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Appendix A:

GOALS AND OBJECTIVES TECHNICAL MEMORANDUM

To: Mario Colone
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Council

From: Adam Catherine
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Project/File: 192510982
Date: November 25, 2025

Reference: NYS 31 Transit Corridor Assessment: Goals and Objectives

The NYS 31 corridor is a critical east-west corridor in northern Onondaga County that provides connections between several activity and growth areas including the Village of Baldwinsville and the towns of Lysander, Clay, and Cicero. The corridor operates in a variety of land use areas and configurations, ranging from a two-lane roadway in rural environments as well as in traditional village areas like Baldwinsville, to a multi-lane arterial in areas with suburban-style retail centers in Cicero and Clay. Overall, the corridor is auto-centric with low-density development and extremely limited transit, pedestrian, and bicycle accommodations.

The NYS 31 corridor is about to undergo a significant transformation spurred by the proposed Micron semiconductor chip manufacturing facility that will lead to substantial economic growth opportunities. At full build-out, the Micron facility is expected to employ 9,000 people and generate over an estimated 40,000 jobs at secondary businesses. This will lead to increased demand for commercial, industrial, and residential development along and around the corridor. This type of growth will require real investment in creative mobility solutions designed to move people (rather than vehicles) in a safe and efficient manner to avoid building large vehicle-clogged roadways. Relying on adding additional vehicular capacity alone will hinder development potential, impact quality of life, and lead to a less equitable and sustainable transportation system.

The Micron site is going to be built in phases over time, and thus so will much of the secondary growth including supporting industry, businesses, and residential. Therefore, any multimodal solutions to reduce vehicle demand and associated roadway improvements will need to be scalable with public transit solutions that can support demand. As such, there will be a need to use the transit solution to guide that development, for example, through transit-oriented development opportunities.

Furthermore, although this study effort is being spurred by the potential for growth, there are existing mobility deficiencies to, from, and along the corridor that will only be exacerbated by this growth. Understanding and addressing the existing issues first can establish a strong foundation of multi-modal activity on the corridor that would then support additional improvements as the Micron site and ancillary development progresses.

This memorandum presents the study purpose, vision, goals and objectives that will guide the analysis and development of recommendations to address existing and future needs along the corridor. It also includes a set of initial evaluation criteria based on the project goals and objectives that will help guide the evaluation

Reference: NYS 31 Transit Corridor Assessment: Goals and Objectives

of options in later stages of the study. This document will be referenced throughout the project to ensure that the study outcomes are focused on addressing the agreed-upon vision, goals, and objectives.

Study Purpose Statement

The purpose of the NYS 31 Transit Corridor Assessment is to develop a mobility plan for the NYS 31 corridor that outlines the feasibility of, and required conditions for, future enhanced public transportation services that support existing and anticipated centers identified in Onondaga County's comprehensive plan.

Vision Statement

The NYS 31 multimodal corridor provides safe, efficient and accessible mobility for people of all ages, abilities, and socioeconomic status who need to travel for work, school, recreation or to access goods and services.

The corridor supports economic opportunity for all by integrating transportation and land use, creating a sense of place, and responding to the evolving needs of the community.

The corridor provides efficient mobility choices that are environmentally responsible and encourage travel by modes other than driving.

Goals and Objectives

Five study goals, each with their own set of objectives, have been developed for this study. These goals and objectives are intended to address needs at each stage of the study process and will serve as measures of effectiveness in which to evaluate transit alternatives in later stages of the study. The project goals and objectives are as follows:

- **Establish a multimodal corridor framework.** Although this study is titled as a transit corridor assessment, other mobility options, such as active modes (pedestrian, bicycle, scooter) must be integrated into any transit solution. The ultimate success of a transit solution for the corridor will be hinged on its accessibility, particularly for the first mile and last mile of any trip. A multimodal corridor is one where people find it easy and convenient to use other modes, rather than driving, for their trips.

This goal has the following objectives:

Identify existing challenges along the NYS 31 corridor and how transit may impact these challenges.

Recognize the need for all modes to manage existing and future demand.

Integrate active transportation infrastructure to solve the first/last mile challenge.

- **Prepare NYS 31 for transit-oriented communities (TOC).** The proposed Micron site, along with the anticipated supporting industries, will lead to substantial growth demands along the corridor. Without a clear plan for the future of the corridor, this growth would likely continue the existing

Reference: NYS 31 Transit Corridor Assessment: Goals and Objectives

pattern of separated land uses that are auto-centric. Auto-centric growth leads to increased congestion and the need to construct more and wider roadways, which then makes the corridor less safe and supportive for other modes. Planning for TOCs creates opportunities for higher-density, mixed-use development that can accommodate the planned growth in a more equitable and sustainable manner. However, this type of development does not have precedent on this corridor and will require community understanding and support, as well as planning and zoning processes that encourage this type of development.

This goal has the following objectives:

Foster support for local community growth.

Create an understanding for what NYS 31 should be for the region.

Develop a plan for station area growth, while embracing the culture and character of existing communities.

Ready community zoning and processes for expected and necessary development.

Identify fundamentals of TOC, including station areas, potential new public spaces, and development sites.

- **Foster regional growth to support communities.** The potential growth along the corridor will span multiple municipalities and affect existing neighborhoods and businesses. Each municipality will likely have its own goals and objectives for managing the potential growth. However, if growth is managed in isolation, it will be difficult to create the transit-supportive communities that are needed to sustainably managed mobility demands that will result from development. The NYS 31 Transit Corridor Assessment is the first step to creating that overarching vision for the corridor. It must establish a foundation of regional coordination and outline the baseline land use, development, and infrastructure requirements for high-quality transit.

This goal has the following objectives:

Identify the appropriate land use mix for corridor segments based on municipal needs and goals.

Support growth through regional relationships.

Develop an implementation plan, aligned with timelines for planned Micron and other corridor development.

Establish development and infrastructure thresholds for high-quality transit.

- **Identify strategies for long-term corridor success.** Growth along the corridor will occur in phases that are likely to be linked to the development phases of the Micron site. High-quality transit and supportive transit-oriented communities will need to be thoughtfully phased in over time. This will require all parties involved in planning, designing, and approving development and

Reference: NYS 31 Transit Corridor Assessment: Goals and Objectives

infrastructure projects to think ahead to future phases so that there is room to provide high-quality transit and active mode infrastructure. Transit and active mode infrastructure must be non-negotiable. This study must show a clear path to the future and outline the steps along the way that will ultimately lead to long-term success for the corridor.

This goal has the following objectives:

Harness growth in a sustainable and equitable manner, using transportation and land use planning.

Encourage transit use by identifying and implementing infrastructure requirements that maximize access to and efficiency of transit.

Prepare infrastructure to accommodate future mobility trends and technologies.

- **Support implementation.** In addition to providing strategies for the long-term success of the corridor, the study must also outline how the recommended transit solution can be implemented. This goal addresses the need to gain support for transitioning the corridor from auto-focused to multimodal, demonstrating the benefits of that change through near-term improvements, and identifying potential funding sources.

This goal has the following objectives:

Cultivate support for change.

Prioritize near-term actions.

Identify funding opportunities for near-term and long-term transit needs.

Evaluation Criteria

Utilizing the goals and objectives establish in the section above, the following evaluation criteria were developed that will help to guide the evaluation of transit options in later phases of this study. These evaluation criteria below will be combined with others as the project progresses. Therefore, the evaluation criteria shown in **Table 1** should not be considered all-encompassing or final.

Table 1: Evaluation Criteria Related to the Study Goals and Objectives

Study Goal	Criterion	Evaluation Measures
Establish a multimodal corridor framework.	Miles of exclusive transit right-of-way.	Total mileage of exclusive transit right-of-way, including bus lanes, queue jumpers, pullouts, and track (for LRT/Streetcar)
	Miles of proposed sidewalks.	Increase in the mileage of sidewalks.
	Pedestrian crossing density.	The number of proposed marked crossings of NYS 31 per mile.
	Miles of low-stress bicycle facilities.	Increase in the mileage of low-stress pedestrian and bicycle facilities.


Reference: NYS 31 Transit Corridor Assessment: Goals and Objectives

Study Goal	Criterion	Evaluation Measures
Prepare NYS31 for transit-oriented communities.	Transit-supportive land uses within one-half mile of the corridor (2050)	Future population and employment density within one-half mile of the corridor that would be capable of supporting the alternative.
	Economic development potential	Number of potential redevelopment sites that are within walking distance* of proposed stops/stations.
	Potential for “missing middle” housing	Number of potential duplex/triplex, townhome, and condo units within walking distance* of a stop/station.
	Zoning potential/capacity	Potential maximum density within walking distance* of stops/stations. This will be measured as a comparison of existing zoning versus potential TOC-supportive zoning.
Foster regional growth to support communities.	Municipal support	A qualitative measure of municipal support for the transit alternative (high, medium, low).
	Likelihood of adoption of recommendations into municipal comprehensive plans, zoning ordinances, etc.	A qualitative measure of the likelihood that the recommendations associated with a particular alternative would be adopted into municipal plans or ordinances (high, medium, low).
	Employment served	The number of existing jobs that would be within walking distance* of a station area.
	Population served	Existing population that lies within walking distance* of a station area.
Identify strategies for long-term corridor success.	Ridership (2050)	Total daily boardings and annual ridership in 2050 (full build-out of Micron).
	Projected vehicle miles traveled (2050)	Measures change in automobile miles traveled that would result from a shift from driving to transit. This would be measured from by comparing No Build and Build conditions in 2050 (full build-out of Micron).
	Corridor travel time	Total estimated time that it would take to travel from one end of the corridor to the other using transit.
	Travel time ratio	The ratio of transit travel time to vehicle travel time for an average end-to-end trip.

Reference: NYS 31 Transit Corridor Assessment: Goals and Objectives

Study Goal	Criterion	Evaluation Measures
	Zero-car households served	Number of existing zero car households within walking distance of a stop/station.
	Affordable housing served	Number of existing and potential affordable housing units within walking distance of stops/stations.
	Households below poverty level served	Number of existing households below poverty level that are within walking distance* of stops/stations.
	Renters served	Number of existing and potential future rental households that are within walking distance* of stops/stations.
	Minority population served	Existing minority population that is within walking distance of stops/stations.
	Elderly and young populations served	Existing elderly (>65 years of age) and young (<18 years of age) population that is within walking distance* of stops/stations.
Support implementation.	Level of community support	A qualitative measure of community support for the transit alternative (high, medium, low).
	Number of potential short-terms actions	Number of recommended short-term actions.
	Capital cost	Planning-level capital cost estimate (in 2024 dollars) per lane/track-mile that includes infrastructure, rider amenities, and vehicle acquisition costs.
	Annual operating and maintenance costs	Planning-level annual operation and maintenance costs in 2024 dollars.
	Cost effectiveness	Cost per rider in 2024 dollars.
	Potential funding	The proportion of the capital cost that could be paid by using known sources of funding
	Operating hours	Proposed hours of operation upon full build-out.
	Operating frequency	Proposed service frequency upon full-build out.

*Walking distance is measured as a 10-minute walkshed around a stop/station.



Appendix B:
EXISTING CONDITIONS REPORT

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Executive Summary

The NYS 31 corridor is a critical east-west corridor in northern Onondaga County that provides connections between several activity and growth areas including the Village of Baldwinsville and the towns of Lysander, Clay, and Cicero. The corridor is about to undergo a significant transformation spurred by the proposed Micron semiconductor chip manufacturing facility (Micron facility) that will lead to substantial economic growth opportunities. At full build-out, the Micron facility is expected to employ 9,000 people and generate over an estimated 40,000 jobs at secondary businesses. This will lead to increased demand for commercial, industrial, and residential development along and around the corridor. This type of growth will require real investment in creative mobility solutions designed to move people (rather than vehicles) in a safe and efficient manner to avoid building large vehicle-clogged roadways. Relying on adding additional vehicular capacity alone will hinder development potential, impact quality of life, and lead to a less equitable and sustainable transportation system.

However, in order to understand where the NYS 31 corridor is going, it is important to understand current conditions to establish a baseline with regards to existing demographics, housing, employment, land use, zoning, traffic volumes, pedestrian and bicycle facilities, transit services and facilities, and environmental justice. The purpose of this report is to summarize existing conditions within a ½ mile of the study corridor and identify existing needs and opportunities.

Analysis Findings

Activity along the corridor is generated by residents living along the corridor, workers accessing employment such as the Anheuser-Busch Budweiser plant, and visitors accessing retail and other amenities, such as the large box retail development in Clay, west of NY 481. The generally low-density environment along the corridor and limited modal options means that most trips are occurring in private vehicles. The reliance on private vehicles also influences zoning and land use which, in turn, can influence demographics, employment, and mode share, and vice versa. Key data points to consider regarding the corridor are as follows:

- Approximately 12,063 residents live within ½ mile of the corridor with a relatively homogenous racial profile across all of the land use areas. Non-white populations make up less than 13% of the population corridor-wide.
- Approximately 6,103 daytime employees are employed along the corridor, with over 50% working within the low-density suburban areas within Lysander and Clay.
- Three strong centers identified in Plan Onondaga lay along the study corridor: Baldwinsville, Great Northern Mall, and Cicero.



- There is a significant amount of vacant and agricultural land along the corridor that would likely be targeted for development in the future.
- Based on 2021 traffic volumes from NYSDOT, the highest segment volume (27,992 vehicles per day) is experienced in the center of the study corridor, just west of NYS 481. This peak in volume is likely due to the large box shopping centers that attract trips from the surrounding areas. Lower volumes are experienced on either end of the study corridor where AADT is around 10,000 vehicles per day.
- 46% of trips starting within Census blocks along the corridor also end within Census blocks along the corridor, reflecting a significant amount of east-west traffic being served by NYS 31.
- Crash clusters can be found in downtown Baldwinsville, the area around the intersection between NYS 31 and NYS 481, and the area around the I-81 interchange with NYS 31, including the intersection of US 11 and NYS 31. There were two fatal crashes and 52 serious injury crashes directly on the corridor.
- The highest density of crashes involving people walking or bicycling in the Study Area occurs in Baldwinsville, likely due to the higher level of pedestrian activity in that area. There were two active transportation crashes that resulted in a serious injury on NYS 31, and there were three fatalities from crashes involving pedestrians within the study area between 2018 and 2022.
- An equity analysis identified low-income populations in the Baldwinsville area in the immediate vicinity of NYS Route 31. The assessment also identified concentrations of seniors who would also experience improved mobility from future transit service. However, there are no “disadvantaged” Census tracts as defined by the USDOT and CEQ demographic tools, nor are there notable minority populations or populations with limited English proficiency.

Needs and Opportunities

Based on the analysis presented in the above sections, the following existing needs and opportunities were identified that should be considered on a high level in the development of transit alternatives and refined through future efforts outside of this study:

- **Modify existing zoning ordinances to permit cluster development along the corridor that will support future stations.** Encourage municipalities to begin thinking about where pockets of transit supportive densities should be located that can support future high-quality transit.
- **Support higher-density development in the Strong Centers identified in Plan Onondaga.** Utilize transit, pedestrian, and bicycle infrastructure to provide modal options that support higher development densities within the Strong Centers.



- **Ensure that the limited vulnerable populations along the corridor are considered in the future transit services.** This would include involving them in the planning and future design of the service, as well as to ensure that neighborhoods are adequately connected to the future transit service. Enhancing existing transit services to these areas may also provide the foundation for higher-quality transit services in the future.
- **Consider starting to build a culture of transit use by assessing the potential for an east-west service.** An initial area that could be targeted is the section of the corridor between Baldwinsville and the retail area around the Great Northern Mall. In fact, Centro, as part of the bus network redesign, is planning to modify bus route 82 so that it connects these two activity nodes via NYS 31. This could potentially provide a base in which to increase service operations along the study corridor as growth demands.
- **Create a corridor pedestrian and bicycle “master plan” that outlines recommended facilities for pedestrian and bicyclists.** A “master plan” will help the NYSDOT and municipalities along the corridor plan for the needs of pedestrians and bicyclists when conducting roadway improvement projects or to ensure that developers install recommended pedestrian and bicycle infrastructure along their site frontages. Prioritize filling gaps in the existing network in more dense areas and/or in areas with a history of pedestrian and/or bicycle crashes.
- **Address pedestrian and bicycle crash clusters.** Work with NYSDOT to identify “quick wins” to enhance pedestrian and bicycle safety within the crash clusters identified in Figure 15.
- **Provide for “missing middle” housing along the corridor.** Most of the residential units along the corridor are single family residential, with some limited low-rise apartments. As the corridor diversifies with future development, demand for various types of housing at different levels of affordability will also increase. Missing middle housing consists of condos, townhomes, cottages, duplexes, triplexes, etc. That are intended to provide more affordable options for housing.



1 Introduction

The NYS 31 corridor is a critical east-west corridor in northern Onondaga County that provides connections between several activity and growth areas including the Village of Baldwinsville and the towns of Lysander, Clay, and Cicero. The corridor operates in a variety of land use areas and configurations, ranging from a two-lane roadway in rural environments, as well as in traditional village areas like Baldwinsville, to a multi-lane arterial in areas with suburban-style retail centers in Cicero and Clay. Overall, the corridor is auto-centric with low-density development and extremely limited transit, pedestrian, and bicycle accommodations.

The NYS 31 corridor is about to undergo a significant transformation spurred by the proposed Micron semiconductor chip manufacturing facility (Micron facility) that will lead to substantial economic growth opportunities. At full build-out, the Micron facility is expected to employ 9,000 people and generate over an estimated 40,000 jobs at secondary businesses. This will lead to increased demand for commercial, industrial, and residential development along and around the corridor. This type of growth will require real investment in creative mobility solutions designed to move people (rather than vehicles) in a safe and efficient manner to avoid building large vehicle-clogged roadways. Relying on adding additional vehicular capacity alone will hinder development potential, impact quality of life, and lead to a less equitable and sustainable transportation system.

The Micron facility is going to be built in phases over time, and thus so will the secondary growth including supporting industry, businesses, and residential. Therefore, any multimodal solutions to reduce vehicle demand and associated roadway improvements will need to be scalable with public transit solutions that can support demand. As such, there will be a need to use the transit solution to guide that development, for example, through transit-oriented development (TOD) opportunities. Furthermore, although this study effort is being spurred by the potential for growth, there are existing mobility deficiencies to, from, and along the corridor that will only be exacerbated by this growth. Understanding and addressing the existing issues first can establish a strong foundation of multi-modal activity on the corridor that would then support additional improvements as the Micron site and ancillary development progresses.

However, in order to understand where the NYS 31 corridor is going, it is important to understand current conditions to establish a baseline with regards to existing demographics, housing, employment, land use, zoning, traffic volumes, pedestrian and bicycle facilities, transit services and facilities, and environmental justice. The purpose of this report is to summarize existing conditions within a ½ mile of the study corridor and identify existing needs and opportunities.



2 Corridor Activity

Activity along the corridor is generated by residents living along the corridor, workers accessing employment such as the Anheuser-Busch Budweiser plant, and visitors accessing retail and other amenities, such as the large box retail development in Clay, west of NY 481. The generally low-density environment along the corridor and limited modal options means that most trips are occurring in private vehicles. The reliance on private vehicles also influences zoning and land use which, in turn, can influence demographics, employment, and mode share, and vice versa. This section reviews activity data on the corridor including residential and daytime employment, housing, community facilities and centers, zoning, and land use.

2.1 Residential Population and Daytime Employment

Residential population and daytime employment were evaluated within a one-half-mile buffer around the NYS 31 study corridor (Figure 1). The corridor was split into four different segments, by three different types of land use: village, suburban low-density, and rural. Within the one-half-mile buffer there are a total of 12,063 residents with a relatively homogenous racial profile across all of the land use areas. Non-white populations make up less than 13% of the population corridor-wide. The highest corridor-adjacent population lies within the low-density suburban area of the corridor that runs from Lysander through Clay, with much of the population residing on the south side of the corridor.

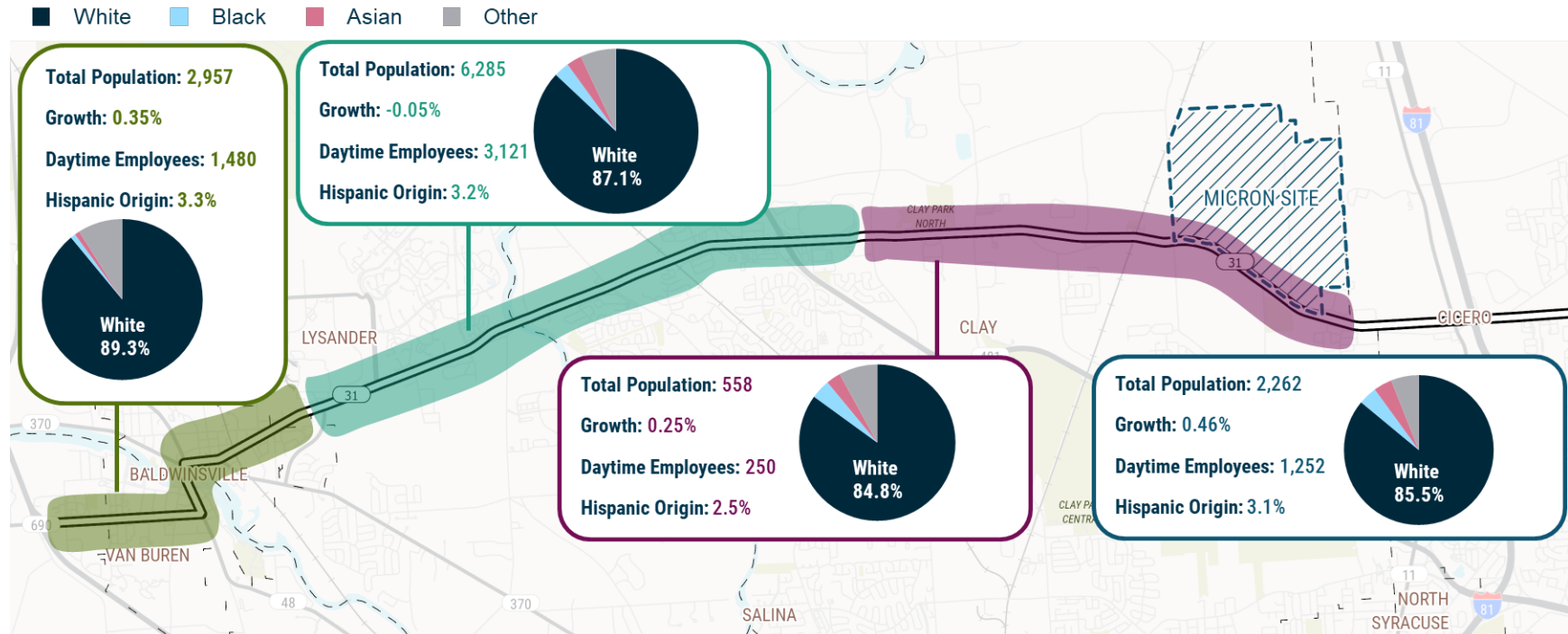
Today, approximately 6,103 daytime employees are employed along the corridor, with over 50% working within the low-density suburban areas within Lysander and Clay. The section of the corridor where the proposed Micron facility would be located currently has 250 employees, but 9,000 additional jobs are expected to be created with 40,000 jobs created in total across the region due to the development of the Micron facility.

ESRI's population growth forecast, based on extrapolating current demographic trends, combined with construction and development data, predicts a relatively low population growth of 0.9% between 2023 and 2028, if the area continues at current trends without the Micron facility (Source: ESRI Business Analyst, American Community Survey 2023).



APPENDIX B: Existing Conditions Report
2 Corridor Activity

Figure 1: Corridor Residential Population and Daytime Employment by Land Use Area within ½ Mile of the Corridor



Source: ESRI Business Analyst, American Community Survey 2023

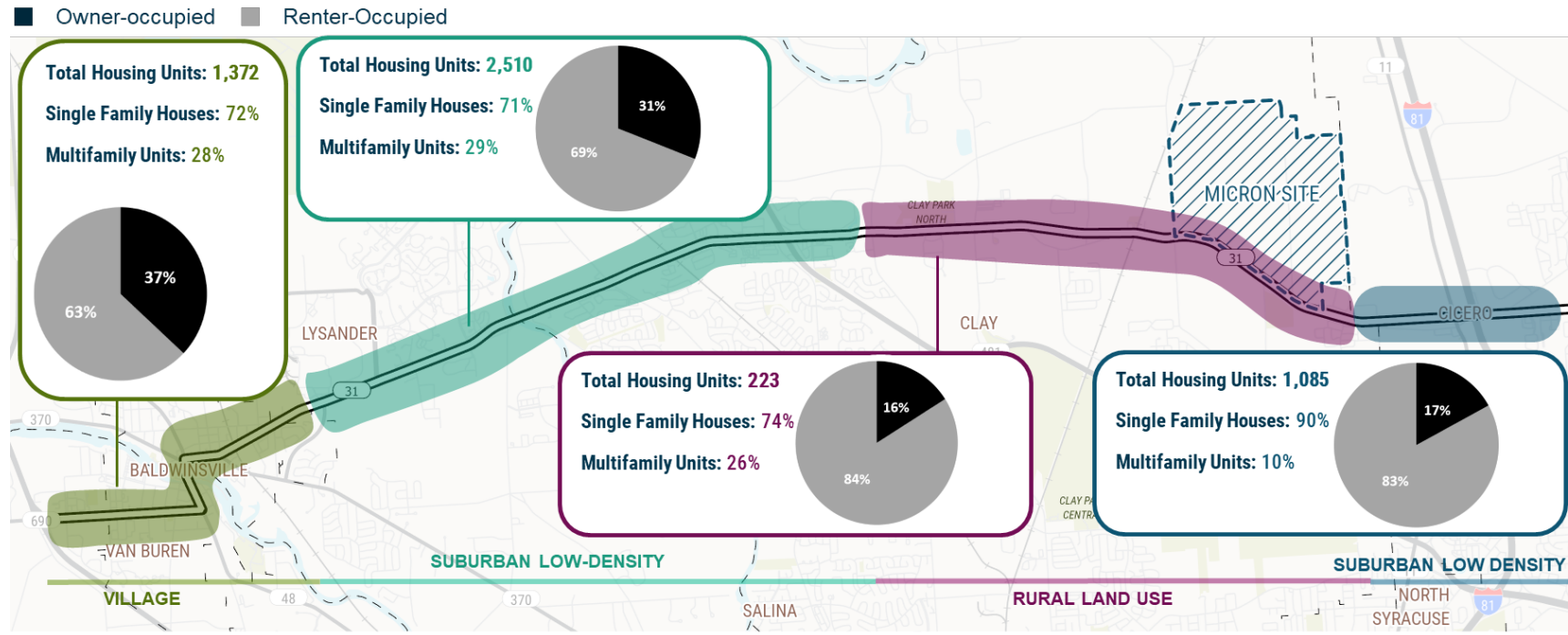
2.2 Housing

Within the one-half-mile boundary of the NYS 31 corridor, there are approximately 5,250 housing units, 75% of which are single-family housing and 68% are owner-occupied (Figure 2). Out of the 32% of renting households, 42% are cost-burdened, paying more than 30% of their household income towards rent. The area near the proposed Micron facility is more rural than the rest of the corridor with less housing than the other sections. However, it is likely that housing demand will increase substantially due to the construction of the facility, and there is a clear need for more “missing middle” housing such as compact homes, condos, duplexes, and triplexes.



