



Transportation Master Plan Update 2026

CITY OF NIAGARA FALLS

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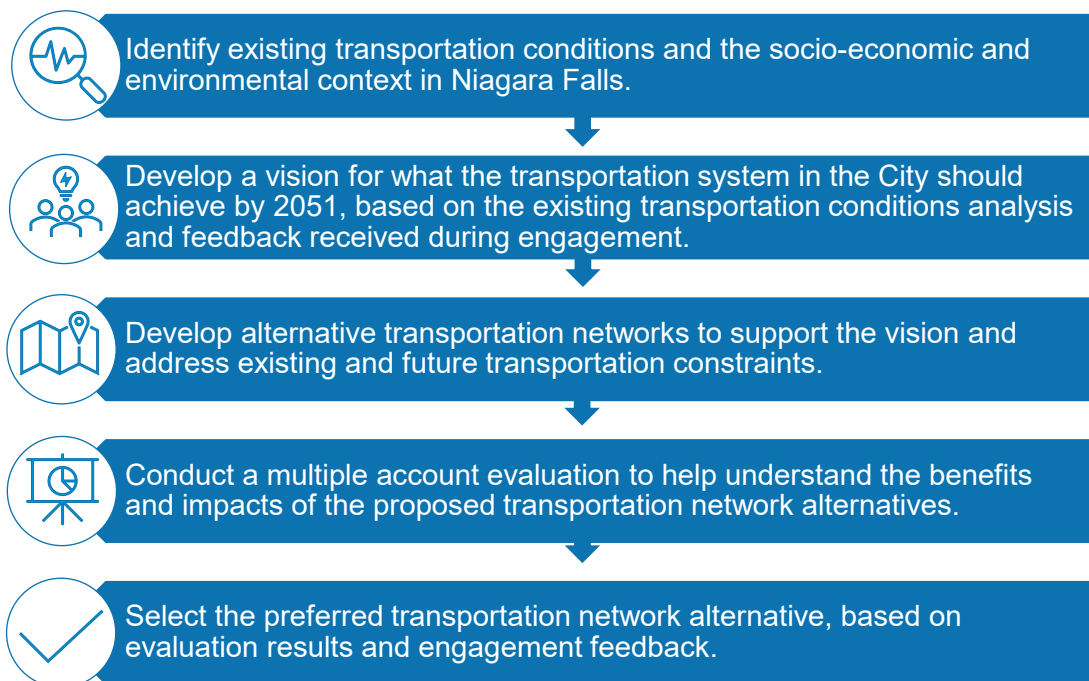
Executive Summary

The Niagara Falls Transportation Master Plan

The City of Niagara Falls is experiencing a surge in residential and employment growth (approximately 178,000 people and 71,000 jobs by 2051), with increasingly more people finding the City a desirable place to live and work. Coupled with rising tourism numbers, this is leading to rapidly increasing demands on the transportation system. To accommodate and plan for these demands, the City is updating its Transportation Master Plan (TMP). A TMP provides tailored policy direction and infrastructure recommendations to shape the City's future multi-modal transportation network. It sets out a vision for future transportation in Niagara Falls and outlines the road and active transportation infrastructure improvements, as well as the related policies, required to support that vision.

Process

The TMP was completed in accordance with phases 1 and 2 of the Municipal Class Environmental Assessment (MCEA) process for Master Plans. To adhere to this process, a comprehensive analysis was conducted to identify recommendations for the transportation network in Niagara Falls, informed by feedback from the public and stakeholders held across two rounds of consultation. An overview of the process used in this TMP is shown below.



Vision

Building on extensive engagement with City residents, visitors, and employees, the TMP sets out the following vision:

“To support the continued development of a safe, connected, equitable, and accessible multi-modal transportation system that supports the local economy by improving intra-City travel for residents, and the tourist experience.”

Recommendations

The TMP identifies a future recommended road network, building on the recommendations created in the 2011 Niagara Falls TMP. This includes road widenings as well as the addition of two-way turning lanes along key corridors in the City, as shown in **Figure 0-1**.

The transportation network recommended in the TMP is supported by the following recommendations related to road classifications and complete streets, emerging technologies, and goods movement:

Road Classifications

- Monitor and evaluate the implementation of Complete Streets in the City.
- Monitor and evaluate the implementation and impacts of Niagara Region’s Complete Streets Classifications.

Transit

- Advocate for and support the Region in increasing service frequency and network coverage across the City’s key growth areas.

Emerging Technologies

- Advocate for and support the Region in electrifying their bus fleet to reduce emissions.
- Develop an Electric Mobility Strategy focused on the provision of public charging stations, incentives to electric vehicle (EV) adoption, and retrofits of existing parking.
- Explore the development and research of automated vehicles (AVs) for transit service, particularly for on-demand services.
- Create an action plan for EV charging and AV integration, considering needed policy changes.
- Identify and implement smart technologies that improve safety, reliability and quality of service of the transportation system.

- Generate a business case for the implementation of a shared micromobility program to supplement transit services and contribute to mobility hubs.
- Employ micromobility solutions as TDM measures for new developments.

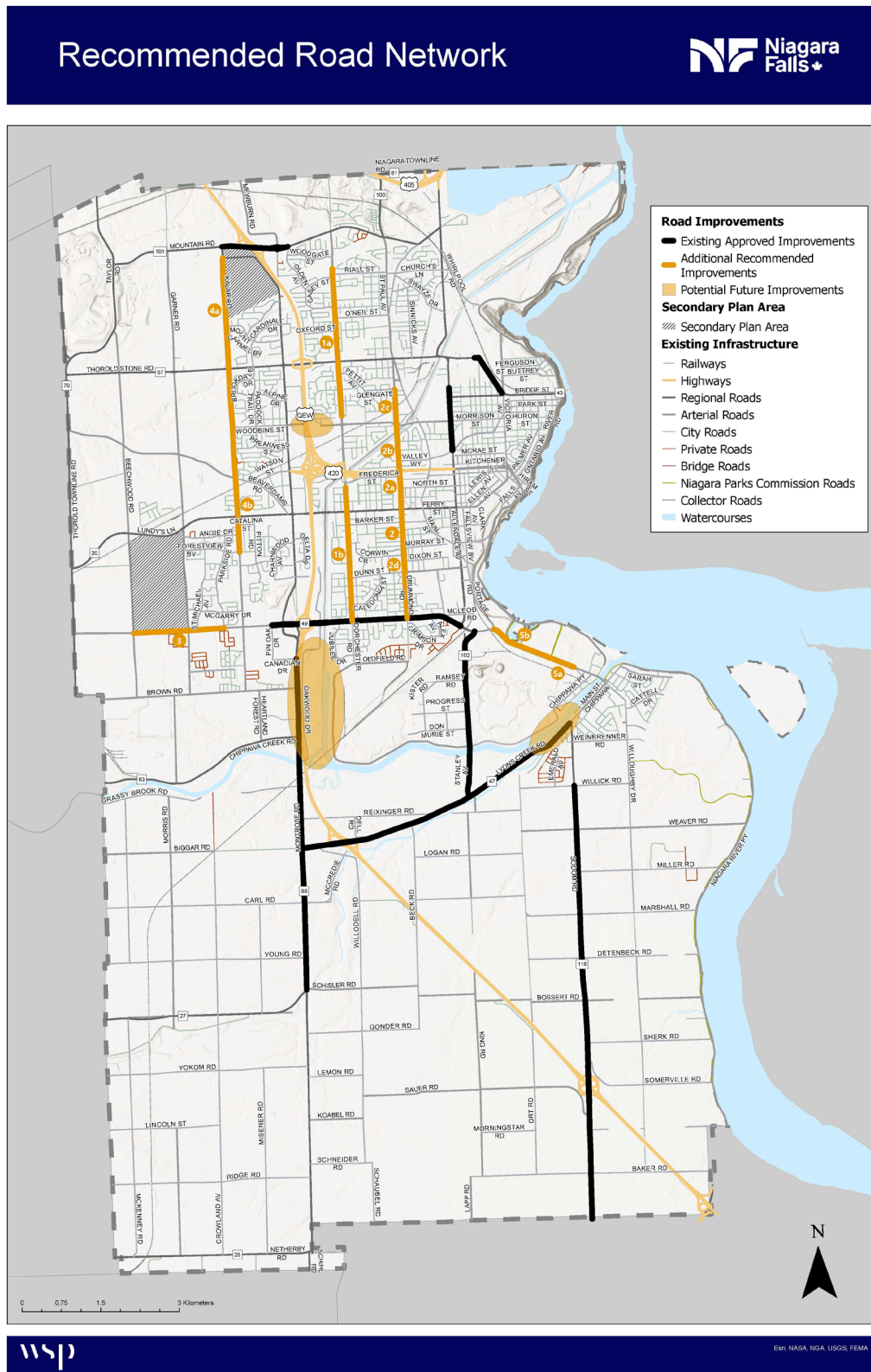
Goods Movement

- Work with MTO to advance the Niagara – Hamilton Trade Corridor, Highway 406 Extension and NGTA East Corridor to provide an efficient trade route connecting the City and Region to both the GTHA and USA. Short-term solutions to provide a dedicated alternate truck route on the QEW should be developed.
- Initiate a Goods Movement Strategy to address trade corridors, truck routes, changing delivery methods and emerging technology, and localized goods movement issues. The study should identify strategies to ensure goods movement by rail continues to be a vital component of goods movement in Niagara Falls, including opportunities for integrated rail services.
- Protect rail infrastructure for future growth opportunities that could have the added benefit of off-loading a congested highway trade corridor and supporting economic growth in the City and Region.

To support the implementation of the recommended future transportation network, an implementation plan was developed. This includes a phasing plan highlighting when recommended improvements should be constructed, estimated high level capital costs for each improvement, and an overview of mechanisms through which the City can fund the plan. Capital costs to construct the recommended future network are estimated at approximately \$126,905,000.

Monitoring the outcomes of the recommendations made will also be crucial, and the TMP includes a framework to track the plan's performance. This will help validate the transportation projects included in the TMP and will also help identify where modifications or updates are needed.

Figure 0-1: Recommended Future Road Network in Niagara Falls



1 Introduction

The Niagara Falls Transportation Master Plan (TMP) is a future-ready blueprint for multi-modal travel within the municipality. A TMP is a central document which provides tailored policy direction and infrastructure recommendations to shape the City's future transportation network.

1.1 Project Introduction and Vision

Situated in Southern Ontario, within the Niagara Region, the City of Niagara Falls hosts one of Canada's world-class tourist attractions. Since the publishing of the City's Sustainable Transportation Master Plan (STMP) in 2011, the City has seen a rise in domestic and international tourists. Tourism contributes greatly towards local economic development within the City, and a robust transportation system can help further support and enhance the tourism experience. At the same time, the City is experiencing residential and employment growth as more people find Niagara Falls a desirable place to live and work.

The rising tourism, growth in new residential and employment development, as well as the shifts in national transportation trends call for an update to the City's transportation plan. The TMP will be developed to remain mindful towards the needs of local residents while also catering to tourists. The goals of this study are summarized in the following proposed vision statement:

“To support the continued development of a safe, connected, equitable, and accessible multi-modal transportation system that supports the local economy by improving intra-City travel for residents, and the tourist experience.”

1.2 The Transportation Master Plan Framework

The Municipal Class Environmental Assessment (MCEA) process for Master Plans is a multi-phase framework which must be followed as part of the development of all municipal infrastructure. Master Plans, such as a TMP, are required to complete Phases 1 and 2 of the five-phased MCEA process. These are:

- Phase 1: Development of an opportunity statement, objectives, and an overall TMP vision.
- Phase 2: Alternative scenarios development and evaluation, leading to a preferred alternative.

The TMP follows Approach #1 of the MCEA process for Master Plans. As such, completion of Phases 1 and 2 through the TMP allows the City to progress with the implementation of any projects that fall under Schedule B of the MCEA document (subject to screening), and advance to Phase 3 (Assessment of Design Alternatives) for recommended Schedule C projects. Schedule C projects have the potential for significant environmental effects and will require further consultation from the public and review agencies.

2 Policy Context

The development of the TMP is informed by several federal, provincial, regional, and municipal policies and studies. A background review of existing plans and policies was conducted to ensure the TMP vision and transportation planning approaches align accordingly. An overview of key policies at each level of governance, and their relevance to the TMP, is provided in the following subsections.

2.1 Federal Policy Context

Federal Sustainable Development Act (2008)

The Federal Sustainable Development Act (FSDA) establishes a comprehensive strategy and framework for promoting sustainable planning at the national level. The document places a strong emphasis on key environmental aspects such as clean air, water quality, and reducing the overall national environmental impact. The primary objectives of this strategy include:

- A comprehensive perspective on Federal initiatives and outcomes aimed at attaining environmental sustainability;
- Establishing effective methods for measuring and monitoring progress in achieving sustainable goals; and
- Ensuring that Federal decision-making considers environmental, economic, and societal factors with equal importance.

The TMP should be developed in accordance with the FSDA by ensuring its alignment with sustainable objectives and policies established by other levels of government. The fundamental lens of preserving environmental integrity and assessing the cost implications of proposed actions are principles that will be applied when developing the TMP.

2.2 Provincial Policy Context

Provincial Planning Statement (2024)

On October 20, 2024, the Provincial Policy Statement and A Place to Grow were replaced by the Provincial Planning Statement. The Provincial Planning Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development. Decisions impacting planning matters must align with the PPS.

The PPS seeks to support an increased supply and mix of housing options and a strong and competitive economy. It prioritizes compact and transit-supportive design where appropriate, as well as optimized investments in infrastructure to support convenient access to housing, quality employment, services, and recreation for all.

Table 2-1 Ontario's Provincial Planning Statement Policy Directives

PPS Policy Section	Policy Directive
2.1	Supporting the achievement of complete communities, including by accommodating a mix of transportation options with multi-modal access.
2.2	Facilitating densities for new housing that support active transportation.
2.2	Requiring transit-supportive development and intensification in proximity to transit, including corridors and transit.
2.3.1	Ensuring land use patterns in settlement areas with land use mixes and densities that support active transportation, are transit-supportive, and are freight-supportive.
2.4.2	Requiring Major Transit Station Areas (MTSAs) to be delineated in Official Plans. Ensuring MTSAs are transit-supportive and achieve multi-modal access to stations and nearby major trip generators.
3.2	Developing transportation systems that are safe, energy efficient, appropriate to address projected needs, and support the use of zero- and low-emission vehicles.
3.2	Employing Transportation Demand Management strategies to ensure efficient use of the network.
3.2	Maintaining and improving connectivity between different transportation systems and modes.
3.3	Protecting transportation corridors.

Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe (2022)

Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe (“the GGH Transportation Plan”) was released by the Ontario Ministry of Transportation (MTO) in 2022. It sets out the Province’s vision for transportation in the region and includes proposed infrastructure and service improvements.

The GGH Transportation Plan proposes new infrastructure in and around the City of Niagara Falls, particularly enhancing GO Rail service to the City, the twinning of the Garden City Skyway, and capacity expansions along sections of the QEW in the City.

The GGH Transportation Plan further includes policy direction relevant to Niagara Falls, including:

- Reducing or shifting the need to travel, particularly during peak hours, and promoting and incenting telecommuting, flexible work hours, and alternative modes.
- Ensuring safe and convenient first- and last-mile connections between stations and communities.
- Implementing transit-oriented communities, making active transportation more attractive, reducing GHG emissions, and leveraging micro-mobility and innovative technologies to reduce gridlock.

The GGH Transportation Plan also identifies a Strategic Goods Movement Network, highlighting priority corridors for the movement of freight. Network elements in Niagara Falls include the QEW, Highway 420, and Thorold Stone Road between Highway 406 and the QEW.

The TMP will consider the infrastructure and service improvements proposed in the GGH Transportation Plan.

Metrolinx 2041 Regional Transportation Plan (2018)

The Regional Transportation Plan (RTP) is designed to serve as a tool for the Greater Toronto and Hamilton Area (GTHA) to establish an integrated regional transportation system that caters to the requirements of residents, businesses, and institutions.

Building upon the foundation laid by Metrolinx's previous RTP, "The Big Move" (2008), the primary objectives in the RTP focus on improving the needs of travelers. The main goals include the following:

- Offering rapid, frequent, and reliable transit access to a larger portion of the population.
- Unifying fares and services to enable smooth travel throughout the entire region.
- Enhancing the efficiency of road and highway utilization to support both transit and the movement of goods.

The TMP will consider any Metrolinx transportation improvement projects that extend into the City and within the surrounding Niagara Region. Examples of such improvements include the new peak-period GO rail service linking Niagara Falls to Hamilton, which launched in 2023.

The Greenbelt Plan (2017)

The Greenbelt Plan was amended in July 2017 and is an overarching document that serves to protect the Greenbelt Area from urbanization that would cause harm to its agricultural and ecological features. The Greenbelt Plan is supported by the Niagara Escarpment Plan. As the City is situated within the greenbelt policy area designation and is designated as an Urban River Valley, the proposed improvements recommended in the TMP will be developed in alignment with policies pertinent to Urban River Valleys.

In addition, the Greenbelt Plan provides policy directives to develop complete communities that are walkable and transit-supportive to reduce greenhouse gas emissions and foster lower-carbon communities. These directives support the Niagara Region's 2050 net-zero corporate emission goal, and therefore will be incorporated in the TMP recommendations.

Destination Niagara (2025)

In December 2025, the Ministry of Tourism, Culture and Gaming released the Destination Niagara Strategy, which seeks to unlock the full potential of the Niagara Region as a world-renown tourism destination. The Province is seeking to increase visitation rates (two-fold), extend the average visit length, attract global recognition, and encourage private investment to stimulate further economic growth.

While this strategy was released near the completion of this TMP, the messaging in the strategy emphasizes the need for continued investment in an efficient and predictable transportation network in Niagara Falls to accommodate and encourage the anticipated growth in tourism activities.

2.3 Regional Policy Context

Niagara Region Official Plan (2022)

The 2022 Niagara Regional Official Plan (ROP) is a planning policy framework that provides clear direction for growth into 2051 and beyond. This includes direction on land use and other policies which will influence economic, environmental, and planning decisions. The vision for Niagara Region is to “support and grow a sustainable and diversified economy while providing expectational quality of life for all, and protecting our beautiful natural landscape”, which recognizes the Region as a distinct, vibrant and well-connected community.

The vision of the ROP is divided into four pillar statements with corresponding directives. The statements and directives for the vision are shown in Table 2-2.

Table 2-2 Niagara Region Official Plan Pillar Statements

Pillar Statement	Directive
Exceptional Development and Communities	Well-planned, high-quality development in appropriate locations that improves our communities, while protecting what is valuable.
Diverse housing types, jobs, and population	A wide mix of housing types and employment opportunities that attract diverse populations to Niagara across all ages, incomes, and backgrounds.
Thriving economy	A prosperous agricultural industry and employment areas that provide jobs and grow our economy.
Resilient urban and natural areas	Areas rich in biodiversity that mitigate and adapt to climate change while strengthening Niagara's ability to recover from extreme weather events.

The City's TMP recommendations will be in alignment with the transportation objectives and criteria outlined in Section 5 of the 2022 Niagara Region Official Plan, a 'Connected Region'. These objectives and criteria support fostering a cohesive and sustainable transportation infrastructure and services system.

Niagara Region Transportation Master Plan (2017)

The 2017 Niagara Region Transportation Master Plan (NRTMP) serves as a guide for Niagara Region's transportation system through the next 25 years. The NRTMP ensures that future transportation needs are met through recommendations for improving pedestrian and cycling facilities as per the Strategic Cycling Network, demand-responsive and conventional transit, and an integrated network of roads and highways.

The City's TMP recommendations will be developed in alignment with the policy directives outlined in the NRTMP. The NRTMP's vision will help guide the City to remain connected to and integrated with the Region's transportation network, and the surrounding municipalities. The City's new TMP may include recommendations for the Region to consider in the future.

Niagara Region is currently updating their 2017 TMP to accommodate and plan for growth towards the year 2051.

Niagara Region Economic Development Strategy (2022)

Niagara Region's 10-year Economic Development Strategy (REDS) outlines the Region's directions, goals and actions required to guide its efforts towards a stronger and more sustainable economy as it emerges from the impacts of the global COVID-19 pandemic. Its key objectives include the following:

- Promote economic diversity and resilience by nurturing emerging sectors, creating value-added opportunities, and supporting our robust industry clusters, which thrive from our strategic location, natural assets, and competitiveness.
- Integrate diversity, equity, and inclusion principles into our goals to build an inclusive society where everyone has the tools to succeed and thrive.
- Establish a strong workforce by collaborating with businesses, employment agencies, and higher education institutions.
- Ensure municipal economic development offices receive appropriate support from Niagara Economic Development to promote business retention and growth by acknowledging the unique opportunities and challenges between urban and rural communities and foster collaboration between the two levels of local government to support business retention and expansion.
- Preserve and leverage Niagara's distinctive natural assets by embracing innovation and adopting new technologies for sustainable environmental growth by aligning with government climate change policies.
- Achieve a higher and better use of infrastructure to support economic growth by facilitating efficient flows of goods, establish connections to support the tourism sector, and offer quality access to employment for all residents.

2.4 Local Policy Context

City of Niagara Falls Official Plan (2023 consolidation)

The City's Official Plan (OP) was approved in 1993 and consolidated in August 2023. The OP remains a dynamic document, with the City initiating and publishing amendments including Employment Lands (OPA Number 147, adopted April 2023) and Housing Policies (OPA Number 149, approved August 2022).

The OP provides policy directives and long-term objectives that guide urban and rural infrastructure development across the City. The key growth objective outlined in the OP that is pertinent to the TMP is "to encourage alternative forms of transportation such as walking, cycling and public transit".

The TMP's recommended network will be in alignment with Part 3 of the OP, which calls for a transportation system that is "integrated, safe, and efficient, facilitating the

movement of people and goods within and outside of the City. The needs of all users in the City have to be considered in transportation. Users include: pedestrians, bicyclists, transit users, those with disabilities (in accordance with the provisions of the Accessibility for Ontarians with Disabilities Act), automobiles, trucks, local residents, and visitors”.

In addition to the OP’s key growth objective and vision for the City’s transportation network, the TMP will be developed in alignment with the OP policy directives outlined in Table 2-3.

Table 2-3 City of Niagara Falls Official Plan Policy Directives Impacting Transportation

OP Policy Direction	Directive
Part 1 (Section 2), 2.2	The City shall protect its Natural Heritage Areas, their features, quality and functions, through the Environmental Protection Area land use designations and their related policies.
Part 2 (Section 6), 6.5	The establishment of an integrated transportation system which fosters links within and between the City’s tourism districts is a key objective of this Plan.
Part 2 (Section 10), 10.6	Notwithstanding Schedule “C” and the Policies of Part 3, Environmental Management, Section 1.4 Road Network, new roads and road improvements within the Niagara Escarpment Plan Area shall be in harmony with the Escarpment landscape. The objective is to design and locate new and expanded transportation facilities to minimize the impact on the Escarpment environment and the natural and cultural landscape. Any development shall comply with the objectives, policies and development criteria of the Niagara Escarpment Plan.
Part 3 (Section 1), 1.5.1	As shown on Schedule A-2, the City’s transportation corridors consist of rail corridors, Provincial highways and the arterial road system. These corridors are the primary conveyors of goods and people within, into and out of the City
Part 3 (Section 1), 1.5.6	Public transit routes shall be designed to service employment areas, intensification areas, nodes and intensification corridors. It is desirable for public transit services to be encouraged in proximity to higher density residential developments, areas of high employment concentration, major medical and social service centres, housing developments for people with special needs and social amenity

OP Policy Direction	Directive
	areas such as the Niagara Parks and other attractions. Transit stops should be located within hubs and major public facilities.
Part 3 (Section 1), 1.5.7	Transit service planning shall be connected with the City and Regional Bicycling Network and co-ordinated with the planning of bicycle routes and pedestrian paths to enhance the convenience, safety and usability of these modes of transportation.
Part 3 (Section 1), 1.5.21	It is intended that the utilization of existing transportation infrastructure will be maximized before new transportation infrastructure is constructed and that opportunities will be available for all residents to use a variety of transportation modes. Appropriate transportation linkages will be developed in order to provide efficient movement of people and goods both within and outside the City
Part 3 (Section 1), 1.5.28	Council shall cooperate with the Niagara Region to designate, maintain, monitor and improve truck routes to accommodate the safe and efficient movement of truck traffic while prohibiting the penetration of non-essential trucking into residential areas.
Part 3 (Section 1), 1.5.30	The long-term impacts on population growth, tourist visitation, land use, public finances and the environment will be taken into consideration in any decisions regarding major transportation improvements.

