MOVING FORWARD 2050 UPDATE

A Regional Transportation Plan for Buffalo Niagara

May 2023

GBNRTC

Greater Buffalo Niagara Regional Transportation Council

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Greater Buffalo Niagara Regional Transportation Council

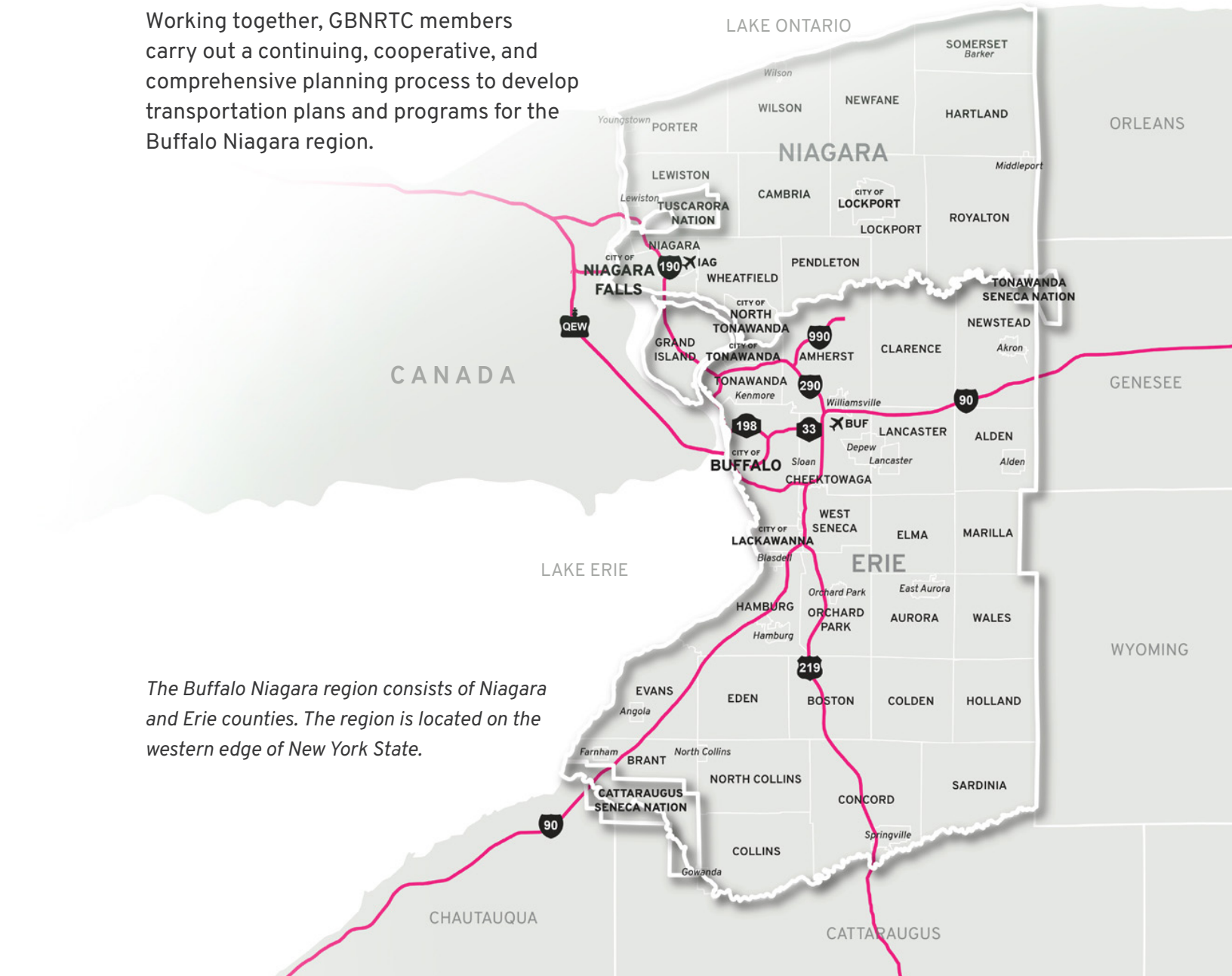
The Greater Buffalo Niagara Regional Transportation Council (GBNRTC) is a partnership of local and state governments working together to make decisions about transportation planning in the Buffalo Niagara region.

The Empire State Development Corporation, the Buffalo Niagara Partnership, and the Seneca Nation of Indians serve as Regional Strategic Stakeholders.

Working together, GBNRTC members carry out a continuing, cooperative, and comprehensive planning process to develop transportation plans and programs for the Buffalo Niagara region.

GBNRTC Member Agencies

- City of Buffalo
- City of Niagara Falls
- Erie County
- Niagara County
- Niagara Frontier Transportation Authority
- New York State Department of Transportation
- New York State Thruway Authority



The Buffalo Niagara region consists of Niagara and Erie counties. The region is located on the western edge of New York State.

We would like to acknowledge the land on which much of the Buffalo Niagara region is located, which is the territory of the Seneca Nation, a member of the Haudenosaunee/Six Nations Confederacy. This territory is covered by The Dish with One Spoon Treaty of Peace and Friendship, a pledge to peaceably share and care for the resources around the Great Lakes. It is also covered by the 1794 Treaty of Canandaigua, between the United States Government and the Six Nations Confederacy, which further affirmed Haudenosaunee land rights and sovereignty in the State of New York. Today, this region is still the home to the Haudenosaunee people, and we are grateful for the opportunity to live, work, and share ideas in this territory.

Tribal Nations

Federal regulations state that when the Metropolitan Planning Areas includes Tribal lands, the MPO shall appropriately involve the Tribal government(s) in the development of the Metropolitan Transportation Plan (MTP). Some of the advantages of this involvement include:

- Build stronger relationships and trust
- Increased understanding of issues facing Tribal Nations
- Assistance in defining a future vision for the region
- Improved understanding of the MTP
- Participation in the identification system needs/new projects
- Opportunity to comment on projects before construction begins
- Avoidance of potential impacts to sensitive and important resources
- Review draft documents and planning studies
- Data assistance and sharing

Seneca Nation of Indians

Seneca Nation is a federally recognized Native American Tribe. It functions as an autonomous and sovereign nation with a total enrolled population of 8,469 persons. Its land base consists of five non-contiguous territories geographically surrounded by Western New York representing over 84 square miles.

SEVEN GENERATIONS

THOSE WHO HAVE PASSED

GRANDPARENTS

PARENTS

YOU

CHILDREN

GRANDCHILDREN

THOSE YET TO BE BORN

Seneca Nation Territories include:

- The Cattaraugus Territory (Ga'dägësgëö') is approximately 40 miles south of Buffalo, New York - forming the southern limit of the Greater Buffalo Niagara metropolitan planning organization (MPO)—at the boundary of Erie, Chautauqua,and Cattaraugus counties. It consists of 22,013 acres, generally following along 17 miles of Cattaraugus Creek to its confluence with Lake Erie.
- The 7-acre Niagara Falls Territory (Josgö'sëhdöh) was acquired in 2001 and converted into a class III gaming operation. The property is bounded by Niagara Street, 3rd Street, Rainbow Boulevard and John B. Daly Boulevard.
- The territory is conveniently located two blocks from the Robert Moses Parkway, one of the major routes in and out of the city, and within three blocks of the famed American Falls, which attracts an estimated 3 million visitors annually.
- The 9-acre Buffalo Creek Territory (Dejohšyogë:h) was acquired in 2005 with the full-service Buffalo Creek Casino constructed in 2010. Bounded by Perry Street, Michigan Avenue, South Park Avenue, and Mervin Street, the property is within a quarter mile of the newly revitalized Canalside development along Buffalo's waterfront. The territory is situated between I-90 NY State Thruway and State Route 5 along the coast.

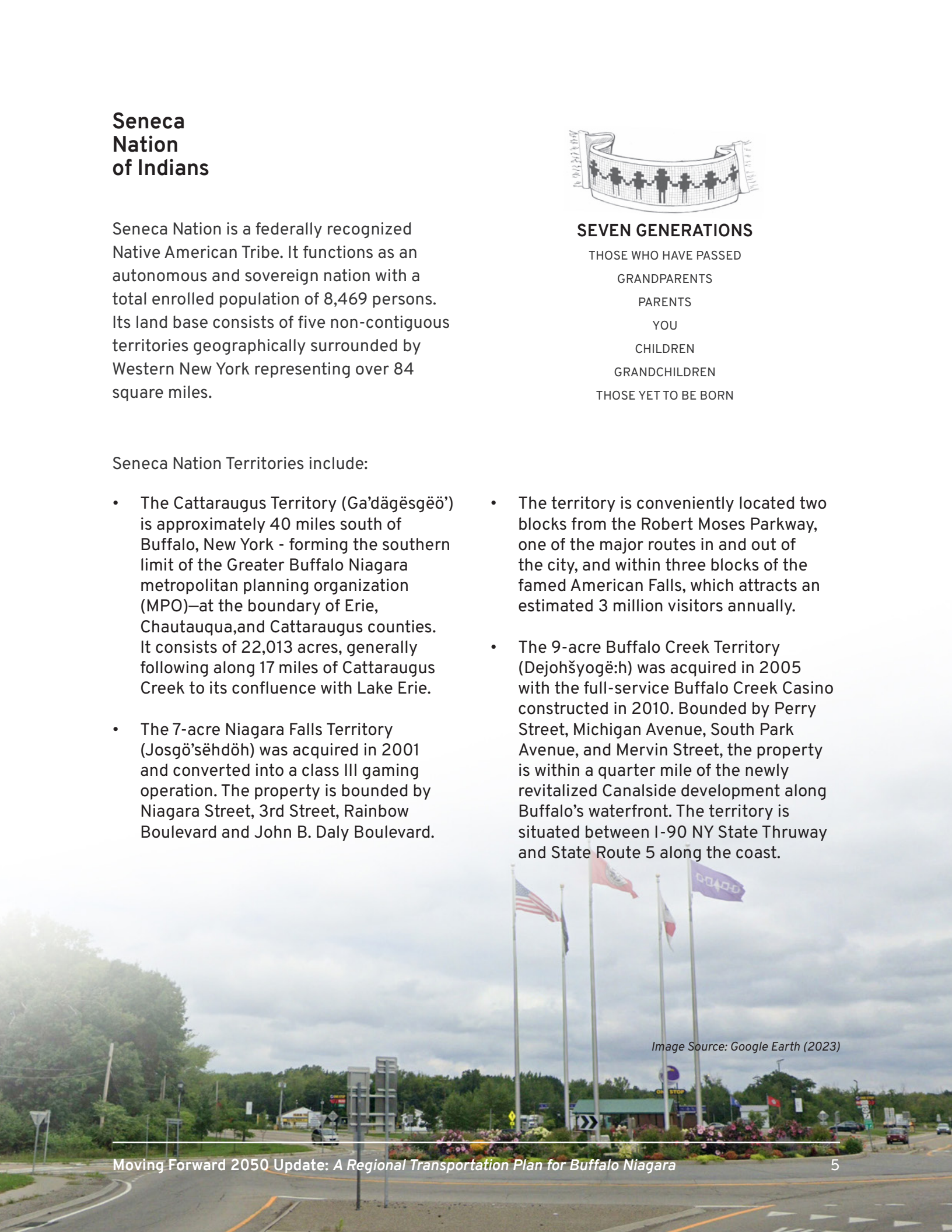


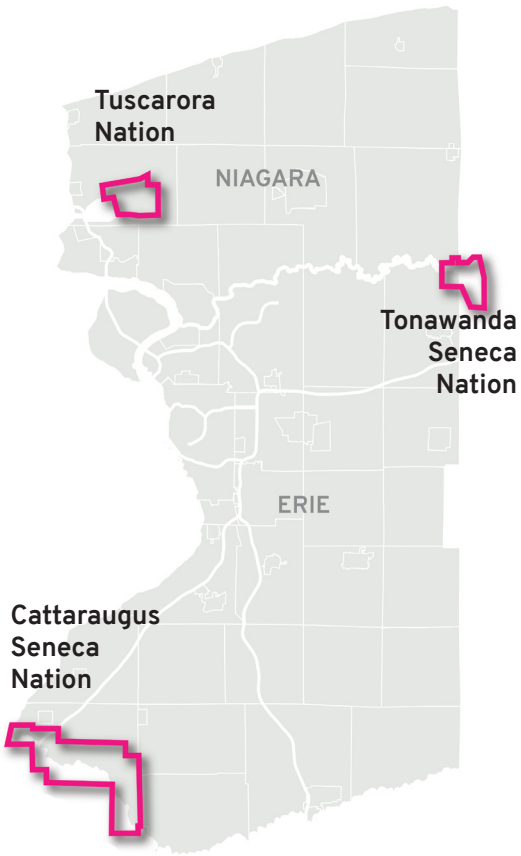
Image Source: Google Earth (2023)

Tonawanda Seneca Nation

The Tonawanda Indian Reservation (Ta:nöwöde') is an Indian reservation of the Tonawanda Seneca Nation located in western New York, United States. The band is a federally recognized tribe and, in the 2010 census, had 693 people living on the reservation. The reservation lies mostly in Genesee County, extending into Erie and Niagara counties. It is bordered by the Towns of Pembroke, Newstead, and Royalton.

Tuscarora Nation

The Tuscarora Reservation (Nyučirhé'ę) is an Indian reservation in Niagara County, New York. The Tuscarora Reservation is home to Tuscarora Nation and their Iroquois relatives and guests. The population was 1,152 at the 2010 census. The Tuscarora are a federally recognized tribe. According to the United States Census Bureau, the Indian reservation has a total area of 9.3 mi2 (24.0 km2), all land. The reservation is located northeast of Niagara Falls, New York. It is surrounded by the Town of Lewiston.



Mt Hope Road on the Tuscarora Reservation. Image Source: Google Earth (2023)

Executive Summary

The Greater Buffalo Niagara Regional Transportation Council (GBNRTC) is pleased to share Moving Forward 2050, the region's Metropolitan Transportation Plan (MTP).

This MTP (published in Spring 2023) is the strategic document that underpins planning of the region's transportation infrastructure, and has been developed in consultation with key stakeholders in the region as well as input from the public.

MTPs are updated every five years, and much has changed since the previous MTP was prepared in 2018.

People

The 2020 Census revealed that the Buffalo Niagara region gained population in the 2010s – for the first time in many decades. Moving Forward 2050 therefore includes a full refresh of the region's demographic profile, including new population forecasts out to year 2050.

Funding Landscape

The 2021 Bipartisan Infrastructure Law (BIL) brings the largest increase in a generation to upgrade the nation's transportation infrastructure. For the Buffalo Niagara region, the available funding out to year 2050 is now projected to be $21 billion (up from the $13B projected in the 2018 MTP). Some of these new resources will be used for strengthening the region's state-of-good-repair activities on roads, bridges, trailways, and transit facilities – however BIL also brings new emphasis on leveraging federal transportation resources to advance Equity and Social Justice goals, as well as tackling Climate Change. Additionally, BIL introduces a new set of discretionary funding programs with the potential to deliver transformational change – but which are competitive and will require agencies in the Buffalo Niagara region to be strategic in their pursuit of the new funding opportunities.

Pandemic

Covid-19 was a major shock to social and economic life in the Buffalo Niagara region, first with lockdowns and "stay-at-home" policies, followed by recovery into today's "new normal". Lasting impacts include increases in remote work and online shopping (and the logistics, warehousing, and trucks required to make all the deliveries), while transit ridership remains below pre-pandemic levels (as is the case nationally).

Reconsidering Transportation Infrastructure

GBNRTC and partners are actively engaged in rethinking the region's legacy highway infrastructure, much of which is at the end of its useful life, and some of which caused harm including severing neighborhoods. GBNRTC's commitment includes the high-profile Region Central initiative (rethinking the Scajaquada Expressway Corridor) and the NYS Route 33, Kensington Expressway Project as well as planned future studies of how to "right-size" other highway facilities facing similar issues.

Technology

Technology increasingly permeates every aspect of life in the region, and the transportation system is no exception. Both public- and private-sector entities have made investments in electrification and information technologies, including connected and automated vehicle technologies, that will continue to change the experience of traveling in the region. This MTP includes increased funding for technology initiatives to enhance the region's transportation system, including a new plan to optimize the region's traffic lights.

Sustainability

GBNRTC is strengthening its commitment to sustainability, through initiatives including the Bicycle Master Plan and Regional Greenway Trails Network. GBNRTC has also enhanced our technical capabilities to simulate emissions from the region's transportation system – allowing us to better understand the impacts of prospective investments on greenhouse-gas emissions and make evidence-based policy decisions.

This new MTP aims to leverage the region's transportation planning to support regional growth and development objectives, and improve quality of life for all residents and visitors.

GBNRTC welcomes feedback from stakeholders and members of the public at any time.

Please visit us at www.gbnrtc.org to get in touch.

MOVING FORWARD 2050 UPDATE

The Process

Metropolitan transportation plans do much more than improve transportation, they give regions an opportunity to leverage transportation investments to achieve goals for their economy, environment and quality of life.

This Moving Forward 2050 update takes a holistic look at where we are and where we are headed to get us to our shared vision for the region's future. This Plan provides a framework to accomplish the goals we set for our economy, communities and environment. As we implement these strategies, we continually reassess our progress and adjust our approach through an adaptive planning process.

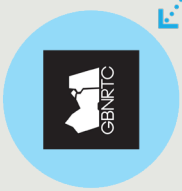
Congress and U.S. Department of Transportation

Establish federal policies via laws and regulations

The U.S. Congress drafts and enacts surface transportation "authorization bills," which is how Congress revises existing laws, establishes new federal transportation policies, and ***"authorizes" the level of funding that will be available*** *over a period of several years.*

State Departments of Transportation, **MPOs**, and Transit Agencies

GBNRTC is our region's MPO



Update Buffalo Niagara's Metropolitan Transportation Plan every five years.

Coordinating with local planning efforts

Build off of One Region Forward which translated the shared values of over 160 existing local plans into a vision for our region's collective future. Look to other important regional strategies expressed in the ***WNY Sustainability Plan and Regional Economic Development Council****, as well as local plans, for recommendations and implications that shape the ways in which we will improve our region's transportation system.*

Engaging the public and local stakeholders

Develop a collaborative and comprehensive Public Participation Plan to encourage public and stakeholder involvement in the development and update of the MTP and planning process.

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The following series of appendices provide background material in support of the main chapters. These items may be located at www.gbnrtc.org/draft-movingforward2050update.

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Appendix B	Glossary of Terms
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CHAPTER 1

About this Plan Update

A Metropolitan Transportation Plan (MTP) is a region's primary tool for laying out significant, long term improvements in their transportation system. Metropolitan Planning Organizations (MPOs) like the Greater Buffalo Niagara Regional Transportation Council (GBNRTC) are required to develop MTPs to allocate federal, state and local dollars to transportation projects across the region.

Image Source: Google Earth (2023)

What is a Metropolitan Transportation Plan?

As the Metropolitan Planning Organization (MPO), the GBNRTC is responsible for developing a metropolitan transportation plan (MTP) for our region that reflects both regional needs and local concerns.

The MTP serves a number of purposes. It provides a vision of the region's future growth and development, identifies regional transportation needs for future transportation improvements and services, and provides guidance and direction for infrastructure investments in the region. The plan sets the foundation and priorities for the distribution of federal transportation funds and serves as the framework for the development of the Transportation Improvement Program (TIP), the capital program of all federally funded transportation projects in the region.

Federal regulations require that the GBNRTC update the region's metropolitan transportation plan every five years to determine its consistency with current trends and conditions and to maintain at least a 20 year planning horizon.

This document serves as an update to Moving Forward 2050, the metropolitan transportation plan for Erie and Niagara Counties adopted by the GBNRTC in May 2018. It keeps our region in compliance with federal legislation and eligible for federal transportation dollars. Like its predecessor, the Moving Forward 2050 update aims to use transportation investments to strengthen communities and focus growth where we already have infrastructure, create economic development, and support workforce access. The Plan also looks at ways to improve mobility using technology, and to protect our natural environment by using sustainable materials and innovative design features.

One Region Forward, a federally-recognized Regional Plan for Sustainable Development, created a new story for our region's future rooted in shared community values. In the process of engaging more than 700 organizations and thousands of citizens through One Region Forward, we learned what we as a region want for our transportation system in broad terms.

The original Moving Forward 2050 built upon One Region Forward, identifying specific transportation policies, strategies, and investments that will help us achieve the region's goals. This Plan update continues to be the foundation that will guide how we implement the future we want to see.

Metropolitan Planning Organizations (MPOs) update MTP plans every five years.

MTPs allocate how regional transportation projects are funded through federal, state and local dollars.

The planning process brings together people from different backgrounds and areas of expertise to share ideas.

Since adoption of the 2018 Plan, the Bipartisan Infrastructure Law was passed and is the largest long-term investment in our infrastructure and economy in our Nation's history. It provides $550 billion nationally over fiscal years 2022 through 2026 in new Federal investment in infrastructure, including in roads, bridges, and mass transit, water infrastructure, resilience, and broadband. This means more funding to the region for both system preservation and system enhancements of our transportation network.

A cyclist riding around Peace Circle in Washington, DC. Photo by Sandy Torchon (www.pexels.com).

Metropolitan Transportation Plan - Transportation Improvement Program Linkage

The Transportation Improvement Program (TIP) is a priority listing of all federally funded transportation projects programmed for implementation during a five-year period and is consistent with the goals and objectives defined in the Metropolitan Transportation Plan.

The GBNRTC TIP, updated every three years, reflect those projects of highest priority based on need, local desires, long-range plan conformity and funding availability. The current TIP covers the period from November 1, 2023 through September 30, 2027 and includes highway, transit, bicycle, pedestrian, and demand management and air quality projects, as well as transportation studies and programs within the Buffalo Niagara Region.

Under federal regulations, the TIP must reflect the investment priorities established in the current Metropolitan Transportation Plan. To learn about ways to better align the goals and objectives of the MTP and TIP projects, GBNRTC member representatives and staff participated in a FHWA sponsored virtual workshop series in June 2021. The workshops focused on how to develop competitive transportation projects for the TIP that align with the Metropolitan Transportation Plan.

The GBNRTC TIP project submission process was updated and a new project submission form and scoring system were developed that required project sponsors to consider how each project submission related to the following criteria:

- MTP goals
- System performance
- Transit accessibility
- Bicycle/pedestrian accommodations
- GBNRTC's regional bicycle plan
- Business attraction and retention
- Social equity including Areas of Persistent Poverty (>20%) and regionally defined Communities of Concern

The more points that a project scored, the better the MTP-TIP linkage was determined to be. From the initial screening of candidate projects, the following types of projects typically received a "High" MTP Alignment ranking:

- Transit projects
- Projects located on main streets or thoroughfares
- Projects that included elements to increase multi-modal options
- Projects in Communities of Concern and Areas of Persistent Poverty

GBNRTC will continue to evaluate and revise the process as part of future MTP and TIP development cycles.

Key Elements of this Plan Update

Federal Planning Emphasis Areas	*Chapter 1*
Updates to demographic, land use and transportation conditions to reflect the most current data available.	*Chapter 3*
Reaffirms the vision and goals, which guide the development and implementation of the metropolitan transportation plan.	*Chapter 4*
Includes a System Performance Report to provide key system information to determine the progress towards achieving goals and objectives.	*Chapter 4*
Updates to the financial plan based on anticipated funding available to the region to implement the metropolitan transportation plan projects.	*Chapter 5*
An inclusive participation process to ensure transparency and provide opportunities for engagement in the planning process.	*Appendix D*
Federal planning requirements as specified in the latest federal transportation legislation, the Bipartisan Infrastructure Law and how the Plan meets those requirements.	*Appendix F*
Air Quality Conformity documentation.	*Appendix E*

Federal Planning Factors

According to regulations, "the degree of consideration and analysis of the factors should be based on the scale and complexity of many issues, including transportation system development, land use, employment, economic development, human and natural environment, and housing and community development.

As the MPO, the GBNRTC, carries out a continuous, cooperative, and comprehensive planning process that addresses ten federal planning factors.

Per federal regulations, the federal planning factors are:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- Increase the safety of the transportation system for motorized and non-motorized users.
- Increase the security of the transportation system for motorized and non-motorized users.
- Increase accessibility and mobility of people and freight.
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation.
- Emphasize preservation of the existing transportation system.
- Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
- Enhance travel and tourism.

Planning Emphasis Areas

With continued focus on transportation planning the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) Offices of Planning jointly issued the 2021 Planning Emphasis Areas (PEAs). These 8 PEAs provide a framework for the GBNRTC planning processes including the development of the 2050 MTP update.

Tackling the Climate Crisis: Transition to a Clean Energy, Resilient Future

Identifying the barriers to and opportunities for deployment of fueling and charging infrastructure, evaluating opportunities to reduce greenhouse gas emissions by reducing single-occupancy vehicle trips and increasing access to public transportation, shift to lower emission modes of transportation, and identifying transportation system vulnerabilities to climate change impacts and evaluating potential solutions.

Equity and Justice40 in Transportation Planning

Executive Order (EO) 14008, "Tackling the Climate Crisis at Home and Abroad" was signed creating a government-wide "Justice40 Initiative" that aims to deliver 40 percent of the overall benefits of relevant federal investments to disadvantaged communities. Through the implementation of this Administration priority, the Department will develop a method to identify disadvantaged communities and benefits for Justice40-covered programs, consistent with guidance from the Office of Management and Budget (OMB) and relevant statutory authorities.

The Justice40 Initiative is also aligned with the goals of EO 13985, "Advancing Racial Equity and Support for Underserved Communities through the Federal Government," and will be implemented as part of the Department's broader equity agenda.

Until such time when further guidance is provided, agencies should consider using, as appropriate, the following indicators of disadvantaged communities to implement the goals of the Justice40 Initiative utilizing existing data sources and indices that are currently used by programs serving low income, vulnerable, and underserved communities:

Community:

Agencies should define community as "either a group of individuals living in geographic proximity to one another, or a geographically dispersed set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions."

