Our transportation system ties our communities together and connects our region with the nation and the world. This network of roads, bikeways, trails, rail lines, airports and more can move us towards a future aligned with our regional vision. This section gives an overview of the components of Buffalo Niagara’s transportation system—the infrastructure we have, the condition it is in, and how well it is working for all of us—and how the evolving landscape of transportation demands innovative approaches for improving our system. This broad understanding of transportation infrastructure, programs and performance is critical in making effective plans for the future of our transportation system.
Our roads and highways accommodate tens of thousands of vehicles every day.

Our region is connected by over 7,800 miles of roads and highways that make up the backbone of our transportation system. Tens of thousands of vehicles carrying residents, workers and visitors travel across our roadways on a typical day. The region’s roadways are comprised of both the National Highway System, which include interstates, expressways and major state routes, and of local roads, which are operated by counties, cities and towns.

Source: Greater Buffalo Niagara Regional Transportation Council & NYS Department of Transportation, 2015.
Collectively, we drive over 2.3 million more miles annually than we did 20 years ago, even with fewer people living in the region.

The total mileage traveled by all vehicles across the region fluctuated over the years. These ups and downs in vehicle use are due in part to broad changes in the population and the economy, like the number of workers and visitors driving around, as well as individual decisions, like how we choose to get around and how far we need to go. Overall, the amount of miles traveled on our roads increased over the past several decades, even though the population has not grown. This adds stress on our environment and roadways, which increases the costs of repairing and maintaining our roads and bridges.

Some of our major roads and highways experience more traffic than they can handle at times.

When compared to other regions, ours has relatively low traffic volumes, which adds to our overall quality of life. However, many high-trafficked road segments can often become congested during peak daily travel hours. Some of these roadways end up carrying volumes that approach and at times exceed the capacity they were built to accommodate. These areas cost us time and money while burning extra fuel, and can often add to air quality concerns in surrounding neighborhoods.
Our roads and highways are in good shape, but many need repair.

As roadways age, and the number of vehicles traveling on them grows, pavement conditions deteriorate. When public dollars are strapped, local governments must be selective in deciding when and where roads are resurfaced. Many roads will often need minor repairs or major improvements, but high traffic roads will be prioritized over others. Pavement condition ratings are based upon visual scoring procedures developed and used by the New York State Department of Transportation (NYSDOT).

Source: Greater Buffalo Niagara Regional Transportation Council & NYS Department of Transportation, 2015.
Throughout recent years, our local roads have generally been in worse condition than those that receive federal funds.

The interstates, expressways, state and federal routes that make up the National Highway System (NHS) in our region accommodate the highest volumes of traffic and are the most critical corridors for our economy. While road surface conditions improved overall since 2001, roads that are reliant on local funds are consistently in worse condition than those eligible for federal funds. The most recent ratings score less than 40% of local road miles as in good or excellent condition.

Most bridges in our region are in good, or passable, condition, but many need to be improved.

Over a third of locally-maintained bridges are rated functionally obsolete, based on inadequate design that may not meet current standards, compared to 14% of federally maintained bridges. NHS bridges are slightly more likely than local bridges to be structurally deficient due to the poor condition of supporting structures, or high likelihood of flooding that would bar traffic. In total, 111 of the region’s bridges are structurally deficient and 287 are functionally obsolete. Alternative financing, like the competitive Bridge NY reimbursement program, will be relied on to fund all phases of future projects on local bridges and culverts.
The public transit system is extensive, but buses can be infrequent.

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 outer 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 and Coach USA.
Millions of trips are made each year using our public transit system.

Use of public transportation across our region generally trended downward for decades, but recently, transit use has increased. The metro rail and bus system still accommodate thousands of passengers every day. And although use of the metro line on Main Street remains below what it once was, more trips are being made by bus in recent years. In the years since 2010, the number of annual trips taken on our bus and metro system combined has generally been higher than at any point since 2000.

Other mobility options supplement our public transportation system.

Public transportation in Buffalo Niagara includes more than just the NFTA. Additional options will grow in the future as new technologies and emerging alternatives fill service gaps. These options, like vehicle-sharing and ride-sharing, can link into our public transportation network, which includes rural providers that offer critical transportation to outlying communities.