City of Niagara Falls 2023-2037 Strategic Plan (2023)

The City presents a new Strategic Plan for every four-year term of Council, to define the key objectives and initiatives that will move the community forward.

Through the 2023-2027 Strategic Plan, the City seeks to provide high-quality municipal services and enhance quality of life throughout the community. To improve environmental sustainability, the Strategic Plan calls for a review of active transportation opportunities. Additionally, the Strategic Plan sets forth an objective to enhance the overall transportation network in Niagara Falls by improving network mobility, accessibility, and sustainability.

The City's TMP will be developed to support the vision of the Strategic Plan. The following three key strategic pillars and associated actions and objectives will guide the development of the recommended transportation network:

- Sustainability (financial, social and environmental)

- Customer service
- Economic diversification and growth

City of Niagara Falls Economic Development Strategy (2023)

The City's 2023 Economic Development Strategy (EDS), spanning five years, presents strategic opportunities that align with the City's fundamental strengths and emerging prospects including tourism, advanced manufacturing systems, information and communication technologies, and health innovations from 2024 to 2029. To harness the potential within these sectors, the plan is built upon four vital pillars:

- Diversify the economy
- Retain and grow existing businesses
- Strengthen the ecosystem
- Expand the City of Niagara Falls

Within each of these pillars, initiatives are put forward to attain, diversify, retain, and attract new investments, job opportunities, and wealth generation.

The EDS is important for the City's TMP as it describes critical economical opportunities while establishing a clear vision and key focal points for the City to thrive economically. The transportation network recommendations outlined in the TMP will be developed to help support economic development across the City.

City of Niagara Falls Tourism District Connection Study (2023)

The City's 2023 Tourism District Connection Study outlines key initiatives to improve visitor experience by enhancing connectivity in the core of the City. The solutions developed for pedestrian and transit systems seek to increasing cohesion between destinations, lodging, and arrival points to facilitate more intuitive and enjoyable stays for all types of visitors.

The key recommendations outlined for the transit network are as follows:

- Develop short and long-term proposals for transportation connections in the study area's north, core, and south regions;
- Enhance WEGO bus services, routing options and station locations; and,
- Consider potential technologies for a new fixed transit line.

The key recommendations outlined for the pedestrian network are as follows:

- Identify future locations for building-to-building pedestrian bridges to improve weather-protected walking for all-year usage; and,
- Enhance pedestrian connectivity within the existing indoor network and the on-street infrastructure.

The tourism industry is a vital consideration for the City's TMP and future transportation network, given tourism's positive role in the City's economy. To ensure the City remains a prominent tourist destination in Southern Ontario, the TMP's future network will be developed to align with the key recommendations proposed in this Study.

City of Niagara Falls Downtown Urban Design Guidelines (2007)

The City's 2007 Downtown Urban Design Guidelines provide a framework for urban development within the City's Downtown, in conjunction with the OP and Zoning By-law. The Guidelines provide direction for built form evolution, ensuring that new development and revitalization projects preserve the City's Downtown heritage.

General guidance is provided for development components including signage, building heights, parking areas, and materials. Additionally, block-specific guidance is provided for the nine Downtown Districts, as follows:

- District 1: Western Gateway
- District 2: Queen Street
- District 3: Civic Square Block
- District 4: Transportation District
- District 5: Open Space
- District 6: Heritage Commercial District
- District 7: Eastern Gateway
- District 8: Southern Residential
- District 9: Park/Bridge Neighborhood

The Guidelines will inform the City's TMP development by providing key design considerations for roads running through the City's Downtown.

City of Niagara Falls Climate Adaptation Plan (2021)

The City's 2021 Climate Adaptation Plan emphasizes the importance of mitigating climate change and extreme weather on built, social, natural, and economic environments to ensure Niagara Falls continues to be a great City for generations to come. The Plan and the implementation strategy focuses on the following five main goals:

- Increase climate change literacy among staff and public;
- Invest in infrastructure and assets that are prepared for the impacts of climate change;
- Encourage green methods of transportation;
- Create and implement energy conservation strategies for City facilities; and,

- Mitigate consequences of extreme weather, emergency events and safety risks to the community.

The Plan is relevant to the City's TMP as it promotes transportation development decisions that prioritize building resilience to mitigate climate change. The key initiatives that are relevant to the City's TMP are presented in Table 2-4.

Table 2-4 Niagara Falls Climate Adaptation Plan Key Initiatives

Initiative	Directive
2.1	Update engineering and design standards to create a more resilient infrastructure network.
2.2	Increase LID and other storm water management philosophies to promote groundwater recharge.
2.4	Ensure new development, redevelopment and intensification preserve and contribute to quality green spaces.
3.1	Continue to connect trails, pathways, and bike paths to create alternative methods of travel within the City.
3.1	Contribute to work to enhance GO Transit levels of service to full day, year-round service.
3.3	Encourage electric vehicle charging as part of new development.
3.4	Continue promotion of inter-municipal transit system, making public transportation convenient and timely.
4.1	Perform energy audits of City facilities to provide base level understanding of current efficiency levels.
4.2	Investigate alternative energy strategies to reduce reliance on carbon fuels.

City of Niagara Falls CN Train Operations Impact Study (2019)

The Canadian National Railway (CN) network has two railway lines falling within the City boundaries, identified as the Grimsby and Stamford Subdivisions. The 2019 CN Train Operations Impact Study was conducted to assess the impact of at-grade rail crossings for the Stamford Subdivision, which is situated along key arterial roadways within the City's urban area.

The Stamford Subdivisions' fourteen at-grade rail crossings were identified as sources of traffic delays, thereby impeding emergency response routes. The Study sought to assess the railway line's impacts on multimodal travel, emergency services, residents, commercial stakeholders, and the environment to develop preliminary recommendations. The Study recommends that through-freight train rerouting should be

considered. Although this will have a positive impact within the City, the Study also recommends that further studies be conducted to assess the impact on other stakeholders such as CN, Metrolinx, and Transport Canada/Canadian Transportation Agency.

The TMP's recommendations, particularly for goods movement and the road network, will consider the findings outlined in this Study.

City of Niagara Falls Speed Control Policy (2010)

The City's 2010 Speed Control Policy provides an overview of various traffic calming measures and associated implementation procedures. These neighborhood traffic management programs are implemented on a public input and City approval basis. The Policy outlines the various procedures such as the public input process, ranking of eligible streets, and speed control measure installation. Road safety recommendations in the TMP will be developed in alignment with the directives outlined in the Policy.

City of Niagara Falls Sustainable Transportation Master Plan (2011)

The City's 2011 Sustainable Transportation Master Plan (STMP) has been the blueprint for transportation infrastructure development and policy in the City of Niagara Falls for the last decade. The plan focuses on sustainable transportation development and planning for the future growth of the City. The STMP was developed according to local community values, ensuring that residents' needs are met in a sustainable manner.

The STMP introduced a number of multi-modal elements to the City's transportation planning scope, addressing the desires of City residents and the transportation culture shift of the time. The STMP also recognizes the effects of tourism on the community and proposes recommendations to best serve the needs of visitors and residents alike. Consultation was an integral component in the development of the STMP. Many stakeholder events were facilitated to reach a wide group of people from different backgrounds and levels of involvement.

The 2011 STMP highlighted four high-level guiding principles, which served as themes throughout the entire STMP document. These principles ensure that transportation and land use decisions are fully consistent with existing relevant policy and direction. These four guiding principles are as follows:

- Optimize the Transportation System;
- Promote Transportation Choice;
- Foster a Strong Economy; and,
- Support Sustainable Development and Growth.

The STMP recommendations cover key elements of the transportation system, each containing an outline of project costs, policy initiatives, and a detailed monitoring program, including:

- **Road network:** Specific improvements to reduce congestion, improve wayfinding, and accommodate future growth in the city;
- **Active Transportation:** Measures to increase accessibility and expand the network to key destinations for pedestrians and cyclists;
- **Transit:** Improvements to local and inter-municipal transit services, as well as future study recommendations, to address the altering transportation demand patterns; and
- **Transportation Demand Management (TDM):** Measures to reduce the need for single occupancy vehicle travel and support more sustainable travel behaviour patterns.

The conclusion of the STMP involved numerous recommendations to improve many aspects of the transportation network. Several focus areas for improvements were noted to be:

- Wayfinding and Signage;
- Parking;
- Active Transportation (On and Off-Road Improvements);
- Transit;
- TDM;
- Road Network; and,
- Long-Term Marquee Projects.

These focus areas were then considered in further detail to develop specific recommendations and an implementation framework. Depending on the type of recommendation, a suitable methodology was used to determine the status of each recommendation. Some methods used were a desktop policy review, Google Streetview to check location-specific improvements, and travel demand modelling data.

The 2025 TMP will build on the recommendations presented in the 2011 STMP. The 2011 recommendations will be assessed through the lens of changing travel patterns, populations, and promoting multi-modal travel. The 2025 TMP will present a mix of new policies and updated recommendations from the 2011 STMP to reflect the new vision for the City. The 2011 recommendations and their implementation statuses are outlined in Table 2-5.

Table 2-5 2011 TMP Implementation Status

2011 TMP Recommendations	Description	Status	Next Steps
Signing Inventory and Effectiveness Survey	Conduct a signage inventory and effectiveness survey with regular updates	Completed	None
Tourist Information Map	Create a Tourist Information Map that indicates the following: • Tourist Districts; • Major attractions • Other points of interest. Map will be combined with parking, transit and AT info	Completed	None
Tourist District Signage	Provide unique signage for the four NF tourist districts (as identified in the 1998 TMP).	Completed	None
Parking Signage	Add signage to principal entry routes to direct incoming traffic to available parking	Completed	None
On-Street Information Maps	Point to nearby attractions and transit.	Ongoing	Ongoing
Transit Signage/Visitor Transportation System (VTS) Information	Direct motorists to GO/VIA stations, WEGO routes	Ongoing	Ongoing
Signage for Active Transportation	Support Cycling and Walking route plan	Ongoing	The Trails & Active Transportation Master Plan (TATMP) will continue this work.
Signage for Public Gathering and	Additional signage at key locations	Ongoing	Ongoing

2011 TMP Recommendations	Description	Status	Next Steps
Historical/Heritage Locations			
Special Event Signage	Event signage to support detours and access	Ongoing	Ongoing
Variable Message Signs (VMS)	VMS at key locations	Completed	None
Commercial Vehicles and International Bridge Crossing	Placement of signage at strategic intersections to route trucks to appropriate bridge crossings	Completed	None
Border Wait Time Advisory System	MTO was to develop a Border Wait Time Advisory system to provide information to both passenger and commercial vehicles at key decision points.	Completed	None
Emergency Detour Routes (EDR)	Placed on defined sections along the QEW to assist motorists in the case of a highway closure	Completed	None
Separate Parking Studies	Complete a separate parking study with focus on requirements of the tourism and hotel sectors	Completed	None

2011 TMP Recommendations	Description	Status	Next Steps
Updated Active Transportation (AT) Inventory	Update an inventory of AT facilities on a regular basis	Ongoing	Ongoing
Group A	Short Term Implementation (2012-2017)	Ongoing	Currently in design process.
Group B	Short Term Implementation (2012-2017)	Incomplete	The TATMP will continue this work.
Group C	Medium Term Implementation (2018-2022)	Partially Completed / Ongoing	The TATMP will review this work.
Group D	Medium Term Implementation (2018-2022)	Incomplete	The TATMP will review this work.
Group 1A	Short Term Implementation (2012-2017)	Incomplete	The TATMP will review this work.
Group 1B	Short Term Implementation (2012-2017)	Incomplete	The TATMP will review this work.
Group 1C	Medium Term Implementation (2018-2022)	Incomplete	The TATMP will review this work.
Group 1D	Medium Term Implementation (2018-2022)	Incomplete	The TATMP will review this work.

2011 TMP Recommendations	Description	Status	Next Steps
Morrison Street QEW	New AT link over QEW crossing/flyover	Incomplete	The ongoing TATMP will review this work.
Transit mode share target	Adopt transit mode share target of 3.2% by 2018	Ongoing	For review in the TMP
Prepare an overarching business plan to co-ordinate and implement TDM strategies	Various TDM policy recommendations were prescribed in the 2011 TMP, including: - Appoint a City TDM coordinator; - Market TDM throughout the community, including tourist sector; - Organize marketing campaign to reach key groups, such as tourists; - Update Niagara Falls OP to include and be in line with City's TDM strategies; - Discuss with Region and Province to modify Development Charges Act to recognize TDM/Transit efforts; - Develop separate infrastructure capital program within annual budget for TDM; - Develop approach to resolve existing and anticipated congestion;	Ongoing	To be considered in the TMP

2011 TMP Recommendations	Description	Status	Next Steps
	- Reassess Traffic Impact Study Guidelines; - Consider TDM in context of all development reviews; and, - Continue to participate in Region's TDM development work.		
Conduct Roadway Standards Review	Ensure network meets AODA and determine context-specific multi-modal solutions within roadway design	Ongoing	Ongoing
Roadway Classification Review	Consider a roadway classification review for arterial, collector, and local roads	Ongoing	Review and discuss through TMP process
5. Thorold Stone Road Widening	Stanley Ave to Gale Centre	Ongoing	Ongoing
12. McLeod Road Widening	Pin Oak Drive to Parkside Rd	Complete	Complete
11. Kalar Road Widening	Beaverdams Rd to Rideau St	Ongoing	Ongoing
18. Livingston St/Fallsvue Connection to Portage Rd	N/A	Ongoing	Ongoing
9. Drummond Road / Hwy 420 Bridge Widening	Valley Way to Frederica St	Ongoing	For review in the TMP
15. Portage Road Widening	Marineland Pkwy to Upper Rapids Blvd	Ongoing	For review in the TMP
17. Buchannan/ Fallsvue Boulevard Widening	Falls Avenue to Livingston St	Completed	None
16a. Allendale Ave Widening	Forsythe St to S. of Dunn St.	Ongoing	For review in the TMP

2011 TMP Recommendations	Description	Status	Next Steps
McLeod Road Widening (ESR to be completed Nov. 2011)	Parkside Rd to Dorchester Rd	Ongoing	Ongoing
5. Thorold Stone Road Extension (priority)	Gale Centre to Bridge	Ongoing	Ongoing
7a. Dorchester Road Widening	Thorold Stone Rd to Pinedale	Ongoing	For review in the TMP
16b. Allendale Ave New Connections to Stanley	Dixon St to Stanley Ave & Ferry St to Forsythe St	Ongoing	For review in the TMP
6. Stanley Ave Widening	Hamilton St to Valley Way	Completed	None
8. Hwy 420/Montrose Road Improvements (priority)	Widening Ramps and Improve Intersection	Cancelled	None
13a. New Hydro Canal Crossing	Dorchester to Oakwood	Ongoing	For review in the TMP
7b. Dorchester Road Widening	Frederica St to McLeod Rd	Ongoing	For review in the TMP
2. Mewburn Rd Reconstruction	Mountain Rd to York Rd	Completed	Completed
3. Mountain Road Widening	Kalar Rd to Olden Ave	Completed	Completed
4. Stanley Ave Widening	Church's Ln to Thorold Stone Rd	Ongoing	None
14. Stanley Ave/Marineland PkwY Intersection	Jog Elimination or Intersection Improvement	Ongoing	None
13b. New QEW Crossing (priority)	Oakwood to Montrose	Ongoing	For review in the TMP

2011 TMP Recommendations	Description	Status	Next Steps
10. Drummond Road Widening	Lundy's Ln to McLeod Rd	Completed	Completed
Highway 420 Extension	Extend Highway West of QEW (Beaverdams)	Cancelled	None
Rail Crossings Review	Further investigation of grade separated crossings/rail relocations	Completed	None
Morrison Street QEW	Crossing/flyover	Ongoing	For review in the TMP

3 Niagara Falls Today

This chapter documents existing socio-economic and transportation conditions in Niagara Falls, to help shape context-sensitive recommendations and solutions in the TMP.

3.1 Socio-Economic and Environmental Context

3.1.1 Land Use

There are a variety of existing land uses in Niagara Falls including (but not limited to) residential, parkway residential, commercial, tourist commercial, resort commercial, theme parks, agricultural and industrial. One of the main drivers of tourism to Niagara Falls are the falls itself and the surrounding parklands. The City also has a large contingent of hotels and casinos to support the tourism industry.

The OP establishes twelve land use designations with preambles which highlight the intention of the designations, policies which describe permitted uses, and various physical development guidelines.

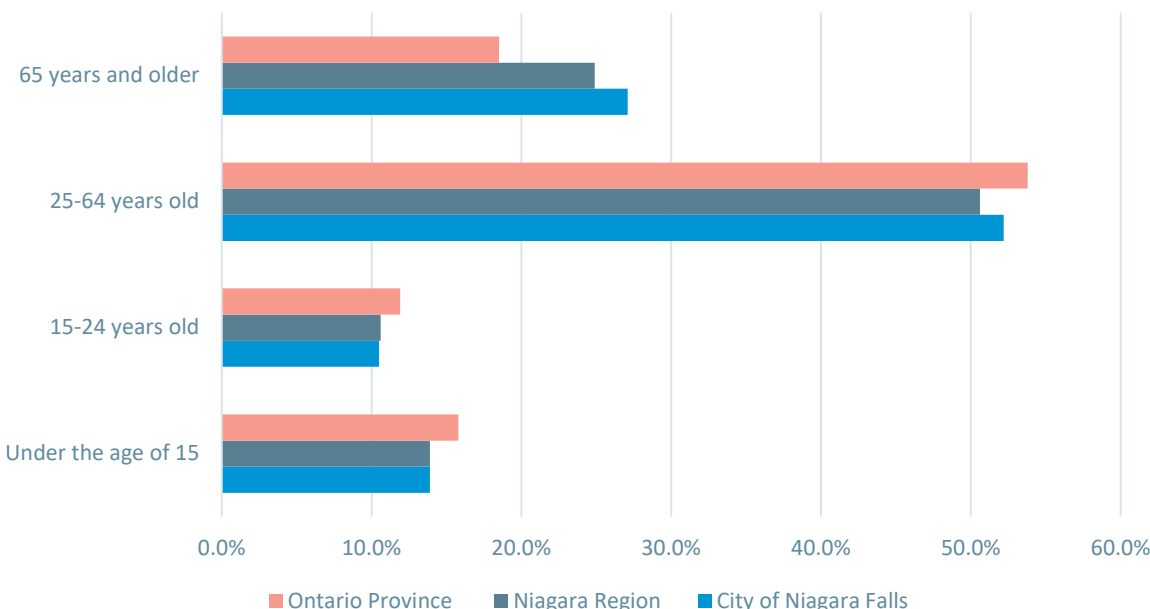
3.1.2 Population Size

Between 2016 to 2021, the City's population rose from 88,071 to 94,415, indicating an increase of 7.2%. This increase is similar to the Region's 7.4% increase, and much larger than the Provincial increase of 5.8%. Based on the Niagara Region Official Plan, planned growth within the City indicates that by 2051 the population will be 142,000. Niagara Falls is a growing city and will face increased challenges in moving people and goods if the transportation network (including active transportation and transit) does not reflect this growth.

3.1.3 Age Distribution

As shown in **Figure 3-1**, over half (52.2%) of Niagara Falls' population is considered to be of working age (25 to 64 years). The remainder of the population distribution is as follows: children (under the age of 15) represent 13.9%, youth (15 to 24 years) represent 10.5%, and seniors (64 years and older) represent 27.1%.

Figure 3-1 Age Distribution in Niagara Falls



Source: Statistics Canada, 2021 Census

Compared to the Region, the City has a higher working age percentage – 52.2% compared to 50.6% of the Region. The City also has a higher senior population percentage, with 27.1% aged 65 or over compared to the Region’s senior population of 24.9%, and even more so when compared to the Province’s senior population at 18.5%.

The future transportation network in the City will need to ensure accessible transportation links are in place to support a high and growing population of seniors.

3.1.4 Education

Based on information from the District School Board of Niagara, Niagara Catholic District School Board, and the South-Central Catholic District School Board, there are 28 elementary schools and 5 secondary schools within the municipal boundary.

For continuing education, Niagara College and Brock University are located a short distance from the city. With the notable number of schools in the district, access to appropriate modes of transportation (including active transportation and transit) will need to be taken into consideration to help decrease the overall impact that school-related trips have on the transportation network.

3.1.5 Natural and Cultural Heritage

3.1.5.1 Niagara Parks

Niagara Parks has a mandate to preserve and promote the natural and cultural heritage along the Niagara River corridor. Niagara Parks state that they are also committed to delivering commercially successful projects in a way that ensures benefits for people who travel, the adjacent communities and the respective natural, social and cultural environments. The transportation network will need to provide quality connections to the Niagara Parks.

3.1.5.2 Niagara Escarpment Plan

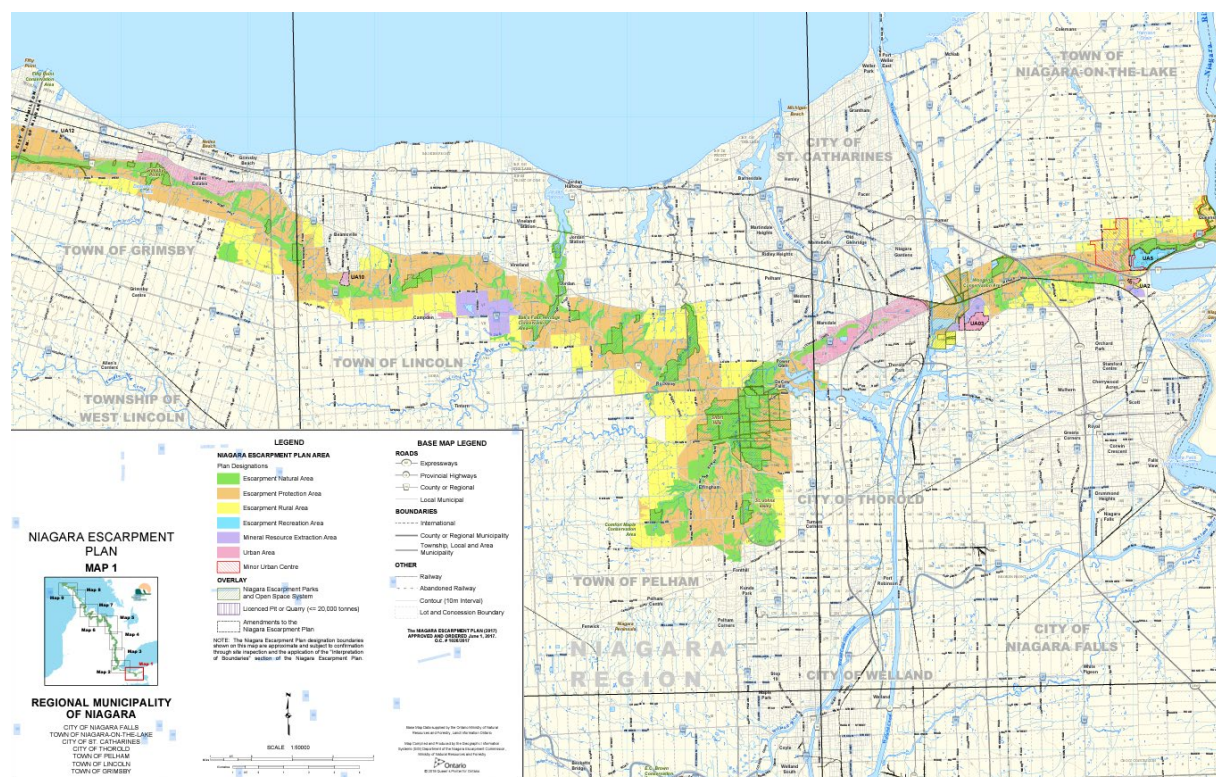
The Niagara Escarpment includes a variety of topographic features and land uses extending 725 kilometres from Queenston on the Niagara River to the islands of Tobermory on the Bruce Peninsula.

