Our 2050 transportation system represents a new way of getting around. This new network aims to concentrate growth and investment, increase revenues to local governments and residents, promote a healthy environment, and improve quality of life by providing better access to jobs, education and services. To accomplish these goals, we need a new way of planning our transportation system. While we continue making the improvements and repairs needed to maintain our current system, we also need to make bigger, bolder moves to achieve our vision. Though the strategies presented here will continually need to be reassessed and refined as we move forward, they 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.
STRATEGIES TO MOVE US FORWARD

A fully connected region with more options and opportunities

New mobility is the next generation of transportation. It will offer shared, electric, and autonomous travel options, and relies on technology and data to create an integrated and seamless transportation system. New mobility will give residents across the region access to multiple transportation modes with various service providers.

New mobility and transit opportunities for the Buffalo Niagara region will mature across the thirty-year timespan of this plan. In this time, technology will significantly transform our current system of human-driven private automobiles, public transit, and the network of social service and volunteer-provided transportation options. Emerging needs in the region may be better served in a more sustainable manner by an integrated network of service options. These would provide more choices for travelers, as well as greater coverage and frequency for those who cannot or choose not to use a personally owned vehicle.

Transportation in the region will be significantly affected by the adoption of electric vehicles, autonomous vehicles, other technologies and emerging transportation services. Some of these shifts will happen sooner than others and we will have to think ahead to make the most of these changes.

To start, traditional public transportation service providers will continue to focus on the most widely used corridors, while new technologies and services will be integrated to enhance the efficiency and accessibility of transit. This continued focus on service upgrades in specific corridors will induce development while improving access to jobs and homes by promoting alternative travel modes.

In the longer term, personal automobile ownership will likely decrease as more people use ride-sharing and other services. Land use and development patterns may also be affected due to a reduced demand for parking and greater concentration of services around transportation hubs and corridors.

We will need to ensure that new mobility is accessible to all residents, and that we utilize technology to enhance equity, safety and sustainability.
TODAY’S TRANSPORTATION SYSTEM

Our current transportation system has many components that are not integrated in a cohesive way. This makes us largely dependent on personal automobiles.

TOMORROW’S TRANSPORTATION SYSTEM

New mobility uses new technologies and emerging transportation services to create an integrated network that connects multiple modes of travel. This way we do not have to rely on any one mode of travel.

New Technologies + Emerging Transportation Services

- Human-driven private automobiles
- Public buses and trains
- Network of social service and volunteer-provided transportation options
- Bike and pedestrian network

NEW MOBILITY

- Autonomous Vehicles
- Electric Vehicles
- Transportation Network Companies
- Data Management Services
- Drone Delivery
- Car Sharing
- Bike Sharing
- Community Mobility Hubs
Our regional highway system is made up of **Next Generation Freeways**, **Commuter Expressways**, and **Connections to Other Regions**. Together, these work to distribute traffic around and into the metro area, accommodate interregional traffic—especially trucks—and experience congestion at rush hour times in certain locations.

Across this entire system, a number of technology advances will help improve the flow of people and goods, improve safety, reduce emissions, and support the region’s economy.

**Where to Implement this Strategy**

The interstates that extend beyond the region, the freeways that circle the City of Buffalo and first-ring suburbs, and the expressways that connect outlying and rural areas make up our regional highway system.
WAYS TO GET THERE

**Vehicle-to-vehicle (V2V) communications**
V2V communications allow “connected” vehicles to alert each other about re-routing, real-time traffic monitoring, and hazard detection (for example, “icy road ahead” warnings), making travel more safe and efficient.

**Vehicle-to-infrastructure (V2I) communications**
V2I communications technology enables traffic management operators to detect incidents, measure speeds, advise travelers and divert traffic when necessary. It also helps provide data for transportation planning.

**Electronic signage**
Electronic signs inform motorists (especially those not in connected vehicles) of traffic conditions in real-time, including re-routing information.

**Variable speeds**
Signs display variable speed limits adjusted based on traffic and weather conditions to improve traffic flow and safety.

**Alternative fueling**
Charging stations for electric and/or other alternative fueled-vehicles, and potentially electrified road surfaces to charge electric vehicles as they drive in a dedicated lane.

