531.

12. Improve the function of intersections through improved design that increases safety, reduces delay, and improves mobility for all users – Ongoing

The safety and efficiency of high volume intersections can sometimes be improved through the incorporation of dedicated turning movements (e.g., turn-only lanes and signalization). Other options include reconfiguring intersections using roundabouts and/or new alignments. Truck turning movements and nearby freight operations should be taken into consideration. Regardless of the type of improvement, appropriate pedestrian safety considerations must be included in any intersection planning and design. Further, improving safety at rail crossings through maintenance and/or replacement of signaling equipment and gates, as well as redesign of the geometry of crossings where necessary, should be advanced.

Representative projects in the Region include: safety improvements at intersection of Route 252 (Jefferson Road) at John Street/Brighton-Henrietta Town Line Road in Henrietta; the construction of roundabouts at the County Road 10 & County Road 46 and the County Road 4 & County Road 46 intersections in Ontario County.



Diverging Diamond
Image credit: Stratus Imaging

13. Advance recommendations contained in completed UPWP studies as part of highway preventive/corrective maintenance, rehabilitation, and reconstruction projects – Near-Term/Medium-Term

GTC has provided funding for and technical assistance to numerous communities to conduct plans and studies that have integrated transportation and land use planning (e.g., Access Management, and Circulation, Accessibility, and Parking). These plans include recommendations that should be advanced as part of preventive/corrective maintenance, reconstruction and rehabilitation projects.

GTC initiated the Circulation, Accessibility, and Parking (CAP) program to improve livability and economic vitality in villages, city neighborhoods, and hamlets by identifying physical and operational improvements, as well as regulatory changes, to enhance traffic circulation, accessibility, and parking for all transportation system users. Representative projects include lane reconfigurations and/or reductions in the number of lanes and addition of on-street parking and bicycle space – recent examples include East Avenue in the City of Rochester and Phillips Road in the Town of Webster.

Access Management plans seek to proactively manage access between highways and adjacent development to improve efficiency and reduce crashes, mitigating both recurring delay and incident-related (non-recurring) delay without requiring the physical expansion of infrastructure.



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14. Establish a Regional Complete Streets Commitment – Immediate/Near-Term

The transportation network in the Region will become measurably better connected, safer, and more accessible for all users as transportation projects are designed and constructed using complete streets principles. Complete streets are those where all current and projected users of the system are able to safely and conveniently reach their destinations along and across a street or road, regardless of their chosen mode of transportation. This includes pedestrians, bicyclists, transit and school bus riders, people with disabilities, motorists, freight haulers, service personnel, and emergency responders. GTC should develop guidance that will support the adoption and implementation of complete streets policies by member agencies.



Bike Lane in Palmyra

Complete Streets

Recognizing the important quality of life, safety, and connectivity benefits provided by facilities such as sidewalks, bicycle accommodations, and shared-use paths, several communities in the region including the City of Rochester (December 2011), the City of Canandaigua (June 2013), and the Town of Williamson (January 2015), have adopted Complete Streets Policies. These policies can help local communities to advance the statewide goals of the New York State Complete Streets Act, as well as advance the goals and meet the needs of their own residents. Typical Complete Street Policies include the following:

- A vision and requirements for agency-funded activities to ensure that the safety and convenience of all customers are fully considered from planning through construction and operation of the facilities
- An assurance and means to ensure that these considerations are applied to all customers regardless of how they choose to travel (mode) or their abilities
- A recognition that Complete Streets must be sensitive to the context of their surroundings (i.e., a 4-foot shoulder may be sufficient along a rural road but not in a downtown area with high pedestrian traffic and bicycle traffic)
- Codification of the municipality's existing planning and programming processes consistent with complete streets principles
- Coordination with other local initiatives and the NYS Complete Streets Act

15. Design responsively to facility users, their needs, and the facility's current and future context - Ongoing

Context sensitive design recognizes that street and highway projects should be responsive to adjacent land uses, local needs, traffic volumes and speeds, current and projected demand, and should consider incorporating the most up-to-date, widely-accepted design standards to determine the appropriate level and type of treatment necessary.

Given that bicyclists, pedestrians, and transit users need to travel safely between the same origins and destinations as motorists, the need for complete streets is greatest along corridors that connect residential settings with popular and important destinations, including, but not limited to medical, shopping, employment, educational and recreational destinations. Planning and design for these high demand areas should strive to accommodate the needs and characteristics of all users.

The **Inner Loop North Transformation Feasibility Study** would include a review of alternatives along with an associated benefits/costs analysis for highway removal and/or other strategies to reduce impacts of the Inner Loop on the north side of Downtown Rochester and the surrounding neighborhoods. The Finger Lakes Regional Economic Development Council's Upstate Revitalization Initiative (URI) – *Finger Lakes Forward* references redeveloping the Inner Loop and creating future investment opportunities along the northern portion as a Full Implementation Initiative. Means to conduct the alternatives analysis may be secured through the URI process and/or additional transportation funding opportunities at the federal level. Additionally, the Inner Loop North Transformation Feasibility study is wholly consistent with *L RTP 2040* of recommendation **15. Design responsively to facility users, their needs, and the facility's current and future context – Ongoing.**

16. Pursue the retrofit and/or new installation of American with Disabilities Act (ADA)-compliant treatments - Immediate/Near-Term

Improvements to pedestrian facilities, including crosswalks, sidewalks, and curb cuts, need to be prioritized so that they can be addressed not only as part of rehabilitation and reconstruction projects but also as stand-alone improvements. State, county, and local governments that receive federal funding are required to have ADA transition plans. These plans should fully address pedestrian and other transportation considerations that limit mobility and access for persons with disabilities, including access to public transportation. Making these improvements will also increase the attractiveness of walking as a preferred mode of travel for persons of all abilities. GTC staff will provide technical assistance to communities as needed.

17. Continue to support development that considers and integrates transportation needs (e.g., transit-supportive, cluster development, etc.) – Immediate/Near-Term

Local land use decisions are a major determinant of transportation system performance. When the demand created by land uses outstrips the supply provided by transportation infrastructure and services, the potential for delay, crashes, and other negative events increases. To improve understanding among local governments of the impacts their decisions have on the transportation system, GTC has developed and funded technical resources and studies to assist in more fully integrating transportation with land use planning and development. GTC will continue to support such studies and share the results with other communities.



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18. Regularly assess and refine public transportation services based on current and projected needs, demand, and market potential – Ongoing

RGRTA has developed a nationally-recognized route analysis system that allows for better optimization of bus routes and schedules. Routes and schedules are adjusted quarterly based on analyses of trip-level and stop-level ridership, and fare data. RGRTA is currently conducting comprehensive audits of the seven public transportation systems operated outside of Monroe County to identify improvements that maximize efficiency, minimize costs, and provide a positive customer experience. Adjustments to maximize the effectiveness of regional transit service consistent with operational service audits should be conducted. The large increase in the number of seniors and the growing importance of universities and colleges will necessitate a regular review of how route structures are developed and adjusted.