Disadvantaged:

Agencies should consider appropriate data, indices, and screening tools to determine whether a specific community is disadvantaged based on a combination of variables that may include, but are not limited to, the following:

- Low income, high and/or persistent poverty.
- High unemployment and underemployment.
- Racial and ethnic residential segregation, particularly where the segregation stems from discrimination by government entities.
- Linguistic isolation.
- High housing cost burden and substandard housing.
- Distressed neighborhoods.
- High transportation cost burden and/or low transportation access.
- Disproportionate environmental stressor burden and high cumulative impacts.
- Limited water and sanitation access and affordability.
- Disproportionate impacts from climate change.
- High energy cost burden and low energy access.
- Jobs lost through the energy transition.
- Access to healthcare.

Complete Streets

A complete street is safe, and feels safe, for everyone using the street. The goal is to provide an equitable and safe transportation network for travelers of all ages and abilities, including those from marginalized communities facing historic disinvestment. Complete Streets approaches vary based on community context. They may address a wide range of elements, such as sidewalks, bicycle lanes, bus lanes, public transportation stops, crossing opportunities, median islands, accessible pedestrian signals, curb extensions, modified vehicle travel lanes, streetscape, and landscape treatments. A safe and complete network for bicycles can also be achieved through a safe and comfortable bicycle facility located on the roadway, adjacent to the road, or on a nearby parallel corridor. Jurisdictions will be encouraged to prioritize safety improvements and speed management on arterials that are essential to creating complete travel networks for those without access to single-occupancy vehicles.

Public Involvement

Early, effective, and continuous public involvement brings diverse viewpoints into the decision-making process. MPOs are encouraged to increase meaningful public involvement in transportation planning by integrating Virtual Public Involvement (VPI) tools into the overall public involvement approach while ensuring continued public participation by individuals without access to computers and mobile devices. The use of VPI broadens the reach of information to the public and makes participation more convenient and affordable to greater numbers of people. Virtual tools provide increased transparency and access to transportation planning activities and decision-making processes. Many virtual tools also provide information in visual and interactive formats that enhance public and stakeholder understanding of proposed plans, programs, and projects. Increasing participation earlier in the process can reduce project delays and lower staff time and costs.

Strategic Highway Network (STRAHNET) / U.S. Department of Defense Coordination

Improve coordination with representatives from the Department of Defense (DOD) in the transportation planning and project programming process on infrastructure and connectivity needs for STRAHNET routes and other public roads that connect to DOD facilities. According to the Declaration of Policy in 23 U.S.C. 101(b)(1), it is in the national interest to accelerate construction of the Federal-aid highway system, including the Dwight D. Eisenhower National System of Interstate and Defense Highways, because many of the highways (or portions of the highways) are inadequate to meet the needs of national and civil defense. The DOD's facilities include military bases, ports, and depots. The road networks that provide access and connections to these facilities are essential to national security.

Federal Land Management Agency (FLMA) Coordination

MPOs are encouraged to coordinate with FLMAs in the transportation planning and project programming process on infrastructure and connectivity needs related to access routes and other public roads and transportation services that connect to Federal lands. Through joint coordination, the State DOTs, MPOs, Tribal Governments, FLMAs, and local agencies should focus on integration of their transportation planning activities and develop cross-cutting State and MPO long range transportation plans, programs, and corridor studies, as well as the Office of Federal Lands Highway's developed transportation plans and programs. Agencies should explore opportunities to leverage transportation funding to support access and transportation needs of FLMAs before transportation projects are programmed in the Transportation Improvement Program (TIP).

Planning and Environmental Linkages (PEL)

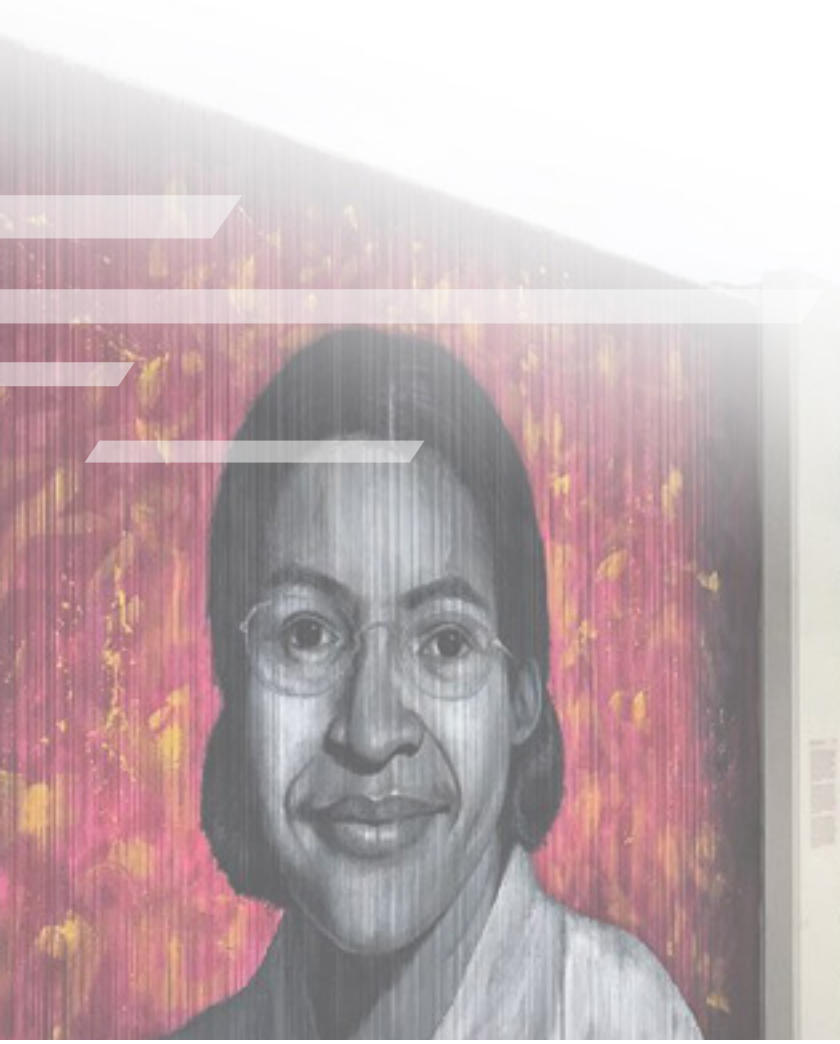
The use of Planning and Environmental Linkages (PEL) is a collaborative and integrated approach to transportation decision-making that considers environmental, community, and economic goals early in the transportation planning process, and uses the information, analysis, and products developed during planning to inform the environmental review process. PEL leads to interagency relationship building among planning, resource, and regulatory agencies in the early stages of planning to inform and improve project delivery timeframes, including minimizing duplication and creating one cohesive flow of information. This results in transportation programs and projects that serve the community's transportation needs more effectively while avoiding and minimizing the impacts on human and natural resources.

Data in Transportation Planning

To address the emerging topic areas of data sharing, needs, and analytics, MPOs are encouraged to incorporate data sharing and consideration into the transportation planning process, because data assets have value across multiple programs. Data sharing principles and data management can be used for a variety of issues, such as freight, bike and pedestrian planning, equity analyses, managing curb space, performance management, travel time reliability, connected and autonomous vehicles, mobility services, and safety. Developing and advancing data sharing principles allows for efficient use of resources and improved policy and decision-making at the State, MPO, regional, and local levels for all parties.

Title VI Statement

GBNRTC is committed to compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and all related rules and statutes. GBNRTC assures that no person or group(s) of persons shall, on the grounds of race, color, age, disability, national origin, gender, or income status, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any and all programs, services, or activities administered by GBNRTC, whether those programs and activities are federally funded or not. It is also the policy of GBNRTC to ensure that all of its programs, policies, and other activities do not have disproportionate adverse effects on minority and low income populations. Additionally, GBNRTC will provide meaningful access to services for persons with limited English proficiency.



The Freedom Wall, located at the corner of Michigan Avenue and East Ferry Street in the City of Buffalo celebrates our nation's historic and ongoing struggles for political and social equality.

Photo by GBNRTC (2022).

CHAPTER 2

Where We Are Today

Since adoption of our previous Metropolitan Transportation Plan, Moving Forward 2050 in May 2018, our region like others around the country and throughout the world were impacted by the Covid-19 pandemic, with significant impacts to our communities, physical and mental health, the economy and the environment. The social and economic impact of the Covid-19 pandemic have been particularly detrimental to member of groups in the most vulnerable situations, and continues to affect populations, including people living in poverty, older persons, persons with disabilities, youth, and black, indigenous and people of color (BIPOC). The lasting effects and how the pandemic will shape our future are just beginning to be understood.

Image Source: GBNRTC (2020)

The May 14, 2022 racist hate fueled attack in Buffalo, which killed 10 innocent people and terrorized the community, has brought another level of fear and uncertainty to our community. It once again brings to focus the urgent need to address social injustices that have plagued our country for far too long.

The Jefferson Avenue Tops Market in the City of Buffalo. Image Source: Google Earth (2023)

Different places, different needs

Our region is made up of many communities, each with its own distinct character and transportation needs. Planning our regional transportation system forces us to think about the different types of places that make up our region and what transportation can do to bolster their future. There are no clear lines between these places, but across our region there are clear differences in the way the land is used that make some transportation alternatives more viable than others in different areas. As transportation options continue to change, they will need to be applied differently in different types of communities to improve quality of life across the region, while maintaining the unique character of every community.

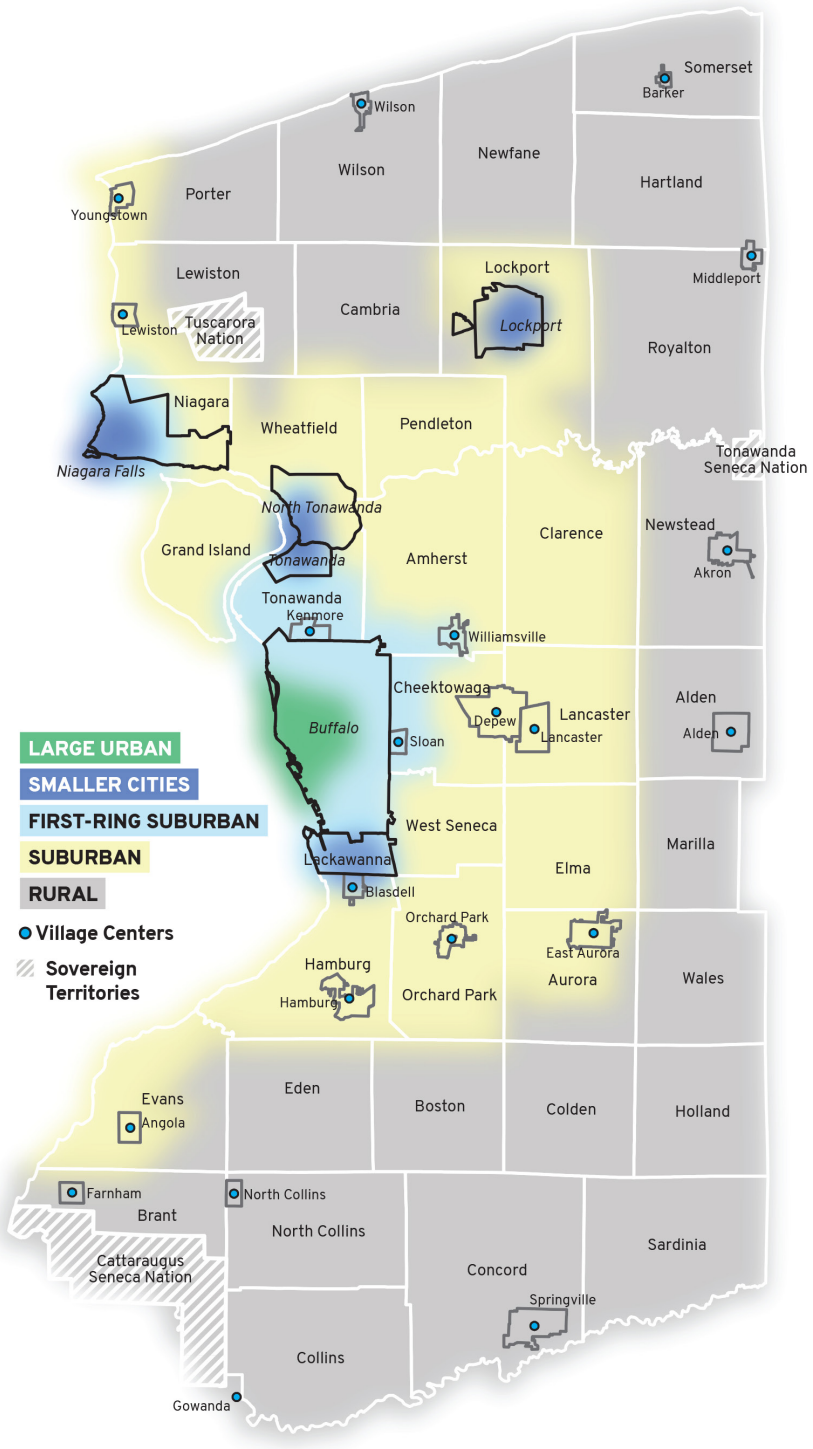
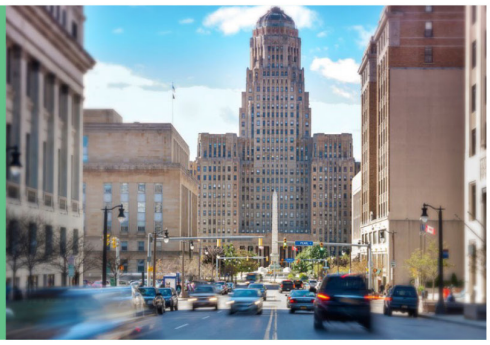


Figure 2.1 | Place Types within Erie and Niagara Counties as Identified in Moving Forward 2050 (2018)

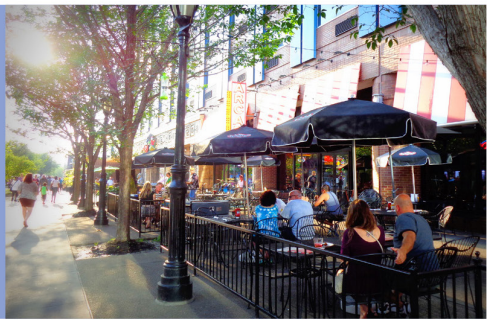
LARGE URBAN

These places have the largest concentrations of jobs and people in the region. Here, many individuals can easily get to work, home and fulfill most daily needs by walking or biking. These places support frequent public transit service thereby providing flexibility via access to multiple modes of transportation. Accommodating high traffic volumes is a primary concern here. Multi-modal access to jobs and other opportunities outside of large urban areas remains a challenge.



SMALLER CITIES

A few smaller cities, like Niagara Falls, Lockport and the Tonawandas, are key centers of the region. While many neighborhoods in smaller cities are somewhat walkable, individuals in these places often require cars to get to daily needs. Beyond main streets and other major corridors, public transit service is often not financially feasible in these cities. Access to services, shopping and other amenities within these smaller cities is limited. Transportation investments present a way to revitalize these places.



FIRST-RING SUBURBAN

Older suburbs were built to accommodate automobiles, but other transportation options do exist. Since these communities are relatively densely populated, with homes close to jobs and services, transit service can be feasible in most places. First-ring suburbs have commercial strips that are inconvenient for pedestrians, as well as village centers suitable for walking, biking and taking transit. The increasing suburbanization of poverty means these areas have a growing transit-dependent population.

SUBURBAN

These areas are more spread out than older suburbs. Walking and biking for daily travel is not feasible in most places. However, there are some strong village centers where people can take local trips without needing a car, but are difficult to connect to frequent transit service. Major commercial strips concentrate services, but walking and biking along these corridors is unsafe. Suburban residents lack multi-modal options to jobs, healthcare and other services located closer to the urban core.

RURAL

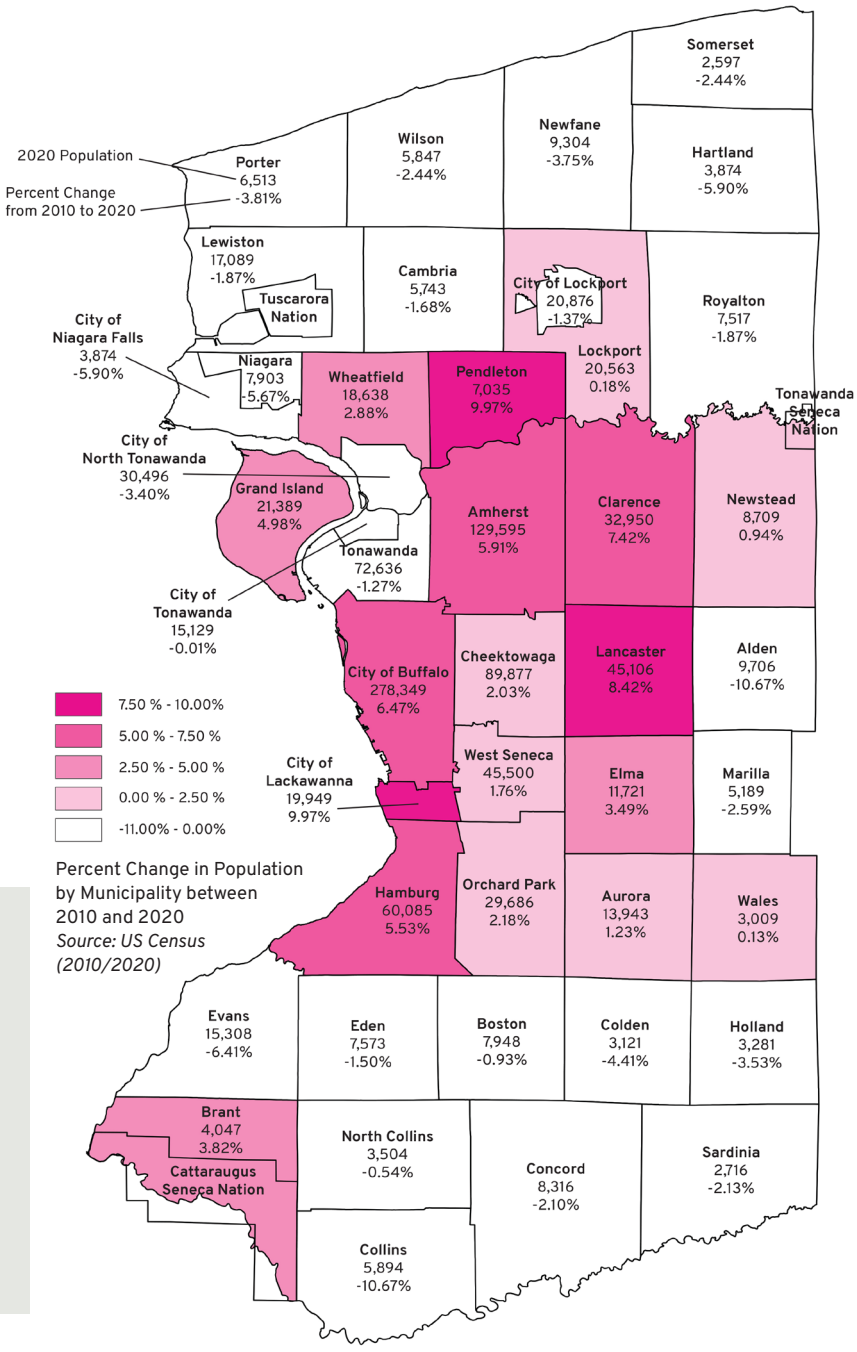
With large distances between homes, businesses and other destinations, a car is needed for most rural travel. Access to jobs, education and healthcare remains a challenge for rural residents—including seniors aging in place and people with disabilities. Farming activity adds to transportation demands in rural areas. Providing access to recreational trails and environmental assets can promote tourism and physical activity.

Our Communities

After years of population decline parts of the region are experiencing a growth in population according to the most recent 2020 US Census. Erie County's population is more than 954,000, up more than 35,000 since the 2010 Census. The City of Buffalo saw an increase of more than 17,000 people, with the current population close to 280,000. The map shows the percent change in total population from the 2010 Census to the 2020 Census for Erie and Niagara counties.

Parts of our region are rebounding after decades of population decline and stagnant growth.

Figure 2.2 | Where We Are Growing



Percent Change in Population by Municipality between 2010 and 2020
Source: US Census (2010/2020)

Past planning efforts and investment decisions have often negatively impacted Communities of Concern resulting in inequitable land-use patterns and disproportionate health and economic impacts.

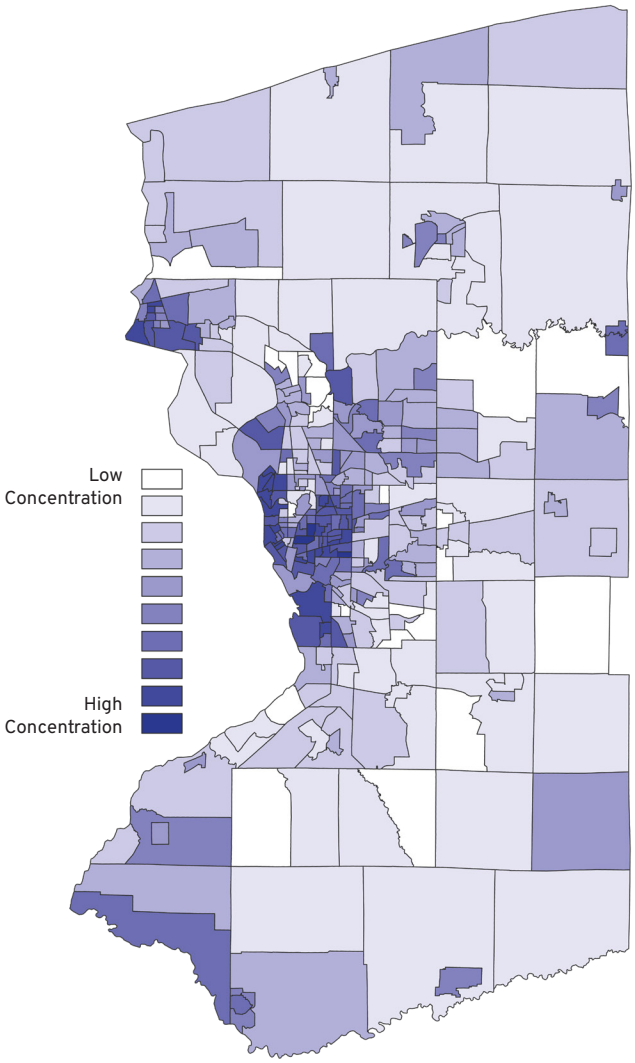
To establish a transportation system that benefits all people, the region will continue to work towards the equitable deployment of investments and to prioritize the mobility needs of Communities of Concern.

Negative health effects related to the transportation system can fall hardest on vulnerable members of the community, such as low-income residents, minorities, children, persons with disabilities, and older adults. Households in low-income areas typically own fewer vehicles, have longer commutes, and have higher transportation costs.

Inadequate or substandard infrastructure in low-income and minority communities can prevent people from using active transportation. It can also make walking and bicycling unsafe for those who do rely on these modes to get around, leading to higher incidences of collisions involving pedestrians and cyclists.

Low-income and minority communities are more likely to be located near highways and other transportation facilities that produce local reduced air quality, and to suffer from negative health effects such as asthma. These communities are also less likely to have convenient access to parks, healthcare, and healthy food.

Figure 2.3 | Concentrations of Communities of Concern



Source: American Community Survey 5-year estimates 2016-2020

See Appendix H for details on how Communities of Concern are defined.

Many of the strategies that transportation agencies can take to increase active transportation, improve safety, improve air quality, and improve connectivity can improve equity if they are targeted in low-income and minority communities.

Examples of some of these strategies include the following:

- Improving pedestrian infrastructure or increasing public transportation service in low-income and minority communities to improve connectivity.
- Using roadside barriers, vegetation, or bottleneck removal to reduce the impacts of pollution on communities located near high-volume roads.
- Targeting demand response service toward communities with high concentrations of older adults and poor access to shops and services.
- Addressing housing affordability in a regional strategy for promoting a variety of housing options at different price points for people of all stages and walks of life.

Newly constructed affordable housing units on Niagara Street in the City of Buffalo. The Niagara Street corridor offers robust bicycle and pedestrian infrastructure and reliable public transit service. Image Source: Google Earth (2023)

Our Economy

Recent unemployment data shows that the region has rebounded after the economy all but shut down due to the Covid-19 pandemic.

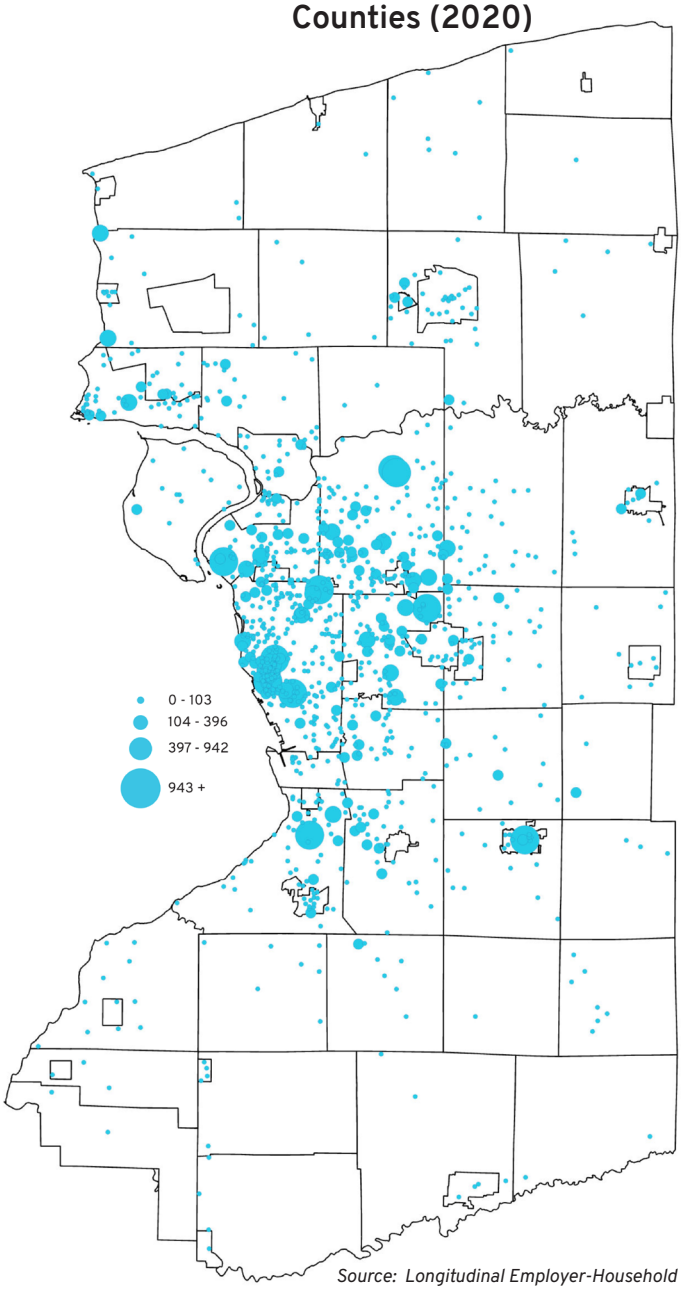
While the pandemic has allowed some jobs to be performed remotely, still many workers continue to commute to work daily.