**APPENDIX B: Existing Conditions Report
2 Corridor Activity**

Figure 2: Housing within ½ Mile of the Corridor



Source: ESRI Business Analyst, American Community Survey 2023

2.3 Community Facilities and Centers

Plan Onondaga lays out desires for strong centers across the region, composed of walkable, mixed-use and people-oriented places (Figure 3). Within the corridor, some centers such as Baldwinsville are closer to these goals, whereas the Cicero Center and Great Northern Mall are still heavily auto-oriented and single-use. However, the developer of the Great Northern Mall has revealed redevelopment plans for the property that includes up to 1,700 residential units, six hotels, a medical hub, and 1.4 million square feet of new retail, office, and entertainment space. If the development



APPENDIX B: Existing Conditions Report 2 Corridor Activity

follows as planned, the Great Northern Mall center will be a key activity node in any of the transit alternatives evaluated for this study. This redevelopment would also likely set the tone for cluster development elsewhere on the corridor.

Figure 3: Strong Centers



Source: Plan Onondaga

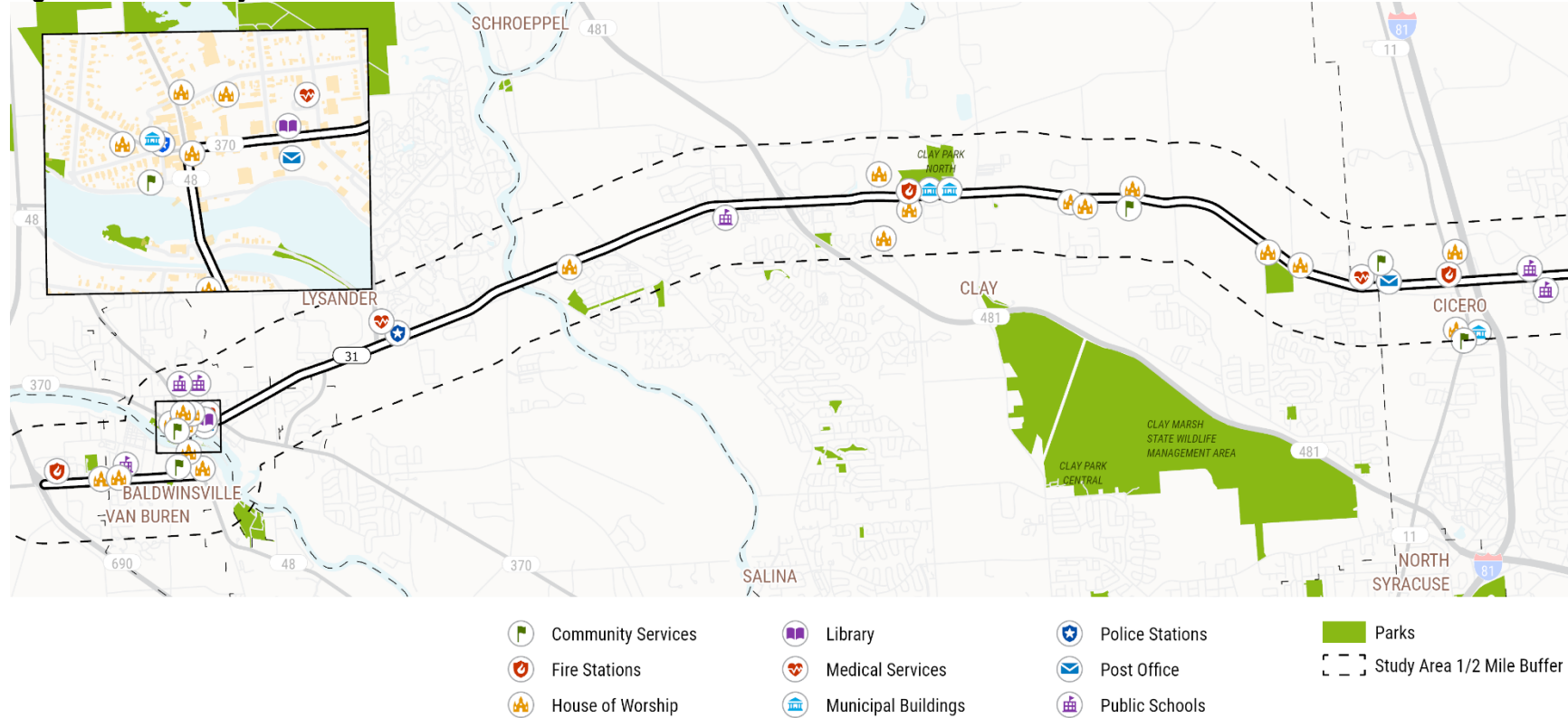
The location of community assets like medical facilities, schools, libraries, parks, and other cultural resources along the NYS 31 corridor were evaluated (Figure 4). Apart from Downtown Baldwinsville shown in the inset, there are no highly concentrated and walkable clusters of community



APPENDIX B: Existing Conditions Report
2 Corridor Activity

assets along the NYS 31 corridor, reflecting the low population density and auto-centric development that characterizes the area. Less dense clusters of community assets are present near Clay Park and the Interstate 81 interchange.

Figure 4: Community Assets Within a ½ Mile Buffer



Source: Google Earth

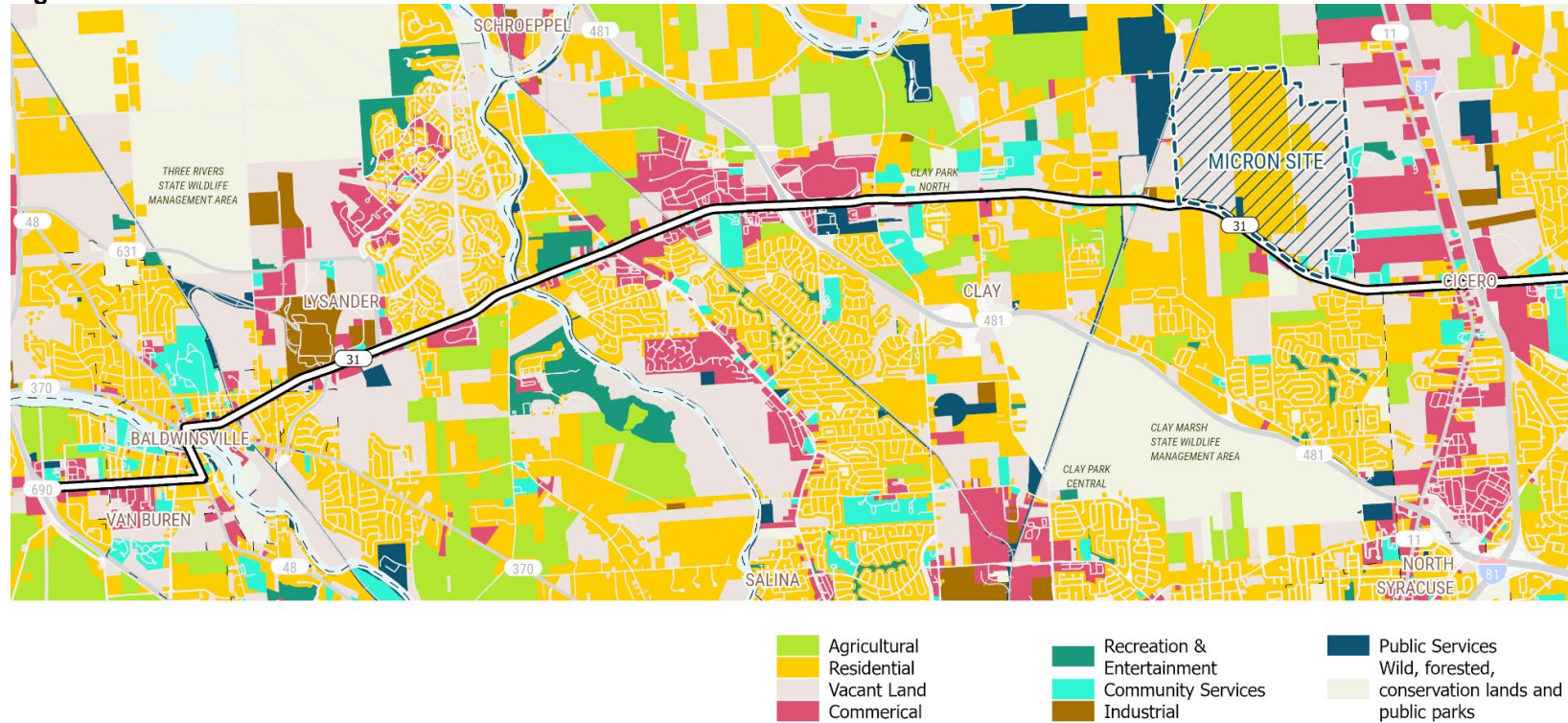


APPENDIX B: Existing Conditions Report
2 Corridor Activity

2.4 Land Use

In terms of developed land, most of the land area in the study is either residential, agricultural, or vacant, with pockets of significant commercial uses near Baldwinsville, the Great Northern Mall, and US 11 (Figure 6). Another commercial corridor exists along Oswego Road in Baldwinsville. Industrial uses are dispersed, other than a cluster of warehouse facilities in Lysander. The large amount of vacant and agricultural land indicates areas where development would be likely. This highlights the need to carefully consider future land use in order to prevent more sprawl-style development that is auto-centric.

Figure 5: Area Land Use



Source: NYS Statewide Parcel Program, 2023

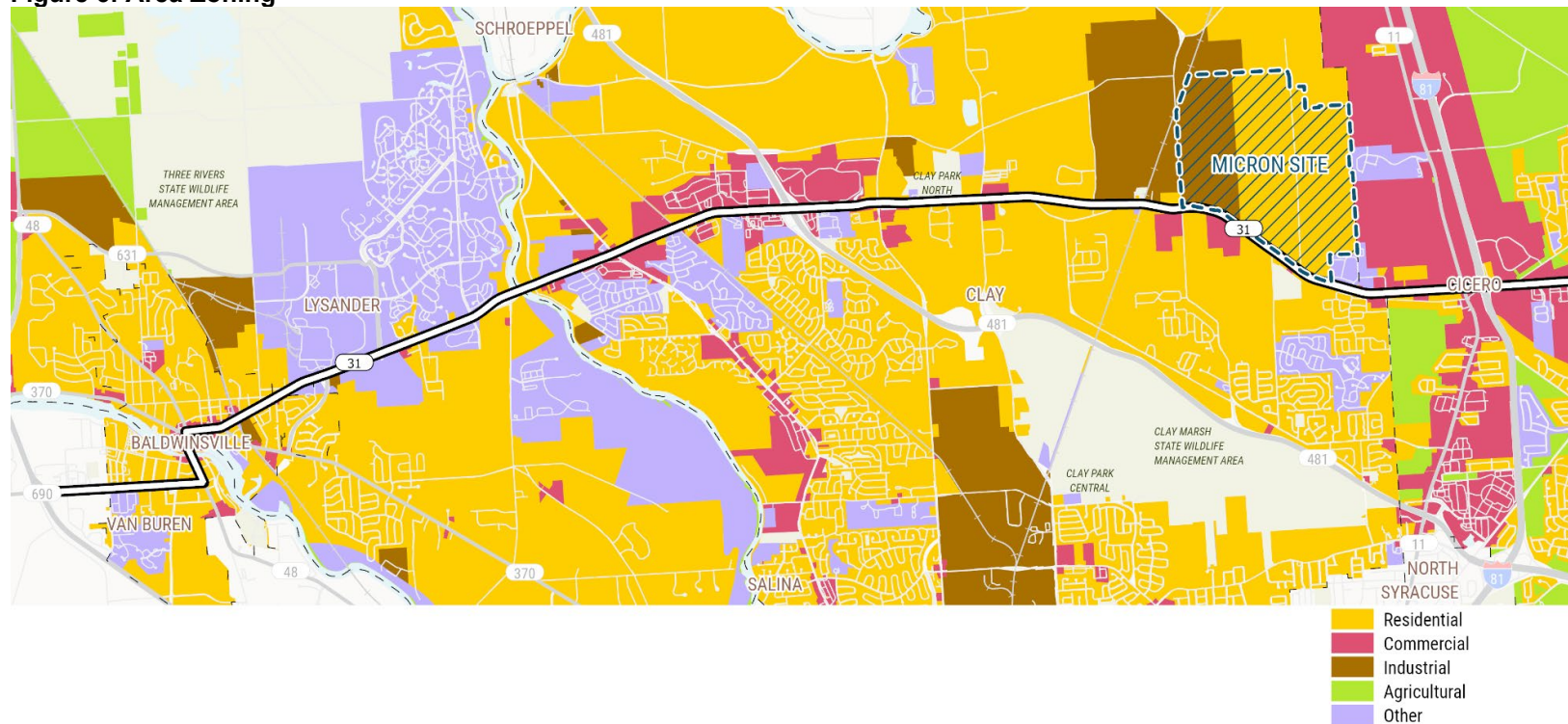


APPENDIX B: Existing Conditions Report
2 Corridor Activity

2.5 Zoning

Most of the corridor is zoned for residential, and much of this zoning is for low-density housing, such as single-family or RA-100 (residential/agricultural) (Figure 5). Areas within the *Other* zoning category are mostly Planned Unit Development (PUD) zones and Planned Development District (PDD) zones, with more flexibility towards a mix of uses. Baldwinsville allows denser housing, especially in its downtown. The towns of Clay and Cicero have recently completed comprehensive plan revisions which allow for pockets of higher density. Many of these areas are along NYS 31 corridor, including surrounding the Great Northern Mall at the intersection of NYS 31 and NYS 481 in Clay, and the area around I-81 and US 11 in Cicero.

Figure 6: Area Zoning



Source: Municipalities of Lysander, Baldwinsville, Cicero. Clay zoning from Syracuse Community Geography.



3 Corridor Access

The primary mode of access along the NYS 31 corridor is private automobile due to the low-density of development and limited alternative options. There are limited pedestrian and bicycle facilities along the corridor, and transit is limited to a few spokes that extend into the study area that connect back to Downtown Syracuse. This section identifies the existing vehicular, pedestrian, bicycle, and transit facilities/services on the corridor.

3.1 Vehicle Mode

NYS 31 is a key east-west thoroughfare, with significant traffic connecting to three regional north-south routes: I-81, NYS 481, and NYS 690 which are oriented to connect communities to the north with the City of Syracuse. Based on 2021 traffic volumes from NYSDOT, the highest segment volume (27,992 vehicles per day) is experienced in the center of the study corridor, just west of NYS 481 (Figure 7). This peak in volume is likely due to the large box shopping centers that attract trips from the surrounding areas, which is supported by the NYS 481 volumes decreasing north of NYS 31, past the Great Northern Mall. Lower volumes are experienced on either end of the study corridor where AADT is around 10,000 vehicles per day.

This corridor is not a significant freight route. Truck traffic on NYS 31 is below 3% of the volume to the east and 6% to the west of NYS 481, compared to 12% of the volume on I-81. However, it is likely that truck traffic will increase on the corridor as the Micron facility develops, along with adjacent supporting industry.

3.1.1 ORIGINS AND DESTINATIONS ALONG THE CORRIDOR

Replica, a location-based services (LBS) data provider, was used to evaluate the origins and destinations of trips to and from the US Census block groups that immediately line the corridor. They use a wide variety of data sources such as the Census, cell phone locations, and connected vehicle data, to create a “replica” population of the US and model or estimate their mobility patterns and travel behaviors. The analysis represents all trips ending in a Census block group that lies along the NYS 31 corridor on a typical weekday. Figure 8 and Figure 9 show the origin of trips to the study area by Census block group.

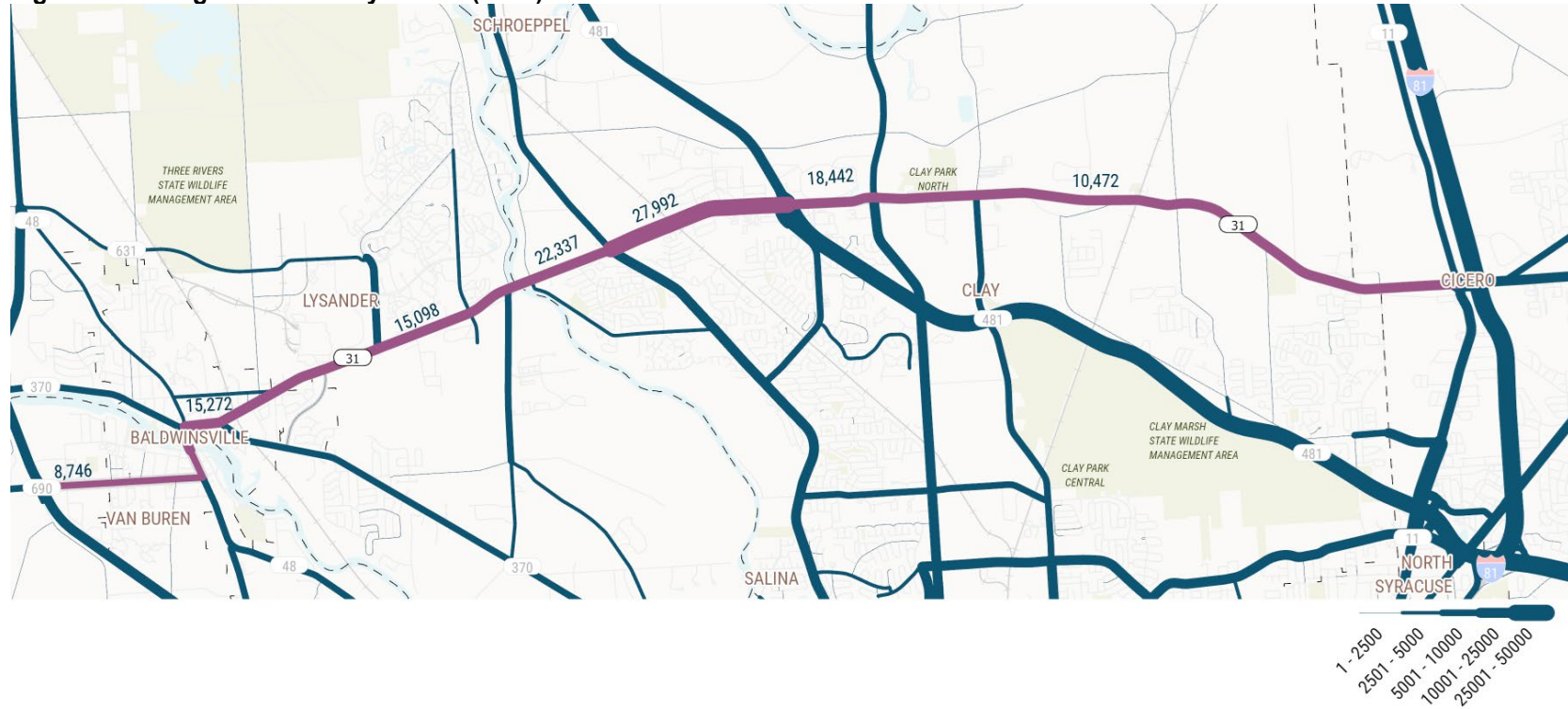
Figure 9 shows that most trips originate from proximate block groups in a radial fashion, with a higher number of trips starting closer to Syracuse. Some trips originate from farther out such as near the City of Oswego or the Town of Onondaga. The data also shows that, of trips that end along



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the corridor, 46% also start in the area, reflecting a significant amount of east-west traffic being served by NYS 31. While there is some traffic from downtown Syracuse, it is not significantly more than from block groups located closer to the study corridor.

Figure 7: Average Annual Daily Traffic (2021)

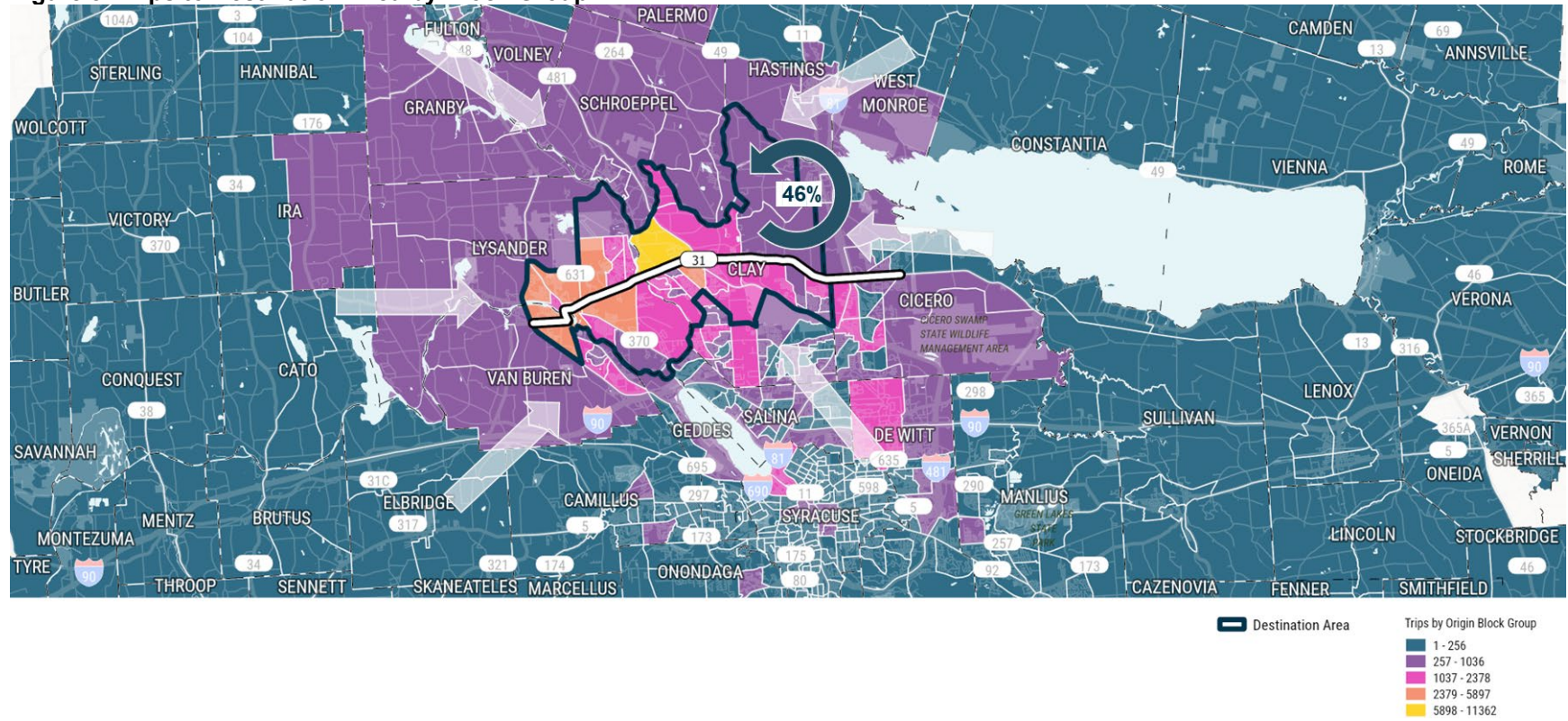


Source: Traffic Data Viewer, NYS DOT (2021)



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Figure 8: Trips to Destination Area by Block Group

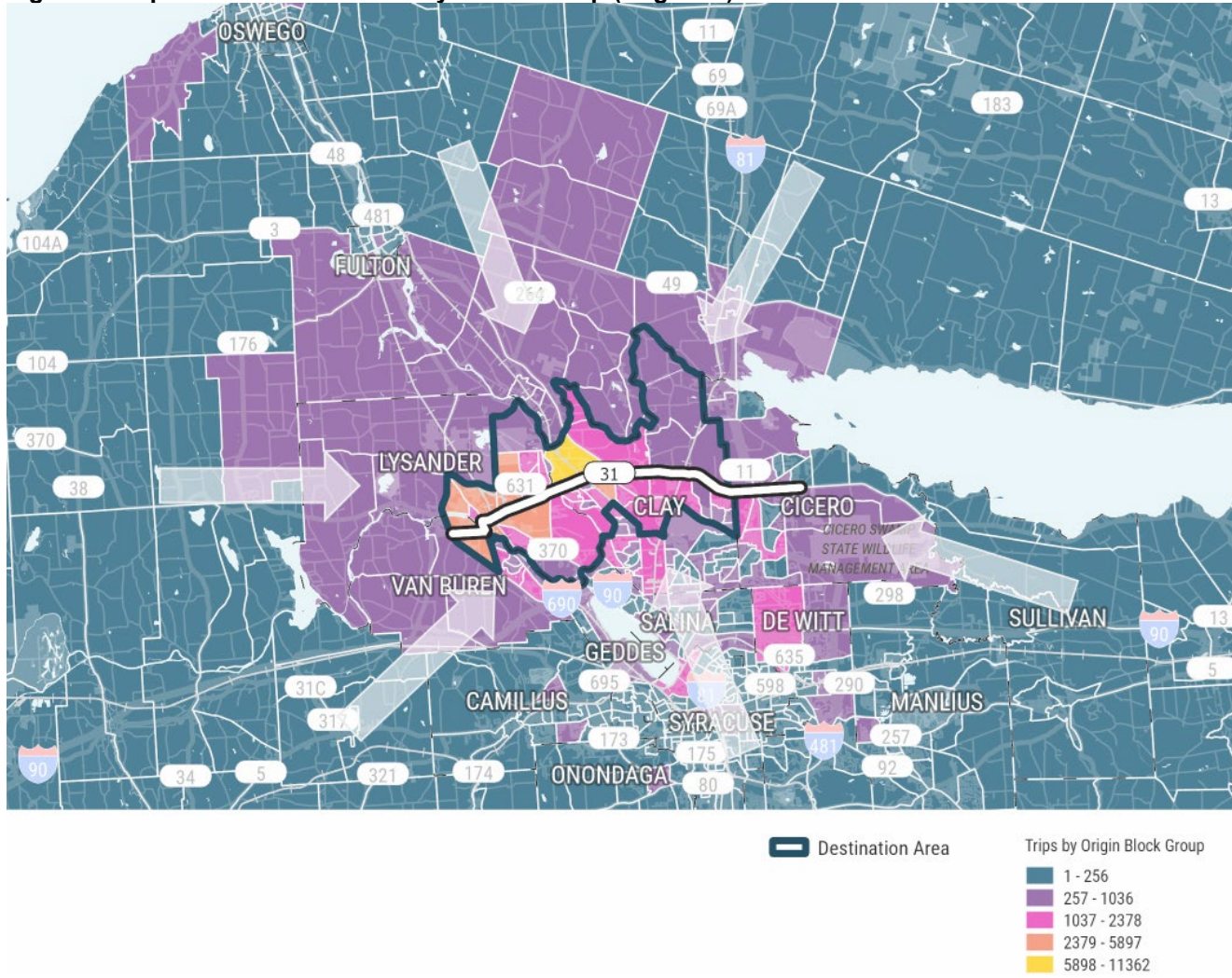


Source: Replica Daily (Spring 2023)



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Figure 9: Trips to Destination Area by Block Group (Regional)



Source: Replica Daily (Spring 2023)

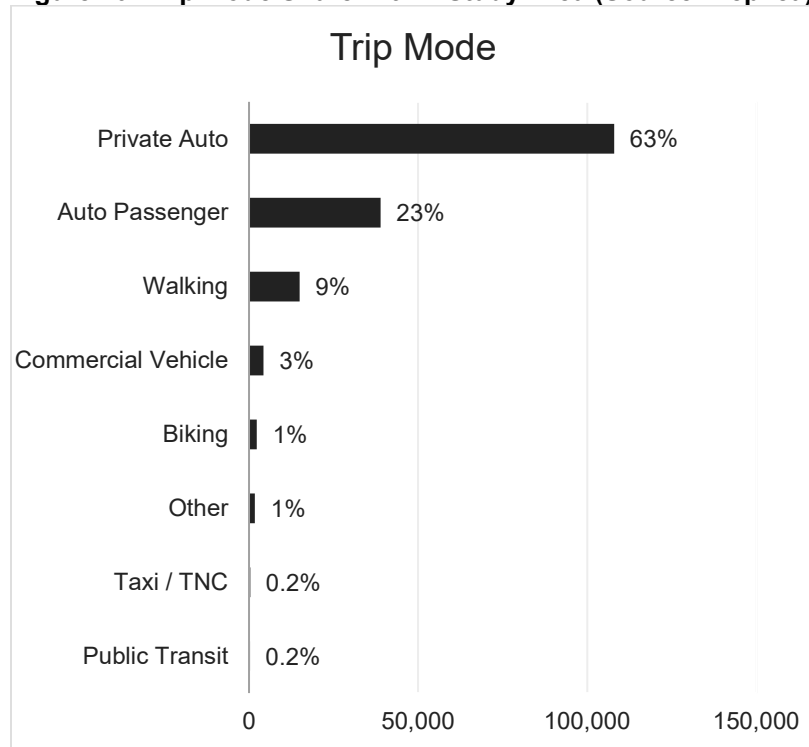


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3.1.2 MODE SHARE

Reflecting the auto-oriented nature of the corridor, the Replica analysis shows that 89% of person trips ending in the area are made with cars (private auto/vehicle driver: 63%, auto passenger: 23%) or commercial vehicles (3%) (Figure 10). Transit and taxi/transportation network company (TNC) trips represent less than half of one percent. Active modes (pedestrian and bicycle) play a minor role, with 9% of trips made by walking and 1% bicycling. The more walkable areas such as the Villages of Baldwinsville and Liverpool likely contribute most to this active mode share.