19. Support efficiency, access, and safety improvements along major regional freight corridors - Near-Term/ Medium-Term

A number of plans and studies along major freight corridors have been completed throughout the Region, with location-specific recommendations along the highway, bridge, and railroad networks calling for a variety of efficiency, access, and safety improvements. Traffic calming measures, streetscape improvements, and enforcement of existing speed, weight, noise, and turning restrictions are cost-effective mitigation techniques that help enhance quality of life for residents living along or near freight corridors. Such improvements increase the viability of these corridors by promoting economic development opportunities while minimizing the negative impacts of freight on nearby residential neighborhoods.

Transportation System Management and Operations

Transportation System Management and Operations or TSMO recommendations provide the best opportunity to maximize the efficiency of the current transportation system at the lowest cost. There are three primary initiatives that serve as the basis for the TSMO recommendations in the *LRTP 2040*: Technology, Coordination, and Demand. These initiatives are not mutually exclusive (e.g., there are Technology elements that are critical to and included in Coordination and Demand initiatives and the same is true for Coordination and Demand elements as they relate to Technology and each other).

The majority of delay in the Region is non-recurring and is the result of crashes, weather, and other irregular events. TSMO programs and projects can effectively address non-recurring delay through improved incident response, more efficient deployment of resources to clear snow and ice, and timelier information to travelers. Even in cases where the delay is recurring due to peak demand and fixed capacity, TSMO programs and projects that inform travelers of less costly options or alternative routes that could be more convenient have the potential to reduce demand on the system when use is at its highest level.

TSMO programs and projects can increase safety by providing timely and accurate information to make travelers aware of hazards such as adverse weather conditions, work zones, crashes, and other incidents. By improving incident response and management, TSMO programs and projects can also shorten clearance times for crashes which reduces the likelihood of secondary crashes. This improves safety, reduces resulting delay, and decreases emissions.

Technology

Technology provides multiple opportunities to improve safety, efficiency, and reliability for transportation users while reducing the need for expansion of physical infrastructure or introduction of new services. Utilizing continuously improving information and communication technologies via Intelligent Transportation System (ITS) instrumentation will allow transportation agencies to better manage and operate the existing system, including parking in areas where it is limited. The usefulness of technology in TSMO will increase substantially over the period covered by the *L RTP 2040*.

At present, transportation agencies in the Region emphasize the use of ITS to determine what is occurring on the system and make corresponding adjustments remotely, to the extent possible. In the near future, it is anticipated that ITS can be used to identify not only what *is* happening on the transportation system but what *will* happen. Technology will allow transportation agencies to conduct not only diagnosis but, more importantly, prognosis to proactively address the safety, efficiency, and reliability of the system.

ITS offers the opportunity to improve preservation and maintenance of infrastructure and vehicles by monitoring and reporting on the structural integrity of roadways, bridges, and buses. As part of the TIDE program, RGRTA has outfitted RTS buses with sensors that are able to identify issues with the functioning of buses prior to breakdowns that would inconvenience travelers and may result in choice riders electing not to use public transportation. Using ITS to detect deterioration of transportation system infrastructure that compromises the structural integrity of a facility can allow for appropriate repairs to be undertaken before weight limits need to be enacted or closures are required.



Regional Traffic Operations Center

20. Upgrade regional communications infrastructure to support greater integration of transportation agency operations – Ongoing

The key to fully utilizing technology to improve TSMO is dependent upon the transfer of information among and between personnel and devices that are deployed to monitor travel conditions and make necessary adjustments. This communication can and should be accomplished by an appropriate combination of hardwired and wireless technologies. As new capabilities become available, existing and expanded communications devices connecting instrumentation and TSMO agency staff will be implemented.

Representative projects include the ongoing expansion and upgrades to the regional fiber optic and wireless communications network - which links traffic signals and other ITS elements to each other and to the RTOC - and the expansion of communications and ITS elements along corridors that have been assessed for future deployments, such as the NYS Route 96 corridor in Victor, Ontario County.



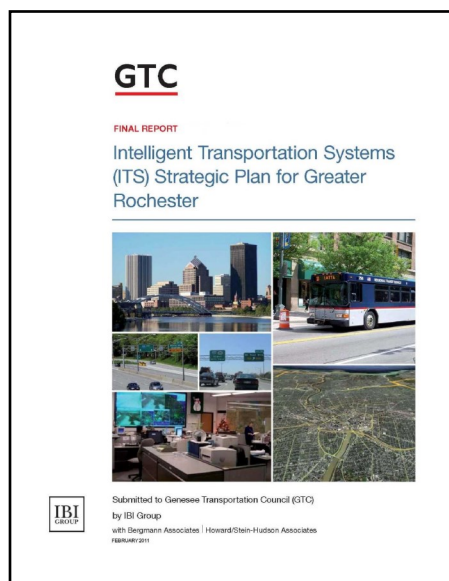
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21. Deploy ITS instrumentation in accordance with the *ITS Strategic Plan for Greater Rochester* – Ongoing

The *ITS Strategic Plan for Greater Rochester* identifies Group 1: Critical Operations Target Areas and Group 2: Areas of Regional Operations Significance.

Group 1 locations include the urban core of Monroe County and the expressways and arterial roads radiating from it. These locations are identified as Critical Operations Target Areas due to traffic volume, access to commercial and employment areas, and their susceptibility to delay from non-recurring events. ITS-enabled safety and mobility improvements in these locations will benefit the greatest number of travelers and volume of freight. The emphasis of ITS deployments in these locations is on infill, upgrade, and integration to maximize system management capabilities.

Group 2 locations include those areas with limited, or without any ITS deployments. The focus of ITS deployments in Group 2 is on expanding the regional ITS network to maximize its effectiveness.



22. Replace ITS instrumentation with next generation technologies as identified in the *ITS Strategic Plan for Greater Rochester* – Ongoing

Many of the ITS instruments currently deployed in the Region are first or second generation equipment. As this equipment ages, it becomes increasingly difficult to maintain. The latest generation technologies that will be available when current ITS instrumentation requires replacement will provide increased management and operation capabilities.

23. Integrate cybersecurity considerations into ITS deployment projects - Ongoing

Cybersecurity measures prevent unauthorized use of and access to the information technology components used to operate ITS field instrumentation. Protecting these assets from intrusion is a critical security function of regional transportation management agencies.