The Escarpment Natural Area includes features that are in a relatively natural state and associated valley lands, wetlands and woodlands that are relatively undisturbed. These areas may contain important cultural heritage resources, in addition to wildlife habitat, geological features and natural features that provide essential ecosystem services.

The Escarpment Protection Areas are important because of their visual prominence and their environmental significance, including increased resilience to climate change through the provision of essential ecosystem services. They are often more visually prominent than Escarpment Natural Areas.

The northern section of the City of Niagara Falls has areas that fall under the Niagara Escarpment Plan. This includes the Escarpment Natural Area, Escarpment Protection Area, Escarpment Rural Area and Mineral Resources Extraction Area. This can be seen in **Figure 3-2**. Any future expansion of the transportation network needs to be developed with the Escarpment Plan in mind.

Figure 3-2 Niagara Escarpment Plan



Source: Niagara Escarpment Commission

3.1.5.3 Niagara Peninsula Conservation Authority (NPCA)

The NPCA is a community-based natural resource management agency that protects, enhances, and sustains healthy watersheds (**Figure 3-3**). The NPCA offers watershed programs and services that focus on flood and hazard management, source water protection, species protection, ecosystem restoration, community stewardship and land management.

The following three conservation areas are situated within the City of Niagara Falls:

- 1 **Woodend:** With sweeping vistas of Lake Ontario and the escarpment slopes, Woodend is considered to have been an observation point during the War of 1812 for both armies. Woodend's location was at the center of the action, with the Queenston Heights battle 9.6km east, Beaver Dam battle 4.8km southwest and Lundy's Lane battle 9.6km southeast. Hiking or skiing the trails of Woodend is possible as they meander through the meadow and escarpment forest and slope. The forest community is composed largely of hardwood species with scattered representatives of Carolinian species such as Black Cherry, Black Oak and Sugar

Maple. Woodend is also home to students participating in outdoor education programs in the education centre.

- 2 **Shiner's Creek:** Currently classed as a wildlife refuge and stormwater management area and is therefore not open to the public.
- 3 **Willoughby Marsh:** A swamp ecosystem and one of the largest forested wetlands in the eastern part of the Niagara Peninsula. Located at the head of Tee, Usshers, Lyons and Black Creeks, this conservation area protects an important source for these area waterways. This water source is also characterized as a wildlife area where a small organic basin and a slough pattern of gently rolling wet and drier pockets are dominated by Maple and Oak trees, buttonbush and meadowsweet, and some shallow cattail marsh, providing cover and feeding areas for many animals. Some of the animals seen here are: herons, evening grosbeaks, northern harriers, redheaded woodpeckers, prothonotary warblers, white-tailed deer and numerous amphibians. A relatively untouched space, there are no formal trails or facilities. Bird watching, seasonal hunting and passive recreational activities can be enjoyed at this site.

An understanding of the environmentally significant areas in the City of Niagara Falls is crucial in the development of alternative solutions in the TMP to ensure impacts are identified/mitigated as early as possible.

Figure 3-3 Niagara Peninsula Watershed



Source: Niagara Peninsula Conservation Authority

3.1.5.4 Cultural Heritage Properties

The City of Niagara Falls has a long and storied history for areas of archaeological importance and of built heritage. The City/Province also maintains a Cultural Register that illustrates the vast number of culturally significant properties in the City. There are 85 listed properties, and 29 of those are also designated. Those that are categorized as “listed” indicates that the property has potential heritage value, with those categorized as “designated” indicates that it has a legal status under the Ontario Heritage Act, to help protect its heritage value. Future road improvements will consider impacts to archaeological or cultural heritage.

3.2 Existing Transportation Network

3.2.1 Road Network

The transportation system in Niagara Falls is organized around a hierarchy of roads (Figure 3-4):

- **Provincial Highways:** Designed to permit the free flow of large volumes of traffic through the City and to interconnect with the arterial road system. Such highways typically include four to six lanes with accesses permitted only at selected separated interchanges. Provincial Highways in Niagara Falls include: The Queen Elizabeth Way (QEW) which travels from the north to south City Limits; Highway 420 from Regional Road 420 (Roberts Street) to the QEW; and Highway 405 south of Niagara Townline Road.
- **Niagara Parkway:** Considered to be a scenic road that is classified as a controlled access highway. The road functions primarily as an arterial roadway for the benefit of tourist traffic along the Niagara River. Design, road allowance widths, use, alignment and access are regulated by the Niagara Parks Commission.
- **International Crossings:** Two international boundary crossings at the Rainbow Bridge and Whirlpool Bridge represent critical links in the transportation networks of Ontario and New York State. Development activity in the vicinity of these crossings should consider the impacts on the transportation systems, particularly as it pertains to traffic queues at the inspection plazas.
- **Arterial Roads:** Includes all roadways under the Region's and City's jurisdiction that are designed to accommodate large volumes of traffic between major land use areas in the City.
- **Collector Roads:** Includes all roadways under the City's jurisdiction that are designed to accommodate moderate to high volumes of medium distance traffic between the Arterial Road and Local Roads.
- **Local Roads:** Intended to provide access to abutting properties and carry traffic predominantly of a local nature. Typically, roadways in this classification carry low volumes of traffic short distances. Local roads generally are designed to accommodate on-street parking, sidewalks and limited landscaping in the boulevards.

Figure 3-4 Existing Road Network


3.2.2 Active Transportation Network

The City is developing a Trails and Active Transportation Master Plan (TATMP) concurrently with the TMP. Similar to the TMP, the TATMP is a community-focused plan being developed to support resident and tourist mobility. The TATMP focuses on improving the walking, cycling, and rolling experience across the City. Information related to the existing active transportation network is available in the TATMP.

Existing pedestrian facilities are described in **Table 3-1** and examples are shown in

Figure 3-5. Existing cycling facilities are described in

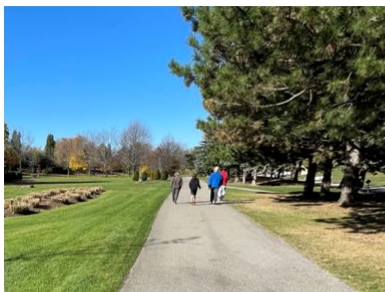
Table 3-2 and examples are shown in

Figure 3-6. A map of all existing active transportation infrastructure is shown in **Figure 3-7.**

Table 3-1 Existing Pedestrian Facility Descriptions

Facility Type	Description
Multi-use trails	• Paved and unpaved • Includes single-track hiking pathways through parks.
Sidewalks	• Paved sidewalks located on at least one side of arterial and collector roads • Gaps located throughout residential areas.
Pedestrian crossings	• Includes mid-block crossings & intersections. • Need for more frequent controlled midblock pedestrian crossings.

Figure 3-5 Pedestrian Facilities



Multi-Use Trails



Sidewalks



Pedestrian Crossings

Table 3-2 Existing Cycling Facility Descriptions

Facility Type	Description
Multi-use trails	- Shared with pedestrians - High-comfort routes as part of Waterfront Trail
Bike lanes	- Painted bike lanes common on City and Regional Roads - Lanes frequently end at intersections
Paved shoulder	Signed routes with paved shoulders located in rural areas

Figure 3-6 Cycling Facilities



Multi-use Trails



Bike Lanes



Paved Shoulder

Figure 3-7: Existing Active Transportation Network


3.2.3 Transit Network

The City is served by Niagara Region Transit (NRT), GO Transit (which is owned and operated by Metrolinx), and WEGO. On January 1, 2023, City-operated transit services were consolidated to be part of the NRT network as part of the Region's vision for a single transit system and operator across the Region. There are also a range of accessible transit services that cater to the varying needs of residents and tourists.

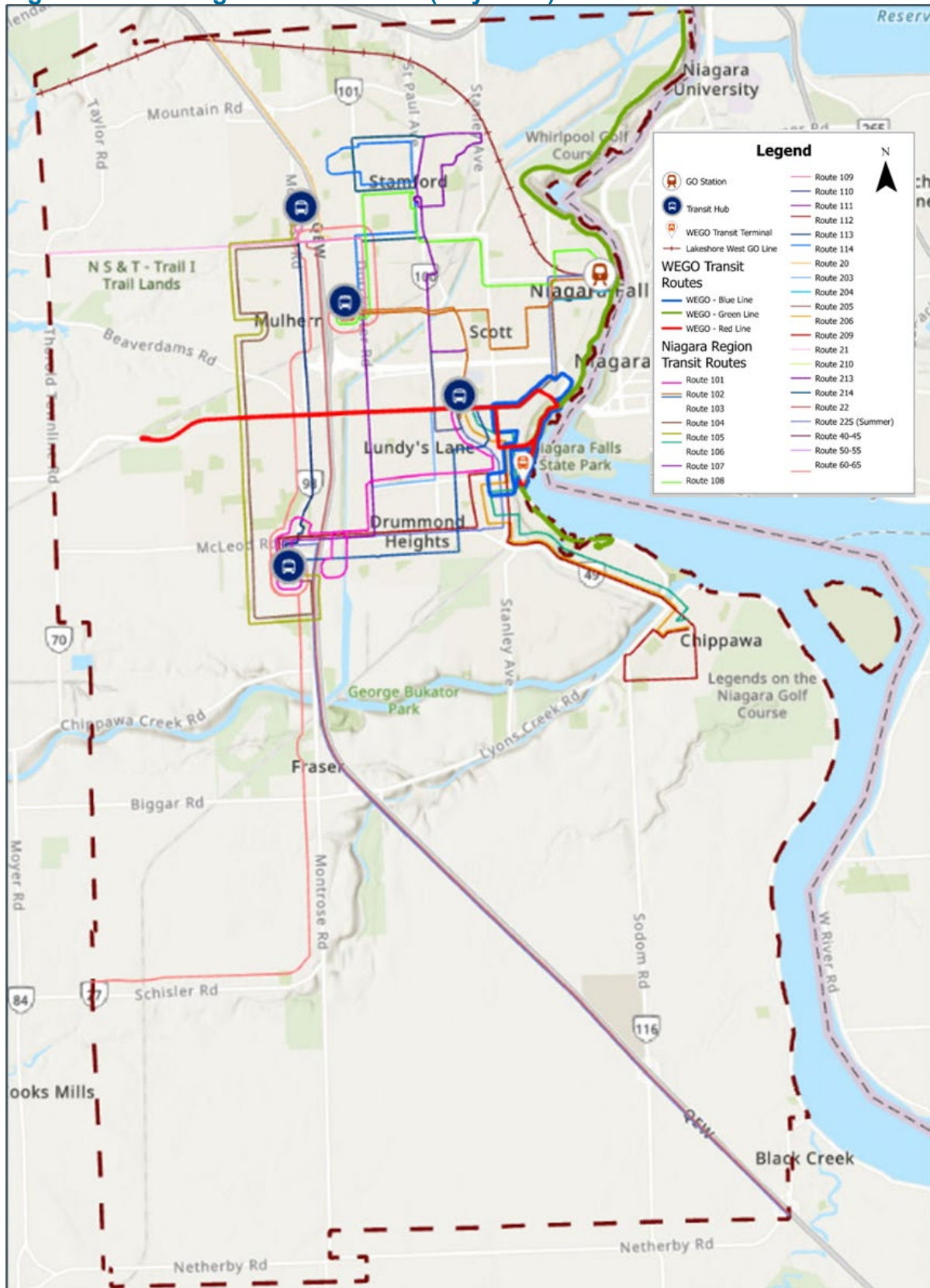
The following services are available across the City (**Figure 3-8**):

- **Regional Buses:** Both weekday (100-series) and night/weekend/holiday (200-series) routes run across the City. They are particularly concentrated in the central areas of the City, with a handful of routes connecting the City to surrounding municipalities within the Niagara Region. Typical service frequency for both 100-series and 200-series routes ranges between 30 minutes – 60 minutes.
- **WEGO:** To accommodate tourist travel, WEGO transit routes connect common tourist destinations close to Niagara Falls. The WEGO has three lines (Red, Green, and Blue) running east-west and north-south, with stops including hotels, Table Rock Welcome Centre, Casino Niagara, Rapidsview, and the Niagara Falls GO Station. Typical daytime service ranges between 30 minutes – 40 minutes, and nighttime/weekend/holiday service ranges between 20 minutes – 40 minutes. The WEGO fare system presents a ticket for 24-48 hours depending on which fare is selected.
- **TransCab:** To accommodate City residents that cannot access bus routes, the NRT has partnered with Central Taxi for taxi services (TransCab) which transport residents to City transit system hubs (TransCab zones). Residents are to meet taxis at Transfer Points, from which they are transported to and from TransCab zones. The three TransCab zones within the City are Chippawa Parkway, Stanley Avenue South/Lyon's Creek Road, and Glenview.
- **Specialized Transit:** To accommodate City residents with disabilities that have accessibility needs beyond those accommodated in other regional transit services, NRT has partnered with Chair-a-van rideshare services. Applications are necessary to qualify for Chair-a-van.

The City contains the Niagara Falls GO station, serving the Lakeshore West GO Line running between Toronto's Union Station and Niagara Falls. Further information regarding existing transit routes within the City can be found on the Niagara Region Transit and GO Transit websites.

As described in Section 2.4, enhanced transit is a key recommendation of the City's 2023 Tourism District Transportation Connectivity Study. Recommendations from this

Study included connecting the existing WEGO bus system to main arrival points (such as the GO network). It also proposes a fixed medium-capacity rail transit link which will start at the GO station and run through the City's tourism core. The Study further describes enhancements to the WEGO bus network to increase frequency, easier transfers, and simplified routes. The future TMP transit network recommendations will be developed to build upon the findings of this Study.

Figure 3-8 Existing Transit Network (May 2024)


3.3 Travel Patterns and Behaviour

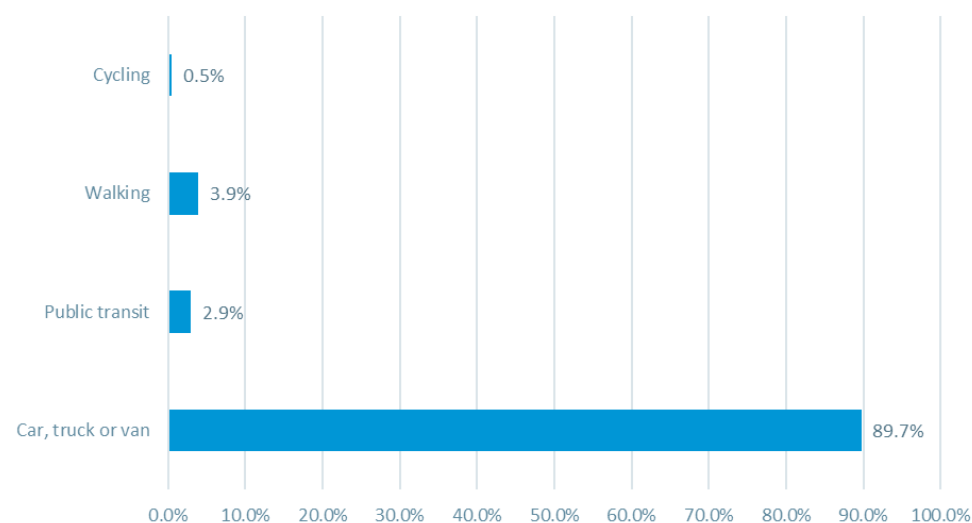
To understand the existing travel patterns and behaviour within the City, existing conditions data from 2016 was analyzed using an activity-based model calibrated for the 2016 base year (The base model results are checked against recent traffic count data for accuracy and adjustments where required, but are based on 2016 travel patterns).

A Technical Memorandum (refer to **Appendix A**) has been developed in conjunction with this report that further details the model, existing conditions, analysis, and preliminary recommendations.

3.3.1 Commuting Patterns

The main mode of commuting for residents of Niagara Falls are as follows: 89.7% used a car, truck or van as their main mode of transportation for commuting, 2.9% used public transit, 3.9% walked, and 0.5% cycled (shown in **Figure 3-9**).

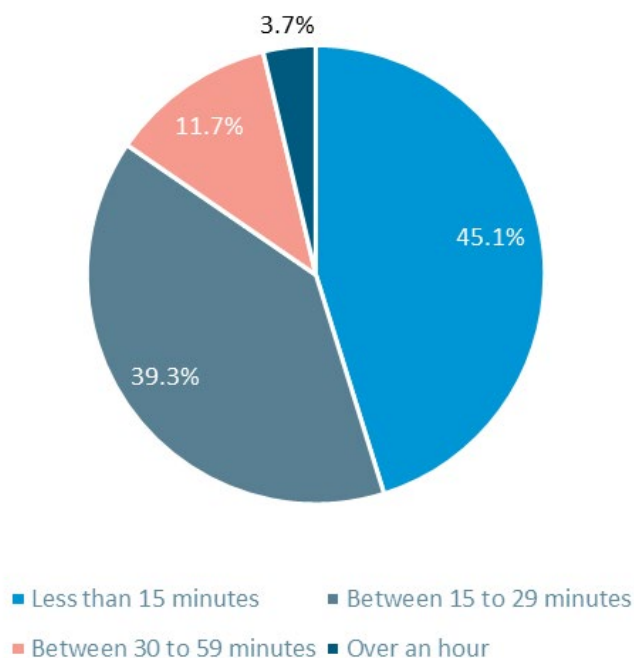
Figure 3-9 Main Mode of Commuting



Source: Statistics Canada, 2021 Census

Taking into account modes used for commuting, 45.1% had a commute of less than 15 minutes, 39.3% had a commute between 15 to 29 minutes, 11.7% had a commute of between 30 to 59 minutes, and 3.7% had a commute of over an hour (as shown in **Figure 3-10**). With many commutes being less than 15 minutes, the TMP can provide recommendations to reduce the impact of short, private vehicle trips and support a more sustainable modes of transportation.

Figure 3-10 Duration of Commuting



Source: Statistics Canada, 2021 Census

3.3.2 Volumes

City and Regional roads which are congested or may be congested in the future were identified. Examples of congested roads include Watson Street, Portage Road, and Thorold Stone Road. Examples of roads that may be congested in the future include Kalar Road, Drummond Road, and Lundy's Lane. The volume-to-capacity (V/C) ratios are shown in **Figure 3-11** and **Figure 3-12**. V/C is a measure of congestion on a roadway that looks at the ratio of traffic volumes to road capacity, with a value of 1.0 meaning a roadway is at full operating capacity.

Figure 3-11 AM Traffic Volume-to-Capacity Ratios Across the City

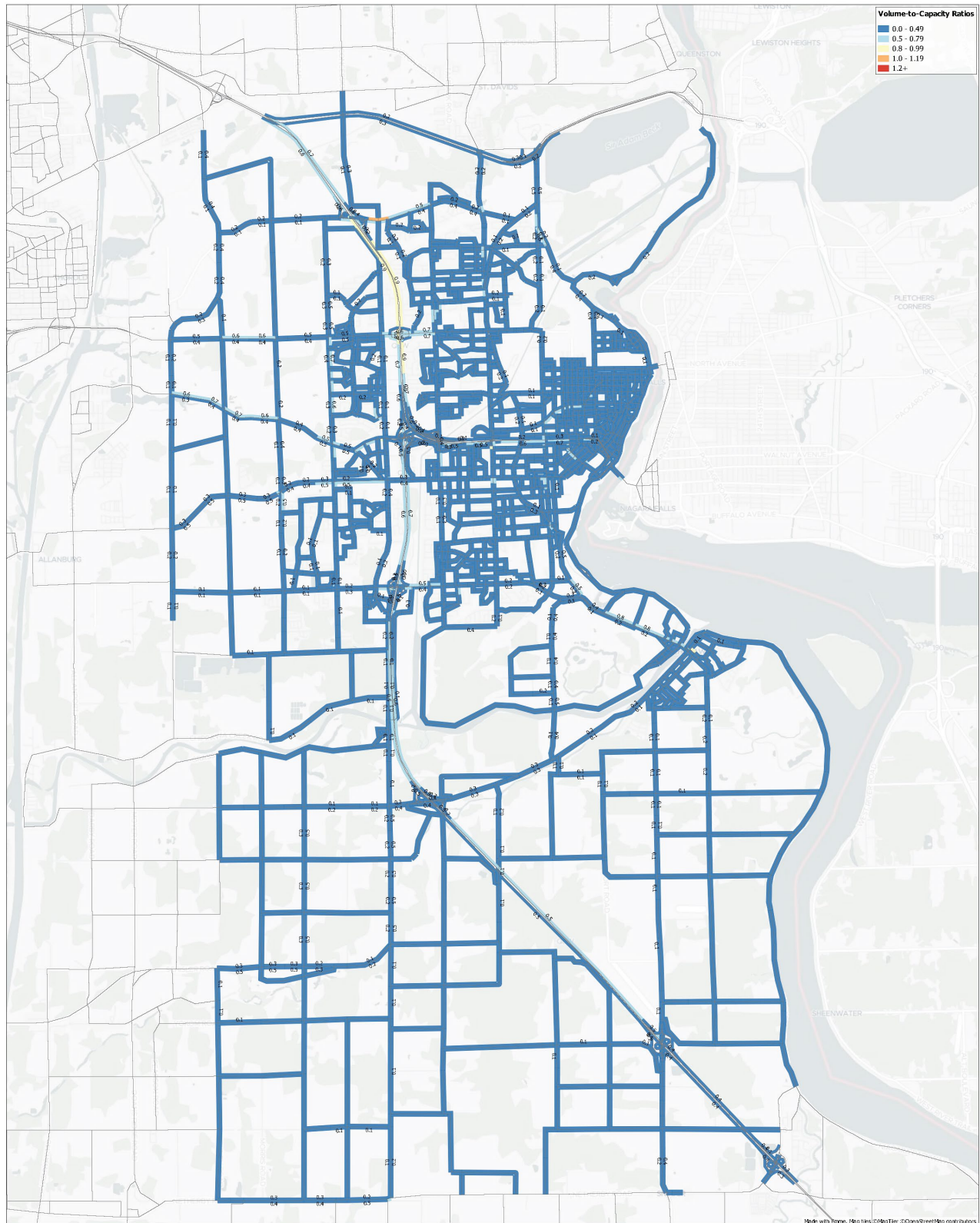
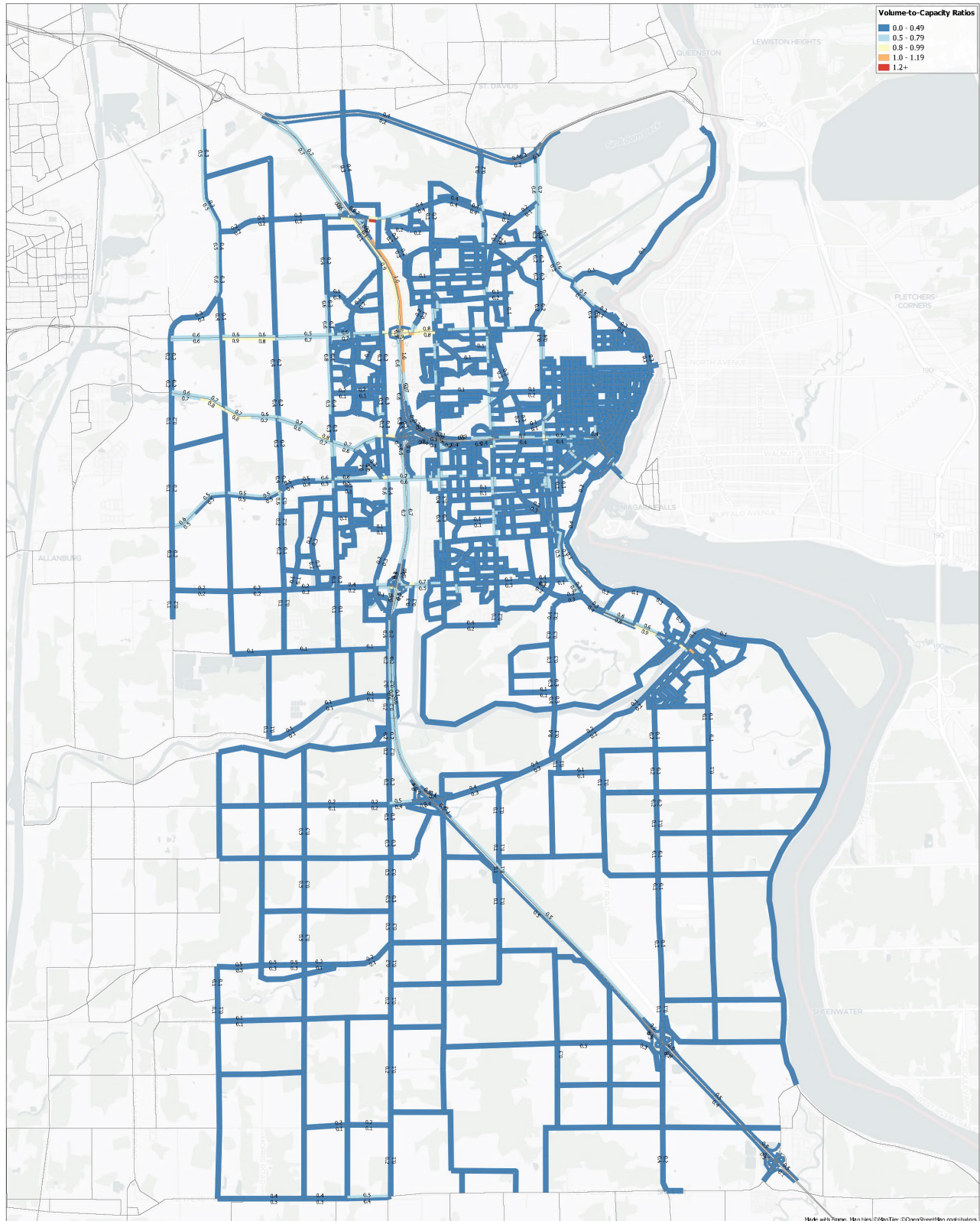