Figure 10: Trip Mode Share within Study Area (Source: Replica)

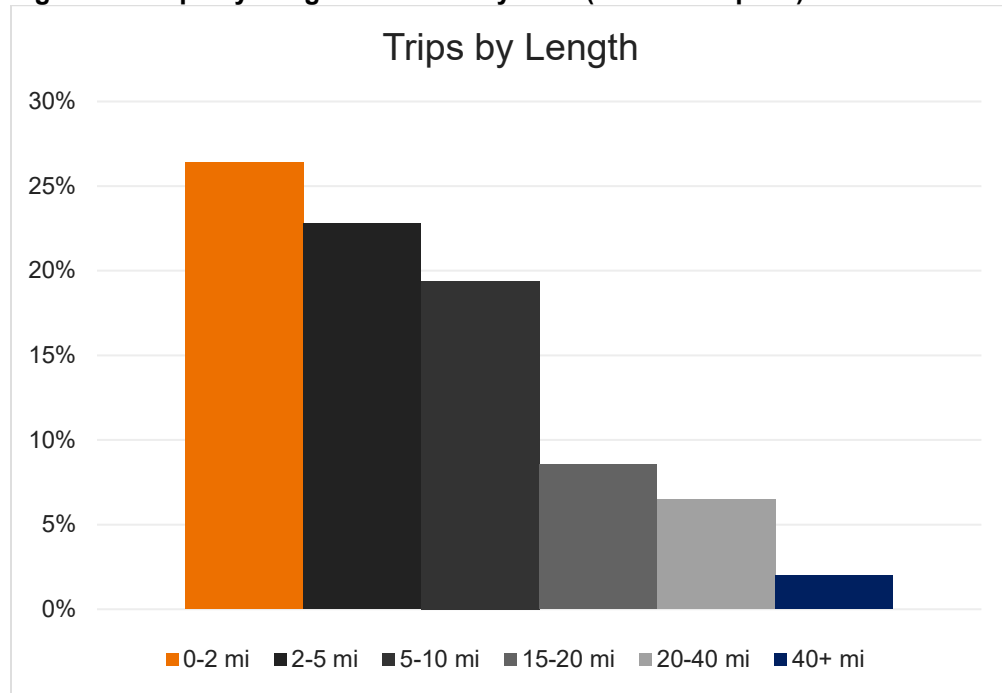


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3.1.3 TRIP LENGTH

Almost half of the trips ending in the Census block groups along the corridor are less than five miles in length (Figure 11). This matches the finding that about half of the trips that end in the corridor area start elsewhere within the corridor area. Syracuse is over 13 miles away, so most trips, even those coming from outside of the corridor area, are coming from nearer communities, especially suburbs closer to Clay. More of the short trips tend to be walking trips; walking is just shy of 30% of the mode share for trips less than 2 miles, whereas for trips that are 2-5 miles, walking drops to 2.3%.

Figure 11: Trips by Length within Study Area (Source: Replica)

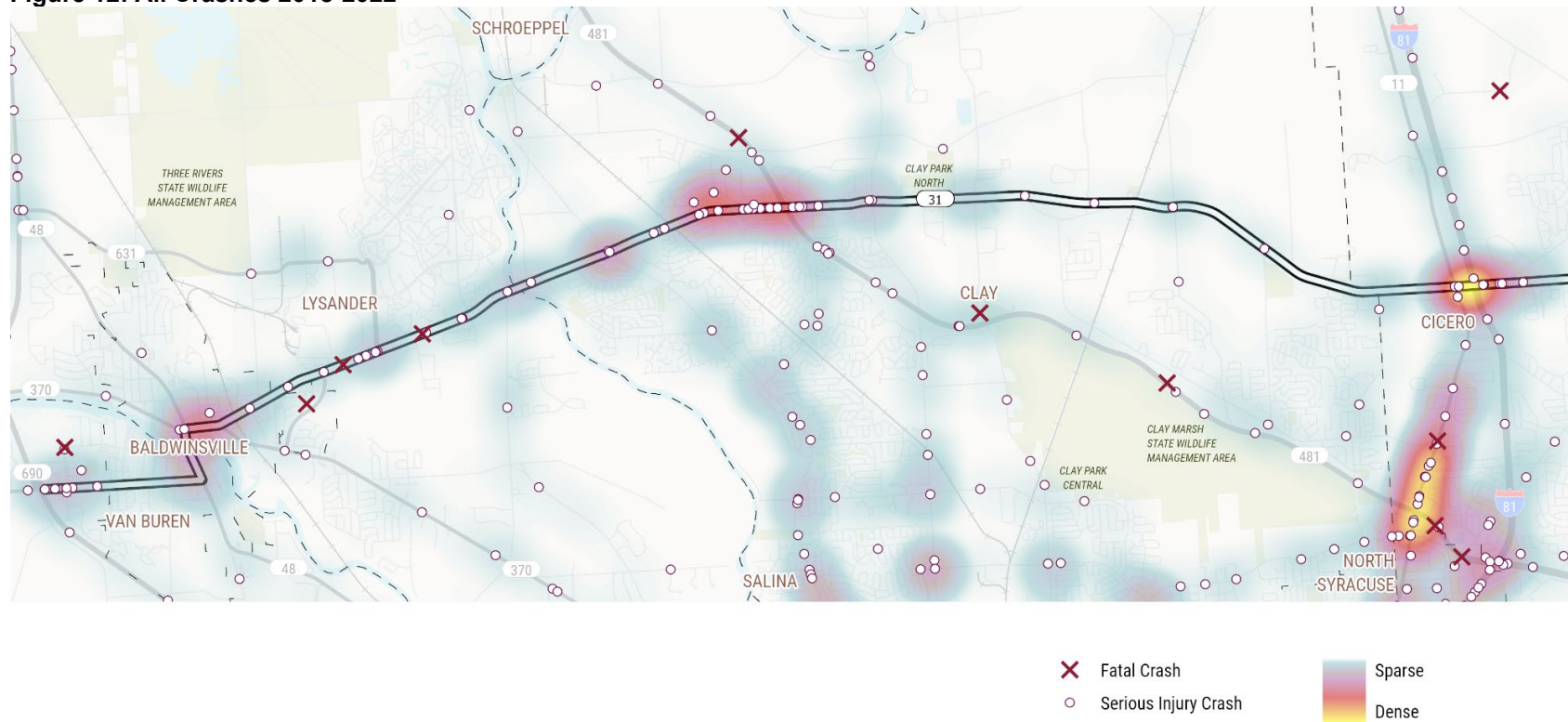


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3.1.4 CRASHES

Figure 12 displays the crash history for the most recent five years for which data is available. This dataset includes all crash types from property damage only to injury and fatal crashes. Based on crash data for the period between 2018 and 2022, clearly identifiable crash clusters can be found in downtown Baldwinsville, the area around the intersection between NYS 31 and NYS 481, and the area around the I-81 interchange with NYS 31, including the intersection of US 11 and NYS 31. There were two fatal crashes and 52 serious injury crashes directly on the corridor.

Figure 12: All Crashes 2018-2022



Source: NYSDOT Crash Location and Engineering Analysis Repository via SMTc

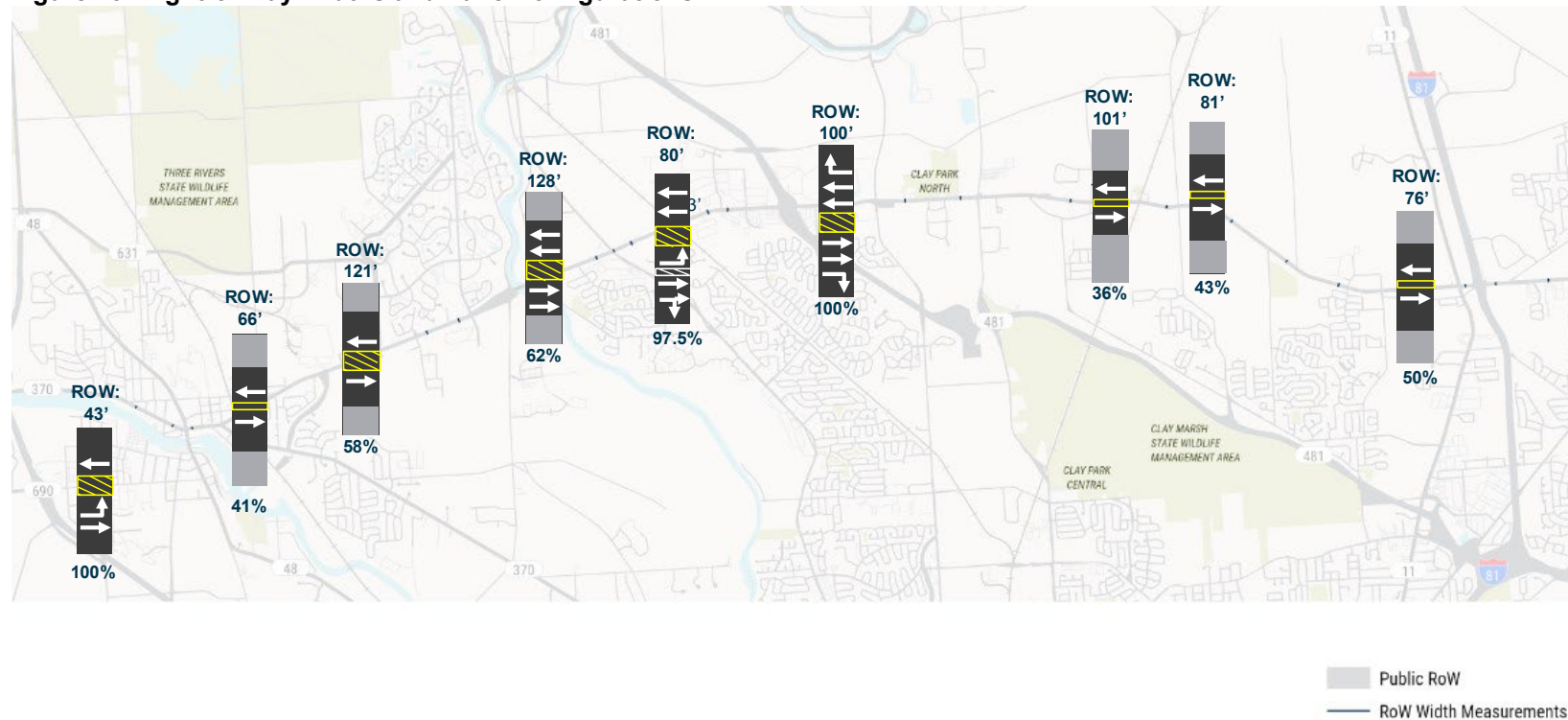


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3.1.5 RIGHT-OF-WAY AND CROSS-SECTIONS

The NYS 31 study corridor has either one or two vehicle travel lanes in each direction throughout. In the center of the segment, NYS 31 becomes a four-lane roadway (two lanes in each direction), with a significant median and almost all right-of-way (ROW) occupied by the roadway (Figure 13). This four-lane segment extends from Byron Road/Speech Drive in Baldwinsville in the west to Mud Creek/Morgan Road in Clay in the east. For the central segment, including areas further east and west of the four-lane configuration, the full ROW width is around 100 feet. The ROW width reaches a maximum of 128 feet around Seneca River in Belgium. At the eastern and western ends of the corridor both the ROW width and the lane configuration are narrower, with a ROW width between 43 and 81 feet and one lane in each direction.

Figure 13: Right-of-way Widths and Lane Configurations



Source: Onondaga County Parcels (2023). Google Earth.



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3.2 Non-Motorized Modes

Non-motorized modes of travel – including walking and bicycling, while less prevalent than driving, do play a role in the Study Area, especially around the Strong Centers, depicted in Figure 14. This section details the facilities available for the non-motorized modes of travel, along with related data on the safety of active modes, that is crashes involving people walking and bicycling.

3.2.1 PEDESTRIAN AND BICYCLE ACCOMODATIONS

Figure 14: Pedestrian and Bicycle Accommodations



Source: NYSDOT for Sidewalks, Crosswalks from Google Street View/Earth



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Outside of Baldwinsville, on the western end of the study area and in Cicero on the east end of the study area, there are few sidewalks along the study corridor (Figure 14). Between Clay Park and the border with Cicero, there are also few sidewalks and no crosswalks on NYS 31.

The corridor is designated as part of NYS Bike Route 5, a signed on-street bike route linking Niagara Falls to the Massachusetts state line. However, other than a short section of multi-use pathway between Drake Landing Road and River Road, there are no designated bike accommodations within the study area. There are shoulder areas along the corridor between Baldwinsville and Clay (Oswego Road) as well as east of Morgan Road to Legionnaire Drive that could be used by bikes, but these shoulder areas are discontinuous and introduce conflicts with vehicles turning into and out of driveways and side streets.

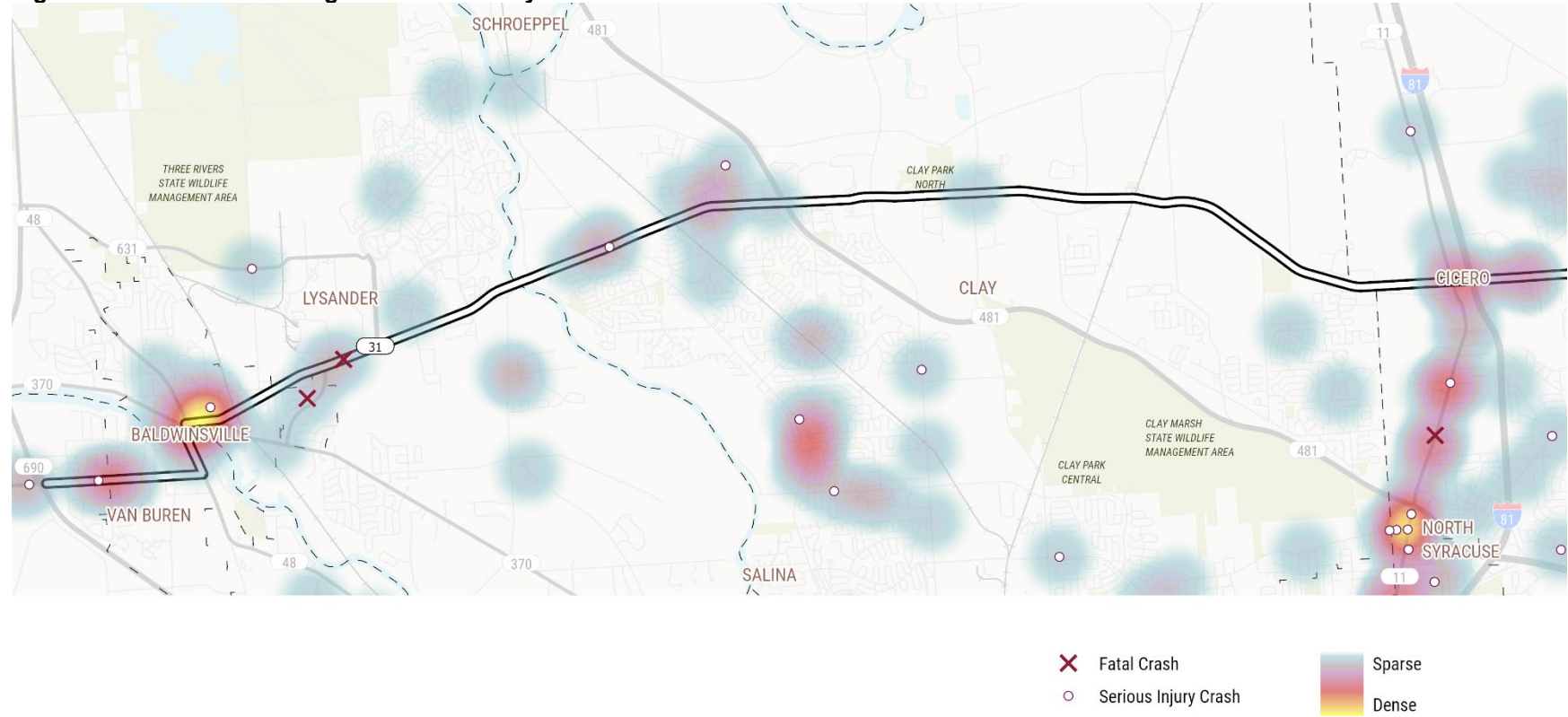
3.2.2 PEDESTRIAN AND BICYCLE CRASHES

The highest density of crashes involving people walking or bicycling in the Study Area occurs in Baldwinsville, likely due to the higher level of pedestrian activity in that area (Figure 15). Between NYS 31, NYS 481, and US 11, there are very few bike and pedestrian crashes, likely due to the highly auto-centric environment and lack of people travelling by active modes. There were two active transportation crashes that resulted in a serious injury on NYS 31. Overall, there were three fatalities from crashes involving pedestrians within the study area between 2018 and 2022.



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Figure 15: Crashes Involving Pedestrians/Bicyclists 2018-2022



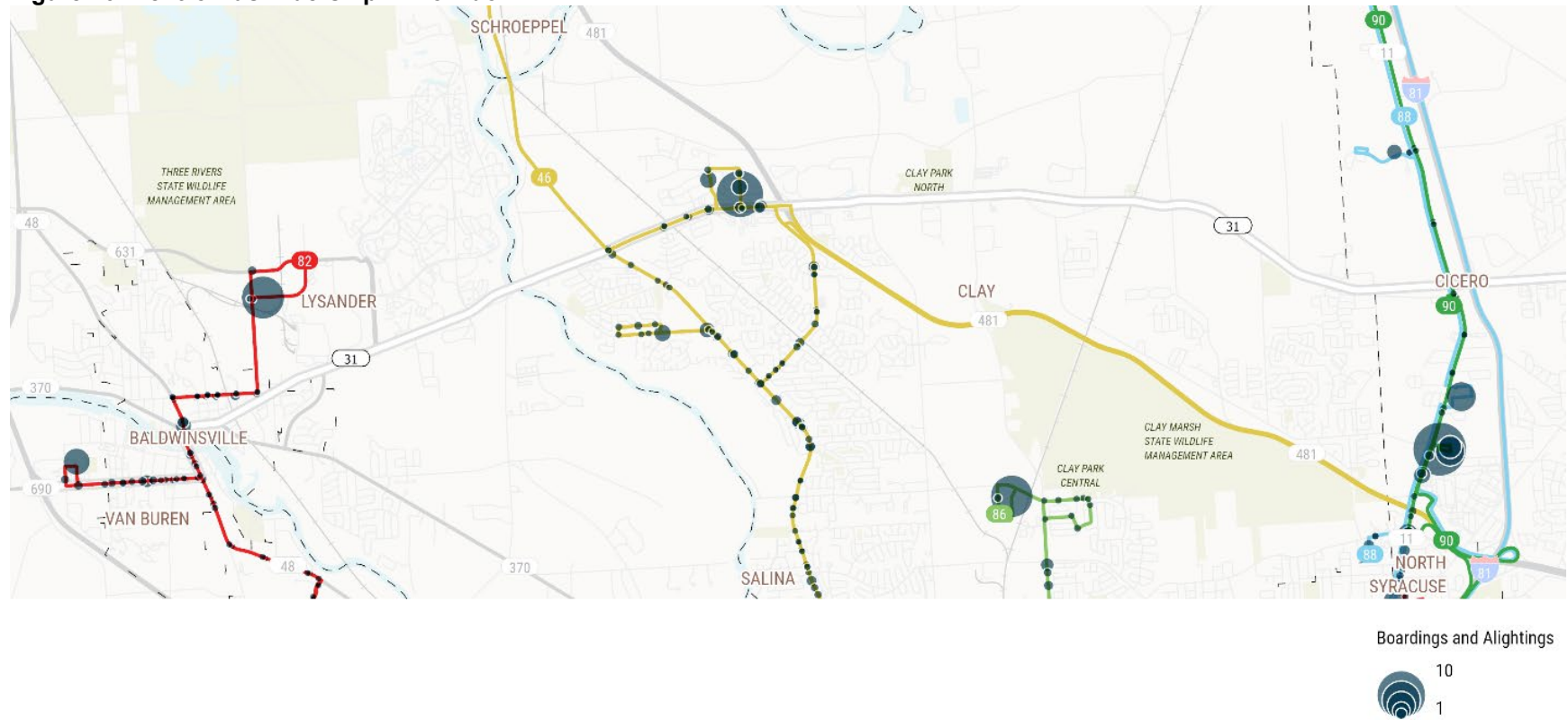
Source: NYSDOT Crash Location and Engineering Analysis Repository via SMTC



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3.3 Transit

Figure 16: Centro Bus Ridership in Corridor



Source: Centro Daily Bus Ridership (Boardings + Alightings) by Stop (2022)



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Figure 15 maps Centro bus routes that intersect with the study area including average daily boardings and alightings at each stop. The NYS 31 study corridor is intersected by Centro bus routes 46, 82, 88 and 90, but there is no continuous service along the corridor or interconnections between the routes. The existing bus routes are spokes of service extending outwards from Downtown Syracuse. All bus routes in the study area connect to the Syracuse Transit Center, except for the 90 (Wegman’s Shopper). The bus ridership in the study area is concentrated around the retail centers in the area around the Great Northern Mall, the Anheuser- Busch Budweiser plant in Lysander, and the Tops Center in Baldwinsville.

Compared to the Centro system as a whole, ridership within the study area represents less than 1% of the Centro system ridership (Table 1). Private vehicles serve the transportation needs of residents far more than the bus system. This matches with the Replica finding shown in section 3.1.2 Mode Share, which reported that only 0.2% of trips within the study area use public transit.

Looking at bus service in the study area, only route 46 operates all seven days of the week (Table 2). Peak frequency is typically one hour or longer, so bus riders need to plan heavily around the bus schedule. There can be often only one or two buses during the peak periods such as 6:00 to 9:00 am or 4:00 to 7:00 pm, with evening and late-night services often non-existent.

Table 1: Ridership Comparison between Route 31, the Study Area, and Systemwide

Geography	Centro Daily Ridership (Boardings+ Alightings)	% of Centro System Daily Ridership
Route 31 (stops along the corridor)	18	0.06%
Study Area (visible in the extent of Figure 16)	143	0.50%
Centro System	28,422	100%

Source: Centro Daily Bus Ridership (Boardings + Alightings) by Stop (2022)

Table 2: Service to the Study Area

Route:	46: Oswego - Syracuse	82: Lakeview Pk Fairgrounds	88: Central Square	90: Wegmans Shopper
Days of Operation	Mon-Sun	Mon-Fri	Mon-Fri	Tuesday to Cicero Wegmans
Hours of Operation	6am-7pm	5am – 5pm	6am-6pm	11am-2pm
Peak Frequency	1h to 1h30	30m-2h	1h20	NA*
Off-Peak Frequency	2h to 3h	4h-5h	4h-5h	NA*

Peak: 6-9am and 4-7pm *Sy 90 has 3 sub routes leaving once every Tuesday, connects to other Wegmans outside of the study area on other days of the week. Source: Centro



4 Equity Assessment

The primary purpose of this equity assessment is to evaluate existing socioeconomic conditions along the project corridor in support of the larger Transit Corridor Assessment. Equity is crucial in transportation improvements. Historically, Environmental Justice (EJ) and Title VI communities have been underrepresented in decisions about public infrastructure projects and disproportionately affected by adverse impacts. The proposed Micron facility and its associated economic growth have sparked discussions about equity. As such, this study prioritizes equitable project development and equitable interrelationships between transit service, mobility, and land use.

This assessment aims to identify socially vulnerable characteristics including low-income, People of Color, limited English proficiency, seniors, zero vehicle households, and those with disabilities. This data will be used to identify residents that have been traditionally underserved and may potentially be adversely or disproportionately affected by the proposed project. Demographic data will also be used to inform population and employment projections to determine transportation and housing needs. Moreover, it will inform opportunities for affordable housing and mixed-income development centered around transit. This equity assessment will guide subsequent tasks in the NYS Route 31 transit corridor assessment, helping identify barriers and develop mitigation strategies to alleviate undue burdens on vulnerable populations.

After quantifying existing needs, the project team will analyze population/housing data, employment projections, distribution of employment types, existing and planned development, identified redevelopment areas, and potential levels of development associated with the Micron facility. This information will be combined with other data sets to estimate potential transit demand, travel desire lines, and areas with capacity constraints. This data will be evaluated in consideration of the results of this equity assessment to develop a community profile and Transit Propensity Index which will help to guide the development and evaluation of transit options in subsequent phases.

4.1 Legislative Overview

4.1.1 FEDERAL REQUIREMENTS

The concept of Environmental Justice is rooted in Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color and national origin, and the National Environmental Policy Act (NEPA) of 1969 which requires federal agencies to integrate environmental values into their decision-making processes. There are also several Executive Orders (EOs) that guide the implementation of EJ principles and processes:



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- EO 12898¹ (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*) directs federal agencies to: “identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations; develop a strategy for implementing environmental justice; and promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.” (Federal Register, 1994)
- EO 13895² (*Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*) directs federal agencies to “assess whether underserved communities face systemic barriers in accessing benefits and opportunities through the federal government” resulting in each federal agency developing an Equity Action Plan to direct federal investment in and support for underserved communities (Federal Register, 2021a).
- EO 14008³ (*Tackling the Climate Crisis at Home and Abroad*) requires the development of “a strategy to address current and historic environmental injustice” and “clear performance metrics to ensure accountability” and publishing of an “annual public performance scorecard on its implementation” (Federal Register, 2021b). This order established the Justice40 Initiative which aims to ensure that 40% of the overall benefits from specific federal investments flow to disadvantaged communities that have historically faced underinvestment and pollution burdens. The Justice40 Initiative covers multiple investment categories including climate change; clean energy and energy efficiency; clean transit; affordable and sustainable housing; training and workforce development; remediation and reduction of legacy pollution; critical clean water and wastewater infrastructure. Additional details on Justice40 are contained in Section 4.3.1.
- EO 14091⁴ (*Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*) which builds on EO 13895 with, among other elements, a streamlined annual reporting process, a directive to expand procurement opportunities for small, disadvantaged businesses through grants, and fostering locally led equitable development in rural and urban areas (Federal Register, 2023a).