24. Monitor advances in Connected and Automated Vehicles and implement supportive ITS projects as appropriate – Medium-Term/Long-Term

The ongoing evolution of the connected vehicle environment has the potential to dramatically improve transportation system safety, efficiency and reliability, as well as generate substantial economic and environmental benefits. By facilitating vehicle-to-vehicle and vehicle-to-infrastructure communications, wireless technology enables travelers to obtain more and better travel information, maximize vehicle and fuel efficiency, and minimize their exposure to weather and safety hazards. Regional transportation management agencies should be mindful of emerging Connected and Automated Vehicle-supportive technologies and integrate these technologies into their ITS deployments as appropriate.

25. Further expand electronic payment options for on-street, garage, and surface lot *parking* in the City of Rochester, including a pilot electronic toll tag for garages – Near-Term

Currently, electronic payment options (e.g., credit card, online, etc.) for parking in the City of Rochester are available on select city streets and some city-owned garages. These options should be expanded to all city parking facilities, and privately-owned garages and lots should be encouraged to adopt them as well. Offering electronic payment options can improve the efficiency of parking administration and make visiting Downtown Rochester easier as payment is not limited to currency, for on-street meters. The installation of multi-space on-street parking meters that accept both coins and credit cards should be expanded.

26. Investigate establishing a single payment system for multiple transportation-related *mobility* options – Long-Term

Consider implementing a single payment system that provides users with the option of paying for access to multiple modes and services (e.g., transit fares, parking, tolls, bike share, and car share). Implementation of such a system would have to be coordinated on the national and state level as well as locally among multiple stakeholders and facility operators, but could potentially provide a seamless user experience among multiple modes and increase access to a range of transportation services.

27. Install Automatic Vehicle Location (AVL) and weather information instrumentation on public fleets to optimize vehicle routing and serve as floating, real-time data sensors – Immediate/Near-Term

The data provided from AVL technology installed on publicly-owned fleet vehicles such as snow plows and refuse trucks allows operating agencies to optimize routing of these vehicles as they

provide needed services. Improved routing based on this data can make service delivery more efficient, reducing labor and fuel costs and allow the fleet size and mix to be optimized. Installing sensors that provide data on weather conditions can, when combined with data on changes in the locations of vehicles equipped with AVL instrumentation, provide valuable information to the public informing them of delay and hazards. The City of Rochester has equipped its Department of Environmental Services vehicles with AVL technology.



Crossing the street — Downtown Rochester

28. Install appropriate pedestrian ITS instrumentation at identified intersections and crossings to reduce vehicle-pedestrian conflict – Ongoing

Installation of pedestrian countdown signals, audible/tactile devices, and similar ITS elements can improve pedestrian safety and accessibility. Pedestrian countdown signals inform pedestrians of the time allotted for crossing; this is especially important for persons with limited mobility, including seniors. Audible/tactile devices provide guidance and assistance to persons with disabilities as to when it is appropriate to cross streets. All signalized locations in Monroe County are being converted to include countdown pedestrian indications, and audible/tactile



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accessible pedestrian devices are being installed at more than 100 signalized locations to assist persons with disabilities. Near-term deployments should be determined based on the volume of pedestrians and data on vehicle-pedestrian incidents to ensure the instrumentation is deployed where it is most needed.

29. Continue the implementation and expansion of Technology Initiatives Driving Excellence (TIDE) for RTS – Ongoing



TIDE is a comprehensive Advanced Public Transportation Systems (APTS) suite that improves operational efficiency and customer service. The benefits derived from TIDE aid in attracting choice riders and reducing delay on the highway and bridge network. As technology advances, additional capabilities will become available and incorporated as the system matures.



APTS implementation plans based on TIDE experiences and lessons learned should be developed for RTS' regional operations. Automatic Vehicle Location systems are in use on RTS Access and RTS Livingston buses. Additional APTS elements and associated instrumentation will be considered as appropriate on all RTS regional services to improve operational functionality and improve customer service.

30. Introduce Transit Signal Priority (TSP) on heavily traveled RTS routes to decrease travel time and improve reliability – Near-Term

TSP allows buses to signal their arrival at an intersection and, as overall operations requirements allow, receive a green light as they approach to continue through. TSP works best in combination with the consolidation of stops and incorporation of queue jump lanes (i.e., lanes dedicated to transit vehicles at the approach to a signalized intersection allowing buses to jump to the front of queuing cars and trucks). TSP and associated roadway configuration improvements can serve as a precursor to more

robust transit services, including Bus Rapid Transit. The *RTS Signal Prioritization Study* has identified the Lake Avenue (RTS Route 1) and Dewey Avenue (RTS Route 10) routes as the optimal routes to introduce TSP. The introduction of queue jump lanes should be accomplished as part of highway reconstruction projects, as appropriate, and in coordination with RTS.

31. Use the Systems Engineering approach to implement ITS projects. – Ongoing

Systems Engineering considers the entire life cycle of a project, including the design, deployment, operation, maintenance, retirement, and replacement phases. This approach maximizes agency resources and ensures integration among systems and system components (e.g., hardware, software, policies, procedures, and personnel), thereby increasing the probability that ITS projects will be delivered on-time and within budget, and will meet user needs.

Coordination

TSMO programs and projects also include the Coordination of transportation infrastructure and services and the associated relationships among all transportation agencies, including but not limited to NYSDOT and NYSTA, counties, the City of Rochester, and other municipalities. How transportation agencies coordinate their respective activities can maximize the investment of public resources and the delivery of services that clear crashes, address weather-related consequences, and provide connections between public transportation services operated by public and not-for-profit providers. The structure of interagency collaboration between transportation, emergency management, and law enforcement entities is critical to efficient management and operation of the transportation system.

32. Continue federal funding for Regional Traffic Operations Center (RTOC) staffing, including continued 24-hour operations and cross-training of NYSDOT and Monroe County staff – Ongoing

To take full advantage of the capabilities provided by current and future ITS instrumentation, trained personnel need to be available at all times to monitor and process the information provided. Improving interoperability is an important component that can be addressed through cross-training of NYSDOT and Monroe County operators, with the expectation that greater consistency between ITS instruments, software, and associated applications can occur in the future.



HELP Truck

33. Continue federal funding for the NYSDOT Highway Emergency Local Patrol (HELP) Program to decrease delay and increase safety on major highways by providing emergency roadside service to disabled vehicles – Ongoing

The HELP Program is an important initiative in minimizing non-recurring incident-related delay. The program provides assistance to motorists experiencing vehicle problems on major roadways

that, without quick action, will limit capacity and cause congestion. The *NYSDOT-Region 4 Advanced Transportation Management System Local Evaluation Report* found that the HELP Program had one of the highest cost/benefit ratios of any initiative assessed.