**Vehicle-Sharing**
Car-sharing and bike-sharing can offer alternatives to owning a personal vehicle by providing access to a fleet of shared vehicles at convenient locations. Reddy bikeshare offers shared bikes for rent at strategically located hubs throughout Buffalo. Zipcar provides cars for shared use near many of these hubs, including college campuses, and offers memberships for individuals, businesses and universities.

**Transportation Network Companies**
Transportation network companies, or ride-sharing services, use smartphone apps to quickly connect drivers with people who need a ride. In 2017, New York State lawmakers passed a bill expanding ride-sharing to Upstate New York and enabling residents and visitors of Buffalo Niagara to take advantage of on-demand ride-sharing services like Uber and Lyft. Future transportation network companies may include shuttle vans and carpools, and will eventually use autonomous vehicles.

**Public Transportation Providers**
Rural Niagara Transportation provides weekday bus service from rural parts of Niagara County to local cities and colleges. The Seneca Transit System offers fixed-route bus service between the Cattaraugus and Allegany territories, and connects to the NFTA bus system. These services are critical for many residents in outlying areas who do not have access to a personal motor vehicle.

**Intercity Transportation Services**
The region is also 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 other regions.
Our network of bike and pedestrian infrastructure is continuing to grow.

Our region is adding ways for people to get around by bike. The miles of bike lanes, routes and multi-use trails more than doubled since 2009. Though more trails are underway, there are still missing links and unconnected communities. These gaps present opportunities to connect more people in more places with designated bikeways. Our region can also improve pedestrian access, especially for those with disabilities. About 10% of the region’s sidewalks and 70% of curb ramps are inaccessible to people with disabilities. This issue will be helped by NYSDOT’s policy to add curb cuts and accessible sidewalks as roadway improvement projects are completed.

**BIKeways in Buffalo Niagara, 2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>Bike Lanes</th>
<th>Multi-Use Trails</th>
<th>NYS Bike Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>138</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>203</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Greater Buffalo Niagara Regional Transportation Council, 2017.

1 NYS Department of Transportation, ADA Draft Transition Plan, ADA Inventory Summary, 2016.
A wide range of efforts are underway to support bicycles and pedestrians.

The recent regional progress in bicycle and pedestrian transportation amenities is due to the collective impact of a wide range of organizations, programs and policies.

**GBNRTC Online Bicycle Map**
This interactive map from the Greater Buffalo Niagara Regional Transportation Council (GBNRTC) allows users to navigate bicycle routes and infrastructure located throughout Erie and Niagara counties. The map features locations of bike lanes, racks and shops across the region, as well as multi-use trails, and other bike routes extending throughout the region and beyond. The map also provides key travel information for bicyclists planning to cross international borders and pair their bike ride with NFTA-Metro bus and rail service. To view the map, visit www.gbnrtc.org/maps

**NFTA-Metro Bikes on Metro Bus and Rail Program**
Passengers on NFTA-Metro bus and rail can bring their bikes along with them for no extra fees. Metro Buses are equipped with bike racks that can hold two standard bikes, and each Metro Rail car can hold two bikes in the areas designated for wheelchairs. Every Metro Rail Station also has bike racks, and several stations also offer bike lockers. This added convenience makes it easier for cyclists to bike to a stop and take a train or bus to complete their trip.

**Go Buffalo Niagara**
Go Buffalo Niagara is a collaborative effort of the GBNRTC, Buffalo Niagara Medical Campus, GObike Buffalo, the NFTA, the Buffalo Niagara Partnership, and others, designed to provide employers, property owners, and commuters with information on transportation options across the region. Their website aims to encourage residents and visitors to change the way they get around the region to save money and reduce their carbon footprint by providing information on the accessibility and costs of various transportation options.

**Bike-Sharing**
Bike-sharing programs provide short-term bike rentals, enabling users to pick up a bike at a self-serve station and return it to other bike stations nearby. Reddy bikeshare was launched in the City of Buffalo in 2016, placing over 30 new bike stations and 200 bikes across the city at key civic, employment, and entertainment destinations. Residents and visitors can also rent a bike directly from someone nearby through the peer-to-peer bike-sharing app Spinlister that allows users to list or book a bike to rent by the hour, day, or week.

