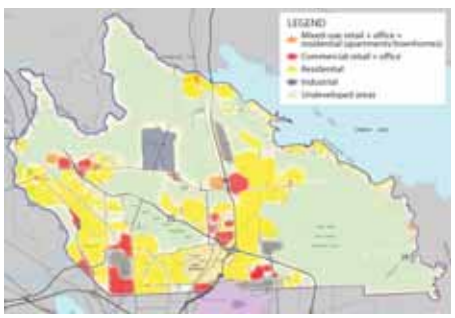
CLAY-CICERO

ROUTE 31

TRANSPORTATION STUDY



Final Report

Prepared by

SMTC

The Syracuse Metropolitan
Transportation Council

Prepared for

Town of Clay & Town of Cicero

March 2010

CLAY-CICERO ROUTE 31 TRANSPORTATION STUDY

Syracuse Metropolitan Transportation Council

Final Report
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This document was prepared with financial assistance from the Federal Highway Administration and the Federal Transit Administration of the U.S. Department of Transportation through the New York State Department of Transportation. The Syracuse Metropolitan Transportation Council is solely responsible for its contents.

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EXECUTIVE SUMMARY

Overview

Route 31 is a major east-west travel route through the Town of Clay and the Town of Cicero. Continued residential and commercial development in these towns combined with an ineffective local road network, limited east-west alternative routes, and a lack of multimodal travel options have severely strained the capacity of the road network. The interchanges of Route 481 and Interstate 81 with Route 31 currently experience congestion during peak commuter hours. An emerging node of large-scale commercial development near the Route 481 interchange has also contributed to congestion in that vicinity. Although Route 31 was recently widened at the Route 481 interchange, the majority of the corridor remains a two-lane roadway with a relatively rural character. Large areas of developable land combined with continued demand for housing and commercial development in Clay and Cicero are expected to result in increased traffic, placing a greater burden on the Route 31 corridor.

The issues that framed this study are summarized in the following problem statement:

> In the Towns of Clay and Cicero, development trends have and may continue to lead to the expectations of increasing travel demand along and adjacent to the Route 31 corridor. The aim of this study is to explore relationships between land use patterns and transportation alternatives as a framework for decision-making, consistent with available resources and environmental considerations.

Advisory Committee and Public Involvement

A Study Advisory Committee (SAC) was formed for this project. The SAC included representatives from the following organizations:

- New York State Department of Transportation
- Onondaga County Department of Transportation
- Onondaga County Office of Economic Development
- Syracuse-Onondaga County Planning Agency
- Central New York Regional Transportation Authority (Centro)
- North Syracuse Central School District
- Town of Cicero (Zoning Board, Planning Board, Town Board)
- Town of Clay (Department of Planning, Planning Board, Town Board)

The role of the SAC was to advise the SMTC on the technical content of deliverables and to provide needed input and guidance throughout the project. Eighteen SAC meetings were held during the course of this study. Information about the study was also distributed to a broader group of interested stakeholders.

The SMTC held three public meetings during this study to present results and elicit feedback from the public.

Study Area

This study is concerned with the Route 31 corridor in the Town of Clay and the Town of Cicero, as well as parallel and connecting roads that impact traffic conditions on Route 31. The focus area extends north of Route 31 to Verplank Road and Mud Mill Road and

south of Route 31 to Route 481. This study also looked at how land use and development throughout the Town of Clay and the Town of Cicero impact the conditions on Route 31.

Current Conditions

A review of the existing land use in the study area showed that large areas of both towns are vacant and undevelopable; residential uses occupy a significant portion of the land area; and commercial uses are clustered along Route 57, Route 11, and on Route 31 near the Route 481 interchange. Both towns have experienced significant residential and commercial development pressure in recent years.

Throughout most of Clay and Cicero, Route 31 is a two-lane rural highway. Route 31 has been widened to five, six, or even seven lanes in some areas where there has been significant commercial development. There are some sidewalks on Route 31, although they are not continuous throughout the study area, and there is a lack of pedestrian connections from Route 31 to the retail buildings in the commercial areas. Route 31 is designated as New York State Bike Route 5 within the study area. There are no bike lanes within the study area; however, significant portions of Route 31 within the study area – particularly the more rural sections – have wide, paved shoulders. A number of Centro bus routes provide service within the study area, but with limited frequency.

The Route 31 Transportation Study did not include intersection capacity analysis; however, a number of previous studies have examined traffic operations at intersections along Route 31. Most of these intersections currently operate at an acceptable level of service. However, there is expected to be a significant increase in the number of intersections along Route 31 operating with high levels of delay in the future, especially during the PM peak hour.

Study Area Issues & Goals

Based on discussions with the Study Advisory Committee and feedback from the public, four primary issues were identified for the study area:

- regional accessibility;
- arterial congestion (with contributing factors such as continuing development, lack of east-west travel options, lack of local street connectivity, the need for better access management, and limited alternatives to private automobile travel);
- development pressure; and
- coordinated planning.

Study goals were defined, with input from the SAC and the public, to address the study area issues. The study goals included:

- Reduce congestion around the existing interchanges.
- Examine the feasibility of a new I-81 interchange.
- Create additional east-west connections.
- Create connections between residential and commercial areas.
- Implement access management throughout the Route 31 corridor.
- Support transit use.
- Create walkable and bikeable neighborhoods and commercial centers.

- Promote infill development and new development adjacent to existing built-up areas.
- Preserve open space.
- Support a balanced mix of residential and commercial development.
- Develop mixed-use hamlets at selected locations.
- Promote economic development through well-planned and well-designed growth that preserves the community character and quality of life.
- Coordinate planning activities between Clay and Cicero.
- Integrate transportation and land use planning.
- Achieve a unified vision of the future of Clay and Cicero.

Evaluation of Alternatives

Based on the study area issues described above, SMTC staff and the SAC developed an initial set of alternative scenarios for future development in the study area. These future scenarios included changes to both the transportation network and the land use pattern from what is included in the current town plans. The impacts of these scenarios were evaluated using a number of criteria that reflect the goals put forth by the SAC members and the public. The evaluation compared each of the proposed alternatives to the Future Base alternative (the future development pattern included in the town plans with the existing transportation network plus known projects that are reasonably assumed to be completed by 2027, based on SAC input). The SMTC's travel demand model was used to evaluate the impact of the alternatives on the transportation network. Other impacts were evaluated qualitatively by SMTC staff and SAC members.

A total of eleven future scenarios were evaluated as part of this study: the Future Base scenario plus ten alternatives.

The future transportation alternatives included:

- two possible locations for a new I-81 interchange;
- new local road connections in the Clay commercial area;
- new local road connections around the Clay Business Park;
- upgrading Verplank and Mud Mill Roads;
- upgrading South Bay Road and adding a new I-81 overpass; and
- expanding or modifying express bus service in the study area.

The land use alternatives analyzed included:

- Alternative Land Use scenario (same amount of development as the Future Base but with a different spatial distribution, concentrating development south of Route 31 with increased density and more mixed-use development); and
- Limited Growth scenario (less future growth than the Future Base with higher densities and more mixed-use development).

All future scenarios result in additional traffic on Route 31 and throughout the study area compared to the existing conditions. The Limited Growth scenario results in the smallest increase in total traffic of all the future scenarios analyzed, with a projected increase in total 24-hour vehicle miles traveled (VMT) of 25 percent from 2003 to 2027. In comparison, the Future Base scenario results in 40 percent growth in VMT, and the Alternative Land Use scenario results in 36 percent growth in VMT from 2003 to 2027. The analysis showed that land use changes (both in spatial distribution and in magnitude of total growth) have a much more significant impact on total traffic in the Town of Clay

and Town of Cicero than any of the transportation network modifications that were modeled. The transportation network changes each had some modest benefits, but with limited geographic reach. The Limited Growth scenario achieved the most study goals while the alternatives that included a new I-81 interchange achieved the fewest study goals.

Recommendations

After reviewing all of the modeling results, alternatives evaluation, and public input, the SAC and SMTC staff developed the following list of recommendations for the Town of Clay and the Town of Cicero.

- Revise the existing Town of Clay and Town of Cicero planning documents to include lower levels of future growth.
- New development should focus on increasing density and mixing uses.
- Enhance transit service, with supportive land use practices.
- Upgrade Verplank Road.
- Build new local road connections in the Clay commercial area through developer mitigation.
- Build new local roads in the Clay Business Park area as development occurs.
- Reconfigure the Route 481 interchange (split the southbound on-ramp from Soule Road).
- Reconfigure the I-81 interchange to increase capacity and enhance safety.
- Do not build additional interchanges unless regionally significant development occurs that would necessitate additional Interstate access.
- Require new development to include pedestrian, bicycle, and transit accommodations.
- Practice good access management in commercial areas.
- Require roadway connections between residential areas (discourage cul-de-sacs).

SMTC staff also worked with the SAC members to develop an implementation plan that includes specific actions to achieve the study recommendations. The implementation plan is included in the final chapter of the full report.

1 INTRODUCTION

1.1 Overview

Route 31 is a major east-west travel route through the Town of Clay and the Town of Cicero. Continued residential and commercial development in these towns combined with an ineffective local road network, limited east-west alternative routes, and a lack of multimodal travel options have severely strained the capacity of the road network. The interchanges of Route 481 and Interstate 81 with Route 31 currently experience congestion during peak commuter hours. An emerging node of large-scale commercial development near the Route 481 interchange has also contributed to congestion in that vicinity. Although Route 31 was recently widened at the Route 481 interchange, the majority of the corridor remains a two-lane roadway with a relatively rural character. Large areas of developable land combined with continued demand for housing and commercial development in Clay and Cicero are expected to result in increased traffic, placing a greater burden on the Route 31 corridor.

The issues that framed this study are summarized in the following problem statement:

> In the Towns of Clay and Cicero, development trends have and may continue to lead to the expectations of increasing travel demand along and adjacent to the Route 31 corridor. The aim of this study is to explore relationships between land use patterns and transportation alternatives as a framework for decision-making, consistent with available resources and environmental considerations.

1.2 Study Objectives

One of the first steps in this study was to clearly define the desired study outcomes. The following four major objectives were identified:

- Plan for a future transportation system (including vehicular, bicycle, pedestrian, and transit transportation) that allows for sensible sustainable development (growth) while maintaining the integrity and capacity of the existing transportation system.

- Develop plans and policies that will minimize future vehicle miles traveled (VMT) (including non-vehicular modes of transportation).

- Develop plans and policies that protect the capacity of existing corridors using land use and zoning controls.

- Develop an implementation plan that includes: action plans, planning-level funding needs and potential sources, and policy recommendations for local government.

1.3 Study Process

In order to achieve the desired outcomes, the following activities were included as part of this study:

- An evaluation of an alternative east-west corridor or route parallel to Route 31 through Clay and Cicero (preferably with a connection to I-81).
- A way to route traffic easily and efficiently in support of the Clay Business Park with a connection to I-81.

- An examination of current transit challenges as well as some possible mitigation.
- An examination of the need for additional interchanges in Clay and Cicero with an eye towards reducing congestion and improving vehicular movement on Route 31, particularly in the vicinity of the existing I-81 interchange on Route 31.
- A consideration of future bicycle and pedestrian needs, including options to improve and/or possibly relocate NYS Bike Route 5 to a parallel corridor.
- An evaluation of the impact of future residential and commercial development plans on the transportation system and opportunities to mitigate any expected traffic issues through changes in future land use.

1.4 Public Involvement

Engaging the public early and often in the planning process is critical to the success of any transportation plan or program and is required by numerous state and federal laws. The Clay-Cicero Route 31 Transportation Study included the development of a Public Involvement Plan (PIP). The complete PIP for this project is included in Appendix A. The goals of the PIP for this study were to:

- create public awareness relative to the study's goals, objectives, and process, as well as publicize the public participation opportunities and activities available throughout the study; and
- involve the public throughout the planning process.

The Study Advisory Committee (SAC) for this project included representatives from the following organizations:

- New York State Department of Transportation
- Onondaga County Department of Transportation
- Onondaga County Office of Economic Development
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The role of the SAC was to advise the SMTC on the technical content of deliverables and to provide needed input and guidance throughout the project. Eighteen SAC meetings were held during the course of this study. Information about the study was also distributed to a broader group of interested stakeholders.

The SMTC held three public meetings during this study to present results and elicit feedback from the public. These meetings are discussed in more detail later in this report and summaries of the meetings are included in Appendix B.

1.5 Study Area

This study is concerned with the Route 31 corridor in the Town of Clay and the Town of Cicero, as well as parallel and connecting roads that impact traffic conditions on Route 31. The focus area extends north of Route 31 to Verplank Road and Mud Mill Road and south of Route 31 to Route 481. This study also looked at how land use and development throughout the Town of Clay and the Town of Cicero impact the conditions on Route 31. Figure 1-1 shows the Town of Clay and the Town of Cicero.

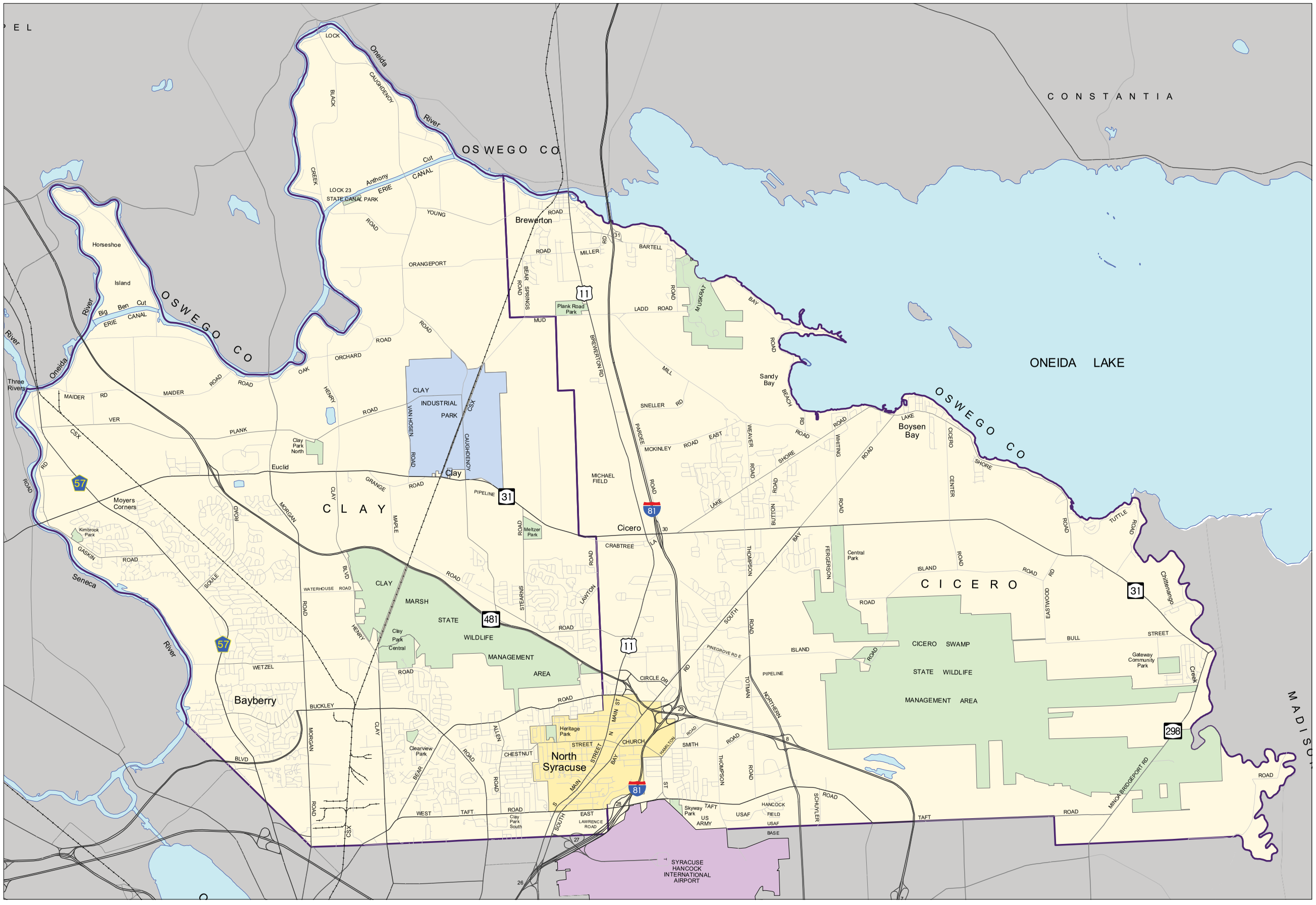

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Figure 1-1: Study Area

Clay-Cicero Route 31 Transportation Study

Roads
- Local
- Minor Collector
- Collector
- Minor Arterial
- Principal Arterial

N

0 0.5 1 2 3 Miles

- Study Area (Towns)
- Village

1.6 Existing Plans and Studies

This section briefly summarizes the existing plans and studies that may impact land use and transportation development in the Town of Clay and Town of Cicero.

1.6.1 Regional Planning Documents

2010 Development Guide for Onondaga County
(Syracuse-Onondaga County Planning Agency, June 1998)

The goals and policies of the 2010 Development Guide are intended to guide future decisions on land use, transportation and infrastructure development, utilizing balanced goals that include economic growth, creating an attractive community, encouraging diversity and choice, and enhancing fiscal strength. The **"**Policies for Investment and Land Use", as defined in the 2010 Development Guide, call for investment in existing communities, preservation of existing infrastructure and transportation assets, sustainable urban and suburban settlement patterns, and protection of the rural economy, agricultural land, and access to natural resources. The 2010 Development Guide encourages the public and private sector to make funding, permitting, and planning decisions utilizing these guiding principles, and to be cognizant of individual projects' effects on the quality of life of all residents. Growth is encouraged in areas currently served by infrastructure, especially transportation infrastructure. One action identified by the 2010 Plan that is necessary to facilitate the concepts identified in the plan is the modification of land use regulations within the respective city, towns and villages to allow for and encourage a renewed emphasis on mixed-use neighborhoods, higher-density developments, and preservation of open space. SOCPA is currently revising and updating the 2010 Plan.

Onondaga County Settlement Plan
(Duany Plater-Zyberk & Company and Environmental Design and Research, 2001)

The Onondaga County Settlement Plan was designed to present a comprehensive "toolbox" of strategies to encourage traditional neighborhood development patterns as an alternative to the conventional zoning and suburban development patterns that many deem an inefficient use of land and a burden on transportation facilities. The Settlement Plan includes a set of transportation policies to guide the County's infrastructure planning and recommends that these policies be implemented by individual municipalities as well. The transportation policy recommendations are described on three levels: the region, the neighborhood, and the street. The Settlement Plan recommends transportation policies that seek to:

- Provide a transportation system that allows users to choose from many modes, such as walking, biking, and transit use in addition to cars
- Emphasize the importance of accessibility and the positive impact of mixed land uses on accessibility
- Preserve existing highway capacity and concentrate development in nodes

Automobility vs. mobility vs. accessibility

Automobility is "the provision of roadways to allow easy automotive access to destinations."