34. Develop interagency agreements, such as Regional Concepts of Transportation Operations (RCTOs) and Concepts of Operations, to improve collaboration and coordination – Immediate/Near-Term

Formalized interagency agreements help stakeholders to more efficiently operate and manage their infrastructure and are important to the successful operation of jointly managed ITS deployments. A RCTO provides a shared strategy among transportation agencies representing all modes, law enforcement, and emergency responders to better coordinate system operations and management. Concepts of Operations define a systems' operational requirements and facilitate interagency understanding of project goals. For example, the City of Rochester has developed a Concept of Operations for coordination of ITS operations at the Port of Rochester among City, County, and State agencies.

35. Coordinate relevant training opportunities between transportation, law enforcement, fire and medical, and other agencies to improve incident response, management, and clearance – Ongoing

Clearing crashes as quickly as possible while providing for the safety of emergency responders and law enforcement agents requires significant coordination. The Genesee-Finger Lakes Regional Traffic Incident Management Symposium, held in October 2015, provided technical training for regional law enforcement, first responders, transportation system management agencies, and the local towing industry. This event or a similar training opportunity should be offered in the Region on a regular basis.



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Genesee-Finger Lakes Regional Traffic Incident Management Symposium



36. Support and promote informational programs to reduce distracted driving – Ongoing

Studies have shown that distracted driving is comparable to operating a vehicle while impaired by alcohol or drugs. Traffic safety boards that include transportation agencies, law enforcement, and other organizations should develop and implement educational and enforcement programs to reduce distracted driving.

37. Ensure that public transportation facilities are accessible to all users – Immediate

If reasonable access to bus stops or shelters is compromised (e.g., snow and ice have not been cleared and/or sidewalks are impassable), the viability of public transportation is also compromised. The responsibility for ensuring this access is typically borne by the adjacent property owner or municipality in which the sidewalk is located however, rules vary across municipalities. There should be greater awareness of responsibility for keeping bus stops

fully operational. Sidewalks that provide access to public transportation should be prioritized for sidewalk preservation and maintenance activities.

38. Preserve existing rights-of-way for future transportation uses that may be needed – Ongoing

Existing linear rights-of-way – including active and abandoned rail corridors and utility corridors – that are suitable for transportation purposes should be preserved as corridors for potential future use. When portions of these corridors are used for non-transportation purposes, it is very challenging and often cost prohibitive to reestablish or create a new corridor. The *Regional Rights-of Way Study* (2015) identifies 16 priority corridors that are no longer used for their original intent. Through stakeholder outreach, eight of the 16 corridors were identified as a high-priority. Detailed corridor profiles including potential future uses, associated costs, and preservation strategies were developed for these eight high-priority corridors. Coordination between land owners and agencies will be required to maintain potential future access.

Demand

These initiatives provide users with better and additional information to manage the Demand that is placed on the system. In some cases, technology is the primary enabler of the provision of the information (e.g., text alerts regarding incidents and next bus arrival times, etc.). In other cases, information is provided to travelers on printed materials (e.g., color coordinated wayfinding signage to assist visitors in reaching their destination, marketing fliers promoting a new transportation service, etc.).

Making full and complete information on options and conditions widely accessible allows users to choose how they travel based on their individual needs. Providing access to travel time, route, and cost information for multiple modes (specifically, non-single occupancy vehicles) in a single place permits users to

comparatively assess their full range of options. Doing so via the internet is currently the most effective means for users to adjust their travel choices.

39. Continuously identify ways to increase and improve real-time travel information – Ongoing

Providing real-time travel information is an important component of managing travel demand and getting the most out of existing infrastructure and services. Improved information on travel options via Dynamic Messaging Signs, the proliferation of smart-phones with apps displaying real-time traffic conditions along with transit arrival and departure times, and the ability of transportation agencies to access real-time and historic travel times will lead to better decision making across all modes. Technologies surrounding travel time data are changing in ways that cannot be predicted over the coming decades. Distilling “big data” resources via massive historic travel time datasets into comprehensible snapshots of information will prove challenging for transportation agencies.

40. Promote use of the Greater Rochester Regional Commuter Choice Program (Roceasyride) to provide up-to-date, consolidated information on transportation options and allow for comparative assessment - Ongoing

GTC established Roceasyride in April 2012 as an online service



(Roceasyride.org) where commuters can find other commuters with proximate origins and destinations for carpooling, identify optimal public transportation routes and schedules, and determine preferred bicycling routes. Roceasyride.org provides information and opportunities to save money and reduce emissions via the various non-single-occupancy vehicle travel options available. Use of Roceasyride should be promoted and marketed to increase its overall effectiveness by maintaining the user levels necessary to facilitate relevant matches.

41. Integrate the Greater Rochester Regional Commuter Choice Program (Roceasyride) with the 511NY Program – Near-Term/Medium-Term

The Roceasyride program and 511NY program share common goals. The 511NY program is maintained by NYSDOT and is the state’s official traffic and travel resource. The program is accessible through the internet or by phone, and provides current traffic and weather conditions. It includes a public transportation trip planner, that has carpooling and vanpooling resources. The program is enhanced regularly and should continue to provide relevant, timely information to transportation system users. Integrating these two programs will increase traveler benefits by providing a “one-stop shop” for users to obtain information and assess options for trips originating or ending within the Region.

42. Support integrated/coordinated interchange and arterial signal timing plans – Ongoing

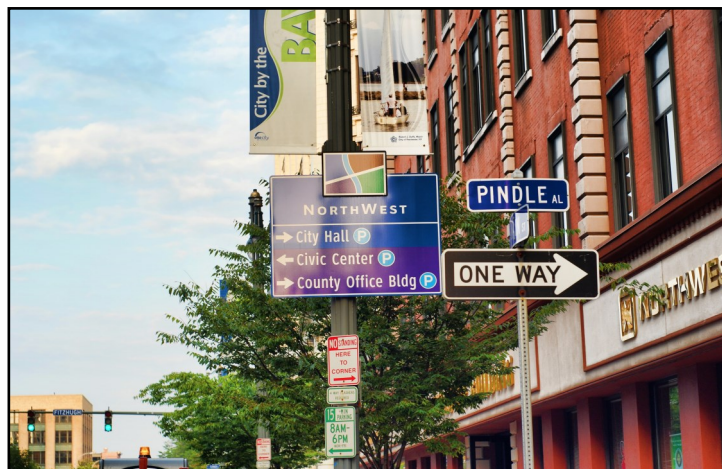
Optimizing signal timing along and between major corridors improves the efficiency of traffic operations, helping to reduce delay and vehicle emissions. The replacement of fixed-time signals with actuated ones (i.e., light cycles change when triggered by traffic detectors monitoring actual demand) allows for quicker, more flexible responses to changing traffic conditions. Both fixed-time and actuated signals can be adjusted remotely from the Regional Traffic Operations Center rather than manually in the field. Traffic signal synchronization along corridors must also include input from agencies whose roadways intersect with the corridor so that the needs of adjacent and parallel facilities are considered.