Figure 3-12 PM Traffic Volume-to-Capacity Ratios Across the City



3.3.3 Trip Patterns

For modelling purposes, the City is divided into 118 transportation analysis zones. Trip patterns were determined by identifying the trip origin and destination zones, as seen in **Figure 3-13** through **Figure 3-16**.

In general, the trip origins and destinations are concentrated in the downtown area and suburban areas around both the QEW and Highway 420 corridors, and in Chippawa. There are fewer trips to/from the more rural communities of Beaverdams, Crowland, Willoughby, and Grassybrook, as there is lower population and employment in these areas.

Figure 3-13 Originating AM Peak Period Trips by Traffic Zone

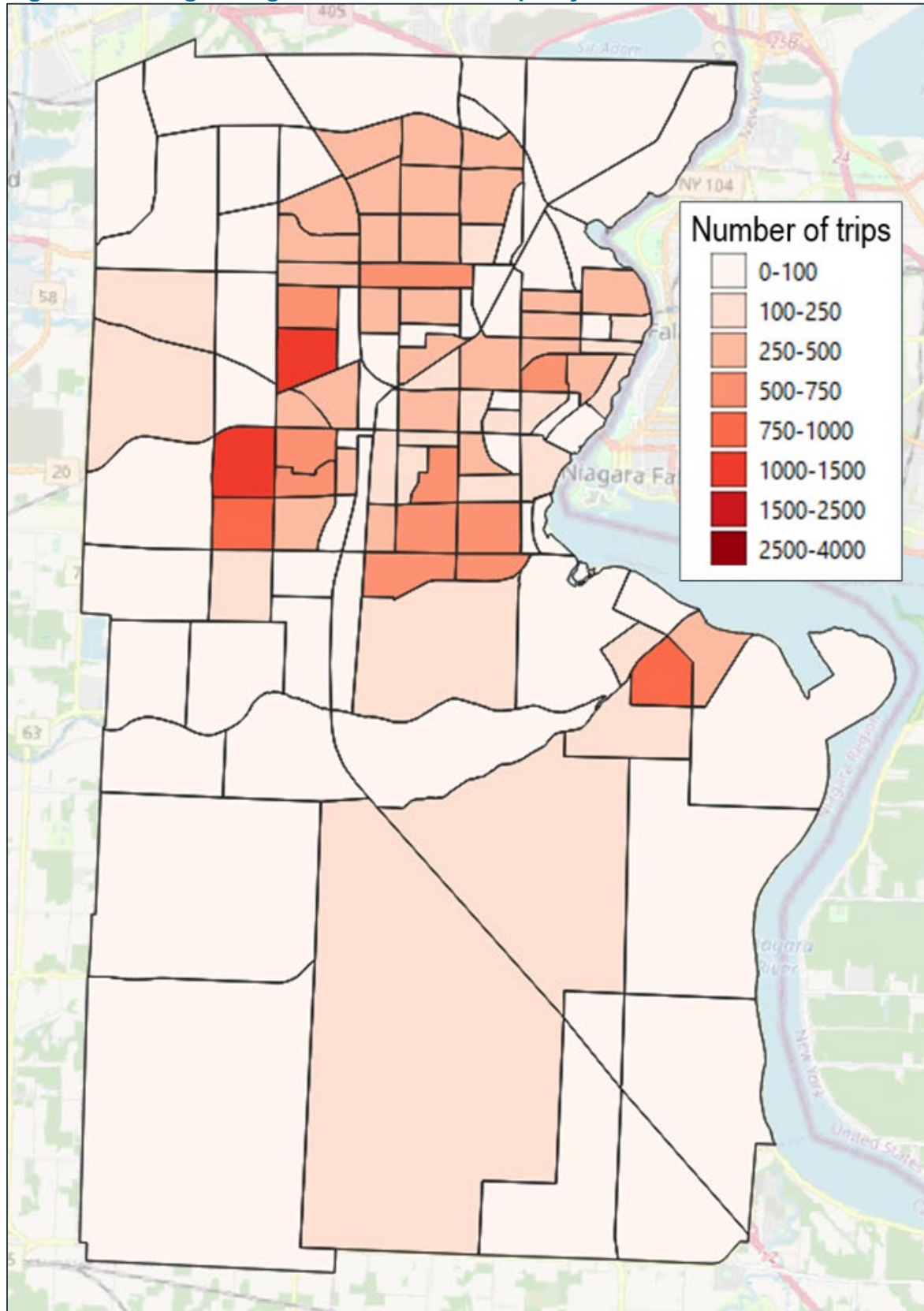


Figure 3-14 Destined AM Peak Period Trips by Traffic Zone

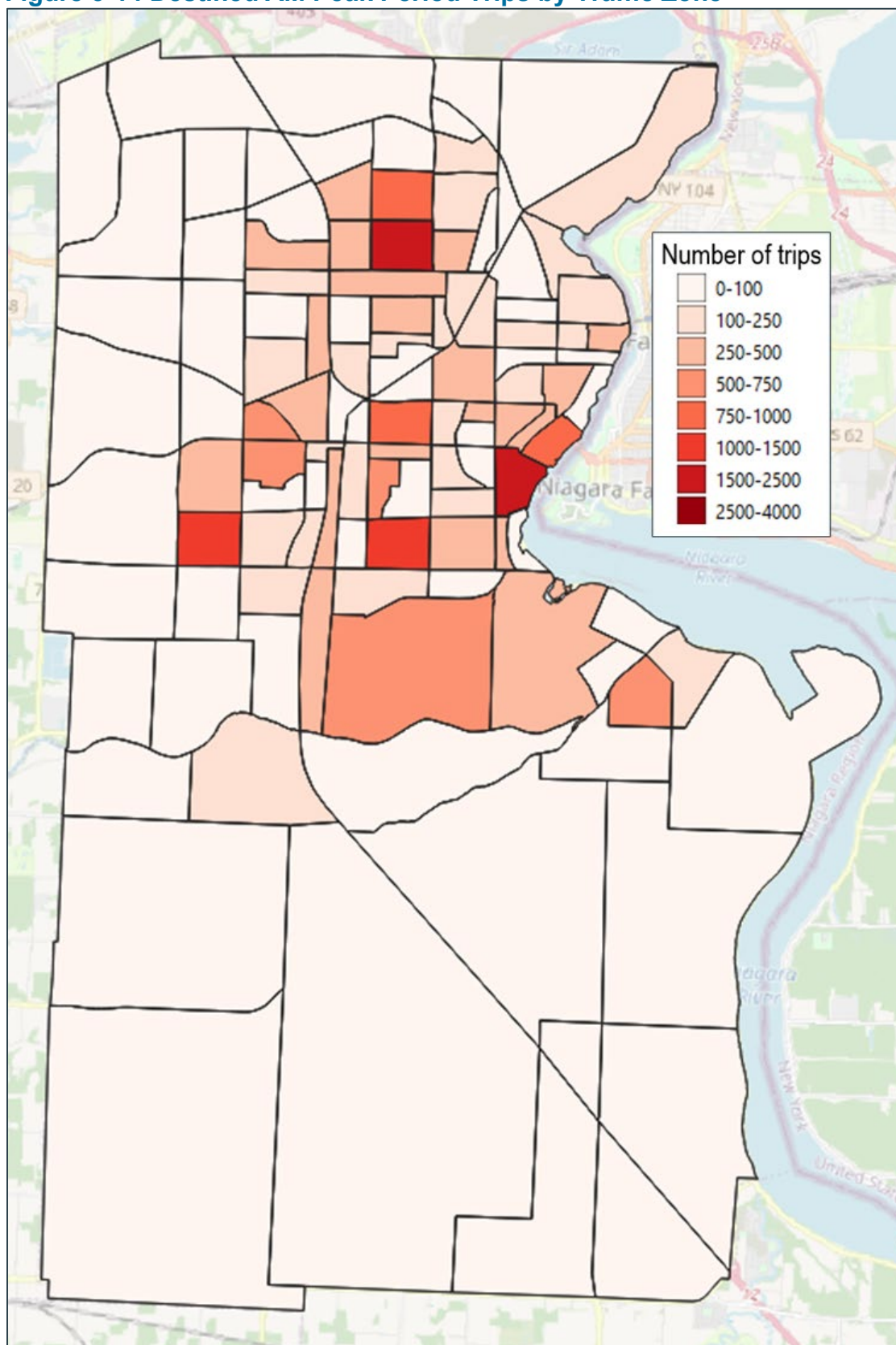


Figure 3-15 Originating PM Peak Period Trips by Traffic Zone

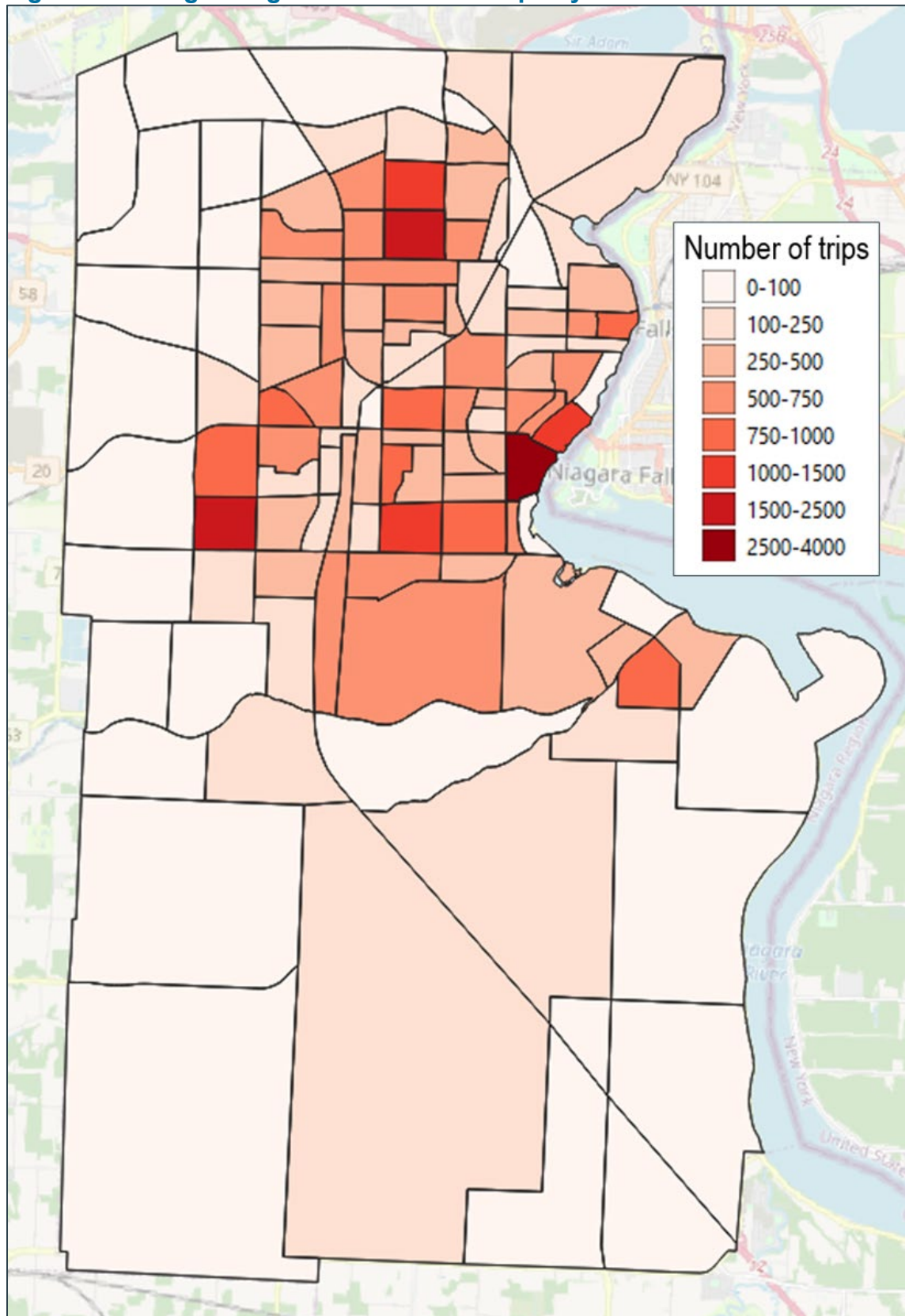
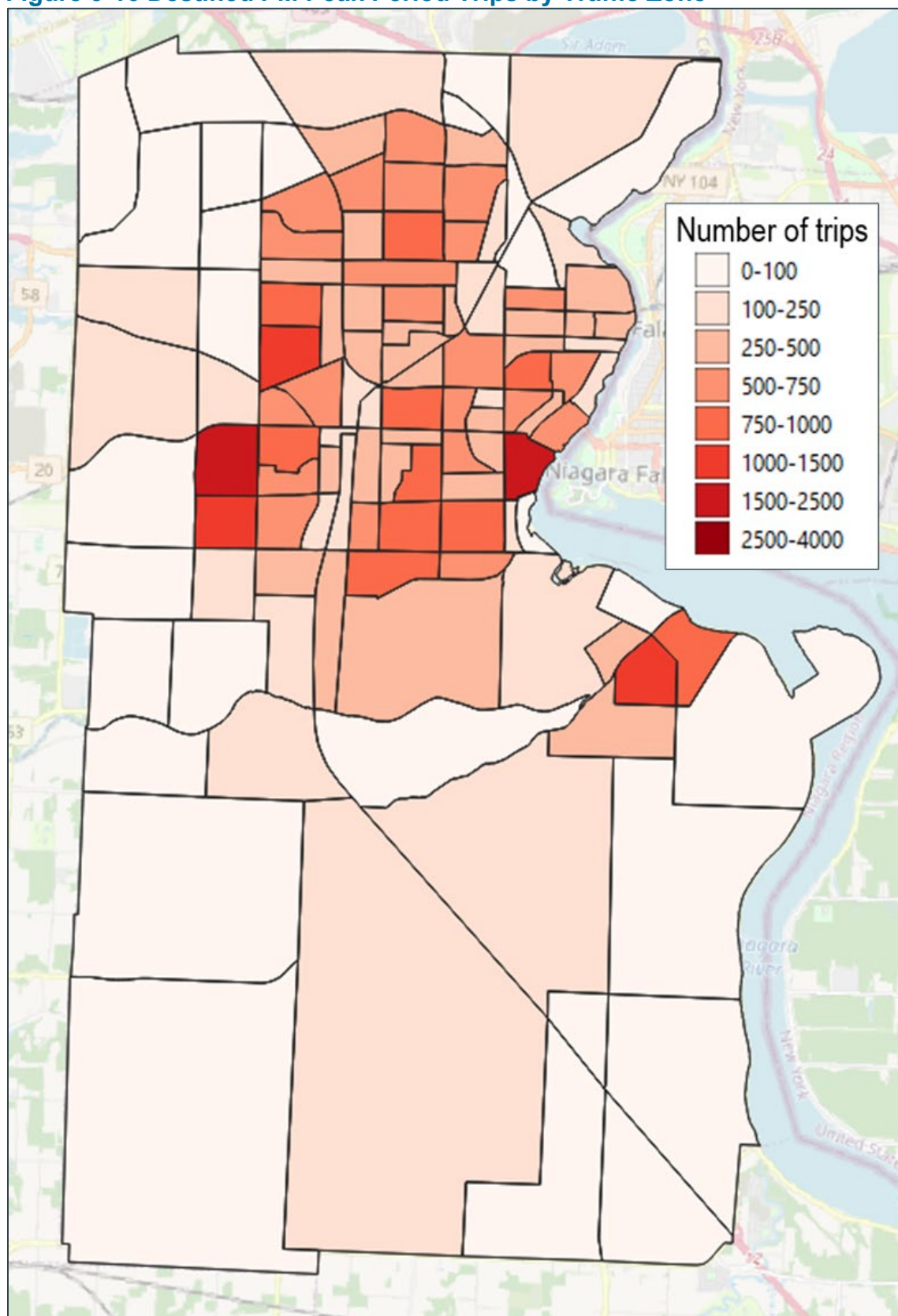


Figure 3-16 Destined PM Peak Period Trips by Traffic Zone



3.3.4 Travel Mode Split

Currently, the majority of trips originating in the City also end in the City (between 52-56% of all trips). A large number of trips are also conducted between the City and the rest of the Region (44-48% of all trips start or end). There are very few trips conducted originating in the City and travelling beyond the Region (approximately 1%).

Personal vehicles are the dominant mode of transportation for all trips originating in the City (78%). This can be broken down further to 69% of all trips that start and end within the City are made by personal vehicle, which increases substantially to 95-98% of trips that start in the City, but end outside of the City/Region.

3.3.5 Low-Income Households Analysis

Further analysis was conducted for low-income household areas, as well as in specific zones (“key zones”) within the City that have a relatively large number of vehicle trips and high vehicle mode splits. This analysis provided further insights into network deficiencies and multimodal recommendations for future consideration.

For low-income household areas, an equity analysis was conducted using zones. The results of the equity analysis show that most zones with a higher number of low-income households within the City have good transit coverage, based on access to transit stops. The zones with most low-income households were then identified, for which transit and active transportation improvements have been recommended.

The demographics and travel patterns for these key zones were analyzed to produce recommendations for transit and active transportation improvements. The purpose of these recommendations is to support vehicle-usage reduction and relieve congestion.

4 Consultation and Engagement

Engagement with technical agencies, stakeholders and the public is one of the core components of the TMP and part of the MCEA process. A comprehensive consultation and engagement program was designed, developed, and implemented with the intent of informing the Niagara Falls Transportation Master Plan. Phase 1 of the consultation focused on identifying the opportunities and constraints, including input on the transportation trends, preferences, and opportunities for the City. This informed the baseline conditions and guided the development of the recommended network enhancements. Phase 2 of the consultation program presented the draft recommended transportation network.

4.1 Who was Consulted?

The consultation and engagement program was designed with the intention of exchanging ideas with key stakeholders:

- **Residents, Employees, and Visitors:** people who live and/or work in, commute to, and visit the City of Niagara Falls. They have a vested interest in the outcomes, as transportation plans will have a direct impact on their day-to-day travel activities and their quality of life.
- **Technical Advisory Committee:** representatives from adjacent municipalities, Niagara Region, conservation authorities, provincial agencies, and utility companies who share and have interests in the municipal right-of-way and transportation-related issues in Niagara Falls.
- **Interested Stakeholders:** representatives from groups and advisory committees who have interest in transportation related decisions within the City or who would have a role in supporting the City in future promotion and outreach initiatives as well as implementation of critical links.
- **City Staff:** City staff are responsible for the implementation, execution, monitoring, assessment, and reporting of the TMP.
- **Council:** Councillors are responsible for endorsement and oversight.

4.2 Phase 1 Consultation Summary

A Stakeholder Meeting was held on November 28, 2023, to introduce the Transportation Master Plan to public stakeholder groups and obtain feedback to help inform the project's development. Attendees were presented with the project timeline, objectives, and the Project Team's understanding of existing transportation network conditions and invited to share their perspectives. Discussion at this meeting led to greater

understanding of key needs and priorities to be addressed by the TMP and alignment with nearby municipalities.

The first in-person Public Information Centre was held from 6:00 – 8:00 pm on December 14, 2023, at the MacBain Centre (7150 Montrose Rd, Niagara Falls). The event invited interested individuals to engage with City staff and members of the Project Team, ask questions, and provide input. Approximately 30 people attended the PIC session. A number of tools were also made available to solicit feedback until the end of the consultation period (January 19, 2024) by survey, email, mail, or phone, and the project website was promoted to increase access to information and provide an avenue for additional questions. The goals of the first PIC were to:

- Share information on the project timeline, objectives, and planning context
- Consult the public on their experience of existing transportation conditions in the City
- Gather input from the public on their priorities and aspirations for the TMP

Round 1 Public Engagement activities provided the Project Team with an excellent sense of existing conditions and potential opportunities for improving active transportation, transit, and the road network in Niagara Falls. Several key ideas and common themes emerged from consultation that were used to guide the development of the TMP and set priorities for the City. These key themes are summarized below.