**Electronic tolling**
Sensors at tolls read electronic tags in vehicles to charge for freeway usage—like an expanded EZpass plan.

**Sustainable and innovative road materials**
Sustainable construction materials help limit stormwater runoff, and reduce maintenance costs. Innovative road surfaces, paints and lane-marking solutions can help efficiently and cost-effectively manage traffic.

**AV lane**
Separate autonomous vehicle (AV) lanes support efficient and safe movement of AVs, especially during the early stages of integration. These lanes could accommodate AV truck “platoons” shipping freight into, from and through the region.
STRATEGIES TO MOVE US FORWARD

Modernizing major highways to build a Next Generation Freeway System

The “ring” of freeways around the City of Buffalo and first-ring suburbs are the most heavily used roadways in the region. These sections of highway are critical to regional economic growth and important for all communities across the region. They serve as a key regional travel link that enables quick drive times between Buffalo and nearby suburbs and from rural communities to major employment centers.

To manage congestion, improve safety and get the most out of our existing infrastructure, technology and innovative transportation management strategies will be integrated on this ring of freeways. These upgrades will transform these freeways into a Next Generation Freeway System with integrated traffic management systems to make travel on this critical ring of highways, and throughout our region, safe, timely and efficient well into the future.

Where to Implement this Strategy

The traditional “ring” of freeways circling the City of Buffalo and the first-ring suburbs make up the Next Generation Freeway System. This “ring” developed over time and today includes the free section of the I-90 from its Interchange with I-290 to its Interchange with I-190, then the I-190 North to the Grand Island Bridge and the I-290.
WAYS TO GET THERE

A  Vehicle-to-vehicle (V2V) communications
B  Vehicle-to-infrastructure (V2I) communications
C  Electronic signage
D  Variable speeds
E  Autonomous vehicle (AV) lane
F  Sustainable materials
G  Alternative fueling (charging stations and lanes)
H  Electronic tolling
I  Ramp metering

Ramp meters control the frequency of cars entering the ring system of Next Generation Freeways from Commuter Expressways and major arterials. This helps balance the flow of traffic onto the freeway and into the entire system.
Where to Implement this Strategy

The major sections of interstates and freeways that tie into the inner “ring” of the Next Generation Freeway system make up the commuter expressways in our region. These roadways—the I-990, Route 219, Route 400, and sections of the I-90 and I-190—carry thousands of commuters everyday and serve as critical links for suburban and rural communities.
WAYS TO GET THERE

A Vehicle-to-vehicle (V2V) communications
B Vehicle-to-infrastructure (V2I) communications
C Electronic signage
D Variable speeds
E Autonomous vehicle (AV) lane
F Sustainable materials
G Alternative fueling (charging stations and lanes)
H Ramp metering

I Mobility Hub
Mobility hubs located near commuter expressways offer connections to and from transit buses and transportation network companies (TNCs), as well as carshare, bikeshare, EV charging, and real-time travel information.

J Electronic Tolling
Installing electronic payment systems at tolls limits delays and improves commutes.
Harnessing technology to improve our connections to other regions

As a major metropolitan area, the Buffalo Niagara region has many roadway connections to communities and destinations outside our region. The interstates, highways and major international bridges that connect people and freight to places beyond are critical to our regional economy. These roadways are also important for intercity bus service providers which provide affordable and efficient transportation options for residents and visitors traveling from our region to places beyond. These key regional connectors support longer trips and more trucks than other highways. Although currently well developed and functional, these external connections must be adequately maintained and modernized. Technology aspects need to be upgraded to ensure efficient travel and keep the region competitive, particularly as an international border crossing for people and goods.