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43. Improve or install wayfinding signage in business, cultural, and other unique districts as well as in interregional travel facilities – Near-term/Mid-Term

Providing information at key locations is an important element in providing access to specific destinations and can reduce delay and visitor angst. Districts and interregional travel facilities that would benefit from the introduction of new or improved wayfinding signage should assess needs/requirements and then determine an appropriate form of signage that is simple, effective, multi-modal, and aesthetically consistent with the area. Wayfinding signage for and along multi-use trails should also be considered.



Wayfinding signage — Downtown Rochester

44. Implement electronic parking guidance systems – Medium-Term/Long-Term

Electronic parking guidance systems help to maximize the existing supply of parking by increasing the efficiency by which motorists are able to locate an appropriate parking space, be it in a garage, surface lot, or on-street. These systems can be particularly useful during planned events such as concerts, festivals, and sports games. Options for implementing such systems include utilizing

dynamic messaging signs and developing smart phone applications and in-vehicle communication technologies to provide relevant parking information.

Expansion

Based on the identified transportation needs of the Region through 2040, Expansion of the bicycle, pedestrian, and public transportation networks is necessary. The level to which this can occur is limited by the reasonably expected revenues available for investment in the system over the next several decades and the need to preserve, maintain, and better manage and operate the existing system. Accordingly, investments in additional infrastructure and services must build upon the existing system by either increasing connectivity (i.e., bridging gaps) or offering increased access. The objective of these recommendations is to *expand* travel choices available to residents, visitors, and freight – not to replace current options. There are three primary initiatives that serve as the basis for the Expansion recommendations in the *L RTP 2040*: Bicycle and Pedestrian, Public Transportation, and Vehicle and Energy Options.

45. Improve connectivity within and between transportation modes and networks – Ongoing

Gap filling projects should serve multiple modes and infrastructure types when appropriate by connecting sidewalks to bus stops, providing park and ride locations, providing bike-on-bus opportunities, and making convenient connections from multi-use trails to the street network. These connections should ensure accessibility to people with disabilities, and should consider the lifespan of the connected networks taking into account the needs of both current and projected users.

46. Study the feasibility of siting future rail sidings and cross dock facilities at regionally significant locations to attract, promote, and support rail-enabled businesses – Near-Term/Medium-Term

Opportunities may exist for the siting of new rail sidings and cross dock facilities at strategic locations to more efficiently and cost-effectively ship bulk goods. Rail sidings offer direct access to rail-enabled businesses and cross dock facilities allow bulk commodities to be shipped longer distances via rail reducing the dependency on long-haul trucking. Increasing opportunities to ship bulk commodities along rail facilities offers businesses cost savings, lowers vehicle emission rates, saves wear and tear on highway and bridge facilities, and increases rail-enabled economic development and job opportunities.

Bicycle and Pedestrian

Based on current and projected development patterns and trip making characteristics in the Region, expanding the Bicycle and Pedestrian networks offer the greatest opportunity to improve public health, reduce greenhouse gas emissions, and provide additional mobility and accessibility to the majority of residents. Regional highway project proposal criteria, through the TIP, favor reconstruction and rehabilitation projects that add or improve on-street bicycle space and sidewalks versus those that do not. The Region has used federal transportation funds to make a significant investment in planning and implementing a comprehensive regional multi-use trails network that is dedicated to providing an efficient and safe bicycle and pedestrian network for both commuting and recreation. In addition, offering the opportunity for individuals to have access to a bicycle without owning one or having theirs immediately available can also assist in reducing energy use and emissions.

47. Expand and increase the connectivity of the Region's multi-use trail system per the Regional Trails Initiative – Ongoing

The Regional Trails Initiative (RTI), first published in 2002-2004, guides trail development in the Region. The RTI was recently updated in 2016 to account for the considerable progress in “filling the gaps” that has occurred in the 10-plus years since it was completed. Accordingly, investments in expanding the multi-use trails system should focus on the gaps identified in the RTI update as this strategy is expected to best meet current and future demand, and, by addressing the areas of highest existing and anticipated use, maximize the investment of limited resources. In cases where off-road trail alignments are not available, on-street facilities should be implemented if complete streets can be provided along the affected segments.



Trail signage — Town of Ontario



RECOMMENDATIONS

48. Increase the availability of sidewalks along federal-aid eligible highways in major need places (see Exhibit 33) to expand connectivity and access for pedestrians – Ongoing

With the majority of retail, commercial, and civic uses located along major roadways that are eligible to receive federal-aid, the provision of sidewalks is critical to accessing these destinations. Beyond adding them as part of federally-funded highway reconstruction and replacement projects, sidewalks should be improved where their condition deters walking and added, where appropriate, considering the need and type of place. Particular emphasis should be given to closing gaps in network and extending existing sidewalks.



49. Promote Safe Routes to School (SRTS) programs and the availability of technical resources to implement them – Ongoing

SRTS programs promote deliberate efforts to increase the number of children that can safely walk and bicycle to school in all places (e.g., urban, suburban, and rural). By encouraging "active transportation", they complement ongoing community- and school-based programs and activities intended to improve the overall health and wellness of children.

Many SRTS also serve as safe routes to play, doubling their purpose in promoting active lifestyles and reducing the tendency towards increased instances of childhood obesity and diabetes. In addition, SRTS programs can reduce delay during drop-off and pick-up periods. While federal funding exclusively dedicated to SRTS is no longer available, these projects remain eligible under a variety of federal, state, and local funding sources, and some can be implemented at a relatively low cost, providing mobility and health benefits as active transportation.



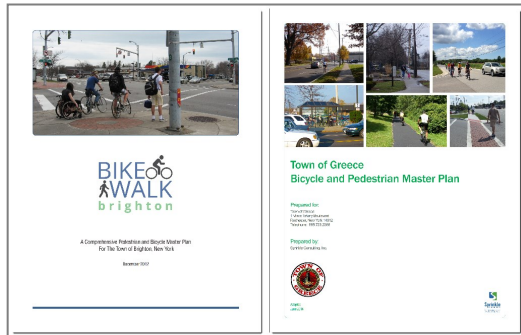
Bikes at Fairport school

50. Ensure that all fixed route buses can accommodate bicycles - Immediate/Near-Term

Bicycle racks on buses promote increased use of bicycling and public transportation by allowing riders to travel further distances to/from the bus stop than if they had to walk. Bicycle racks are currently installed on all RTS Monroe buses and being added to RTS regional services. In all places where fixed-route bus service is available, bicycle racks are a cost-effective means to improving intermodal connections. Bus operators should be trained in the use of these racks and encouraged to assist customers in utilizing them. When upgrading and/or replacing bicycle racks, RTS should look at options to increase their capacity beyond the current two bike limit.