Mobility is "the provision of multiple modes of transportation to provide such access."

Accessibility is "the ability to access ones daily needs with the minimum amount of travel and cost. "

Source: Onondaga County Settlement Plan (2001) Duany Plater-Zyberk & Company.

- Enhance connectivity for walking, biking, and driving
- Preserve natural features
- Promote mixed land uses and shared parking
- Promote local streets as public spaces
- Provide streetscaping amenities, especially street trees

Long-Range Transportation Plan 2007 Update
(Syracuse Metropolitan Transportation Council, 2007)

The SMTC's Long-Range Transportation Plan (LRTP) is a twenty-year guide for transportation development in the Syracuse Metropolitan Area. The LRTP presents a vision for the future that is focused on preserving and maintaining the existing transportation infrastructure. The LRTP seeks to address mobility constraints and expand travel choices primarily through innovative operations management and integrated transportation and land use planning, rather than infrastructure expansion. The goals of the LRTP 2007 Update are:

- SAFETY: To enhance the safety of the people using the transportation system
- MOBILITY: To improve the mobility options for people within the Syracuse Metropolitan Planning Area
- ENVIRONMENT: To provide a clean and environmentally sound transportation system for current and future residents
- ECONOMY: To enhance the area's economic competitiveness thereby increasing opportunities for employment
- LAND USE: To promote the development of an efficient urban area and a sense of community through transportation planning
- FACILITIES: To provide safe, clean, well-maintained and efficient transportation infrastructure.

Strategies for a New Age: New York State's Transportation Master Plan for 2030
(New York State Department of Transportation, 2006)

Regional and statewide planning themes
- Preserve and maintain existing infrastructure
- Address mobility constraints through operations management
- Expand travel choices
- Integrate land use and transportation planning

Strategies for a New Age: New York State's Transportation Master Plan for 2030 is the State's comprehensive statewide transportation master plan and serves as the federally recognized, long range transportation plan for the State of New York pursuant to Federal law and in accordance with State Transportation Law. The State Transportation Master Plan is focused on five priority themes: Mobility and Reliability, Safety, Security, Environmental Sustainability and Economic Competitiveness. The State Transportation Master Plan recognizes the importance of integrated transportation and land use planning and supports preservation of existing infrastructure, stating that:

- "demands on the transportation system are influenced a great deal by land use decisions" (p. 39) and
- "preservation of existing assets and improved management of the transportation system are the primary means of improving mobility and reliability for transportation customers" (p.50).

1.6.2 Town Plans

Both the Town of Clay and the Town of Cicero recently completed major planning efforts: the Town of Clay Northern Land Use Study (May 2007) and the Town of Cicero Comprehensive Plan Update (Kent Environmental Planning & Design and O'Brien & Gere Engineers, September 2006). The Clay study is focused on the section of the town located north of Route 31 and Route 481 while the Cicero Plan is a town-wide comprehensive plan. Both of these plans include assessments of existing land use, visions for future land development, and recommendations for modifying the existing transportation system. The Town of Cicero plan included detailed traffic analysis at major intersections along the Route 31 corridor.

According to the Town of Clay Northern Land Use Study, the total number of households in the entire Town of Clay is expected to increase by approximately 15 percent by 2025. The total number of households located north of Route 31 is expected increase by 30 percent. The Town of Clay Northern Land Use study also noted the following proposed projects in the town:

- Three Rivers waterfront development – mixed-use/New Urbanist development at the confluence of the Seneca, Oswego, and Oneida Rivers.
- Main Street project - business facade improvements, streetscapes, improved signs, and street trees for the Euclid and Clay hamlets.
- Clay Business Park – approximately 1,200 acres of industrial-zoned land located on the north side of Route 31 and bisected by Caughdenoy Road. The Onondaga County Industrial Development Agency owns 250 acres in the southeast corner of the park.

Growth is also expected to continue, at least in the short term, in the Town of Cicero. According to the Town of Cicero Comprehensive Plan Update:

- The Town of Cicero experienced total growth of 24 percent between 1970 and 2000.
- Between 2000 and 2004, the Town of Cicero had the second highest rate of population growth in Onondaga County.
- During the same time period the number of households grew over 76 percent (from 5,960 households in 1970 to 10,538 households in 2000) as household size has declined over time.
- An average of over 200 new housing units per year were built in the Town between 2000 and 2004.
- Single-family homes made up nearly 85 percent of the Town's housing supply in 2000.
- Growth trends are expected to continue in the short term (five to seven years), after which the rate of growth will gradually decline.
- People age 50 and older are expected to make up a larger proportion of the town's population in the future.

Expected population changes
- Growth is expected to continue
- Aging population
- Residential use is predominantly single-family
- Continued demand for residential development, especially north of Route 31 in Clay

1.6.3 Other local planning studies

A number of related planning studies in the Town of Clay and Town of Cicero have been completed, including:

- Route 31 & Route 57 Land Use and Circulation Study (Clough, Harbour & Associates, LLP, November 1999)
- Route 31 & Route 57 Corridor Study (FRA Engineering, April 2006)

- Town of Clay Travel Demand Modeling and Analysis (Cambridge Systematics, April 2007)
- Thompson Road Study: Travel Demand Modeling and Operational Analysis of the Thompson Road and NYS Route 31 Corridors (Edwards and Kelcey, 2007)

The first two studies listed above focused on Route 31 from the Belgium Bridge to Henry Clay Boulevard and Route 57 from Three Rivers to Redwing Drive. The 1999 Route 31 & Route 57 Land Use and Circulation Study examined existing and future land uses and general transportation issues, while the 2006 Route 31 & Route 57 Corridor study included an in-depth analysis of traffic operations in that study area.

The Town of Clay Travel Demand Modeling and Analysis was completed at the request of the Town of Clay. This technical analysis task involved the use of the SMTC's travel demand model to assess the transportation impacts of proposed land use changes and roadway improvements in the portion of the town along Route 31 and Verplank Road between Route 57 and Route 481. The results of this technical analysis (included in Appendix D) support the idea that increasing roadway connectivity and providing alternative travel routes will allow the existing transportation network to function at an acceptable level of service without major road widening or new construction.

The SMTC also completed the Thompson Road Study travel demand modeling and analysis for the Onondaga County Department of Transportation. This task was focused on Thompson Road between Route 31 and Northern Boulevard in the Town of Cicero, although the analysis also included a section of Route 31 between the I-81 interchange and South Bay Road.

2 CURRENT CONDITIONS

2.1 Demographics

2.1.1 Overview of Study Area Population

Table 2-1 lists basic demographic characteristics of the Town of Clay and Town of Cicero.

Table 2-1: Selection of Demographic Characteristics (Census 2000)

	Town of Clay	Town of Cicero	Onondaga County
Total population	58,805	27,982	458,336
Population 65 years and over	5,472 (9.3%)	2,981 (10.7%)	63,294 (13.8%)
Average household size	2.63	2.65	2.46
Mean travel time to work	20.0 minutes	19.5 minutes	19.3 minutes
Median household income (1999)	$50,412	$50,055	$40,847
Individuals below poverty level	3,320 (5.7%)	1,409 (5.1%)	54,208 (12.2%)
Median home value (single-family owner-occupied)	$85,500	$86,200	$85,400

Source: U.S. Census Bureau, *Census 2000*, Summary File 1 and Summary File 3

The data in Table 2-1 indicate that the Town of Clay and the Town of Cicero are, demographically, very similar. As compared to Onondaga County, these two towns have higher median household incomes, lower poverty rates, lower proportions of elderly people, slightly higher average household sizes, slightly higher median home values and almost equivalent mean commute times.

Figure 2-1 shows population density throughout the Town of Clay and Town of Cicero. This area is generally not very densely populated, with fewer than 500 people per square mile in most of the two towns. However, there are some fairly densely populated areas in the southern part of the Town of Clay, where there are many residential subdivisions. These areas of the Town of Clay – with over 5,000 people per square mile – are comparable to some residential neighborhoods in the City of Syracuse[1] in terms of population density. With the exception of the far western end, the Route 31 corridor is populated at a relatively low density.

A review of other demographic data revealed that the average household size and the median household income are fairly uniform throughout the Town of Clay and Town of Cicero. The minority and elderly population densities generally align with the overall population density throughout the two towns. Additional demographic mapping is included in Appendix C.

[1] Gross population density in the City of Syracuse is 5,871 people per square mile.

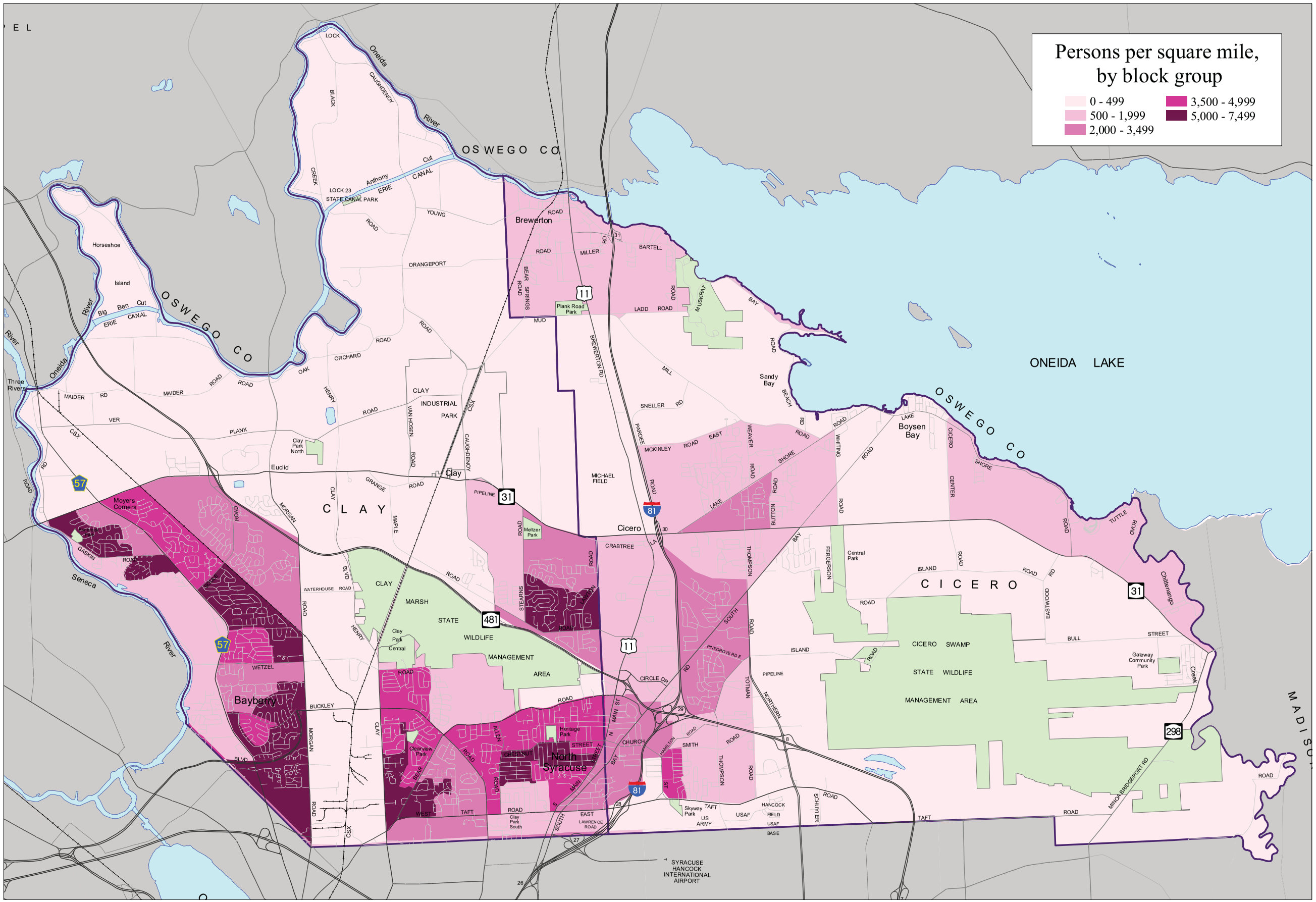

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Figure 2-1: Population Density

Clay-Cicero Route 31 Transportation Study

Data Sources: SMTC
Prepared by SMTC, 12/2007

2.1.2 Commuter Flows

There are far more people who live in the Town of Clay and Town of Cicero than there are people who work in these two towns. Nearly 45,000 workers reside within these two towns while a little over 29,000 people work in these two towns. This means, not surprisingly, that most employed persons living in the Town of Clay and the Town of Cicero commute to locations outside the study area. Approximately 33,000 study area residents commute to locations outside of the study area while only about 17,000 workers from other locations commute to jobs within the study area. The high number of Clay and Cicero residents that commute to locations outside of these two towns places a large burden on regional travel routes such as Route 31 and the two interchanges within the study area.

Figures 2-2 and 2-3 show employment locations for Clay and Cicero residents and place of residence for people that work in Clay or Cicero.

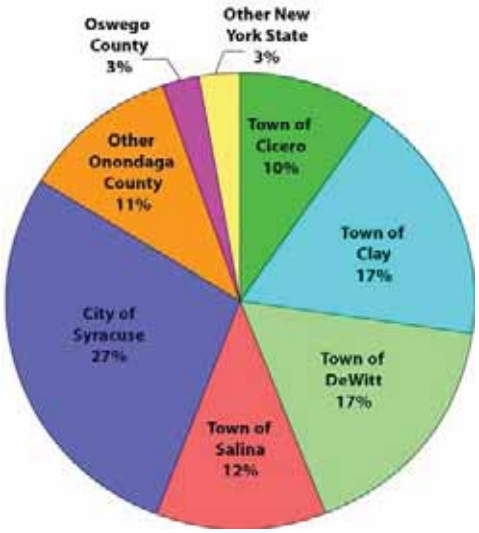

Figure 2-2: Place of Employment for Clay and Cicero Residents
Source: Census Transportation Planning Package

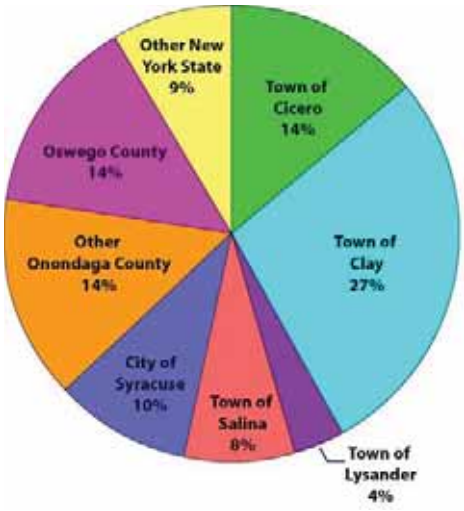

Figure 2-3: Place of Residence for Persons Working in Clay and Cicero
Source: Census Transportation Planning Package

The following conclusions can be drawn from Figures 2-2 and 2-3:

- The single most common place of employment for Clay and Cicero residents is the City of Syracuse, although this represents less than one-third of workers residing in the study area. However, the percentage of Clay and Cicero residents who work within the study area is the same as the percentage of Clay and Cicero residents that work in Syracuse.
- Over half of Clay and Cicero residents work at locations south of the study area (Syracuse, Salina, DeWitt).
- The single most common place of residence for people who work in Clay or Cicero is the Town of Clay.
- Most people who work in Clay or Cicero live outside of these two towns Of the workers who live outside of the study area, the single most common place of residence is Oswego County, followed by the City of Syracuse. Other workers from outside the study area live in various towns throughout Onondaga County and other areas of New York State.

2.2 Existing Land Use

Figure 2-4 shows existing land uses in the Town of Clay and Town of Cicero. From this map, it is apparent that:

- Much of these two towns is vacant and undevelopable.
- Residential uses occupy a significant portion of the land area.
- Commercial uses are clustered along Route 57, Route 11, and on Route 31 near the Route 481 interchange.

The Town of Cicero Comprehensive Plan Update and the Town of Clay Northern Land Use Study also provide some additional information about the current land uses in the two towns.

According to the Town of Cicero Comprehensive Plan Update:

- The two major interstate highways in the study area provide access that promotes development but also create barriers that "segment the town".
- A large portion of the town is undevelopable due to the presence of the Cicero Swamp and other wetlands.
- Significant areas of the town lack sanitary sewers and thus require individual septic systems. The areas lacking sewers include most of the property adjacent to the Cicero Swamp, a section along Route 31 between South Bay Road and Cicero Center Road and a section along Route 11 north of McKinley Road.
- Public water is provided to most areas of the town.
- There is a major electrical transmission line easement that generally runs in a north-south direction along the western edge of the town.
- Recommendations for future land use were "geared to balancing the town's recent boom in the development of single-family homes with a desire to encourage a controlled increase in commercial, business, and industrial uses in the Town." (p. 4)

Existing land use

- Lack of public sewers in large areas of both towns
- Significant amounts of vacant agricultural land in northern Clay
- Commercial uses are concentrated along Route 31, particularly around the interchanges
- Clay Business Park currently has limited use
- Cicero Swamp will remain undevelopable

According to the Town of Clay Northern Land Use Study:

- Currently, 15 percent of the town's population resides north of Route 31.
- Vacant agricultural land is the predominant use north of Route 31. This land is zoned RA-100 (Residential Agricultural District), providing significant potential for development.
- The 250-acre Clay Business Park, owned by the Onondaga County Industrial Development Agency (OCIDA), presently has limited use. OCIDA is promoting the site for a major development.
- Most of the land north of Route 31 is not served by public sewers. Some areas, especially in the northeastern portion of the town, also have limited septic suitability.
- Some rural areas north of Route 31 are not served by public water.