Active Transportation

- Residents expressed concerns about road safety for pedestrians and cyclists, who have experienced near misses walking at several intersections and at parking lot entrances, and while cycling along Niagara Falls' roads. Speeding was also cited as an issue on arterial roads and in residential areas.
- Residents feel that cars are heavily prioritized at intersections, and that more effective safety solutions beyond signage need to be implemented, such as red-light cameras, improved signal timing prioritization, and improved crossing facilities for pedestrians.
- There is a desire for safer, more comfortable facilities for cyclists and micromobility, since existing bike lanes lack physical barriers or separation and do not feel safe, resulting in the use of sidewalks for cycling and scooters. Residents expressed a desire for improved design standards for these facilities.
- There is a significant tie between active transportation use and equity-deserving groups in Niagara Falls, and active transportation infrastructure should be planned with these residents in mind, especially in low-income areas.

- Residents felt that existing and planning infrastructure should be leveraged to provide active transportation improvements by repurposing old railway lines and tying active transportation infrastructure in with planned road reconstructions.
- There is a desire for sidewalk and trail improvements in maintenance and connectivity, particularly in winter months and along the Hydro Canal.

Transit

- A high amount of car dependence was reported by residents, who felt that the transit system in Niagara Falls did not adequately service longer trips with multiple destinations
- Residents feel that there is a lack of convenient and affordable connection between transit services and desire fare integration
- There is a need for vast improvements to transit access to downtown from the Niagara Falls GO station through more frequent and connected service

Traffic Congestion

- There is a desire for improved connectivity between Chippawa and Niagara Falls over the Welland River to alleviate congestion issues on Portage Road, which is experiencing pressure from increased local use and tourism.
- Many community members shared concerns about congestion and connectivity issues on Dorchester Road leading to low level of service at intersections and cut-through traffic in nearby residential areas
- Residents from Chippawa and outside of the downtown core felt that transportation investments should be shared more equitably between areas of the City, especially those areas faced with population increases
- Residents felt that truck traffic from the QEW to Stanley Avenue is problematic for overall traffic operations.

4.3 Phase 2 Consultation Summary

After reviewing feedback from Phase 1 project engagement events and analyzing future growth conditions, preliminary recommendations were developed and presented to the Technical Advisory Committee in an in-person meeting on June 25, 2024. Technical representatives from Niagara Region and the Niagara Parks Commission were informed of the project timeline, objectives, and the Project Team's understanding of future conditions, and engaged in dialogue about transportation improvements to address future conditions.

The second PIC was held on December 12, 2024, at the MacBain Centre from 6:00 PM to 8:00 PM. Approximately 40 people attended and participated in the PIC event. A notice to promote the PIC event was issued through the project webpage and email list. Attendees were encouraged to ask questions and access additional information on the project website. The purpose of the second PIC was to:

- Provide an overview of the TMP study process
- Present proposed recommendations for the 2051 transportation network
- Discuss recommended roadway improvements for the preferred scenario as well as future projects for consideration
- Gather feedback to finalize and complete the TMP

The below sections summarize the feedback received during the event.

General Comments

- Community members felt that the preferred scenario should include considerations for Niagara Falls' long-term needs, such as a balance between economic development and agricultural preservation while managing the City's unique position as a world-class tourist destination

Active Transportation

- Residents felt positively about proposed protected bike lanes on Dorchester Road and Drummond Road
- There is a need for improved visibility at crosswalks throughout the city
- Residents shared that it is difficult to walk between businesses on Niagara Falls' commercial streets due to the wide, car-oriented streets
- There is a desire for improved facilities for pedestrians and cyclists at highway crossings and improved connectivity through additional crossovers

Transit

- Community members emphasized the need for widespread transit improvements in the City and consideration for transit in the preferred scenario

Traffic Congestion

- Residents want to limit road widenings in the City to avoid additional induced demand on congested roads such as Portage Road
- Many people felt that highways are beneficial for improving mobility across the City but must be managed well by providing ample highway crossings and limiting direct highway access from residential streets

- A potential flyover of the QEW at Morrison Street would be beneficial to pedestrians, cyclists, and local traffic
- Proposed road improvements were well received, but some requested that centre turn lanes be added to McLeod Rd as well.

5 Niagara Falls in the Future

5.1 Approach to Developing the Future Transportation Network

This TMP follows the Municipal Class Environmental Assessment (MCEA) process for Master Plans. To meet the phase 2 requirements of this process, the TMP must identify and evaluate different transportation alternatives to help inform the selection of a preferred alternative.

Three transportation network alternatives were identified for the TMP's 2051 horizon year:

- Alternative 1: A **business-as-usual** (BAU) alternative was set out as a reference for the other alternatives. It includes the existing transportation network in addition to projects that have already been committed to by the Region and Province, factoring in the planned 2051 growth figures.
- Alternative 2: The transportation network recommended in the **2011 TMP** was added to Alternative 1 as the second alternative. This will help identify whether the recommendations included in the previous TMP would still serve residents of Niagara Falls, given the forecast growth to the year 2051.
- Alternative 3: A **third alternative** was developed to address any identified gaps in the performance of the first two alternatives. The Region is currently forecasting approximately 178,000 people and 71,000 jobs in the City of Niagara Falls by 2051. This planned growth, in combination with continued tourism growth, may require different transportation improvements beyond those identified in 2011. The next subsection describes how this alternative was formed.

The alternative networks are shown in **Figure 5-1**, **Figure 5-2**, and **Figure 5-3**.

Figure 5-1: Alternative 1

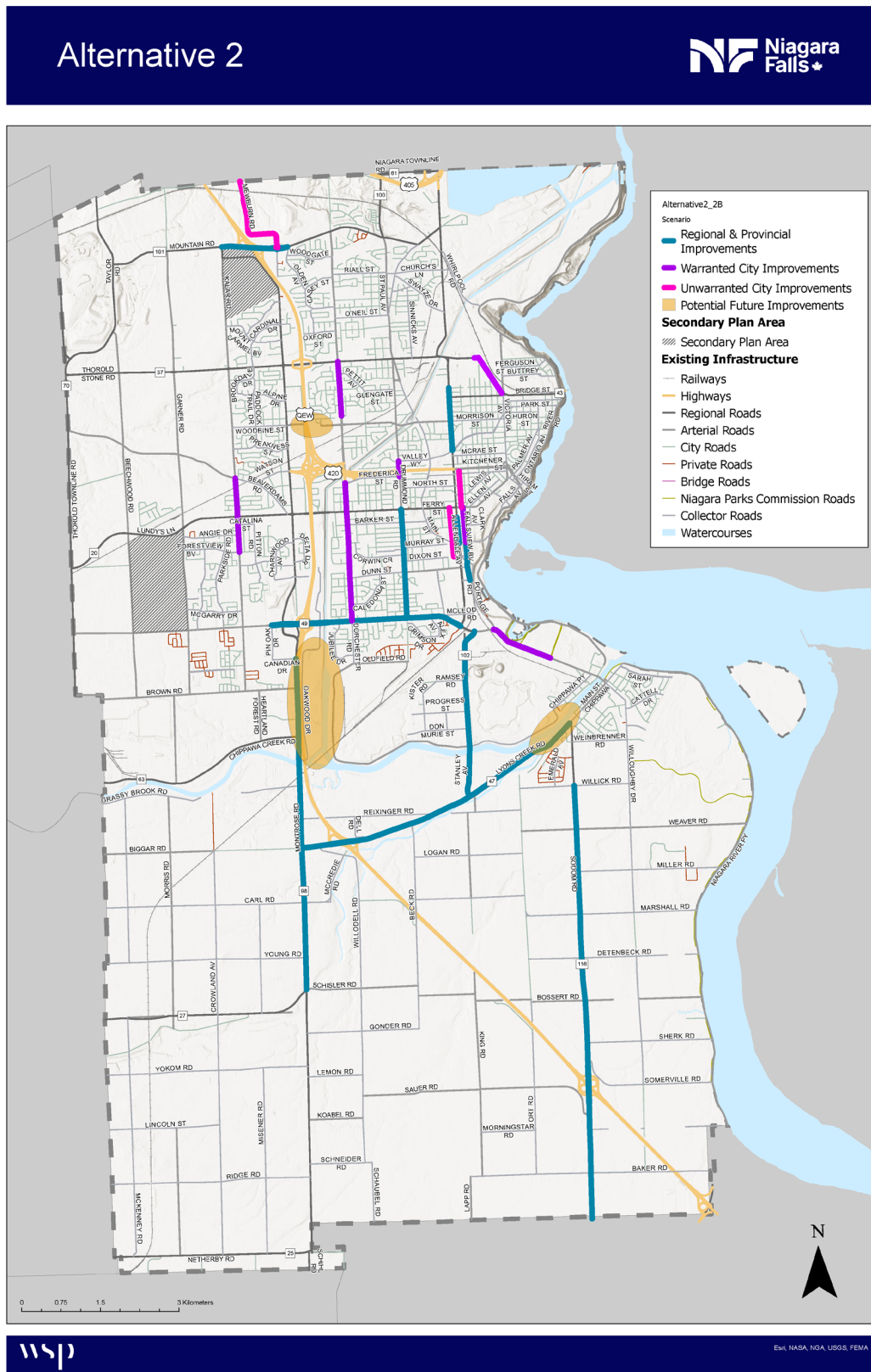
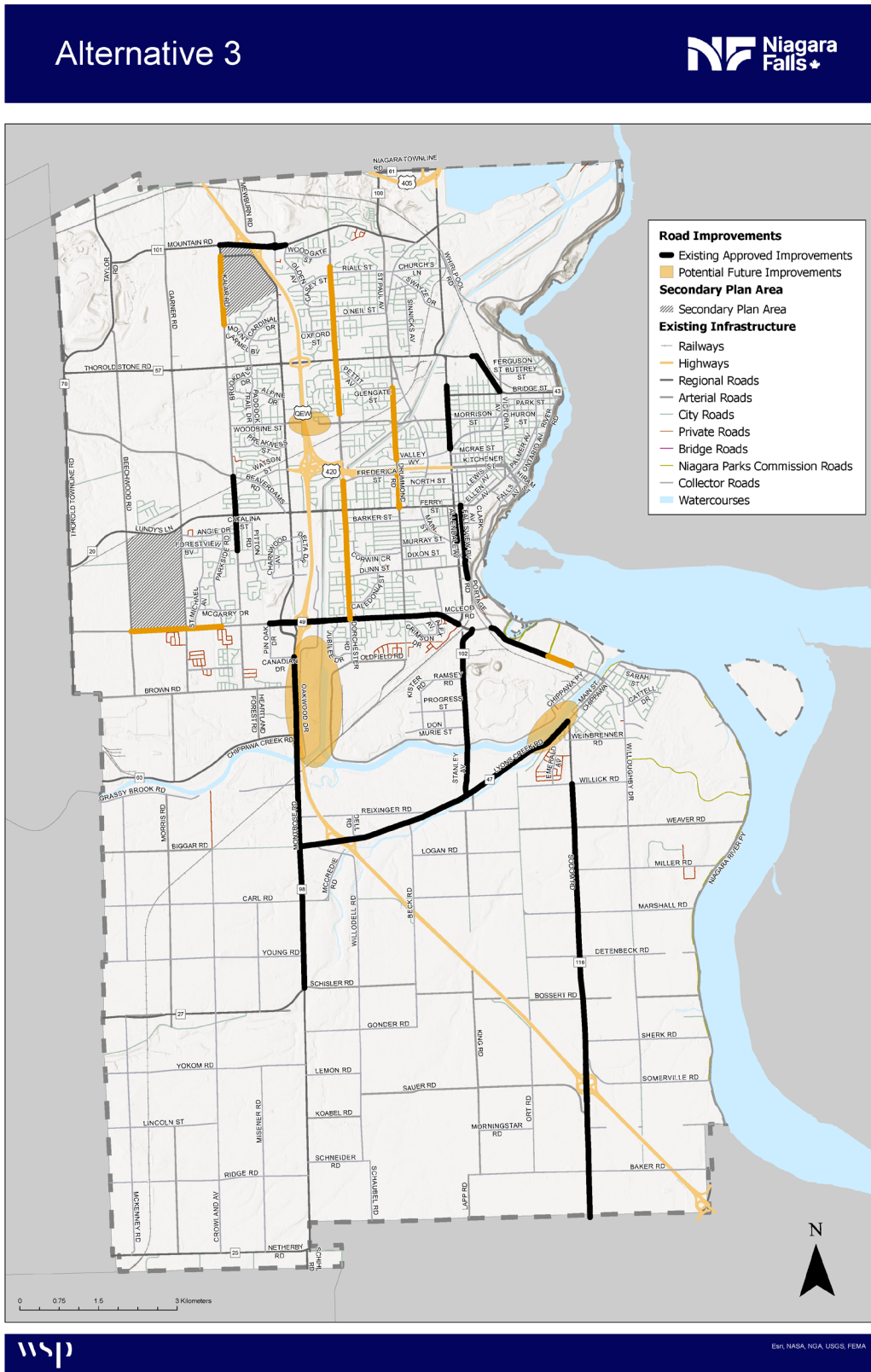

Figure 5-2: Alternative 2


Figure 5-3: Alternative 3



5.1.1 Developing the Third Alternative

To identify the improvements to include in the third alternative, a gap analysis was conducted to identify how alternatives 1 and 2 (the BAU and 2011 TMP, respectively) would perform in 2051, considering the City's future population and employment, and then identifying the infrastructure that would be needed to resolve any gaps.

The gap analysis was conducted using the Niagara + Greater Toronto Area (NGTA) model developed by WSP specific to the City of Niagara Falls. The NGTA is built on the GTAModel V4, which is an activity-based model. It is a state-of-the-art travel demand forecasting model that simulates activity schedules and daily travel patterns and behaviours for each person living in Niagara Region and the GTHA, based on highly detailed inputs for population, land uses and employment, transportation networks, and policy decisions. The NGTA provides model outputs related to auto and truck traffic, transit volumes, active transportation, and school buses.

The following subsections detail the gap analysis results for the BAU and 2011 TMP alternatives and highlight how new infrastructure was proposed for the third alternative. The gap analysis specifically examined volume to capacity (V/C) ratios, which measure expected congestion on the roadway network, as well as mode shares and equity for 2051.

Alternative 1 (BAU) Gap Analysis

In the BAU alternative, V/C ratios were found to be approaching 1 for many City and Regional roads in both the AM and PM peak periods, and exceeding 1 for some shorter sections, as shown in **Table 5-1**.

A V/C ratio above 1 indicates that a roadway is congested, while a V/C ratio between 0.8 and 1 indicates that a roadway is nearing congestion and may start to experience lower levels of service. As such, these roadways may be candidates for improvements (which can be road improvements, but also transit, active transportation, or policy). A V/C ratio less than 0.8 generally indicates that the roadway is not congested.

Table 5-1 City and Regional Roads with V/C Ratios Greater than 0.8 in the BAU in 2051

Jurisdiction	VC Ratio (VCR)	AM	PM
City Roads	$VCR \geq 1.0$	N/A	Garner Rd (SB) Kalar Rd (NB/SB) Watson St (WB) Morrison St (EB) crossing of QEW Portage Road (NB/SB)
	$0.8 \geq VCR > 1.0$	Beaverdams Rd (WB) Kalar Rd (NB) Portage Rd (NB) Watson St (EB) Whirlpool Rd (SB)	Bridge St (WB) Beaverdams Rd (EB/WB) Drummond Rd (NB/SB) Dorchester Rd (NB/SB) Garner Rd (NB) Portage Rd (SB) St. Paul Ave (NB/SB) Valley Way (WB) Victoria Ave (SB) Whirlpool Rd (NB) Woodbine St (WB)
Regional Roads	$VCR \geq 1.0$	Lundy's Lane (WB) at west city limits Mountain Rd (EB/WB) immediately surrounding QEW) Stanley Ave (SB)	Lundy's Lane (EB/WB) at west city limits Mountain Road (EB/WB) immediately east of QEW) Stanley Ave (NB/SB) Thorold Stone Rd (EB/WB) Dorchester Road (SB) around Highway 420 Drummond Road (SB) around Highway 420
	$0.8 \geq VCR > 1.0$	Lundy's Lane (EB) Stanley Ave (NB) Taylor Rd (NB) Thorold Stone Rd (EB/WB)	Falls Ave (WB) McLeod Rd (EB/WB) Montrose Rd (NB/SB) Netherby Rd (WB) Taylor Rd (SB) Thorold Townline Rd (SB)

Mode shares in the BAU alternative in 2051, both for trips wholly within Niagara Falls as well as trips originating or ending elsewhere, are shown in **Table 5-2** and **Table 5-3** for the AM and PM peak periods, respectively. The mode shares in the BAU are predicted to be approximately the same as those today, with active transportation, transit, and school bus mode share significantly higher for trips fully within the City compared to

trips starting or ending elsewhere. Trip mode shares were also analyzed at a traffic analysis zone level, as seen in **Figure 5-4** through **Figure 5-7**. The AM peak generally sees a lower auto mode share than the PM peak, especially in the City's urbanized areas. Areas with low non-auto mode shares may be candidates for improvements to support meeting the TMP's vision of a multi-modal transportation system.

An equity analysis was also conducted. The equity analysis found that auto ownership was significantly higher among high-income households, with the opposite true for low-income households. Zones with the most significant percentage of low-income households were therefore identified for active transportation and transit improvements, as seen in **Figure 5-8**.

Traffic analysis zones with the highest vehicle trip and vehicle mode share rates were also identified as candidates for active transportation and transit improvements. These zones are highlighted in **Figure 5-9**.

Table 5-2 AM Peak Period Regional Trips and Mode Splits in the BAU in 2051

Linkages		Number of Trips 2051 (2016)				Percent of Trips 2051 (2016)				Niagara Falls Trips Distribution 2051 (2016)
Origin	Vehicle	Transit	AT	School bus	Totals	Vehicle	Transit	AT	School- bus	
Niagara Falls – Niagara Falls	29,994 (17,965)	3,011 (1,758)	4,099 (2,885)	5,687 (3,438)	42,791 (26,047)	70% (69%)	7% (7%)	10% (11%)	13% (13%)	46% (52%)
Niagara Falls – Niagara Region (Outside Niagara Falls)	42,308 (21,770)	739 (246)	74 (44)	1,962 (500)	45,083 (22,559)	94% (97%)	2% (1%)	0% (0%)	4% (2%)	48% (45%)
Niagara Falls – Outside Niagara Region	5,761 (1,316)	174 (26)	-	-	5,934 (1,342)	97% (98%)	3% (2%)	0% (0%)	0% (0%)	6% (3%)
Niagara Region – Niagara Region (Including Niagara Falls)	205,061 (134,207)	14,651 (8,563)	19,577 (13,008)	30,787 (18,697)	270,076 (174,475)	76% (77%)	5% (5%)	7% (7%)	11% (11%)	-

Table 5-3 PM Peak Period Regional Trips and Mode Splits in the BAU in 2051

Linkages		Number of Trips 2051 (2016)				Percent of Trips 2051 (2016)				Niagara Falls Trips Distribution 2051 (2016)
Origin	Vehicle	Transit	AT	School bus	Totals	Vehicle	Transit	AT	School- bus	
Niagara Falls – Niagara Falls	66,009 (37,195)	2,735 (1,722)	5,268 (3,764)	3,435 (2,046)	77,447 (44,726)	85% (83%)	4% (4%)	7% (8%)	4% (5%)	51% (56%)
Niagara Falls – Niagara Region (Outside Niagara Falls)	63,738 (33,436)	514 (180)	104 (44)	1,220 (327)	65,576 (33,988)	97% (98%)	1% (1%)	0% (0%)	2% (1%)	43% (42%)
Niagara Falls – Outside Niagara Region	6,755 (1,582)	1,023 (125)	-	-	7,778 (1,707)	87% (93%)	13% (7%)	0% (0%)	0% (0%)	5% (2%)
Niagara Region – Niagara Region (Including Niagara Falls)	410,586 (258,056)	14,147 (8,381)	26,116 (17,066)	18,598 (11,375)	469,448 (294,878)	87% (88%)	3% (3%)	6% (6%)	4% (4%)	-