51. Increase the amount of bicycle parking in key places throughout the Region (specifically Urban Cores, Employment Centers, Retail, and Higher Education locations) - Near-Term/Medium-Term

Bicycles provide a low-cost, active means of transportation and are financial assets to both commuter and recreational users. Bicycle use can be discouraged, however, if places to park or store them securely are not available. Short- and long-term bicycle parking should be highly visible, advertised, and located in well-lit areas (preferably with surveillance to deter theft and vandalism). Associated signage should be included wherever appropriate.



52. Assist in the implementation of a regional bike sharing program to expand access to bicycles without requiring ownership - Immediate/Near-Term

The *Rochester Area Bike Sharing Program Study*, completed in March 2015, has determined that a bike sharing program is feasible for the Center City and surrounding areas. The study provides a strategic plan for implementing the program utilizing public, private, and not-for-profit-contributed funding, and administered by a yet-to-be-identified sponsoring organization. As bike sharing programs promote increased use of not only bicycling but also public transportation (by allowing program members to travel further distances to/from the bus stop than if they had to walk), GTC should work with local partners to identify a suitable sponsoring/administering organization and assist in the advancement of the initiative.

Active Transportation Plans

A number of municipal-scale plans supporting bicycling and walking have been completed in the Region in recent years, beginning with the Town of Penfield Bicycle Facilities Master Plan in 2008, the City of Rochester Bicycle Facilities Master Plan (self-funded) in 2011, and Bicycle and Pedestrian Master Plans for the Towns of Brighton and Greece, respectively, in 2012 and 2014. A Bicycle Boulevard Plan for the City of Rochester was completed in December 2015. Bicycle and Pedestrian Master Plans have been completed for the Town of Chili, the Village of Brockport, the Town of Henrietta and are currently underway for the City of Geneva, the Town of Perinton, the Town and Village of Pittsford, and the Town of Irondequoit.

With the exception of the City of Rochester's Bicycle Facilities plan, all these projects were funded by GTC under its UPWP, along with a local cash match or in-kind services from the project sponsors.

These plans facilitate local advancement of bicycle and pedestrian-supportive projects, policies, and programs by providing concept-level planning and design guidance linking the overarching goals of the LRTP with local needs, goals, and capabilities.



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Public Transportation

To effectively serve the needs of the Region through 2040, a fundamental shift in what is considered Public Transportation will need to occur. The fixed-route and dial-a-ride services of RGRTA will need to be supplemented to a greater degree by specialized transportation services supplied by not-for-profit agencies and private providers. Ensuring access for persons with disabilities, seniors, and other transit-dependent populations to medical appointments, employment, and social events will be a major determinant of their independence, quality of life, and the overall livability of the Region.



In 2014, RGRTA conducted a Bus Stop Optimization Study for RTS Monroe. RTS Monroe had approximately 3,400 stops which is comparable to several larger transit systems across the Country. RGRTA found that over time, the use of some bus stops has changed and some stops are no longer ideal or convenient for customers. RGRTA assessed each bus stop against several criteria to identify which stops are underutilized and which stops are not well-suited for customers. RGRTA also identified over 600 critical bus stops that should be kept in place to provide comfort and convenience to a large number of customers. Another factor was to determine optimal spacing along routes so that buses can run more efficiently, noting that too many stops will actually result in poorer service times. As a result of the study, RTS Monroe planned to phase out approximately 25 percent of the bus stops by the end of 2015 with equal proportions in the City of Rochester and Monroe County suburbs. The optimization of bus stops is expected to result in more efficient operations and improved service to customers.

53. Increase the frequency of fixed-route public transportation services where customer demand dictates – Near-Term/Medium-Term

Fixed-route public transportation service supports and is supported by adjacent land uses that provide density in both population and employment. Determinations of when and where to increase frequency of service should consider lower-income residents' employment prospects, retail and commercial businesses' operating hours, and access to medical facilities. There is also potential to increase service via "interceptor routes" (i.e., routes that intersect and provide a minimal layover period) and reduce trip length by eliminating the need to transfer downtown.

54. Construct satellite transit facilities in the City of Rochester and assess their feasibility in Mature and Recent/Emerging Suburbs – Near-Term/Medium-Term

Mixed-use developments are transit-supportive and more attractive to both residential and commercial tenants when serviced by fixed-route public transportation. This interaction can lead to increases in choice riders (i.e., individuals who have a choice to either use public transportation or travel via privately-owned automobile). RGRTA recently developed transit facilities as part of the University of Rochester's College Town development. In addition, a feasibility assessment of the RTS Park and Ride route structure with respect to service to suburban areas through mixed use developments that include a satellite transit facilities has been conducted and has identified suburban locations with the greatest potential for development that supports public transportation use.

55. Explore the feasibility of increased public transportation service across county lines to provide customers with greater access to services and jobs – Near-Term

With RGRTA as the sole public transportation provider in the Region, there are increased opportunities to coordinate transit services across county lines. Through its operating subsidiaries RGRTA should seek to reduce regulatory barriers to inter-county service and explore the potential to provide more efficient service near county boundaries.

56. Explore opportunities to provide service directly to Mount Hope Station from areas with high concentrations of customers, including express service to and from the Downtown Transit Center – Immediate/Near-Term

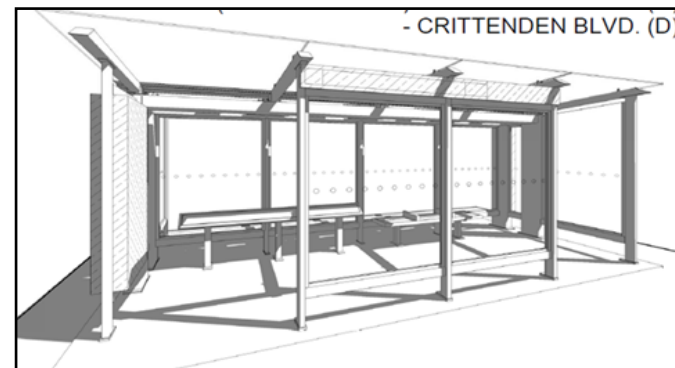
The UR, including its college and medical center, is the largest employer in the Region. The area around the UR has many smaller employers providing services to UR visitors, employees, and students as well as area residents. Several bus routes converge on the UR campus and it is the second busiest location in the RTS Monroe service area. Mount Hope Station is a distributed station concept on the UR campus that provides a higher level of service than typical bus shelters. Opportunities may exist for increased transit service at and near Mount Hope Station.