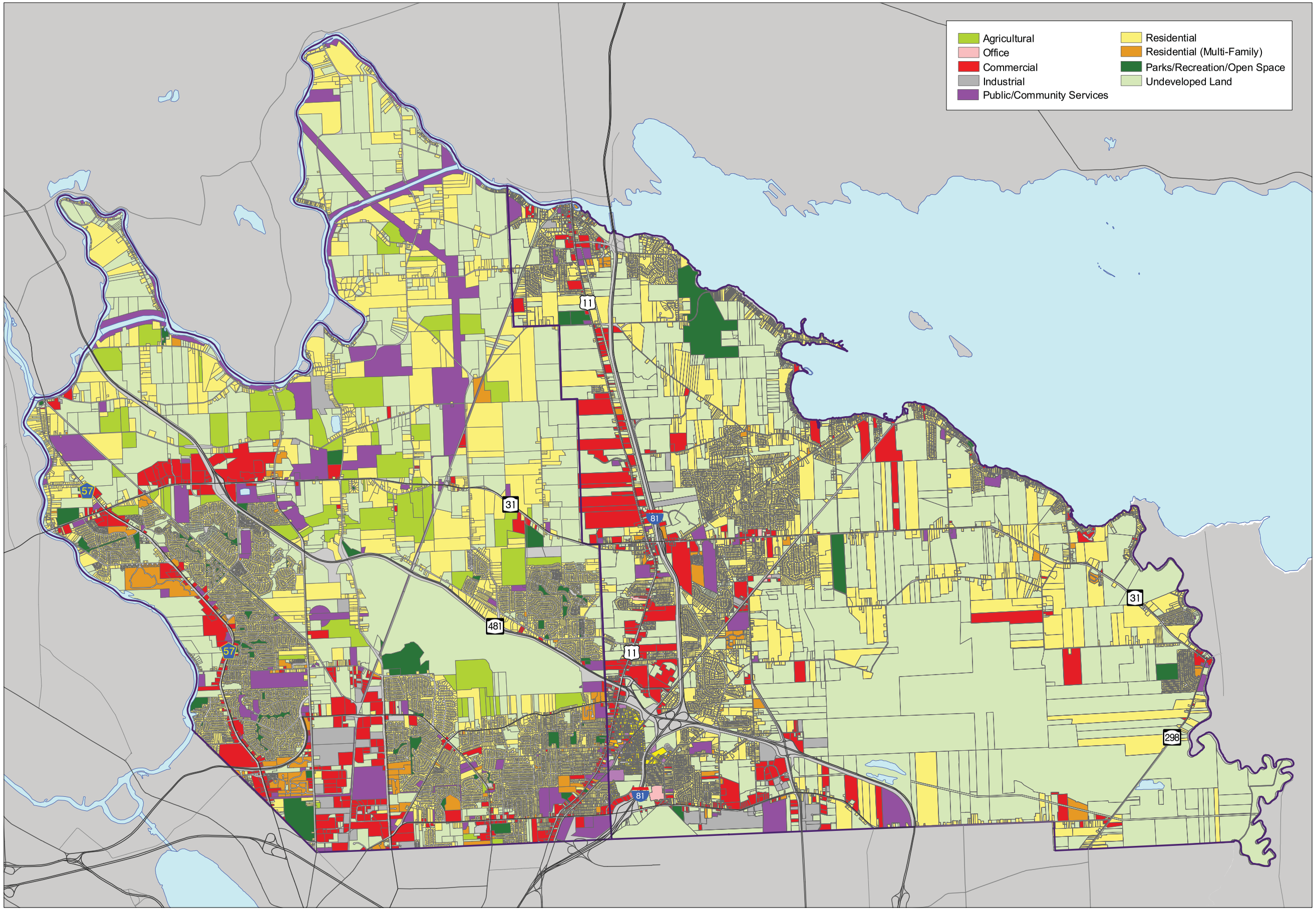

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Figure 2-4: Existing Land Use

Clay-Cicero Route 31 Transportation Study

N

0 0.5 1 2 3 Miles

Towns

Data Sources: SMTC
Parcel Boundaries: Town of Cicero, SOCPA
Land Use: SOCPA, Town of Cicero Comprehensive Plan Update (2006)

Prepared by SMTC, 12/2007

2.3 Existing Transportation System

2.3.1 Route 31 Lane Configuration

The lane configuration of Route 31 varies through the study area, as shown on Figure 2-5. Beginning at the western edge of the Town of Clay, Route 31 has a five-lane section on the Belgium Bridge over the Seneca River, with two travel lanes in each direction and a westbound left turn lane approaching River Road (just outside the study area). Moving from west to east, the five-lane section, generally with a two-way center left-turn lane, is maintained until just west of the COR Center entrance. Approaching COR Center, Route 31 widens to a six-to-seven-lane section with two through travel lanes in each direction and varying turn lanes at each intersection. This configuration is maintained through the Great Northern Mall area. East of Morgan Road, Route 31 narrows to a single lane in each direction. The road widens again approaching the intersection with Route 11. Between Route 11 and Lake Shore Road, there are two through travel lanes in each direction with a center two-way left-turn lane and from Lake Shore Road to Cicero-North Syracuse High School Route 31 consists of four lanes total. East of the high school, Route 31 again narrows to a two-lane section and this configuration is maintained to the eastern edge of the Town of Cicero (Bridgeport).

Route 31 at Route 57

Route 31 near the Route 481 interchange

Route 31 passes over Route 481 in the Town of Clay and passes under Route 81 in the Town of Cicero. There is an at-grade freight railroad crossing on Route 31 east of Caughdenoy Road in the Town of Clay.

Route 31 typical section between Henry Clay Boulevard and Route 11

Route 31 near the I-81 interchange

2.3.2 Pedestrian and Bicycle Facilities

There are some sidewalks on Route 31, although they are not continuous throughout the study area, as illustrated by Figure 2-5. The specific segments of Route 31 that have sidewalks are:

- North side of the Belgium Bridge, ending at Gaskin Road
- Both sides of Route 31 from the Kimbrook Plaza signal to just east of Route 57
- North side of Route 31 from COR Center to Route 481 SB off-ramp
- South side of Route 31 from Sports Authority/Raymour & Flanigan to Soule Road
- North side of Route 31 from Great Northern Mall east to the Mud Creek bridge (east of Morgan Road)
- Just west of Route 11 to Lake Shore Road (north side) and Cicero-North Syracuse High School (south side).
- South side of Route 31 from the Kinney/shopping plaza driveway to Route 298.

Route 31 is designated as New York State Bike Route 5 within the study area. There are no bike lanes within the study area; however, significant portions of Route 31 within the study area – particularly the more rural sections – have wide, paved shoulders.

Typical sidewalk along the north side of Route 31 between COR Center and Route 481

Sidewalks, wide shoulders, and bike route signage in the Euclid area, near Morgan Road

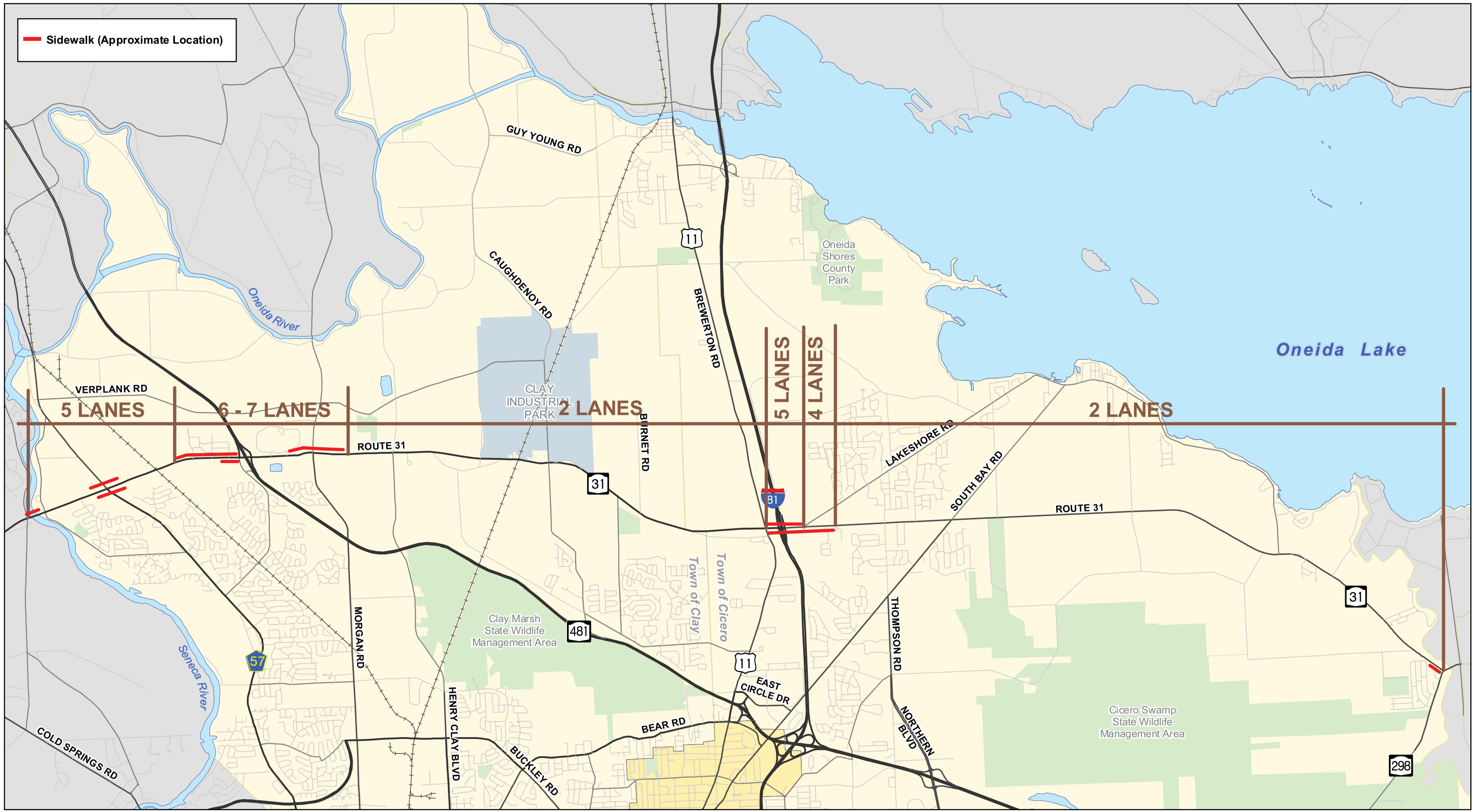

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Figure 2-5: Route 31 Road Sections and Sidewalk Locations

Clay-Cicero Route 31 Transportation Study

Roads
- Local
- Minor Collector
- Collector
- Minor Arterial
- Principal Arterial

N

0 0.25 0.5 1 1.5 2 Miles

Data Sources: SMTC, NYSDOT 2001
Prepared by SMTC, 8/2009

An inventory of pedestrian accommodations at signalized intersections within the study area is shown in Table 2-2. Generally pedestrian signals are provided wherever there are crosswalks; however, many intersections within the study area lack crosswalks.

Table 2-2: Pedestrian Accommodations at Signalized Intersections

Location	Crosswalks?	Pedestrian Signal Heads?	Push buttons?
Gaskin Rd.	Only SB and WB approaches	No	Yes
Kimbrook Plaza	No	No	No
Route 57	All except WB approach	Yes	Yes
COR Center	No	No	No
Dell Center	All approaches	Yes	Yes
Carling Rd.	All except WB approach	Yes	Yes
Wegmans east	All except WB approach	Yes	Yes
Soule Rd./Rt. 481 SB off-ramp	No	No	No
Rt. 481 NB ramps	No	No	No
Market Fair North	No	No	No
Mall west	No	No	No
Mall east	No	No	No
Morgan Rd.	SB and WB approaches only	Yes	Yes
Henry Clay Blvd.	No	No	No
Route 11	All approaches	Yes	Yes
Route 81 SB ramps	NB and SB approaches only	No	No
Route 81 NB ramps	NB and SB approaches only	No	No
Thompson Rd.	No	No	No
South Bay Rd.	No	No	No

There is a lack of pedestrian connections from Route 31 to the retail buildings in the commercial areas. In order to reach a store, a pedestrian on Route 31 would need to walk along roads and commercial driveways and across large parking areas that lack designated walkways.

Internal roads lack sidewalks

Large parking areas are uninviting to pedestrians

2.3.3 Transit

The following Centro bus routes provide service within the Route 31 corridor:

- Route 246/246X – Oswego: City of Oswego to downtown Syracuse via Route 57.
- Route 46/146/246 – Liverpool & Route 57: Great Northern Mall to downtown Syracuse and Syracuse University via Route 57.
- Route 48/148/248 – Liverpool Morgan Road: Great Northern Mall to downtown Syracuse via Morgan Road.
- Route 88/188/288/388 – North Syracuse–Cicero–Central Square to downtown Syracuse via Route 11.

These routes provide service every day of the week. Hours and frequency vary but service is generally provided from early morning through early evening with relatively long headways (30 minutes or longer between bus arrivals). These routes serve Park-N-Ride lots at Great Northern Mall, Seneca Mall, and Wegmans (Route 57). As is true throughout the Centro system, the bus routes within the study area provide transportation from a suburban area to downtown Syracuse with the major transfer point located downtown. Figure 2-6 shows the location of transit facilities and routes within the study area.

There are Centro bus stop signs located on the south side of Route 31 in the Great Northern Mall area; however, there are no sidewalks or crosswalks provided in this area. There are no bus shelters on Route 31.

2.3.4 Capacity Analysis

The Town of Cicero Comprehensive Plan Update, the Route 31 & Route 57 Corridor Study, and the Thompson Road Study included capacity analysis at intersections on Route 31. The existing and expected future levels of service for selected intersections within the study area are shown in Table 2-3. Since the analysis results shown in Table 2-3 were compiled from a number of previous studies, the "Future" analysis year varies (2010, 2016 or 2030, as described in the table notes).

The Town of Cicero Comprehensive Plan Update included traffic analysis for a ten-year planning horizon. New trips were generated for the ten-year land use projections and assigned to the roadway network. The Comprehensive Plan also applied a 1 percent per year background growth rate to existing traffic volumes.

The Route 31 & Route 57 Corridor Study used 2010 land use projections to forecast future traffic volumes in the study area, in addition to a background growth rate that accounts for development outside of the immediate Route 31 and Route 57 corridors (4 percent per year, for five years, applied to local roads north of Route 31, 1 percent per year to local roads south of Route 31, and 2.7 percent per year to Route 481 traffic).

Intersection capacity analysis compares the actual volume of traffic at an intersection to the maximum volume of traffic that can pass through an intersection within a specified period of time (typically one hour) based on factors such as the number of travel lanes, width of travel lanes, and the type of traffic control (such as a stop sign or a traffic signal). Various software programs are used to automate the capacity analysis procedures described in the Transportation Research Board's *Highway Capacity Manual*. The capacity analysis procedures are used to calculate the amount of "control delay" experienced by drivers at an intersection. Control delay is the time that a driver spends decelerating, stopped, moving up in queue, and accelerating as a result of a traffic signal or stop sign. A letter grade – called a **level of service** (LOS) – is assigned to individual movements and/or a whole intersection based on the average control delay. There are six possible levels of service, from LOS A to LOS F, and each level of service corresponds to a range of delay values. LOS A represents ideal conditions with minimal delay to travelers. LOS F indicates that excessive delay is experienced at an intersection. Generally, LOS D is considered the minimum

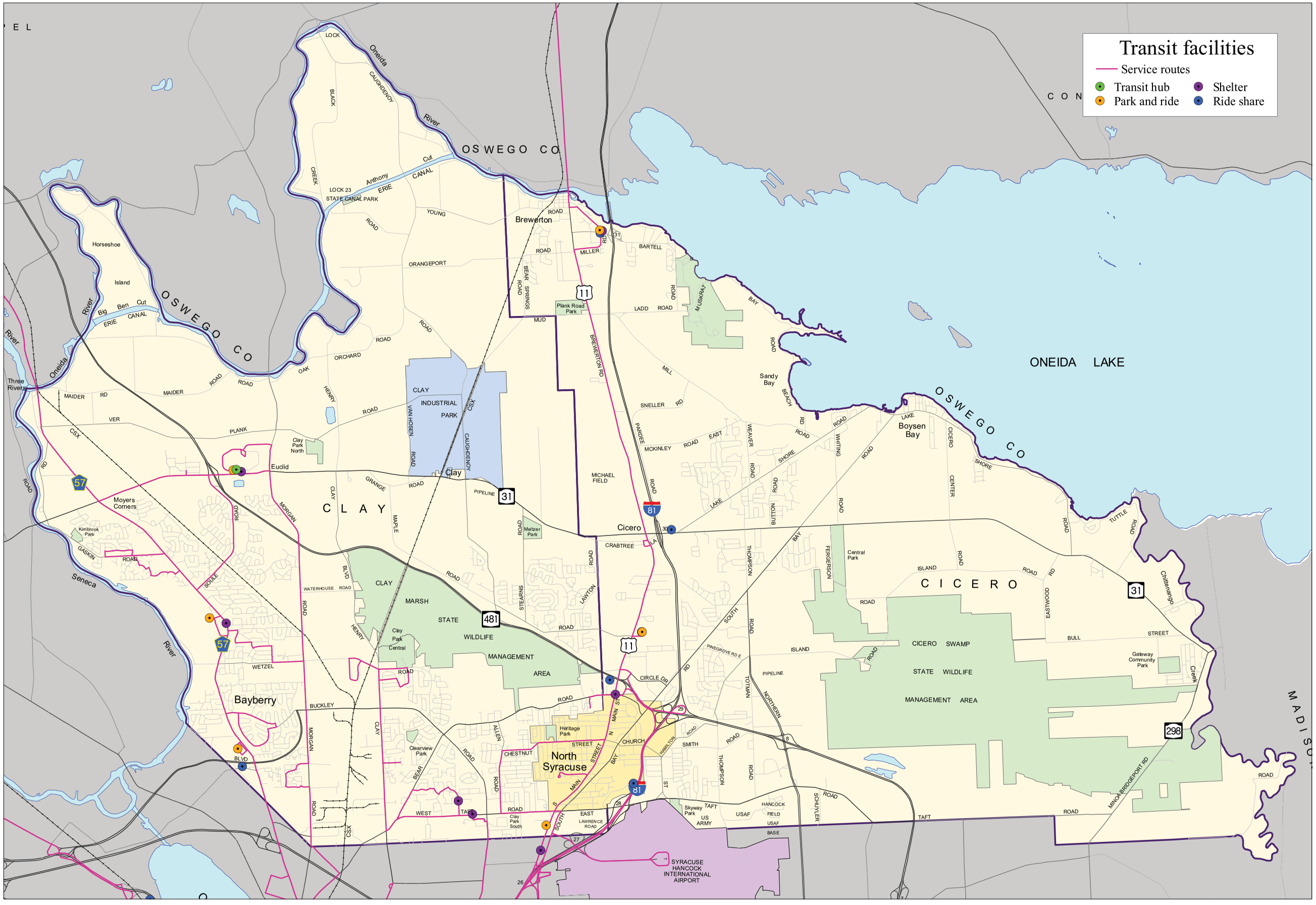

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Figure 2-6: Transit Service Map

Clay-Cicero Route 31 Transportation Study

Roads
- Local
- Minor Collector
- Collector
- Minor Arterial
- Principal Arterial

N

0 0.5 1 2 3 Miles

Study Area (Towns)

Table 2-3: Existing and Future Level of Service Summary for Intersections in the Route 31 Corridor

Location (control)	AM		PM		Saturday	
	Existing	Future	Existing	Future	Existing	Future
Gaskin Rd. (S)	A	A	A	A	A	B
Kimbrook Plaza (S)	A	A	A	C	A	E
Route 57 (S)	B	B	C	F	C	F
COR Center (S)	A	A	B	E	B	D
Dell Center (S)	A	A	B	D	B	C
Carling Rd. (S)	B	B	D	F	E	F
Wegmans east (S)	A	B	B	D	B	D
Soule Rd./Rt. 481 SB off-ramp (S)	C	C	D	F	D	F
Rt. 481 NB ramps (S)	B	B	D	F	B	C
Market Fair North (S)	A	A	B	B	na	na
Mall west (S)	B	B	B	B	C	E
Mall east (S)	A	A	A	A	B	B
Morgan Rd. (S)	C	C	C	D	D	F
Henry Clay Blvd. (S)	A	A	B	B	B	B
U.S. Route 11 (S)	B	C	C	D	na	na
Crabtree Lane (U)	B	B	C	C	na	na
I-81 SB ramps (S)	C	D	B	C	na	na
I-81 NB ramps (S)	B	C	C	E	na	na
Lakeshore Rd. (U)	F	F	F	F	na	na
New Country Dr./Cicero ES (S)	A	A	A	B	na	na
CNS High School (S)	B	B	na	na	na	na
Thompson Rd. (S)	C	E	E	F	na	na
South Bay Rd. (S)	B	C	B	F	na	na
Cicero Center Rd. (U)	B	E	C	F	na	na
Bull St. (U)	A	B	B	B	na	na
Route 298 (U)	C	F	E	F	na	na

Sources: Route 31 & Route 57 Corridor Study, Town of Cicero Comprehensive Plan, Thompson Road Study.
Notes:
(S) = signalized, (U) = unsignalized
For signalized intersections, overall intersection LOS is shown. For unsignalized intersections, worst LOS for a movement at that intersection is shown.
For Gaskin Road through Henry Clay Blvd., Existing = 2005 and Future = 2010. For Thompson Road through Route 298, Existing = 2006 and Future = 2016. For Route 11 through CNS High School, Existing = 2006 and Future = 2030.
na = information not available from listed sources

As shown in Table 2-3, most of these intersections currently operate at Level of Service D or better. However, the expected increase in the number of intersections along Route 31 operating at LOS E or LOS F is significant. This is especially true during the PM peak hour, with three intersections currently operating at LOS E/F and eleven intersections expected to operate at LOS E/F by the year 2030. Saturday peak hour data is only available for thirteen of the intersections listed in Table 2-3 and six of these intersections are expected to operate at LOS E/F under future conditions.