In recent years, the region has seen private sector job growth, however, these jobs are often difficult to reach without an automobile.

For those who do not own a car, either by choice or for other reasons, access can be limited. There are a growing number of households, including those without a car, living in auto-dependent places where vehicles are necessary to get to most jobs and services.

Our transportation system needs to ensure that today's workers have access to this emerging employment centers, along with those that already exist, via multiple, reliable modes. Our system also needs to keep goods and services flowing to, from and throughout our region, while helping to attract new workers and businesses to keep our economy growing.

Figure 2.4 | Concentration of Private Sector Jobs in Erie and Niagara Counties (2020)



Source: Longitudinal Employer-Household Dynamics (LEHD), (2019)

Our region's economic development strategy focuses on priority sectors to support economic prosperity.

Our region continues to invest in a diverse range of industries to build off of local strengths and make us competitive in a global economy. To support the work of the WNY Economic Development Council, our transportation system must ensure that businesses have access to the transportation services they need in the places they are needed most.

Advanced Manufacturing

Advanced manufacturing remains a key driver of the WNY economy, but the sector faces retirement cliffs and hiring gaps. In a recent survey of WNY businesses, 16% of employers said people not interested in the type of work made positions difficult to fill, pointing to a major need for awareness and training in the skilled trades.

Agriculture

Agriculture is a small, but critical industry to future regional prosperity. Agriculture is the heart of the economy in rural communities across WNY that drives job growth in related sectors like tourism and logistics. Retirements, limited wages, and the loss of agricultural land challenge the sector and may signal a need for workforce development.

Health and Life Sciences

Health and Life Sciences is a diverse and sizable sector of the economy. Health care workers, like nurses, are some of the most in-demand and hard to fill positions in WNY, based on recent job postings and a DOL survey of businesses.

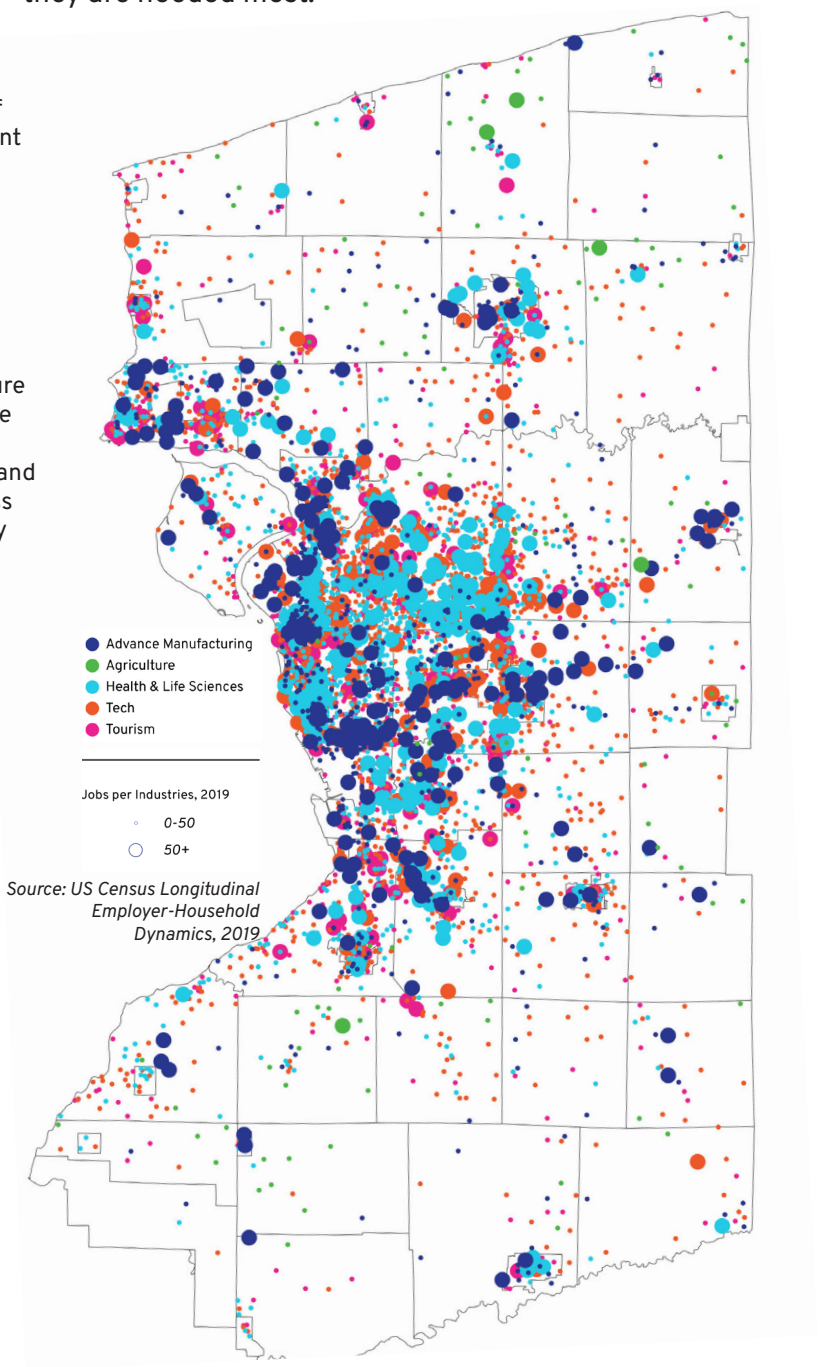
Tech

Technology drives today's economy. Tech is cross- cutting, as tech workers and tech skills are needed by employers across every sector. Tech jobs offer higher-paying opportunities for workers and the potential for significant economic growth for the region.

Tourism

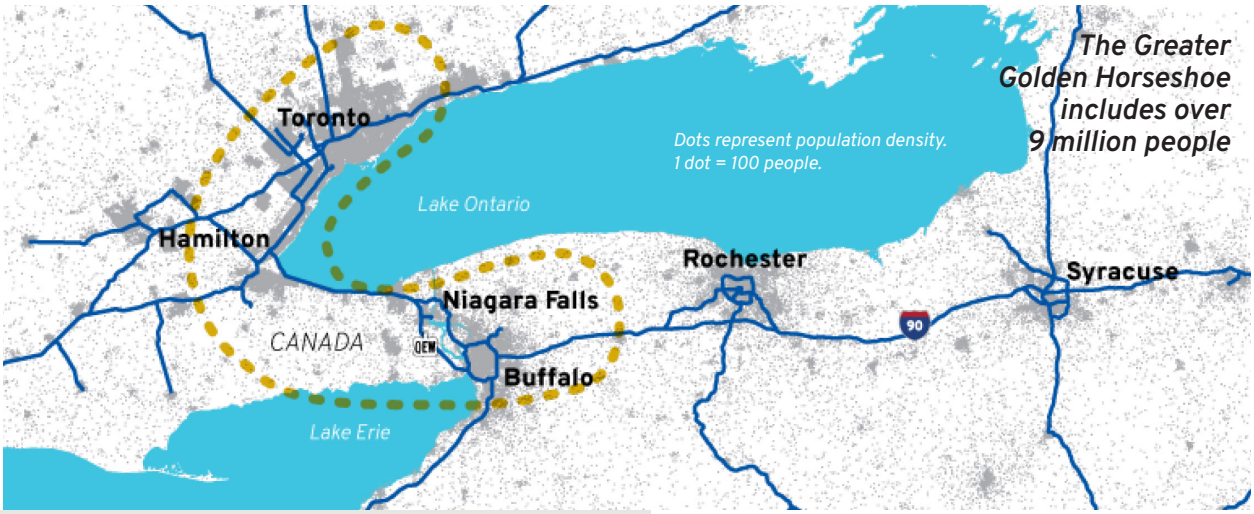
Tourism is a key driver of the region's economy that brings new dollars in the economy through visitor spending.

Source: Regional Economic Develop Council (REDC), Progress Report 2022.



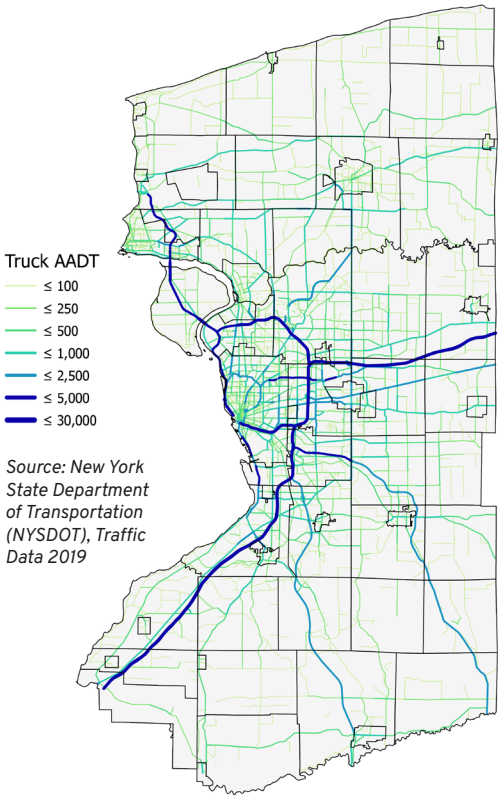
Source: US Census Longitudinal Employer-Household Dynamics, 2019

Figure 2.5 | Major Economic Sectors



An international gateway, the Buffalo Niagara region is the second largest port of entry on the U.S.-Canadian border.

Figure 2.6 | Regional Truck Annual Average Daily Traffic



Source: New York State Department of Transportation (NYSDOT), Traffic Data 2019

Prior to the Covid-19 pandemic, nearly 2 million commercial trucks and 11.5 million vehicles crossed between the Buffalo Niagara region and Canada every year.

The Greater Golden Horseshoe (GGH) region that stretches around Lake Ontario and connects Toronto, Hamilton, Niagara Falls and Buffalo, represents one of the largest concentration of people in North America with a population of over 9 million.

Buffalo Niagara continues to serves as a critical link in this megaregion. Fifteen percent of the trade between Canada and the U.S. moves across the Niagara River, making it the second largest port of entry on the U.S.-Canada border. Ensuring quick, effective and secure movement of freight and travelers through the region and across the border is imperative to building a robust, dynamic economy in Buffalo Niagara. This requires enhanced cross-border coordination, embracing innovative technologies and adaptive transportation management systems.

Our Environment

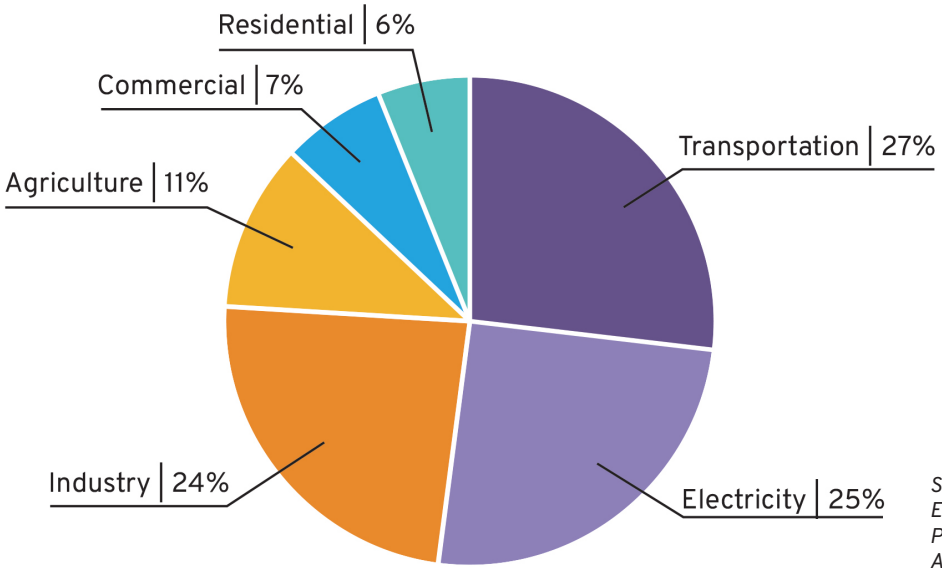
Greenhouse gas (GHG) emissions from transportation account for about 27 percent of total U.S. greenhouse gas emissions, making it the largest contributor of U.S. GHG emissions.

Between 1990 and 2020, GHG emissions in the transportation sector increased more than any other sector. Burning fossil fuels like gasoline and diesel releases carbon dioxide, a greenhouse gas, into the atmosphere. The buildup of carbon dioxide (CO2) and other greenhouse gases like methane (CH4), nitrous oxide (N2O), and hydrofluorocarbons (HFCs) is causing the Earth's atmosphere to warm, resulting in changes to the climate we are already starting to see today.

While transportation continues to contribute a large percentage of U.S. emissions, there are many opportunities for the sector to deliver greenhouse gas reductions. Low-carbon fuels, electric vehicles and other improved vehicle technologies, strategies to reduce the number of vehicle miles traveled, and operating vehicles more efficiently are all approaches to reducing greenhouse gases from transportation.

The greatest overall contributor to transportation GHG emissions is single occupancy vehicle use. According to the 2017 National Household Travel Survey, 87% of trips in the Buffalo Niagara region are made using private vehicles of which 44% are single occupancy. With recent population growth in the region for the first time in a few decades, this presents an opportunity to focus on building community resilience, promoting equity, and reducing GHG emissions through improvements in public transportation and land use.

Figure 2.7 | 2020 U.S. Greenhouse Gas Emissions by Sector



Source: Environmental Protection Agency (2020)

Future trends in public and multimodal transportation and land use will have transformative impacts on our environment, our health, and our quality of life. Expanding and improving transportation options, increasing affordability, and connectivity, and educating the population on transportation options available, will allow for improved air quality, more efficient use of land, and the creation of recreational, educational, and economic opportunities for all.

Creating an efficient, attractive, and affordable transportation system will promote increased utilization, reduce the use of highly polluting, car-focused modes of transportation, and ultimately, reduce GHG emissions, making it key to achieving an equitable and zero-emission transportation system.

Blue Economy

Our region is actively working to create economic revitalization through the restoration of the health and integrity of its freshwater system. This model is referred to as our "Blue Economy". Clean water is a vital asset and the value will increase as global climates change. Buffalo Niagara Waterkeeper has worked for 30 years to restore and revitalize our freshwater. With our partners, ready to lead the surge into a "blue economy," based on this invaluable natural asset.

The Niagara River flows between Lakes Erie and Ontario.
Source: Google Earth (2023)

Local Initiative to Climate Change

A number of local initiatives are underway to address the impact of climate change.

Climate Leadership and Community Protection Act (CLCPA)

New York's Climate Scoping Plan is the framework for how New York will reduce greenhouse gas emissions and achieve net-zero emissions, increase renewable energy use, and ensure all communities equitably benefit in the clean energy transition. The MTP aligns with the transportation strategies in New York's Climate Scoping Plan and Erie County's Climate Action Plan (see below) to promote smart growth and efforts to reduce GHGs.

Climate Smart Communities (CSC)

Climate Smart Communities (CSC) is a New York State program that supports local governments in leading their communities to reduce greenhouse gas emissions, adapt to the effects of climate change, and thrive in a green economy. Erie County has achieved a Silver Certification, currently the highest level, in New York State's Climate Smart Communities program by demonstrating the extensive work being done across the county to reduce greenhouse gas emissions and prepare for the changing climate. The City of Buffalo received is bronze-level Climate Smart Community certification.

Clean Energy Communities (CEC)

The Clean Energy Communities (CEC) program promotes ten "High Impact Actions" to help local communities reduce energy costs, create jobs, and improve the environment. When a community completes at least four actions, it becomes designated by New York State Energy Research and Development Authority (NYSERDA) as a "Clean Energy Community."

Erie County Climate Action Plan

Erie County Climate Action is Erie County's green initiative to develop an equity-centered Community Climate Action Plan, to identify actions we can take to reduce greenhouse gas emissions, and help the community adapt to our changing climate.

NFTA Clean Fuels

NFTA's Clean Fuels program supports emerging clean fuel and advanced propulsion technologies for transit buses and markets for those technologies. Twenty five percent of the NFTA bus fleet is expected to be electric by 2025 and 100% over the next decade.

Environmental Mitigation

Transportation infrastructure has a large footprint in the Buffalo Niagara region, and can be either beneficial or harmful to the natural environment. GBNRTC is committed as an organization to leveraging funding for transportation system preservation and enhancement to avoiding, and where necessary mitigating, environmental impacts.

Environmental mitigation is incorporated throughout the transportation planning processes undertaken by GBNRTC and partner agencies in the Buffalo Niagara region. Public engagement and expert evaluation serve to identify potential environmental impacts early in the project-development process, minimizing the potential for unnecessary delays and cost-escalation.

The nature of environmental-mitigation activities that may be undertaken for the projects in this Plan's fiscally constrained project listing varies across the different project types.

In some cases, GBNRTC and partners are investing in projects that are motivated by the goal of undoing decades-old environmental harm, such as the project to reconnect the neighborhoods severed by the depressed section of the Kensington Expressway and re-establish the green space originally provided by the Humboldt Parkway. Likewise, GBNRTC's support for zero-emission forms of transportation (e.g. enhancing the walking and cycling networks) will also have positive impacts environmental impacts in the region.

For other projects, environmental mitigation activities are likely to include stormwater management activities, such as highway projects that impact how much area is covered by pavement that is impervious to water and where it is located. Examples are likely to include incorporating bioswales into both large projects (e.g. redesign of interchanges on the freeway network) and smaller ones (e.g. Complete Streets projects on arterial streets). In all cases, construction using funding through GBNRTC will use state-of-the-art measures to minimize environmental impacts during construction, such as sediment fences.
GBNRTC will continue deepening its understanding of how the changing climate will affect the region's transportation infrastructure, and take action where warranted. The Project Listing, for instance, contains Bridge/Culvert Improvements that will upgrade existing structures to accommodate heavier water flows, to mitigate flooding.

Finally, GBNRTC will take actions to support the electrification of the region's vehicles, both private fleets and the hundreds of thousands of automobiles owned by the public. This transformation of the energy used in the region's transportation system will contribute to achieving NYS and national objectives to reduce climate-changing emissions.

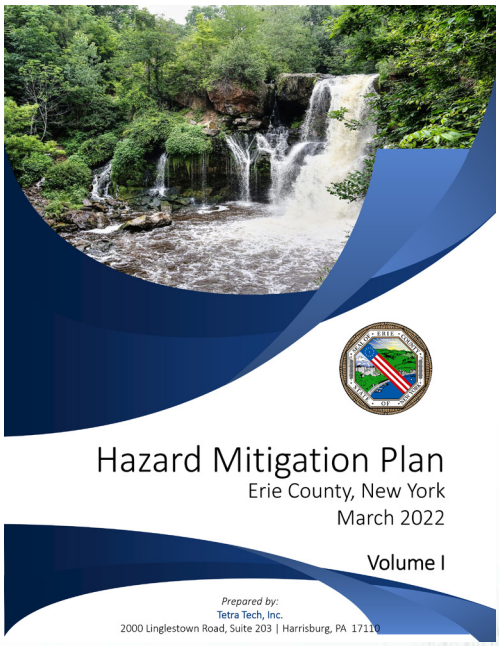
The transportation agencies of the Buffalo Niagara region are committed to enhancing the resilience of the region's transportation infrastructure to natural disasters. The transportation system also plays a key role in other aspects of hazard mitigation, including providing corridors for public evacuation and helping emergency-service assets reach the locations in which they are needed.

Natural Disaster Risk Reduction

Both Erie[1] and Niagara[2] counties have adopted Hazard Mitigation Plans; some of the key types of natural hazards identified as relevant to the region include:

- Coastal Erosion
- Earthquakes
- Expansive Soils
- Extreme Temperatures
- Flooding
- Landslides
- Pandemics
- Severe Storms
- Wind damage

The risk of damaging flooding in the region is exacerbated by climate change – GBNRTC's member agencies therefore take increased hydraulic loadings into risk in designing bridges and culverts.



Erie County's Hazard Mitigation Plan (2022).

Additionally, compared to many US regions, Lake Effect snows present routine wintertime hazards that threaten lives and property, as well as core social and economic activities. The region's transportation agencies incorporate the need for routine clearing of large snow volumes into project planning, as well as system maintenance/operations. GBNRTC's overriding principle with respect to natural hazards is to incorporate risk-reduction into all aspects of its transportation planning activities.

1. https://www3.erie.gov/dhses/hazmit
2. https://niagara.mitigateny.org/

Photo by Tom Fisk (www.pexels.com)

Our Transportation System

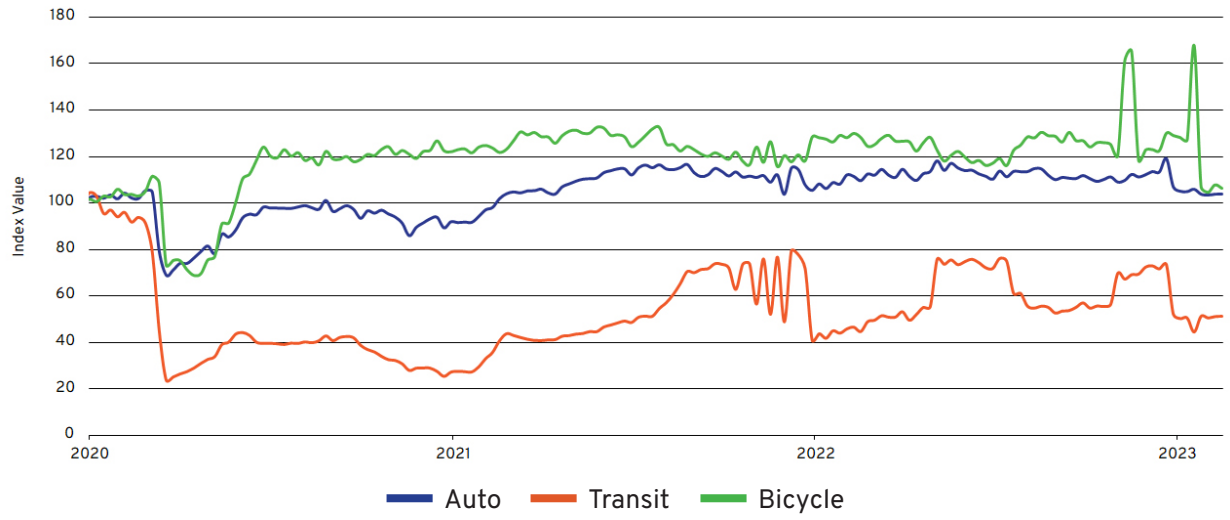
Our transportation system ties our communities together and connects our region with the nation and the world.

Like all US regions, Covid-19 hit the Buffalo Niagara region hard both in terms of direct medical impact and associated disruption to social and economic activities. Many schools and businesses were closed for extended periods, and there was a step-change in "virtual" activities including shopping and work-from-home (for certain types of workers). In order to serve growing consumer demand for online shopping, the region has seen growth in the warehousing and logistics sector, and in the number of delivery vehicles on the road.

The region's recovery from Covid-era lockdowns is well underway, as can be seen in new "Big Data" resources now being used by GBNRTC to monitor travel in the region. Along with the GBNRTC's peer metropolitan planning organizations across all of New York State, GBNRTC has access to data from the Replica provider which is generated in part from passively collected and anonymized location-based services (LBS) data from people's smartphones and other electronic devices.

Among other possibilities, Replica data allows GBNRTC to track the impact over time of Covid-19 and the region's recovery. The chart below (Figure 2.8) shows the time-trend in travel by automobile, transit, and cycling in the region starting at the onset of the Covid-19 lockdowns in March 2020.

Figure 2.8 | Indexed Trips by Three Modes: Auto, Transit, & Bicycles (2020-2023)



Source: Replica data for Erie and Niagara Counties (2019-2023)

Cycling experienced something of a 'boom' nationally – and by Summer 2020 bicycling in the Buffalo Niagara region had increased to pass its pre-pandemic level (and remains higher some 3 years later). For automobile travel, pre-pandemic traffic levels were first exceeded in early 2021, roughly a year after the first Covid-19 wave. However, traditional commuting patterns have been impacted, and the "where" and "when" of traffic patterns are now different.

Unlike cycling and car travel, transit ridership has trended upwards much more slowly and remains below the levels of the pre-pandemic era. Similar findings have been reported by transit agencies nationally, and efforts are underway to determine how this pattern can be reversed, particularly given the challenge of covid-era emergency federal funding assistance coming to an end.

GBNRTC will continue to engage with Replica and other data providers to ensure that the best-available data resources are brought to bear on the region's transportation planning efforts.

Roads and Highways

Strengthening our network of roads, bikeways, greenway trails, rail lines, airports and more can move us towards a future aligned with our regional vision. This section provides an overview of the components of Buffalo Niagara's transportation system—the infrastructure we have and its' condition. This broad understanding of transportation infrastructure, programs and performance is critical in making effective plans for the future of our transportation system.