Figure 5-4 Originating AM Peak Period Trips and Mode Split in the BAU in 2051

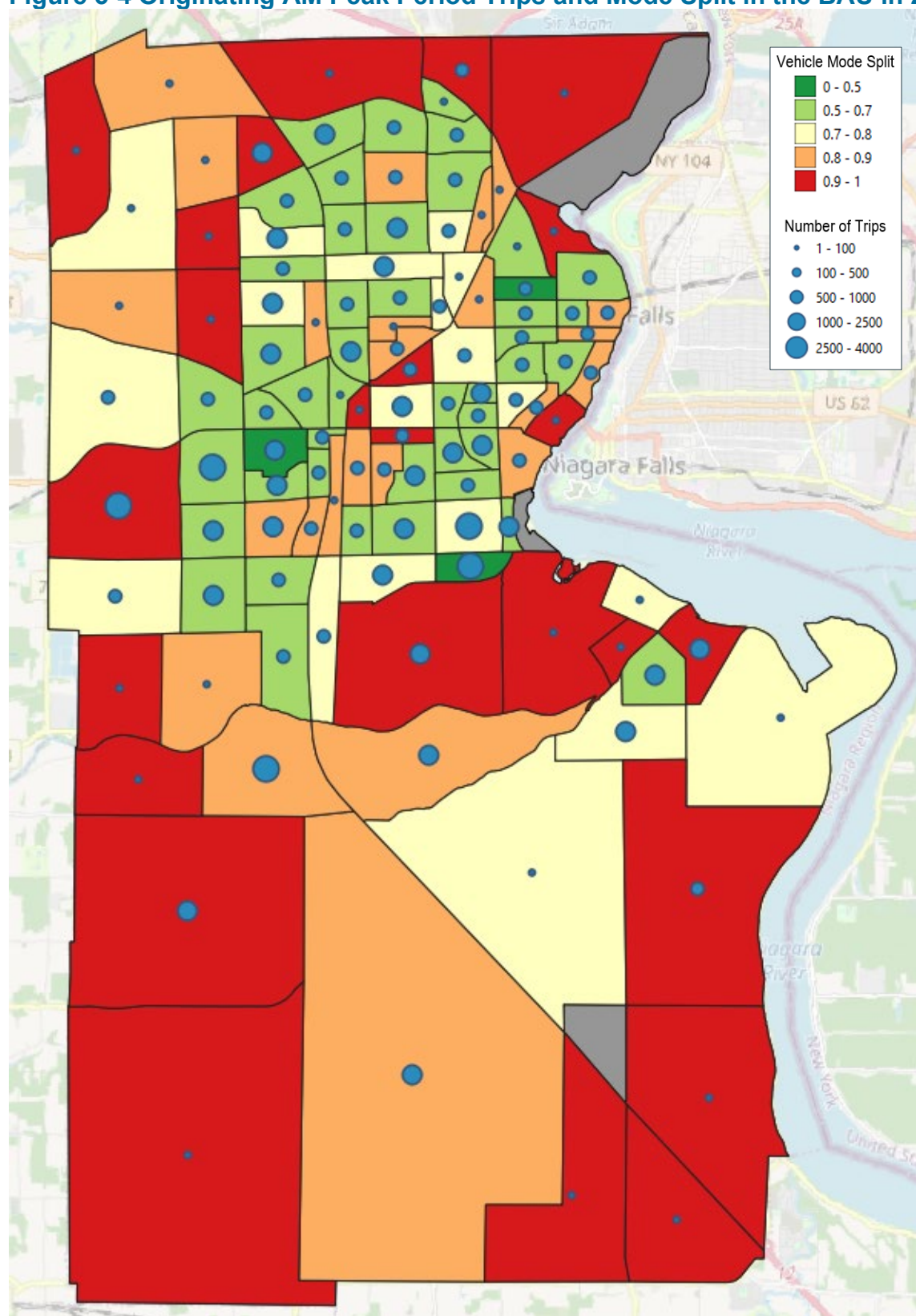


Figure 5-5 Destined AM Peak Period Trips and Mode Split in the BAU in 2051

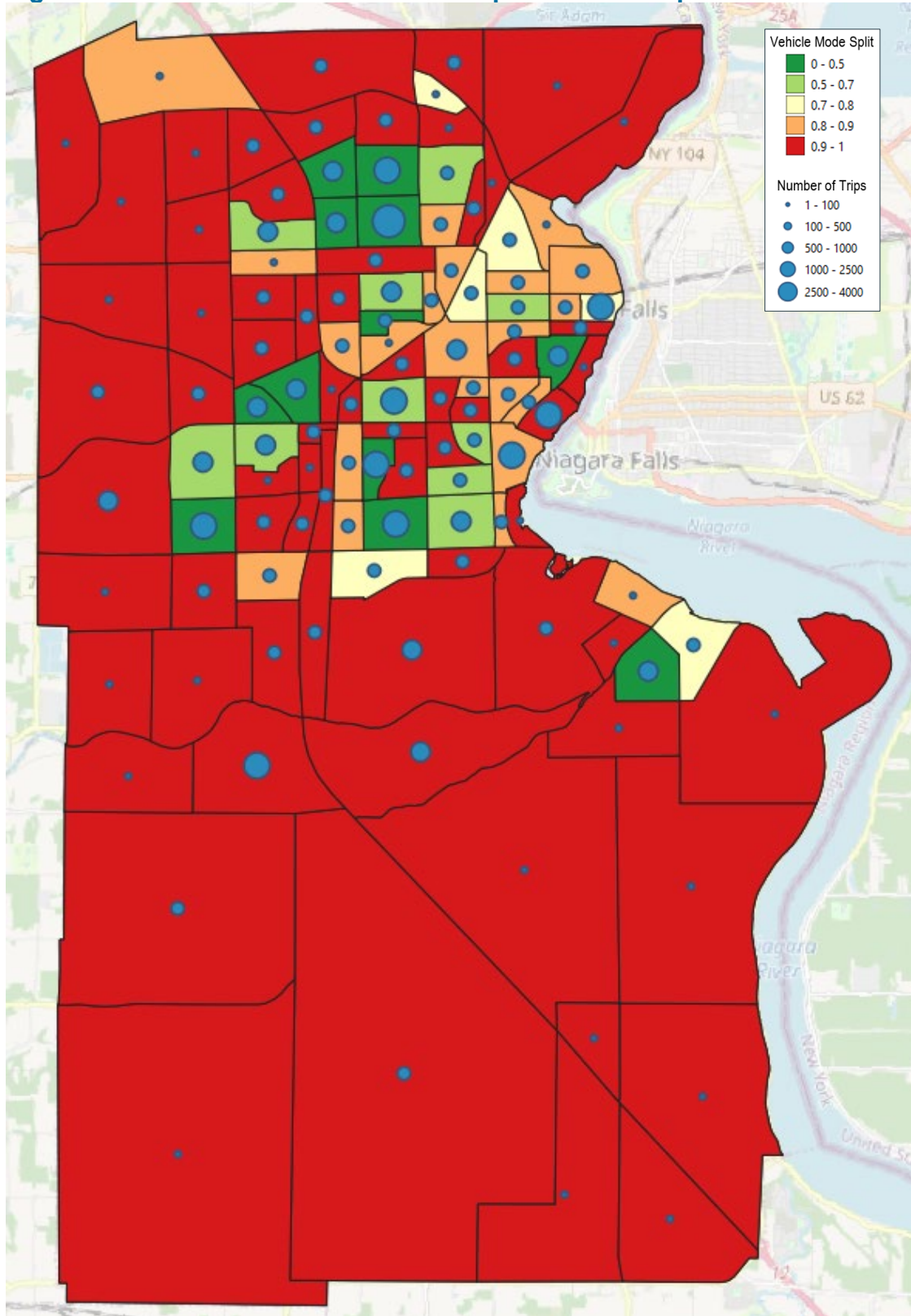


Figure 5-6 Originating PM Peak Period Trips and Mode Split in the BAU in 2051

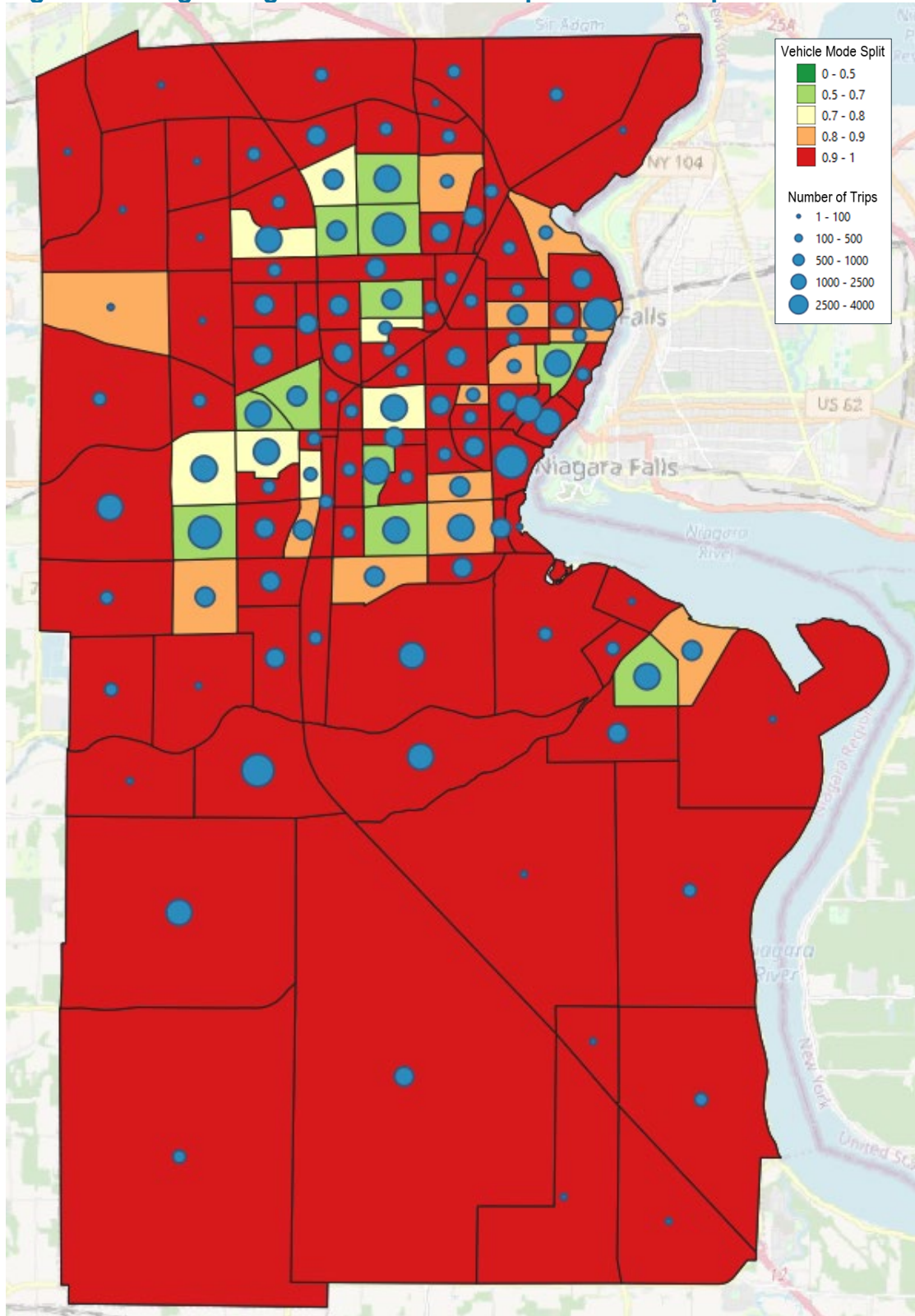


Figure 5-7 Destined PM Peak Period Trips and Mode Split in the BAU in 2051

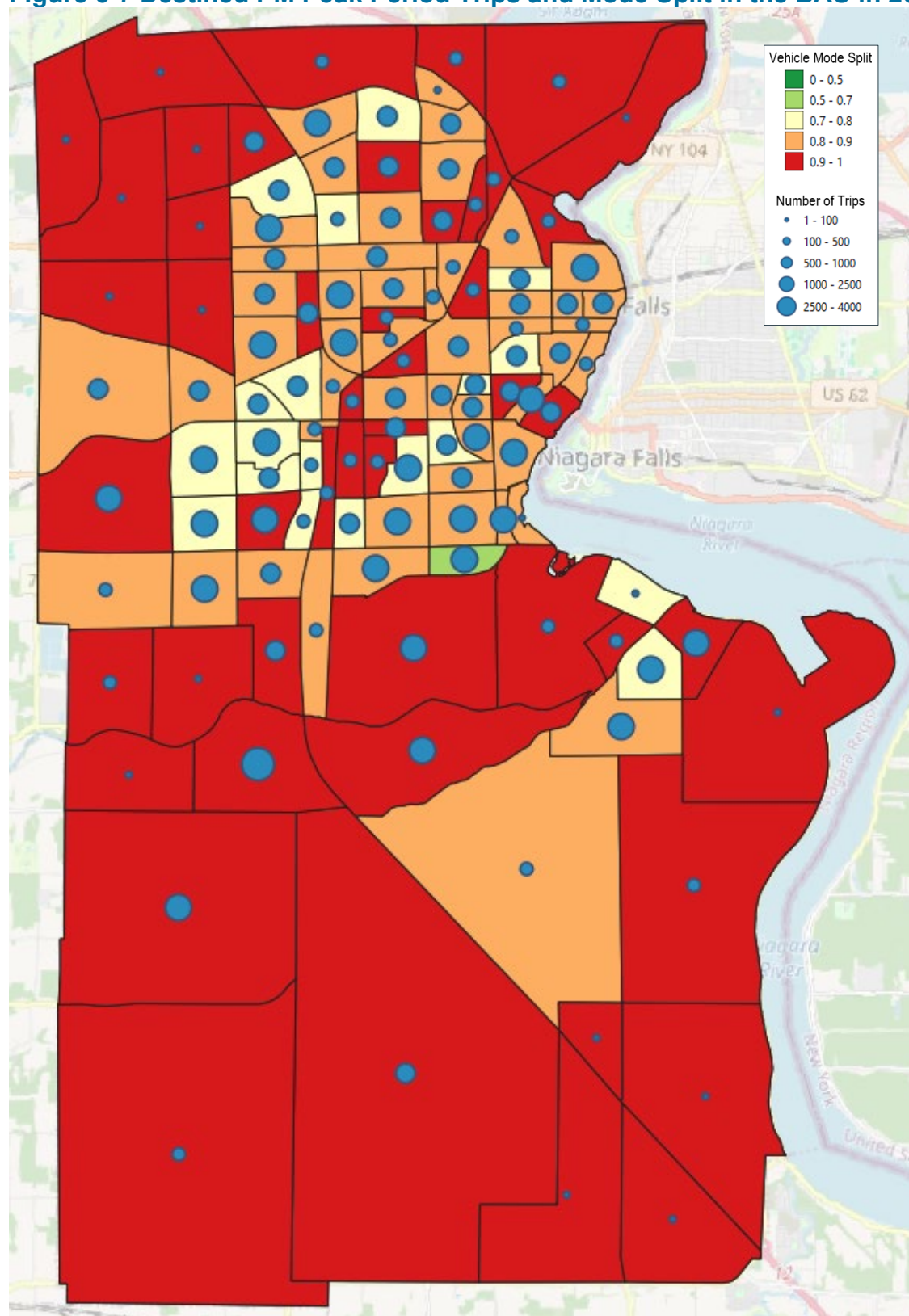


Figure 5-8 Zones with the Most Low-Income Households

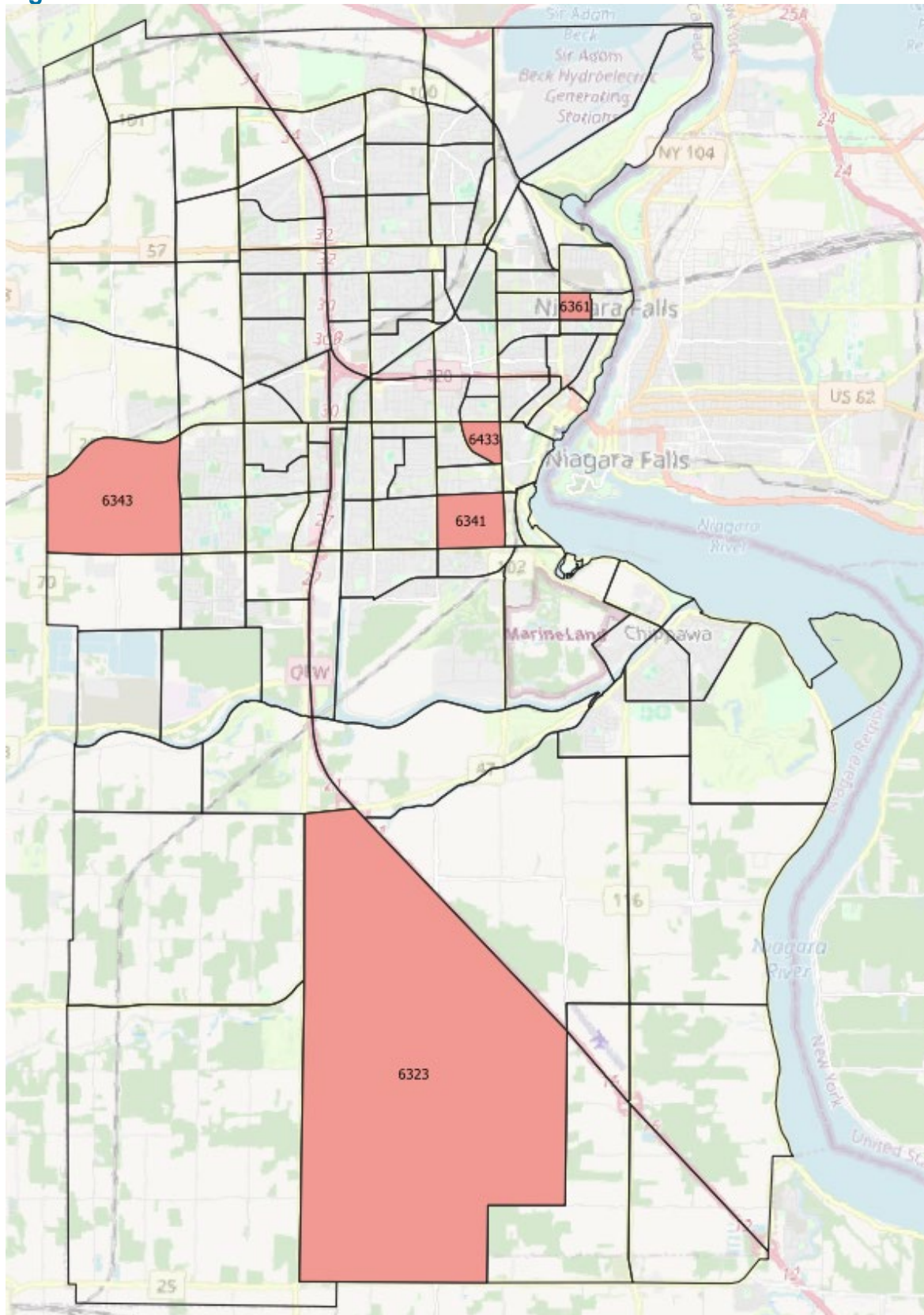
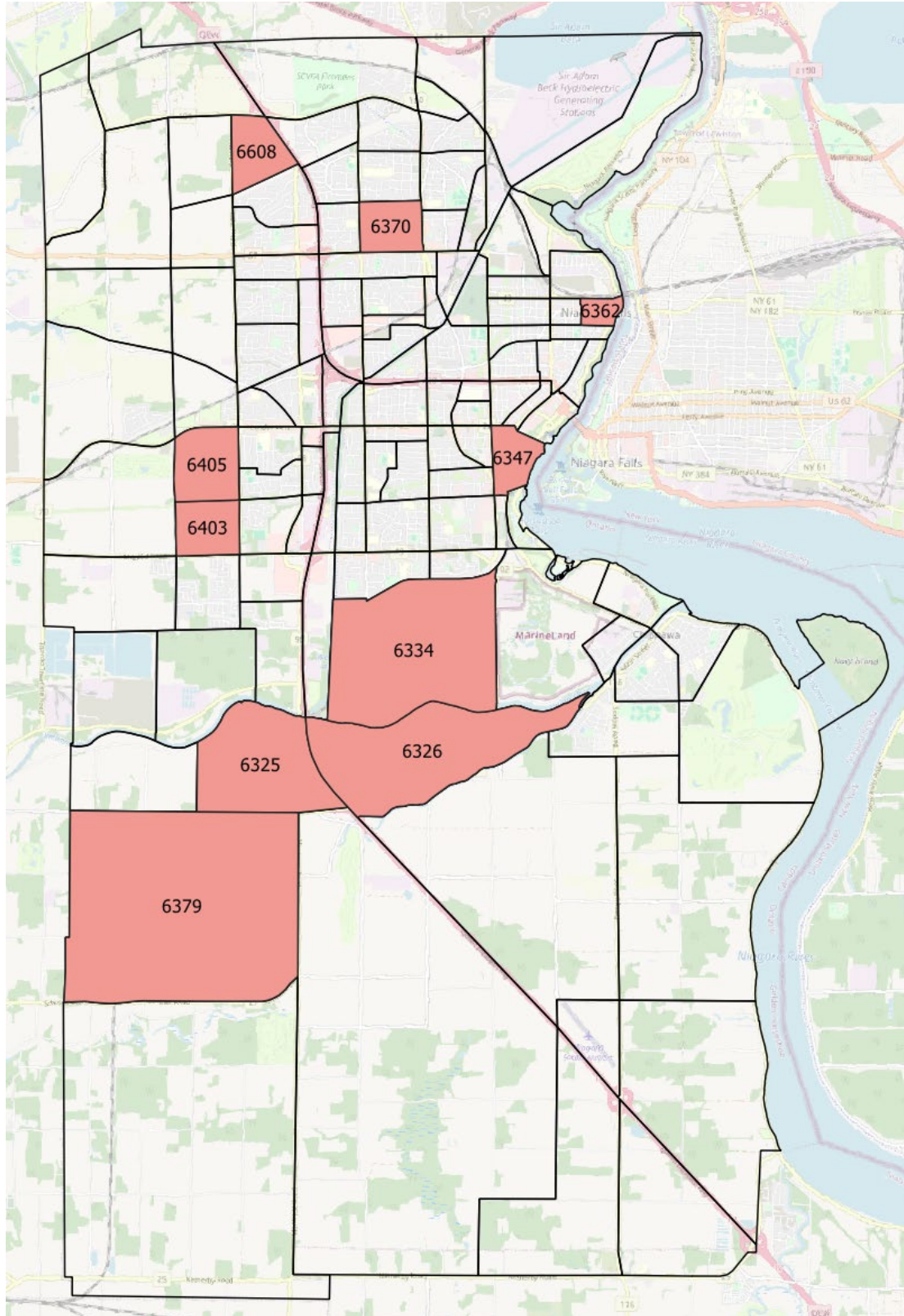


Figure 5-9 Key Zones to Target for Non-Auto Improvements Based on BAU Results in 2051



5.1.1.1 Alternative 2 (2011 TMP) Gap Analysis

The results of the gap analysis conducted for Alternative 1 (the BAU) revealed that there were several improvements included in Alternative 2 (the 2011 TMP) that would not be warranted based on V/C ratios (due to shifting population or travel patterns since the 2011 TMP). To recognize this, an Alternative Scenario #2B was created that includes all improvements identified in the 2011 TMP but without the unwarranted improvements. These unwarranted improvements are listed in **Table 5-4**.

Table 5-4: Unwarranted Improvements in the 2011 TMP Alternative

Unwarranted Improvement in the 2011 TMP Alternative	BAU V/C Ratio in the AM Peak in 2051	BAU V/C Ratio in the PM Peak in 2051
Mewburn Rd widening between Mountain Rd and York Rd	Less than 0.5	0.6
Allendale Ave widening from Forsythe St to Dunn St	Less than 0.5	Less than 0.5
Buchanan Ave widening from Falls Ave to Ferry St	Less than 0.5	Less than 0.5

A gap analysis was then undertaken for the 2B alternative. V/C ratios were found to be approaching 1 for several City and Regional roads in both the AM and PM peak periods, and exceeding 1 for some shorter sections, as shown in **Table 5-5**. Compared to the BAU scenario, performance has improved along several City streets, including Dorchester Rd, Drummond Rd, Garner Rd, Morrison St, Valley Way, Victoria Ave, and Watson St. Small performance improvements are also present on Regional roads.

Table 5-5 City and Regional Roads with V/C Ratios Greater than 0.8 in the BAU in 2051

Jurisdiction	VC Ratio (VCR)	AM	PM
City Roads	VCR ≥ 1.0	Portage Rd (NB)	Kalar Rd (SB) Portage Rd (SB)
	0.8 ≥ VCR > 1.0	Beaverdams Rd (WB) Bridge St. (EB) Kalar Rd (NB) Whirlpool Rd (SB) Woodbine St. (EB, at a new QEW overpass)	Beaverdams Rd (EB/WB) Bridge St. (WB) Kalar Rd (NB) Portage Rd (NB) St. Paul Ave (SB) Whirlpool Rd (NB) Woodbine St. (EB/WB, at a new QEW overpass)

Jurisdiction	VC Ratio (VCR)	AM	PM
Regional Roads	$VCR \geq 1.0$	Lundy's Lane (EB/WB west of Garner Rd) Mountain Rd (EB/WB immediately surrounding QEW) Stanley Ave (SB)	Lundy's Lane (EB/WB) Mountain Rd (EB/WB immediately surrounding QEW) Stanley Ave (SB)
	$0.8 \geq VCR > 1.0$	Falls Ave (EB) Stanley Ave (NB) Taylor Rd (NB) Thorold Stone Rd (EB/WB)	Falls Ave (WB) McLeod Rd (EB/WB) Montrose Rd (SB) Netherby Rd (WB) Stanley Ave (NB) Taylor Rd (SB) Thorold Stone Rd (EB/WB)

5.1.1.2 Creating Alternative 3

The gap analysis revealed several roadways that would remain congested both in alternative 1 and alternative 2B. Improvements were recommended for these roadways, where feasible, as well as for any connectivity gaps present in the network. Improvements sought to leverage the existing right-of-way to the extent possible, and also include new widenings.

Specific improvements included in the third alternative are highlighted in **Table 5-6**. These improvements are in addition to those identified in alternative 2B.

Table 5-6: Improvements Identified in Alternative 3

Road	From	To	Improvement Type
Dorchester Rd	Willinger St	Pinedale Dr	Adding two-way turning lane and protected bike lanes
Dorchester Rd	Garden St	McLeod Rd	Adding two-way turning lane and protected bike lanes
Drummond Rd	Glengate St	McLeod Rd	Adding two-way turning lane and protected bike lanes
McLeod Rd	Beechwood Rd	Parkside Rd	Adding two-way turning lane
Kalar Rd	Thorold Stone Rd	Montrose Rd	Widening to 4 lanes
Portage Rd	Upper Rapids Rd	Norton St	Widening to 4 lanes

In addition to these road improvements, Alternative 3 also includes active transportation improvements, as identified in the ongoing Trails and Active Transportation Master Plan (TATMP). Please refer to the TATMP for more information on the active transportation network.