Where to Implement this Strategy

There are many ways to get to and from our region, but most of the traffic flows over these critical highways. The I-90 connects us with economies across Upstate New York and throughout the rest of the country going west. Route 219 is the fastest link between Pittsburgh and Buffalo, and also connects us with the Southern Tier of New York State. The I-190, with the terminus at the Queenston-Lewiston Bridge, the Peace Bridge and Rainbow Bridge are key links between our region, the U.S., and into Canada.
WAYS TO GET THERE

A Vehicle-to-vehicle (V2V) communications
B Vehicle-to-infrastructure (V2I) communications
C Electronic signage
D Variable speeds
E Autonomous vehicle (AV) lane
F Sustainable materials
G Alternative fueling (charging stations and lanes)
H Electronic tolling
I Seamless bridge crossings
   Allow most passenger and freight vehicles to be pre-cleared to cross, minimizing border delays and congestion. Low-risk cross-border travelers and freight shippers enroll in pre-clearance programs in order to expedite the customs process and limit border delays—like an expanded NEXUS plan.
J AV lane with Truck Platoons
   AV lanes could accommodate closely-spaced together AV truck “platoons” that ship freight into, from and through the region. These may initially run during off-peak hours and would travel in a dedicated lane alongside passenger vehicles.
STRATEGIES TO MOVE US FORWARD

SMARTLY ENHANCED
MULTI-MODAL ARTERIALS

Transforming key corridors into Smartly Enhanced Multi-modal Arterials

Many major corridors in large urban areas of our region were originally built to carry more traffic than they currently do. Today, many people still use these streets to drive, walk, bike or take transit, but they often lack the basic elements that make alternative travel modes safe and efficient.

Moving forward, new technologies, upgraded street features and emerging transportation services will be incorporated along these corridors to create Smartly Enhance Multi-modal Arterials (SEMAS) that offer a range of convenient transportation options. Select radial roads, along with east-west and north-south corridors, will be maintained and modernized as SEMAS. These corridors will work with the Next Generation Freeways to accommodate rush hour traffic using coordinated and priority signals.

SEMAS are designed and actively managed to efficiently utilize the full capacity of key corridors for the safe movement of people and goods. 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.

SEMAS will make transportation throughout the region more safe and efficient while reactivating corridors with infrastructure improvements that promote reinvestment with spin-off benefits for nearby communities and the regional economy.

Mobility Hub

Mobility hubs strategically located along SEMAs connect travelers to a range of transportation options for safe and efficient multi-modal trips.

- **Transit stops**
  For ride-sharing, circulators or buses.

- **Bike shares**
  To easily link bicycles into multi-modal trips for first- and last-mile connections.

- **EV charging stations**
  Grouped together at parking spaces near mobility hubs to support longer trips for electric vehicles.

- **Information kiosk**
  With real-time information on traffic and transit conditions, the availability of shared bikes, cars, and electric charging stations, as well as price and travel time by different modes.

- **Wi-Fi**
  So people and vehicles can quickly use the Internet to access service maps, trip planners and connect with other transportation services.

- **Car shares**
  Shared vehicles can be used to complete trips, limiting the need to own personal vehicles.
WAYS TO GET THERE

Sharing the street
Using the street right-of-way for more than just automobile traffic allows for safe and convenient travel via other modes—like walking, bicycling and transit.

A Travel lanes for vehicles
B Dedicated bus/transit lanes
C Bike lanes
D Safe pedestrian environment, with wide sidewalks, frequent crosswalks and pedestrian activated signals

Improving the flow of people and goods

E Coordinated and priority traffic signals
Traffic signals coordinated across jurisdictions using real-time traffic information will limit stop-and-go traffic, and give priority to buses and other mass transit vehicles.

F Microtransit
Microtransit, or a shared vehicles to transport multiple commuters in one vehicle, limiting the number of cars on the road. Rerouting school buses to other roadways would also improve traffic flow on SEMAs.

G Connected vehicles
Technology will enable vehicles to share information on roadway hazards, traffic signal timing, and alternative routes, and could direct vehicles to available parking spaces, variably priced based on demand.

H Autonomous vehicles
AVs, including public buses and other commuter vehicles, improve efficiency and safety with technology to avoid congestion and prevent crashes.

Reactivating the street

I Flexible curb space
Curbs are used differently at different times of the day. For instance, AVs could drop off and pick up passengers during AM and PM peak travel hours; AV and drone deliveries could be made overnight; and events can be held throughout the year (See page 76).

J New development along the street
Existing buildings can be reused and new buildings can be constructed along the street to add commercial space and housing and revitalize these corridors. Benches, street art and other amenities can also be incorporated to bring life back to these corridors. Green infrastructure, like sustainable pavement materials, trees and plants, and drainage improvements, can help reduce runoff into the region’s waterways.