The Buffalo Niagara region is connected by over 7,800 miles of roads and highways that make up the backbone of our transportation system. The region's roadways are comprised of both the National Highway System, which includes interstates, expressways, and major state routes, and local roads which are operated by counties, cities, and towns.

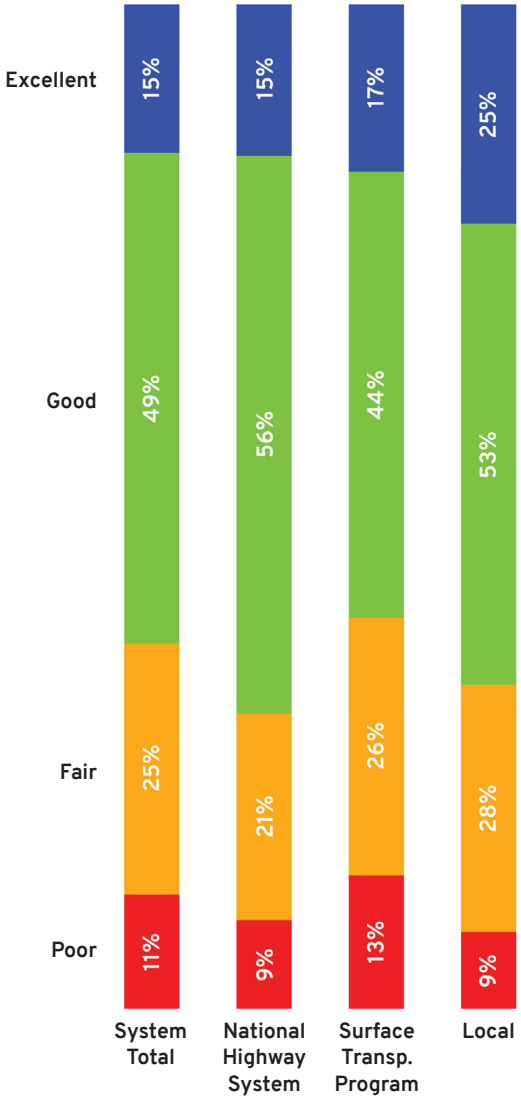
During the pandemic, the region saw a significant drop in traffic volumes as unemployment and telecommuting increased. People were using public transportation less and more private cars during pandemic. Shifts to active modes such as walking or bicycling were significant as people placed more priority on pandemic related factors when choosing how to travel.

The Buffalo Niagara Region has seen much correlation with the rest of the United States after 2020, where Average Annual Daily Traffic (AADT) and Vehicle Miles Traveled (VMT) are now currently reflective of what was recorded during pre-covid conditions. That being said, the daily peak spreading phenomena is still occurring, and prevalent on all types of facilities throughout the region. AM & PM peak travel windows have broadened, with mid-day peaks now competing with morning and evening commute volumes. The increase in flexible work schedules and work-from-home opportunities has led to an increase in shorter mid-day trips, that may have occurred before or after the work day in pre-pandemic travel. Although daily traffic patterns seem to have been altered for the foreseeable future, it is yet to be determined if daily traffic volumes will continue to climb beyond pre-pandemic thresholds in the years to come.

The condition of our roads and highways are improving but many still need repair.

As roadways age, pavement conditions deteriorate. Pavement condition ratings are based upon visual scoring procedures developed and used by the New York State Department of Transportation (NYSDOT).

Figure 2.9 | Surface Conditions of Buffalo Niagara Roadways by Funding Source (2021)



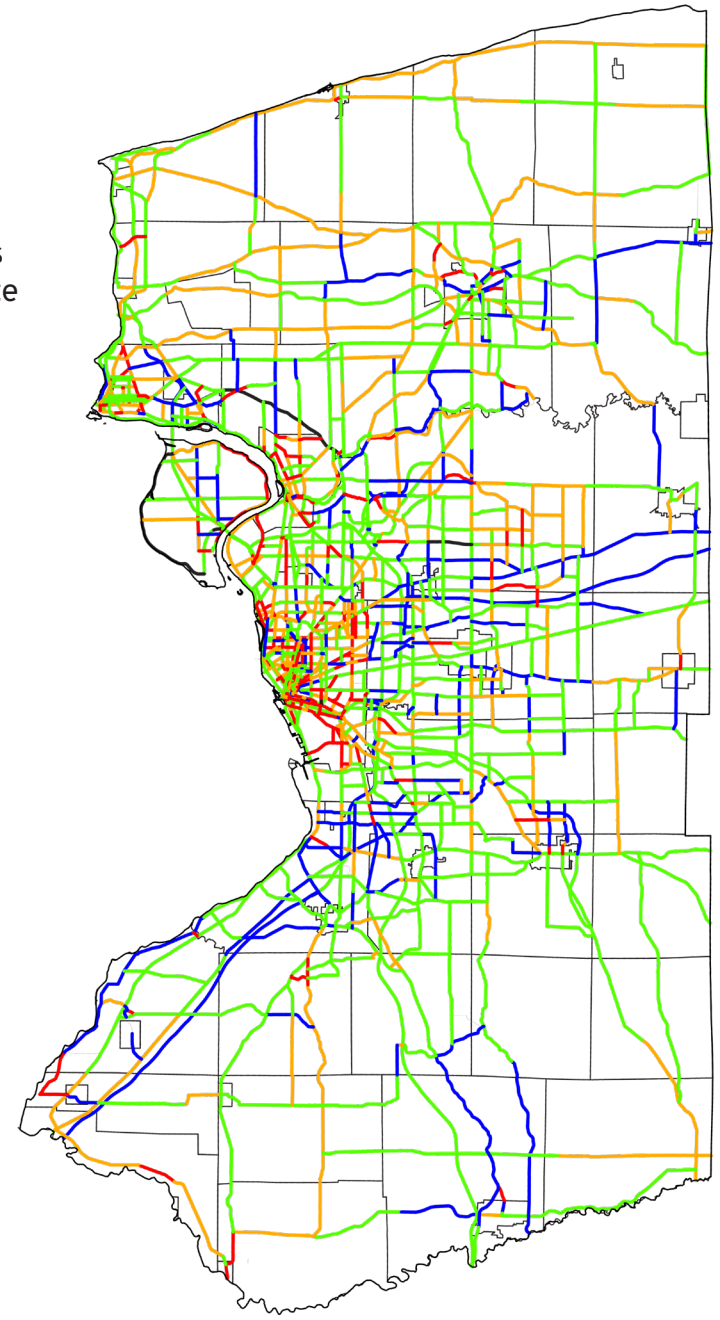


Figure 2.10 | Surface Scores on Roadways Eligible for Federal Aid (2020-2021)

- 1 - 5 *Poor*
- 6 *Fair*
- 7 - 8 *Good*
- 9 - 10 *Excellent*
- Under Construction / Not Rated

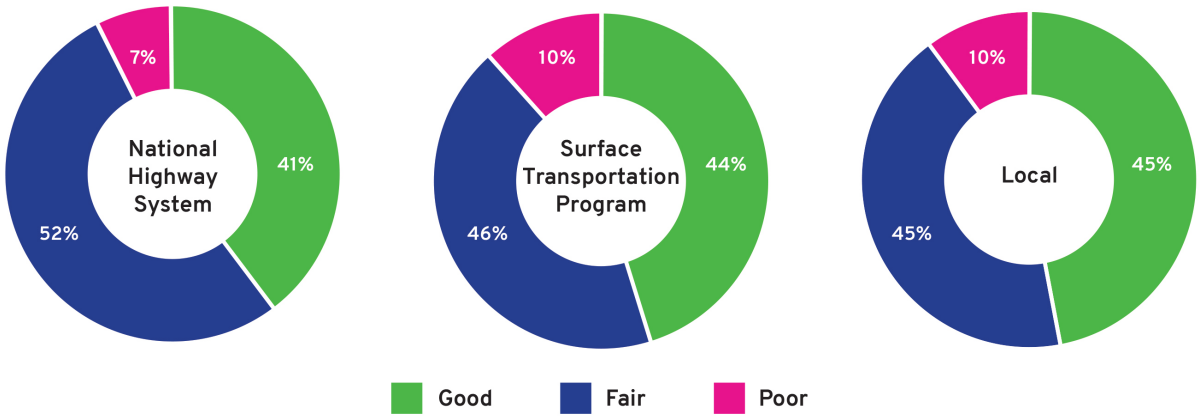
Source: GBNRTC and NYSDOT (2020-2021)

Bridges

Our region's bridges form key links in the roadway and highway system, providing access to employment, agricultural areas, schools, shopping and medical facilities, and facilitating commerce and access for emergency vehicles. There are 1,157 bridges located in Erie and Niagara Counties. Most bridges in our region remain in good or fair condition, but many need to be improved.

Around 10 percent of bridges in our region are rated in poor/ structurally deficient condition.

Figure 2.11 | Bridge Conditions in Buffalo Niagara (2021)



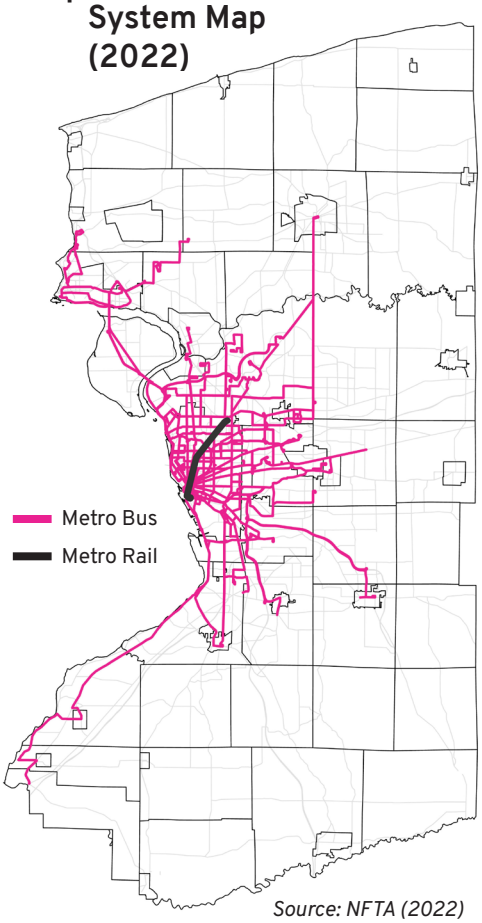
Source: National Bridge Inventory (NBI), 2022.

A bridge is rated poor/ structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid weight-restricted bridges. Redirected trips can also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

Public Transportation

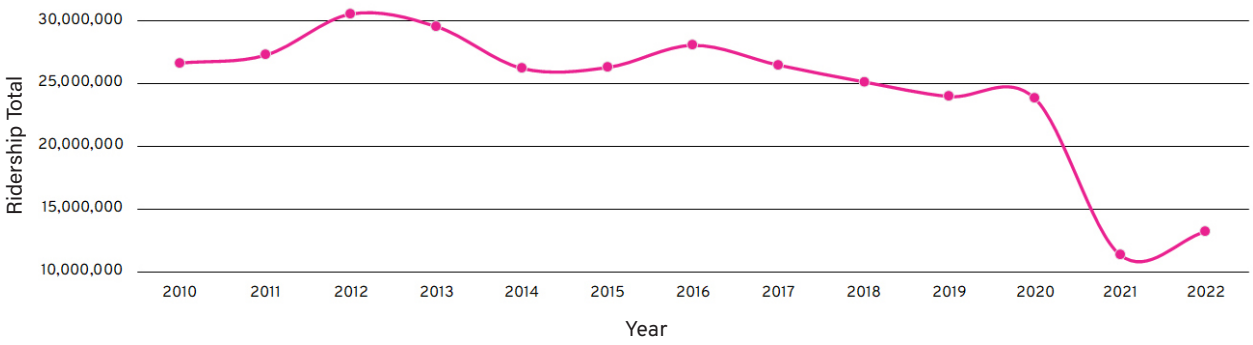
The Niagara Frontier Transportation Authority (NFTA) operates the public transit system linking Erie and Niagara counties. The system has over 60 bus routes covering cities and suburbs, and the Metro Rail runs six miles along Main Street in Buffalo. Most routes in the City of Buffalo offer frequent service during peak travel hours, but wait times are higher in suburbs where lower density and demand limits the financial feasibility of running buses frequently. NFTA also provides curb-to-curb paratransit services for passengers with disabilities. Other providers offer public transportation to and from rural areas and nearby counties, like the Seneca Transit System, Rural Niagara Transportation and Coach USA.

Figure 2.12 | NFTA Metro System Map (2022)



Source: NFTA (2022)

Figure 2.13 | NFTA System Ridership (2010-2022)



Source: NFTA (2022)

Like other transit systems around the county, the Covid-19 pandemic has had a significant impact on public transit ridership in our region.

While NFTA Metro Bus and Rail serves Erie and Niagara Counties, there are other bus transit providers in Western New York that are available to all residents.

Rural Niagara Transportation

Rural Niagara Public Transportation provides bus service to rural areas of Niagara County.

Seneca Transit System (STS)

The Seneca Transit System (STS) is a public bus service that provides transportation for all area residents on the Allegany and Cattaraugus Territories and surrounding communities of Western New York. STS provides public transportation to Nation members as well as residents and visitors to the Territories, surrounding communities and the general public.

The Seneca Nation was selected to receive a federal grant of $7,625,000 through the highly competitive Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program. The grant will fund the construction of the Southern Tier Regional Transit Hub, a state-of-the-art, transit facility comprised of a combined transit hub and bus storage facility on the nation's Cattaraugus Territory. Operated by the Seneca Nation Department of Transportation and Seneca Transit System, the facility will increase accessibility, streamline bus services and fuel economic growth across the region.

Intercity Transportation Services

The region is connected to intercity bus and rail services. The Amtrak stations in Depew and Buffalo, the new Niagara Falls Station and Customhouse Interpretive Center, the Buffalo-Niagara International Airport, the Niagara Falls International Airport, and UB's "Express Bus Home" stop at Greiner Hall all offer intermodal connections. Privately-operated facilities like Greyhound stops in Niagara Falls and Springville, and the Ocean Bus stop on Millersport Highway offer residents other travel options to get to areas outside the region.

The newly constructed Amtrak Station in the City of Niagara Falls, NY. Image Source: Google Earth (2023).

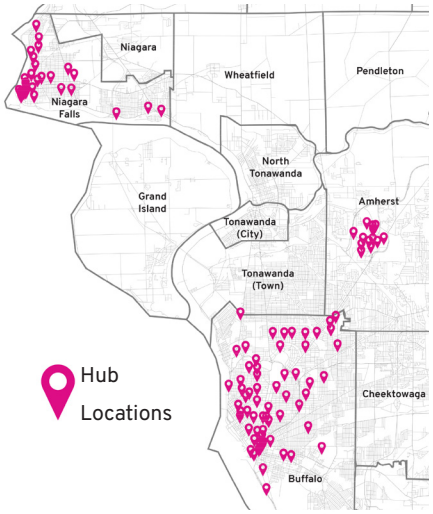
Ride Hail Services

Throughout the Buffalo Niagara Region, Transportation Network Companies (TNC's) like Uber and Lyft have expanded transportation options for residents and visitors.

Reddy Bikeshare

Reddy Bikeshare provides members with access to bicycles that are conveniently located throughout the City of Buffalo and at major college campuses around the city.

Figure 2.14 | Reddy Bikeshare Hub Locations



Source: Reddy Bikeshare (2022)

Go Buffalo Niagara

Go Buffalo Niagara works with commuters, employers, and property owners to promote sustainable transportation choices. As a close partner of the GBNRTC, the Buffalo Niagara Medical Campus (BNMC, Inc.), the NFTA, and 511NY Rideshare.

GO Buffalo Niagara provides free resources, tools, and rewards that help commuters in Erie and Niagara counties discover and switch to sustainable transportation such as walking, biking, public transit, carpooling, and other modes to help individuals and businesses save money, lead healthier and happier lives, reduce our collective impact on the environment.

A Reddy Bikeshare hub at Roosevelt Square in Downtown Buffalo. Image Source: Google Earth (2023).

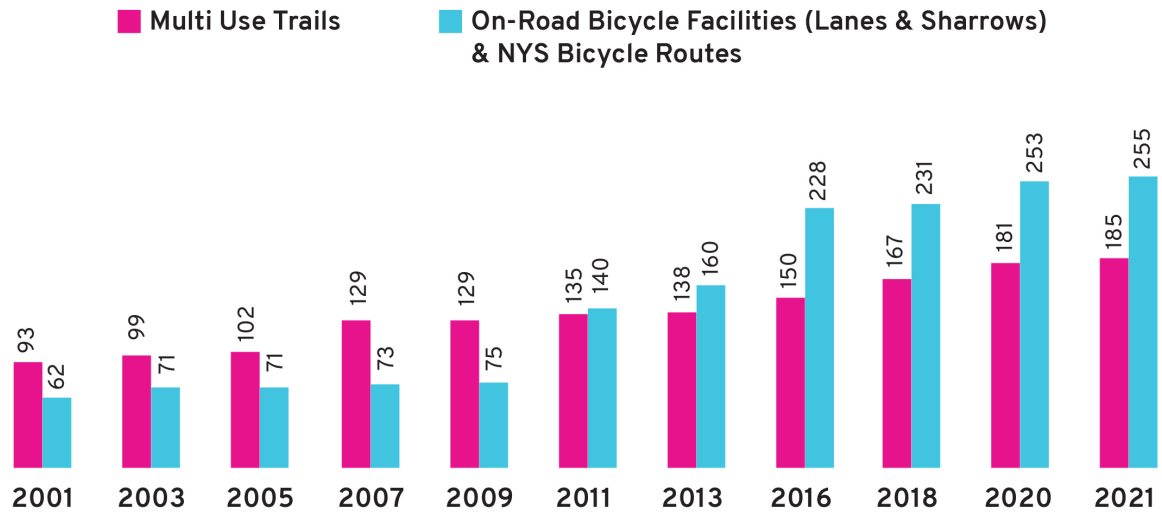
Bicycle and Pedestrian Infrastructure

A portion of the Greenway Upper River Trail in the City of Tonawanda, NY. Photo by GBNRTC (2022).

The network of bicycle infrastructure continues to grow in the Buffalo Niagara region as the total miles of bike lanes, routes and greenway trails nearly tripled since 2001. In recent years, our region has seen the development of the City of Buffalo's and City of Niagara Fall's Bicycle Master Plans, upgrades and gap closures to the Shoreline Trail, construction of the Tonawanda Rails to Trails project and the Empire State Trail. In addition, a number of municipalities throughout the region are interested in adopting complete streets policies in support of bicycle and pedestrian transportation.

Current projects on the GBNRTC TIP include the Wheatfield Scenic Byway, Niagara Falls Connection Trail and the City of Buffalo Complete Streets efforts.

Figure 2.15 | Miles of Bikeways in Erie and Niagara Counties (2001-2021)



Source: Greater Buffalo Niagara Regional Transportation Council (GBNRTC)

A high priority for the Regional Bicycle Network development is to fill gaps in the Greenway Trail Network.

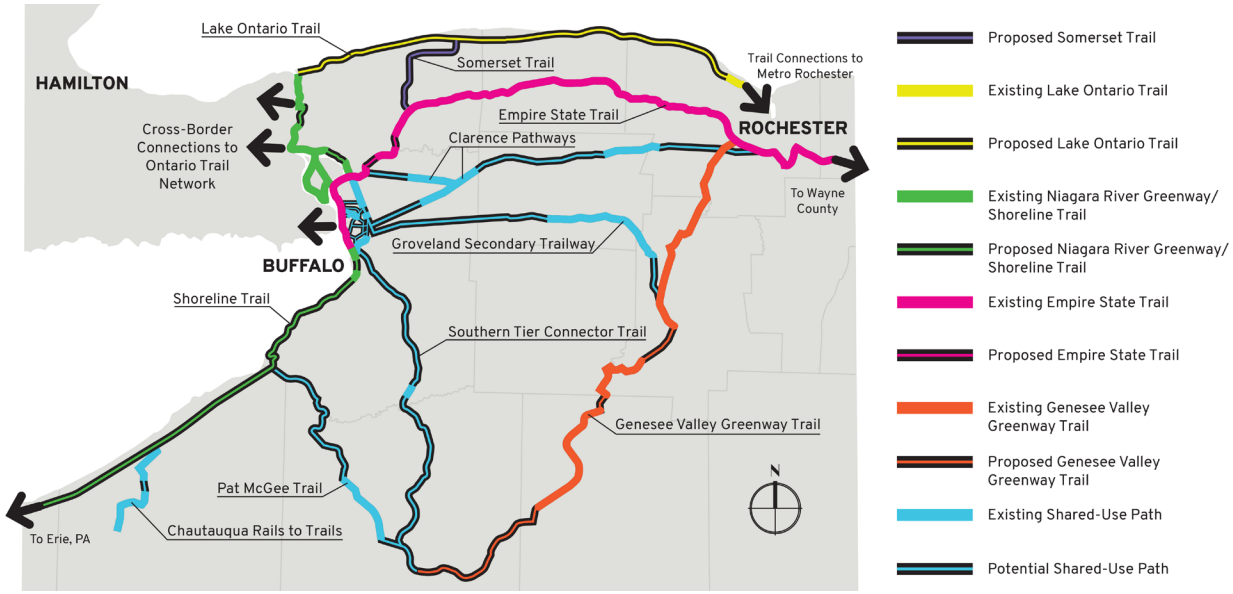


Figure 2.16 | Western New York Trail Network

The Buffalo Niagara Region has a number of local and regional trails that offer tremendous opportunities for bicycle commuting, utility trips and for recreation.

With a blueprint from Bike Buffalo Niagara, the Regional Bicycle Master Plan, the region is working to expand our bicycle network and connect the existing greenway trail system through the work of the Regional Trail Coalition and its partners. The Coalition currently comprises of governmental, nonprofit, regional park authorities, and private foundations committed to the development of the Buffalo Niagara Greenway Trail network. The role of the Coalition is to develop project priorities, advocate for new projects to deliver in a comprehensive approach and seek funding for projects and necessary partnerships for delivery.

Since adoption of the Regional Bicycle Master Plan, a number of studies and planning initiatives have been completed or are underway aimed at expanding our current network, closing critical gaps and improving the overall experience and safety for users. Examples of recent initiatives include East Side Trails, Lancaster Heritage Trail West, Southern Tier Trail, and The Riverline.

Current Coalition Membership

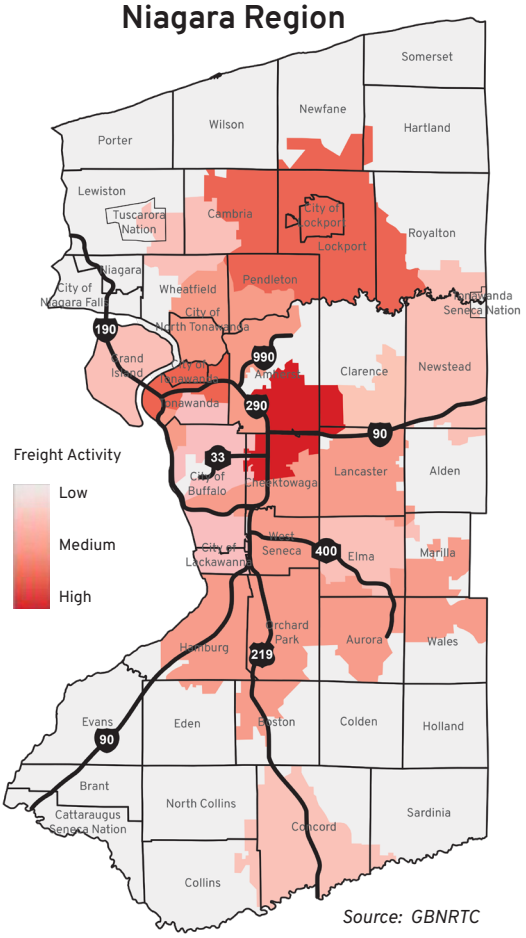
GBNRTC
City of Buffalo
City of Niagara Falls
NYSDOT
GObike Buffalo
Erie County
Niagara County
Community Foundation of Buffalo
Ralph Wilson Foundation
Western New York Land Conservancy
Buffalo Niagara Waterkeeper

Freight and Commerce

The Buffalo Niagara Regional Freight Plan, 2021 aims to promote the Buffalo Niagara Region as a premier bi-national hub for freight and logistics industries integrating "Green" or sustainable platforms and as an intermodal gateway for freight and goods traveling between the bi-national region and the Port Authority of New York/ New Jersey (PANYNJ) and other East Coast locations.

To help understand clusters of activity that are reflective of freight supply and demand in the region, available employment in key sectors that are generally associated with generating freight supply and demand were analyzed as part of the Buffalo Niagara Regional Freight Plan. These employment categories included agriculture, manufacturing, mining, retail, transportation, and warehousing/ wholesale, obtained through data generated by the U.S. Economic Census. The employment figures were used to generate a map that portrays general freight activity resulting from the supply and demand. The map helps identify areas where freight activity is generally highest and clusters of employment sectors that generate freight supply and demand in the region. The map to the right show that areas in Amherst and Williamsville experience the greatest freight supply and demand in the region. Areas in and around Lockport and in the industrial sections of the Town of Tonawanda also represent higher freight activity.

Figure 2.17 | Freight Activity in the Buffalo Niagara Region



Source: GBNRTC

The International Trade Gateway Organization (ITGO) is a collaborative initiative of the public, private, and academic sectors to create a globally known logistics center in the Buffalo Niagara region. ITGO has supported a number of freight infrastructure projects since its inception, such as the New York Gateway Connection Improvement Project and replacement of the Portageville Bridge in Livingston County that serves as a vital freight link to the region. Additionally, ITGO has established a strategic relationship with the Port Authority of New York and New Jersey (PANYNJ) to promote the Buffalo Niagara region as an "inland port" providing congestion relief and distribution capabilities. This led to a Memorandum of Understanding with PANYNJ to designate the region as a "strategic international gateway", creating a relationship based on joint marketing and sharing of resources and data.