Following the presentation of the Alternative Scenarios to the Public and Technical Advisory Committee, the road widening proposed for Kalar Road was extended to cover the gap between Mount Carmel Boulevard and Beaverdams Road to protect for the future expansion of the corridor post-2051.

5.1.1.3 Summary of the Alternatives Identified

The new alternative shown above supplements alternatives 1 and 2B (the BAU and the 2011 TMP, respectively). An overview of the core features of each of these alternatives is provided in **Table 5-7**, with visualizations of the networks shown in **Figure 5-1**, **Figure 5-2**, and **Figure 5-3**.

Table 5-7. Alternatives Identified

1: BAU	2A: 2011 TMP	2B: 2011 TMP	3: Third Alternative
Niagara Falls's current transportation network, in addition to projects already committed to by the Region and Province.	The transportation network recommended in the 2011 TMP.	The transportation network recommended in the 2011 TMP, without City improvements deemed to be unwarranted considering expected travel patterns.	A third alternative that addresses identified gaps that persist in the BAU and 2011 TMP networks.

5.1.2 Alternatives Evaluation

To identify a preferred alternative, the three alternatives (1, 2B, and 3) were assessed against each other using a Multiple Account Evaluation (MAE). An MAE is a systematic framework to assess different transportation alternatives based on a variety of criteria that align with the TMP's vision. Its purpose is to provide guidance on which transportation network alternative is preferred for the City.

The MAE measures the performance of the three alternatives on 6 key themes that matter for the City. Each theme consists of a series of accounts that are calculated through the NGTA model or through a qualitative assessment. The themes and accounts used in the MAE are shown in **Table 5-8**.

Table 5-8: Multiple Account Evaluation Criteria

Themes	Accounts	Assessment Criteria
Multi Modal Network Impacts	Active Transportation Connectivity	Qualitative: How does the network support active transportation?
	Street Network Connectivity	Qualitative: How connected are the links in the network?
	Mode Share	Quantitative: Percentage of all AM and PM peak trips made by modes other than the car.
	Network Performance	Quantitative: V/C ratios along Dorchester Rd, Drummond Rd, McLeod Rd, Portage Rd, and Kalar Rd.
Environmental Impacts	Emissions Impact	Quantitative: Vehicle kilometers travelled (VKT) in the City.
	Impact on Conservation Areas	Quantitative: Number of conservation areas impacted.
Socio-economic Impacts	Economic Impacts	Qualitative: Do the improvements support access to/from local businesses?
	Equity	Quantitative: Number of infrastructure improvements in areas identified in Error! Reference source not found. as having the largest number of low-income households
Financial Cost	Capital Cost	Quantitative: High level planning estimate of capital costs required to implement the alternative
Shaping the City	Access to Green Space and Recreational areas	Qualitative: How accessible are green space and recreational areas?
	Connectivity between employment zones and neighbourhoods.	Qualitative: How accessible are employment zones?
Support for Local Economy	Goods Movement Impacts	Quantitative: vehicle hours travelled (VHT) within Niagara Falls.

Because of the mixed qualitative and quantitative nature of the accounts, a scoring mechanism was utilized to assess the accounts for each alternative. Each alternative

was rated on a score from 1 through 5 (represented as ○, ◐, ◑, ◒, and ●) based on how well they further the assessment criteria (for example, an alternative with a low capital cost would get a high score, an alternative with a high non-car mode share would get a high score, and so forth).

The results of the MAE are shown in

Table 5-10. Based on this analysis, the third alternative is preferred, as it scores the highest on 3 of the 6 themes:

- It provides the most connected multi-modal network, thanks to extensive active transportation infrastructure and strategic road widenings.
- It improves equity the most by providing targeted improvements in areas with many low-income households.
- It provides the highest access to green spaces and employment areas.

Alternative 3 scores lower than alternative 2B on metrics related to the environment and goods movement impact. This is related to alternative 3 having both a higher VKT and VHT than alternative 2B. This could mean that alternative 3 can meet previously unserved travel demand in Niagara Falls. As such, alternative 3 was still chosen as the preferred alternative.

Table 5-9: Multiple Account Evaluation Results

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
Multi Modal Network Impacts	Active transportation connectivity	○ There are no additional active transportation improvements/benefits as part of the BAU alternative.	◐ The 2011 TMP recommended a network of both on- and off-road active transportation links, though the on-road network is generally comprised of bike lanes or marked routes.	● The active transportation network included in the third alternative is that of the ongoing Trails and Active Transportation Master Plan. It includes spine routes with physically separated bike lanes, as well as connector routes with dedicated cycling facilities. The network in this alternative is also the most extensive.
	Street network connectivity	○ There are no additional connections crossing barriers provided in the BAU.	● The 2011 TMP includes potential future improvements to better connect across the QEW, the Welland River, and the railway parallel to Portage Rd.	● Alternative 3 includes potential future improvements to better connect across the QEW, the Welland River, and the railway parallel to Portage Rd.
	Mode share	● AM Driver or Passenger: 81%	● AM Driver or Passenger: 81%	● AM Driver or Passenger: 81% AM All Other Modes: 19% PM Driver or Passenger: 89%

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
		AM All Other Modes: 19% PM Driver or Passenger: 89% PM All Other Modes: 11% The number of trips in a car (driver or passenger) is high in the p.m. peak and slightly lower in the a.m. peak. The a.m. peak reflects trips on school buses, in addition to transit, walking, and cycling.	AM All Other Modes: 19% PM Driver or Passenger: 89% PM All Other Modes: 11% This alternative does not change the expected modal split between those in cars and those using other modes for the a.m. or p.m. peak hours.	PM All Other Modes: 11% This alternative does not see a measurable change in modal split between cars and other modes compared to the other two alternatives.
	Network performance	 The average V/C ratio across the studied roads (Dorchester, Drummond, McLeod, Portage, and Kalar) is 0.53.	 The average V/C ratio across the studied roads is 0.50. The volume to capacity ratio has decreased compared to the BAU alternative, providing more consistent travel times for vehicles on the roads.	 The average V/C ratio across the studied roads is 0.49. The volume to capacity ratio has decreased compared to the other two alternatives, providing more consistent travel times for vehicles (including transit) on the roads.

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
	Summary	 The BAU acts as a baseline in this analysis. It generally performs the worst of the alternatives analyzed for multi-modal network impacts, with highest volume to capacity ratio across the studied roads and the least amount of improvements in active transportation and connections crossing barriers. The modal split is similar among the three alternatives analyzed.	 Alternative 2B provides some active transportation connections and the same opportunity to address barriers as Alternative 3. The modal split is similar among the three alternatives analyzed. The volume to capacity ratio for the roads studied falls between Alternative 1 and 3.	 Alternative 3 provides the most active transportation connections. It provides the same opportunity to address barriers as Alternative 2. Road improvements result in the lowest volume to capacity ratio for the studied roads. The modal split is similar among the three alternatives analyzed.
Environmental Impacts	Emissions impact	 Total VKT in the AM peak hour is 416,872. Total VKT in the PM peak hour is 505,263.	 Total VKT in the AM peak hour is 413,569. Total VKT in the PM peak hour is 500,536.	 Total VKT in the AM peak hour is 417,759. Total VKT in the PM peak hour is 504,380.

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
	Impact on Conservation Areas	No alternatives propose infrastructure that would cross conservation areas.	No alternatives propose infrastructure that would cross conservation areas.	No alternatives propose infrastructure that would cross conservation areas.
	Summary	The BAU has the highest VKT in the PM peak hour, which would be expected to result in the highest emissions and the worst environmental impacts of the alternatives analyzed.	Alternative 2B scores best for the least amount of environmental impacts.	Alternative 3 is in the middle of the three alternatives analyzed for environmental impacts, performing better than Alternative 1 but not as well as Alternative 3.
Socio-economic Impacts	Economic accessibility	Alternative 1 relies on Provincial and Regional improvements for economic accessibility, with no additional investment from the City.	Alternative 2B builds upon Alternative 1 with additional infrastructure improvements to enhance economic accessibility.	Alternative 3 provides the most robust multi-modal transportation network to support economic accessibility.
	Equity	 The BAU includes two infrastructure upgrades in areas identified as having a large number of low-income households (shown	 The 2011 TMP includes three infrastructure upgrades in areas identified as having a large number of low-	The third alternative includes five infrastructure upgrades in areas identified as having a large number of low-income households: the Montrose Rd, Stanley Ave, and

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
		in Figure 5-8): the Montrose Rd widening (Canadian Dr to Schisler Rd) and Stanley Ave widening (Murray St to Peer Ln).	income households: the Montrose Rd and Stanley Ave widenings included in the BAU, as well as the addition of a third lane for Drummond Rd (Lundy's Ln to McLeod).	Drummond Rd improvements included in the 2011 TMP, as well as the addition of a protected bike lane along Drummond Rd (Glengate St to McLeod Rd) and the addition of a two-way turning lane to McLeod Rd (Beechwood Rd to Parkside Rd).
	Summary	 Alternative 1 does address socio-economic impacts but not to the extent of the other alternatives analyzed.	 Alternative 2B improves on Alternative 1 for economic accessibility and equity needs.	 Alternative 3 builds on Alternative 2B and best meets economic accessibility and equity needs.
Financial Cost	Capital cost	 As all improvements included in the BAU are already committed to / planned, no additional capital costs are needed.	 Improvements in Alternative 2B would cost approximately \$26 million.	 Improvements in Alternative 3 would cost approximately \$126 million.
Shaping the City	Access to green space and recreational areas	 The BAU alternative directly increases the ease	 In addition to the improvements made in	 Alternative 3 provides the same access to green spaces /

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
		of accessing the Newburn Road Recreation Area, Oakes Park, and Baden-Powell Park.	the BAU, the 2011 TMP improves the ease of accessing Marineland.	recreational areas as in the 2011 TMP.
	Connectivity between employment zones and neighbourhoods	 Improvements along Montrose Rd in the BAU will provide additional connectivity to the QEW business park, and the Stanley Ave widening will provide additional connections to the industrial area just north of the Welland River.	 The 2011 TMP includes the BAU improvements while enhancing access to the QEW business park further by providing connections across the QEW at Morrison St/Woodbine St and between Dorchester Rd and Montrose Rd.	 Alternative 3 provides the same access to employment zones as in the 2011 TMP.
	Summary	 The BAU enhances connectivity to both green spaces / recreational areas as well as employment zones.	 The 2011 TMP builds on the connectivity provided by the BAU to further enhance connections to recreational areas and employment zones.	 Alternative 3 provides the same connectivity to green spaces / recreational areas and employment zones as the 2011 TMP.

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
Support for Local Economy	Goods movement impacts	 Total VHT in the AM and PM peak hours is 6,849 and 9,416, respectively. These are the highest number of hours in traffic of the alternatives analyzed, leading to the highest likelihood of vehicle delay in goods movement.	 Total VHT in the AM and PM peak hours is 6,726 and 9,199, respectively.	 Total VHT in the AM and PM peak hours is 6,837 and 9,372, respectively. These are less than the BAU scenario, showing less time in congestion, but more than Alternative 2B.
Support through Engagement	Public and Stakeholder feedback	 Does not proactively plan for the expected growth, which goes against the majority of public sentiment.	 Partially plans for growth to meet public sentiment but does not address emerging areas that are included for development to the year 2051.	 Best meets public and stakeholder sentiment to address transportation concerns related to growth by making strategic City investments in the network. Identifies long-term infrastructure for monitoring to determine when or if it will be needed.
Support of the TMP Vision	Vision Statement	 No City improvements, leaving all improvements to meet the Vision Statement to the Region and Province. Does not meet	 Addresses the Vision Statement but falls short of planning for growth to the year 2051.	 Best supports the Vision Statement to plan for growth to the year 2051 and provide a safe, connected, equitable, and accessible multi-modal transportation system.

Themes	Accounts	1: BAU	2B: 2011 TMP Warranted Improvements	3: Third Alternative
		the intent of the Vision Statement.		

Overall, Alternative 3 performs the best of the three alternatives analyzed and is the recommended alternative. It listens most closely to public and stakeholder input, best supports the TMP Vision Statement, best addresses equity and economic development, and performs the best or second best on several quantitative measures taken from the transportation demand model. Implementation of Alternative 3 will best position the City to address the multi-modal transportation needs of the growth expected to the year 2051.

5.2 Recommended Future Transportation Network

5.2.1 Recommended Future Active Transportation Network

A Trails and Active Transportation Master Plan (TATMP) is being completed concurrently with this TMP. The TATMP seeks to cultivate a safe, connected, equitable, and accessible active transportation system that responds to the diverse needs of all users while supporting the local economy, encouraging and enhancing opportunities for active transportation, and ensuring connections to key destinations, contributing to a more vibrant, sustainable city.

The recommended active transportation network for Niagara Falls is the network shown in the TATMP. It includes three distinct route types:

- **Spine routes:** These routes are the most direct connections for travelling across the City by active transportation. They are designed for users of all ages and abilities, with a focus on physical separation when on major roads. Spine trails will be planned to be paved, have a wide surface, and have year-round maintenance
- **Connector routes:** These routes connect local areas and destinations to the spine network. They are usually on lower volume and lower speed roads, so they are typically not the priority for physical separation. Active transportation users travel on them for shorter distances, so they are only exposed to traffic for short times. Connector trails are not necessarily paved or winter maintained
- **Local routes:** Routes on local roads that are designed to have very low traffic volumes and speeds through traffic diversion or traffic calming. Active transportation modes are prioritized on these routes to allow for safe sharing of the road.

For more details on how the AT network was derived, please refer to the TATMP.

5.2.2 Recommended Future Road Network

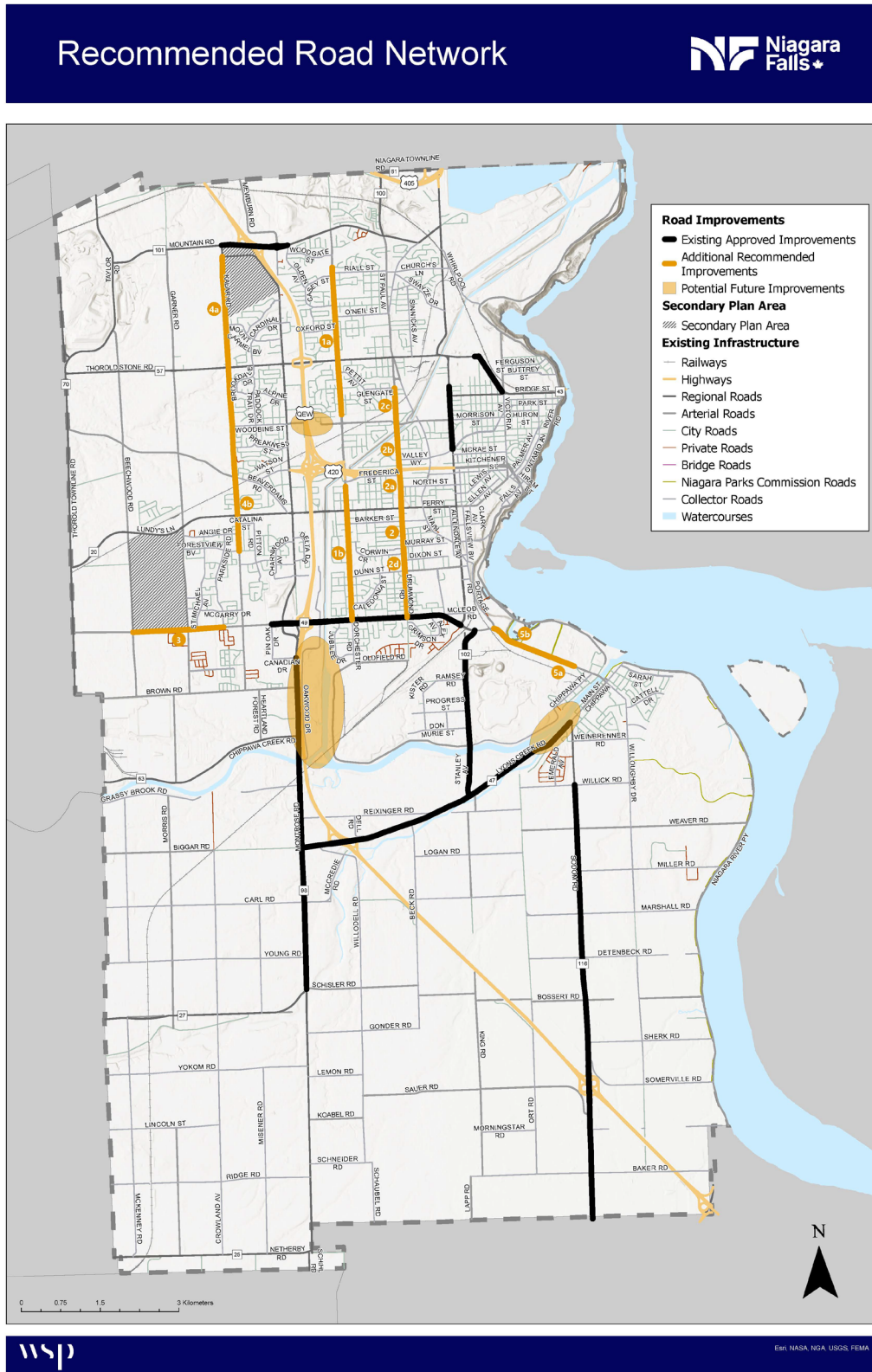
The recommended future road network was developed based on the process identified in **Section 5.1**, and corresponds to alternative 3. This network includes the improvements set out in

Table 5-10, in addition to any already committed and planned Provincial and Regional road improvements. A map of the recommended future road network is provided in **Figure 5-10**.

Table 5-10: Recommended Road Network Improvements

ID	Roadway	From	To	Improvement Type	Source
1a	Dorchester Rd	Willinger St	Pinedale Dr	Adding two-way turning lane and protected bike lanes	Alternative 3
1b	Dorchester Rd	Garden St	McLeod Rd	Adding two-way turning lane and protected bike lanes	Alternative 3
2a	Drummond Rd	Frederica St	Lundy's Ln	Adding two-way turning lane and protected bike lanes	Alternative 3
2b	Drummond Rd	Morrison St	Frederica St	Adding two-way turning lane and protected bike lanes	Alternative 3
2c	Drummond Rd	Glengate St	Morrison St	Adding two-way turning lane and protected bike lanes	Alternative 3
2d	Drummond Rd	Lundy's Ln	McLeod Rd	Adding two-way turning lane and protected bike lanes	Alternative 3
3	McLeod Rd	Beechwood Rd	Parkside Rd	Adding two-way turning lane	Alternative 3
4a	Kalar Rd	Beaverdams Rd	Montrose Rd	Widening to 4 lanes	Alternative 3
4b	Kalar Rd	Beaverdams Rd	Rideau St	Widening to 4 lanes	2011 TMP, carried forward into Alternative 3
5a	Portage Rd	Upper Rapids Rd	Norton St	Widening to 4 lanes	Alternative 3
5b	Portage Rd	Marineland Pkwy	Upper Rapids Blvd	Widening to 4 lanes	2011 TMP, carried forward into Alternative 3

Figure 5-10: Recommended Future Road Network in Niagara Falls



5.3 Supporting the Future Network

To ensure the recommended transportation network serves the needs of the residents, employees, and visitors of Niagara Falls well, high-level supporting policy was developed, highlighting how the City can support the future transportation network through updated road classifications, Complete Streets, emerging technologies, and goods movement policy.

5.3.1 Road Classifications & Complete Streets

The City of Niagara Falls is anticipating considerable population and employment growth, resulting in greater travel demand. The City should ensure that its street network is designed to meet the needs of these additional people, as well as the movement of goods, through a flexible road classification system that is multi-modal, safe, and efficient and takes into account Complete Streets concepts. This will allow the street network to serve users of all ages and abilities.

Road Classifications

The City's road classification guides the makeup of streets based on their intended physical and functional attributes. The classification informs the suitability of design elements and planning procedures for each roadway.

Currently, Policy 1.5.18 and Schedule C in the City's Official Plan outline street classifications and rights-of-way. Considering continued demographic changes and emerging trends in personal mobility and goods movement, the road classification types could be updated in the future. This would help establish design and functionality standards, manage transportation modes appropriately, coordinate land use and transportation planning, and preserve intended roadway function to promote safer streets.

Complete Streets

Complete Streets refers to the concept of designing streets for all users, regardless of their age and ability, and all modes of transportation. The Complete Streets movement places emphasis on place-making and connected communities as well as encouraging more sustainable modes of travel over motor vehicle use. Complete Streets seek to shift the focus from car-centric to resilient communities, street-level livability, and multi-modal mobility.

The objectives of introducing Complete Streets across Niagara, as outlined by the Complete Streets for Niagara Handbook, are to:

- Balance multiple modes of transportation in the right-of-way.
- Provide opportunities for access and mobility for people of all ages and abilities.
- Increase the efficiency of existing rights-of-way.
- Lower greenhouse gas emissions.
- Create opportunities for more passive physical activity.
- Capitalize and build upon road rehabilitation projects.
- Better integrate transportation and land use planning.
- Develop vibrant communities with a sense of place.
- Support the local economy and tourism initiatives.

The Complete Streets Handbook should be reviewed by relevant City departments to assess its potential impacts. External stakeholders should also be consulted as needed.

Implementing and Monitoring Complete Streets

City staff should regularly monitor and evaluate the operation of Complete Streets once implemented. Detailed evaluation criteria will allow for future improvements to requirements and enhance the performance of Complete Streets.

The City should develop clear and measurable criteria that align with the objectives outlined in the OP, the Niagara Region TMP, and broader strategies for the transportation network. Benchmarks should also be created to track progress and rate of implementation. An audit of existing infrastructure in need of capital works, planned improvements in the capital budget, and policy frameworks would allow for maximum Complete Streets implementation.

There are a series of steps that then follow to achieve a full cycle of designing and implementing Complete Streets. City staff should develop an internal working committee of City staff involved with the delivery, operations, and maintenance of the street network to help ensure construction and maintenance of Complete Streets, while also educating City staff through workshops and seminars. The City should also review ongoing projects to implement Complete Streets elements and develop a monitoring tool to evaluate implementation.

Setting a standard for current roads can aid in evaluating their effectiveness and contribute to the overall efficiency of the network. Pairing these standard measures with a monitoring program can identify potential areas for enhancement, such as patterns in street usage that can provide insights into current, future, and unfulfilled demand. As the City grows, it is important to consistently learn from these experiences and incorporate

these lessons into future plans. The City should consider the following aspects for a Complete Streets monitoring plan:

- Employing a multi-modal level of service (MMLOS) analysis for intersections, road segments, and corridors.
- Identifying success of place-making through both qualitative and quantitative measures such as pedestrian volumes, on-street parking demand, and bicycle parking demand.
- Using roadway collision and near-miss data to inform design improvements.
- Developing a spatial analysis tool that examines data concerning land use and transportation to assess access to amenities and key destinations for all users.
- Identifying and tracking implementation progress of AODA requirements and universal design elements such as for curbs and transit stops.
- Tracking City-wide emissions, non-auto mode shares along road corridors, stormwater retention capacity and facilities, and tree canopy coverage.

5.3.2 Emerging Technologies

Micromobility, smart cities, electric vehicles, and autonomous vehicles are driving changes in how transportation systems are managed and how users choose to travel. This section provides an overview of these emerging technologies and their potential to positively influence travel behaviour while curbing negative impacts.