The Town of Cicero Comprehensive Plan Update concluded that “the majority of the intersections analyzed will need improvements within the next ten years to continue to

operate at an acceptable level of service" (p. 36). The combination of traffic associated with specific developments and the background growth rate results in significant projected increases – up to 75 percent – at a number of individual intersections along Route 31. The Comprehensive Plan goes on to point out that most intersections within the corridor do not have adequate excess capacity to accommodate this level of increase and that "the majority of development will not consist of big retail developments that can fund improvements to these intersections" (p. 40). As a result of this situation, the Comprehensive Plan recommends that the town consider preparing a Generic Environmental Impact Statement and use this document to develop transportation mitigation fees for specific areas.

In addition to the level of service results, the Town of Cicero Comprehensive Plan Update cited the following traffic issues along Route 31:

- The intersections of Route 31 with the Route 81 ramps are nearing capacity and currently experience queuing problems.
- Safety issues associated with vehicles attempting left turns out of driveways along the north side of Route 31 in the area between the I-81 ramps and Lakeshore Road.
- Excessive curb cuts in the commercial areas and lack of connectivity between commercial developments.
- Lack of east-west travel alternatives.
- Limited public transportation.

The Route 31 & Route 57 Corridor Study also noted that:

- The Route 31/Morgan Road intersection operated at LOS D during the Saturday midday peak hour, even though improvements to the intersection were recently completed.
- The northbound left-turn lane on Soule Road approaching Route 31 was found to operate poorly during the PM and Saturday peak hours.
- Traffic congestion results in "spillback" between intersections during the PM and Saturday peak hours, particularly around the Route 481 interchange.

Traffic operations

- Intersections are approaching capacity
- Congestion near the interchanges
- Lack of connectivity
- Proliferation of commercial driveways
- Lack of choices, both in travel route and mode (walking, biking, transit)

The Route 31 & Route 57 Corridor Study stated the following regarding the future traffic operations in the study area, which summarizes well the situation faced by both the Town of Clay and the Town of Cicero:

> *…it is clear that traffic operations breakdowns occur first at key critical intersections and on certain turning movement or lane groups at various intersections. Even if development was scaled back, the system will continue to operate at less than optimal conditions due to the following:*
> *1. Lack of diversification of land uses with too much retail and not enough public service and office uses.*
> *2. Lack of alternative travel options.*
> *3. Need to correct outdated areas to serve current and future traffic demands. (p.III-5)*

2.4 Interstate 81 Interchange Area

As noted above, there are existing traffic flow issues around the I-81 interchange. The high traffic volumes and short distances between the ramp intersections result in queuing problems. Numerous commercial driveways between the interchange and Lakeshore Road also contribute to congestion and present safety issues.

Figure 2-7 shows existing (2006) turning movement count data for the intersections in the I-81 interchange area. Table 2-4 lists the two-way traffic volumes on Route 31 during the AM and PM peak by segment.

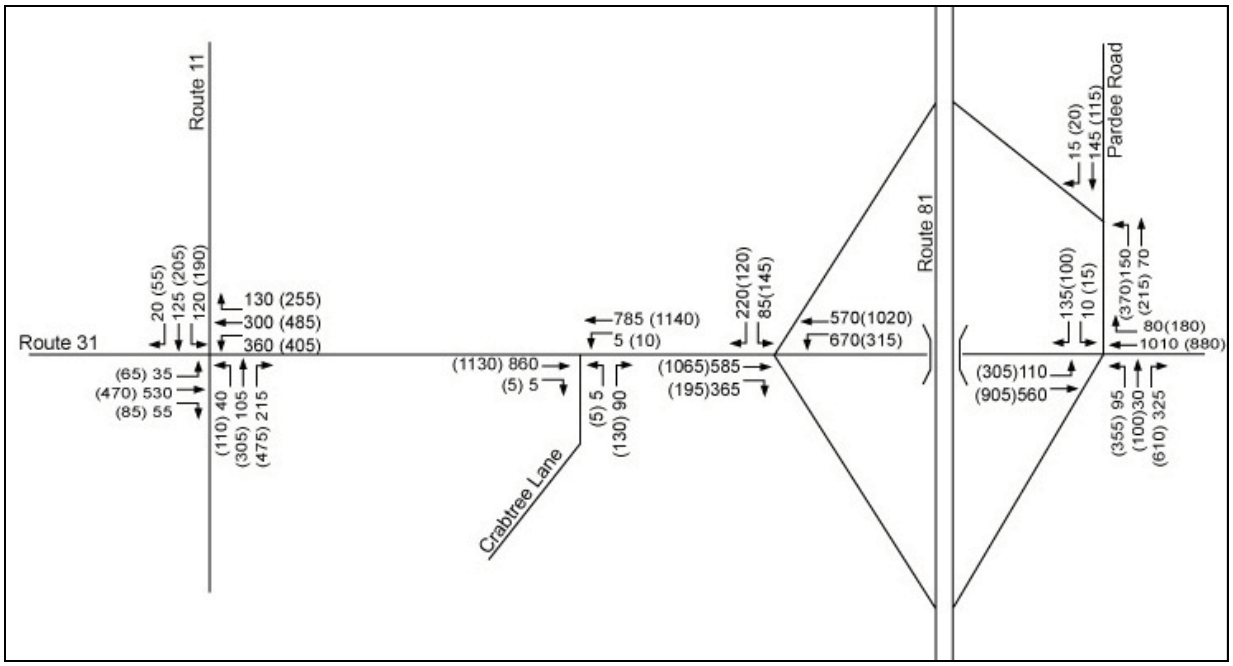


Figure 2-7: 2006 Existing Traffic Volumes in the I-81 Interchange Area
Key: AM Peak Hour (PM Peak Hour)
(Source: SMTC traffic counts)

Table 2-4: Peak Hour Two-Way Traffic Volumes on Route 31 in the I-81 Interchange Area

Segment	AM Peak Hour	PM Peak Hour
Route 11 to I-81 SB ramps	1,520	2,220
I-81 SB ramps to I-81 NB ramps	1,940	2,600
East of I-81 NB ramps	1,970	2,600

The following observations are evident from the traffic volume data shown on Figure 2-7 and in Table 2-4:

- The east/west directional split of traffic just west of the interchange is fairly even during both the AM and PM peak hours.
- The PM peak-hour traffic volumes are higher than the AM peak hour traffic volumes. This is a typical traffic characteristic, especially in areas with significant retail uses.

- There is a very high volume of westbound left-turns at the I-81 SB on-ramps during the AM peak hour.
- The northbound left and right-turns at the I-81 NB off-ramps are also high-volume turning movements.
- Most of the traffic using this interchange comes from and goes to the east on Route 31.
- The dominant traffic flows are vehicles getting on to I-81 SB during the AM peak hour and vehicles exiting I-81 northbound during the PM peak hour.

2.5 Verplank Road and Mud Mill Road

The idea of utilizing Verplank Road and Mud Mill Road as an alternative east-west corridor to relieve some of the pressure on Route 31 has long been discussed. Therefore, these two roads were specifically examined as part of this study.

Verplank Road

Verplank Road is located north of Route 31 in the Town of Clay and runs roughly parallel to Route 31 from Gaskin Road to Caughdenoy Road. The existing character of Verplank Road is low-density residential. This is a two-lane roadway with narrow travel lanes (ten to eleven feet wide) and very narrow shoulders. The Verplank Road bridge over Route 481 consists of two eleven-foot wide travel lanes with six-foot-wide shoulders for a total pavement width of thirty-four feet. Verplank Road is functionally classified as an urban collector.

Mud Mill Road

Mud Mill Road extends from Caughdenoy Road in the Town of Clay to Lake Shore Road in the Town of Cicero and passes over I-81. This road provides an east-west connection from the Town of Clay through the Town of Cicero, although it is not directly parallel to Route 31. Mud Mill Road is a two lane roadway with a character very similar to Verplank Road. Mud Mill Road is functionally classified as a local road.

3 STUDY AREA ISSUES & GOALS

3.1 Overview

A preliminary set of issues and goals was developed by SMTC staff in consultation with the Study Advisory Committee. This preliminary list was presented at the first public meeting for the Route 31 Transportation Study in November 2007. The meeting was attended by approximately thirty residents, elected officials, and Study Advisory Committee members and included a brainstorming session in which participants were asked to identify study area issues and then to vote on the top three issues. Meeting participants also developed goals for each of the top issues. The issues and goals identified by the participants at the public meeting were generally consistent with the preliminary set of issues and goals developed by SMTC staff and the Study Advisory Committee. The top three issues from the public meeting were: lack of connectivity, interstate access, and lack of parallel roads. A summary of the public meeting is included in Appendix B.

Based on discussions with the Study Advisory Committee and feedback from the public, four primary issues were identified for the study area: regional accessibility, arterial congestion, development pressure, and coordinated planning. The remaining sections of this chapter describe each of these issues. Following a brief discussion of the significance of each issue, each section of this chapter includes a list of contributing factors, study goals, recommendations from previous studies that are related to that issue, and an assessment of the previous recommendations in the context of the current study goals.

Study area issues
- Regional accessibility
- Arterial congestion
- Development pressure
- Coordinated planning

3.2 Regional Accessibility

The two interchanges on Route 31 within the study area (Route 481 in the Town of Clay and I-81 in the Town of Cicero) provide access to the regional highway network. Congestion around the interchanges – particularly the I-81 interchange – hinders the ability of these interchanges to provide convenient regional accessibility for drivers traveling to and from the study area. Future development at the Clay Business Park will depend on convenient access to the site for workers and suppliers. Given the regional significance of potential development at the business park, particular attention must be paid to ensuring that the site has convenient and efficient access to the interstate system.

Contributing factors

A number of factors contribute to the concerns about regional accessibility:

- Most of the employed persons that live in the study area commute to locations outside of the study area, which places a large burden on regional travel routes such as Route 31 and the two interchanges.
- In addition to the commuter traffic at the interchanges, Route 31 also serves numerous retail uses that have located in the vicinity of the interchanges.

Clustering of commercial developments around the interchanges creates a "competition" between commuters and shoppers for roadway capacity. Future operating conditions are expected to be poor (LOS E/F) at a number of intersections in the corridor, particularly during the PM peak hour when both commuters and shoppers utilize Route 31. Intersections near the Route 481 interchange are also expected to operate at LOS E/F during the Saturday peak hour, which highlights the impact of commercial traffic in the corridor.

- Intersections near the interchanges are approaching capacity and currently experience queuing problems. Capacity analysis has shown that a number of intersections near the interchanges are expected to operate at LOS E/F under future conditions.
- Development at the Clay Business Park has the potential to bring an additional 1,500 employees to that site, with approximately 600 to 800 additional peak hour vehicle trips (depending on the final mix of land uses at the site). The majority of those additional trips can be expected to use Route 31 to access the site.

Study goals

Based on the issues above, the goals of this study related to regional accessibility are to:

- Reduce congestion around the existing interchanges.
- Examine the feasibility of a new I-81 interchange from a preliminary planning perspective in terms of its impact on regional accessibility and mobility.

Previous recommendations

The Town of Cicero Comprehensive Plan Update and the Clay Northern Land Use Study included the following recommendations related to regional accessibility:

Town of Cicero

- Promote the construction of a new interchange at Mud Mill Road and improvements to the existing interchange to alleviate the pressures at the Route 31/I-81 interchange.

Town of Clay

- Implement the Soule Road connection to Carling Road/ramp modifications as recommended in the Route 31 & Route 57 Corridor Study.

Assessment of previous recommendations from Town plans

A new interchange should only be pursued if travel demand modeling shows that *(a)* land use policies and transportation management techniques alone do not adequately address congestion, *(b)* a new interchange will significantly reduce long-term congestion at the existing interchange, and *(c)* regional mobility, particularly in the Route 31 corridor, is enhanced.

The Carling Road extension and Soule Road ramp modifications were evaluated in the *Break-In-Access Study: Soule Road* in 2003. This study recommended realigning Soule Road to intersect Route 31 opposite Carling Road and creating an on-ramp to Route 481 southbound directly from Route 31. This study was revisited by the SMTC in 2007, and the original recommendations were found to remain valid. Since existing studies have

already shown the effectiveness of the Carling Road extension/Soule Road ramp modifications, this should remain a high-priority project.

3.3 Arterial Congestion

As discussed in previous chapters, intersections along the Route 31 corridor already experience some congestion and queuing issues and a significant increase is expected in the number of intersections operating at unacceptable (LOS E/F) levels by the year 2030. Congestion on the arterial roadways limits local mobility and also contributes to degradation in regional accessibility. Due to fiscal constraints, additional widening of Route 31 in the Route 481 interchange area is unlikely.

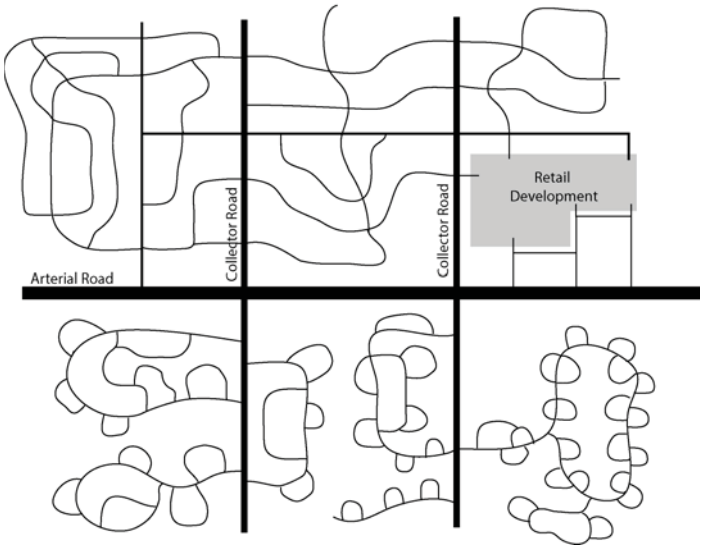
Contributing factors

Congestion on the arterials is really a symptom of other issues that exist in the study area. Congestion results from a combination of numerous factors, which are described as follows.

Continuing commercial and residential development.
The most obvious cause of congestion is more traffic. Continuing commercial development along the arterials draws more traffic to congested areas. Even though residential development may not be located directly on congested roads, such as Route 31, nearby residential development adds more traffic to major roadways as more people try to move around the area.

Lack of adequate east-west travel options.
East-west travel options in the Town of Clay and the Town of Cicero are limited. There are few roads that run parallel to Route 31 that could provide a viable alternative for east-west travel. Verplank Road and Mud Mill Road, which both run roughly parallel to Route 31, have been discussed previously as possible alternative east-west routes; however, these roads cannot carry significant traffic due to narrow travel lanes and little to no shoulder. As a result, virtually all east-west cross-town traffic is forced onto Route 31, even if the trip destination is not located on Route 31. Additional east-west travel options combined with additional access points for commercial developments could remove some of the local retail-related traffic from Route 31 and allow Route 31 to better serve its primary purpose as a regional east-west travel route. By providing an alternate east-west travel route, the carrying capacity of the overall transportation network can be increased, which will allow the area to accommodate additional development.

Lack of local street connectivity.
Development patterns that favor cul-de-sacs and individual commercial driveways result in a lack of local street connectivity. Since residential subdivisions often do not have connections to adjacent residential areas, drivers are forced onto collector or arterial roadways even for short local trips. The same issue exists for travel from residential areas to commercial areas and between multiple commercial plazas. Short trips unnecessarily burden roads that were designed to be regional travel routes. With appropriate design features, local connector roads can be built that allow local traffic to avoid roads like Route 31 while also maintaining a low-traffic, low-speed environment in residential areas. A well-connected local street grid also encourages more bicycling and walking.



The bottom half of this image shows a conventional suburban street network. The lack of local street connectivity forces all the residents to use the arterial road to access the retail area. The top half shows a modified grid street network that includes: a high level of local street connectivity; an alternative road parallel to the arterial; and access to the retail area from the local road network. The top pattern offers residents more travel choices and preserves capacity on the arterial.

Need for a better coordinated access management strategy.
Access management is a set of techniques that are used to increase roadway capacity, manage congestion, and reduce crashes. Access management techniques include signal spacing, driveway spacing, the use of exclusive turn lanes, median treatments such as raised medians, frontage roads, and land use policies that limit access to highways, such as requiring shared driveways. Access management is usually applied to major roadways in areas with a high level of commercial development.