¹ [Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations](#)

² [Executive Order on Further Advancing Racial Equity and Support for Underserved Communities Through The Federal Government | The White House](#)

³ [Executive Order on Tackling the Climate Crisis at Home and Abroad | The White House](#)

⁴ [Executive Order On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government | The White House](#)



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- EO 14096⁵ (*Revitalizing Our Nation's Commitment to Environmental Justice for All*) affirms the federal government's commitment to confronting environmental justice through scientific research, high-quality data, meaningful engagement, and transparency and accountability (Federal Register, 2023b).

The U.S. Department of Transportation (USDOT) and the Federal Highway Administration (FHWA) developed rules and provide guidance on the implementation of EJ principles to ensure compliance with EO 12898 and other EOs on EJ:

- USDOT Order 5610.2(a)⁶ (Final Order to Address Environmental Justice in Minority Populations and Low-Income Populations), an update to the original 1997 Order 5610.2.
- FHWA's EJ Order 6640.23A⁷ (FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), an update to the original 1998 Order 6640.23

Both Orders describe the process for incorporating EJ principles into all USDOT and FHWA existing programs, projects, and activities.

4.1.2 STATE REQUIREMENTS

New York's "Cumulative Impacts Bill" was signed into law on December 31, 2022 and became effective in June 2023. This new law aims to ensure equitable sharing of responsibilities, burdens, and benefits related to environmental facilities across communities in New York. It addresses the inequitable pattern of siting facilities such as power plants, warehouses, and landfills in minority and economically distressed communities. Among other requirements, when issuing permits for projects that affect vulnerable communities, the law requires the Department of Environmental Conservation (DEC) to prepare an existing burden report and assess the cumulative pollution burden. No permit will be approved if it contributes to disproportionate or inequitable pollution burdens.⁸

4.2 Methodology

This equity assessment utilizes demographic data from the US Census American Community Survey (ACS) Five Year Datasets and 2020 US Census referenced in the online federal agency tools and indices discussed in Section 4.3. Care was taken to explore and identify

⁵ [Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All | The White House](#)

⁶ [Department of Transportation Order 5610.2\(a\) | US Department of Transportation](#)

⁷ [FHWA Order 6640.23A - Resources | Federal Highway Administration \(dot.gov\)](#)

⁸ [New York State Governor Hochul Signs the Cumulative Impacts Bill \(natlawreview.com\)](#)



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vulnerable populations that could be masked by aggregated data as well as areas where data suggests the presence of populations with EJ concerns but in actuality the data is influenced by other factors such as concentrations of retired seniors on fixed incomes.

4.3 Study Area Demographics

4.3.1 CEQ CLIMATE AND ECONOMIC JUSTICE SCREENING TOOL (CEJST)

The Council on Environmental Quality (CEQ) created the Climate and Economic Justice Screening Tool (CEJST) as part of the federal government's Justice40 Initiative. The tool identifies disadvantaged census tracts based on a number of social, economic, and environmental indicators.⁹ Federal agencies are directed to use CEJST as their primary tool for identifying disadvantaged communities.¹⁰

Based on CEJST mapping, there are **no Justice40 disadvantaged census tracts** along the NYS Route 31 corridor or immediate vicinity.

4.3.2 FHWA SCREENING TOOL FOR EQUITY ANALYSIS OF PROJECTS (STEAP)

The Screening Tool for Equity Analysis of Projects (STEAP), an extension of the Federal Highway Administration's (FHWA) HEPGIS web application, enables rapid screening of potential project locations. Its purpose is to support Title VI, EJ, and other socioeconomic data analyses. Project proponents can estimate the socioeconomic characteristics of a study area using American Community Survey block group data on race, income, and other demographics. Some categories (such as disability status) are estimated from Census tract level data because they are not available at the block group level.

In STEAP, disadvantaged areas are identified based on their overburdened and underserved status. Specifically, the tool highlights Census tracts that experience burdens related to climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. These communities are considered disadvantaged because they face both excessive burdens and inadequate services. The STEAP tool aligns with the Justice40 Initiative, aiming to direct at least 40% of overall benefits from investments in climate, clean energy, and related areas to these vulnerable communities.

A 0.5-mile buffer was created around the project corridor to create a 16.0 square-mile analysis area with a total population of 19,663 people. Within the analysis area, approximately 92.0% of the population is White alone and 96% are native born. Most people (94.5%) have access

⁹ [Explore the map - Climate & Economic Justice Screening Tool \(geoplatform.gov\)](#)

¹⁰ [Equity and Justice40 Analysis Tools | US Department of Transportation](#)



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to one or more vehicles and 94.4% of residents have internet access. Most residents over 25 years of age have high school diplomas or college degrees with only 4.3% having less than a high school diploma.

Approximately 7.5% of residents have incomes below the poverty level. The majority of these residents (59.5%) are female. Children under 18 comprise 35.8% of residents below the poverty level and residents 60 and over comprise 21.9% of residents below the poverty line. Residents with a disability comprise approximately 12.4% of the total population. The racial composition of residents with incomes below the poverty level is predominantly White alone (92.2%). The majority of households (94.2%) speak only English as the household language. Other languages spoken at home include Spanish, other Indo-European languages, Asian/Pacific Island languages, plus others. Most of these households are not characterized as limited English-speaking households; limited English-speaking households comprise 0.4% of all households in the analysis area.

Based on the STEAP analysis for the project corridor, **there are no concentrations of vulnerable populations** within the analysis area. The STEAP analysis profile report for this project is appended to this memorandum.

4.3.3 USDOT EQUITABLE TRANSPORTATION COMMUNITY (ETC) EXPLORER

The USDOT Equitable Transportation Community (ETC) Explorer is an interactive web application that utilizes 2020 census tracts and data to explore the cumulative burden experienced by communities due to underinvestment in transportation. This dynamic tool assesses five critical components: Transportation Insecurity, Climate and Disaster Risk Burden, Environmental Burden, Health Vulnerability, and Social Vulnerability. It is a compliment to CJEST and STEAP as it provides deeper insights into transportation disadvantage. The ETC Explorer empowers decision-makers at all levels to understand community challenges and identify projects that can mitigate or reverse these burdens, ultimately enhancing quality of life and economic prosperity.

As noted in the previous sections, **none of the Census tracts that traverse the project corridor are identified as “disadvantaged”** in the ETC Explorer, which means that none of the overall index scores for any census tracts exceeds the 65th percentile of all US census tracts. The 65th percentile value was selected as the threshold in the ETC Explorer to maintain consistency with definitions used in CJEST.¹¹

Upon taking a closer look at individual categories for each census tract, there is evidence of three notable data trends. While none of the Census tracts along the project corridor have a composite score that exceeds the national 65th percentile, there are Census tracts that exceed the 65th percentile for health vulnerability or transportation security. Census Tract 36067011600 includes the Baldwinsville area,

¹¹ [Understanding the Data | USDOT Equitable Transportation Community \(ETC\) Explorer \(arcgis.com\)](#)



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which exceeds the 65th percentile for health vulnerability at 67%. Residents in this area have a higher prevalence of asthma, cancer, and high blood pressure.

Moving eastward, Census tracts 36067011401 and 36067011300 on the north side of NYS Route 31 west of I-81 exceed the 65% threshold for transportation insecurity at 79% and 78% respectively. Within the transportation insecurity category, **these Census tracts are considered ‘transportation access’ disadvantaged** due to longer commute times and difficulty traveling where they want to go via cars, walking, cycling, and transit. These factors can create significant barriers to employment and resources.

4.3.4 ENVIRONMENTAL JUSTICE EVALUATION

In 2015, the USEPA launched EJSCREEN, an online environmental justice screening tool that generates socioeconomic indicators (such as race, age, education attainment, and unemployment) and environmental justice indexes (such as proximity to hazardous waste sites, air toxins, and lead paint) for a selected geography.¹² This tool is utilized early in the process to identify potential EJ populations to be further investigated during the project development process.

Consistent with EO 12898 and FHWA guidance on EJ, demographic data was evaluated to assess the presence of communities with EJ concerns. A 0.5-mile radius was used to create a buffer area around the NYS Route 31 corridor. Census block groups traversing the buffer area, as well as a few additional block groups within immediate proximity to the corridor were evaluated in this analysis (Figure 17).

Table 3 contains the results of the EJ evaluation for the Census block groups shown in Figure 17. There are no block groups that exceed the minority threshold and seven block groups that exceed the low-income threshold. Four of the seven block groups contain higher numbers of retired seniors which is likely the reason why these block groups exceed the low-income threshold value. The remaining three block groups have concentrations of low-income populations in multifamily housing and mobile homes. See Table 3 for additional details.

Table 4 provides supplemental demographic data on English proficiency, disability, vehicle access, age, and education attainment to provide additional context on the demographics of the area and to inform public engagement strategies. This information is referenced to determine if translation services or other accommodations may be needed to facilitate meaningful engagement with limited English-speaking populations, persons with disabilities, those needing transportation and/or childcare in order to participate, and other factors. The EPA EJScreen report for the project corridor and supplemental EPA EJScreen demographic maps are appended to this equity assessment. These materials provide additional context and illustrate where populations are found along the project corridor.

¹² [EJScreen: Environmental Justice Screening and Mapping Tool | US EPA](#)



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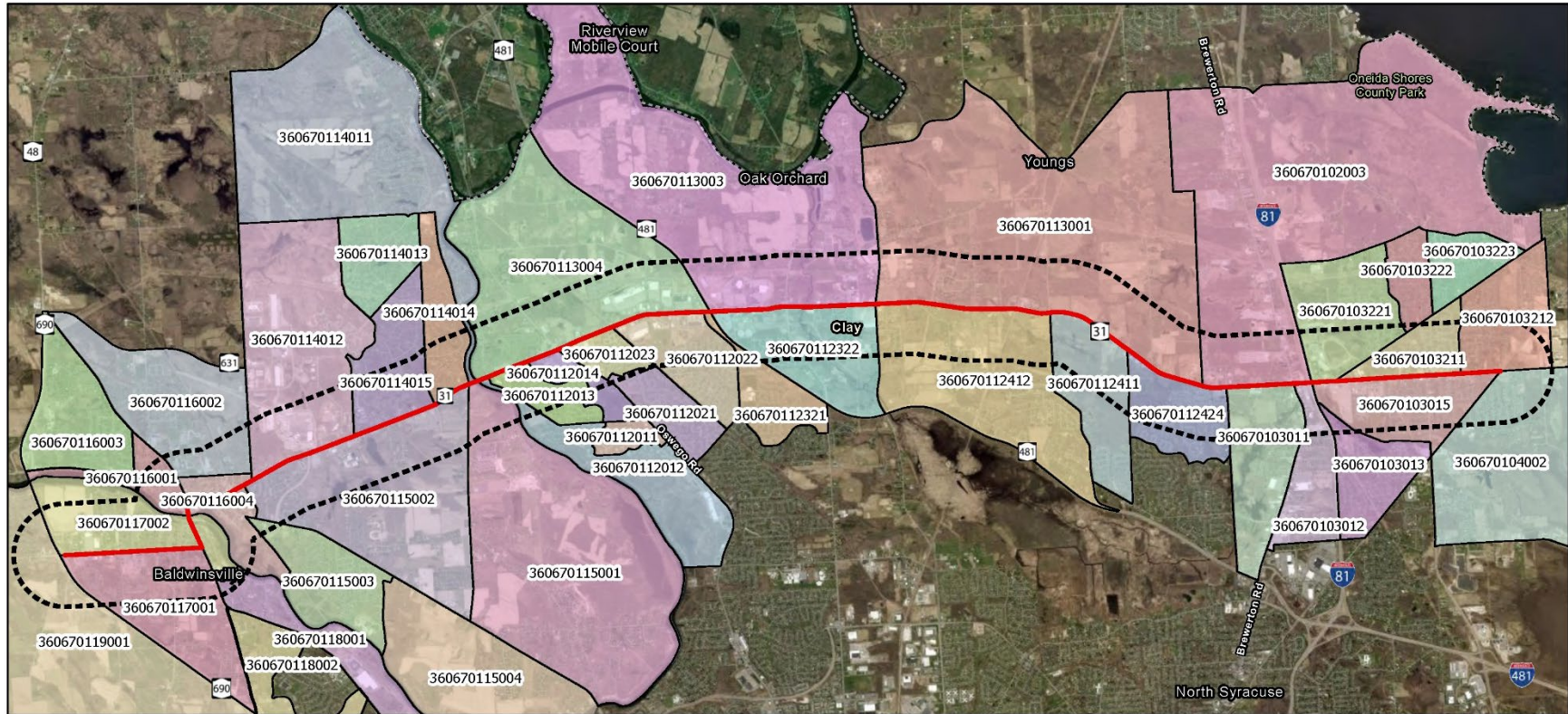
While not a factor for identifying populations with EJ concerns, access to vital information is protected under Title VI of the Civil Rights Act.¹³ Languages spoken at home vary cross the project corridor, ranging from Russian, Polish, or Other Slavic languages to Spanish, Other Indo-European languages (e.g., Balto-Slavic languages, Greek, Indo-Iranian, French, Portuguese), and Asian-Pacific Island languages (e.g., Mandarin, Cantonese, Vietnamese).

¹³ [Welcome to LEP.gov](http://www.welcomelep.gov)



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Figure 17: Census Block Groups in the Study Area



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Table 3: Environmental Justice Demographic Analysis Summary

Geography	Minority %	Low Income %	Exceeds EJ Minority Threshold? (Y/N)	Exceeds EJ Low-Income Threshold? (Y/N)	EJ Population? (Y/N)	Notes
<i>Onondaga County</i>	24.0%	29.0%	---	---	---	---
360670102003	2.3%	9.7%	N	N	N	
360670103011	0.3%	28.8%	N	N	N	
360670103012	5.2%	27.7%	N	N	N	
360670103013	12.1%	11.0%	N	N	N	
360670103015	3.8%	19.7%	N	N	N	
360670103211	4.5%	0.0%	N	N	N	
360670103212	8.8%	3.6%	N	N	N	
360670103221	6.8%	10.9%	N	N	N	
360670103222	7.3%	6.1%	N	N	N	
360670103223	12.6%	3.8%	N	N	N	
360670104002	7.3%	16.5%	N	N	N	
360670112011	13.7%	50.2%	N	Y	Y	Just outside 0.5-mile buffer; northeast Baldwinsville on south side of NYS 31 south of Gaskin Road and west of Oswego Road; low-income population at Madison Village mobile home neighborhood and adjacent multifamily housing
360670112012	4.2%	42.1%	N	Y	Y	
360670112013	12.7%	23.9%	N	N	N	
360670112014	16.4%	17.7%	N	N	N	
360670112021	15.5%	34.1%	N	Y	Y	Just outside 0.5-mile buffer; northeast Baldwinsville on south side of NYS 31 east of Oswego Road and west of the Penn Central Railroad; some multifamily housing; low-income percentage likely influenced by seniors (51 st percentile)
360670112022	19.0%	1.6%	N	N	N	
360670112023	3.7%	23.8%	N	N	N	
360670112321	22.9%	11.1%	N	N	N	
360670112322	15.2%	17.1%	N	N	N	
360670112411	18.7%	5.5%	N	N	N	
360670112412	10.0%	4.8%	N	N	N	



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Geography	Minority %	Low Income %	Exceeds EJ Minority Threshold? (Y/N)	Exceeds EJ Low-Income Threshold? (Y/N)	EJ Population? (Y/N)	Notes
360670112424	13.1%	8.2%	N	N	N	
360670113001	2.8%	18.4%	N	N	N	
360670113003	12.5%	26.3%	N	N	N	
360670113004	15.4%	13.8%	N	N	N	
360670114011	12.0%	5.6%	N	N	N	
360670114012	7.6%	68.5%	N	Y	Y	Northeast Baldwinsville on north side of NYS 31; older neighborhoods and apartments; low-income percentage likely influenced by seniors (72 nd percentile)
360670114013	0.2%	20.8%	N	N	N	
360670114014	0.9%	0.8%	N	N	N	
360670114015	3.4%	0.6%	N	N	N	
360670115001	11.0%	18.8%	N	N	N	
360670115002	29.5%	42.8%	N	Y	Y	Northwest Baldwinsville on south side of NYS 31 on west side of Drakes Landing Road; low-income population likely concentrated at Riverknoll-at-Radisson Apartments (an affordable, low-income housing tax credit community)
360670115003	1.9%	0.0%	N	N	N	
360670115004	19.8%	24.7%	N	N	N	
360670116001	0.0%	25.4%	N	N	N	
360670116002	6.8%	28.8%	N	N	N	
360670116003	14.4%	5.3%	N	N	N	
360670116004	0.0%	26.6%	N	N	N	
360670117001	12.0%	32.9%	N	Y	Y	Southwest Baldwinsville, south side of NYS 31; low-income percentage likely influenced by number of seniors (46 th percentile)
360670117002	7.1%	33.3%	N	Y	Y	Northwest Baldwinsville, north side of NYS 31; low-income percentage likely influenced by seniors (87 th percentile)
360670118001	3.6%	13.8%	N	N	N	
360670118002	13.3%	12.4%	N	N	N	
360670119001	0.0%	6.5%	N	N	N	

NOTES: EJ minority populations are indicated where minority percentages comprise 50% of the block group population or exceed county percentage by ten percent. EJ low-income populations are indicated where low-income percentages exceed county poverty level percentage. SOURCES: American Community Survey 2018-2022 5-Year Estimates via EPA EJScreen.



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Table 4: Supplemental Demographic Data

Geography	Linguistically Isolated %	Disability %	No Vehicle %	Over 64 %	Under 5 %	Unemployed %	Less Than High School %
<i>Onondaga County</i>	2.0%	14.0%	12.3%	17.0%	6.0%	6.0%	9.0%
360670102003	2.7%	25.0%	9.0%	42.1%	0.8%	2.4%	5.4%
360670103011	0.0%	11.0%	1.8%	10.8%	7.0%	0.0%	11.0%
360670103012	0.0%	9.0%	1.8%	17.1%	4.7%	7.6%	4.2%
360670103013	0.0%	14.0%	1.8%	20.3%	5.3%	1.6%	3.6%
360670103015	0.0%	12.0%	1.8%	19.6%	5.5%	2.1%	4.1%
360670103211	0.0%	11.0%	0.8%	16.6%	4.7%	2.0%	6.1%
360670103212	0.0%	9.0%	0.8%	9.2%	10.4%	4.9%	0.6%
360670103221	0.0%	8.0%	1.7%	10.0%	4.2%	5.9%	6.8%
360670103222	0.0%	10.0%	1.7%	9.6%	8.3%	1.4%	0.0%
360670103223	0.0%	7.0%	1.7%	15.7%	2.2%	1.5%	2.1%
360670104002	0.0%	12.0%	2.5%	15.5%	3.2%	4.0%	3.6%
360670112011	0.0%	10.0%	8.2%	3.8%	6.5%	0.0%	9.0%
360670112012	0.0%	13.0%	8.2%	7.9%	3.8%	3.3%	21.9%
360670112013	0.0%	16.0%	8.2%	15.6%	3.5%	1.1%	0.9%
360670112014	0.0%	13.0%	8.2%	17.7%	0.0%	1.4%	3.1%
360670112021	0.0%	11.0%	6.6%	15.7%	6.9%	6.4%	7.8%
360670112022	0.0%	12.0%	6.6%	12.7%	2.9%	1.9%	2.2%
360670112023	0.0%	11.0%	6.6%	34.2%	0.7%	3.2%	5.0%
360670112321	0.0%	14.0%	2.2%	6.3%	9.2%	4.3%	4.1%
360670112322	1.2%	13.0%	2.2%	20.9%	7.1%	5.0%	4.6%
360670112411	0.0%	8.0%	4.0%	4.3%	2.4%	0.0%	1.9%
360670112412	0.0%	7.0%	4.0%	23.5%	6.1%	2.6%	1.2%
360670112424	1.4%	16.0%	8.0%	8.7%	6.5%	0.6%	0.0%
360670113001	0.0%	21.0%	6.3%	26.6%	10.2%	0.0%	14.0%
360670113003	0.0%	14.0%	6.3%	10.2%	3.5%	4.3%	13.8%
360670113004	0.0%	24.0%	6.3%	20.7%	6.6%	3.0%	8.1%
360670114011	0.0%	23.0%	5.8%	50.6%	0.0%	0.0%	0.0%
360670114012	0.0%	9.0%	5.8%	21.5%	2.1%	6.5%	3.3%
360670114013	0.0%	13.0%	5.8%	24.8%	2.8%	1.9%	2.1%



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Geography	Linguistically Isolated %	Disability %	No Vehicle %	Over 64 %	Under 5 %	Unemployed %	Less Than High School %
360670114014	0.0%	5.0%	5.8%	16.2%	0.0%	0.0%	1.2%
360670114015	0.0%	11.0%	5.8%	14.2%	5.9%	8.2%	4.7%
360670115001	0.0%	7.0%	2.8%	15.2%	2.7%	5.6%	5.5%
360670115002	0.0%	10.0%	2.8%	8.9%	4.4%	3.5%	14.1%
360670115003	0.0%	8.0%	2.8%	8.1%	2.7%	0.0%	1.4%
360670115004	9.1%	21.0%	2.8%	69.3%	4.6%	12.4%	24.1%
360670116001	7.9%	14.0%	4.8%	19.1%	0.0%	0.0%	3.9%
360670116002	3.0%	14.0%	4.8%	15.7%	7.4%	9.3%	1.5%
360670116003	0.0%	9.0%	4.8%	9.7%	8.3%	6.8%	2.5%
360670116004	0.0%	14.0%	4.8%	13.7%	5.5%	14.1%	10.9%
360670117001	0.0%	23.0%	11.1%	29.0%	13.6%	3.8%	4.8%
360670117002	0.0%	18.0%	11.1%	14.6%	9.0%	2.0%	2.1%
360670118001	0.0%	15.0%	6.6%	12.1%	2.8%	4.4%	5.5%
360670118002	0.0%	15.0%	6.6%	17.0%	7.3%	6.5%	3.3%
360670119001	0.0%	12.0%	0.8%	17.2%	5.7%	0.0%	0.0%

NOTES: This data provides additional context and to inform public engagement strategies but is not used in calculations to determine whether there are notable EJ populations. Values higher than the county value are shown in bold and italicized. SOURCES: American Community Survey 2018-2022 5-Year Estimates via EPA EJScreen.

When evaluating EJ concerns under the National Environmental Policy Act (NEPA), CEQ notes that EJ populations also include “geographically dispersed group of individuals that experience common conditions of environmental exposure or effect” (CEQ, 1997). This definition can include refugees/special immigrant visa holders, migrant workers, and people experiencing homelessness. Available data from the Housing and Homelessness Coalition of Central New York indicates that homelessness increased by 30% at the beginning of 2023 across Cayuga, Onondaga and Oswego Counties. Family homelessness increased by 41%. Of people currently experiencing homelessness, 75% have never been homeless before. This data underscores the need for affordable housing and employment opportunities in Onondaga County and the consideration of homelessness as a part of equitable project development.

4.4 Equity Assessment Findings & Recommendations

This analysis identified low-income populations in the Baldwinsville area in the immediate vicinity of NYS Route 31. The assessment also identified concentrations of seniors who would also experience improved mobility from future transit service. However, there are no



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“disadvantaged” Census tracts as defined by the USDOT and CEQ demographic tools, nor are there notable minority populations or populations with limited English proficiency.

Future public engagement efforts outside of this transit planning effort should focus on the low-income populations identified in Table 3 to ensure fair participation and meaningful engagement in the project development process. In addition, future stakeholder engagement should also include community organizations focused on serving senior citizens in the Baldwinsville area and across the project corridor. While it does not appear that the percent of limited English-speaking residents warrants translation of written materials or translation services under Title VI of the Civil Rights Act requirements, coordination with local representatives to validate the data and where appropriate, provide translation could be considered. At minimum, written materials could include a statement(s) offering translation services upon request. Additionally, supplemental demographic data indicates the presence of populations with disabilities. Coordination with local agencies and community organizations could be considered in the future to understand the disabilities experienced by area residents.



5 Existing Transit Propensity

When conducting an analysis of potential transit services, an important first step is to identify areas that have concentrations of populations that have the greatest need for transit. A transit propensity analysis identifies these areas by using socioeconomic characteristics that were assessed in Section 4 (Equity Assessment) including elderly, minority, low-income, and disabled populations as well as zero vehicle households. In addition to socioeconomic data, research regarding transit propensity from the University of South Florida’s (USF) Center for Urban Transportation Research was also consulted.

USF’s transit propensity research presents general statistics on the propensity for transit use by various population groups based on user surveys. The propensity for transit user describes how a population’s per capita use of public transit compares to the per capita use of public transit nationwide. Propensity can be influenced by a variety of socioeconomic and built environment factors. For example, according to the research conducted by USF, the propensity for transit in a metropolitan statistical area (MSA) of similar size to that of Syracuse ranges from 0.08 in a rural area to 1.0 in an urban area (Table 5).

The NYS 31 study corridor lies within a mix of areas including rural, small town, and suburb. Therefore, the expected transit propensity would be around 0.20 based on the distribution of these three main land use types along the corridor. This means that residents along the corridor are only 20% as likely to use transit for their trips when compared to the nationwide average. Therefore, as the corridor stands today, there is little transit demand when considering land use alone. However, other socioeconomic factors could lead to areas of the corridor having a higher transit propensity.

Table 5: Propensity for Transit Use by MSA Population and Urbanization
 (Source: USF Center for Urban Transportation Research)

MSA Population (1,000s)	Urbanization					
	Rural	Small Town	Suburb	Second City	Urban	Total
Nation	0.41	0.28	0.47	0.54	2.63	1.00
Outside MSA	0.63	0.35	0.00	0.12	0.04	0.41
Under 250	0.33	0.29	0.20	0.45	0.00	0.39
250-499	0.14	0.04	0.15	0.45	0.00	0.27
500-999	0.08	0.31	0.26	0.62	1.00	0.45
1,000-2,999	0.27	0.18	0.24	0.61	1.02	0.47
3,000 +	0.12	0.38	0.67	0.64	3.05	1.60



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Considering the socioeconomic factors identified in Section 4, there are very few indicators of vulnerable communities along the corridor. Out of the indicators analyzed in Section 4, the only ones of note are low-income, limited English speaking, elderly (64+) and disabled populations where a few Census block groups have higher proportions of those populations (refer to maps in Appendix A). When evaluating the location of these more vulnerable residents, the Baldwinsville area stands out as having a higher concentration of low-income, limited English speaking, and persons with disabilities. For example, only four of the Census block groups that lie along the corridor are considered to exceed the low-income threshold to identify potential EJ populations, and these all lie within or adjacent to Baldwinsville. Higher percentages of people with disabilities also lie within census block groups along the corridor to the west of I-81, and this pattern is also reflected in the location of those aged 64 or older.

USF research has provided transit propensity factors based on age and household income. Transit propensity among low-income households ranged between 0.25 in a rural area to 1.12 in a suburban area (Table 6). When compared to MSA population, the transit propensity for households with incomes under \$15,000 was 0.88. For those 65 or older (Table 7), the range was 0.70 in rural areas to 0.31 in suburban areas. When compared to MSA population, the transit propensity for those 65 and older was 0.46.