**Safe Routes to School Programs**
Since 2008, several communities throughout the region received funding through the federal Safe Routes to School program, including cities, towns, and small villages in both Erie and Niagara counties.

**Multi-Use Trails**
Pathways and trails along historic rail lines, riverways, and waterfronts provide safe walking and biking opportunities for residents and visitors throughout the region. Many trails incorporate lighting, wayfinding signage, and brush clearing for improved safety and connectivity. In addition to enhancing walkability and protecting open spaces in established neighborhoods, some of these trails connect communities across the region such as the Tonawanda Rails to Trails Project that links the Town and City of Tonawanda with the City of Buffalo.

Communities across the region used this funding for infrastructure projects that make it safer for students to walk and bike to school. More broadly, these programs promote active, healthy lifestyles in communities. Examples of projects include sidewalk improvements and reconstruction of intersections near schools, as well as pedestrian safety education in local school districts.
Our freight network is a critical asset.

Our mid-sized region handles an oversized volume of commerce. The railroads, shipping ports, transfer stations, international bridges and airports that make up our freight network allow us to exchange goods with the rest of the world. Most freight in our region is transported by truck, particularly along the interstate.

As the regional economy grows, and global trade accounts for an increasing share of our economy, we will grow even more dependent on our freight system in the future. Our system will have to evolve to accommodate growing and diversifying freight movement as new technologies continue to change the way goods are moved.

**TOTAL VALUE OF FREIGHT IN BUFFALO NIAGARA, 2015 AND 2045 (PROJECTED)**

<table>
<thead>
<tr>
<th>Category</th>
<th>2015</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Within Our Region</strong></td>
<td>$20.7B</td>
<td>$35.3B</td>
</tr>
<tr>
<td><strong>Out of Our Region</strong></td>
<td>$83.0B</td>
<td>$187.9B</td>
</tr>
<tr>
<td><strong>Into Our Region</strong></td>
<td>$90.2B</td>
<td>$234.7B</td>
</tr>
</tbody>
</table>


**TOTAL COMMERCIAL TRUCKS ON ROADWAYS PER DAY, ANNUAL AVERAGES, 2016**

Source: GBNRTC, 2016.

**TOTAL FREIGHT VALUE IN BUFFALO NIAGARA BY MODE, 2015 AND 2045 (PROJECTED)**

<table>
<thead>
<tr>
<th>Mode</th>
<th>2015</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck</td>
<td>$73.1B</td>
<td>$154.6B</td>
</tr>
<tr>
<td>Rail</td>
<td>$20.5B</td>
<td>$44.8B</td>
</tr>
<tr>
<td>Other</td>
<td>$10.2B</td>
<td>$23.8B</td>
</tr>
</tbody>
</table>

**Portageville Bridge Project**

Improvements to the Portageville Bridge, which spans the Letchworth Gorge in neighboring Wyoming County could have significant impacts on Buffalo Niagara's economy by enabling increased freight traffic to and from the region. The bridge falls along Norfolk Southern’s Southern Tier Line, which connects Binghamton to Buffalo. This is a primary east-west rail route through NYS that links with other major Class 1 rail routes between Chicago and the East Coast. The project was completed in early 2018 and the bridge is now open.
CHAPTER 3

OUR TRANSPORTATION SYSTEM

HOW IT’S WORKING FOR US

Most workers drive alone to get to work.
The share of workers commuting by car rose consistently for decades. Today, 90% of workers commute by automobile, including 82% who drive alone to work.

Our earnings, commute times and how we get to work are inter-related.
Vehicle commutes in the region are quick and easy, but commuters who bike, walk or take transit to work spend more time commuting. This presents additional challenges for workers who are more likely to face economic and other barriers accessing jobs and opportunities.

Even though we have easy commutes, we still get stuck in traffic at times.
Low traffic volumes are a great regional asset that add to our quality of life, but many still spend extra time in traffic, usually during peak workday travel hours. We burn a lot of time and fuel sitting in traffic, which adds up to a lot of money spent and lost due to wasted time. Moving forward, enabling new mobility services and diverse transportation options can help keep congestion low.