Access management can contribute to a reduction in congestion by limiting the number of driveways in a corridor. By limiting the number of driveways and providing connections between parcels, driveway conflicts are reduced and there are fewer short trips between plazas on the major roadway. Limiting the number of driveways also reduces accident potential. Access management encourages regularly spaced traffic signals, generally at ½-mile intervals, since closely spaced signals also hinder efficient traffic flow.

Neither the Town of Clay nor the Town of Cicero has an access management ordinance as part of the municipal zoning code, although access management principles are implemented through other avenues. The majority of site plans submitted to the Towns for review meet the criteria for referral to the Syracuse-Onondaga County Planning Agency[2], which generally recommends that the towns incorporate access management.

[2] According to New York State General Municipal Law, section 239-m, approval of site plans, among other certain actions, must be referred to the county planning agency if the affected property is within five hundred feet of the following: (i) the boundary of any city, village or town; (ii) the boundary of any existing or proposed county or state park or any other recreation area; (iii) the right-of-way of any existing or proposed county or state parkway, thruway, expressway, road or highway; (iv) the existing or proposed right-of-way of any stream or drainage channel owned by the county or for which the county has established channel lines; (v) the existing or proposed boundary of any county or state owned land on which a public building or institution is situated; or (vi) the boundary of a farm operation located in an agricultural district, as defined in the agriculture and markets law (except this provision does not apply to the granting of area variances). From New York State Legislature, Laws of New York, http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS

The NYSDOT incorporates access management as part of its involvement in the State Environmental Quality Review (SEQR) process. When developers request access to a State highway, they must obtain a highway work permit from the NYSDOT, which presents another opportunity for the NYSDOT to implement access management. On County-owned roads, access management is implemented through the County DOT's work permit procedures and Access Management Policy (currently under development).

Alternatives to private automobile travel are very limited.
Opportunities to walk, bike, or ride transit to and from destinations within the Route 31 corridor are very limited. Low-density, disconnected land uses are difficult to access for pedestrians and bicyclists. Walking or biking from the residential areas to the commercial areas is generally infeasible due to the distance between destinations and the lack of amenities such as sidewalks, crosswalks, and bike lanes. Although there are some sidewalks along Route 31, they are not contiguous and generally do not link desired origins and destinations. Commercial developments are set far back from the road, forcing pedestrians to walk across large parking lots to reach a destination. The section of Route 31 through Clay and Cicero is designated New York State Bike Route 5. Although this designation does not require that bicycle facilities be provided[3], any future changes to the corridor should include bicycle accommodations wherever feasible in order to encourage alternatives to driving. The physical design of the corridor also hinders efficient and convenient transit service due to the following issues:

- Serving individual shopping plazas is time consuming if buses pull in to each location. If buses remain on Route 31, customers are forced to cross Route 31 at unsafe locations. (The only locations where buses currently pull-in are Wegmans and the Great Northern Mall.)
- The corridor has numerous destinations (i.e. stores) but few origins (i.e. residential development).
- Under the current system, all Centro routes are set up to travel from a suburban area to downtown Syracuse. This makes travel within a suburban area and suburb-to-suburb travel difficult and time consuming.
- Suburban circulator routes have been suggested; however, the prevailing view is that ridership on circulators routes will be low due to the lack of "origins" and the abundance of free parking in the corridor.

Study goals

New development can be accommodated while also minimizing additional congestion if the other issues listed above are addressed. Therefore, the goals of this study related to arterial congestion are to:

- Create additional east-west connections by upgrading local roads parallel to Route 31 to carry additional traffic.
- Create connections for local traffic between residential developments and from residential areas to commercial areas.

[3] The NYSDOT web site states that "The New York State Department of Transportation maintains three signed, long distance, on-road bicycle routes for experienced cyclists. Cyclists using these routes should be comfortable sharing the roadway with motorized vehicles and with traveling at higher speeds." https://www.nysdot.gov/portal/page/portal/divisions/operating/opdm/community-assistance-delivery-bureau/biking

- Develop a coordinated strategy for implementing access management throughout the Route 31 corridor.
- Promote development patterns and individual site designs that support transit use.
- Create walkable and bikeable neighborhoods and commercial centers.

Previous recommendations

The Town of Cicero Comprehensive Plan Update, Route 31 & Route 57 Corridor Study, and Clay Northern Land Use Study included the following recommendations related to arterial congestion:

Town of Cicero

- Reduce and control the number and location of driveways/curb cuts in commercial development areas such as Route 11 and Route 31.
- Build an east-west, publicly owned, collector street north of Route 31.
- Increase ridership on public transportation.
- Develop systems that can safely accommodate pedestrians and bicycles as well as automobiles on local streets.
- Establish new roadway connections from South Bay Road to Cicero Center Road (north of Route 31) and from Pardee Road to Mud Mill Road (parallel to I-81).
- Modify Town Subdivision Regulations to require connectivity between neighboring subdivisions whenever possible and to discourage the use of cul-de-sacs.
- Establish a formal town policy and standards for the location, design, construction, maintenance, and retrofitting of sidewalks.

Town of Clay

- Strongly encourage the installation of sidewalks and pedestrian paths in all future subdivision projects in the study area. Consider relocating the New York State Bicycle Route 5 from Route 31 to a safer alternate east-west route.
- Develop vehicle interconnections by establishing standards and principles of street network design to safely accommodate travel between development areas while promoting a “hybrid” of traditional and contemporary street network designs.
- Promote designs that will allow for efficient transit operations.
- Consider Verplank Road as an east-west route. Promote a road parallel to Route 31 in conjunction with commercial development at Clay Business Park.
- Establish the following new roadway connections:
    - Verplank Road to Great Northern Mall
    - Verplank Road to Oak Orchard Road
    - Burnet Road to Mud Mill Road
    - Burnet Road to Route 11 through Cicero Commons
    - Maple Road to Henry Clay Boulevard.
    - Carling Road to Verplank Road.
    - Water Board Road to Morgan Road.
- Promote use of the Morgan Road entrance to Great Northern Mall.
- Widen westbound Route 31 between Soule Road and Carling Drive.
- Implement access management standards. Include a requirement that new signals serve a public street (rather than access to private parking lots).
- Consolidate traffic signals in the Water Board Road/Market Fair/Great Northern Mall area.

Assessment of previous recommendations from town plans

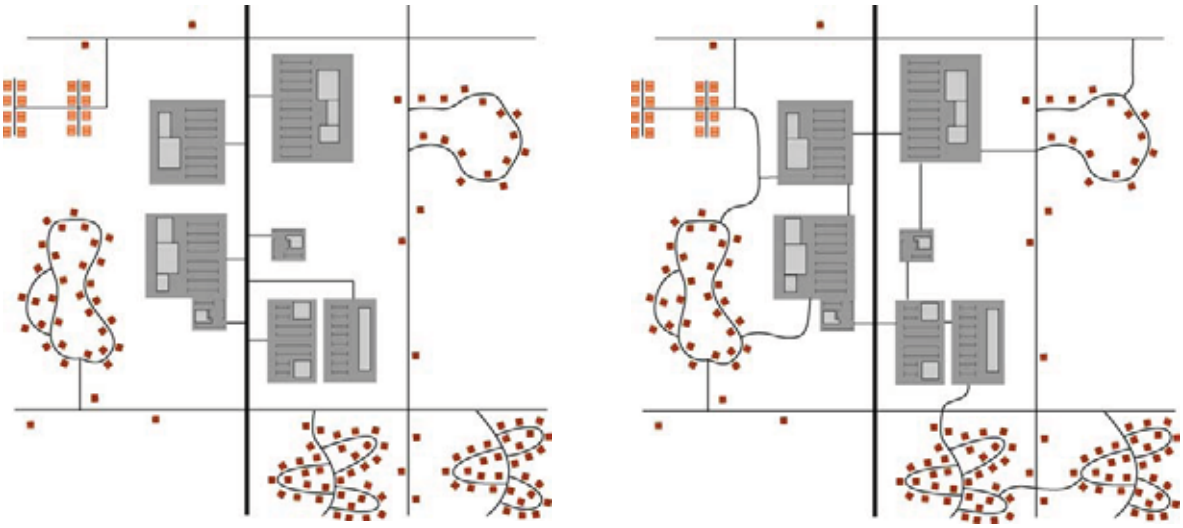
The Towns' recommendations generally support the study goals. Some of the Towns' recommendations, such as those related to transit accessibility, are vague and need more definition in order to be practicable. Additional widening of Route 31 should be considered only after land use measures and transportation management techniques have been employed to address congestion. In some locations, particularly near the interchanges, additional widening of Route 31 would require right-of-way acquisition and/or bridge widening, which would add significantly to the costs. Accommodations for walking and bicycling should be required – not simply encouraged – in new development. New roadway connections should be pursued in coordination with development. The NYSDOT Bicycle Routes are intended for experienced cyclists and are often designated on high-volume roadways since cross-state routes tend to be higher-volume routes.

Although the current process of implementing access management through the review of individual developments can be successful at encouraging shared access between parcels or limiting turning movements at a proposed driveway, some aspects of access management are not included in this process. Since implementation is currently done on a case-by-case basis, regulation of corridor-wide factors is difficult. Actions such as creating a frontage road to serve multiple developments or installing a raised median may be difficult to implement through individual site plan reviews. A corridor-specific access management plan could address such issues. Also, increased coordination between the Town of Clay and the Town of Cicero would result in a more consistent application of access management throughout the Route 31 corridor. Coordination with the NYSDOT and the Onondaga County Department of Transportation early-on in the development approval process will help to ensure that access management principles are followed. Finally, any policy or access management plan should be able to adapt as development pressure changes over time.

3.4 Development Pressure

The demand for additional residential and commercial development in the Town of Clay and the Town of Cicero is expected to continue. As noted above, residential and commercial development throughout the Towns creates additional traffic and contributes to congestion. The Towns need to determine the best way to accommodate the demand for new development while promoting design that can mitigate the associated traffic impacts and protect open space. Infill development and new development adjacent to existing built-up areas will make the most efficient use of existing infrastructure and preserve open space. Mixed-use developments that combine residential, retail, and office uses in close proximity can reduce the need to drive. This type of development often appeals to young professionals and "empty nesters" that want to live in a suburban town but might not want a large single-family home. By encouraging well-designed growth with a variety of residential and commercial uses, the Town of Clay and the Town of Cicero can support economic development and preserve the existing quality of life. The following illustration shows alternative patterns that can accommodate the same amount of development.

Development Alternatives



***Upper left**: A typical suburban development pattern with disconnected land uses and numerous driveways on the major arterial roadway.*
***Upper right:** The same land use pattern with more local road connections and fewer driveways on the arterial, to improve mobility and preserve arterial capacity.*
***Bottom left:** The same commercial and residential development but with a different land use pattern. This "town center" option keeps new residential development adjacent to existing development, preserves open space, minimizes local travel on the arterial, and creates opportunities to walk, bike, or use transit.*

Contributing factors

Considerations related to the continuing development pressure include:

- Significant portions of both Towns lack public sewers.
- There is a large amount of vacant agricultural land in northern Clay.
- Within the Town of Clay, the soils in the undeveloped areas north of Route 31 are not generally suitable for septic systems. Therefore, development in this area will require either sewer extensions or large lots that can accommodate a primary and secondary septic system.

Study goals

Based on these issues, the goals of this study related to development pressure are to:

- Accommodate demand for residential development by promoting infill development and new development adjacent to existing built-up areas.
- Preserve open space.
- Support a balanced mix of residential and commercial development.
- Develop mixed-use hamlets at selected locations.
- Promote economic development through well-planned and well-designed growth that preserves the community character and quality of life.

Previous recommendations

The Town of Cicero Comprehensive Plan Update and the Clay Northern Land Use Study included the following recommendations for future development:

Town of Cicero

- Rezone the entire west side of Route 11 (north of Route 31 to Mud Mill Road) to enable and encourage general commercial development.
- Examine the existing zoning and revise if necessary to encourage neighborhood commercial development at the intersections of South Bay Road and Lakeshore Road, Route 31 and Cicero Center Road, and South Bay Road and Route 31.
- Encourage new single-family home development on infill parcels where sewer and/or water already exist or in areas contiguous to areas served by sewer and/or water. Restrict the R-20 zoning district to areas without existing water and sewer services.
- Create a new "estate lot zone" consisting of 5-acre minimum lots in areas contiguous to Route 31 (east of Cicero Center Road) and large wetlands/floodplains that are currently without sewer or water.
- Maintain owner-occupancy as the prevailing form of tenancy while providing some diversity in housing type. Review the zoning ordinance and map to identify measures to allow additional multi-family developments.
- Create a new zoning overlay district to promote hamlet type development in designated locations, such as along Route 31 just east of South Bay Road. The Hamlet Overlay District should allow multi-family housing and combined commercial/residential structures.

Town of Clay

- Replace the existing R-40 zoning designation with an R-60 designation in order to provide sufficient area for primary and secondary septic systems.
- Encourage medium and high density residential development south of Route 31 and high density residential development in the Euclid Hamlet area.
- Encourage small-scale retail and service uses at Moyers Corners, Euclid, Route 31/Henry Clay Boulevard, and Route 31/Gaskin Road.
- Encourage office park development near Moyers Corners and the Route 31/Soule Road intersection to balance the existing retail uses.
- Develop a "town center" around the existing Town Hall complex (north of Route 31 between Morgan Road and Henry Clay Boulevard).
- Encourage build-out of the Kimbrook Plaza shopping center, including consolidation of some smaller adjacent parcels.

- Discourage commercial uses along Verplank Road.
- Reuse the former firehouse site on Route 57 north of Route 31 as a parking lot.

Assessment of previous recommendations from town plans

With the exception of the "hamlet" areas, the Towns' plans promote the continuation of single-use development. In order to reduce the need for travel, more mixed-use development should be included and additional hamlets should be developed. Large-lot development, intended to address issues related to wastewater treatment, is antithetical to the goals and objectives of this study and is not a sustainable model for accommodating future development demand. Developing a variety of housing options – including apartments and townhouses – will enable the Towns to serve a more diverse population, and denser development will encourage walking, biking, and riding transit.

3.5 Coordinated Planning

Uncoordinated mitigation plans tied to individual developments are not adequate to address the cumulative impacts of development. The lack of a coordinated development strategy has increased traffic on Route 31 to the point that a number of intersections are at or nearing capacity and excessive delay is experienced within the corridor. Recent travel demand modeling work in the Town of Clay illustrated that cumulative impacts can be mitigated by providing a more complete local transportation network with more interconnections and route choices. By upgrading a local road (Verplank Road) and providing more connections to the developments, additional retail and residential traffic can be accommodated while maintaining traffic operations on Route 31 at a level similar to what exists today. Traffic studies that are completed for individual developments typically consider the impacts at individual site driveways and nearby intersections and do not typically consider the need to improve the overall local transportation network. Implementing improvements that will provide a benefit to the overall network (and, thus, to many developments) requires the support and financial backing of multiple parties including the municipality, the State and/or County Department of Transportation, and private developers. In order to accommodate additional development and maintain adequate mobility within the corridor, an integrated transportation and land use plan that utilizes tools such as access management, increased connectivity, and mixed-use development is necessary.

Contributing factors

Concerns related to the need for coordinated planning include:

- Individual mitigation plans tied to specific development approvals cannot address the cumulative impacts of development.
- Congestion resulting from uncoordinated development harms all developers and travelers in the corridor.
- Traffic issues do not stop at town borders; development in one town can create traffic problems in the neighboring town.

Study goals

This study will develop an implementation plan that includes strategies to:

- Coordinate planning activities between Clay and Cicero.

- Integrate transportation and land use planning in future development.
- Coordinate the numerous concurrent developments activities taking place in the towns in order to achieve a unified vision of the future of Clay and Cicero.

Previous recommendations

The Town of Clay Travel Demand Modeling Task (for the area west of Route 481) considered the cumulative impacts of a number of transportation and land use changes. The results of that analysis showed that increasing roadway connectivity and providing alternative travel routes will allow the existing transportation network to function at an acceptable level of service without major road widening or new construction.

Assessment of previous recommendations from town plans

As indicated by the results of the Town of Clay Travel Demand Modeling Task, the Town of Clay and the Town of Cicero must consider the cumulative impacts of development in high-growth areas. Solutions that enhance roadway connectivity and disperse traffic through a network of local streets should be favored over arterial capacity expansion.

3.6 Summary of Issues and Goals

The Town of Clay and the Town of Cicero are faced with issues of regional accessibility, arterial congestion, development pressure, and the need for coordinated planning. The study goals outlined above are intended to help the Towns address these issues. Generally, the existing planning studies for the Town of Clay and Town of Cicero include recommendations that support the goals of this study. However, some modifications to the Towns' recommendations are necessary in order to create denser, mixed-use development that will promote alternatives to private automobile travel.

Summary of study goals

- Reduce congestion around the existing interchanges.
- Examine the feasibility of a new I-81 interchange.
- Create additional east-west connections.
- Create connections between residential and commercial areas.
- Implement access management throughout the Route 31 corridor.
- Support transit use.
- Create walkable and bikeable neighborhoods and commercial centers.
- Promote infill development and new development adjacent to existing built-up areas.
- Preserve open space.
- Support a balanced mix of residential and commercial development.
- Develop mixed-use hamlets at selected locations.
- Promote economic development through well-planned and well-designed growth that preserves the community character and quality of life.
- Coordinate planning activities between Clay and Cicero.
- Integrate transportation and land use planning.
- Achieve a unified vision of the future of Clay and Cicero.

4 EVALUATION OF ALTERNATIVES

4.1 Overview

Based on the issues discussed in the previous chapter, the SMTC and the SAC developed an initial set of alternative scenarios for future development in the study area. These future scenarios included changes to both the transportation network and the land use pattern from what is included in the current town plans. The impacts of these scenarios were evaluated using a number of criteria that reflect the goals put forth by the SAC members and the public. The evaluation compared each of the proposed alternatives to the Future Base alternative (the future development pattern included in the town plans with the existing transportation network plus known projects that are reasonably assumed to be completed by 2027, based on SAC input). The SMTC's travel demand model was used to evaluate the impact of the alternatives on the transportation network. Other impacts were evaluated qualitatively by SMTC staff and SAC members.

Travel demand modeling uses computer software to determine the expected volume of traffic on roadways based on a set of assumptions about the future population and employment characteristics of an area.

A travel demand model *can*:
- Determine the impact of changes to the transportation system
- Evaluate the impact of land use changes
- Evaluate the impact of policy changes, such as pricing

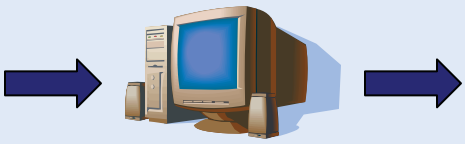
A travel demand model *cannot*:
- Forecast future land use
- Evaluate micro-scale traffic operations (such as level of service at specific intersections)
- Model every road in the SMTC Planning Area
- Model external trips (outside the model area)

After the initial set of alternatives was evaluated and presented to the SAC and the public, a second set of alternatives was developed that included modifications to and combinations of elements of the initial alternatives.