Table 6: Propensity of Transit Use by Household Income
 (Source: USF Center for Urban Transportation Research)

Urbanization	Household Income			
	Under \$15,000	\$15,000-\$49,999	\$50,000 +	Total
Nation	2.30	0.93	0.63	1.00
Rural	0.25	0.34	0.72	0.42
Small Town	0.35	0.30	0.27	0.29
Suburb	1.12	0.38	0.43	0.45
Second City	1.17	0.38	0.38	0.53
Urban	4.59	2.62	1.54	2.67

Table 7: Propensity of Transit Use by Age
 (Source: USF Center for Urban Transportation Research)

Urbanization	Person Age			
	Under 18	18 to 64	65 +	Total
Nation	0.77	1.10	0.82	1.00
Rural	0.68	0.26	0.70	0.41
Small Town	0.25	0.26	0.46	0.28
Suburb	0.46	0.50	0.31	0.47
Second City	0.40	0.62	0.36	0.54
Urban	1.96	2.91	2.08	2.63



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5 Existing Transit Propensity

Other factors that were examined within the research include residential housing density and employment density. Overall residential housing density along the corridor ranges from just under 1,000 units per square mile in Baldwinsville to around 50 units per square mile around the proposed Micron facility. As such, the anticipated transit propensity would be between 0.18 and 0.26 (Table 8).

Employment along the corridor is relatively sparse, except for the Anheuser – Busch Budweiser plant. Based on the overall corridor employment density, the anticipated transit propensity would be around 0.09 (Table 9).

Considering the factors discussed in this section, there is no reliable method for estimating transit propensity for the NYS 31 corridor due to its low densities and limited vulnerable populations. Any attempts to calculate an existing transit propensity would likely yield results that are unreliable and not useful or helpful to the overall analysis. It is recommended that a transit propensity score and/or ridership estimates be assessed as part of the future scenarios that will be developed in subsequent tasks.

Table 8: Transit Propensity by Housing Density
 (Source: USF Center for Urban Transportation Research)

MSA Population (1,000s)	Residential Housing Density in Units per Square Mile					
	Under 50	50-249	250-999	1,000-1,999	2,000 +	Total
Nation	0.35	0.31	0.39	0.46	1.73	1.00
Outside MSA	0.52	0.31	0.57	0.20	0.40	0.41
Under 250	0.13	0.19	0.45	0.45	0.50	0.39
250-499	0.15	0.16	0.13	0.30	0.44	0.27
500-999	0.43	0.18	0.26	0.26	0.79	0.45
1,000-2,999	0.36	0.15	0.25	0.27	0.78	0.47
3,000 +	0.26	0.57	0.54	0.66	2.32	1.60

Table 9: Transit Propensity by Job Density
 Source: USF Center for Urban Transportation Research)

MSA Population (1,000s)	Work Site Employment Density in Jobs per Square Mile					
	Under 50	50-499	500-1,999	2,000-9,999	10,000 +	Total
Nation	0.34	0.25	0.42	0.78	3.07	1.00
Outside MSA	0.49	0.13	0.25	0.15	0.26	0.29
Under 250	0.19	0.43	0.62	0.01	0.60	0.39
250-499	0.00	0.00	0.08	0.06	0.37	0.07
500-999	0.00	0.09	0.36	0.17	1.57	0.41
1,000-2,999	0.16	0.09	0.24	0.38	1.03	0.40
3,000 +	0.72	0.45	0.58	1.19	4.29	1.71



6 Existing Needs and Opportunities

Based on the analysis presented in the above sections, the following existing needs and opportunities were identified that should be considered on a high level in the development of transit alternatives and refined through future efforts outside of this study:

- **Modify existing zoning ordinances to permit cluster development along the corridor that will support future stations.** Encourage municipalities to begin thinking about where pockets of transit supportive densities should be located that can support future high-quality transit.
- **Support higher-density development in the Strong Centers identified in Plan Onondaga.** Utilize transit, pedestrian, and bicycle infrastructure to provide modal options that support higher development densities within the Strong Centers.
- **Ensure that the limited vulnerable populations along the corridor are considered in the future transit services.** This would include involving them in the planning and future design of the service, as well as to ensure that neighborhoods are adequately connected to the future transit service. Enhancing existing transit services to these areas may also provide the foundation for higher-quality transit services in the future.
- **Consider starting to build a culture of transit use by assessing the potential for an east-west service.** An initial area that could be targeted is the section of the corridor between Baldwinsville and the retail area around the Great Northern Mall. In fact, Centro, as part of the bus network redesign, is planning to modify bus route 82 so that it connects these two activity nodes via NYS 31. This could potentially provide a base on which to increase service operations along the study corridor as growth demands.
- **Create a corridor pedestrian and bicycle “master plan” that outlines recommended facilities for pedestrian and bicyclists.** A “master plan” will help the NYSDOT and municipalities along the corridor plan for the needs of pedestrians and bicyclists when conducting roadway improvement projects or to ensure that developers install recommended pedestrian and bicycle infrastructure along their site frontages. Prioritize filling gaps in the existing network in more dense areas and/or in areas with a history of pedestrian and/or bicycle crashes.
- **Address pedestrian and bicycle crash clusters.** Work with NYSDOT to identify “quick wins” to enhance pedestrian and bicycle safety within the crash clusters identified in Figure 15.
- **Provide for “missing middle” housing along the corridor.** Most of the residential units along the corridor are single family residential, with some limited low-rise apartments. As the corridor diversifies with future development, demand for various types of



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housing at different levels of affordability will also increase. Missing middle housing consists of condos, townhomes, cottages, duplexes, triplexes, etc. That are intended to provide more affordable options for housing.





Appendix C:

PRELIMINARY TRANSIT ASSESSMENT

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Executive Summary

The NYS 31 corridor is a critical east-west corridor in northern Onondaga County that provides connections between several activity and growth areas including the Village of Baldwinsville and the towns of Lysander, Clay, and Cicero. The corridor is about to undergo a significant transformation spurred by the proposed Micron semiconductor chip manufacturing facility (Micron facility) that will lead to substantial economic growth opportunities. At full build-out, the Micron facility is expected to employ 9,000 people and generate over an estimated 40,000 jobs at secondary businesses. This will lead to increased demand for commercial, industrial, and residential development along and around the corridor. This planned development, as well as the identification of the need for enhanced transit service along the NYS 31 corridor in Plan Onondaga, is generating energy and excitement in the area, as well as concern over the impact of additional growth on the transportation network. This study presents the unique opportunity to be proactive about mobility and growth; however, it must also acknowledge that there are still many unknowns regarding the type and timing of development. Therefore, planning for both mobility and land use must be forward-thinking but also flexible to respond to demands that may change in the future.

This technical report presents a preliminary evaluation of potential transit options which includes an initial overview of associated operating parameters, infrastructure needs, and supporting land use densities. To this end, a review of deployments of potential transit options on corridors with transit-oriented development potential in the United States was conducted. This will be used to identify density and ridership thresholds that are conducive to supporting each type of transit option, as well as order of magnitude capital and operating costs, thus outlining the nature, intensity, and density of future development patterns along the NYS 31 corridor that would be needed to support each transit option.

Potential Transit Service Options

Data contained in the Existing Conditions Report, as well as coordination with the Study Advisory Committee (SAC), identified several needs and opportunities that highlight the potential for the NYS 31 corridor to become an important economic driver for the Syracuse area as well as for upstate New York as a whole. The type of investments being planned along the corridor warrant a technology-driven mobility system that supports development and integrates all modes to support the movement of existing and potential future corridor users without the need for a personal vehicle. Therefore, the project team identified five potential transportation service options that could address the corridor needs and opportunities:

- **On-Demand Bus:** On-demand transit, also sometimes referred to as microtransit, is a flexible, shared transportation service that uses technology to allow passengers to request rides when and where they need them. Passengers can book, pay for, and track their trips using an app. On-demand transit vehicles typically include passenger vans or small buses.



- **Enhanced Fixed-Route Bus:** Enhanced fixed-route bus service is an upgraded version of a more traditional fixed-route service, common to the Syracuse area. These upgrades include a higher frequency of service as well as complimentary infrastructure such as branded bus stops with shelters and multimodal connections, higher-capacity buses with on-board amenities, and transit-priority infrastructure such as transit signal priority (TSP), bus lanes, and queue jumps.
- **Bus Rapid Transit (BRT):** BRT is a high-frequency, high-capacity bus service that shares many features with rail service, such as service branding, stations with shelter areas and level-platform boarding, off-board fare collection, separated right-of-way consisting of bus lanes or an entirely separated busway, and transit signal priority.
- **Streetcar:** Streetcars are a high-capacity transit service that run on a track that is typically laid within the street, and operate within mixed traffic lanes or alongside vehicular traffic and obey all traffic signals, pedestrian crossings, etc. Streetcars are typically used for more local transportation service and operate at lower speeds than light rail transit (LRT) and are often seen as a merging of aspects of bus and rail service.
- **Light Rail Transit (LRT):** LRT is a high-frequency, high-capacity transit service that typically uses electric-powered vehicles on fixed rails that operate on street, within medians, or within their own right-of-way. LRT vehicles are similar to streetcars but are designed to run faster and carry more passengers over longer distances.

NYS 31 Corridor Land Use and Zoning

To support the evaluation of the potential transportation service options, the project team conducted an analysis of land use and zoning within a ½-mile buffer of the NYS 31 corridor. The analysis resulted in the following findings:

- **There are areas with existing land uses within the NYS 31 corridor that can support transit.** The Village of Baldwinsville and several intersections contain existing density and land uses that are aligned with the principles of transit oriented development (TOD). However, outside of the Village of Baldwinsville, existing land uses frequently have large surface parking lots, large setbacks, and low building density which detracts from the high-quality walking environments needed to support transit.
- **There is a significant amount of vacant land that will likely see development pressure with the development of the Micron site.** Vacant land is the most prominent existing land use within the corridor. There are several vacant parcels south of NYS 31 near the Micron site that are currently zoned for low density residential and agricultural use. This area presents a unique opportunity to promote TOD principles given the major employment center that Micron is anticipated to become.



- **Current zoning may create challenges for Transit Oriented Development.** While many zoning districts appear transit supportive from a high-level assessment, there are often additional requirements for large setbacks and open space set asides that make achieving the density and physical layout needed for TOD difficult.
- **Very few residential zoning districts allow for the unit density needed to support transit.** The current regulatory environment for residential development within the NYS 31 corridor almost exclusively promotes low-density, single-family residential uses. Often, zoning districts that do allow multifamily residential uses have additional lot requirements that bring the unit density below what is considered necessary to support higher levels of transit.
- **The current regulatory environment is complex and difficult to navigate.** With fifty unique zoning districts across four municipalities within the study area, understanding the regulatory environment will be a challenge for developers that want to build within the NYS 31 corridor.

Selection of Transportation Service Options for Further Analysis

The main purpose of this task is to evaluate the five potential service options for the NYS 31 corridor and select up to three to advance for further analysis. The additional analysis will include ridership projections, order of magnitude construction and operating costs, a more detailed assessment of land use/zoning needs, and renderings of land use and transit. In order to select the three transportation service options to advance, the project team conducted SAC and focus group meetings in June 2024 utilizing information summarized in Table E-1. Upon review of the options with the SAC and Focus Groups, as well as the high-level assessment documented in this report, the project team selected Enhanced Fixed-Route Bus, BRT, and LRT as the three options to advance for further assessment. On-demand service was excluded from further analysis because of its low capacity that would not be supportive of the potential development that is likely to occur along the NYS 31 corridor. Streetcar was not advanced for further analysis because it has many features similar to LRT. Therefore, it was determined that if LRT was ultimately selected as the preferred transportation service option for the corridor, that Streetcar could be considered equivalent.



Table E-1: Summary of Transportation Service Options

Mode	Service Frequency	Station Spacing (miles)	Primary Operating Environment	Vehicle Types	Station Area Target Density	Is Current Zoning Supportive?	Potential Capacity	Capital Cost (Million \$ per Mile)	Operating Cost (per rider)
On-Demand Bus	On Demand	N/A	Mixed Traffic	Vans or Shuttle Buses	No Min Density	Yes	Low	N/A	\$10 - \$50+
Enhanced Fixed-Route Bus	10 – 30 Min	¼ - ½	Mixed traffic with queue jumpers and transit signal priority	Standard transit bus with branding and enhanced on-board amenities	5-15 Dwelling Units/Acre 20 Jobs/Acre	Yes, but only in areas shown in Figure 24	Moderate	\$5 - \$10	\$5 - \$15
BRT	10 – 15 Min	¼ - ½	Bus-only lanes with transit signal priority	Modern, articulated, high-capacity vehicle design with branding	20-30 Dwelling Units/Acre 40-60 Jobs/Acre	No	High	\$20 - \$50	\$5 - \$10
Streetcar	6 – 20 Min	¾ - 1	Mix of dedicated ROW with transit signal priority and mixed traffic operation in constrained locations.	Modern, low-floor, single unit vehicles powered by overhead catenary	20-30 Dwelling Units/Acre 40-60 Jobs/Acre	No	High	\$30 - \$70	\$10 - \$20
LRT	5 – 30 Min	≥1	Dedicated ROW with transit signal pre-emption	Modern, low-floor, multiple-unit vehicles powered by overhead catenary	>40 Dwelling Units/Acre >70 Jobs/Acre	No	High	\$150 - \$350+	\$10 - \$20



1 Introduction

The NYS 31 corridor is a critical east-west corridor in northern Onondaga County that provides connections between several activity and growth areas including the Village of Baldwinsville and the towns of Lysander, Clay, and Cicero. The corridor operates in a variety of land use areas and configurations, ranging from a two-lane roadway in rural environments, to traditional village areas like Baldwinsville, to a multi-lane arterial in areas with suburban-style retail centers in Cicero and Clay. Overall, the corridor is auto-centric with low-density development and extremely limited transit, pedestrian, and bicycle accommodations.

The corridor is about to undergo a significant transformation spurred by the proposed Micron semiconductor chip manufacturing facility (Micron facility) that will lead to substantial economic growth opportunities. At full build-out, the Micron facility is expected to employ 9,000 people and generate over an estimated 40,000 jobs at secondary businesses. This will lead to increased demand for commercial, industrial, and residential development along and around the corridor. This planned development, as well as the identification of the need for enhanced transit service along the NYS 31 corridor in Plan Onondaga, is generating energy and excitement in the area, as well as concern over the impact of the additional growth on the transportation network. This study presents the unique opportunity to be proactive about mobility and growth; however, it must also acknowledge that there are still many unknowns regarding the type and timing of development. Therefore, planning for both mobility and land use must be forward-thinking but also flexible to respond to demands that may change in the future.

Following the review of existing conditions, presented in the *New York State Route 31 Transit Corridor Assessment: Existing Conditions Report*, the next step in the evaluation of mobility options and land use along the corridor is to conduct a preliminary evaluation of potential transit options which includes an initial overview of associated operating parameters, infrastructure needs, and supporting land use densities. To this end, a review of deployments of potential transit options on corridors with transit-oriented development potential in the United States was conducted. This will be used to identify density and ridership thresholds that are conducive to supporting each type of transit option, as well as order of magnitude capital and operating costs, thus outlining the nature, intensity, and density of future development patterns along the NYS 31 corridor that would be needed to support each transit option.



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options

In addition to outlining the land use requirements for each option, this document also outlines other critical components to the potential phased deployment of transit improvements, including:

- Infrastructure requirements, such as station types, transit lanes, queue jumps, transit signal priority¹, etc., that could be considered in relation to other projects along the corridor, such as roadway widening or utility improvements.
- Mobility hub profiles that outline amenities and intermodal connections that extend the reach of corridor-based transit.
- Vehicle types, including zero emission vehicles, fueling and/or charging, maintenance requirements, and potential for future automated operations.
- Potential phasing thresholds that could be considered when upgrading transit services base

Consideration of these items, in addition to the land use and development requirements, will provide a complete picture of what may be needed for each transit option. This will ensure that stakeholders are aware of what it would take from a cost, operations, land use, and infrastructure standpoint for each transit option so that these items can be considered in other planning and design efforts being conducted by other agencies. As a result of this analysis, focus groups meetings, and study advisory committee meeting, three transit options will be advanced to further study.

2 Potential Transportation Service Options

Data contained in the Existing Conditions Report, as well as coordination with the Study Advisory Committee (SAC), identified several needs and opportunities that highlight the potential for the NYS 31 corridor to become an important economic driver for the Syracuse area as well as for Upstate New York as a whole. The type of investments being planned along the corridor warrant a technology-driven mobility system that supports development and integrates all modes to support the movement of existing and potential future corridor users without the need for a personal vehicle. Therefore, the project team identified five potential transportation service options that could address the corridor needs and opportunities:

¹ Transit signal priority provides an early or late green for a transit vehicle that allows it to either jump in front of traffic or be extended through the intersection after general traffic has received a red indication. The purpose of transit signal priority is to enhance transit travel times with minor disruptions to other vehicle movements at the intersection.



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options



On-Demand Bus: On-demand transit, also sometimes referred to as microtransit, is a flexible, shared transportation service that uses technology to allow passengers to request rides when and where they need them. Passengers can book, pay for, and track their trips using an app. On-demand transit vehicles typically include passenger vans or small buses. On-demand services are being deployed in a variety of areas from high-density urban areas, where it is used to fill in gaps in existing fixed-route transit, to lower-density communities, where fixed-route services are not as effective, reliable, or efficient.



Enhanced Fixed-Route Bus: Enhanced fixed-route bus service is an upgraded version of a more traditional fixed-route service that is common to the Syracuse area. These upgrades include a higher frequency of service as well as complimentary infrastructure such as branded bus stops with shelters and multimodal connections, higher-capacity buses with on-board amenities, and transit-priority infrastructure such as transit signal priority (TSP), bus lanes, and queue jumps. Because enhanced fixed-route bus service would require less density than bus rapid transit (BRT), it could be considered as an interim condition leading up to the eventual implementation of a higher-intensity service like BRT or LRT.



Bus Rapid Transit (BRT): BRT is a high-frequency, high-capacity bus service that shares many features with rail service, such as service branding, stations with shelter areas and level-platform boarding, off-board fare collection, separated right-of-way consisting of bus lanes or an entirely separated busway, and transit signal priority. BRT vehicles typically have more capacity than a standard bus and are often designed and branded in a more sleek and modern way that is reminiscent of a light rail vehicle. BRT also provides more flexibility than a rail service to respond to changes in demand that may require adjustments to routing.



Streetcar: Streetcars are a high-capacity transit service that run on a track that is typically laid within the street, and operate within mixed traffic lanes or alongside vehicular traffic and obey all traffic signals, pedestrian crossings, etc. Streetcars are typically used for more local transportation service and operate at lower speeds than light rail transit (LRT) and are often seen as a merging of aspects of bus and rail service. Streetcars can act like a bus service with on-board fare collection and more frequent stops, while also having aspects of rail service such as a fixed route on a track and branded stations with level-boarding platforms. Streetcar services can use traditional trolley-style vehicles or single-unit modern vehicles that look more like LRT vehicles.



Light Rail Transit (LRT): LRT is a high-frequency, high-capacity transit service that typically uses electric-powered vehicles on fixed rails that operate on-street, within medians, or within their own right-of-way. LRT vehicles are similar to streetcars but are designed to run faster and carry more passengers over longer distances. LRT typically has features that are more like traditional rail such as substantial stations with level boarding and off-board fare collection, enhanced integration with other modes, and transit pre-emption at traffic signals and/or formalized at-grade rail crossings.



2.1 Review of Similar Applications

In order to understand how these five transportation service options could be implemented on the NYS 31 corridor, a review was conducted to identify and categorize other applications of these options in the United States. Given the unique characteristics of the corridor as low-density with the potential for substantial transit-supportive development, the review was limited to examples with similar characteristics to the corridor. The review utilized existing sources of information obtained from the transit agencies that operate the service. The results of this review will be used to establish the operating, infrastructure, and land use requirements for each of the service options detailed in Section 2.2.

2.1.1 ON-DEMAND BUS

2.1.1.1 WeGo – Gainesville and Hall County, GA

Description: WeGo is an on-demand rideshare transportation service provided by the City of Gainesville, GA and operated by Via. The service utilizes 22 passenger vans to transport riders within the City of Gainesville as well as greater Hall County. Passengers can book rides by utilizing a smartphone application where they can enter their destination. The app informs of a nearby location where they can board the van, and drivers are directed to the selected destination.

According to Via, the WeGo service has resulted in a 50% cost per trip reduction when compared to previous fixed-route transit and has also reduced the average wait time by 30 minutes².

Land use densities within the area in which it serves, particularly outside of Gainesville, are similar to that of the NYS 31 corridor with low density single family residential and big box retail. However,

Figure 1: WeGo Vehicle
(Image Source: WeGo Gainesville)



² [Delivering efficient rural transit in Georgia \(ridewithvia.com\)](https://ridewithvia.com)



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options

the service has a relatively low number of weekly trips (465) and 50% of the riders have an annual income of less than \$20,000. This service has been used as a replacement for the fixed route transit and is not expected to generate additional development and land use changes that are anticipated along the NYS 31 corridor.

Operating Statistics

Operating Hours: Monday – Friday 5:00 AM – 9:00 PM

Average Wait Time: 15 – 20 minutes

Fare: \$2 per ride under 5 miles, \$0.50 per additional mile

Approximate Service Area Population: 210,000

Capital Cost per Mile: N/A – this service is procured by the City of Gainesville and operated by Via. Therefore, there is no capital cost.

System Operating Cost per Trip: \$12.76



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

2.1.1.2 Centro MOVE – Rome, NY

Description: Centro MOVE is an on-demand transit service that was started in 2024 as a way to better serve the Rome community with a service that was more responsive to the community needs, utilizes the latest in mobility technology, and was a more efficient use of transit resources. The service currently utilizes two to three shuttle buses per day. Similar to WeGo, passengers can book rides by utilizing a smartphone application where they can enter their destination. The app informs them of a nearby location where they can board the shuttle bus, and drivers are directed to the selected destination.

This on-demand service was selected for review in this study because it is an example of this type of service in a lower-density, upstate New York environment. However, similar to the WeGo example (Section 2.1.1.1), it is not anticipated to be a driver of development and land use changes in Rome.

Operating Statistics

Operating Hours: Monday – Friday 6:00 AM – 6:00 PM, Saturday 9:00 AM – 6:00 PM.

Average Wait Time: 13 minutes

Fare: \$1 per ride to the Downtown transit hub, \$4 per ride directly to destination

Approximate Service Area Population: 35,000

Capital Cost per Mile: N/A – this service is procured by Centro and operated by Via. Therefore, there is no capital cost.

System Operating Cost per Trip: TBD

Figure 2: Centro MOVE Shuttle Bus
(Image Source: Centro)



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

2.1.2 ENHANCED FIXED-ROUTE BUS SERVICE

2.1.2.1 BusPlus Red Line – Schenectady and Albany, NY

Description: The BusPlus Red Line is a high-capacity, limited-stop service with service between Schenectady and Downtown Albany which launched in 2011. It has many features of a BRT such as service branding, higher-capacity vehicles, and larger stations with shelters, real-time transit information and bike parking, but lacks other features of full BRT service, such as exclusive bus-only lanes. Therefore, for the purposes of this study, it is considered an enhanced fixed-route bus service. However, CDTA is currently engaging in several improvement projects for the Red Line, including the Gateway Mobility Hub in Schenectady which will link the service with ten transit routes, and car share, bike share, and scooter services; rehabilitating the shelters to include heaters, USB chargers, solar panels, and heated sidewalks for snow melting; and, a study to evaluate intersection enhancements to improve bus travel time reliability.

Outside of Downtown Albany and Schenectady, the Red Line corridor operates in a relatively low-density environment characterized by retail strip centers and low- to medium-density residential. Although more developed than the NYS 31 corridor is today, it is a good representation of an enhanced bus service in upstate New York that could be applied to the NYS 31 corridor.

Although most of the BusPlus station areas include bike racks, there are no formal bicycle facilities to connect to. Furthermore, while each station is connected with sidewalk, the walking environment along NYS 5 is not ideal. The sidewalks are relatively narrow with little to no buffer to the travel way, and there is an abundance of drop-curb cuts and driveways for residents and businesses, sometimes resulting in large gaps in the sidewalk. There are also limited crosswalks across NYS 5 that connect northbound and southbound stations.

Operating Statistics



**Figure 3: A stop of the BusPlus Red Line
(Image Source: CDTA)**



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Operating Hours: Monday – Friday 4:00 AM – 1:00 AM, Saturday 5:30 AM – 1:00 AM, Sunday 7:00 AM – 11:00 PM

Average Frequency: 12 – 15 minutes on weekdays, 12 – 20 minutes on Saturday, and 20 minutes on Sunday.

Fare: \$2 per ride

Approximate Service Area Population: 640,000 in Albany metro area

Average Stop Spacing: 1.1 miles

Average Station Area Density: 7 dwelling units/acre, 24 jobs/acre

Capital Cost per Mile (2024 Dollars): \$3.2 million

System Operating Cost per Trip: \$3.76



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

2.1.2.2 VelociRFTA – Glenwood Springs to Aspen, CO

Description: Considered the first rural bus rapid transit system in the US, VelociRFTA was intended to enhance mobility along a 40-mile corridor between Glenwood Springs and Aspen, CO. Although it is billed as a BRT system, it has features more similar to an enhanced bus service as identified in this study. Components of the service include higher-capacity vehicles with Wi-Fi, branded service, substantial station areas with park-and-ride lots and bike parking, off-board fare collection, queue jumps, and transit signal priority. It also takes advantage of existing HOV lanes along Route 82.

The VelociRFTA service was considered in this review of similar services because it operates in a very low-density environment, primarily serving key nodes along the route's length. This service shows that it is possible to operate a higher-quality bus service in a low-density environment if focus is placed on nodal densities rather than corridor-wide density. However, minimal land use changes have occurred within the major nodes along the corridor, such as Glenwood Springs and Aspen. The City of Glenwood Springs does not have a specified TOD overlay nor does it appear to have overhauled its zoning code to lay out enforceable policy as it relates to TOD. The City's Comprehensive Plan, updated in Spring of 2023, explicitly states that the City should promote compact, mixed-use development around transit as much as possible. In February of 2024, the Colorado State Legislature introduced [House Bill 1152](#), which would increase the number of accessory dwelling units within the state. However, mountain resort towns, such as Aspen, would not be subject to the law.

**Figure 4: Station on the VelociRFTA System
(Image Source: ASLA Colorado)**



Operating Statistics

Operating Hours: Service schedule is seasonal. Current Summer 2024 schedule provides daily service between 5:45 AM and 1:30 AM.

Average Frequency: 15 minute peak, 30 minute off-peak

Fare: \$2 per ride

Approximate Service Area Population: 50,000

Average Stop Spacing: 4 miles

Average Station Area Density: 4 dwelling units/acre, 15 jobs/acre



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Capital Cost per Mile (2024 Dollars): \$13.6 million

System Operating Cost per Trip: \$12.50



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

2.1.3 BUS RAPID TRANSIT (BRT)

2.1.3.1 Emerald Express – Eugene-Springfield Metropolitan Area, Oregon

Description: Planning for a high-capacity transit connection between Eugene and Springfield began in 1996 with a variety of options on the table including light rail transit (LRT). BRT was ultimately selected because of its ability to achieve many of the benefits of LRT but at a substantially lower cost for the modest population within the service area. The first phase of the Emerald Express (EmX) began service in 2007 on a four-mile, 10-stop route that connected downtown Eugene with downtown Springfield. Two additional extensions of the route were added on 2011 and 2017, resulting in a total length of 13 miles with 37 stations. Approximately 60% of the route operates on dedicated bus-only lanes with transit signal priority. The system has a combination of branded and level-boarding stations that are either curbside or in the center median. The service is branded with articulated buses with doors on both sides which allow for right and left-side boarding.