Congestion Management

The majority of congestion on the Buffalo Niagara transportation network occurs on the facilities that comprise the GBNRTC Congestion Management Process (CMP) Network. Planning at the corridor level – either the full length of the facilities or a subset – allows for the identification of coordinated strategies that result in a synergy that can provide greater benefits than individual plans to address specific segments or intersections/interchanges.

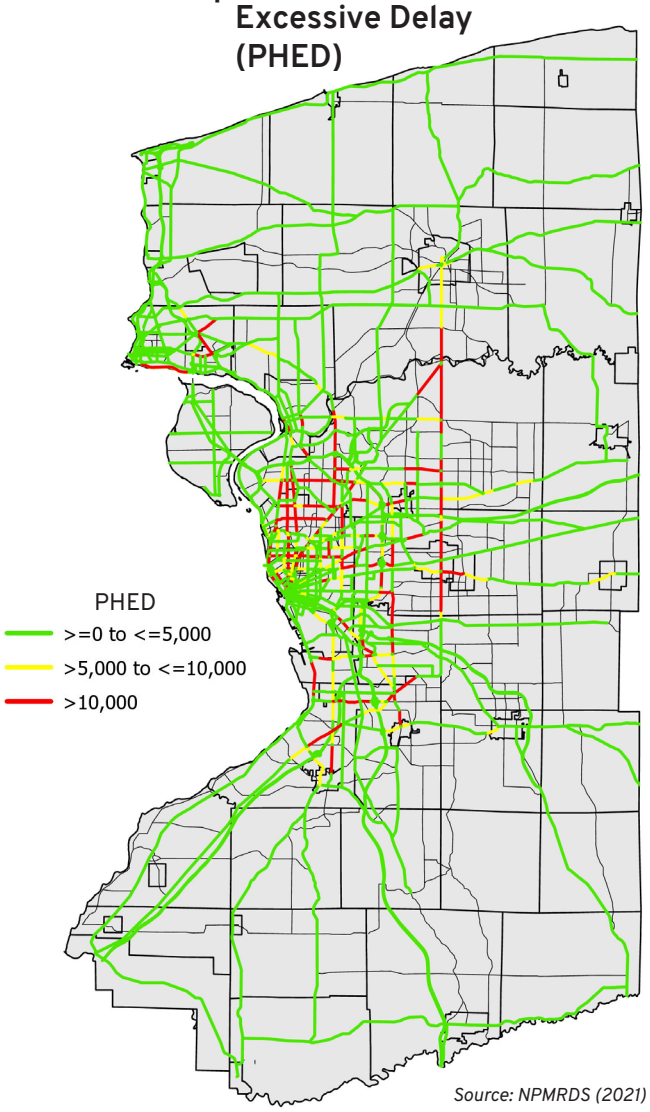
In 2021, GBNRTC updated its Congestion Management Process. The approved CMP is a systematic and regionally-accepted approach for managing congestion that identifies transportation system performance and assesses alternative strategies for congestion management meeting state and local needs.

The CMP looks at Management and Operations (M&O) and other strategies for managing congestion, focusing on developing objectives that drive performance-based planning for responding to congestion. The CMP is based upon objectives articulated in the metropolitan transportation plan (MTP). The CMP incorporates specific, measurable, agreed-upon, realistic, and time-bound objectives that reflect regional goals. The CMP feeds projects and strategies directly into the MTP and transportation improvement program (TIP).

Strategies include:

- Dynamic traveler information
- Incident detection and service patrol
- Ramp metering
- Variable speed limits and queue warning
- Variable toll pricing
- Signal coordination

Figure 2.18 | Person Hours of Excessive Delay (PHED)



Source: NPMRDS (2021)

Excessive delay means the extra amount of time spent in congested conditions defined by speed thresholds that are lower than a normal delay threshold. The speed threshold is 20 miles per hour or 60 percent of the posted speed limit, whichever is greater.

Safety

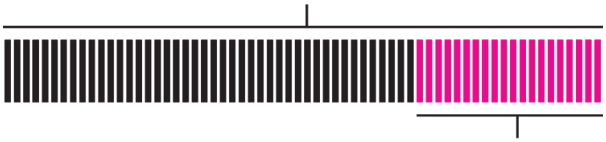
Vehicle crashes result in thousands of injuries and fatalities every year.

As we look to make our transportation system more efficient, safety remains a primary concern. Between 2018 and 2020, an average of 24,880 automobile-involved crashes were reported each year or 68 crashes per day in Erie and Niagara counties. These crashes result in an average of 8,293 injuries or deaths each year.

The GBNRTC successfully secured funds through the Safe Streets for All (SS4A) program for a planning grant to create a Comprehensive Regional Safety Action Plan. Once the plan is completed, the region will be eligible for future federal funding for infrastructure projects and programs that prevent roadway deaths and serious injuries.

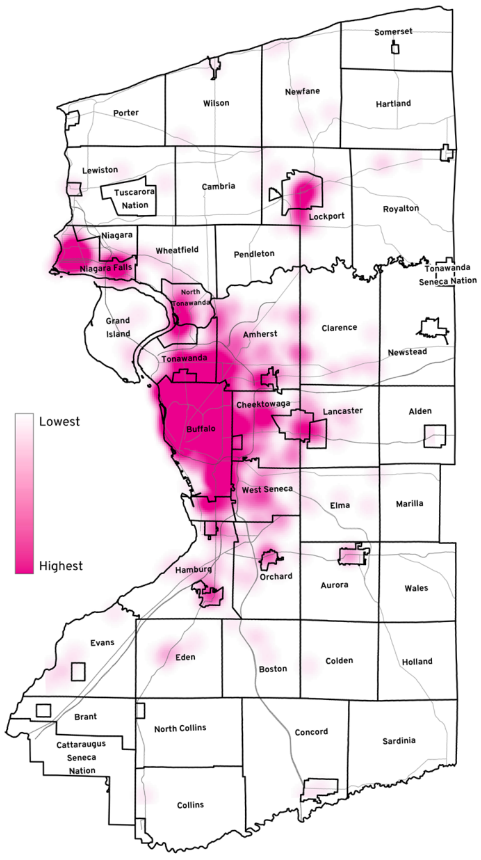
Every year, an average of 797 crashes involve bicycles or pedestrians, an average of 2.1 per day.

On average there are 68 crashes every day in our region...



of which 22 result in serious injury or fatality.

Figure 2.19 | Concentration of Crashes Involving Bicyclists (2021)



Source: New York State Department of Transportation (NYSDOT) Accident Location Information System (ALIS) and New York State Department of Motor Vehicles (DMV), Institute for Traffic Safety Management and Research (ITSMR).

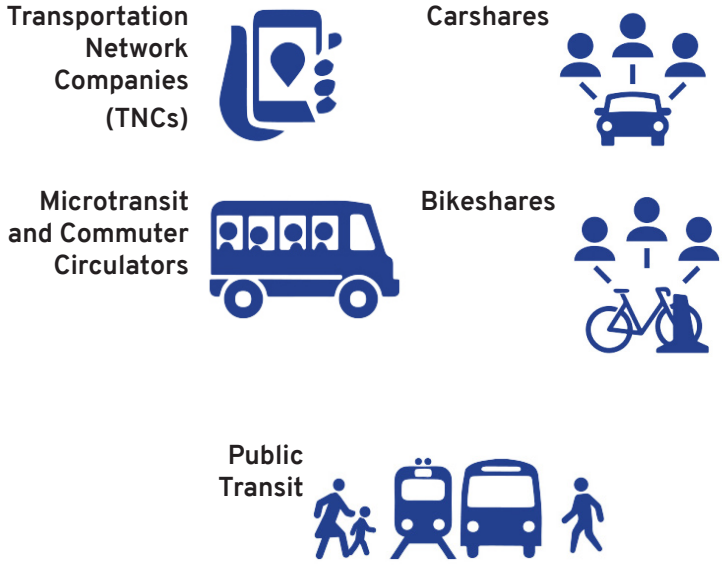
Innovation

The next generation of transportation will rely on technology to create an integrated and seamless transportation system that offers access to multiple transportation modes across various service providers. Anticipating and learning about new trends can help us harness emerging transportation technologies, data and services so we can make the most out of the evolution in transportation.

Transportation built on access, not ownership

Mobility as a Service (MaaS)

Provides a platform that treats transportation as a customizable, on-demand service with "à la carte" mobility, real-time travel information and smart payment systems across modes.



The new face of transit

To ensure equitable access to services, public subsidies will continue to be provided as transit providers look to partner with TNCs and other service options. Wheelchair accessible vehicles will be part of the available fleet of options.

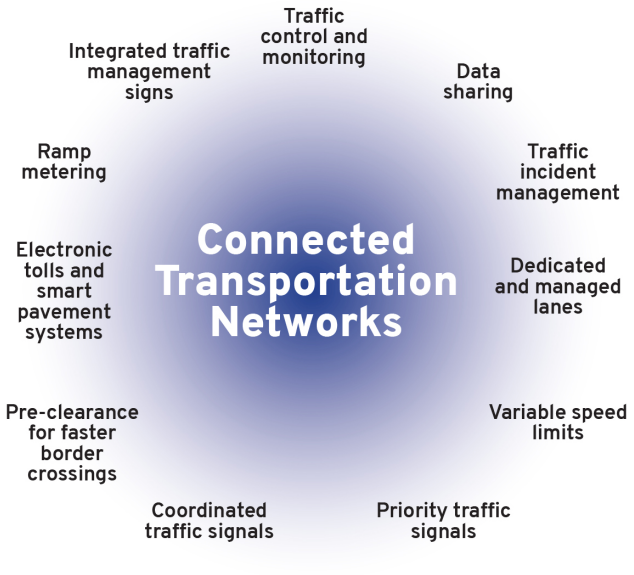
"Public transit" buses will focus on densely populated areas in the urban core and first-ring suburbs. Over time, buses could become autonomous.

Other services, like TNCs or microtransit, will integrate with the overall network and can provide services in less densely populated areas, and at times of the day when public transit is not running.

Data is the new infrastructure

"Person flow" traffic management technology

Technology will be used to make the movement of people and goods safer and more efficient through connected technologies and by upgrading infrastructure.



Mobility hubs

Mobility hubs conveniently connect all these services at one location.

Real-time travel information

- Kiosks, trip planners and message signs for real-time navigation
- Wi-fi access for on-demand trip planning on mobile devices

MaaS transportation options

- TNCs
- Bike shares
- Car shares
- Microtransit
- Public transit
- Smart parking

Mobility amenities

- Electric vehicle charging stations
- Bike repair stations
- Proximity to services, shops, restaurants and more

The future of vehicles

As the landscape of transportation services continues to evolve, carmakers are also changing the nature of the automobile by increasing the number of automated features, like parking assist, and moving toward electric, connected and driverless vehicles. These vehicle types are already evident, to some extent, but as these technologies continue to evolve and become more prevalent, the nature of our transportation system will have to embrace and plan for these changes to make the most of these new vehicle types.

Automobiles of the future that may be owned or shared

Electric Vehicles (EVs)

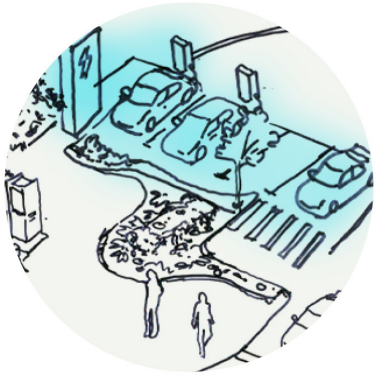
Electric vehicles are a growing part of the current transportation system. From cars on our roadways to buses in the NFTA fleet, the Buffalo Niagara region is embracing this technology and planning for the infrastructure to support it.

Connected Vehicles (CVs)

Most vehicles manufactured today are connected to the Internet in ways that help keep drivers safe and comfortable. In the future CVs with vehicle-to-vehicle (V2V) communications will improve the safety and flow of people and goods.

Autonomous Vehicles (AVs)

AVs range from human-driven vehicles with automated safety features like many vehicles on the market today, to fully autonomous vehicles that are completely driverless. AVs include personal cars as well as driverless buses or shuttles, deliverybots and commercial trucks, which may travel together in AV truck platoons. All of these will be connected and most will be electric. Automated vehicles further improve the efficiency and safety of travel by using V2V and vehicle-to-infrastructure (V2I) communications technology.



CHAPTER 3

Where We Want to Be

This section of the MTP 2050 update reaffirms our regional vision and lays out our shared goals for our communities, economy, and environment. We track our progress towards meeting these goals, and how well we are carrying out our objectives, by looking at key performance measures.

Image Source: GBNRTC (2020)

Where we'll be in 2050

As in the previous 2050 Plan, the total increases in people and jobs were allocated to different areas across the region consistent with One Region Forward, the Regional Plan for Sustainable Development.

A review of the current employment forecasts indicated that forecasts were still valid for the MTP update and that no wholesale changes needed to be made to the regional employment growth estimates. A review of 2020 decennial population data, however, deviated from previously assumed inter-decennial (2010-2019) trend therefore population forecasts were updated to reflect current trends based on the most current data available.

The approach to develop the update was designed to be consistent with the land-use-based forecasting approach developed in the previous Moving Forward 2050 Plan, which was the basis for the current set of demographic forecasts.

Our economy will continue to grow and provide more opportunities by focusing jobs near existing communities.

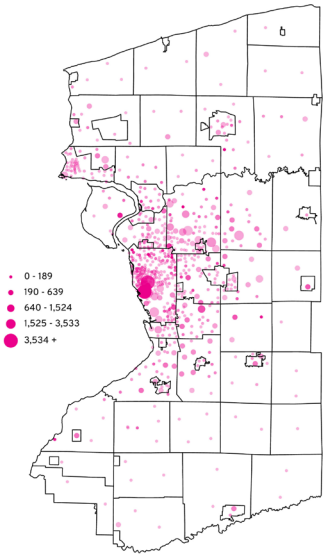


Figure 3.1 | Areas of Employment Growth by 2050

Our communities will grow stronger as we continue to invest in areas where infrastructure already exists.

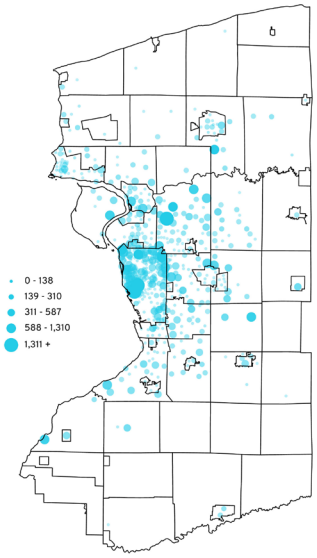


Figure 3.2 | Areas of Population Growth by 2050

Table 3.1 | Forecasted Change in Employment and Population

	2020	2050 Vision	Change	% Change
EMPLOYMENT	696,286	791,271	94,985	+13.6%
POPULATION	1,166,902	1,267,392	100,490	+8.4%

Source: Transpo Group, 2050 Projects by Block Group (2020)

A key component of a Metropolitan Transportation Plan is establishing a vision for the future and the goals and objectives that set the stage for achieving that vision.

The vision for Buffalo Niagara region is to provide a transportation system that connects residents and visitors with a variety of convenient options to promote opportunity, health, and safety for all. At the same time, the system will bolster a globally competitive economy with shared prosperity by encouraging efficient use of our resources and collaborating to make smart, forward thinking decisions that harness changes in the future. The goals identified in this chapter, as in the previous Plan, continue to guide future investment decisions towards that shared strategic direction.

The 2050 MTP update process reaffirms the vision of the 2018 Plan. Our goals, substantially unchanged since the previous plan, were refined to reflect an additional emphasis on equity, safety and resilience of the transportation system. Other changes were made to better align our regional goals with national goals and to incorporate new federal planning requirements. Our progress as a region towards meeting national goals using federal performance measures is documented in Appendix J.

Goals

A goal is a broad statement that describes a desired end state. Transportation planning goals represent key priorities for desired outcomes for the transportation system and/or for region as a whole. Goals are typically broad, visionary statements focused on key priority topics.

Objectives

An objective is a specific, measurable statement that support the achievement of goals. Transportation objectives describe an achievable outcome within constraints (timeframe, funding). Objectives are more specific than goals and there often are multiple objectives for every goal.

Performance Measures and Targets

Performance measures and associated targets serve as the basis for measuring objectives. Performance measures are used to track performance over time. More information on the plan's performance measures and targets can be found in the appendix.

Strategies

Strategies describe actions that can or will be taken to address goals and objectives. Strategies describe the role of programs, policies, and priorities in determining a list of projects and services for investment. Strategies can also address guiding principles for how implementing partners will act to progress toward goals and objectives. The Plan's strategies are discussed in more detail in Chapter 4.

Measuring System Performance

Seven National Performance Goals for the Transportation System

Safety

To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

Congestion Reduction

To achieve a significant reduction in congestion on the National Highway System.

Infrastructure Condition

To maintain the highway infrastructure asset system in a state of good repair.

System Reliability

To improve the efficiency of the surface transportation system.

Freight Movement and Economic Vitality

To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

Environmental Sustainability

To enhance the performance of the transportation system while protecting and enhancing the natural environment.

Reduced Project Delivery Delays

To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion.

The National Transportation Goals were considered in Moving Forward's shared goals and, by extension, in the strategies and actions that guide GBNRTC's activities as described throughout this document.

Pursuant to federal requirements, MPOs must employ a Transportation Performance Management (TPM) approach in carrying out their federally required planning and programming activities. This approach uses system information to make investment and policy decisions to achieve outcomes related to the seven national performance goals. These goals include safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays.

Figure 3.3 below shows how the MTP goals relate to the federal transportation goals.

Figure 3.3

Moving Forward 2050 Goals

Communities

In 2050, our communities will be brimming with opportunities, providing residents with various lifestyle choices and attracting new, diverse residents, businesses and investments from all over the world.

Economy

In 2050, our economy will be globally competitive with shared prosperity that spreads economic opportunities and benefits to all residents in the region.

Environment

In 2050, our environment will be ecologically healthy and easily accessible so that all residents and visitors have abundant opportunities to enjoy our region's world-class waterways and open spaces.

Innovation

In 2050, we will be making transportation changes to the way we plan, fund and implement the region's transportation advances, making data-driven decisions and utilizing creative and diverse partnerships and funding sources.

Transportation Performance Management (TPM)

The Federal Highway Administration (FHWA) defines Transportation Performance Management (TPM) as a strategic approach that uses information to make investment and policy decisions to achieve national performance goals.

Investment Decisions
Using goals, measures, and data to make better informed decisions about how to invest transportation funding.

Aimed at a Better Performing Transportation System
Setting targets, developing plans, reporting results, and being accountable for performance.

For Connected and Productive Communities
Focusing on the efficient delivery of goods and safe, reliable journeys to work, to school, to shopping, to community activities.

The FHWA defines TPM as a strategic approach that uses system performance information to make investment and policy decisions to achieve national performance goals.

TPM:

- Is systematically applied providing key information to help decision makers understand the consequences of investment decisions across transportation assets or modes
- Improves communication between decision makers, stakeholders, and the traveling public
- Ensures targets and measures are developed in cooperative partnerships and based on data and objective information.

MTPs must include performance targets for the measures associated with the following performance management rulemakings:

- FHWA Safety
- FTA Transit Asset Management
- FHWA Pavement & Bridge Condition
- FHWA Performance of NHS, Freight, & CMAQ
- Transit Safety

Summary of System Performance Report

An emerging aspect of activities by GBNRTC and peer metropolitan planning organizations (MPOs) across the country is to incorporate Performance-Based Planning principles. Standards for Performance-Based Planning were first introduced by federal legislation in 2015 (the "FAST Act"), and are being brought into practice nationally over time.

Put simply, Performance-Based Planning is about identifying key performance indicators, establishing the baseline performance of the region's transportation system, setting targets, monitoring progress towards the targets, and over time adapting the region's investment plans to help address if a target is proving to be challenging to attain.

Targets have been established for Safety, Congestion, Transit asset condition, and Pavement/Bridge condition. For a number of the performance measures, GBNRTC as well as peer MPOs across New York State have partnered with NYSDOT to support statewide targets. For targets relating to transit system performance, GBNRTC collaborates with the Niagara Frontier Transportation Authority (NFTA), the region's public transit operator.

In keeping with the Performance-Based Planning approach, GBNRTC regularly monitors the region's performance as well as progress towards its targets. Performance measures that GBNRTC is paying particular attention to at the time of writing are road fatalities (which regionwide are slightly above the NYS average), age of transit assets (certain types of transit vehicles and facilities), transit system safety, and transit (Metro) staff training activities. GBNRTC currently outperforms both the NYS average and the NYS targets for all of the standard road congestion and road/bridge condition performance measures. Many of this MTP's planned investments address the Buffalo Niagara region's performance measure targets (see Chapter 5 for the itemized listing of planned investments).

GBNRTC reports annually on its Performance-Based Planning activities in a System Performance Report. The 2023 edition is presented as Appendix J of this MTP, and future editions will be published at www.gbnrtc.org.

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CHAPTER 4

We Are Moving Forward

The strategies presented on the following pages were developed as part of the subsequent Moving Forward 2050 plan and have been reassessed and refined as part of this planning update. It is important to note that these strategies continue to lay the groundwork for a new approach to transportation in Buffalo Niagara, one that harnesses technology and innovation to strengthen our economy, our communities and our environment.

Image Source: GBNRTC (2022)

Strategies in Action

We are taking steps to create a transportation network that connects our region with a variety of convenient options to promote opportunity, health and safety for all. We are focusing transportation investments in strategic areas to spur development and reinvigorate the places we live and work today, while deterring development on open spaces and reducing infrastructure maintenance costs. We are embracing new technologies and emerging trends to build a transportation system that works better for our environment and our health.

New Mobility & Transit	A fully connected region with more options and opportunities.
Regional Highway System	Enhancing our highway system with Next Generation freeways, commuter expressways, and connections to other regions.
Smartly Enhanced Multi-Modal Arterials	Transforming key corridors into Smartly Enhanced Multi-modal Arterials.
Secondary Corridors	Revitalizing car-dependent corridors with new mobility upgrades.
Infrastructure for Reconsideration	Adapting underutilized infrastructure.
Regional Cycle Network	Promoting bicycling with a modern cycle network.
Future Freight Network	Strengthening our economy with a smart, efficient and diverse freight network.
Smaller Cities & Village Centers	Maximizing access and mobility in village centers and small cities.
Rural Roadways	Upgrading our rural roadways and bridges.

As a Region, we are moving forward many of the adopted strategies described in the 2018 Moving Forward 2050 plan.

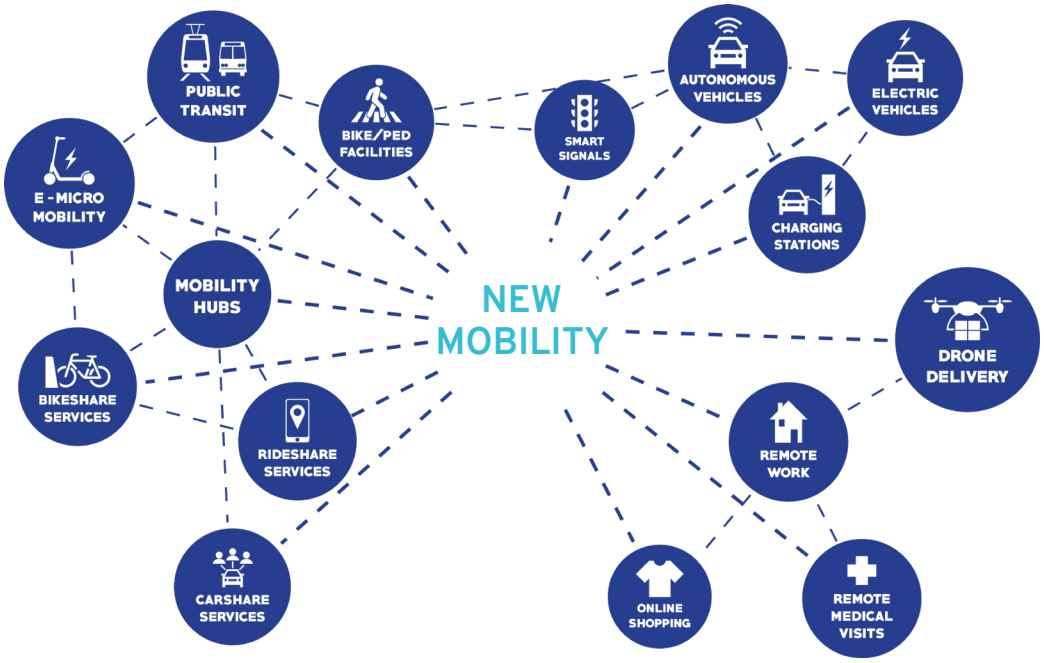
Strategies to Move Us Forward

New Mobility & Transit

Why new mobility and transit?

New mobility can revitalize communities by reconnecting residents to opportunities with multiple modes of transportation. Strategic reinvestments will improve walkability, transit access, and bike infrastructure to keep communities active and healthy. By improving access to multiple modes of transportation, and shifting to electric vehicles, new mobility will reduce private vehicle ownership, which would limit greenhouse gas emissions. Improving worker access to job centers with multiple modes and new transportation services, enhancing freight movement, and promoting investments in targeted areas while limiting the costs of system maintenance, new mobility will benefit our economy.

Innovation is at the heart of new mobility. Technology is used to integrate transportation modes, improve available options, and create a more reliable transportation network. New mobility and transit integrates technology advances to improve safety and increase mobility for the elderly and people with disabilities. It also increases access to parks and could also free up land for green space as autonomous vehicles are expected to require fewer parking spaces. New mobility also relies new partnerships to help finance and manage these initiatives.



Enhancing our mobility and transit options in the Buffalo Niagara Region

NFTA Metro Expansion Project

NFTA is proposing to expand high quality transit in the Buffalo Amherst-Tonawanda Corridor. An Environmental Impact Statement (EIS) is underway to evaluate the potential benefits and impacts to expand Metro's Metro Rail system in Buffalo to Amherst and Tonawanda. Both light-rail transit and bus-rapid transit alternative are being considered. The project would serve existing Metro riders, attract new transit patrons, and improve regional connections between Buffalo, Amherst, and Tonawanda, and support redevelopment and other economic development opportunities. Additionally, the project would improve livability by increasing mobility and accessibility in communities throughout the region.