Travel demand modeling inputs & outputs

Inputs

- Socioeconomic characteristics (such as vehicle ownership and household size).
- Employment and population forecasts.
- Roadway ("link") and intersection ("node") attributes (such as speed, capacity, and delay).



Outputs

- Vehicle-Miles-Traveled (VMT)
- Vehicle-Hours-Traveled (VHT)
- Network-wide delay
- Volume-to-Capacity Ratio (V/C)
- Average trip lengths
- Link volumes & turning movements
- Link speeds
- Transit trips

4.2 Future Base scenario

The first scenario that was evaluated was the Future Base scenario. This includes:

- future land use pattern as envisioned in the current town plans for 2027, and

- existing transportation system plus known projects that are reasonably expected to be completed by 2027 (based on SAC input).

4.2.1 Household and employment growth

The Town of Clay Northern Land Use Study together with the Route 31 and Route 57 Corridor Study included:

- 6,370 buildable lots (north of Route 481/Route 31);
- 1,640,000 square feet of commercial development; and
- 1,156 acres of industrial-zoned land.

The Town of Cicero Comprehensive Plan included:

- 3,160 additional households (under full build-out);
- 4,090,000 square feet of commercial development; and
- 658 acres of industrial land.

Since the Town of Clay studies did not include the entire geographic area of the town, the figures above were combined with the projected residential and employment growth in the current SMTC 2027 travel demand model for the purpose of this study. A travel demand model requires the expected number of households and employees for any scenario that is modeled. Therefore, the expected commercial and industrial development in square feet listed above were converted to an expected number of employees. This was accomplished using a standard rate of employees per square foot for commercial development. OCIDA provided estimates of the expected number of employees for each industrial area. More details on these calculations can be found in Appendix E. Table 4-1 summarizes the household and employment data used in the Existing and Future Base scenarios.

Table 4-1: Household and Employment Summary for Existing and Future Base Travel Demand Modeling

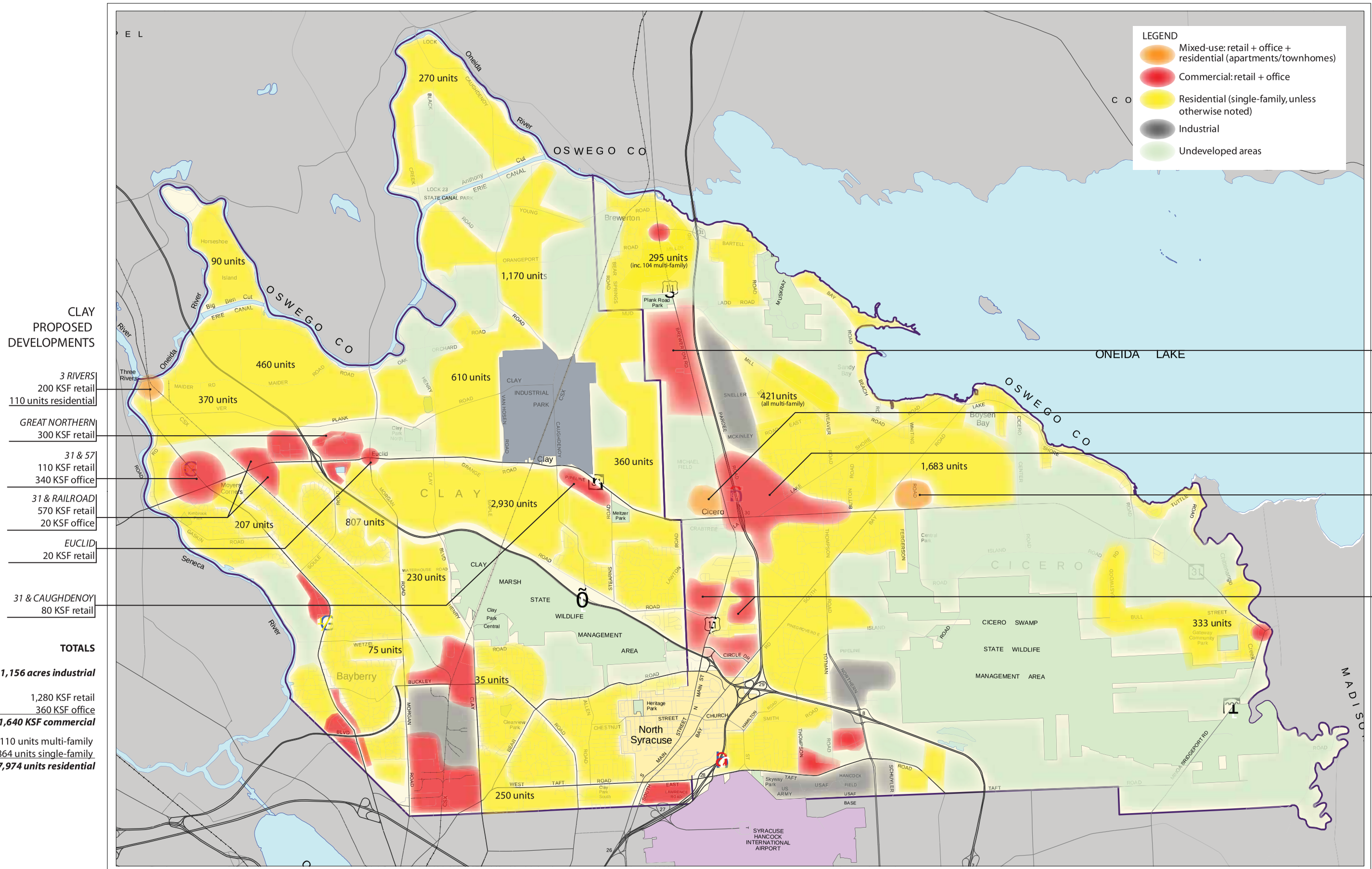
	Households			Employees		
	2003 Existing*	**2027 Future Base**	**Change**	**2003 Existing***	**2027 Future Base**	**Change**
Clay	21,573	29,547	7,974	17,626	25,409	7,800
Cicero	10,522	13,682	3,160	7,068	17,754	10,669
Study Area Total	32,095	43,229	11,134	24,694	43,163	18,469

*from existing SMTC travel demand model

The Future Base land use is shown on Figure 4-1. This land use pattern shows significant residential development north of Route 31, due to the number of new households included in this scenario and the preference for larger-lot development in both of the towns' existing plans. Three mixed-use areas are shown, which were included in the towns' existing plans. Large areas of single-use commercial development are also readily apparent on the Future Base land use plan.

4.2.2 Transportation projects

The following transportation projects are included in the Future Base transportation network. These changes are also shown on the Figure 4-2.



CLAY
PROPOSED
DEVELOPMENTS

3 RIVERS
200 KSF retail
110 units residential

GREAT NORTHERN
300 KSF retail

31 & 57
110 KSF retail
340 KSF office

31 & RAILROAD
570 KSF retail
20 KSF office

EUCLID
20 KSF retail

31 & CAUGHDENOY
80 KSF retail

TOTALS

1,156 acres industrial

1,280 KSF retail
360 KSF office
1,640 KSF commercial

110 units multi-family
7,864 units single-family
7,974 units residential

CICERO
PROPOSED
DEVELOPMENTS

ROUTE 11 NORTH
1,362 KSF retail

31 & 11
242 KSF retail
94 units residential

31 & LAKESHORE
1,120 KSF retail

CICERO CENTER
224 KSF retail
340 units residential

ROUTE 11 SOUTH
1,142 KSF retail

TOTALS

658 acres industrial

4,090 KSF commercial

959 units multi-family
2,207 units single-family
3,160 units residential

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www.smtcmpo.org

This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map.

Figure 4 -1: Future Base Land Use Plan

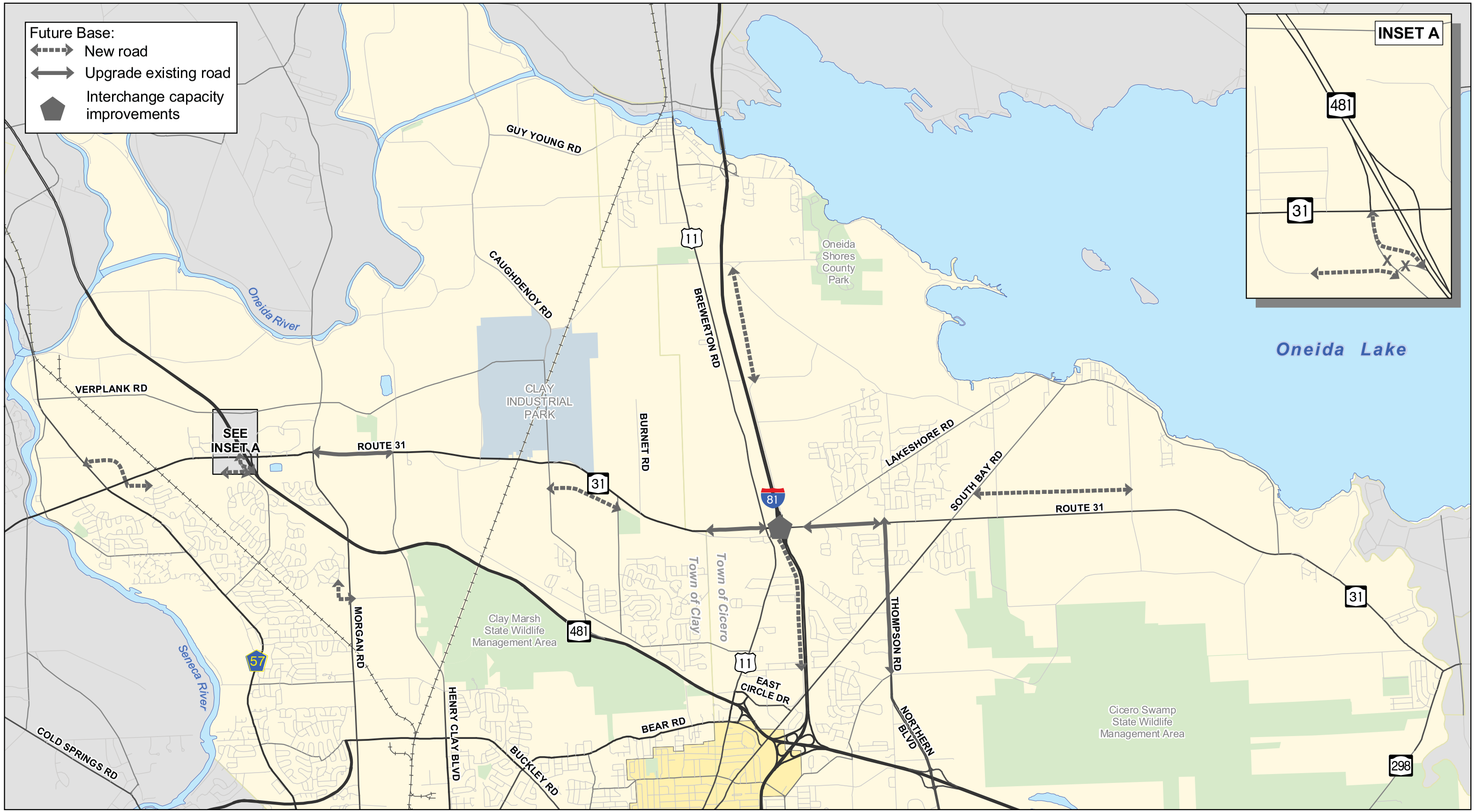
Clay-Cicero Route 31 Transportation Study

Roads
Local
Minor Collector
Collector
Minor Arterial
Principal Arterial

0 0.5 1 2 3 Miles

Study Area (Towns)
Village

Data Sources: SMTC
Prepared by SMTC, 12/2007 Revised 10/30/08



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This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map.

Figure 4-2: Future Base Transportation Network

Clay-Cicero Route 31 Transportation Study

Roads

- Local
- Minor Collector
- Collector
- Minor Arterial
- Principal Arterial

N

0 0.25 0.5 1 1.5 2 Miles

Data Sources: SMTC, NYSDOT 2001
Prepared by SMTC, 8/2009

This list was developed with input from the town planning departments, the New York State Department of Transportation, and the Onondaga County Department of Transportation.

Town of Clay

- Waterhouse Road extension to Fairway East and signalization of the Fairway North/Morgan Road intersection.
- New connection from Route 57 to Route 31 (northeast quadrant of that intersection) with extension to residential area on the south side of Route 31.
- Carling Road extension to Soule Road and reconfiguration of the Route 481 southbound on-ramp.
- Connection from Caughdenoy Road to Stearns Road south of Route 31.
- Two additional travel lanes (one in each direction) plus a two-way center left-turn lane on Route 31 from Morgan Road to Henry Clay Boulevard. (Note: this project is included in the SMTC's current 2027 model).

Town of Cicero

- Capacity improvement at the existing I-81 interchange on Route 31.
- Upgrade Thompson Road from Northern Boulevard to Route 31.
- Connection from South Bay Road to Cicero Center Road on the north side of Route 31.
- Addition of a two-way center left-turn lane on Route 31 from Legionnaire Drive to Route 11.
- Additional travel lanes on Route 31 from Lakeshore Road to Thompson Road.
- Connection from Sneller Road to Mud Mill Road, parallel to I-81.
- New access road from Route 31 to Pine Grove Road, west of I-81.

4.3 Round 1 Alternatives

4.3.1 Round 1 Alternatives Development

Future alternative scenarios were analyzed in two rounds. Round 1 consisted of four transportation alternatives and one land use alternative that were developed by SMTC staff and SAC members. The Round 2 alternatives were developed after the Round 1 alternatives were presented to the public.

Table 4-2 describes the land use and transportation network conditions used for each alternative evaluated in Round 1. Figure 4-3 illustrates the transportation conditions for Alternatives 1, 2, 3, and 4, and Figure 4-4 illustrates the land use pattern for Alternative 5.

Table 4-2: Round 1 Alternatives

Alternative	Land Use	Transportation Network
1: I-81 interchange (north)	Full Build-out, as shown in town plans	Future Base plus: ▪ Connect Sneller Road east and west of I-81 ▪ New diamond interchange at Sneller Road. ▪ Upgrade Verplank Road and Mud Mill Road to current design standards for a collector road (no widening).
2: I-81 interchange (south)	Full Build-out, as shown in town plans	Future Base plus: ▪ Extend Caughdenoy Road to South Bay (east and west of I-81) ▪ New diamond interchange at Caughdenoy Road
3: Expanded local road network (Clay commercial area)	Full Build-out, as shown in town plans	Future Base plus: ▪ Upgrade Verplank Road and Mud Mill Road to current design standards for a collector road (no widening) ▪ Connection from Verplank Road to Great Northern Mall ▪ Connection from Verplank Road to Route 31 at a location between the railroad and Route 481 ▪ Connection from the COR Center/Route 31 intersection to the Carling Road extension
4: Expanded local road network (Clay Business Park area)	Full Build-out, as shown in town plans	Future Base plus: ▪ Upgrade Verplank Road and Mud Mill Road to current design standards for a collector road (no widening) ▪ Extension of Burnet Road to Mud Mill Road ▪ Extension of Van Hosen Road to Oak Orchard Road ▪ Extension of Verplank Road to Burnet Road ▪ Connection from Burnet Road to Route 11
5: Alternative Land Use Scenario	Same amount of development as Full Build-out, but with different spatial distribution	Future Base (no additional changes)

The transportation network changes included in Alternatives 1 through 4 were based on the recommendations of previous studies and discussions with the SAC members.

The land use pattern for Alternative 5 was developed by SMTC staff based on aerial photography, tax parcel data, site visits, and communication with the town planning staff. This alternative was reviewed by the full SAC prior to modeling. The following goals guided the development of Alternative 5:

- Create mixed-use nodes (hamlets) containing retail, office, and multi-family residential units.
- Discourage development of single-family residential districts north of Route 31 unless adjacent to a hamlet area.
- Encourage infill development south of Route 31.
- Cluster regional-scale commercial uses near existing areas with similar use; encourage infill on commercial sites.