The service operates through a variety of land use types from the relatively dense downtown areas of Eugene and Springfield to low-density suburban areas outside of those areas. Both the City of Eugene and City of Springfield also have adopted TOD overlay zoning to promote higher density development in station areas. For example, Springfield's TOD overlay is called a Nodal Development Overlay District to work in conjunction with underlying land use districts to implement transportation-related land use policies that support "pedestrian-friendly, mixed-use development" within nodal areas around transit. The overlay district

Figure 5: An EmX station with level boarding.
(Image Source: Transportation for America)



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options

guidelines outline permitted uses and densities, and outline design standards that are structured to encourage pedestrian-friendly, human scale development, including³:

1. Design elements that support pedestrian environments and encourage transit use, walking and bicycling;
2. Transit access within walking distance (generally 1/4 mile) of anywhere in the node;
3. Mixed uses and a core commercial area so that services are available within walking distance;
4. Public spaces, including parks, public and private open space, and public facilities that can be reached without driving; and,
5. A mix of housing types and residential densities that achieve an overall net density of at least 12 units per acre.

Station types and sizes vary substantially throughout the corridor, from larger, multi-bay stations at transit hubs with multiple vehicle and/or bicycle parking spaces to smaller stations with only one or two bike parking spaces. All stations are relatively well-connected with sidewalks; however, bicycle facilities are limited along the corridor. Stations are typically located near traffic signals where pedestrians can cross safely. Where there are no adjacent traffic signals, signalized mid-block crossings are sometimes provided (**Figure 6**).

Operating Statistics

Operating Hours: Monday – Friday 5:30 AM – 11:30 PM, Saturday 6:30 AM – 11:30 PM, Sunday 7:30 AM – 9:00 PM

Average Frequency: 10 – 15 minutes on weekdays, 15 minutes on Saturday and Sunday

Fare: \$1.75 per ride

Approximate Service Area Population: 240,000

Average Stop Spacing: 1/3 mile

Average Station Area Density: 15 dwelling units/acre, 18 jobs/acre

Capital Cost per Mile (2024 Dollars): \$12.5 million

System Operating Cost per Trip: \$10.41

³ <https://springfield-or.gov/wp-content/uploads/2022/06/3.3-1000-Nodal-Development-Overlay-Districts.pdf>



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Figure 6: A signaled mid-block crossing along the EmX Line (Image Source: Google Streetview)



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

2.1.3.2 Route 355 FLASH – Montgomery County, MD

Description: FLASH is the branded bus rapid transit service that operates/will operate in the suburbs of Washington, D.C., specifically Montgomery County, Maryland. There is currently one FLASH route in operation with two service patterns (Blue and Orange). In the future, FLASH will expand to a multi-line system, crossing the County and providing critical links to major employment and residential centers, commuter rail lines, and the Washington Metropolitan Area Transit Authority (WMATA) Metrorail system.

The current FLASH Orange route is more akin to that of the BusPlus, where it is functionally more a bus-priority corridor. The Route 355 FLASH, however, will have more bus rapid transit features, including a center-running dedicated guideway for 11 miles of the alignment, from Germantown to Rockville, serving lower-density suburban neighborhoods and business centers along the way. The remainder of the route will be in mixed traffic with transit priority features and specialized stations. The route is undergoing final design, with construction anticipated to begin in 2025.

Although this proposed route lies within a larger metropolitan region, the service area population and lower densities demonstrate the potential for a high-frequency BRT service in a suburban corridor where higher densities occur at nodes along the corridor. It also shows how proactive land use planning can occur in conjunction with the service planning and infrastructure design. For example, the County's zoning code has been updated to include several transit-related elements, including the Germantown Transit Mixed-Use District, which supports higher-density mixed-use development in proximity to station areas. Furthermore, it demonstrates opportunities for multi-modal connectivity along a BRT corridor. Much of the current proposed corridor will include sidewalks and a multi-use pathway along the corridor to provide enhanced pedestrian and bicycle connections.

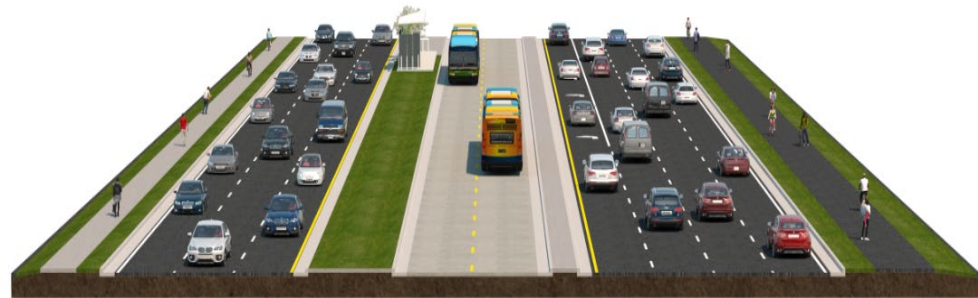
Operating Statistics

Operating Hours: Daily 5:15 AM – 1:00 AM

Average Frequency: 15 minutes, where Blue and Orange lines overlap service is at 7- to 8-minute headways

Fare: \$1.00 per ride

Figure 7: Future FLASH System with Center Median Operations
(Image Source: Montgomery County Department of Transportation)



Appendix C: Preliminary transit Service Options Assessment
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Approximate Service Area Population: 225,000 (Sum of populations of Germanton, Gaithersburg and Rockville, MD)

Average Stop Spacing: 1 mile

Average Area Density: 10 dwelling units/acre, 32 jobs/acre

Capital Cost per Mile (2024 Dollars): \$32.6 million

System Operating Cost per Trip: \$6.74 (based on existing services)



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options

2.1.4 STREETCAR

2.1.4.1 METRO Streetcar – Little Rock, AR

Description: The METRO Streetcar operates on a 3.4-mile figure-eight loop between Little Rock and North Little Rock, Arkansas. The service utilizes traditional style single-unit streetcars. There are 15 stops along the route that are indicated with 10-foot (3.05 m)-tall black signs and yellow sidewalk "bumps" curbside with the system map posted at each stop. Trolleys cannot be hailed between stops. The streetcar service is primarily used as a circulator for Downtown for visitors to Little Rock with stations at many attractions such as the Clinton Library, River Market, Historic Arkansas Museum, USS Razorback, Verizon Arena, and Dickey-Stephens Park. This is reflected in the operating hours described below, where weekday service does not start until 10:45 AM.

The METRO Streetcar has been credited with revitalizing North Little Rock's traditional Main Street area but has led to limited higher density redevelopment. However, this streetcar line was evaluated for this study because it operates in an area with low to moderate residential density, but higher employment density. It also is an example of a streetcar service that is oriented around circulation within an area rather than commuting.

Station types along the corridor consist of larger more prominent curbside stations with a platform and shelters, some of which also include bike parking. Within Downtown Little Rock, the service operates within the travel lane. Curb extensions are provided at most of these stations; however, due to limited space, most of these stations lack other amenities such as shelters or bike parking.

Figure 8: METRO streetcar traveling along curbside of roadway in Little Rock

(Image Source: North Little Rock Tourism)



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Operating Statistics

Operating Hours: Monday – Thursday 10:45 AM – 7:00 PM, Friday – Saturday 8:20 AM – 12:00 AM, Sunday 11:45 AM – 7:00 PM

Average Frequency: 20 minutes

Fare: Free

Approximate Service Area Population: 200,000

Average Stop Spacing: 1/4 mile

Average Area Density: 5 dwelling units/acre, 40 jobs/acre

Capital Cost per Mile (2024 Dollars): \$14.4 million

System Operating Cost per Trip: \$9.60



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

2.1.4.2 S Line Streetcar – Salt Lake County, UT

Description: The Sugar House Streetcar, or S-Line, is a modern streetcar service operating in Salt Lake County, Utah and connects the Sugar House neighborhood of Salt Lake City to regional light rail services in South Salt Lake. The line operates as a single-track service with passing tracks, mostly operating within its own right-of-way, but sharing on-street trackage with general purpose traffic in some locations. The streetcar's dedicated right-of-way is on a former freight rail line that ended operation in 2005. The vehicles are modern and low-floor. The S Line Streetcar connects with all three of the TRAX light rail lines at the Central Pointe Station.

To support TOD along the S-Line, as well as the City's other rail lines, the [Utah Transit Authority has developed TOD Guidelines](#) that outline what developers must consider when designing sites near transit stations including connectivity and development form. In addition, Salt Lake City also has [Transit Station Area Development Guidelines](#). Furthermore, Chapter 21A of Salt Lake City's municipal code outlines transit-oriented development policy in zoning within Salt Lake City. These include mixed-use districts, standards for design review near transit lines, and a special Business District for the Sugar House neighborhoods (served by the S-Line). In October 2023, the City of Salt Lake also adopted the "Transit Station Area District" as part of its zoning code (Ordinance 74 of 2023). Stations are categorized into typologies that are used to establish appropriate zoning regulations for similar station areas. Each station area has two subsections: the Core Area and the Transition Area. The ordinance also formalizes a design review process for proposals within the Transit Station Area District.

The S-Line was also designed as a multi-modal corridor. Stations are well connected to the surrounding communities by sidewalks and on-street bike lanes. In addition, Parley's Trail, a mixed-use pathway parallels the entire length of the corridor on the north side of the tracks.

Figure 9: S Line Streetcar
(Image Source: Public Domain)



Operating Statistics



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Operating Hours: Daily 5:30 AM – 12:00 AM

Average Frequency: Monday – Saturday: 15 minutes, Sunday: 30 minutes

Fare: \$2.50

Approximate Service Area Population: 26,000

Average Stop Spacing: 1/4 mile

Average Area Density: 18 dwelling units/acre, 21 jobs/acre

Capital Cost per Mile (2024 Dollars): \$31.4 million

System Operating Cost per Trip: \$3.48



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2.1.5 LIGHT RAIL TRANSIT

2.1.5.1 NJ TRANSIT RiverLINE

Description: The NJ TRANSIT RiverLINE is a 34-mile light rail line in New Jersey that connects the cities of Trenton and Camden. It is both the longest light rail line in the United States as well as the first to utilize a diesel vehicle. The diesel vehicle is used because the RiverLINE was constructed on a former freight rail line that ceased operation in 1999, and overhead catenary was not installed. The line operates in its own dedicated right-of-way on a mix of single and double track sections outside of the City of Camden. Within Camden, the service operates on-street. Stations have high-level platforms with shelters, real-time arrival information, and off-board fare collection.

The RiverLINE operates in a variety of land use environments. The Cities of Camden and Trenton are higher density nodes along the corridor. However, much of the RiverLINE operates outside of both city's residential neighborhoods because it was built on a former freight line. The City of Trenton has developed a [Trenton Transit District Redevelopment Plan](#) that outlines plans to enhance mixed-use development around the terminus station. Closer residential access to the RiverLINE typically occurs within some of the more traditional older suburbs that exist between the two cities. However, these areas tend to have low- to moderate-densities which are not typically considered supportive of LRT. Furthermore, despite having several state guidance for TODs such as NJ TRANSIT's [Transit-Oriented Development Policy Statement](#), [Transit-Friendly Planning Guide for New Jersey Communities](#), and [Manual of Best Practices for TOD](#), the existing suburban development outside of Trenton and Camden have proved difficult for any larger-scale TOD development.

Stations along the corridor vary in design from level-boarding curb-side stations where the line operates on-street, to more traditional commuter-style rail stations in communities between Camden and Trenton. All stations are connected to the surrounding neighborhoods via sidewalks. However, bicycle facilities are limited and most stations do not have a formal parking area for bikes (bikes are often seen locked to railings).

Figure 10: RiverLine Vehicle at Center Platform Station
(Image Source: NJ TRANSIT)



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Operating Statistics

Operating Hours: Sunday – Friday 6:00 AM – 10:00 PM, Saturday 6:00 AM – 1:00 AM

Average Frequency: Monday – Friday: 15-minutes during peak, 30 minutes off-peak, Weekends: 30 minutes

Fare: \$1.80

Approximate Service Area Population: 170,000

Average Stop Spacing: Stop spacing ranges from 1/2 mile in urban areas to over 3 miles in suburban areas

Average Area Density: 12 dwelling units/acre, 32 jobs/acre

Capital Cost per Mile (2024 Dollars): \$54.2 million

System Operating Cost per Trip: \$8.00



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

2.1.5.2 Valley Metro Rail – Phoenix, AZ

Description: Valley Metro Rail is a 29.8-mile light rail line serving the cities of Phoenix and Mesa, AZ. Vehicles are modern and low-floor and are powered by overhead catenary. Most of the line operates in the center median of major arterial roadways within the area. Most stations are center-platform stations and have amenities such as off-board fare collection, level boarding, and shade-making structures. Because much of the line operates in the center of arterial roadways, stations are typically located at signalized intersections to facilitate passengers crossing to the center platforms. The stations are relatively well-connected via sidewalks to the surrounding land uses. Although bike racks are provided at most stations, they are typically provided on the sidewalks across from the actual stations due to space limitations, and there are limited bicycle facilities along the corridors in which the service operates, particularly outside of the Phoenix and Mesa cores.

This service was used as a reference for this study because of its center-median operations on major arterials, something that could be considered for the NYS 31 corridor. Furthermore, outside of downtown Phoenix and Mesa, the service operates in areas with lower densities and more suburban-style development. Valley Metro also has provided extensive resources for TOD near station areas. For example, in order to encourage TOD, they have developed [Station Profiles](#) that help to identify existing land uses, community resources, and vacant properties within a ¼ mile radius of the station.

Operating Statistics

Operating Hours: Daily 4:00 AM – 2:00 AM

Average Frequency: Monday – Saturday: 15-minutes, Sunday: 20 minutes

Fare: \$2.00

Approximate Service Area Population: 1,025,000

Average Stop Spacing: 1/2 mile

Figure 11: Valley Metro Rail Vehicle Operating in Roadway Median
(Image Source: Valley Metro)



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Average Area Density: 10 dwelling units/acre, 25 jobs/acre

Capital Cost per Mile (2024 Dollars): \$222.7 million (cost per mile of the Northwest Extension Phase II, the latest extension to be constructed)

System Operating Cost per Trip: \$10.74



2.2 Defining the Potential Transportation Service Options on the NYS 31 Corridor

Utilizing information obtained from the case study review of deployments of each potential transportation service option, FTA resources such as [FTA's Planning for Transit-Supportive Development](#) and other funding guidance, and knowledge of the existing and potential future conditions on the corridor, the project team developed a profile for each potential option on the NYS 31 corridor. This profile will help to define, at a high level, the requirements for each option which will allow each option to be compared and provide enough information to assist the SAC in selecting three of the five options for further study. Each profile considers the following:

- Service frequency
- Infrastructure requirements, such as station types, transit lanes, queue jumps, transit signal priority, etc., that could be considered in relation to other projects along the corridor, such as roadway widening or utility improvements.
- Mobility hub profiles that outline amenities and intermodal connections that extend the reach of corridor-based transit.
- Vehicle types, including zero emission vehicles, fueling and/or charging, maintenance requirements, and potential for future automated operations.
- Potential phasing thresholds that could be considered when upgrading transit services base.
- Station area target density

2.2.1 ON-DEMAND BUS

- **Service Frequency:** On demand.
- **Infrastructure Requirements:** On-demand bus is a decentralized form of transportation that does not require any fixed infrastructure. On-demand bus vehicles would operate within the travel way and would not require stations, transit lanes, signal priority, or other transit-supportive infrastructure.
- **Mobility Hubs:** Similarly, as a decentralized form of transportation, stops would not be in fixed locations.
- **Vehicle Types:** This analysis assumes a vehicle that is similar to the shuttle bus vehicle that is currently deployed by Centro in the on-demand service in Rome, NY. Consideration could be given to utilizing natural gas or battery-electric vehicles for the service if charging



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2 Potential Transportation Service Options

stations could be provided around the community. The future of on-demand bus and autonomous operations is unknown at this point. However, it may be possible in the future to have autonomous on-demand vehicles which would help to reduce operating costs.

- **Potential Phasing:** On-demand microtransit has a variety of applications from serving as a primary mode of transit for a community, such as the application in Rome, NY, to a service that supports underserved communities, to a first-mile/last-mile connection between fixed-route transit and surrounding neighborhoods. For the purposes of this study, the on-demand bus option represents on-demand service as the primary service on the corridor, and not a supporting service. However, it could be considered in the future as a support to fixed-route BRT or LRT service to extend the reach of that type of transit.
- **Station Area Target Density:** No minimum density required.

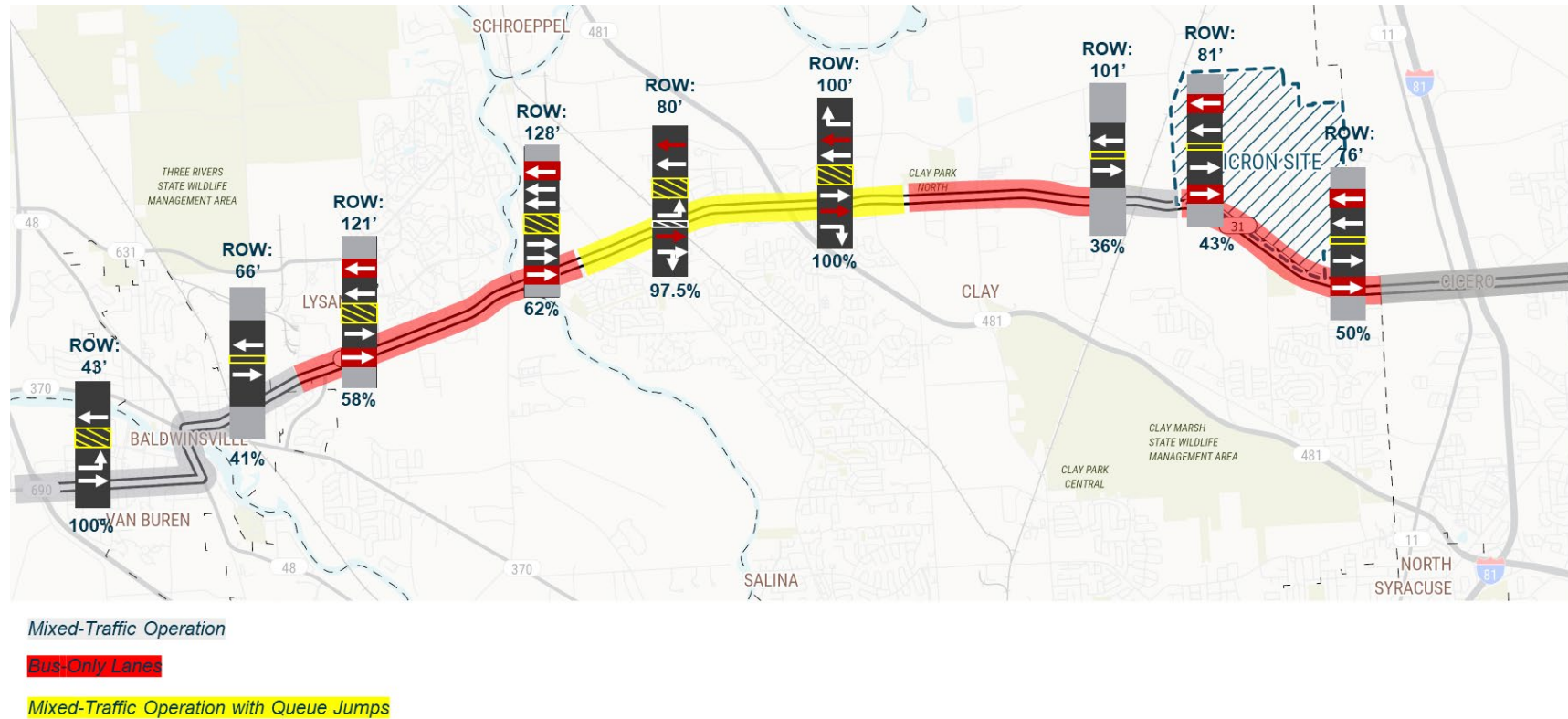
2.2.2 ENHANCED FIXED-ROUTE BUS SERVICE

- **Service Frequency:** 10 – 30 minutes
- **Infrastructure Requirements:**
 - Stations Spacing: $\frac{1}{4}$ to $\frac{1}{2}$ mile
 - Station Amenities: Branded stations with shelters, real-time arrival/departure information, bicycle/scooter parking/storage
 - Operating Environment: A mix of bus-only lanes with transit signal priority, mixed-traffic with queue jumpers and transit signal priority, and mixed-traffic without queue jumpers or transit signal priority as outlined in **Figure 12**.



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2 Potential Transportation Service Options

Figure 12: Enhanced Bus Operating Environment



- Mobility Hubs:** Mobility hubs at stations will be a critical means of extending the reach of transit to neighborhoods and businesses along the corridor because they will provide the ability for passengers to access other modes, such as driving, biking, scootering, ridesharing, etc., to complete their trip. Mobility hubs can be different sizes and have different amenities. Given the anticipated distribution of land uses along the corridor, mobility hubs should be divided into primary and secondary hubs (see **Figure 13**).
 - Primary Hubs:** These would be larger mobility hubs that would be located at critical nodes along the corridor and provide more options. Primary hubs could include amenities and services such as bike and scooter parking and charging, bike or scooter share



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stations, bike tool and repair stations, parks or open community space, vending opportunities, restrooms, package lockers/pick-up area, parking for carshare or car rental, park-and-ride, etc.

- **Secondary Hubs:** Located at stations that serve local neighborhoods and other areas with lower densities, these hubs would provide fewer amenities focused primarily on active modes such as parking/storage for bikes and scooters.
- **Vehicle Types:** An enhanced fixed-route bus service would utilize a bus similar to what is currently deployed by Centro. However, it would be branded with the service colors and logos and could include additional amenities such as more comfortable seating and on-board Wi-Fi. Consideration should also be given to alternative fuel or battery-electric vehicles.
- **Potential Phasing:** An enhanced bus service could be the ultimate “full-build” service operated on the corridor, or it could be used as an initial service that is provided along the corridor in anticipation of BRT or LRT service once development levels meet the target densities specified in Sections 2.2.3 and 2.2.4.
- **Station Area Target Density:** 5 – 15 Dwelling Units/Acre, 20 Jobs/Acre. This density already occurs on the corridor within Baldwinsville. Eastdale Village, a planned community in Poughkeepsie, NY is a good example of how new development can be structured at those densities to include a mix of residential, retail, and office uses (**Figure 14**).



Appendix C: Preliminary transit Service Options Assessment 2 Potential Transportation Service Options

Figure 13: Potential Distribution of Mobility Hub Types



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Figure 14: Eastdale Village in Poughkeepsie, NY is a new community that has been constructed with transit-supportive densities and a mix of uses that is reminiscent of traditional villages. (Image Source: Eastdale Village)



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options

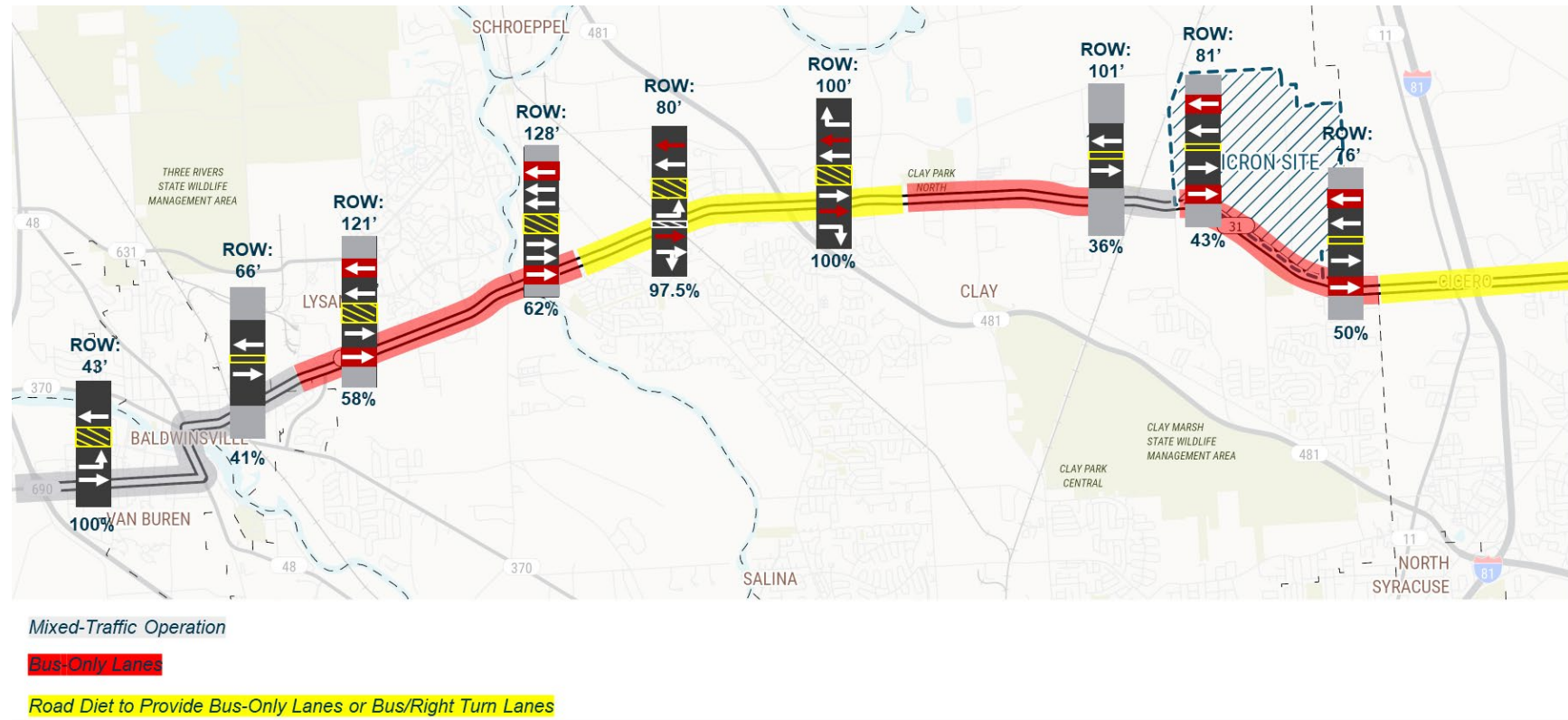
2.2.3 BRT

- **Service Frequency:** 10 – 15 minutes
- **Infrastructure Requirements:**
 - Stations Spacing: $\frac{1}{4}$ - $\frac{1}{2}$ mile
 - Station Amenities: Larger branded stations with shelters, off-board fare collection, level boarding platforms, real-time arrival/departure information, bicycle/scooter parking/storage.
 - Operating Environment: Bus-only lanes with transit signal priority from roadway widening or road diets. Operation in mixed traffic in constrained locations such as Baldwinsville (see **Figure 15**).
- **Mobility Hubs:** Mobility hubs at stations will be a critical means of extending the reach of transit to neighborhoods and businesses along the corridor because they will provide the ability for passengers to access other modes, such as driving, biking, scootering, ridesharing, etc., to complete their trip. Mobility hubs can be different sizes and have different amenities. Given the anticipated distribution of land uses along the corridor, mobility hubs should be divided into primary and secondary hubs in a similar manner to that of the enhanced bus service (see **Section 2.2.2** and **Figure 13**).
- **Vehicle Types:** Modern, articulated, high-capacity vehicle design with an open seating design that provide circulation and standing areas, Wi-Fi, potential areas for bike and scooter storage, and multiple doorways for alighting. Consideration should also be given to alternative fuel or battery-electric vehicles. The potential for autonomous operation should be explored in the future to help reduce operating costs.
- **Potential Phasing:** BRT would require achieving the minimum station area target densities specified below and would not be warranted in the initial stages of the Micron development. BRT could be an enhancement to an existing enhanced bus service which could be operated in lower-density environments during the initial development stages.
- **Station Area Target Density:** 20 – 30 Dwelling Units/Acre, 40 – 60 Jobs/Acre. This level of density is similar to that of new development that is occurring in the City of Rochester in and around the infill of the eastern half of the Inner Loop (**Figure 16**).