57. Explore opportunities to provide bus shelters with enhanced passenger amenities that serve large trip generators – Medium-Term

In order to attract choice riders, bus shelters serving large trip generators should offer enhanced amenities that provide additional security, comfort, and information. Such amenities would make taking the bus a more attractive option and improve the experience for all riders. Representative project: Such amenities are currently being implemented as part of Mount Hope Station.

In early 2011, the UR announced the selection of a private firm as prime developer for its proposed College Town. The project is a community-oriented development containing retail, residential, office, and recreational uses. College Town represents a major economic development opportunity for the community. The UR medical center is the second most active destination in the RTS Monroe system. In anticipation of this development, RGRTA began discussions with the University and its chosen developer on including the Mount Hope Station bus facility near the center of the medical facilities.

RGRTA continued discussions with the University to structure a transit component to serve the many thousands of people who now and in the future will travel to this area daily for employment and health services. The plan has evolved to a distributed station concept with heated transit stations installed around the medical center and college campus that include real-time bus arrival information in the form of ATIS signs. Given the level of demand across the entire UR campus, a distributed station concept will provide a higher level of service for customers than a larger, centralized station could.



Rendering of a station at University of Rochester's College Town.
Image credit: RTS

RECOMMENDATIONS

58. Continue to support mobility management initiatives that coordinate services of public, not-for-profit, and private transportation providers for the elderly, low-income individuals, and people with disabilities – Immediate

Mobility management involves meeting individual needs through the variety of services offered by multiple transportation providers. County- and regional-level mobility management initiatives, including information sharing, inter-county operations, and scheduling and ride matching technology improvements, offer opportunities to improve the effectiveness of existing services and meet increasing needs.



In the near-term, efforts should focus on supporting and enhancing county-level initiatives already underway, with region-wide coordination between counties as a longer-term goal. This bottom-up approach will allow a gradual increase in transportation system coverage as participating agencies share knowledge and build the capacity to implement mobility management programs.

59. Implement vanpooling services as a demonstration project – Immediate/Near-Term

A Vanpool allows groups of people (ideally consisting of groups of five to 12 people) to share a ride from a common origin to a common destination, typically for work commuting purposes. This allows people to share the cost of fuel and operating costs and realize individual commuting cost savings. Vanpools help bridge the gap to employment sites, typically in the suburbs or rural areas, that may be underserved by public transit. The *Rochester Area Vanpool Feasibility Study* determined that vanpooling is feasible in the Region and recommended that RTS implement demonstration vanpools to determine their viability.

60. Explore the feasibility of High-Capacity Transit (HCT) to serve the urban core and surrounding suburbs – Long-Term

Compared to traditional fixed-route bus service, HCT (e.g., bus rapid transit, streetcar, light rail) can provide a higher level of service for a greater number of passengers in a particular corridor by offering frequent service with fewer planned stops. Depending on the selected service model, HCT may also operate along a dedicated right-of-way for all or part of its route. Over the next 25 years potential alignments and development patterns that would allow for HCT service to be realized in the Region may emerge.

Vehicle and Energy Options

To address energy, air quality, climate change, and cost concerns, the migration of energy sources for public fleets from gasoline and diesel to domestically-produced, cleaner options need to be accelerated. The expanded availability of alternative energy sources for vehicles is largely dependent on actions at the national level but options that are immediately available are fully considered as part of this initiative. The establishment of alternative fuel dispensing and electric vehicle recharging infrastructure for public fleets can spur the use of more sustainable energy sources by other public operators, as well as private automobiles, creating private sector demand to provide the service. Given the global nature of crude oil pricing and recent volatility in the market, it is important to diversify energy sources to avoid being overly dependent on any single source.

61. Encourage and support the expanded use of more energy efficient, alternative fuel vehicles (e.g., electric and hybrid) and retrofitted vehicles in public and private fleets – Ongoing

Encouraging the use of cleaner, more energy-efficient vehicles by providing information on their capabilities and limitations, and

financially supporting their purchase for use in public fleets (including school buses), can significantly increase their use in both public and private sectors. GTC has and continues to partner with Genesee Regional Clean Communities, including providing funding through the TIP, to incentivize the replacement of gasoline and diesel vehicles with those that are more energy efficient and environmentally friendly, as well as retrofit existing vehicles to reduce emissions.

Representative projects include: funding to retrofit CSX Transportation switcher locomotives with more efficient engines that increased operating efficiencies and significantly reduced emissions in and around the Goodman Street Yard, improving air quality in the surrounding neighborhood and the purchase of plug-in hybrid electric vehicles for the City of Rochester.

62. Assess the feasibility of a regional car sharing program to expand access to automobiles without requiring ownership - Immediate/Near-Term

Many individuals want to enjoy the benefits of a private vehicle but may not have enough of a need to warrant the costs of ownership. In addition, lower-income individuals may not be able to afford a vehicle but would benefit from access to one for trips not served by other modes. Individuals who participate in car sharing programs typically have a desire to lower overall transportation costs, drive less, and use other modes more frequently. Additionally, many public agencies do not use or need passenger vehicles on a full-time basis (excluding police and emergency responders). Car sharing may allow these agencies to reduce vehicle purchase and maintenance costs while allowing for access when needed.

63. Increase the number of Truck Stop Electrification (TSE) facilities to reduce idling emissions – Immediate/Near-term

Operators of long-haul trucks often idle their vehicles when stopping overnight to provide heating or cooling in their cabs and to maintain the charge of vehicle batteries while using appliances leading to increased diesel emissions. Expanding the number of facilities that provide TSE options can improve air quality, reduce fuel use, and decrease maintenance costs. The New York State Energy Research and Development Authority (NYSERDA) may have funding opportunities in the future to study the feasibility of and/or assist with siting TSE facilities. GTC should explore partnerships with NYSERDA if an opportunity arises.

Illustrative Projects

The recommendations discussed above will be advanced with the reasonably expected revenues available through 2040. In addition, other projects have been identified that the Region would pursue implementation if and when additional funding becomes available. These projects are provided for illustrative purposes and represent actions above and beyond those that can reasonably be expected to be accomplished given limited federal resources. Financial partnerships with private and not-for-profit entities should be explored; specifically, those that would directly benefit from the projects. Each of these projects have been discussed and vetted through the regional transportation planning process and are considered worthy of implementation if sufficient additional revenues were to be made available for their advancement. A timeline for implementation is not given as these projects are unable to be achieved with the reasonable expected revenues as part of the fiscally constrained plan. If and when funding becomes available timelines can be established.