New road
Upgrade existing road
New interchange
Interchange capacity improvements

Future Base
Alternative 1
Alternative 2
Alternative 3
Alternative 4

INSET A

GUY YOUNG RD
CAUGHDENOY RD
BREWERTON RD
BURNET RD
LAKESHORE RD
SOUTH BAY RD
ROUTE 31
VERPLANK RD
SEE INSET A
MORGAN RD
HENRY CLAY BLVD
BUCKLEY RD
BEAR RD
EAST CIRCLE DR
THOMPSON RD
NORTHERN BLVD
COLD SPRINGS RD

Oneida River
Seneca River
Oneida Lake

Oneida Shores County Park
CLAY INDUSTRIAL PARK
Clay Marsh State Wildlife Management Area
Town of Clay
Town of Cicero
Cicero Swamp State Wildlife Management Area

11
31
481
81
57
298

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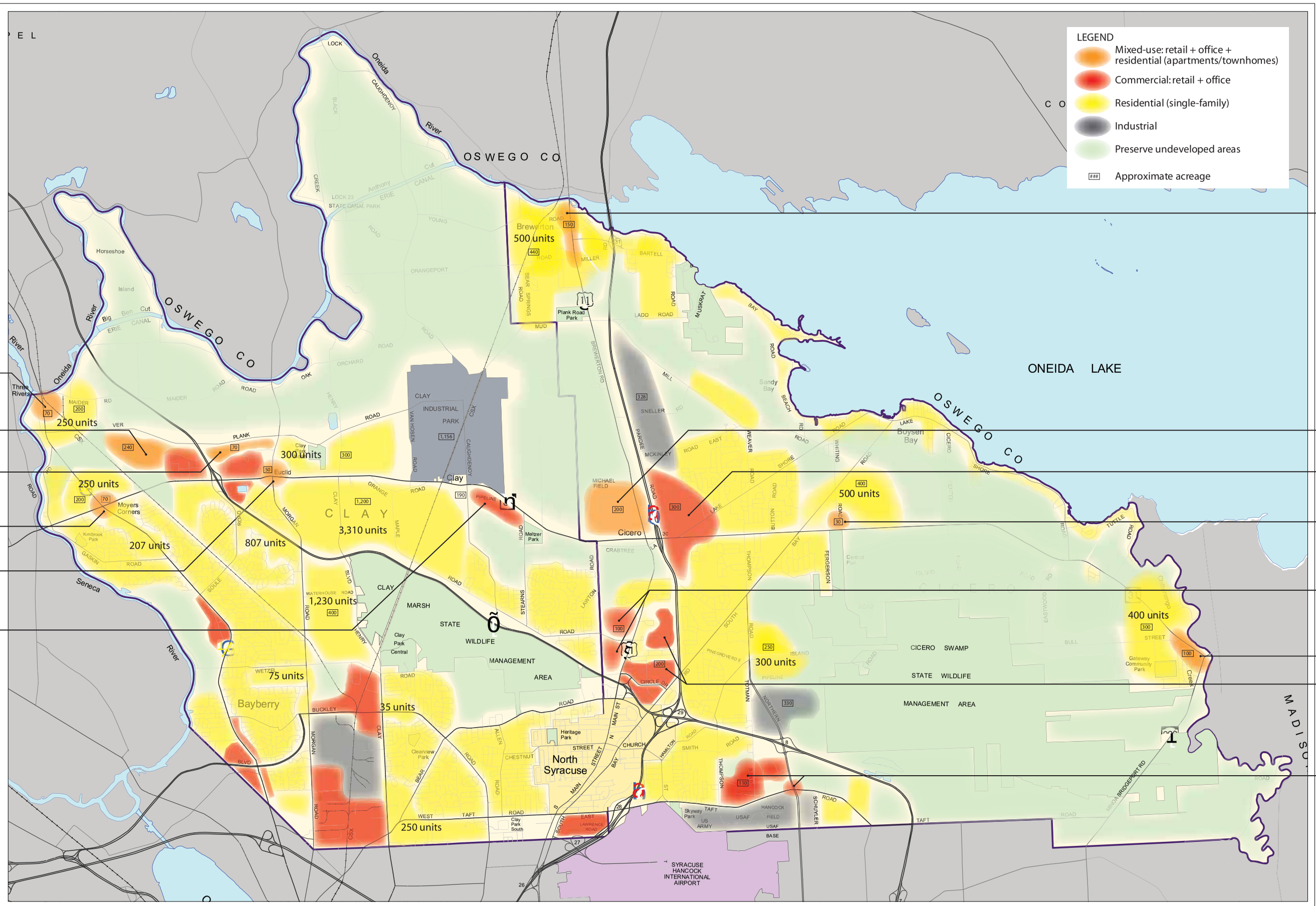
Figure 4-3: Transportation Network Changes Round 1 Alternatives

Clay-Cicero Route 31 Transportation Study

Roads
Local
Minor Collector
Collector
Minor Arterial
Principal Arterial

N
0 0.25 0.5 1 1.5 2 Miles

Data Sources: SMTC, NYSDOT 2001
Prepared by SMTC, 8/2009



CLAY PROPOSED DEVELOPMENTS

3 RIVERS
200 KSF retail
400 units residential

VERPLANK
210 KSF retail
80 KSF office
300 units residential

GREAT NORTHERN
300 KSF retail
100 units residential

31 & 57
170 KSF retail
200 KSF office
360 units residential

EUCLID
20 KSF retail
100 units residential

31 & CAUGHDENOY
380 KSF retail
80 KSF office

TOTALS

1,156 acres industrial

1,280 KSF retail
360 KSF office
1,640 KSF commercial

1,260 units multi-family
6,714 units single-family
7,974 units residential

CICERO PROPOSED DEVELOPMENTS

BREWERTON
550 KSF retail
500 units residential

31 & 11
855 KSF retail
100 KSF office
500 units residential

31 & LAKESHORE
1,020 KSF retail

CICERO CENTER
324 KSF retail
110 units residential

ROUTE 11 SOUTH
221 KSF retail

BRIDGEPORT
300 KSF retail
350 units residential

CIRCLE DR
420 KSF retail

TAFT RD
200 KSF retail
100 KSF office

TOTALS

658 acres industrial

3,890 KSF retail
200 KSF office
4,090 KSF commercial

1,460 units multi-family
1,700 units single-family
3,160 units residential

SMTC
100 Clinton Square
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This map is for presentation purposes only. The SMTC does not guarantee the accuracy or completeness of this map.

Figure 4-4: Alternative Land Use Plan
(Alternative 5)
Clay-Cicero Route 31 Transportation Study

Roads
- Local
- Minor Collector
- Collector
- Minor Arterial
- Principal Arterial

0 0.5 1 2 3 Miles

Study Area (Towns)
Village

Data Sources: SMTC
Prepared by SMTC, 12/2007 Revised 10/28/08

4.3.2 Travel Demand Modeling Results for Round 1

Maps illustrating the modeling results (segment traffic volumes, volume changes, volume-to-capacity ratios on segments, and intersection volume-to-capacity ratios) are included in Appendix F. SMTC staff and SAC members reviewed the modeling outputs for the Round 1 alternatives and observed the following results:

Alternative 1: I-81 interchange (north)

- Compared to the Future Base, this alternative results in less traffic and a slight decrease in V/C ratio near the existing I-81 interchange; however, this still represents an increase over *current* traffic volumes (and congestion levels) in this area.
- No significant change in traffic volumes near the Route 481 interchange.
- Approaches to new I-81 interchange are over capacity.
- Upgraded Verplank Road attracts traffic from Route 31 in Clay, especially in the eastern part of the town.
- New interchange attracts some traffic away from the existing interchange at Route 31. However, it appears that trips currently using the Circle Drive interchange will move to the Route 31 interchange.
- Most of the traffic using the new interchange appears to come from the Business Park.

Alternative 2: I-81 Interchange (south)

- No impact to Route 11 north of Route 31.
- Reduces the traffic volume on Route 11 south of Route 31 compared to the Future Base scenario.
- Improves the Route 31/Route 11 intersection and reduces traffic on all ramps at the existing I-81 interchange on Route 31 compared to the Future Base scenario; however, this alternative still results in increased traffic volumes compared to *current* conditions.
- Most localized impact of all the alternatives. The benefit from this alternative is focused on I-81 and Route 11 between Mattydale and Route 31, with little impact to the rest of the study area.

Alternative 3: Expanded local road network (Clay commercial area)

- Impact on Verplank Road is similar to Alternative 1. Trips between the Clay commercial area and points north (Oswego County) appear to use the Brewerton exit and Verplank Road.
- Improves the Route 31/Route 11 intersection compared to the Future Base scenario.
- Decreases traffic on Route 31 near COR Center (trips to the plazas and the mall use Verplank Road and the new rear access roads) compared to the Future Base scenario.

Alternative 4: Expanded local road network (Clay Business Park area)

- Impact on Verplank Road is similar to Alternative 1.
- Increases traffic on the north-south roads between Verplank Road and Route 31. Although the magnitude of change is relatively small, these roads may need upgrades since they are currently low-capacity local roads.
- Improves the Route 31/Route 11 intersection compared to the Future Base scenario.
- Decreases traffic on Route 31 in the eastern part of Clay and near the Route 11 intersection (similar to Alternative 1) compared to the Future Base scenario.
- Decreases traffic on Route 11 north of Route 31.

Alternative 5: Alternative Land Use Scenario

- This alternative has the most significant benefit to the Route 31 intersections.

- Most significant decrease in traffic on Route 11 north of Route 31 compared to the Future Base scenario.
- Slight decrease in traffic on Route 31 approaching I-81 from the east compared to the Future Base scenario.
- Increase in traffic on Route 31 near Bridgeport; however, there is plenty of capacity available in that area. Additional capacity may be needed on Route 298 in Bridgeport.
- Increase in northbound Route 481 traffic exiting in Clay.
- Moderate decrease in traffic on Route 31 in Clay compared to the Future Base scenario.
- Decreases in traffic north of Route 31 on South Bay Road, Caughdenoy Road, Henry Clay Boulevard, and Morgan Road compared to the Future Base scenario.

The Round 1 travel demand modeling results showed relatively minor differences on Route 31 between the various alternatives. No single alternative emerged as the "best" alternative. The Verplank Road upgrade seemed to have the most impact of any of the proposed improvements; however, its impact was modest, with only 200 to 400 vehicles attracted from Route 31 to Verplank Road during the PM peak hour.

As shown in Figure 4-5, the 2027 Future Base scenario resulted in a 40 percent increase in 24-hour VMT as compared to the 2003 Existing condition. Alternative 5 (Alternative Land Use scenario) showed the greatest benefit to Route 31 and the largest decrease in 24-hour VMT as compared to the 2027 Future Base; however, even this scenario only decreased the 24-hour VMT growth by approximately 4 percent. In other words, the Alternative Land Use scenario still resulted in a 36 percent increase in 24-hour VMT as compared to the 2003 Existing condition.

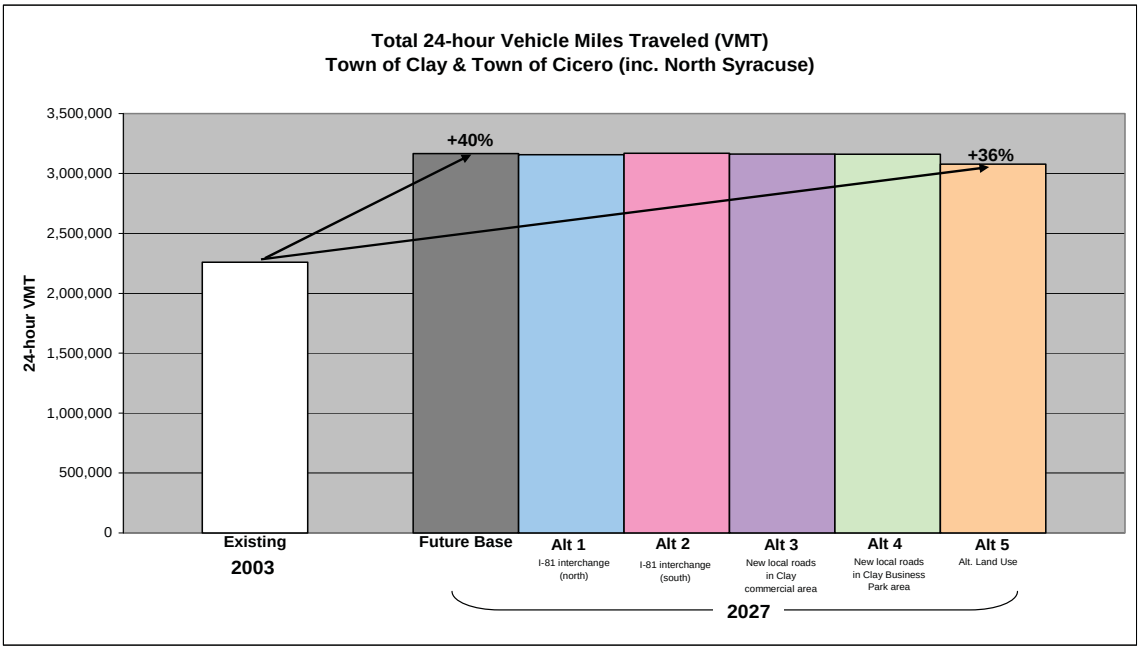


Figure 4-5: 24-hour Vehicle Miles Traveled Comparison for Round 1 Alternatives

4.3.3 Round 1 Evaluation

Each of the alternatives was evaluated based on the study goals discussed in the previous chapter. SMTC staff made an initial determination of whether an alternative

had a positive, neutral, or negative impact relative to each project goal. SAC members had the opportunity to review the evaluation and make changes. At the suggestion of the SAC, a relative weighting was added to the evaluation, to indicate that some alternatives would have a more positive or more negative impact than other alternatives. Some aspects of the evaluation were based on quantitative data resulting from the travel demand model while other aspects involved a more qualitative judgment based on staff and SAC input. Table 4-3 summarizes the evaluation for the Round 1 alternatives.

Table 4-3: Round 1 Alternatives Evaluation

STUDY GOALS	Future Base	Alternative 1 I-81 Interchange North	Alternative 2 I-81 Interchange South	Alternative 3 Clay Commercial Network	Alternative 4 Clay Business Network	Alternative 5 Alternative Land Use
Plans for sustainable development	⊖	⊖	⊖	⊖	⊖	⊕
Protects existing capacity on Rte. 31	⊖	⊕	⊕	⊕	⊕	⊕
Minimizes future vehicle miles traveled (VMT)	⊖	⊕	⊖	⊕	⊕	⊕
Minimizes capital cost	⊕	⊖	⊖	⊕	⊕	⊕
Reduces congestion around interchanges	⊖	⊕	⊕	⊕	⊕	⊕
Creates east-west connections	⊖	⊕	⊖	⊕	⊕	⊖
Connects residential and commercial	⊖	⊖	⊖	⊕	⊕	⊕
Supports access management	○	○	○	⊕	○	⊕
Supports transit	⊖	⊖	⊖	○	⊖	⊕
Supports walkability and bikeability	⊖	⊖	⊖	○	⊖	⊕
Reduces arterial congestion	○	⊕	⊕	⊕	⊕	⊕
Promotes infill development	⊖	⊖	⊕	⊖	⊖	⊕
Preserves open space	⊖	⊖	⊖	⊖	⊖	⊕
Promotes environmental sustainability	⊖	⊖	⊖	⊖	⊖	⊕
Supports a mix of uses	○	○	○	○	○	⊕
Promotes mixed use hamlets	○	○	○	○	○	⊕
Promotes economic development	○	⊕	⊕	⊕	⊕	⊕
Preserves community character	○	○	○	○	○	⊕
Integrates transportation and land use	⊖	⊖	⊖	⊕	⊕	⊕

KEY: ⊕ ⊕ ○ ⊖ ⊖ ← Achieves Study Goal — Does Not Achieve Study Goal →

4.3.4 Public Input on Round 1 Alternatives

A public meeting was held on January 13, 2009, to present the evaluation of the Round 1 alternatives and seek public input before developing the Round 2 alternatives. Approximately seventy people attended the meeting, which was held on a weekday evening at the Cicero Elementary School. The meeting included a presentation of the Round 1 alternatives and the evaluation results, followed by an open house period for attendees to review the alternatives in more detail. Six "stations" were set up around the meeting room. Each station focused on a single scenario and included a poster showing the transportation and land use assumptions, an evaluation of the alternatives based on the study goals, and a map showing traffic volume differences. An SMTC staff member was available at each station, and SAC members were also available at some stations. Meeting attendees were asked to visit the stations, review the

graphics, discuss the scenario with staff, and provide feedback. The meeting concluded with an open question-and-answer period.

Generally, the responses to Alternative 1, 3, 4, and Alternative 5 (Alternative Land Use scenario) were positive. Meeting attendees seemed very skeptical about Alternative 2 (I-81 interchange south), questioning both its feasibility and its usefulness. Some of the common concerns expressed were the magnitude/cost of a new interchange (Alternatives 1 and 2), that Alternative 4 would only make sense if significant development occurred at the Business Park site, and the difficulty of implementing the regulatory changes necessary to make Alternative 5 a reality.

A more detailed summary of this meeting and public comments are included in Appendix B.

4.4 Round 2 Alternatives

4.4.1 Round 2 Alternatives Development

The Round 2 alternatives were developed based on the Round 1 analysis results and the input received from the SAC and the public. Table 4-4 lists the Round 2 alternatives and includes a brief description of each alternative.

Table 4-4: Round 2 Alternatives

Alternative	Land Use	Transportation Network
6: Limited development + Alternative land use pattern	Follows same general pattern as Alternative 5 (Alternative Land Use), but with a reduction in the total amount of development	Future Base (no change)
7: South Bay upgrade with I-81 overpass	Same as Alternative 5. (Same amount of development as Full Build-out, but with different spatial distribution.)	Future Base plus: ▪ Upgrade South Bay Road ▪ Create a new I-81 overpass (no access to the interstate) at Pine Grove
8: Increased transit usage	Same as Alternative 5. (Same amount of development as Full Build-out, but with different spatial distribution.)	Future Base road network with new or modified transit routes: ▪ East-west service on Route 31 ▪ Express service from hamlet areas to downtown Syracuse
9: New interchange with new local roads in Business Park area	Full Build-out, as shown in Towns' plans	Future Base plus everything in Alternatives 1 and 4: ▪ Connect Sneller Road east and west of I-81 ▪ New diamond interchange at Sneller Road. ▪ Upgrade Verplank Road and Mud Mill Road to current design standards for a collector road (no widening). ▪ Extension of Burnet Road to Mud Mill Road ▪ Extension of Van Hosen Road to Oak Orchard Road ▪ Extension of Verplank Road to Burnet Road ▪ Connection from Burnet Road to Route 11
10: Expanded local road network (Clay commercial + Business Park)	Same as Alternative 5. (Same amount of development as Full Build-out, but with different spatial distribution.)	Future Base plus everything in Alternatives 3 and 4: ▪ Upgrade Verplank Road and Mud Mill Road to current design standards for a collector road (no widening) ▪ Connection from Verplank Road to Great Northern Mall ▪ Connection from Verplank Road to Route 31 at a location between the railroad and Route 481 ▪ Connection from the COR Center/Route 31 intersection to the Carling Road extension ▪ Extension of Burnet Road to Mud Mill Road ▪ Extension of Van Hosen Road to Oak Orchard Road ▪ Extension of Verplank Road to Burnet Road ▪ Connection from Burnet Road to Route 11

Alternative 6

It was obvious from the Round 1 modeling that the amount of development in the town plans (Future Base) would need to be reduced to achieve a more significant decrease in 24-hour VMT compared to the Future Base scenario. Alternative 6 was meant to address this issue. With input from the SAC, it was decided that this "limited development scenario" should follow the land use patterns established for Alternative 5 (that is, new development would be focused in denser, mixed-use hamlets), with reductions primarily in single-use, low-density areas. SAC members also suggested that reductions in the amount of development should be based on the remaining capacity of roads in the study area.

SMTC staff used the travel demand model to identify areas in Alternative 5 that were generating significant traffic on certain key congested road segments (based on the Round 1 modeling results). SMTC staff then reduced the amount of development in these areas, focusing on reductions in large-scale retail developments and large-lot residential developments, while maintaining density and mixed-use development in the proposed "hamlet" areas. SMTC staff used data from the travel demand model to estimate a reduction in development that would likely reduce traffic volumes below congested levels. The result was Alternative 6, which maintains the hamlet areas shown in Alternative 5, but includes a lower total amount of development. Table 4-5 compares the number of households and employees included in the each of the land use scenarios modeled for this project. Appendix E contains a more detailed discussion of how Alternative 6 was developed.