DL+W Multimodal Study

NFTA is leading an effort to establish a safe, inviting multi-modal network adjacent to the Delaware, Lackawanna and Western (DL+W) Terminal that facilitates activity to and from the station, connects people to the Buffalo River and creates a unique recreational experience along the waterfront.

Bailey Avenue

The GBNRTC, in collaboration with the City of Buffalo and NFTA, commissioned the Bailey Avenue Corridor Transportation Study. This study focuses on a 7.5-mile section of Bailey Avenue from Main Street to South Park Avenue. The purpose of the study is to analyze existing transportation infrastructure along Bailey Avenue and identify long-term approaches to streetscape and transit enhancements. Recommendations are intended to enhance multi-modal mobility options and improve the corridor's sense of place to facilitate economic development along Bailey Avenue and its surrounding neighborhoods.

DL+W Station

This project will reuse and reactivate the former DL&W Trainshed in the Cobblestone/ Canalside districts of the city, which now serves as the NFTA-Metro Rail yard and shop facility. The trainshed will be a new commercial activity center on the Buffalo River waterfront and a new Metro Rail station enhancing public access to the Canalside and Cobblestone districts. This project will extend Metro Rail revenue service from the current terminus at Special Events Station into the DL&W Trainshed where a new Metro Rail Station will be built.

Concept rendering for NFTA LRRT extension at the University at Buffalo's North Campus. Source: NFTA.

Equitable Transit-Oriented Development (eTOD)

Transit-oriented development (TOD) promotes the development of vibrant, walkable, mixed-use communities in and around transit corridors and transit stations. Equitable transit-oriented development (eTOD) provides the benefits of access, mobility, employment, entrepreneurship, housing, and economic development that come along with TOD to everyone. Good TOD projects seek to embrace and empower the local community by building human capital and reversing the forces of socio-economic disinvestment.

The NFTA's Comprehensive Transit-Oriented Development Plan demonstrates that Metro Rail expansion has the opportunity to not only enhance regional mobility, but to serve as a part of a regional investment strategy to leverage economic and community development opportunities associated with transit investment. Developing equitable, mixed-use, vibrant communities around transit will help the Buffalo Niagara region sustain itself in the long-term.

GBNRTC and NFTA are conducting a housing assessment, including household vulnerability to displacement and opportunities and challenges for affordable housing development along the Metro Rail corridor. The results of this analysis will set the stage for the development of a Regional TOD fund to provide financing opportunities along the corridor for affordable housing and community facilities.

LaSalle Station

The LaSalle Station property, including the building and the adjacent Park-and-Ride lot, covers six parcels along Main Street corridor. Three are owned by the City of Buffalo and three by NFTA. In seeking the Requests for Proposals, the City of Buffalo is looking to advance the development activity along Main Street, put the acreage to more active use and take advantage of the proximity to public transportation.

201 Ellicott

201 Ellicott is a mixed-use affordable housing and fresh food market project in downtown Buffalo. A number of new mobility hub amenities are being added including wider sidewalks to encourage walking, a "pull up zone" for ride hailing services, interior long-term bike storage and a fix-it station. Bike stations with e-Bikes will also be installed as well as additional Complete Streets strategies and introduces bike-pedestrian safety features (including bike lanes).

Braymiller Market on the corner of Clinton St and Ellicott St in the City of Buffalo, part of the 201 Ellicott mixed-use development. Photo by GBNRTC (2022).

BuffALLo All Access

The BuffALLo All Access project, formally ITS4US, aims to solve mobility challenges for all travelers with a specific focus on underserved communities, including people with disabilities, older adults, low-income individuals, rural residents, veterans, and limited English proficiency travelers by deploying an integrated set of travel support services and systems within neighborhoods surrounding the Buffalo Niagara Medical Campus (BNMC). Central to the project is a complete trip platform that is able to factor in travelers' preferences and accessibility-related needs in providing comprehensive trip planning and execution support to registered users. The platform, accessed both offline and online via multiple interfaces including an app, will integrate with multiple enabling technologies and services including fixed route transit, community shuttles, smart intersections that use tactile and mobile technologies that assist travelers with disabilities navigate intersections safely, and wayfinding Infrastructure such as smart signs and information hubs to support outdoor and indoor navigation. Through the deployment, the BuffALLo All Access project seeks to address the challenges facing communities in the area by:

- Providing transit access to healthcare and jobs to underserved residents including persons with disabilities and allowing them to share in the economic development in downtown Buffalo.

- Leveraging technology to work in support for accessible transportation, integrating accessible transportation technology, transit, and connected automation to solve a transportation need.

- Developing a scalable model for considering accessibility and universal design in transportation technology projects.

GBNRTC Electric Vehicle Planning

To support the transition to a cleaner transportation system and facilitate the creation of a more comprehensive Electric Vehicle (EV) charging network in the region, GBNRTC is developing an electric vehicle planning website to serve as a resource to help provide information to a broad variety of regional stakeholders on EVs, EV incentive programs, EV chargers in terms of types and locations, EV siting recommendations and other EV planning related information. The EV website will be hosted under GBNRTC's main website and is scheduled to be launched by summer 2023.

Strategies to Move Us Forward

Regional Highway System

Why improve our regional highway system?

Incorporating technology upgrades on the region's highway system will make travel more efficient and cost-effective, expanding access to jobs and making people and businesses more productive. Enhancing our connections to other regions, particularly by making the flow of freight across the border more efficient, will increase trade, help grow local businesses and bring new employment and workforce development opportunities to the region.

Leveraging vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications on expressways will improve transportation safety and efficiency, and enhance access to employment, education and other opportunities for all residents, particularly in rural and suburban communities. Promoting autonomous vehicles by adding dedicated lanes and V2I communications will improve transportation safety and efficiency while improving the flow of traffic and enhancing access to opportunities.

Technology upgrades to improve the flow of traffic on the regional highway system will decrease congestion and the environmental impacts of transportation. Adding dedicated lanes and charging stations will promote the use of autonomous and electric vehicles to further reduce fossil fuel use and improve air quality. Applying innovative, sustainable materials for road surfaces will minimize stormwater runoff.

Technology advances are expected to facilitate better flow of vehicle traffic through dynamic routing, lane management, and border clearance. The region's highway system relies on technological innovation to make transportation highways more efficient, safe and cost-effective. Communications technology will allow vehicles to communicate to one another and relay traffic information back to integrated transportation management systems. Innovative traffic management strategies like variable speed limits and ramp-metering will also improve travel on the highway system. Trucks will likely become the first autonomous fleet, allowing more efficient flow of freight into and out of the region. Creating a strong bi-national border requires innovative partnerships and governance arrangements to facilitate the efficient movement of people and goods.

Here's how we're improving our regional highway system

Smart Signal System Deployment

The Town of Amherst and the Town of Tonawanda have recently deployed smart signals along several corridors. This hardware and software utilizes the latest in traffic signal artificial intelligence. The system incorporates camera-based video detection with extreme weather reliability, full-scale remote management, automated traffic signal performance, real-time telemetry, and 24/7/365 data for planning and network optimization. The smart signal deployment has the ability to reduce congestion, increase safety, and reduce emissions, making the existing transportation system more efficient and improving overall mobility in the region.

The Advanced Transportation Congestion Management Technology Deployment (ATCMTD) - All Roads

The ATCMTD Grant was awarded to Niagara International Transportation Technology Coalition (NITTEC) by the Federal Highway Administration. The $7.8 Million award is targeted specifically to fund model deployment sites for large-scale installation and operation of advanced transportation technologies. Building upon recent Integrated Corridor Management (ICM AMS) efforts, the Phase I (Planning) and Phase II (Implementation) approach from industry-led teams are focusing efforts on system integration and collaboration, enhancements of mobility and safety, dynamic information dissemination, and Active Traffic Management (ATM). This will be accomplished through means of a fully-integrated Decision Support System (DSS) and performance measure modules, interfacing external traffic and weather information services with existing ATM, integration of vehicle and infrastructure communication (V2I and I2V), and sophisticated parking/ wayfinding and incident management systems.

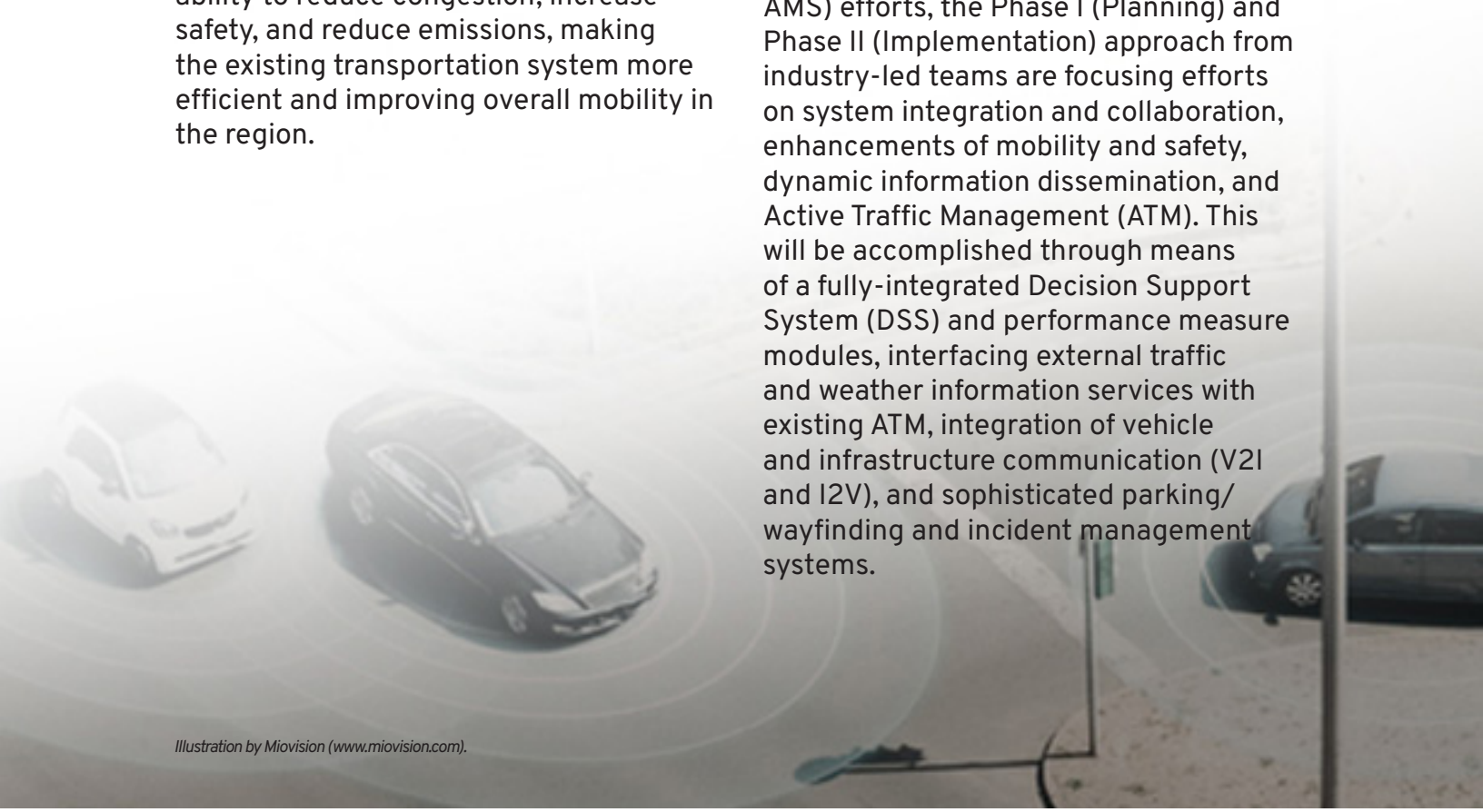


Illustration by Miovision (www.miovision.com).

Strategies to Move Us Forward

7 Smartly Enhanced Multimodal Arterials (SEMA)

Why SEMAs?

SEMAs represent the convergence of modern street design standards, connected vehicle technologies, and multi-modal mobility services. Making these improvements and repurposing underused roadway space for pedestrians, bicycles and transit, where feasible, will optimize travel along these corridors.

Focusing investments in key areas along major corridors will maximize revenues for local governments while limiting new infrastructure costs. Linking reliable transportation options along major corridors will enable multi-modal trip planning and expand access to opportunities while promoting revitalization of key areas. Adding electric vehicle charging stations, limiting congestion and promoting alternatives to personal vehicle ownership can limit transportation's impact on the environment and air quality. SEMAs will integrate existing and emerging technologies to create a seamless system for safely navigating between various transportation modes. SEMAs will also transform existing rights-of-way to create a sense of place and spur investment in key corridors to strengthen the overall region.

Niagara Street in the City of Buffalo. Photo by GBNRTC (2022).

Bringing SEMAs to the Buffalo Niagara Region

Niagara Street Corridor

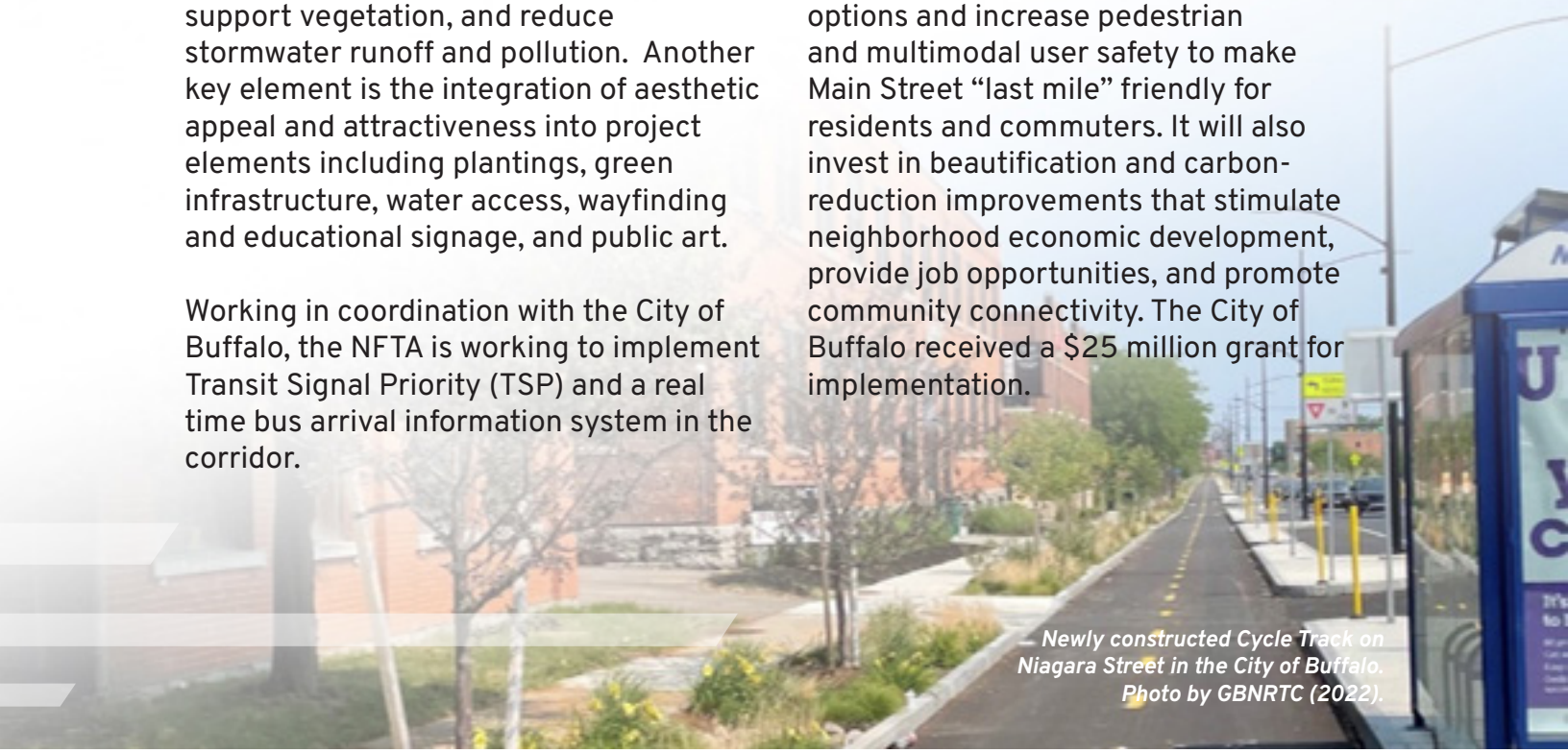
The Niagara Street corridor is in the midst of a transformative process from industrial corridor to a vibrant destination that befits its waterfront proximity and recent increased level of private investment. The City of Buffalo is leading the effort to transform Niagara Street into a multimodal corridor that serves pedestrians, bicycles, transit, and motor vehicles in a safe and functional manner by use of traffic calming, pavement rehabilitation, curb bump-outs, improved crosswalks and signals, and LED street lighting. The project incorporates responsible stormwater management elements that increase infiltration, support vegetation, and reduce stormwater runoff and pollution. Another key element is the integration of aesthetic appeal and attractiveness into project elements including plantings, green infrastructure, water access, wayfinding and educational signage, and public art.

Working in coordination with the City of Buffalo, the NFTA is working to implement Transit Signal Priority (TSP) and a real time bus arrival information system in the corridor.

Main Street BEAMS

Transforming Main Street: Building Equity and Assuring Mobility through Sustainability ("Main Street BEAMS") is a people-centered, multimodal surface infrastructure improvement project that will be a catalyst for transforming east-west social, economic, and transportation connections in the City of Buffalo. Main Street BEAMS is a complete streets project that will revitalize a 2.5-mile corridor of Main Street corridor from Goodell Street to Kensington Avenue in the City of Buffalo adjacent to the Masten Park neighborhood.

The project will enhance mobility options and increase pedestrian and multimodal user safety to make Main Street "last mile" friendly for residents and commuters. It will also invest in beautification and carbon-reduction improvements that stimulate neighborhood economic development, provide job opportunities, and promote community connectivity. The City of Buffalo received a $25 million grant for implementation.



Newly constructed Cycle Track on Niagara Street in the City of Buffalo. Photo by GBNRTC (2022).

Strategies to Move Us Forward

Secondary Corridors

Why improve our secondary corridors?

Concentrating development along key locations of corridors will revitalize and strengthen our first ring suburbs. Adding bike lanes and pedestrian amenities can help make existing communities more active and healthy. By reducing or repurposing excess road capacity, adding electric vehicle charging stations and amenities for bicycles and pedestrians, secondary multi-modal corridors improve our environment. Innovative retrofits of secondary arterials can create flexible use of the right-of-way. Rethinking the infrastructure along these secondary corridors will make these communities more walkable, livable and attractive for reinvestment.

Union Road in the Town of Cheektowaga, NY.
Source: Google Earth (2023).

Strategies to Move Us Forward

Infrastructure for Reconsideration

Why reconsider how we use our infrastructure?

Taking a critical look at some of the region's roadways—how much they cost to maintain and how much traffic they typically carry today compared to the volume of traffic they were originally built for—reveals opportunities to reduce existing infrastructure to accommodate future land use and travel patterns. Reconfiguring some portions of the system will reduce the costs of maintaining and repairing our infrastructure while still enhancing mobility and the overall efficiency of our transportation system.

Major roads or highways potentially suited for reconsideration may have the following characteristics:

- Built based on previous forecasts of significant growth and travel demand in an area where those forecasts have not been reached.
- Traffic levels below what would justify the size and nature of the existing road.
- Areas where travel patterns have shifted resulting in less reliance on the road.
- Out of context with their surrounding land uses.

The Scajaquada Expressway (NY RT 198) bisects Delaware Park in the City of Buffalo. Image Source: Google Earth (2023)

Infrastructure for reconsideration in our region

The current alignment of the Scajaquada Expressway (NY RT 198) divides Buffalo neighborhoods. Image Source : Google Earth (2023)

Region Central

The GBNRTC has taken the lead in the Region Central effort to reimagine the future of the Scajaquada Corridor. This project includes developing a comprehensive planning process to reimagine the Scajaquada Expressway corridor and surrounding neighborhoods. The project will identify future land use and community development vision and develop a data-driven mobility assessment and set of recommendations to create a better future for all who live work and play in Region Central.

Reimagining the Twin Cities Memorial Highway

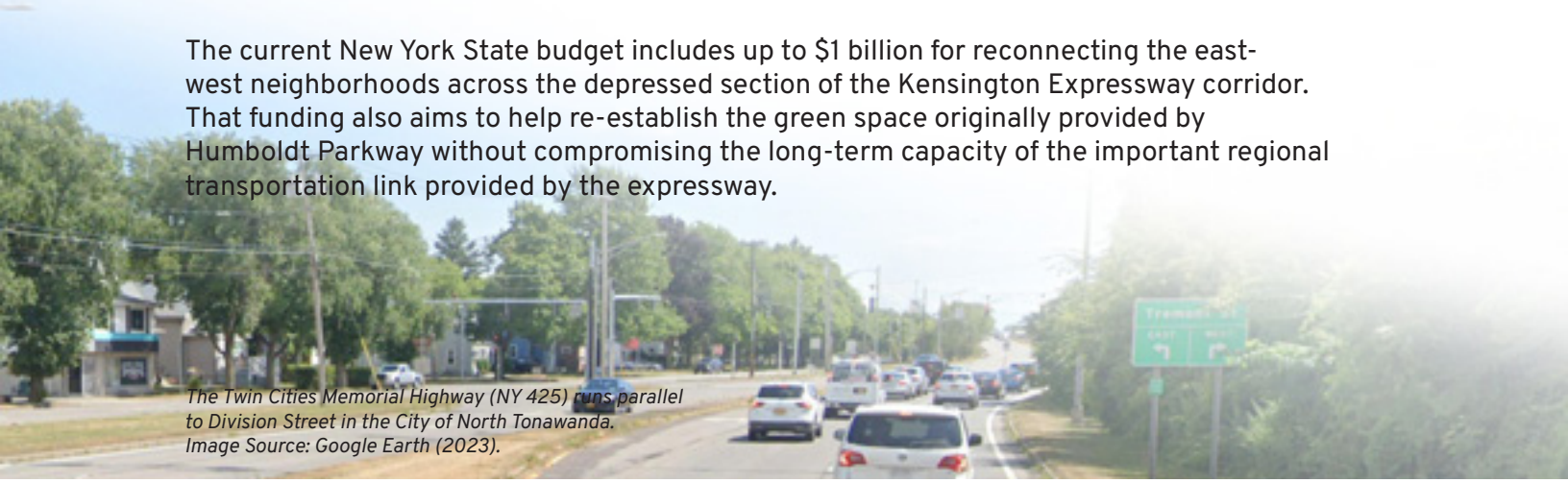
The Twin Cities Memorial Highway, NYS Route 425, located in the City of Tonawanda and North Tonawanda has long created significant barriers to mobility, access, or economic development to the area and presents an opportunity to reconnect, improve safety and access to the community.

The purpose of the planning initiative is to develop and evaluate mobility options and advance recommendations for the redesign of the highway, which may include reducing the number of travel lanes or removal of the highway all together.

Re-Connecting Humboldt Parkway

Constructed during the 1950s and 1960s, the Kensington Expressway replaced what had been a tree-lined boulevard – the Humboldt Parkway, designed by Frederick Law Olmsted – with a below-grade highway that severed the connection between the surrounding neighborhoods. The original boulevard connected Humboldt Park (now Martin Luther King, Jr. Park) with Delaware Park.

The current New York State budget includes up to $1 billion for reconnecting the east-west neighborhoods across the depressed section of the Kensington Expressway corridor. That funding also aims to help re-establish the green space originally provided by Humboldt Parkway without compromising the long-term capacity of the important regional transportation link provided by the expressway.



The Twin Cities Memorial Highway (NY 425) runs parallel to Division Street in the City of North Tonawanda. Image Source: Google Earth (2023).

Strategies to Move Us Forward

Regional Cycle Network

Making bicycling a viable transportation option for the region starts with carrying out the plans we have in place while exploring other ways to connect more communities and destinations with the regional bicycle network.

Why invest in our regional cycle network?

Expanding and upgrading the regional cycle network will increase multi-modal access to employment centers and support tourism by providing recreational opportunities that connect with tourist destinations on both sides of the border.

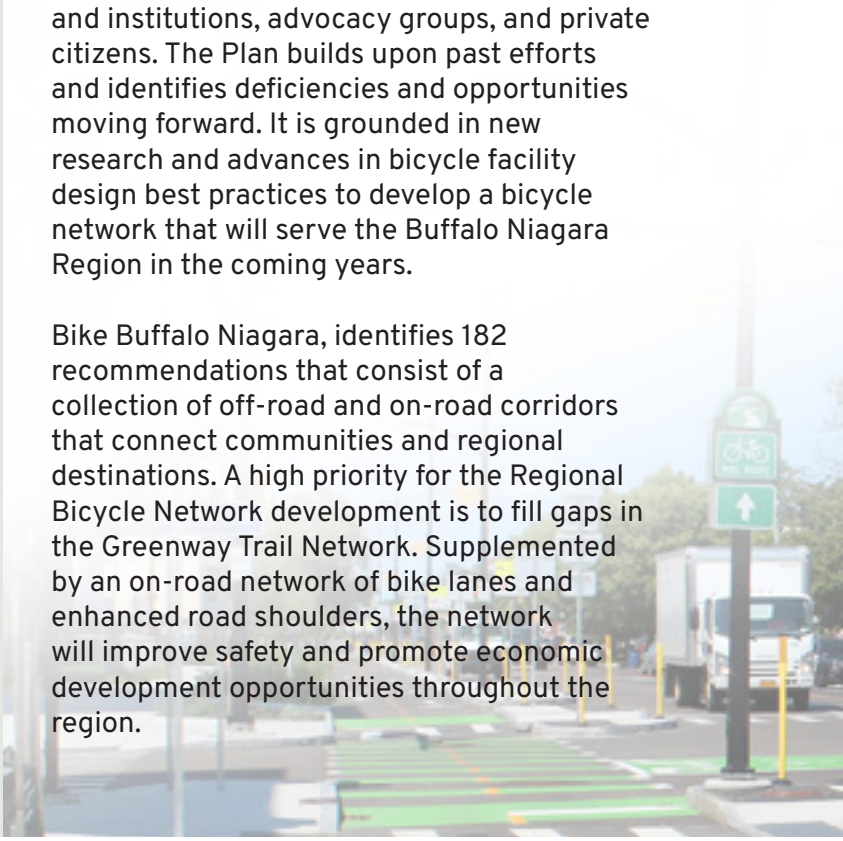
A modernized, safe and convenient regional cycle network bolsters communities throughout the region by enhancing multi-modal access to employment, services and recreational opportunities. Linking bikes with other modes and services at mobility hubs could also spur reinvestment in key centers of urban, suburban and rural communities. Connect bicycling with transit services to improve transit accessibility by providing a solution for the first and last mile.