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2 Potential Transportation Service Options

Figure 15: BRT Operating Environment



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Figure 16: Development on the former Inner Loop in Rochester, NY. (Image Source: Google Streetview)



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options

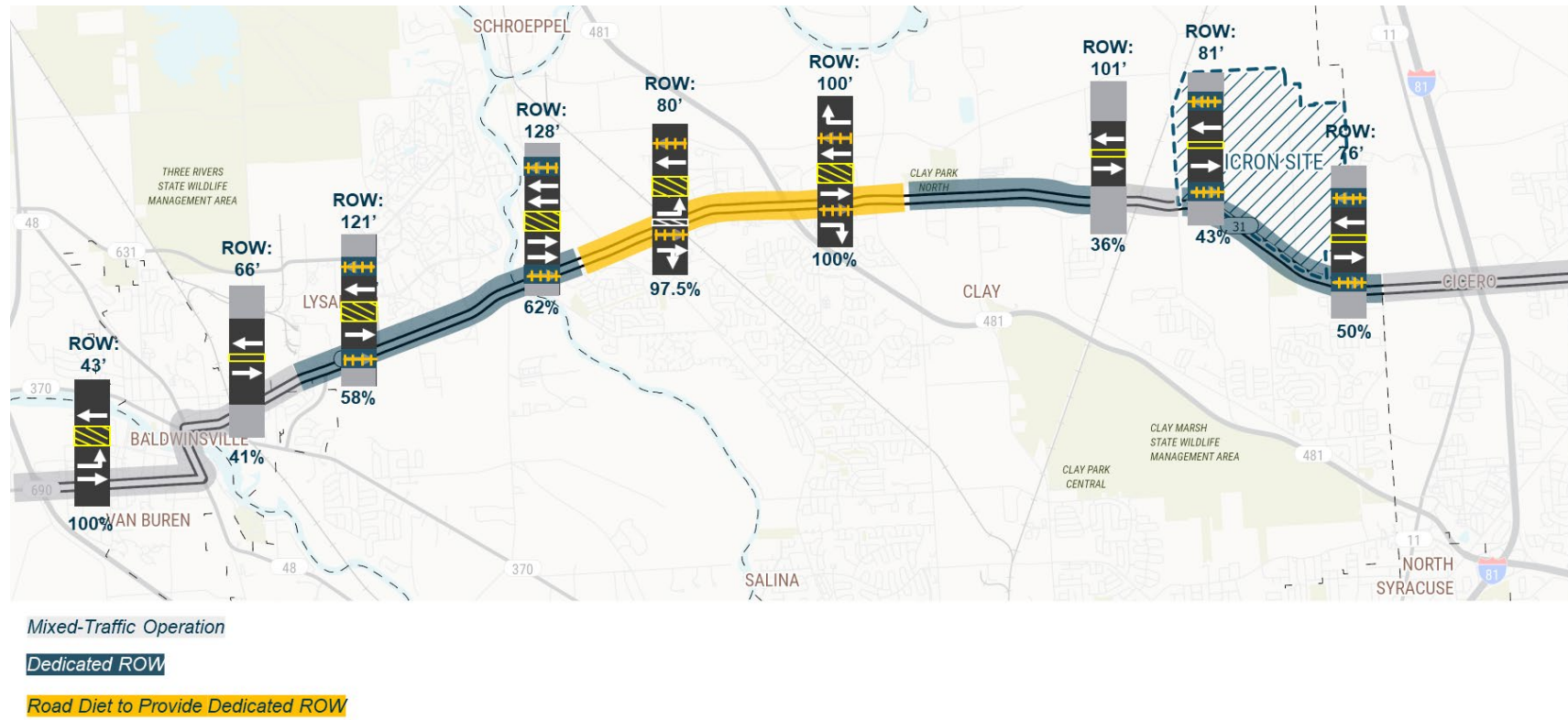
2.2.4 STREETCAR

- **Service Frequency:** 6 – 20 minutes
- **Infrastructure Requirements:**
 - Stations Spacing: 3/4 - 1 mile
 - Station Amenities: Stations with similar design to that of enhanced bus with shelters, level boarding platforms, real-time arrival/departure information, bicycle/scooter parking/storage.
 - Operating Environment: On higher-volume, higher-speed segments of the corridor between Cicero and Baldwinville the streetcar would operate in a dedicated ROW through either a road diet or widening. Within more constrained areas of the corridor, such as in Baldwinville and Cicero, the streetcar could operate in mixed traffic (see **Figure 17**). Transit signal priority would be provided at signalized intersections along the entire corridor.
- **Mobility Hubs:** Mobility hubs at stations will be a critical means of extending the reach of transit to neighborhoods and businesses along the corridor because they will provide the ability for passengers to access other modes, such as driving, biking, scootering, ridesharing, etc., to complete their trip. Mobility hubs can be different sizes and have different amenities. Given the anticipated distribution of land uses along the corridor, mobility hubs should be divided into primary and secondary hubs in a similar manner to that of the enhanced bus service (see **Section 2.2.2** and **Figure 13**).
- **Vehicle Types:** Modern, low-floor, single unit vehicles powered by overhead catenary. The potential for autonomous operation should be explored in the future to help reduce operating costs.
- **Potential Phasing:** Streetcar service would require the densities specified below and would likely not be appropriate in earlier stages of the Micron development. Although enhanced bus service is a possible precursor to streetcar service, it would likely require substantial reinvestment in the corridor to upgrade the bus facilities to support streetcar. However, it would likely be lower cost to upgrade enhanced bus service to streetcar rather than to LRT.
- **Station Area Target Density:** 20 – 30 Dwelling Units/Acre, 40 – 60 Jobs/Acre. An example of new development that was constructed at Streetcar and LRT densities is the Rockville Town Center in Rockville, MD (**Figure 18**). This high-density TOD was constructed within proximity of a Metrorail Station and was an infill development that was located on lower-density strip retail and parking lots.



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Figure 17: Streetcar Operating Environment



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

Figure 18: The Rockville Town Center is a higher-density, mixed-use TOD located near a Metrorail Station (Image Sources: Congress for New Urbanism)



Appendix C: Preliminary transit Service Options Assessment

2 Potential Transportation Service Options

2.2.5 LRT

- **Service Frequency:** 5 – 30 minutes
- **Infrastructure Requirements:**
 - Stations Spacing: 1 mile
 - Station Amenities: Larger platforms that would support multi-unit trains with enhanced climate-controlled shelters, real-time transit information, level boarding, off-board fare collection, and bicycle/scooter storage/parking.
 - Operating Environment: LRT would operate in a similar ROW to that of a streetcar service; however, it is recommended in this study that LRT be provided its own ROW in Cicero, rather than mixed traffic operation (**Figure 19**). Where LRT is operating within its own dedicated ROW, it will have transit signal pre-emption⁴ rather than priority due to the larger vehicle sizes and prioritized operation.
- **Mobility Hubs:** Mobility hubs at stations will be a critical means of extending the reach of transit to neighborhoods and businesses along the corridor because they will provide the ability for passengers to access other modes, such as driving, biking, scootering, ridesharing, etc., to complete their trip. Given the larger stop spacing, it would be recommended that each LRT station have substantial mobility hub amenities similar to that of primary hubs as described in **Section 2.2.2**. These amenities could include bike and scooter parking and charging, bike or scooter share stations, bike tool and repair stations, parks or open community space, vending opportunities, restrooms, package lockers/pick-up area, parking for carshare or car rental, park-and-ride, etc.
- **Vehicle Types:** Modern, low-floor, multiple-unit vehicles powered by overhead catenary. The potential for autonomous operation should be explored in the future to help reduce operating costs.
- **Potential Phasing:** LRT would require the densities specified below and would likely not be appropriate in earlier stages of the Micron development. Although enhanced bus service is a possible precursor to LRT service, it would likely require substantial reinvestment in the corridor to upgrade the bus facilities to support LRT.

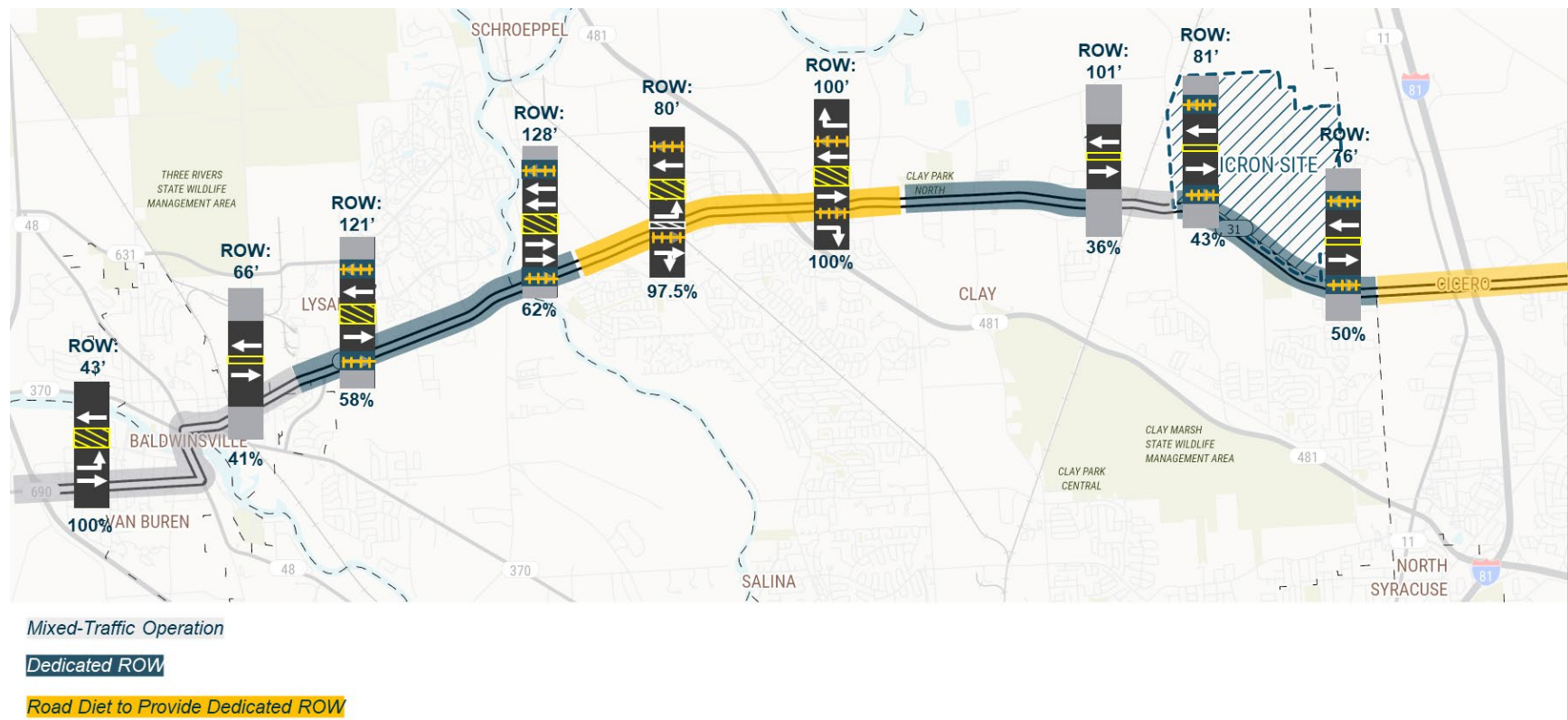
⁴ Transit signal pre-emption stops all conflicting vehicle movements at an intersection to allow a transit vehicle to pass through. The transit vehicle is given priority regardless of the impact to vehicle operations.



Appendix C: Preliminary transit Service Options Assessment
2 Potential Transportation Service Options

- Station Area Target Density:** 40 Dwelling Units/Acre, 70 – 80 Jobs/Acre. An example of new development that was constructed at Streetcar and LRT densities is the Rockville Town Center in Rockville, MD (see **Section 2.2.4 Figure 18**). This high-density TOD was constructed within proximity of a Metrorail Station and was an infill development that was located on lower-density strip retail and parking lots.

Figure 19: LRT Operating Environment



3 NYS 31 Corridor Land Use and Zoning

3.1 Land Use

Transit-supportive land uses are crucial to the success of transit systems by providing the population density, job density, and density of destinations needed to operate transit cost-effectively. Transit Oriented Development (TOD) is an approach to developing land in a manner that specifically supports transit. According to the Federal Highway Administration, TOD is “compact mixed-use development with housing, commercial and retail space and other amenities all in close proximity to transit stations. TOD provides a high-quality walking environment and encourages transit ridership. TOD focuses on developing cohesive communities with business clusters and entertainment centers to counter the effects of urban sprawl.” TOD is recognized by the New York State Department of State as a planning principle for the NYS Smart Growth Program.

This assessment of existing land use in the NYS 31 corridor will help to determine where there may be existing land uses in the corridor that are currently supportive of transit, and where future development to support transit may be most appropriate given current land use conditions. It should be noted that Clay and Cicero are currently updating their town comprehensive plans which may affect future land use and zoning. This document includes land use and zoning information as available in July 2024.

3.1.1 METHODOLOGY

This analysis of existing land use along the NYS 31 corridor is a parcel-level assessment using the New York State Department of Tax and Finance property class codes as a land use classification system. The property class codes are assigned to every parcel in New York State for tax purposes, making it a consistent and reliable data source for assessing land use. The assessment includes any parcel within a 0.5-mile buffer of NYS 31, which was determined as the catchment area for potential transit users on the corridor. Parcels that are only partially located within the 0.5-mile buffer are also included in this assessment.

3.1.2 FINDINGS

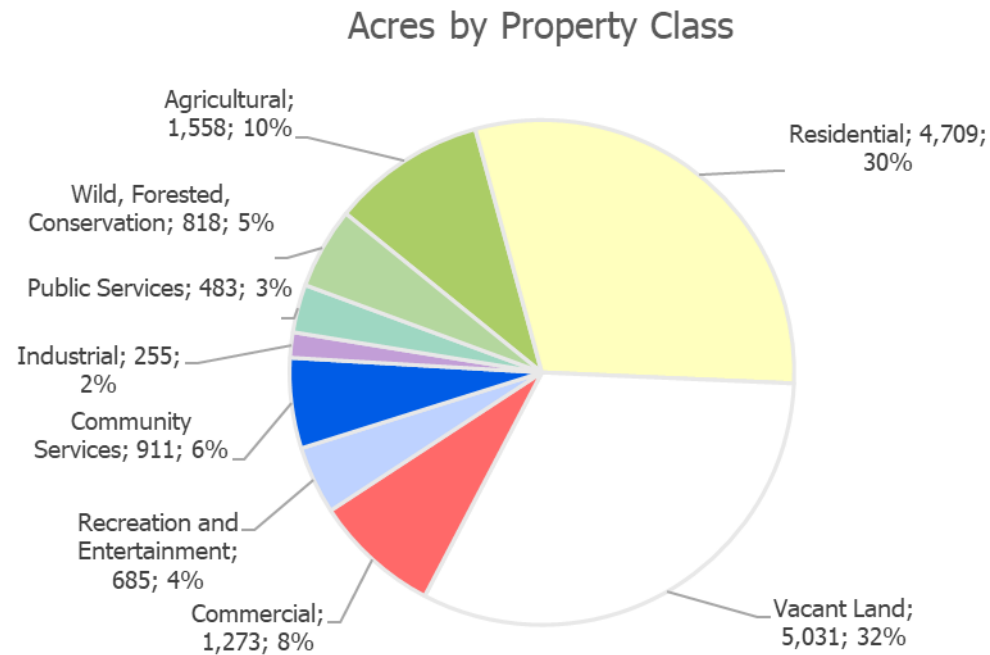
By acreage, the predominant land use in the NYS 31 corridor is vacant land (32%), followed by residential land (30%), and agricultural land (10%). While vacant and agricultural lands are not typically land uses that would be considered supportive of transit, residential land uses may support transit if the development is dense and provides a high-quality walking environment for people to get to and from transit stops.



Appendix C: Preliminary transit Service Options Assessment 3 NYS 31 Corridor Land Use and Zoning

Other land uses that are supportive of transit represent a smaller share of total acreage within the NYS 31 corridor. Commercial land uses – which includes mixed-use developments – represent 8% of the total acres in the study area while recreation and entertainment land uses represent an additional 4%. These land uses are considered destinations and employment centers that drive transit use by attracting residents, visitors, and workers. While not destinations, community services, public services, and industrial land uses may also drive transit use given their role as employment centers. These land uses combine to represent 11% of total acres within the study area. **Figure 20** summarizes land use by property class within the study area.

Figure 20: Acres by Property Class



The distribution of land area by property class alone does not inform how transit-supportive the current land uses are in the NYS 31 corridor. The geographic location of these uses is critical to understanding where there may be clusters of transit-supportive land uses. Additionally, the density of buildings must be assessed to evaluate the concentration of destinations, job centers, and housing within the corridor. **Figure 21** depicts all



Appendix C: Preliminary transit Service Options Assessment 3 NYS 31 Corridor Land Use and Zoning

parcels along the corridor based on each parcel's land use property class. **Figure 22** through **Figure 25** show the building footprints along the primary transit study area based on the corresponding parcel's land use property class. These diagrams are helpful to visualize the density of structures relative to the overall parcel sizes.

Figure 21 shows clusters of land uses in several areas that may support transit, including but not limited to:

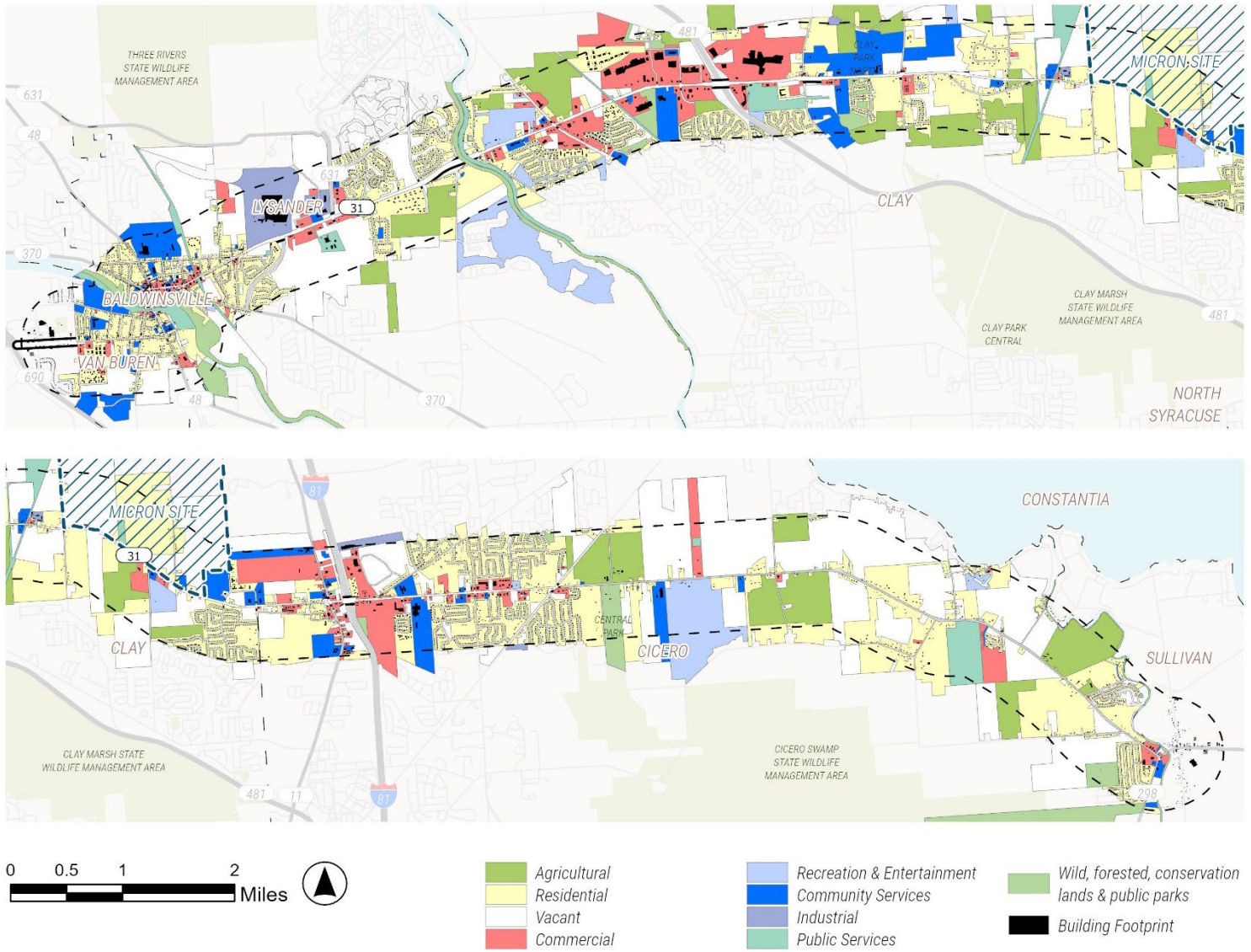
- The Village of Baldwinsville;
- The intersection of NYS 31 and Oswego Road
- The intersection of NYS 31 and NYS 481; and
- The intersection of NYS 31 and I-81

These areas have a high concentration of parcels with existing land uses that function as destinations and employment centers. However, **Figures 22 through 25** reveal that most land associated with these transit-supportive parcels is set aside for setbacks, parking, open space, or other uses on the parcel that limit the density of structures. For example, of the 1,273 acres of commercial land approximately 112 acres – or 8.8% - of the land is allocated to commercial structures. To support transit, these parcels may require infill development to increase the density of structures that serve as destinations and employment centers, or to add mixed-use buildings that would add residential density to existing commercial areas. Additionally, the current development pattern creates large gaps between destinations that transit users must walk, highlighting the need for high-quality walking environments in addition to transit-supportive uses.



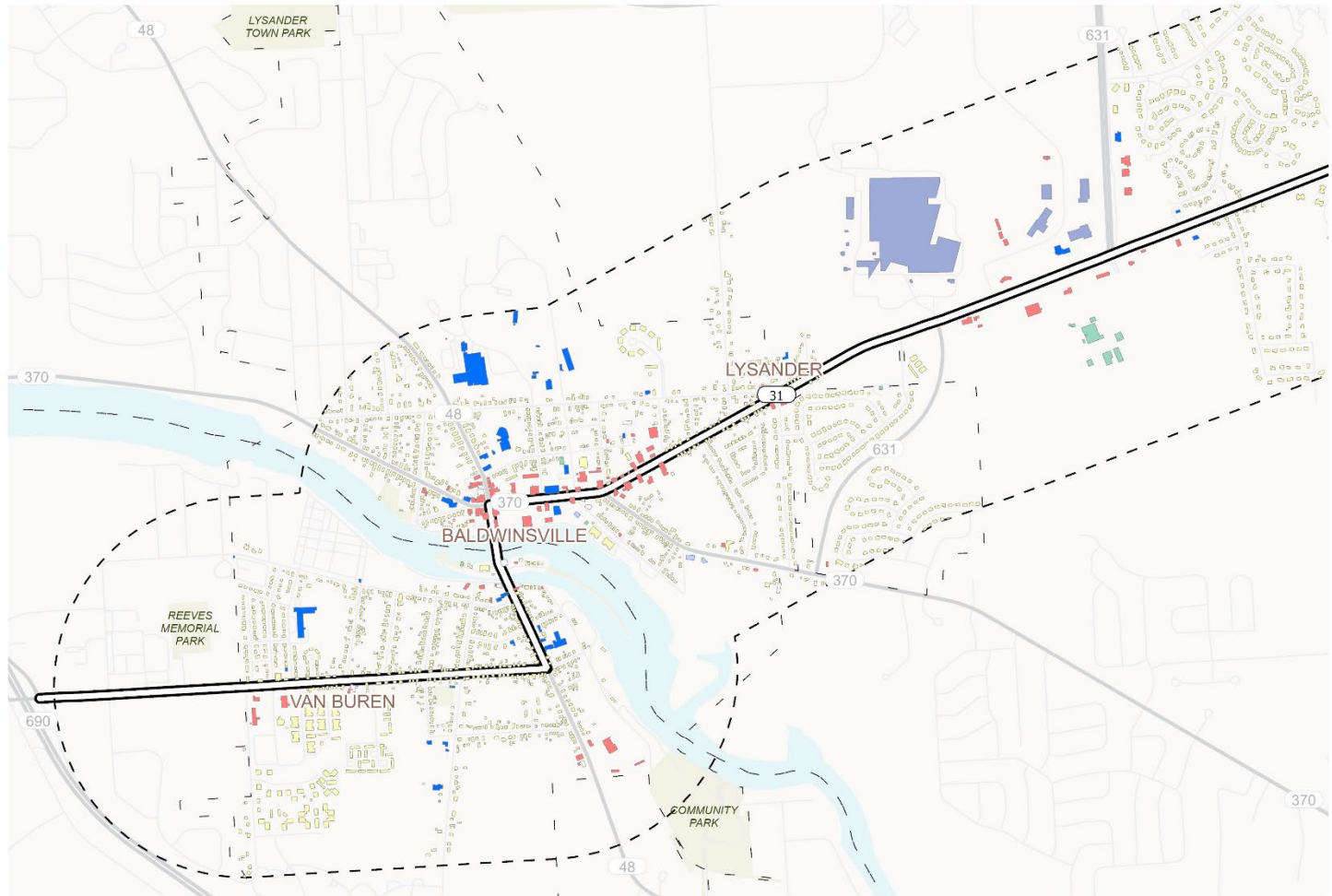
**Appendix C: Preliminary transit Service Options Assessment
3 NYS 31 Corridor Land Use and Zoning**