DIFFERENCES IN COMMUTE TIMES BY MODE, BUFFALO NIAGARA, 2015

<table>
<thead>
<tr>
<th>Mode</th>
<th>Average Commute Time</th>
<th>% Spending 45 minutes or More on Commute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Alone or Carpool</td>
<td>21 min.</td>
<td>6%</td>
</tr>
<tr>
<td>Transit, Bike, Walk or Other</td>
<td>44 min.</td>
<td>20%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2015.
Those who work from home make up 2.5% of workers in the region.
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. Numerous vehicle crashes occur every day across the region. Over the past few years, there have been 57 crashes each day, on average. Twenty-one of these result in injuries or fatalities, and about two involve pedestrians or bicyclists. We need innovative, effective solutions that make roads safe for drivers as well as pedestrians and bicyclists.

It costs a lot to maintain our transportation system, even more than in the past.

A big share of public funds are spent on transportation, like plowing and paving roads, and running school buses. These costs increase as roads are built and infrastructure ages. Diverse, innovative financing will be needed to keep our system running well into the future.

Number of vehicle crashes (average, 2014-2016)

<table>
<thead>
<tr>
<th>DAILY CRASHES ON AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>57 crashes every day...</td>
</tr>
<tr>
<td>...21 involved injuries or fatalities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEARLY CRASHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,959</td>
</tr>
<tr>
<td>7,845</td>
</tr>
</tbody>
</table>

Number of vehicle crashes involving bicyclists and pedestrians (average, 2014-2016)

<table>
<thead>
<tr>
<th>887 CRASHES PER YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4 crashes involving injuries or fatalities every day.</td>
</tr>
</tbody>
</table>


Figures include police-reported collisions as well as those reported by civilians.

The future of mobility

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.

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.

Connected Transportation Networks

- Integrated traffic management signs
- Traffic control and monitoring
- Data sharing
- Ramp metering
- Electronic tolls and smart pavement systems
- Pre-clearance for faster border crossings
- Coordinated traffic signals
- Priority traffic signals
- Variable speed limits
- Dedicated and managed lanes
- Traffic incident management
- 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
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 autonomous vehicles, with many aiming to hit the market by 2020. 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)
Vehicles that run on electricity rather than fossil fuels benefit drivers by reducing fuel costs, noise, air pollution and emissions. As these vehicles proliferate, EV charging stations, and even dedicated lanes with electrified road surfaces for vehicle charging will be needed.

### 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.
### Anticipating the evolution of autonomous vehicles

#### NEAR TERM

- **Autonomous vehicle technologies continue improving, becoming less expensive.**
- **Autonomous vehicles are tested on roadways alongside human-operated motor vehicles.**

#### MID-TERM

- **Autonomous vehicles, delivery trucks, and possibly deliverybots and drones, are increasingly used to ship products to consumers requiring new regulations and uses of the street and curb space.**
- **Public transit vehicles, cars and commercial trucks become increasingly autonomous, which may require managed and dedicated lanes on highways and other major roads as AVs mix with human-driven vehicles.**

#### LONG TERM

- **As autonomous vehicles become commonplace, transportation infrastructure continues to adapt—including a reduced need for traffic signals. Land use around streets makes room for pedestrians, bicyclists, and other “active” types of transportation.**

### Benefits of AVs

- Safety (no distracted drivers, no speeding, and vehicles automatically stop for pedestrians and cyclists)
- Improved accessibility for non-drivers, seniors, people with disabilities
- Reduction in need for parking space as vehicles return home or pick up the next passenger
- Reduced needs for parking, along with reductions in the width of road lanes can mean opening up street and sidewalk space for recreation and commercial uses

### Concerns with AVs

For more details on the risks and uncertainties of AVs, see the Risk Management section of Chapter 7.

- Security (cyberattacks, personal information) and liability
- Data management requirements
- Regulation (to allow testing AVs before being fully integrating on local roads)
- Relationship with public transit
- Effects on jobs
- Effects on development patterns
- Adaptations for people with disabilities