Supporting bicycling with improvements to the regional cycle network, like electric bike charging stations, and connections with other modes can reduce the use of motorized vehicles and limit greenhouse gas emissions. Bicycle improvements would also increase access to parks and recreational opportunities promoting active, healthy lifestyles.

Bike Buffalo Niagara

Bike Buffalo Niagara, the Regional Bicycle Master Plan is one step in the overarching goal to make the region's bicycle network safer and more accessible for residents and visitors. This Plan, adopted in 2020, was developed in consultation with local, county, state representatives, public organizations and institutions, advocacy groups, and private citizens. The Plan builds upon past efforts and identifies deficiencies and opportunities moving forward. It is grounded in new research and advances in bicycle facility design best practices to develop a bicycle network that will serve the Buffalo Niagara Region in the coming years.

Bike Buffalo Niagara, identifies 182 recommendations that consist of a collection of off-road and on-road corridors that connect communities and regional destinations. A high priority for the Regional Bicycle Network development is to fill gaps in the Greenway Trail Network. Supplemented by an on-road network of bike lanes and enhanced road shoulders, the network will improve safety and promote economic development opportunities throughout the region.



Strategies to Move Us Forward

Future Freight Network

Why invest in our future freight network?

A modernized and diversified freight network will improve the flow of goods and bolster our economy, particularly by improving exports and increasing the amount of cargo and containers processed in the region. Making transportation more cost effective will allow people and businesses to be more productive, which will support all industries in the region, including target employment sectors. Improving the local business climate could also create spin-off economic benefits for our communities. Reducing border delays and promoting alternative fuels would improve fuel efficiency and reduce the environmental impact of our freight network.

Technology advances are expected to facilitate better flow of vehicle traffic through dynamic routing, lane management, and border clearance. Trucks will likely become the first AV fleet, facilitating efficient flow of freight in and out of the region. Creating robust and secure bi-national bridges requires innovative partnerships and governance arrangements to facilitate safe and efficient movement of people and goods across the border.

Buffalo Niagara Regional Freight Plan

Freight planning is an important component of metropolitan transportation planning processes. Input from a variety of public and private stakeholders—State DOTs, MPOs, freight modes, general public must be considered to successfully integrate freight planning into these existing transportation planning processes. Adopted in 2021, the Buffalo Niagara Regional Freight Plan seeks to connect different modes of transportation and/or transferring freight from one mode to another at facilities such as airports, terminals, and stations and coordinate public-private, state-local, and state-federal freight transportation investment decisions and activities.

The primary objective of the Plan was to develop quality freight projects and policy recommendations that will encourage growth in the industry and economic development opportunities for the WNY region.

New technologies, emerging transportation services and shifting consumer preferences are changing how goods get to market. Our regional freight network will have to anticipate and adapt to these shifts in order for the region to remain competitive in an increasingly global marketplace.

Buffalo Niagara International Airport
Image Source: Google Earth (2023).

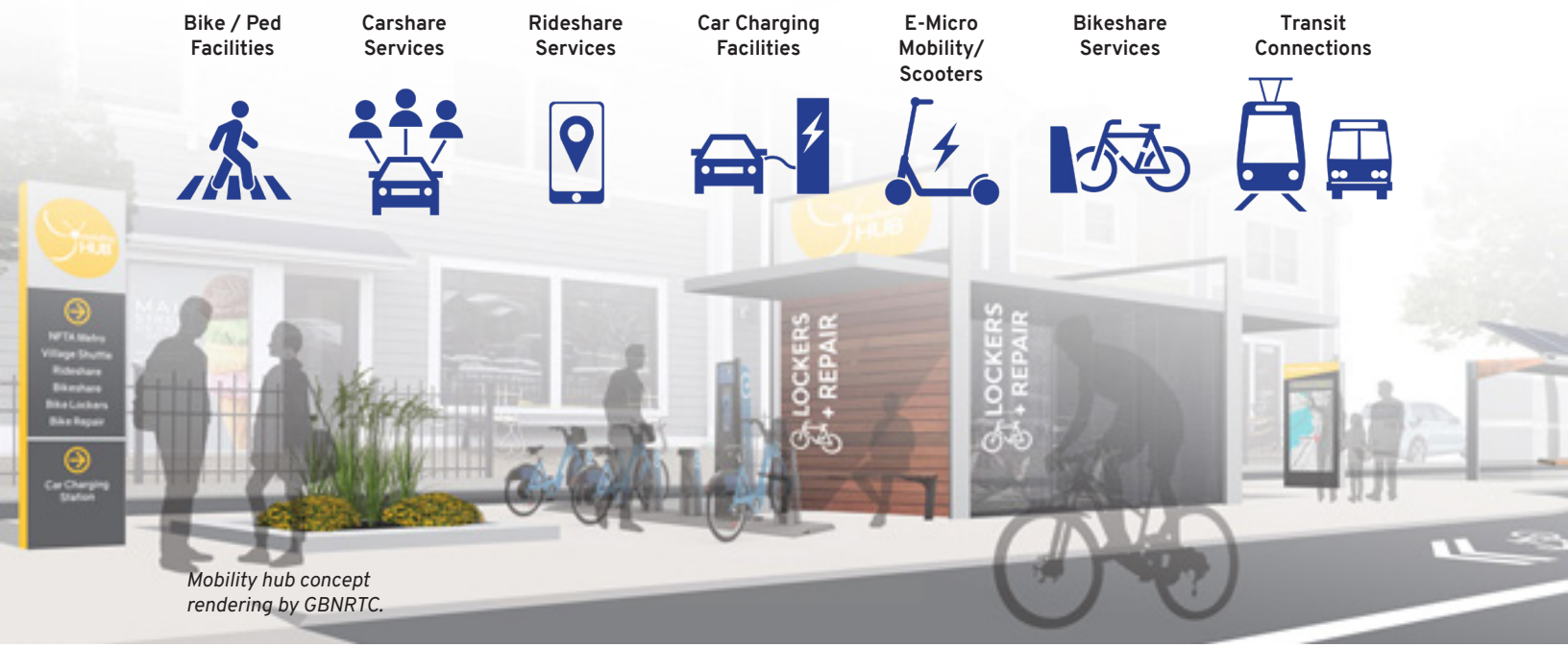
Strategies to Move Us Forward

Smaller Cities & Village Centers

How should we invest in our smaller cities and village centers?

While our region's village centers and small cities range in size, they all share a desire to be the focal point for local residents, businesses and other services, and to be safe, walkable and easily accessible communities. The focus needs to be on creating complete streets in these communities with walkable neighborhoods and downtown centers, bicycle and pedestrian facilities, mobility hubs, green infrastructure and smart parking.

Mobility hubs are places in a community that bring together public transit, bike share, car share and other ways for people to get where they want to go without a private vehicle. Built around frequent and high-capacity transit, mobility hubs offer a safe, comfortable, convenient and accessible space to seamlessly transfer from one type of transportation to another. GBNRTC is working with the Villages of Hamburg and Lancaster in the development and implementation of mobility hubs in these communities.



Mobility hub concept rendering by GBNRTC.

Strategies to Move Us Forward

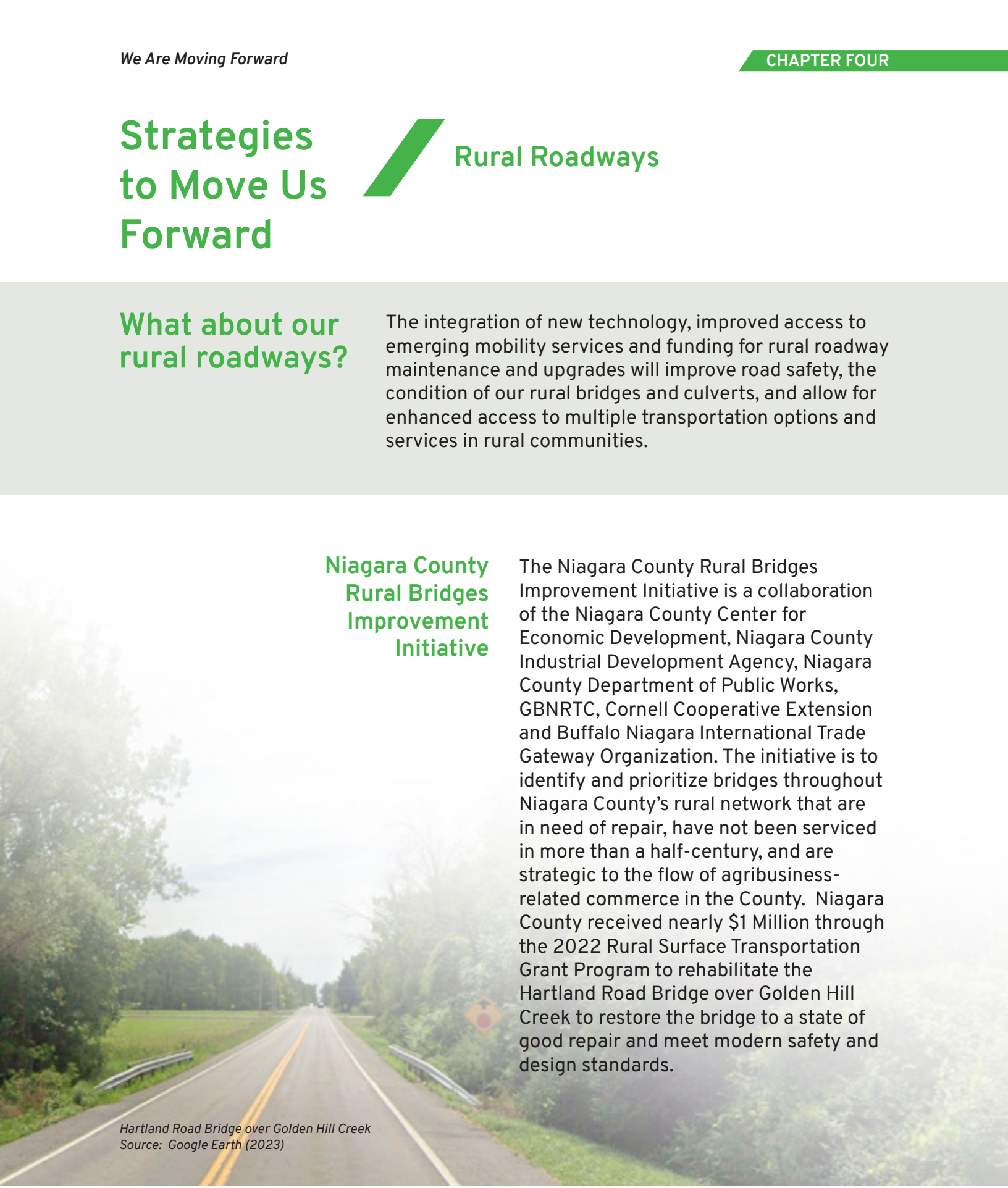
Rural Roadways

What about our rural roadways?

The integration of new technology, improved access to emerging mobility services and funding for rural roadway maintenance and upgrades will improve road safety, the condition of our rural bridges and culverts, and allow for enhanced access to multiple transportation options and services in rural communities.

Niagara County Rural Bridges Improvement Initiative

The Niagara County Rural Bridges Improvement Initiative is a collaboration of the Niagara County Center for Economic Development, Niagara County Industrial Development Agency, Niagara County Department of Public Works, GBNRTC, Cornell Cooperative Extension and Buffalo Niagara International Trade Gateway Organization. The initiative is to identify and prioritize bridges throughout Niagara County's rural network that are in need of repair, have not been serviced in more than a half-century, and are strategic to the flow of agribusiness-related commerce in the County. Niagara County received nearly $1 Million through the 2022 Rural Surface Transportation Grant Program to rehabilitate the Hartland Road Bridge over Golden Hill Creek to restore the bridge to a state of good repair and meet modern safety and design standards.



Hartland Road Bridge over Golden Hill Creek
Source: Google Earth (2023)

CHAPTER 5

Funding and Project Delivery

This section provides a financial plan that estimates how much will be available for the recommended transportation investments and strategies and the funding allocated to maintaining the existing system. It also includes both constrained and illustrative project lists. Illustrative projects may be advanced to address unfunded needs, if additional money becomes available to the region.

Image Source: Google Earth (2023)

Working together, the region will make investments and deliver projects that upgrade the condition of streets, highways, transit and bridges. The projects will make these facilities safe for all users and modernize them so that the transportation network is accessible for all users, provides people with better choices across all modes, is more sustainable and resilient to a changing climate, and is more equitable.

Many of our local streets, roads, bridges and highways were built decades ago and now require investments to rehabilitate, reconstruct and maintain them. This update to the Moving Forward 2050 Plan will ensure that the region's infrastructure and services continue to function properly, safely and support the movement of people and goods—while at the same time prioritizing infrastructure that is both critical to the region, and supports Moving Forward's goals. Overall approaches to asset management and maintenance include: implementing systematic, aggressive road maintenance region-wide, with safety and technology upgrades, adopting advanced materials and construction techniques, and carrying out the Transit Asset Management Plan

The planning process must be consistent with federal transportation law. The most recent transportation legislation, the Bipartisan Infrastructure Law (BIL) provides the basis for federal transportation programs and activities through September 30, 2026. It makes a once-in-a-generation investment of $350 billion in highway programs nationwide, including the largest dedicated bridge investment since the construction of the Interstate Highway System.

New programs under the BIL focus on key infrastructure priorities including rehabilitating bridges in critical need of repair, reducing carbon emissions, increasing system resilience, removing barriers to connecting communities, and improving mobility and access to economic opportunity.

Investments and projects that align with the BIL and will help Build a Better America include those that:

- Improve the condition, resilience and safety of road and bridge assets consistent with asset management plans (including investing in preservation of those assets)
- Promote and improve safety for all road users, particularly vulnerable users
- Make streets and other transportation facilities accessible to all users and compliant with the Americans with Disabilities Act
- Address environmental impacts ranging from storm water runoff to greenhouse gas emissions

- Prioritize infrastructure that is less vulnerable and more resilient to a changing climate
- Future-proof our transportation infrastructure by accommodating new and emerging technologies like electric vehicle charging stations, renewable energy generation, and broadband deployment in transportation rights-of-way
- Reconnect communities and reflect the inclusion of disadvantaged and under-represented groups in the planning, project selection and design process

Many of the new programs are for local governments, Metropolitan Planning Organizations (MPOs), Tribes, and other public authorities to compete directly for funding. It is important to note that USDOT has advised the MPO to not incorporate BIL discretionary funding programs into revenue projections and instead include projects that may be funded in this way in "Illustrative Projects" listing. Some of these new programs, the GBNRTC and its members are actively pursuing include:

Reconnecting Communities Pilot

$1 Billion

The program's funds can support planning, capital construction, and technical assistance to equitably and safely restore community connectivity through the removal, retrofit, mitigation, or replacement of eligible transportation infrastructure facilities that create barriers to mobility, access, or economic development.

Safe Streets and Roads for All (SS4A)

$5 Billion

The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. The SS4A program supports the Department's National Roadway Safety Strategy and a goal of zero deaths and serious injuries on our nation's roadways.

Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program

$500 Million

The SMART program was established to provide grants to eligible public sector agencies to conduct demonstration projects focused on advanced smart community technologies and systems in order to improve transportation efficiency and safety.

Bridge Investment Program

$12.2 Billion

The Bridge Investment Program will support projects to improve bridge and culvert condition, safety, efficiency, and reliability.

The Mega Grant Program

$5 Billion

The Mega Program will support large, complex projects that are difficult to fund by other means and likely to generate national or regional economic, mobility, or safety benefits.

RAISE Discretionary Grants

$7.5 Billion

The Rebuilding American Infrastructure with Sustainability and Equity Discretionary Program will support surface transportation infrastructure projects that will improve safety, environmental sustainability, quality of life, mobility and community connectivity, economic competitiveness and opportunity including tourism, state of good repair, partnership and collaboration and innovation.

Charging and Fueling Infrastructure Discretionary Grant Program

$2.5 Billion

Program to strategically deploy publicly accessible electric vehicle charging infrastructure and other alternative fueling infrastructure along designated alternative fuel corridors. At least 50 percent of this funding must be used for a community grant program where priority is given to projects that expand access to EV charging and alternative fueling infrastructure within rural areas, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces.

Low/No Emissions Vehicle Program

$5.6 Billion

The Low or No Emission competitive program provides funding to state and local governmental authorities for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required supporting facilities.

Buses and Bus Facilities Program

$1.9 Billion

The Grants for Buses and Bus Facilities Competitive Program makes federal resources available to states and direct recipients to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities, including technological changes or innovations to modify low or no emission vehicles or facilities. Funding is provided through formula allocations and competitive grants.

Financial Plan

The fiscal constraint aspect of the regional transportation plan requires a financial plan be prepared so that the resulting plan can be used as a tool for the community to realistically establish priorities within the financial resources likely to be available. The plan must be fiscally constrained to the amount projected to be available to the region. As described above, there are funding sources that GBNRTC can apply for but have not been awarded and projects from these sources are included in the illustrative projects list.

The following Financial Plan tables (Tables 5.1 and 5.2) illustrate forecast revenues through 2050 (basis for forecasts are detailed in Appendix G). The table also shows projected expenditures over that period, including system preservation needs, also detailed in Appendix L, and expenditures per strategy.

Tables 5.1 and 5.2 below illustrate the balance between revenues and expenditures in Moving Forward 2050 Update.

Table 5.1 | MTP 2050 Plan Forecast Expenditures (in Millions of Dollars)

System Preservation	**$12,655.95**
Preservation of Highway, Bridge and Transit Systems	$12,655.95
Constrained Strategies Beyond Preservation	**$8,898.83**
New Mobility & Transit	$2,833.25
Regional Highway System Upgrades	$1,954.47
Regional Traffic Signal Enhancement	$500.00
Smartly Enhanced Safety and Mobility Corridors	$1,085.92
Secondary Corridors	$222.99
Smaller Cities	$489.05
Rural Roadways	$606.37
Regional Cycle Network	$341.77
Future Freight Network	$442.71
Infrastructure for Reconsideration	$422.30
Program Total	**$21,554.78**

Table 5.2 | MTP 2050 Financial Plan (In Millions of Matched Year-of-Expenditure Dollars)

Reasonably-expected revenues for implementing the recommendations of Moving Forward are based on traditional sources and levels of federal, state, and local expenditures for roads, bridges, public transportation vehicles and rail infrastructure, bicycle paths and lanes, and sidewalks.

Reasonably-Expected Revenues	Near-Term (FFYs 2023-2030)	Mid-Term (FFYs 2031-2040)	Long-Term (FFYs 2041-2050)	Full MTP 2050 (FFYs 2023-2050)
FHWA (Allocated)	**1,238.53**	**1,851.29**	**2,252.07**	**5,341.88**
Congestion Mitigation and Air Quality (CMAQ) Improvement Program	17.55	26.22	31.96	75.73
Highway Safety Improvement Program (HSIP)	89.35	133.56	162.81	385.71
National Highway Performance Program (NHPP)	811.17	1,212.50	1,478.03	3,501.70

Table 5.2 continues on page 88

Table 5.2 "MTP 2050 Financial Plan" continues from page 87

Reasonably-Expected Revenues	Near-Term (FFYs 2023-2030)	Mid-Term (FFYs 2031-2040)	Long-Term (FFYs 2041-2050)	Full MTP 2050 (FFYs 2023-2050)
FLEX	152.92	228.58	278.66	660.16
Off System Bridge	46.41	69.37	79.90	195.68
Large Urban	121.13	181.06	220.71	552.90
FHWA (Non Allocated)	**174.36**	**249.14**	**329.30**	**752.80**
Transportation Alternatives Program (TAP)	24.58	36.74	44.79	106.11
Railway-Highway Crossings Program (RHCP)	4.64	6.18	9.23	20.05
National Highway Freight Program (NHFP)	39.95	53.2	79.32	172.47
Carbon Reduction Program (CRP)	26.09	34.74	51.80	112.63
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program	38.66	57.82	70.46	166.94
Bridge Formula Program (BFP)	40.44	60.46	73.70	174.60
State	**1,301.21**	**1,876.36**	**2,205.69**	**5,383.26**
NYSDOT	581.61	869.37	1,059.74	2,510.73
NYSTA	366.36	478.99	503.50	1,348.85
Local/State Match*	353.24	527.99	642.45	1,523.68
Transit	**2,621.42**	**2,578.63**	**4,041.43**	**9,241.48**
FTA	270.05	404.98	495.63	1,170.66
Other Transit**	2,351.37	2,173.65	3,545.80	8,070.82
Local Revenues	**140.85**	**192.59**	**212.75**	**546.19**
Non-Transportation Funds	**74.58**	**101.96**	**112.63**	**289.17**
TOTAL	**5,550.95**	**6,849.96**	**9,153.87**	**21,554.78**

Notes:

**Local/State funding match is estimated at 20%*

*** Includes Metro Expansion (Federal and Non Federal), State and Local Operating Assistance, and PT Modernization and Enhancement*

The constrained projects were analyzed to determine their ability to meet Moving Forward 2050's objectives. A quantitative analysis used the regional travel demand model, and a qualitative assessment was based on observed improvements in other regions when similar projects were implemented. The Moving Forward 2050 project selection process embodies performance-based planning by taking a strategic, data-informed approach to identify transformative investments in the region's transportation system.

The table below includes representative projects that help meet Moving Forward 2050's objectives, as well as the total estimated cost for each strategy.

It is important to note that the projects below are dependent on the proper operation and maintenance of the existing transportation network. To that end, Moving Forward 2050 update allocates nearly 60% of reasonably-expected revenues to maintain and preserve the existing system.