Electric Vehicles

Electric vehicles (EVs), including Battery EVs, Plug-in Hybrid EVs, and Hybrid EVs, have seen a significant rise in Canada recently. According to Statistics Canada, in 2018, EVs accounted for 3.6% of all new vehicle registrations, with that percentage rising to 13.5% in 2022. This increase is likely influenced by factors such as the cost of gas, EV subsidies, consumer awareness, and improved technologies. The market share of EVs is likely to continue growing over the coming years. The federal government's mandate requiring all new passenger vehicles and light trucks sold in Canada to be zero-emission electric vehicles by 2035, as well as strategic partnerships to open manufacturing plants for EVs in Canada, are predicted to extend this trend into the future.

Though EVs are not new technology, their modern introduction to the transportation network will require significant integration. Municipalities across Ontario have adopted Net Zero strategies, which include a transition to EVs, guiding investment into EV-supportive infrastructure such as charging stations. Some cities, such as Toronto, are also developing EV Strategies specifically to support EV adoption rates through:

- Building public EV charging infrastructure.
- Requiring EV charging infrastructure at residential, commercial, institutional, and industrial buildings.
- Conducting education and outreach campaigns regarding EVs.
- Implementing specific measures for ride-share vehicles to access EV charging.

Other measures for supporting the integration of EVs into cities include:

- Emission-free zones.
- EV driving lanes (such as HOV lanes on Ontario Freeways).
- Dedicated EV parking areas.

Equity must be addressed when identifying and implementing strategies related to EVs. Many municipalities are working to create a network of both public and private charging stations, as well as targeting neighbourhoods with low EV ownership rates and a greater proportion of lower-income households. The City should ensure EV charging infrastructure is a component of new developments, with minimum requirements and revisions as EVs proliferate. Municipal buildings and lots can serve as an opportunity for the City to lead by example in EV integration. The Federal Zero Emission Vehicle Infrastructure Program and Green Municipal Fund serve as funding opportunities to develop EV charging infrastructure.

Autonomous Vehicles

The advent of autonomous vehicles presents a range of opportunities to be leveraged in the transportation network. The removal of human input presents the potential for enhanced driving behaviour and improved network efficiency. It also presents challenges surrounding ethical decision-making dilemmas, weather conditions, identification of the complexity of the urban environment, concerns surrounding AV training models, risks of hacking and technological malfunctions, and increased attractiveness of private vehicles. Though caution must be applied as autonomous vehicles are in early stages of development and continue to face significant challenges in integration with the wider network, the City should consider how they can be leveraged and regulated.

Due to the novel nature of autonomous vehicles, collaboration across various levels of government will be necessary for their research and potential implementation. Regulations concerning the design and use of AVs are spread across all jurisdictions (federal, provincial, regional, local), as are responsibilities relating to their use.

Possible priorities and action items while considering AVs include:

- Continued prioritization of transit and active transportation, as AVs will still contribute to traffic congestion, parking demand, and other automobile-related externalities.
- Ensuring that land use and transportation policies continue to support equity through dense, affordable, and accessible communities to provide opportunities for all rather than treating AVs as a silver bullet.
- Regulation of data collection, management, and privacy.
- Focusing on people movement instead of vehicle movement, and continuing to dissuade auto usage through restriction and dieting of vehicle movement, parking, and right-of-way.
- Reducing heavy vehicles in dense areas through coordinated goods movement.
- Facilitating last-mile deliveries through the use of smaller vehicles (such as e-bikes) to improve safety and reduce congestion.
- Ensuring traffic calming and road safety remain priorities, and ensuring pedestrian and cyclist safety is put above operations of automobiles.
- Exploring smart city technology that can communicate with AVs to improve driving behaviour.
- Increasing the supply of Passenger Pick-up and Drop off areas at transit stations.

The City has a responsibility to continue to shape its streetscapes and transportation networks to prioritize efficient people movement, regardless of technological changes such as AVs. Improvements in traffic calming and roadway safety, transit infrastructure and service, and active transportation contribute to a pleasant urban environment. Ensuring AVs are added as component to this approach will ensure their benefits are best leveraged.

Micromobility

Micromobility is defined as the use of lightweight personal vehicles such as e-bikes, e-scooters, and skateboards. These modes of transportation are growing more popular, especially in urban and suburban areas, and provide a convenient and cheap travel option for shorter trips. This can improve access to local destinations such as grocery stores, recreational facilities, schools, and healthcare. Micromobility vehicles are typically owned by individuals, or offered for use through municipal programs or private services, providing flexibility for a wide user base.

Micromobility can introduce the following benefits:

- Improved short-range accessibility
- Reduced storage and parking requirements
- Suitability for those with difficulty walking or cycling

- Environmental sustainability
- Improved affordability of travel
- Improved first- and last-mile connection opportunities from transit and mobility hubs

Micromobility devices are typically permitted on multi-use paths and cycling facilities, due to having a comparable size and speed to biking. Where these facilities are not present, micromobility users are expected to keep to the right-most lane similarly to cyclists. Consideration of the interactions between micromobility users and other users including pedestrians, cyclists, automobiles, and transit vehicles is critical.

Shared micromobility services have been offered elsewhere throughout Ontario and the world. These services generally leverage technology such as phone applications and digital pay stations to make them convenient to use. Bike Share Toronto launched e-bikes in 2020 in addition to their conventional bicycle fleet, with plans to continue to expand their availability. In Mississauga, a partnership with Lime Technology and Bird Canada in 2024 has introduced e-bikes and e-scooters across the city, with devices placed around community centres, libraries, bus stops, and parks. Within the City of Niagara Falls, the provision of shared micromobility services should consider:

- Pick-up and drop-off locations or docking stations
- Possible speed limits
- Risk, enforcement, and legal issues
- Changing facilities

Two voluntary pilot program initiatives by the Province provide an experimental framework for municipalities to introduce electric micromobility on Ontario roads including the Ontario E-Scooter Pilot Program and the Ontario Cargo E-Bike Pilot Program. These programs provide an opportunity for municipalities to introduce bylaws related to e-scooter and cargo e-bike operation on their roads. To develop such bylaws, Niagara Falls could consider:

- Acceptable parking locations, non-compliance penalties, and interoperability between neighboring municipalities.
- Operating parameters such as permits, locations, cargo contents, removal, volume limits, and integration.
- Liability and insurance coverage for e-scooter or cargo e-bike providers.
- Highway Traffic Act, bylaw, and Criminal Code offence consequences.

The Province's support for the integration of micromobility into the transportation system contributes to understanding the advantages, impacts, and drawbacks of micromobility.

Niagara Falls could position themselves to collect critical data and community input through Provincial programs, community engagement, and public surveys and studies. The collected data will help to create informed policy and infrastructure to best leverage micromobility as a piece of the transportation network.

Smart City Technology

The emergence of new data collection and communication technologies have opened up possibilities for municipalities to improve their transportation systems. Technologies such as Internet-of-Things (IoT) sensors, video cameras, and social media can be used to inform decision-making, either based on real-time information or on built datasets.

Smart city tools provide the opportunity to realize the following benefits:

- Unlock more opportunities for engagement by facilitating greater interactions between the public and the city.
- Provide real-time data services to the public, such as for transit, parking, and road conditions to offer the public enhanced information.
- Create better optimized services and improve inter-agency collaboration.
- Publicize collected data to enhance economic potential for businesses.

Examples of data that can be used by smart cities include the following:

- Demand-based parking pricing and availability to better match demand and supply and improve efficiency.
- Air quality monitoring to implement emission restrictions.
- Coordinated traffic signals during special events to mitigate congestion, or to respond to incidents in real-time.
- Real-time transit bus arrival information at transit stops for passengers to see when the next vehicle is coming.
- Live road condition updates on arterials providing delay and closure information.

Emerging Technology Recommendations

The City should:

- Advocate for and support the Region in electrifying their bus fleet to reduce emissions.
- Develop an Electric Mobility Strategy focused on the provision of public charging stations, incentives to EV adoption, and retrofits of existing parking.
- Explore the development and research of AVs for transit service, particularly for on-demand services.

- Create an action plan for EV charging and AV integration, considering needed policy changes.
- Identify and implement smart technologies that improve safety, reliability and quality of service of the transportation system.
- Generate a business case for the implementation of a shared micromobility program to supplement transit services and contribute to mobility hubs.
- Employ micromobility solutions as TDM measures for new developments.

5.3.3 Goods Movement

Niagara Falls is located along a critical international trade corridor, with direct connections between the GTHA and New York State. This trade corridor uses both road and rail infrastructure located within the City. The border crossings in the City are critical to connecting goods movement between Canada's and the US's largest economic regions, requiring them to be efficient to maximize movement without creating delay.

In 2016, Niagara Region was designated as a Foreign Trade Zone (FTZ). Manufacturing and transportation logistics were identified as two of the top four key economic growth opportunities for the Region. The City's transportation infrastructure must capitalize on this opportunity and provide the capacity for continued economic development to attract manufacturing and logistics firms. At the same time, the City's Official plan discusses the need to balance people and goods movement while promoting safety along with efficiency.

The Region's 2017 TMP highlights that the level of production occurring within the Region appears to be adequately supported. Goods passing through the Region face no requirement to change modes.

Roads

The QEW is the primary highway link from Niagara Region to the GTHA and the US, with a critical portion passing through the City. The City continues to protect land use along the QEW for employment uses. Cross-border truck traffic has remained relatively stable in recent years, while traffic towards the GTHA continues to grow.

According to the Region's 2017 TMP, the number of truck trips in Niagara Region will grow due to population and economic growth in the Region. Truck volumes in Niagara Region are expected to grow by 57% from 2011 to 2041, from 35,000 to 55,000 daily trips, with most new trips being between the Region and the GTHA. Existing heavy traffic volumes along the QEW in peak periods and during tourist season continue to place constraints on growing truck volumes.

The City should advocate for the Niagara – Hamilton Trade Corridor and NGTA East Corridor as an alternate route that improves the Region’s connection to both the GTHA and the international border, while removing strain from the QEW and the City’s road network.

This TMP also highlighted a number of Regional roads within the boundary of Niagara Falls that are projected to experience congestion in the future. As Niagara Region updates their TMP to 2051, these corridors should be explored for potential improvements to support the regional goods movement network.

Rail

CN Rail owns and operates tracks and stations within the City, offering freight connections to the wider Regional rail network. Freight rail no longer crosses the border at the Whirlpool Bridge in Niagara Falls and instead is directed to the Fort Erie International Railway Bridge. According to the Region’s 2017 TMP, all rail lines in Niagara operate significantly lower than their peak capacity and no significant intermodal facilities exist. Total trade value crossing the border between Buffalo and Niagara Falls by rail has declined very slightly from \$10.0 billion in 1995 to \$9.8 billion in 2023, though trade value crossing by truck has increased by over \$11 billion in the same time period.

Recommendations

- The City should work with MTO and Niagara Region to advance the Niagara – Hamilton Trade Corridor, Highway 406 Extension and NGTA East Corridor to provide an efficient trade route connecting the City and Region to both the GTHA and USA. Short-term solutions to provide a dedicated alternate truck route on the QEW should be developed.
- The City should initiate a Goods Movement Strategy to address trade corridors, truck routes, changing delivery methods and emerging technology, and localized goods movement issues. The study should identify strategies to ensure goods movement by rail continues to be a vital component of goods movement in Niagara Falls, including opportunities for integrated rail services.
- The City should protect rail infrastructure for future growth opportunities that could have the added benefit of off-loading a congested highway trade corridor and supporting economic growth in the City and Region.

6 Planning, Implementation, and Monitoring

This chapter provides the implementation plan for the TMP. It details the steps necessary to achieve the TMP's vision by setting out when different elements of the recommended transportation network should be constructed, highlighting the financial resources required to achieve this, and providing an overview of how the improvements can be funded.

This chapter is meant to serve as a guide for the City when constructing future transportation projects; it is not prescriptive.

6.1 Monitoring Plan

It is recommended that that City builds on its existing monitoring frameworks, as well as the Region's frameworks, to conduct both short-term and long-term monitoring of the TMP. This should include ongoing monitoring of the implementation of recommended improvements and their impacts on the TMP vision. Such monitoring will help validate the transportation projects included in the TMP and identify areas where modifications or updates may be necessary.

The monitoring framework for the TMP should consist of:

- **Key performance indicators (KPIs):** A list of KPIs that closely track the TMP's vision.
- **Data sources and frequency:** For each KPI, the data sources to be used for calculation, the frequency of these calculations, and the office within the City responsible for data collection and analysis.
- **KPI targets:** A target for each KPI that outlines the City's goals. Progress towards these targets can be monitored by establishing a baseline of historical and existing indicators (many of which the City already has) and updating these indicators over time.
- **Action plans:** A plan detailing the actions the City intends to take when a target is met or not met.
- **Status updates and progress reports:** The regular creation of status update and progress reports.

Initial KPIs for the TMP are shown in Table 6-1. KPIs are intended to measure, as directly as possible, how implementation of the recommended improvements supports the vision set out for the TMP: "To support the continued development of a safe, connected, equitable, and accessible multi-modal transportation system that supports

the local economy by improving intra-City travel for residents, and the tourist experience.”

Table 6-1: Initial Key Performance Indicators to Measure Implementation Success

Vision Element	KPI	Data Source	Frequency
Safe transportation system	Number of traffic collisions per capita or per 100,000 vehicle kilometers travelled	Niagara Regional Police / Ontario Road Safety Annual Reports	Every year
Connected multi-modal transportation system	Modal share of transit trips in the PM peak period	Transportation Tomorrow Survey	Every five years
	Modal share of active transportation trips in the PM peak period	Transportation Tomorrow Survey	Every five years
	Average number of vehicles owned by a household in the City	Transportation Tomorrow Survey	Every five years
	Length of new active transportation infrastructure (cycling facilities, trails, and sidewalks) constructed	Internal City data	Every year
Equitable and accessible transportation system	Length of new infrastructure following the Complete Streets for Niagara Handbook	Internal City data	Every year
Support the local economy and improve intra-city travel for residents and tourists	Volume to capacity ratios for corridors at screenlines in the PM peak period	Regional and City traffic counts	Every three years
	Average travel speeds	Travel time surveys	Every five years

6.2 Phasing Plan

It is recommended that the proposed improvements are implemented in a phased manner, to ensure projects are built when and where needed in a financially prudent manner. Improvements were therefore classified into three phases, representing the

short term (2031), medium-term (2041), and long term (2051). The recommended horizon year was determined based on a variety of factors such as knowledge of development context and population and employment forecasts. Phasing based on these criteria ensures that the transportation network is in place before the projected growth occurs. The full scope of the criteria used in the phasing plan is shown in Table 6-2.

The timeline of the proposed projects is not intended to be prescriptive, but rather serves as a guide for the Town, with the timeline to be confirmed closer to the time of implementation based on priorities and available resources.

Table 6-2: Phasing Criteria

Horizon year	Criteria
Short term (before 2031)	- Alignment with planned capital projects. - Improvements that provide strong connections between communities and key destinations.
Medium term (before 2041)	- Response to growth in the medium term. - Improvements that provide strong connections between communities and key destinations.
Long term (before 2051)	- Response to growth in the long term. - Requires reconstruction beyond the current capital plan

The resulting phasing for each proposed improvements is shown in Table 6-3.

Table 6-3: Phasing for Recommended Improvements

ID	Roadway	From	To	Improvement Type	Phasing
1a	Dorchester Rd	Willinger St	Pinedale Dr	Adding two-way turning lane and protected bike lanes	2041
1b	Dorchester Rd	Garden St	McLeod Rd	Adding two-way turning lane and protected bike lanes	2041
2a	Drummond Rd	Frederica St	Lundy's Ln	Adding two-way turning lane and protected bike lanes	2031

ID	Roadway	From	To	Improvement Type	Phasing
2b	Drummond Rd	Morrison St	Frederica St	Adding two-way turning lane and protected bike lanes	2041
2c	Drummond Rd	Glengate St	Morrison St	Adding two-way turning lane and protected bike lanes	2051
2d	Drummond Rd	Lundy's Ln	McLeod Rd	Adding two-way turning lane and protected bike lanes	2051
3	McLeod Rd	Beechwood Rd	Parkside Rd	Adding two-way turning lane	2031
4a	Kalar Rd	Thorold Stone Rd	Montrose Rd	Widening to 4 lanes	2051 Tied to Secondary Plan Area development (earlier if development occurs)
4b	Kalar Rd	Thorold Stone Rd	Rideau St	Widening to 4 lanes	2041 (south of Beaverdams Road); 2051 between Thorold Stone Road and Beaverdams Road
5a	Portage Rd	Upper Rapids Rd	Norton St	Widening to 4 lanes	2041
5b	Portage Rd	Marineland Pkwy	Upper Rapids Rd	Widening to 4 lanes	2051 Tied to redevelopment in the vicinity (earlier if development occurs)

6.3 Costing

High-level, order-of-magnitude costs have been estimated for the improvements recommended within the TMP. These estimates are provided to assist the City in budgeting for proposed improvements and should be refined as the planning and design of each project proceeds.

Estimates are derived from unit costs based on recent tenders for road projects within Ontario. They include expenses related to road works within the right-of-way, including excavation and preparation, construction, construction management, storm servicing, traffic signals, lighting, landscaping, and active transportation facilities. They do not include any land and property acquisition costs, nor the costs for crossings and bridges.

The following unit costs were used:

- Widening from 2 to 4 lanes: \$7.25 million
- New 2 lane roadway: \$3.50 million
- New 4 lane roadway: \$9.00 million
- Adding a two-way turning lane: \$5.375 million

Estimates were only developed for roads to be constructed by the City; additional roads that could be constructed and funded by the development community through greenfield development are not costed.

Cost estimates for each improvement are shown in Table 6-4, and summarized by phase in Table 6-5. Total costs are estimated to be \$126,905,000.

Table 6-4: Cost Estimates for the Recommended Improvements

ID	Roadway	From	To	Improvement	Distance (km)	Estimated Cost	Design/Permits (15%)	Contingency (20%)	Total Cost
1a	Dorchester Rd	Willinger St	Pinedale Dr	Adding two-way turning lane and protected bike lanes	2.81	\$10,187,000	\$1,529,000	\$2,038,000	\$13,754,000
1b	Dorchester Rd	Garden St	McLeod Rd	Adding two-way turning lane and protected bike lanes	2.54	\$9,208,000	\$1,382,000	\$1,842,000	\$12,432,000
2a	Drummond Rd	Frederica St	Lundy's Ln	Adding two-way turning lane and protected bike lanes	4.20	\$15,226,000	\$2,285,000	\$3,046,000	\$20,557,000
2b	Drummond Rd	Morrison St	Frederica St	Adding two-way turning lane and protected bike lanes					
2c	Drummond Rd	Glengate St	Morrison St	Adding two-way turning lane and protected bike lanes					
2d	Drummond Rd	Lundy's Ln	McLeod Rd	Adding two-way turning lane and protected bike lanes					
3	McLeod Rd	Beechwood Rd	Parkside Rd	Adding two-way turning lane	1.73	\$6,235,000	\$936,000	\$1,247,000	\$8,418,000
4a	Kalar Rd	Thorold Stone Rd	Montrose Rd	Widening to 4 lanes	2.11	\$15,298,000	\$1,414,000	\$1,885,000	\$12,724,000
4b	Kalar Rd	Thorold Stone Rd	Rideau St	Widening to 4 lanes	3.51	\$25,448,000	\$3,818,000	\$5,090,000	\$34,356,000
5a	Portage Rd	Upper Rapids Rd	Norton St	Widening to 4 lanes	0.48	\$3,480,000	\$522,000	\$696,000	\$4,698,000
5b	Portage Rd	Marineland Pkwy	Upper Rapids Blvd	Widening to 4 lanes	1.23	\$8,918,000	\$1,338,000	\$1,784,000	\$12,040,000

Table 6-5: Cost Estimates by Phase

Horizon Year	Total Cost
Short term (before 2031)	\$11,502,000
Medium term (before 2041)	\$35,778,000
Long term (before 2051)	\$79,625,000

6.4 Funding Opportunities

Implementing the recommended improvements in the TMP will require ongoing investment. To help offset a portion of these costs, external funding opportunities at the Federal, Provincial, and Private level beyond the City's annual capital budget process were identified.

It is recommended that City continues monitoring and assessing funding programs made available by all levels of government on a regular basis.

Federal Funding Opportunities

Canada Community Building Fund (CCBF)

The CCBF is a permanent source of federal funding that allocates funding upfront, twice-a-year to provinces and territories, who then distribute the funding to municipalities for local infrastructure projects. Over the next five years, the CCBF will invest over \$4.7 billion in the province of Ontario, starting with \$895 million in 2024-2025. The City of Niagara Falls is expected to receive approximately \$3 million from the CCBF in 2025.

Investing in Canada Infrastructure Program (ICIP)

The ICIP is a \$33 billion federal funding initiative that supports infrastructure projects across provinces and territories. The program, among other objectives, helps fund the planning, construction, expansion, and improvement of public transit networks. It also supports green infrastructure projects that help reduce pollution.

National Trade Corridors Fund (NTCF)

The \$4.6 billion NTCF helps fund infrastructure projects in Canada. Infrastructure projects could include work to airports, ports, railways, transportation facilities, and access roads.

Zero Emission Vehicle Infrastructure Program (ZEVIP)

The ZEVIP is a \$680 million federal funding program by Natural Resources Canada that seeks to build out Canada's network of electric vehicle charging and hydrogen refuelling stations.

Green Municipal Fund (GMF)

The GMF is a federal funding program administered by the Federation of Canadian Municipalities that seeks to accelerate the transition towards resilient, net-zero communities across Canada. The GMF offers a range of funding opportunities, including grants for plans, studies, and pilot projects, as well as loans and grants for capital projects.

Provincial Funding Opportunities

Connecting Links Program

The Ontario Ministry of Transportation offers a Connecting Links program that covers capital improvement costs for municipal roads or bridges that connect two ends of a provincial highway. The provincial program provides up to \$3 million per road project and \$5 million per bridge. Niagara Region is one of 77 municipalities eligible for Connecting Links funding.

Ontario Community Infrastructure Fund (OCIF)

The OCIF provides regular funding to help small, rural, and northern communities in the province renew and rehabilitate infrastructure. This funding allows municipalities to invest in capital expenditures for core infrastructure such as roads, bridges, water, and wastewater. The annual grants can be accumulated for up to five years to address larger projects. Niagara Falls will receive \$4,994,214 in 2025.

Ontario Municipal Partnership Fund (OMPF)

The OMPF provides reliable, unconditional general assistance funding to northern and rural municipalities. Niagara Falls will receive \$246,500 in 2025.

Infrastructure Ontario Loan Program

Infrastructure Ontario offers a Loan Program that provides long-term financial support to eligible public sector clients, helping with infrastructure renewal and delivering improved infrastructure to the community. Infrastructure Ontario (IO) promotes the following benefits of the loan program:

- Affordable rates
- Access to capital market financing without any fees or commissions
- Longer loan terms designed to match the life of an asset
- No need to refinance over the life of the loan
- Online application with access to dedicated and experienced staff

IO loans are intended to be utilized as a capital investment for initiatives involving roads, bridges, and other projects that would enhance mobility and accessibility for all transportation users.

Private Funding Opportunities

Canada Infrastructure Bank (CIB)

The CIB invests in revenue-generating infrastructure that benefits Canadians and attracts private capital through private investment in projects that support economic growth. Their priority sectors for investment are green infrastructure, clean power, public transit, trade and transportation and broadband infrastructure.

Public-Private Partnerships (P3s)

P3s are long-term agreements between a government and private companies to deliver large-scale infrastructure projects and represent an alternative method to funding and delivering necessary infrastructure in the City.

Appendix A – Travel Demand Model Existing Conditions Technical Memorandum