Figure 21: NYS 31 Corridor Land Use with 1/2 Mile Buffer



**Appendix C: Preliminary transit Service Options Assessment
3 NYS 31 Corridor Land Use and Zoning**

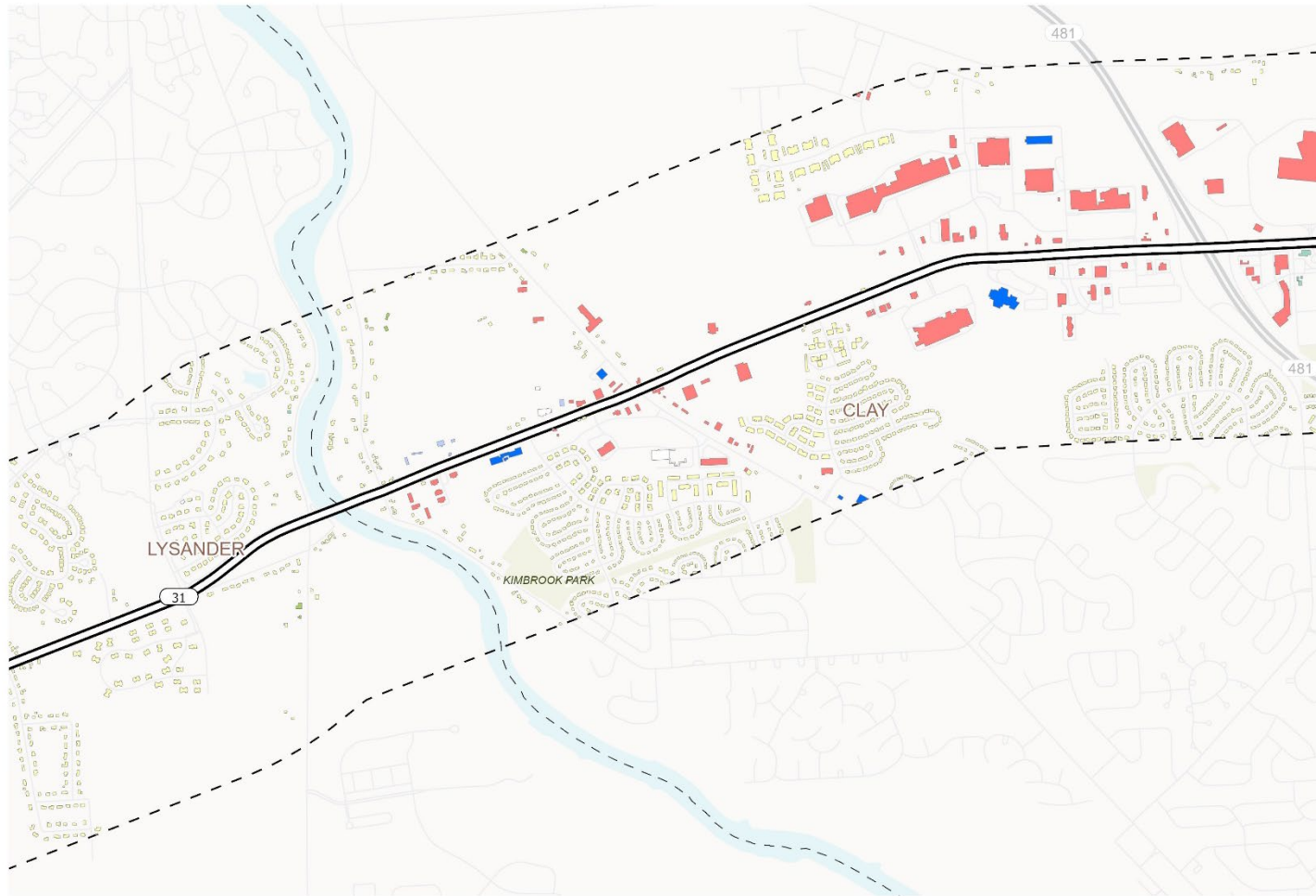
Figure 22: Building Footprints by Property Class in Baldwinsville and Lysander



- | | | | |
|--------------------|-----------------|------------------------------|------------------------------|
| Agricultural | Industrial | Recreation and Entertainment | Vacant Land |
| Commercial | Public Services | Residential | Wild, Forested, Conservation |
| Community Services | | | |

**Appendix C: Preliminary transit Service Options Assessment
3 NYS 31 Corridor Land Use and Zoning**

Figure 23: Building Footprints by Property Class in Clay, West of NY 481



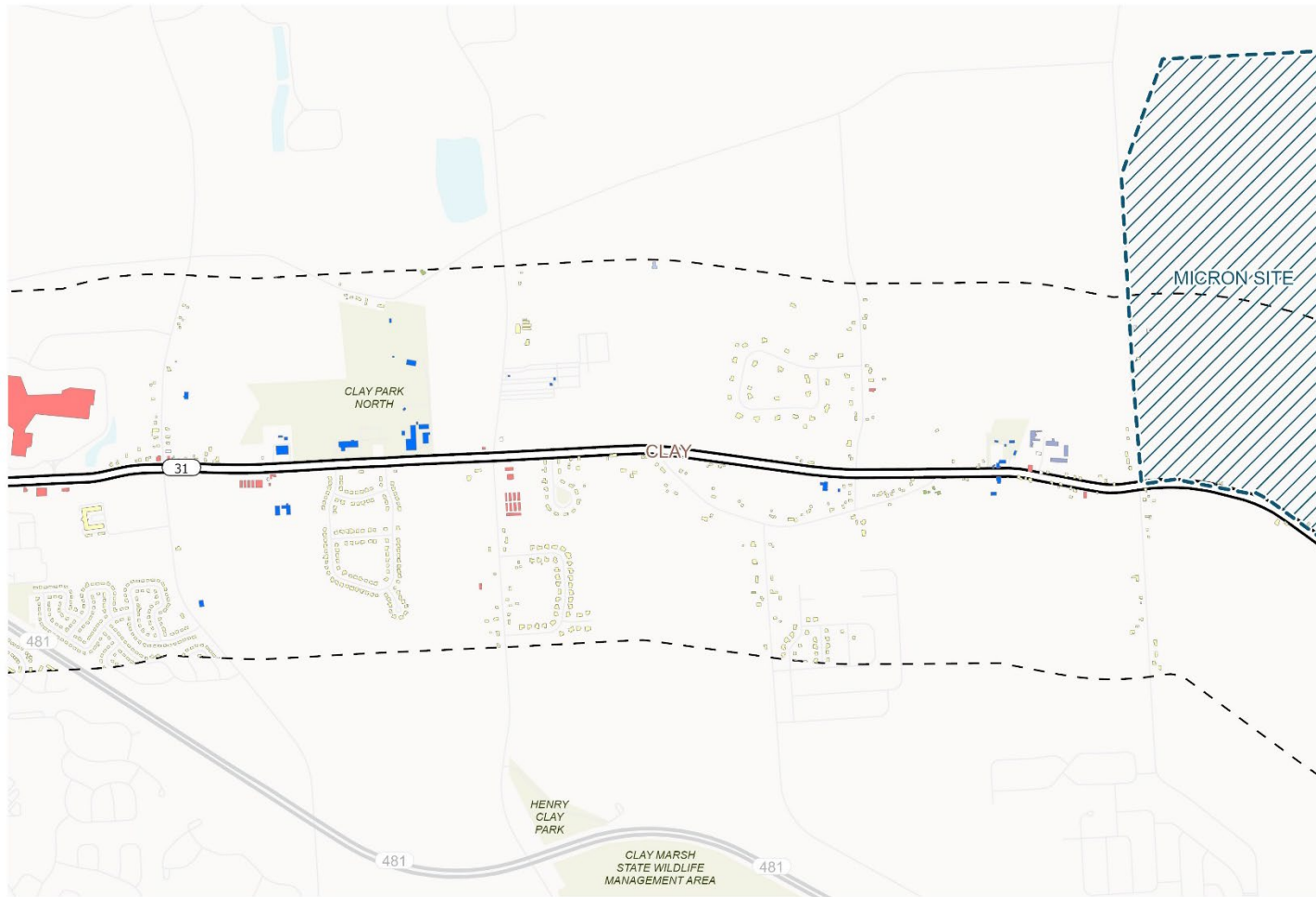
0 0.25 0.5
Miles



- | | | | |
|--------------------|-----------------|------------------------------|------------------------------|
| Agricultural | Industrial | Recreation and Entertainment | Vacant Land |
| Commercial | Public Services | Residential | Wild, Forested, Conservation |
| Community Services | | | |

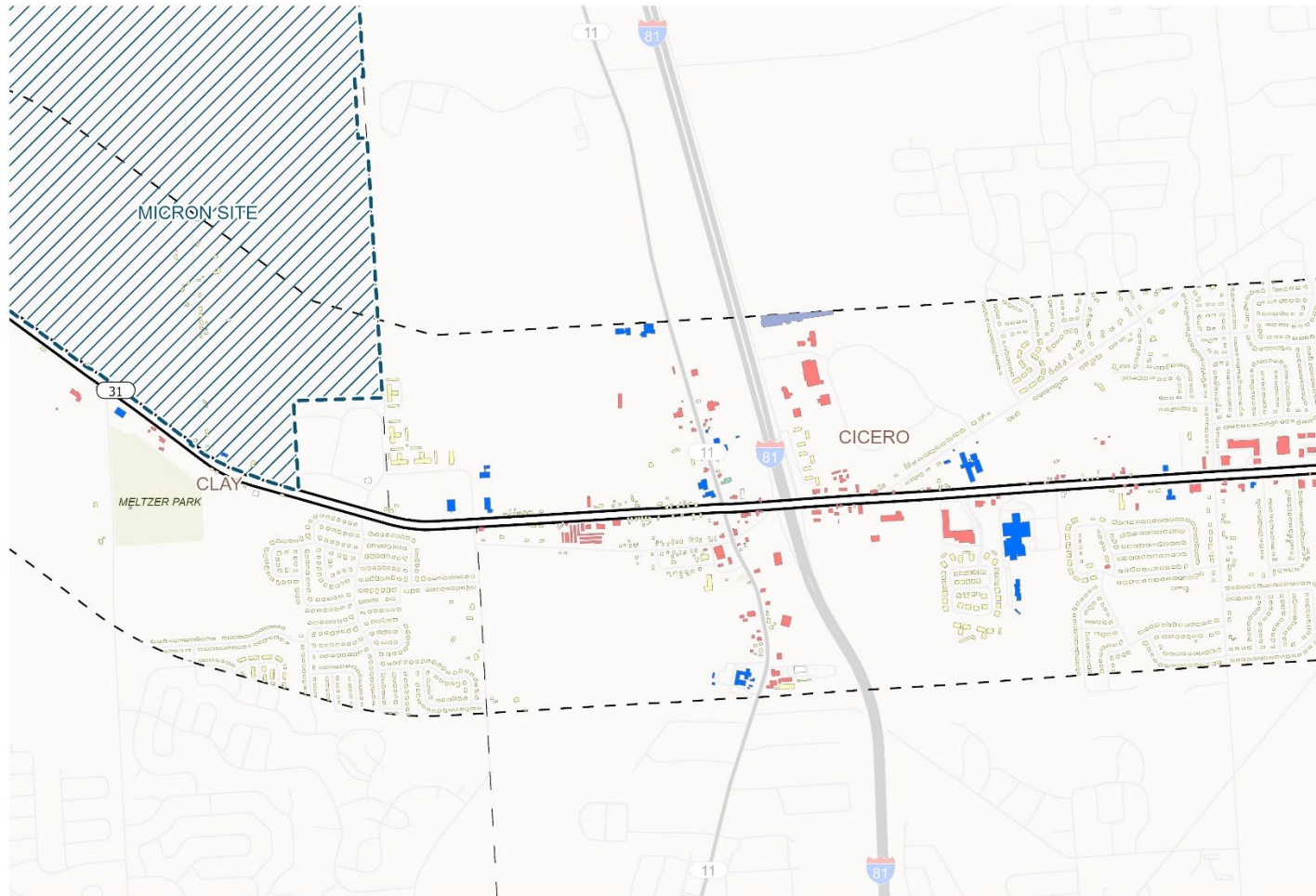
**Appendix C: Preliminary transit Service Options Assessment
3 NYS 31 Corridor Land Use and Zoning**

Figure 24: Building Footprints by Property Class in and around Clay Village



**Appendix C: Preliminary transit Service Options Assessment
3 NYS 31 Corridor Land Use and Zoning**

Figure 25: Building Footprints by Property Class in Cicero



- | | | | |
|--------------------|-----------------|------------------------------|------------------------------|
| Agricultural | Industrial | Recreation and Entertainment | Vacant Land |
| Commercial | Public Services | Residential | Wild, Forested, Conservation |
| Community Services | | | |

3.2 Zoning

Assessing the zoning regulations within the NYS 31 corridor is necessary to understand what future land uses may be allowed in the current regulatory environment. This assessment of existing zoning in the NYS 31 corridor will help to determine where there may be regulatory conditions that allow for the development of transit-supportive land uses in the future.

3.2.1 METHODOLOGY

Zoning regulations were evaluated within 0.5-miles of NYS 31 for the Village of Baldwinsville, and towns of Lysander, Clay, and Cicero to determine the total acres and allowed uses within each zoning district. Zoning districts that allow uses with property classes that function as destinations or employment centers, as well as multifamily residential development, are considered transit supportive. Additionally, for residential zoning districts, minimum lot sizes were evaluated against the American Planning Association publication “Context-Sensitive Zoning for Transit-Oriented Development” which identified one housing unit per 5,000 square feet as the threshold for residential developments to be supportive of transit.

3.2.2 FINDINGS

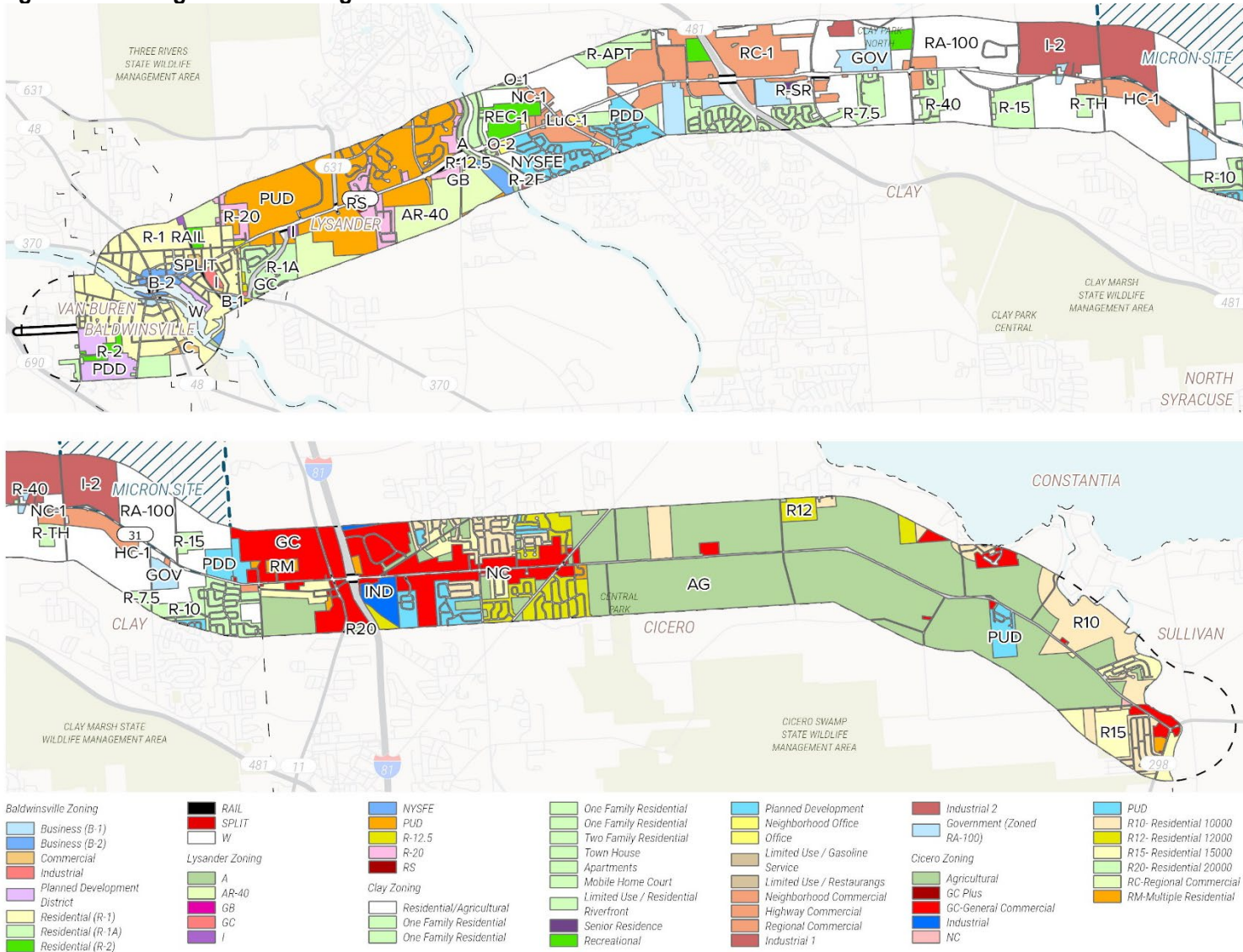
In total, there are fifty zoning districts across four municipalities within the study area. Each zoning district has unique regulatory conditions for development and each municipality has unique processes for permitting development. This complex regulatory environment may make navigating development possibilities within the NYS 31 corridor challenging. Additionally, while a surface level assessment of allowed uses and minimum lot sizes may result in many zoning districts being considered transit supportive, the reality of additional nuance within the zoning codes may make development with the appropriate density and mix of uses to support transit difficult.

Figure 22 depicts a map of the zoning districts within the study area. **Figure 23** depicts the zones that could be considered transit-supportive from the assessment of allowed uses and minimum lot size requirements. The portion of the study area to the west of NYS 481 has zoning that is potentially supportive of transit. Between NYS 481 and I-81 there are fewer areas that could potentially support transit however, there are clusters of parcels with zoning that could be transit supportive. East of I-81 is largely agricultural land and very few areas have zoning that could be supportive of transit.



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3 NYS 31 Corridor Land Use and Zoning**

Figure 26: Zoning Districts Along NYS 31 Corridor



Appendix C: Preliminary transit Service Options Assessment 3 NYS 31 Corridor Land Use and Zoning

Figure 27: Districts with Potentially Transit Supportive Zoning



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3 NYS 31 Corridor Land Use and Zoning

The following tables depict all zoning districts and the total land area of each zoning district within the 0.5-mile buffer around NYS 31 in the Village of Baldwinsville, Town of Lysander, Town of Clay, and Town of Cicero.

3.2.2.1 Village of Baldwinsville

There are eleven zoning districts in the Village of Baldwinsville within the study area (**Table 1**). Nearly two-thirds of the land in the Village is zoned for residential use. The Water, Rail, and Split zoning districts represent areas that are undevelopable. Of the residential uses in the Village, the majority allow a density that could be supportive of transit.

Table 1: Village of Baldwinsville Zoning Districts

Zone	Total Acres	Percentage within Study Area (Baldwinsville Only)
Residential (R-1)	611	49
Residential (R-1A)	147	12
Planned Development District	106	8
Water	106	8
Business (B-2)	43	3
Residential (R-2)	39	3
Commercial	22	2
Business (B-1)	12	1
Industrial	14	1
Rail	9	1
Split	1	<1



**Appendix C: Preliminary transit Service Options Assessment
3 NYS 31 Corridor Land Use and Zoning**

3.2.2.2 Town of Lysander

There are ten zoning districts in the Town of Lysander within the study area (**Table 2**). Areas zoned for residential use combine for roughly one-third of the land in the study area – none of these residential zones allow density that could be supportive of transit. The Planned Unit Development (PUD) district represents the largest land area in the Town within the study area. This district is intended to allow for flexibility in large-scale developments and could be transit supportive; however, projects are proposed and reviewed individually with little regulatory framework that actively encourages density or a mix of uses that could support transit. As a result, this district has historically resulted in only residential developments at a density that would not be considered transit supportive.

Table 2: Town of Lysander Zoning

Zone	Total Acres	Percentage within Study Area (Lysander only)
Planned Unit Development	766	52
Agricultural Residential - 40	313	21
Residential - 20,000	145	10
Agricultural	29	2
New York State Flowage Easement	36	2
Industrial	10	1
Residential - 12,500	14	1
General Business	2	<1
General Commercial	1	<1
Retail Service	6	<1



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3 NYS 31 Corridor Land Use and Zoning

3.2.2.3 Town of Clay

There are nineteen zoning districts in the Town of Clay within the study area (**Table 3**). Residential zoning districts combine to represent 40% of the land area assessed. While the Town’s R-2F and Apartments zoning districts allow for multifamily development, they do not meet the criteria to be considered transit supportive because the zoning requires a minimum lot size of 6,000 square feet per unit, which is less than the density threshold identified for this analysis. Additionally, in zoning districts that allow uses that function as destinations or employment centers there are open space and dimensional requirements that may make developing high-quality walking environments a challenge by creating large gaps between buildings.

Table 3: Town of Clay Zoning

Zone	Total Acres	Percentage within Study Area (Clay Only)
Residential / Agricultural	1,877	40
Regional Commercial	521	11
Industrial 2	384	8
Planned Development	263	6
One Family Residential (R-7.5)	304	6
Government (Zoned RA-100)	250	5
Highway Commercial	120	3
One Family Residential (R-15)	130	3
Recreational	119	3
One Family Residential (R-10)	108	2
Apartments	81	2
Neighborhood Commercial	28	1
One Family Residential (R-40)	58	1
Town House	58	1
Limited Use / Gasoline Service	6	<1
Office	18	<1



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3 NYS 31 Corridor Land Use and Zoning**

Zone	Total Acres	Percentage within Study Area (Clay Only)
Senior Residence	8	<1
Two Family Residential (R-2F)	1	<1
Neighborhood Office	1	<1

3.2.2.4 Town of Cicero

There are ten zoning districts in the Town of Cicero within the study area (**Table 4**). Agricultural and residential zones dominate the study area, combining for nearly three-quarters of all the assessed parcels in the Town. Of the residential zones, only the Multiple Residential zone allows a density that could be supportive of transit.

Table 4: Town of Cicero Zoning

Zone	Total Acres	Percentage within Study Area (Cicero only)
Agricultural	2,797	51
General Commercial	829	15
Residential 10,000	581	11
Residential 12,000	283	5
Residential 15,000	288	5
Planned Unit Development	189	3
Industrial	71	1
Multiple Residential	54	1
Neighborhood Commercial	8	<1
Residential 20,000	4	<1



3.3 Key Takeaways

There are areas with existing land uses within the NYS 31 corridor that can support transit.

The Village of Baldwinsville and several intersections contain existing land uses that are aligned with the principles of TOD. However, outside of the Village of Baldwinsville, these developments frequently have large surface parking lots, large setbacks, and low building density which detracts from the high-quality walking environments needed to support transit. Promoting infill development in underutilized parking lots and open spaces in these areas will add to the density of destinations, employment centers, and housing needed to support transit. Additionally, ensuring high-quality pedestrian infrastructure is provided in these areas to connect destinations is crucial.

There is a significant amount of vacant land that will likely see development pressure with the development of the Micron site.

Vacant land is the most prominent existing land use within the corridor. As the Micron site is developed it will drive demand for development near the site. There are several vacant parcels south of NYS 31 near the Micron site that are currently zoned for low density residential and agricultural use. This area presents a unique opportunity to promote TOD principles given the major employment center that Micron is anticipated to become.

Current zoning may create challenges for Transit Oriented Development.

While many zoning districts appear transit supportive from a high-level assessment, there are often additional requirements for large setbacks and open space set asides that make achieving the density needed for TOD difficult. Minor adjustments to these zoning districts to allow more structures to be built closer together may have a large impact on the style of development and the success of transit in the corridor. Additionally, there is very little land with zoning regulations that allow for a mix of uses, which is a foundational development type for Transit Oriented Development.

Very few residential zoning districts allow for the unit density needed to support transit.

The current regulatory environment for residential development within the NYS 31 corridor almost exclusively promotes low-density, single-family residential uses. Often, zoning districts that do allow multifamily residential uses have additional lot requirements that bring the unit density below what is considered necessary to support transit. Promoting unit-density bonuses within certain proximity to future transit stops may alleviate these barriers.



Appendix C: Preliminary transit Service Options Assessment

3 NYS 31 Corridor Land Use and Zoning

The current regulatory environment is complex and difficult to navigate.

With fifty unique zoning districts across four municipalities within the study area, understanding the regulatory environment will be a challenge for developers that want to build within the NYS 31 corridor. Many of the zoning districts identified as transit supportive are Planned Unit Development or Planned Development District zones that offer flexibility to developers but are also subject to rigorous local reviews with little guidance to suggest that these districts are intended to promote TOD style development. Additionally, these districts are typically intended to be used for large contiguous parcels while smaller scale infill development may be more appropriate considering much of the existing development throughout the corridor. Municipalities and developers may require technical assistance to understand how to design, evaluate, permit, and fund the types of projects that would support transit in the corridor.



4 Selection of Potential Transportation Service Options for Further Analysis

The main purpose of this task is to evaluate the five potential service options for the NYS 31 corridor and select up to three to advance for further analysis. The additional analysis will include ridership projections, order of magnitude construction and operating costs, a more detailed assessment of land use/zoning needs, and renderings of land use and transit. In order to select the three transportation service options to advance, the project team conducted Study Advisory Committee and focus group meetings in June 2024. The SAC and Focus Groups were given a summary of information regarding each mode, including case studies, costs, and target densities. A summary of the data discussed in this report as well as what was presented at the SAC and Focus Group meetings is shown in **Table 5**.

Upon review of the options with the SAC and Focus Groups, as well as the high-level assessment documented in this report, the project team selected Enhanced Fixed-Route Bus, BRT, and LRT as the three options to advance for further assessment. On-demand service was excluded from further analysis because of its low capacity that would not be supportive of the potential development that is likely to occur along the NYS 31 corridor. Streetcar was not advanced for further analysis because it has many features similar to LRT. Therefore, it was determined that if LRT was ultimately selected as the preferred transportation service option for the corridor, that Streetcar could be considered equivalent. The additional analysis on the three selected options will be documented in the final report.



Appendix C: Preliminary transit Service Options Assessment
4 Selection of Potential Transportation Service Options for Further Analysis

Table 5: Summary of Transportation Service Options

Mode	Service Frequency	Station Spacing (miles)	Station Amenities	Primary Operating Environment	Vehicle Types	Station Area Target Density	Is Current Zoning Supportive?	Potential Capacity	Capital Cost (Million \$ per Mile)	Operating Cost (per rider)
On-Demand Bus	On Demand	N/A	N/A	Mixed Traffic	Vans or Shuttle Buses	No Min Density	Yes	Low	N/A	\$10 - \$50+
Enhanced Fixed-Route Bus	10 – 30 Min	¼ - ½	Branded stations with shelters, real-time arrival/departure information	Mixed traffic with queue jumpers and transit signal priority	Standard transit bus with branding and enhanced on-board amenities	5-15 Dwelling Units/Acre 20 Jobs/Acre	Yes, but only in areas shown in Figure 24	Moderate	\$5 - \$10	\$5 - \$15
BRT	10 – 15 Min	¼ - ½	Large branded stations with shelters, off-board fare collection, level boarding platforms, real-time arrival/departure information	Bus-only lanes with transit signal priority	Modern, articulated, high-capacity vehicle design with branding	20-30 Dwelling Units/Acre 40-60 Jobs/Acre	No	High	\$20 - \$50	\$5 - \$10
Streetcar	6 – 20 Min	¾ - 1	Stations with similar design to that of enhanced bus with shelters, level boarding platforms, real-time arrival/departure information	Mix of dedicated ROW with transit signal priority and mixed traffic operation in constrained locations.	Modern, low-floor, single unit vehicles powered by overhead catenary	20-30 Dwelling Units/Acre 40-60 Jobs/Acre	No	High	\$30 - \$70	\$10 - \$20



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4 Selection of Potential Transportation Service Options for Further Analysis

Mode	Service Frequency	Station Spacing (miles)	Station Amenities	Primary Operating Environment	Vehicle Types	Station Area Target Density	Is Current Zoning Supportive?	Potential Capacity	Capital Cost (Million \$ per Mile)	Operating Cost (per rider)
LRT	5 – 30 Min	≥1	Large platforms that would support multi-unit trains with enhanced climate-controlled shelters, real-time transit information, level boarding, off-board fare collection	Dedicated ROW with transit signal pre-emption	Modern, low-floor, multiple-unit vehicles powered by overhead catenary	>40 Dwelling Units/Acre >70 Jobs/Acre	No	High	\$150 - \$350+	\$10 - \$20