Constrained Project List by Strategy

Table 5.3 | Constrained Project List by Strategy

Note: Projects are not listed in order of priority

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
New Mobility & Transit			**$2,833.25**
NMT1	Metro Transit Expansion	Expand high quality transit service in Buffalo to Tonawanda and Amherst.	$1,698.01
NMT2	Metro State of Good Repair	Metro Rail vehicle replacements, station enhancements, track and catenary replacements.	$400.00
NMT3	Zero Emissions Bus Purchase and Bus Infrastructure Garage Enhancements	Zero-emissions bus purchases. Infrastructure installation, facility modifications, and the addition of new power supply or other fueling infrastructure.	$400.00
NMT4	Mobility Hubs	Install varying physical and technology improvements for various modes to better serve travelers at strategic locations.	$80.96
NMT5	Bailey Avenue High Capacity Transit Enhancements	Implement BRT along Bailey Avenue. Includes transit and streetscape enhancements and smart technology implementation.	$78.44
NMT6	NFTA Bus System-wide High Capacity Transit Enhancements	Implement transit enhancements along select corridors in the region.	$75.00
NMT7	Access Improvements near NFTA stations	Enhance multimodal access to/from NFTA stations to support usage of the transit network.	$39.49

Table 5.3 continues on page 90

Table 5.3 "Constrained Project List by Strategy" continues from page 89

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
NMT8	Buffalo CBD, Niagara Falls and Villages Smart Parking	Deploy technology to optimize existing spaces by providing real-time information to users seeking parking.	$35.50
NMT9	DL&W Access Improvements	Establish a safe, inviting multi-modal network adjacent to the DL+W Terminal that facilitates activity to and from the new station.	$20.00
NMT10	Commuter Shed EV Charging Demonstration	Install 10 EV charging stations per year for 5 years to demonstrate viability of private operation at Mobility Hubs.	$5.85
Regional Highway System			**$1,954.47**
RHS1	NYS Route 33, Kensington Expressway Project	Reconnecting neighborhoods in the City of Buffalo that were divided by the construction of the Kensington Expressway.	$1,000.00
RHS2	Exit 50 ramps/interchange Improvements	Improvements to Exit 50 interchange ramps, bridges, and supporting infrastructure connecting I-90 and I-290.	$300.00
RHS3	Next Generation Freeway Technology and Safety Upgrades	Systematic Freeway upgrades to deploy corridor management solutions, operational and safety upgrades.	$280.14
RHS4	Smart Region Coordination Support	Provide operational support for regional Transportation Management Center (TMC) and Transportation Management Association (TMA).	$170.44
RHS5	Freeway Interchange Reconfigurations and Upgrades	Reconfigure selected freeway interchange and arterial interface locations for traffic management and safety.	$129.04
RHS6	I-290/Main Street Interchange Improvements	Consolidate interchange ramps at I-290/Main Street to improve safety and efficiency.	$40.20
RHS7	I-190/Niagara Falls Blvd Interchange Improvements	Improvements to Exit 22 of I-190 (Niagara Falls Boulevard), possibly including a diverging diamond treatment.	$25.00
RHS8	Route 5 Future Considerations	Assess alternatives for longer term Route 5 planning.	$9.65

Table 5.3 continues on page 91

Table 5.3 "Constrained Project List by Strategy" continues from page 90

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
Regional Traffic Signal Enhancement			**500.00**
RTSE1	Regional Traffic Signal Enhancement	Deploy and operate an integrated traffic signal control system for the Buffalo Niagara region.	500.00
Smartly Enhanced Multi-modal Arterials			**$1,085.92**
SEMA1	Initial SEMA Corridor	Construct upgraded street features, safety improvements and technology integration, and create mobility hubs on SEMA Corridors including Main Street BNMC	$219.79
SEMA2	2nd Generation SEMA Corridors	Construct two SEMA Corridors with updated designs, safety improvements and technology integration by 2035.	$265.31
SEMA3	3rd Generation SEMA Corridors	Construct two SEMA Corridors with updated designs, safety improvements and technology integration by 2045.	$600.81
Secondary Corridors			**$222.99**
SC1	Phase 1 Secondary Corridors Complete Streets	Construct five Complete Streets with improved walkability, integrated technology, and enhanced mobility by 2030.	$56.91
SC2	Phase 2 Secondary Corridors Complete Streets	Construct five Complete Streets with improved walkability, integrated technology, and enhanced mobility by 2040.	$72.84
SC3	Phase 3 Secondary Corridors Complete Streets	Construct five Complete Streets with improved walkability, integrated technology, and enhanced mobility by 2050.	$93.25
Smaller Cities			**$489.05**
SMC1	Neighborhood Walk Access Improvements	Upgrade five miles of sidewalks, crossings, and wayfinding between neighborhoods and main streets annually.	$266.68
SMC2	Neighborhood Complete Streets	Construct one Complete Streets treatment annually on arterials or collectors.	$222.37

Table 5.3 continues on page 92

Table 5.3 "Constrained Project List by Strategy" continues from page 91

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
Rural Roadways			**$606.37**
RR1	Bridge/Culvert Improvements	Upgrade existing structures to reduce hydraulic vulnerability and improve system resilience.	$312.09
RR2	Safety Upgrades	Install countermeasures at high crash locations along with guiderail, signage, and pavement marking upgrades.	$145.78
RR3	Village Main Street Improvements	Construct 10-12 Complete Streets treatments in Village Center arterials or collectors.	$106.93
RR4	Erie-Niagara Counties Agricultural Access Improvements	Expand and upgrade access roads and bridges serving commercial farming and agribusiness establishments.	$40.47
RR5	Niagara County Rural Bridge Improvement Initiative - Hartland Road Bridge over Golden Hill Creek	Rehabilitate the Hartland Road Bridge over Golden Hill Creek to restore the bridge to a state of good repair and meet modern safety and design standards.	$1.10
Regional Cycle Network			**$341.77**
RCN1	Regional Greenway Trails Network	Build out and close existing gaps in the Regional Greenway Trail Network (off-road) as identified in the Regional Bicycle Master Plan.	$145.60
RCN2	Bicycle Master Plan Implementation - Buffalo/ Smaller Cities/Villages	Construct recommended bike lane, cycle track, traffic calming, on-road facilities, connector, and commuter cycling network improvements.	$84.27
RCN3	Olmsted Plan Implementation	Implement pathway rehab, access to water amenities/neighborhoods, traffic calming and related projects.	$44.72
RCN4	Shoreline Trail Gaps & Water Way Access	Complete currently unfinished segments and integrate access to waterway into improvements	$38.24
RCN5	Next Generation Shoreline Trail Technology Upgrades	Deploy technology along trail network for wayfinding, data collection, smart lighting, and other purposes.	$28.94

Table 5.3 continues on page 93

Table 5.3 "Constrained Project List by Strategy" continues from page 92

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
Future Freight Network			**$442.30**
FFN1	Shortline Rail Improvements	Upgrade tracks, siding, and other facilities as well as purchase ultra-low emissions locomotives.	$256.95
FFN2	Automated Vehicle (AV) Truck Platoon Facilities	Identify locations for up to 10 facilities with staging areas and alternative fuel charging.	$165.76
FFN3	Truck Parking Facilities	Construct/improve truck parking facilities to improve efficiency and safety.	$20.00
Infrastructure for Reconsideration			**$422.30**
IR1	Region Central Infrastructure Re-Envisioning	Restore community connectivity - Region Central (NY 198 and supporting elements).	$272.30
IR2	Adapting Underutilized Infrastructure	Restore additional community connectivity by removing, retrofitting, or mitigating highways or other transportation facilities that create barriers to community connectivity, including to mobility, access, or economic development.	$150.00
		Total	**$8,898.83**
		Total Highway, Bridge, Transit Preservation	**$12,655.95**
		Total Funds Available	**$21,554.78**

Illustrative List

These projects have not been programmed for improvements. Illustrative projects may be considered for future programming contingent upon additional resources becoming available.

Table 5.4 | Illustrative Project List

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
Regional Highway System			**$117.72**
RHS(I)1	Next Generation Freeway Electrification Demonstration	Demonstrate production of in-motion wireless power transfer to charge electric vehicles (EVs) on a high-volume corridor	$117.72
Safety			**TBD**
S(I)1	Regional Safety Action Plan Implementation	Federal discretionary funding has been awarded through USDOT's SS4A competitive program to develop a Regional Safety Action Plan; this Plan will identify specific implementation items to enhance safety on key corridors which will be pursued in forthcoming applications for SS4A Implementation Grant funding.	TBD
S(I)2	NY 78 Transit Rd: Walden to Gould	Widening to accommodate a two-way center turn lane for safety and operational improvements, widen RR bridges.	50.00-60.00
S(I)3	NY 240: Michael to Ridge reconstruction	Provide center turn lane and curbed section to address safety and operational issues and provide pedestrian and bicycle accommodations.	12.00-15.00
S(I)4	NY 93 Dysinger Rd: Transit to Raymond	Safety widening to provide two-way center turn lane.	6.00-8.00
Rural Roadways			**$8.60**
RR(I)1	Moving the Rural Economy: Niagara County Rural Bridges Improvement Initiative	Restore bridges to a state of good repair and meet modern safety and design standards • Willow Road over East Branch of Twelve Mile Creek • Carmen Road over Golden Hill • Johnson Creek Road over Golden Hill Creek • Gasport Road over 18-Mile Creek	$5.10

Table 5.4 continues on page 95

Table 5.4 "Illustrative Project List" table continues from page 94

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
RR(I)2	Old Niagara Road over the Somerset RR	Remove existing bridge in the Town of Lockport, on Old Niagara Road between Purdy Road and Lake Avenue and. Replace with a small precast concrete structure to allow the abandoned RR line to be used as a trail for pedestrians.	$3.50
Technology			**TBD**
T(I)1	Tonawanda/Amherst Signal Communication and Smart Corridor Project	Federal discretionary funding is sought by the Towns of Amherst and Tonawanda through USDOT's SMART competitive program.	TBD
Future Freight Network			**$470.72**
FFN(I)1	International Rail Connection Improvements	Reconstruct/enhance cross-border rail connectivity.	$150.00
FFN(I)2	Improved I-90 Access	Enhance access to the I-90 corridor to better distribute truck trips.	$113.20
FFN(I)3	Regional Freight Rail Bottleneck Improvements	Improve Buffalo River Crossings to relieve bottlenecks and ease rail congestion.	$105.39
FFN(I)4	Transshipment Facility	Construct an intermodal freight facility, potentially in conjunction with the Port Authority of New York & New Jersey.	$51.45
FFN(I)5	Permanent Pre-Clearance Implementation	Work with U.S. and Canadian customs agencies to implement pre-clearance and expedite travel over the Peace Bridge.	$50.68
Smaller Cities and Village Centers			**$10.00-$15.00**
SCVC(I)1	Pedestrian accommodations on State routes in multiple municipalities.	Provide sidewalks or multiuse paths in locations where pedestrian activity is anticipated and where sidewalks are not present or deteriorated.	$10.00-$15.00
External Opportunities			**$240.92**
EO(I)1	Border Crossing Improvements	Provide pre-clearance, AV-compatible facilities on international bridges.	$240.92

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Table 5.4 "Illustrative Project List" table continues from page 95

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
Regional Cycle Network			**$218.65 - $219.65**
RCN(I)1	Next Generation Shoreline Trail Rebuild	Reconstruct the Shoreline Trail with newer materials and technology upgrades upon end of its useful life.	$214.65
RCN(I)1	NY 104 at NY 61	Road diet, pedestrian and bicycle accommodations. Provide intersection improvements at NY 104 and NY 61 and pedestrian and bicycle connections between Devil's Hole State Park, the Power Vista visitors Center, and Niagara University.	$4.00-5.00
Preservation of Highway, Bridge and Transit Systems			**$79.00-$102.00**
PHBT(I)1	US 219: NY 39 – NY 391	Provide needed improvements to deteriorating pavement structure on US 219 (crack and seat).	$40.00-$50.00
PHBT(I)2	Skyway Repainting	Repaint to preserve and prolong lifespan of steel superstructure.	$15.00-$20.00
PHBT(I)3	US 62 Niagara Falls Blvd: Williams to Walmore	Complete remaining phases of widening US 62 from 4 to 5 lane section in Niagara County.	$6.00-$8.00
PHBT(I)4	Bridge Painting: NY 198, I-290, I-990 (14 bridges)	Paint aging bridges to reduce future need for maintenance by preventing/reducing corrosion.	$6.00-$8.00
PHBT(I)5	Bridge Painting: NY 33 (15 bridges)	Paint aging bridges to reduce future need for maintenance by preventing/reducing corrosion.	$6.00-$8.00
PHBT(I)6	Bridge Painting: I-190 (11 bridges)	Paint aging bridges to reduce future need for maintenance by preventing/reducing corrosion.	$4.00-$6.00
PHBT(I)7	Bridge Painting: US 219 and NY 400 (4 bridges)	Paint aging bridges to reduce future need for maintenance by preventing/reducing corrosion.	$2.00
Infrastructure for Reconsideration			$114.00-$146.00
IR(I)1	Reimaging Twin Cities Memorial Highway, Niagara County	Reconstruction of and re-envision the corridor to provide enhancements to safety, mobility, and multi-modal opportunities while continuing to provide necessary capacity.	$45.00

Table 5.4 continues on page 97

Table 5.4 "Illustrative Project List" table continues from page 96

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
IR(I)2	Twin Cities Memorial Highway, Erie County	Provide intersection operational and safety improvements.	$5.00-$8.00
IR(I)3	Milestrip Expressway Reclassification	Reclassify from a limited access expressway to a principle arterial and provide pedestrian and bicycle access along the corridor from Blasdell to the Lake Erie waterfront in Erie County	$8.00-$12.00
IR(I)4	Niagara Scenic Parkway Removal or Re-envisioning	NY 104 to NY 18 remove or resize the facility to divest from aging and underused infrastructure, provide recreational access between multiple state parks and preserves along the corridor. (study only)	$3.00
IR(I)5	Niagara Scenic Parkway	Removal Findlay Drive to NY 104 (currently being studied by NYS Parks)	$50.00-$75.00
IR(I)6	LaSalle Expressway	Investigate opportunities to re-envision the corridor to re-connect communities to north and south, and eliminate unnecessary infrastructure. (study only)	$3.00
Freeway Interchange Reconfigurations and Upgrades			**$3.00**
FIRU(I)1	Rt 5/Rt 75 interchange, Hamburg	Investigate opportunities to enhance safety and operation, improve land use, connectivity, multimodal and recreational opportunities, and remove unnecessary infrastructure. (study only)	$3.00

Partnership Opportunities

Additional investments to consider that would be pursued with the help of partners in the region and beyond.

Table 5.5 | Partnership Opportunities

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
PO1	Bi-national Autonomous Green Freight Corridor	Reconnect residential neighborhoods in the City of North Tonawanda that were divided by the construction of the Twin Cities Memorial Highway.	TBD
PO2	Mobility as a Service	Establish MaaS coordination among service providers including TNCs.	TBD
PO3	Bi-national Cycling Network	Integration NY and Ontario cycling networks through bridge infrastructure.	TBD
PO4	Buffalo - Niagara Falls Passenger Rail Connection	Commuter rail service (private operator) between Buffalo and Niagara Falls.	TBD
PO5	Empire Corridor High Speed Rail to New York City	High-speed rail service between Buffalo and New York City.	TBD
PO6	Buffalo Cruise Port Infrastructure	Build a Great Lakes cruise terminal, welcome center and dock space. Existing Great Lakes cruise ships carry between 200 and 300 tourists. There are currently regionally active cruise ship ports in Cleveland, OH and Toronto, ON.	TBD
PO7	Marine Port Expansion	Make port improvements to increase marine cargo tonnage being imported and exported, including bulk, break-bulk and container service.	TBD
PO8	Air Cargo Expansion	Make facility improvements at NFIA and BNIA to process increased tonnage of high value/time sensitive air cargo being imported and exported.	TBD

Table 5.5 continues on page 99

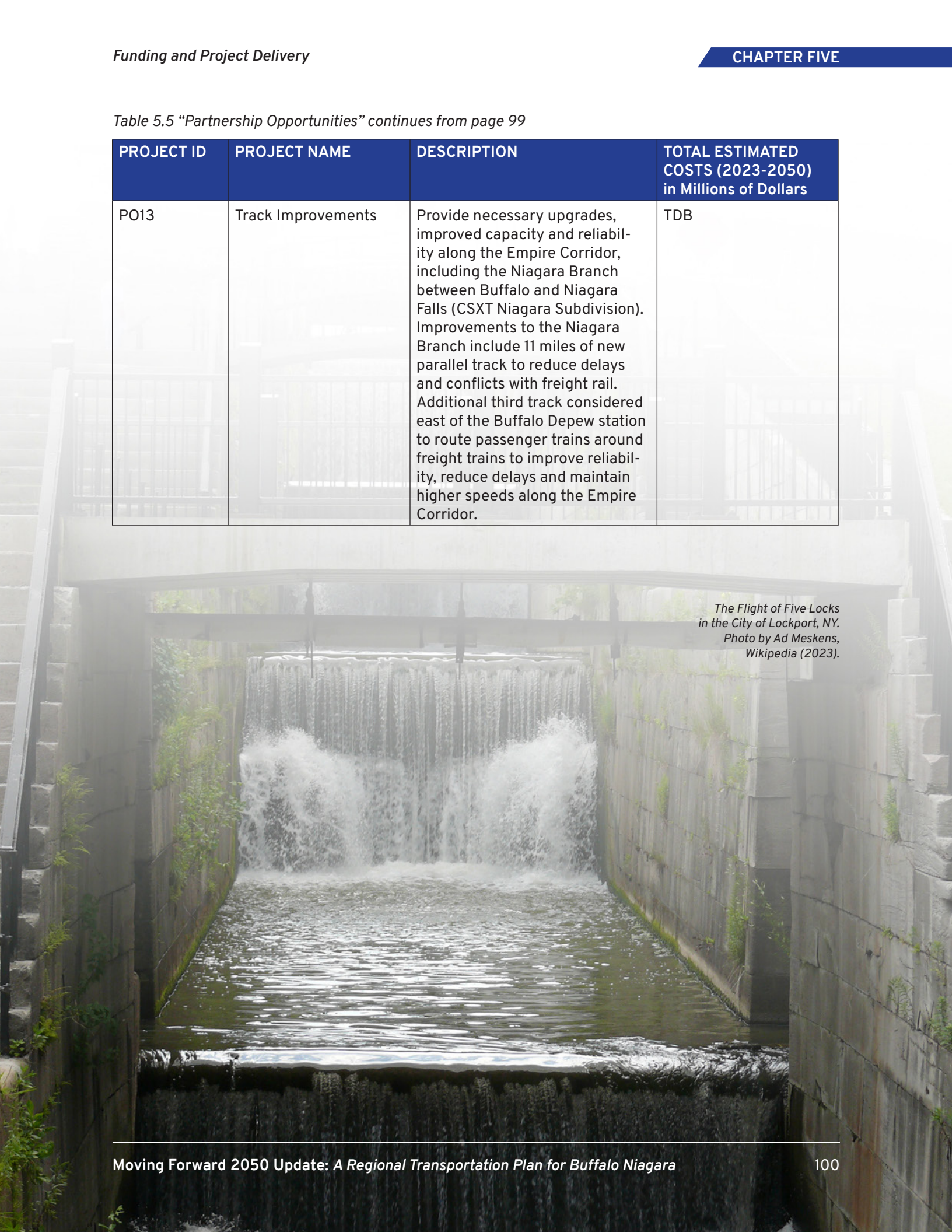
Table 5.5 "Partnership Opportunities" continues from page 98

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
PO9	Erie Canal Flight of Five	Complete the rehabilitation of the Erie Canal Flight of Five Locks. Rehabilitation of Locks 67 & 71 of the Flight of Five would return the Flight of Five to operational condition.	$17.00
PO10	International Rail Bridge Replacement	Replace the aging structure which was built in 1873. A new structure will provide a safe and efficient means of goods movement between Canada and USA. Additional freight moving between the two countries by rail would reduce the number of trucks crossing the border, resulting in reduced congestion/delay, lower fuel costs and improved air quality.	TBD
PO11	Niagara Falls Maintenance Facility and Yard Improvements	Improve reliability by adding storage tracks and a maintenance building to provide shore power, potable water, inspection, cleaning and light repair capabilities. Decreases time to prepare for AM departures and eliminates delays from frozen equipment. Increases layover capacity.	TBD
PO12	Buffalo Depew Station	Improve reliability by constructing a new station with high level center platform and ADA compliant amenities as well as additional track to improve train operations and reduce dwell time.	TBD

Table 5.5 continues on page 100

Table 5.5 "Partnership Opportunities" continues from page 99

PROJECT ID	PROJECT NAME	DESCRIPTION	TOTAL ESTIMATED COSTS (2023-2050) in Millions of Dollars
PO13	Track Improvements	Provide necessary upgrades, improved capacity and reliability along the Empire Corridor, including the Niagara Branch between Buffalo and Niagara Falls (CSXT Niagara Subdivision). Improvements to the Niagara Branch include 11 miles of new parallel track to reduce delays and conflicts with freight rail. Additional third track considered east of the Buffalo Depew station to route passenger trains around freight trains to improve reliability, reduce delays and maintain higher speeds along the Empire Corridor.	TDB



The Flight of Five Locks in the City of Lockport, NY. Photo by Ad Meskens, Wikipedia (2023).

CHAPTER 6

Impacts of Moving Forward

Implementing the strategies and projects of the Moving Forward 2050 Plan will continue to move our Region towards creating a safer, more equitable, reliable and cleaner transportation system. The Moving Forward approach set out in this Plan is expected to produce a number of meaningful and measurable benefits to our communities, economy and environment.

Impacts of Moving Forward

The various factors discussed throughout this Metropolitan Transportation Plan (MTP) make this a critical time for the Buffalo Niagara region's transportation planning.

GBNRTC and our partners have crafted this plan to accommodate a population that is growing for the first time in many decades, to right-size and optimize the region's highway network, to increase use of technologies in transportation system operations, and to enhance Safety and Equity for all road users and affected social groups.

The core of this MTP is the list of projects to enhance the transportation system that are funded within the funding resources that are anticipated between now and year 2050 (see Chapter 5). Roughly 60% of the funding is anticipated to be used for state-of-good-repair system preservation activities, with the remainder allocated to system enhancement projects. Relative to the previous (year 2018) MTP, this is a slight shift in the proportion for system enhancement projects – the Bipartisan infrastructure Law increases funding for maintenance, but it increases funding for enhancement projects even more rapidly. To strike this balance between preservation and enhancement, GBNRTC consulted with stakeholders including the region's agencies that own and operate transportation systems.

This plan developed by GBNRTC and partners is the most ambitious agenda the region has had in the 21st century for transportation system improvements.

Using state-of-the-art computer-based modeling techniques (details in Appendix I), GBNRTC staff have carefully studied how the region's transportation system works today ("Existing Conditions"; year 2020), how it would work in the year 2050 if no improvements are made to the region's transportation infrastructure ("No-Build"), and how it would work in the year 2050 with the system-enhancements projects set forth in this MTP (the "Build" Scenario).

Table 6.1 shows the impacts of implementing the investments outlined in this MTP, along with the changes that can be expected to occur between 2020 and 2050 due to population change in the region. Many of the projects are tested conceptually and these findings should therefore be viewed as indicative (see Appendix I).

Table 6.1 | Impacts of Implementing this MTP's System-Enhancement Projects

PERFORMANCE INDICATOR	EXISTING CONDITIONS (year 2020)	NO-BUILD (year 2050 w/out system enhance-ments)	BUILD (year 2050 with enhancement projects set forth in this MTP)	IMPACT of Implementing MTP 2050 investments (Build vs No-Build)
Vehicle-miles of travel (VMT/year)	24.2 M	26.3 M	26.3 M	No change in VMT.
Vehicle-hours of travel (VHT/year)	815,000	903,000	878,000	VHT decreases by 3% with MTP investments.
Transit mode share (as a proportion of trips by all modes)	1.6%	1.9%	2.2%	Transit mode share increases by 15% due to MTP investments.
Non-motorized mode share (walk-ing/bicycling/e-bikes/e-scooters)	7.4%	7.9%	8.2%	Non-motorized mode share increases by 4%
Amount of green-house gas emis-sions from vehicles (tons/year of CO2-equivalent)	8.8 B	2.64 B	2.62 B	MTP investments will reduce green-house gas emis-sions by an addi-tional 1%, a 70% overall improve-ment between 2020 Base and 2050 Build totals.

The amount of vehicle-miles of travel (a measure of how much driving is occurring across the region) and vehicle-hours of travel (a measure of how much time people spend traveling in the region) both would increase between 2020 and 2050 due to background population change, due to greater demands on the transportation system. The share of all trips that would be made in non-motorized modes (walking and cycling) and transit also increase, reflecting the projection that the region's population growth will be concentrated in higher-density places with strong walking/cycling/transit networks.

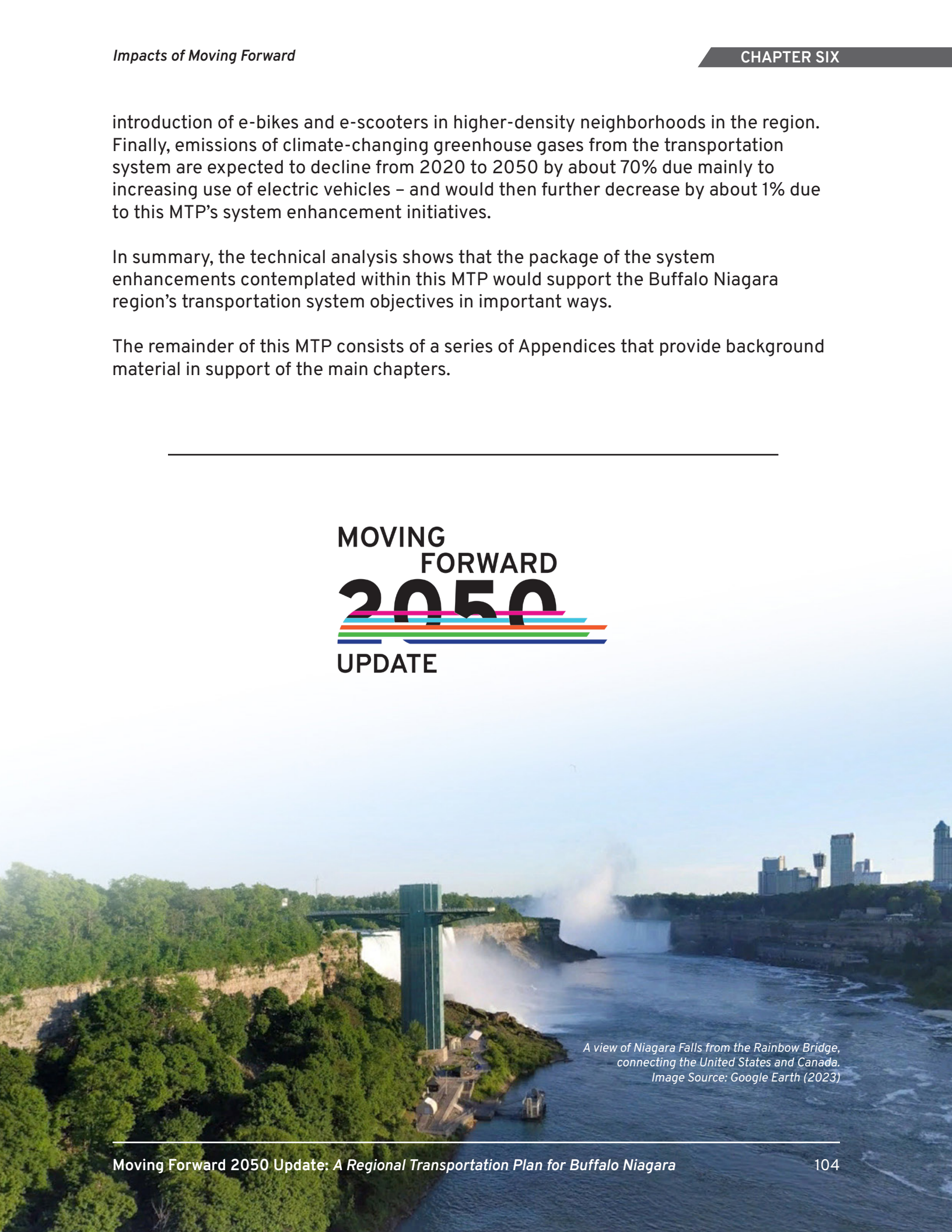
The impact of making the MTP's investments in system enhancement are shown to be powerful in helping the region achieve its transportation objectives. Vehicle-miles of travel would change little, however vehicle-hours would decrease by 3% – indicating a beneficial impact on congestion while still accommodating the region's level of mobility. The transit mode share in the region would be increased by 15%, primarily due to the extension of the Metro light rail system and implementation of Bus Rapid Transit in the Bailey Avenue corridor. The mode share of non-motorized travel would also increase by 4%, in response to improvements in the walking and cycling networks as well as the

introduction of e-bikes and e-scooters in higher-density neighborhoods in the region. Finally, emissions of climate-changing greenhouse gases from the transportation system are expected to decline from 2020 to 2050 by about 70% due mainly to increasing use of electric vehicles – and would then further decrease by about 1% due to this MTP's system enhancement initiatives.

In summary, the technical analysis shows that the package of the system enhancements contemplated within this MTP would support the Buffalo Niagara region's transportation system objectives in important ways.

The remainder of this MTP consists of a series of Appendices that provide background material in support of the main chapters.

MOVING FORWARD 2050 UPDATE



A view of Niagara Falls from the Rainbow Bridge, connecting the United States and Canada. Image Source: Google Earth (2023)