RECOMMENDATIONS

64. NYS Route 390/I-490 Interchange/Lyell Avenue Interchange

The NYS Route 390/I-490 Interchange/Lyell Avenue Interchange is the FLREDC's Infrastructure and Transportation Workgroup's 2014 Highest Priority Transformational Project and is identified as a near-term recommendation in the 2012, *Regional Goods Movement Strategy*. The Interchange serves approximately 200,000 vehicles a day – the daily equivalent of the Brooklyn Bridge and the Manhattan Bridge combined or the entire population of the City of Rochester. The interchange suffers from peak-period congestion, higher than average crash rates, and deteriorating facilities that are leading to higher operating costs. The Lyell Avenue Interchange with Route 390 serves the southern end of Eastman Business Park and the Rochester Technology Park – both freight generators and major employment centers. The FLREDC's highest economic development priority remains fully revitalizing the Eastman Business Park, and the congestion and access issues surrounding the Lyell Avenue/Route 390 Interchange is a limiting factor to redevelopment. This project would address safety concerns, current and future capacity issues, and operational constraints over four phases at an estimated total cost of \$157 million. The replacement of the Lyell Avenue bridge over I-390 and the realignment of the northbound exit ramp is already funded.

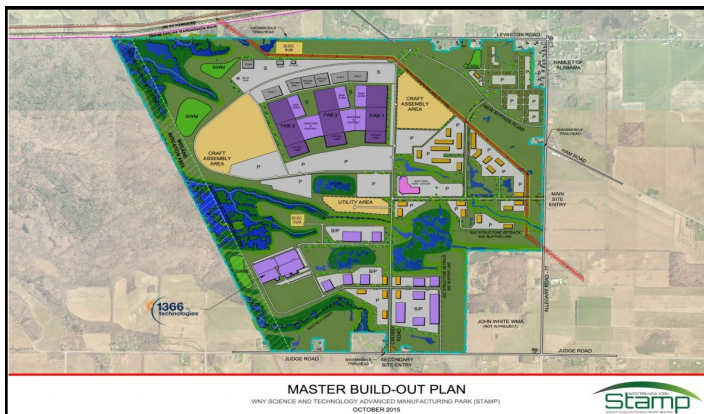


Image credit: <http://wnystamp.com/>



Rendering of NYS Route 390/I-490 Interchange/Lyell Avenue Interchange

Image credit: 2014 FLREDC Report

65. Western New York Science and Technology Advanced Manufacturing Park (STAMP) - Infrastructure and Transportation Improvements

The STAMP Infrastructure and Transportation Improvements is identified as by the FLREDC as a 2014 High Priority Transformational Project. The 2012, *Regional Goods Movement Strategy*, previously identified improving access to regional priority economic development sites, including the STAMP site and the Buffalo East Technology Park located in nearby Pembroke, as a near-term recommendation. The STAMP site is a shovel-ready 1,250-acre mega site currently under development located five miles from the NYS Thruway in Genesee County that will support nanotechnology and advanced manufacturing – potentially creating thousands of jobs. The installation of infrastructure to support the first advanced manufacturing tenant is underway. In order to accommodate increased freight traffic to the site, transportation infrastructure improvements are needed along NYS Route 77 between NYS Route 5 and NYS Route 63 in Genesee County. Additional funding through the FLREDC will be sought to continue roadway improvements as the site is further developed.

66. Support Transportation and Infrastructure Improvements surrounding Eastman Business Park

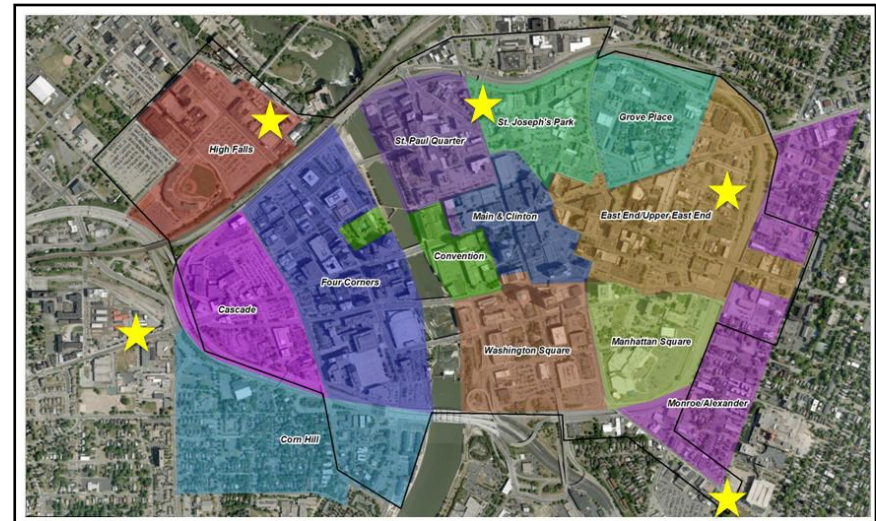
Supporting the revitalization of Eastman Business Park has remained the FLREDC's highest priority since the inception of the council and firmly supports Rochester's past and present as an industrial center. The Eastman Business Park, currently home to Kodak and a number of technology firms, is located in the City of Rochester. It is a 1,250 acre industrial park with on-site generation capability for utilities, including a 125 megawatt electric power station, and a wastewater treatment facility. The park also includes 17 miles of railroad track. The NYS Route 390/I-490 Interchange/Lyell Avenue Interchange (recommendation #64) supports the development of Eastman Business Park by alleviating bottlenecks associated with accessing the site. Additional required infrastructure and transportation system improvements should continue to be supported to redevelop the site.

67. Establish a Center City Circulator Service to serve daily commuters, visitors, and tourists

The circulator service would be designed to serve the needs of morning and evening peak period commuters, daytime workers and tourists, and evening/late-night visitors and tourists. The service would link major employment destinations, entertainment venues, and parking in Downtown Rochester, extending into the East End, High Falls, and Cascade districts. At present, it is recommended that this service initially utilize buses that could be purchased for \$1.5-\$1.75 million and be operated for \$2-\$3 million per year in current dollars. The feasibility of converting the service to modern streetcars or some other fixed-guideway system should be considered based on ridership and continued growth Downtown.

68. Support efforts to establish high-speed passenger rail service on the Empire Corridor

Improved passenger rail service between Buffalo and Albany (with connections to Toronto and New York City) that is faster and more reliable than current Amtrak service should be provided as it offers the opportunity to increase connections within the larger mega-region. As part of this, the Rochester Intermodal Transportation Center (i.e., Downtown Train Station) is being built and the development of a station in central Wayne County should be considered. To be feasible, this service must save time for existing riders, attract new riders from other modes, and not interfere with freight operations. NYSDOT has undertaken planning for proposed higher-speed passenger rail service along the Empire Corridor. Once the associated corridor-wide Environmental Impact Statement is drafted, the Region will be able to consider whether the proposed service meets future transportation needs.



Center City Circulator Study Area