Table 4-5: Comparison of Households and Employees in the Town of Clay and Town of Cicero (including Village of North Syracuse) for Land Use Alternatives

Modeled Scenario	Clay		Cicero		Study Area	
	Households	Employees	Households	Employees	Households	Employees
2003 Base	21,573	17,626	10,522	7,068	32,095	24,694
2027 Future Base	29,547	25,409	13,682	17,754	43,229	43,163
Total change vs. 2003 Base	*7,974*	*7,783*	*3,160*	*10,686*	*11,134*	*18,469*
Total % change vs. 2003 Base	*37%*	*44%*	*30%*	*151%*	*35%*	*75%*
Alternative Land Use	29,547	25,409	13,682	17,754	43,229	43,163
Total change vs. 2003 Base	*7,974*	*7,783*	*3,160*	*10,686*	*11,134*	*18,469*
Total % change vs. 2003 Base	*37%*	*44%*	*30%*	*151%*	*35%*	*75%*
Limited Growth	24,198	23,317	12,666	15,013	36,864	38,330
Total change vs. 2003 Base	*2,625*	*5,691*	*2,144*	*7,945*	*4,769*	*13,636*
Total % change vs. 2003 Base	*12%*	*32%*	*20%*	*112%*	*15%*	*55%*

As shown in Table 4-5, both the Future Base and Alternative Land Use scenarios include 35 percent growth in households and 75 percent growth in employees (total study area) compared to the 2003 Base model. Under the Limited Growth scenario, there is still growth in households and employees compared to the existing (base) conditions (15 percent and 55 percent, respectively), although the amount of growth is much less than the amount included in towns' current land use plans.

Figure 4-6 illustrates the Limited Growth (Alternative 6) land use plan.

Alternative 7
Alternative 7 includes a new road connection over I-81 and was the result of feedback received at the public meeting.

Alternative 8
The SAC and the public expressed a desire for more transit options in the Town of Clay and Town of Cicero. The goal of Alternative 8 was to assess the impact of land use and transit operating conditions on transit usage. This alternative included the same land use pattern and total amount of development as Alternative 5 and included the Future Base road network. However, this alternative was modeled with additional express-service bus routes from Clay to downtown Syracuse (with stops in the proposed Three Rivers and Euclid hamlet areas), modifications to existing express service from Cicero to downtown (to include stops in the proposed hamlets at Brewerton and Cicero Center) and a new east-west, "cross-town connection" service on Route 31 from Moyers Corners (Route 31/Route 57) to Cicero Center.

Alternatives 9 and 10
Alternatives 9 and 10 simply combined elements of some Round 1 alternatives based on feedback received at the public meeting.

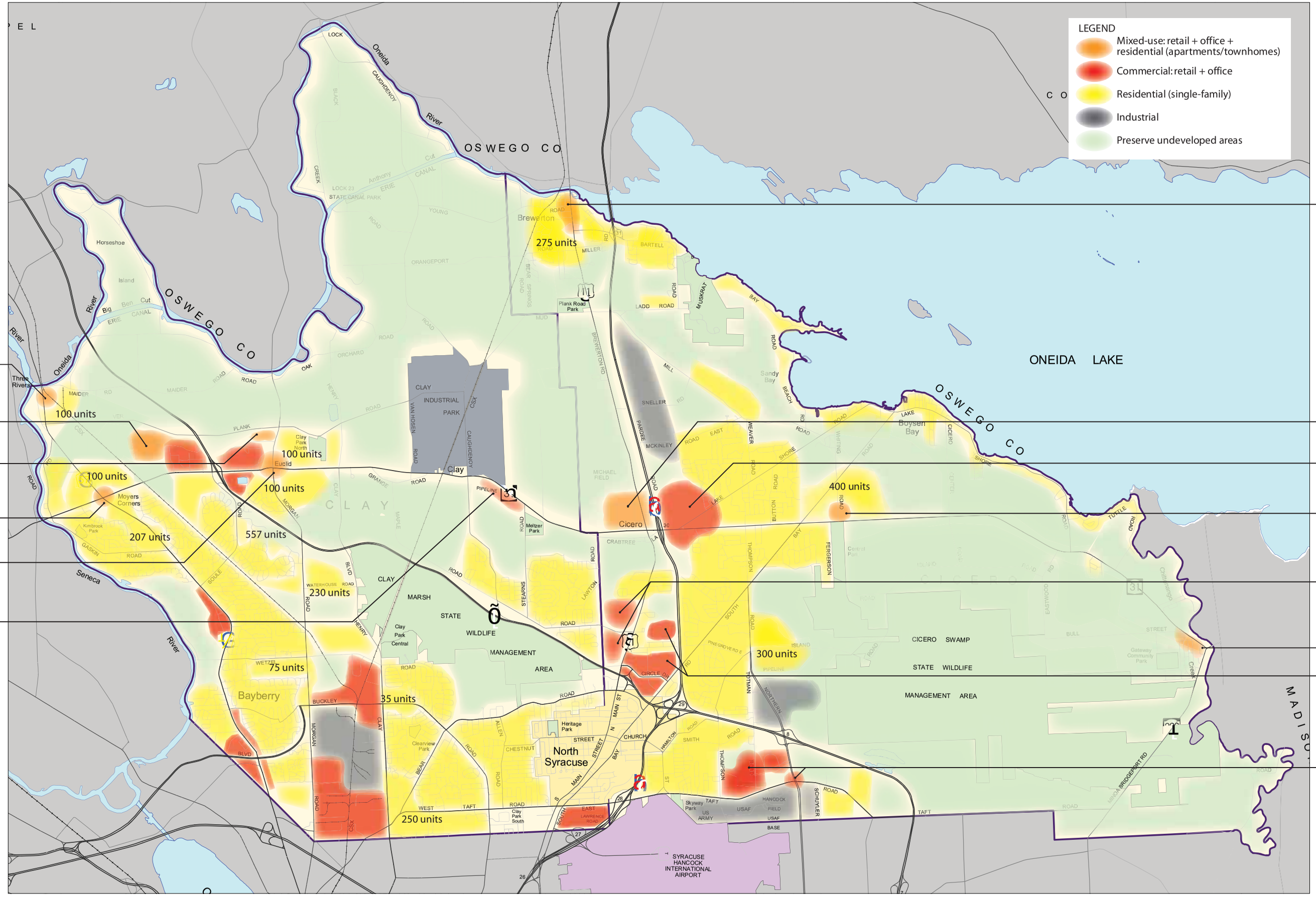
Figure 4-7 illustrates the transportation network changes for Alternatives 7, 8, 9, and 10.

4.4.2 Travel Demand Modeling Results for Round 2

Maps illustrating the modeling results (segment traffic volumes, volume changes, volume-to-capacity ratios on segments, and intersection volume-to-capacity ratios) are included in Appendix F. SMTC staff and SAC members reviewed the modeling outputs for the Round 2 alternatives and observed the following results (based on PM peak hour conditions):

Alternative 6: Limited growth with land use pattern from Alternative 5
- Decreases in traffic volume on almost every road as compared to the 2027 Future Base.
- Significant decreases in traffic volumes on much of Route 31, with reductions of over 500 vehicles, or over 20 percent, of 2027 Future Base volume during the PM peak hour near both the Route 481 and I-81 interchanges.
- Improves the V/C ratio on most roadways compared to the 2027 Future Base. No segments on Route 31 are near or at capacity. Significant improvement in the V/C ratio on Route 11 north of Route 31.
- Route 298 within the study area is still very close to capacity.
- Reduces delay from the 2027 Future Base condition at five major intersections on Route 31 (of twelve studied). Remaining intersections experience minimal change, with one intersection remaining with V/C > 0.9.

Alternative 7: South Bay Road upgrade + I-81 overpass (with Alternative Land Use pattern)
- Increase in traffic volume on South Bay Road of less than 125 vehicles per hour as compared to the 2027 Future Base condition, indicating that the overpass does not draw significant traffic.
- The results are very similar to Alternative 5 (Alternative Land Use), indicating that the added road improvements do not have much impact.
- Reduces delay from the 2027 Future Base condition at four major intersections on Route 31. Remaining intersections experience minimal change, with two intersections remaining with V/C > 0.9.



CLAY PROPOSED DEVELOPMENTS

3 RIVERS
200 KSF retail
200 units residential

VERPLANK
80 KSF office
300 units residential

GREAT NORTHERN
100 units residential

31 & 57
120 KSF retail
100 KSF office
180 units residential

EUCLID
20 KSF retail
100 units residential

31 & CAUGHDENOY
180 KSF retail
80 KSF office

TOTALS

1,156 acres industrial

520 KSF retail
260 KSF office
780 KSF commercial

880 units multi-family
1,754 units single-family
2,634 units residential

CICERO PROPOSED DEVELOPMENTS

BREWERTON
350 KSF retail
400 units residential

31 & 11
455 KSF retail
100 KSF office
500 units residential

31 & LAKESHORE
420 KSF retail

CICERO CENTER
324 KSF retail
110 units residential

ROUTE 11 SOUTH
221 KSF retail

BRIDGEPORT
150 KSF retail
150 units residential

CIRCLE DR
320 KSF retail

TAFT RD
200 KSF retail
100 KSF office

TOTALS

658 acres industrial

2,440 KSF retail
200 KSF office
2,640 KSF commercial

1,160 units multi-family
975 units single-family
2,135 units residential

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Figure 4-6: Limited Growth Land Use Plan
(Alternative 6)
Clay-Cicero Route 31 Transportation Study

Roads
- Local
- Minor Collector
- Collector
- Minor Arterial
- Principal Arterial

0 0.5 1 2 3 Miles

- Study Area (Towns)
- Village

Data Sources: SMTC
Prepared by SMTC, 12/2007 Revised 7/13/09

New road
Upgrade existing road
New interchange
Interchange capacity improvements
New/modified express bus route

Future Base
Alternative 7
Alternative 8
Alternative 9
Alternative 10

INSET A

GUY YOUNG RD
CAUGHDENOY RD
BREWERTON RD
BURNET RD
VERPLANK RD
SEE INSET A
ROUTE 31
LAKESHORE RD
SOUTH BAY RD
MORGAN RD
HENRY CLAY BLVD
BUCKLEY RD
EAST CIRCLE DR
BEAR RD
THOMPSON RD
NORTHERN BLVD
COLD SPRINGS RD

Oneida River
Seneca River
Oneida Lake

Oneida Shores County Park
CLAY INDUSTRIAL PARK
Town of Clay
Town of Cicero
Clay Marsh State Wildlife Management Area
Cicero Swamp State Wildlife Management Area

11
31
81
481
57
298

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Figure 4-7: Transportation Network for Round 2 Alternatives

Clay-Cicero Route 31 Transportation Study

Roads
Local
Minor Collector
Collector
Minor Arterial
Principal Arterial

N
0 0.25 0.5 1 1.5 2 Miles

Alternative 8: New/modified express bus routes (with Alternative Land Use pattern)

- Results appear almost identical to Alternative 5 (Alternative Land Use), indicating that the new/modified transit routes have little impact on traffic conditions within the study area.
- Transit ridership (measured by boardings in a 24-hour period) increases by about 35 percent (or a total of approximately 1,400 additional boardings) for the overall study area.
- Reduces delay from 2027 Future Base condition at four major intersections on Route 31. Increases delay at one intersection on Route 31 (Lake Shore Road). Remaining intersections experience minimal change. Two intersections experience approach V/C > 0.9.

Alternative 9: New I-81 interchange (north) + new local roads in Clay Business Park area (with Full Build land use)

- Significant decreases in traffic volumes on Route 31 between Caughdenoy Road and Route 81, and on Route 11 north of Route 31, as compared to the 2027 Future Base condition. Little impact elsewhere on Route 31.
- Significant increases in traffic on Verplank Road as compared to the 2027 Future Base condition; however, the V/C ratio on Verplank Road is still very good.
- Significant increases in traffic on Mud Mill Road west of Route 11 as compared to the 2027 Future Base condition with high V/C ratios.
- Minor changes in traffic volumes on other local roads.
- Approaches to new interchange have V/C ratios greater than 1.0; Route 11 and Pardee Road would likely require widening to accommodate the increase in traffic.
- Reduces delay from the 2027 Future Base condition at two major intersections on Route 31. Remaining intersections experience minimal change, with two intersections remaining with V/C > 0.9.

Alternative 10: New local roads in Clay commercial area and Business Park area (with Alternative Land Use pattern)

- Significant decreases in traffic volumes on Route 11 north of Route 31 as compared to the 2027 Future Base condition (but with an increase on the segment immediately north of Route 31). Also significant decreases on Route 31 from the Cicero town line to Route 11, and on Caughdenoy Road, Henry Clay Boulevard, and Morgan Road north of Route 31.
- Significant increases in traffic on Verplank Road as compared to the 2027 Future Base condition; however, the V/C ratio on Verplank Road is still very good.
- Moderate decrease in traffic volume at the I-81 interchange as compared to the 2027 Future Base condition.
- Reduces delay from the 2027 Future Base condition at three major intersections on Route 31. Increases delay at one intersection on Route 31 (Lake Shore Road). Remaining intersections experience minimal change. Three intersections experience Approach V/C > 0.9.

It is important to recognize that all future scenarios (2027 Future Base and alternatives) create additional traffic congestion on Route 31 compared to the existing condition. Compared to the 2027 Future Base condition, the alternatives analyzed reduce future traffic volumes to varying degrees and with varying geographic impacts, as described above.

Figure 4-8 shows the total 24-hour VMT for the existing conditions, Future Base, and each of the Round 2 alternatives (Alternative 5 is also included for comparison). As previously stated, the 2027 Future Base scenario results in 40 percent growth in VMT compared to the 2003 Existing Condition. Alternative 5 results in a slight reduction in the VMT growth, with a total increase of approximately 36 percent compared to the Existing Condition. Alternative 6 (Limited Growth) results in VMT growth of approximately 25 percent as compared to the Existing Condition, which is much closer to (although still higher than) the expected VMT growth for the SMTC planning area overall.[4]

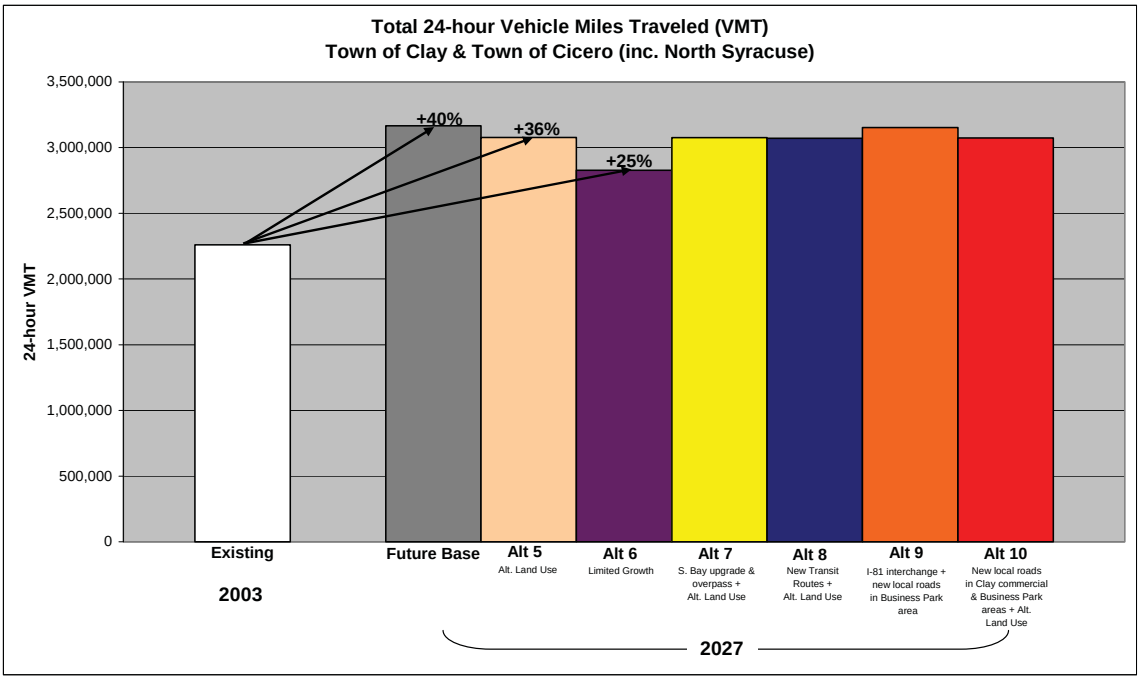


Figure 4-8: 24-hour Vehicle Miles Traveled (VMT) Comparison for Round 2 Alternatives

Alternatives 7, 8, and 10 showed very similar impacts to Route 31, i.e. slight decrease in traffic volumes west of Thompson Road and moderate increases east of Thompson Road (but still maintaining good V/C ratios) as compared to the 2027 Future Base. In each of these alternatives, the alternative land use pattern appears to have a more significant impact than the transportation network changes. Alternative 6 (limited growth with alternative land use pattern) is the only alternative that results in substantial traffic volume decreases from the 2027 Future Base condition throughout the study area. Alternative 9 results in traffic volume decreases, as compared to the 2027 Future Base, between Caughdenoy Road and Route 81, with minimal changes elsewhere within the study area. However, the future traffic volume on Route 31 with a new interchange will still be much greater than the existing traffic volume, and there will still be congestion; i.e. this alternative will not solve existing or future congestion issues.

[4] SMTC's current 2027 travel demand model shows a 17 percent increase in total 24-hour VMT for the entire Metropolitan Planning Area (MPA) as compared to the 2003 existing conditions model.

4.4.3 Round 2 Evaluation

Similar to the Round 1 alternatives, the Round 2 alternatives were evaluated based on the project goals. Each of the alternatives was evaluated based on the study goals discussed in the previous chapter. Table 4-6 summarizes the evaluation for the Round 2 alternatives.

Table 4-6: Round 2 Alternatives Evaluation

STUDY GOALS	Future Base	Alternative 5 Alternative Land Use	Alternative 6 Limited Growth	Alternative 7 5. Bay Upgrade & Overpass + Alternative Land Use	Alternative 8 New Transit Routes + Alternative Land Use	Alternative 9 I-81 Interchange north + new local roads in Business Park area	Alternative 10 New local roads in Clay commercial and Business Park areas + Alternative Land Use
Plans for sustainable development							
Protects existing capacity on Rte. 31							
Minimizes future vehicle miles traveled (VMT)							
Minimizes capital cost							
Reduces congestion around interchanges							
Creates east-west connections							
Connects residential and commercial							
Supports access management							
Supports transit							
Supports walkability and bikeability							
Reduces arterial congestion							
Promotes infill development							
Preserves open space							
Promotes environmental sustainability							
Supports a mix of uses							
Promotes mixed use hamlets							
Promotes economic development							
Preserves community character							
Integrates transportation and land use							

KEY:

4.4.4 Public Input on Round 2 Alternatives

A public meeting was held on September 1, 2009, to present the evaluation of the Round 2 alternatives and seek public input before developing the final recommendations. Approximately forty people attended the meeting, which was held on a weekday evening at the Cicero-North Syracuse High School. The meeting followed the same format as the January 2009 public meeting, with a presentation of the Round 2 alternatives and the evaluation results, followed by an open house period for attendees to review the alternatives in more detail. Stations were set up around the room for each of the Round 2 alternatives plus the Future Base scenario and Alternative 5. (Alternative 5, although a Round 1 alternative, was included in the September public meeting since the previous response to this alternative was positive.) Each station focused on a single scenario and included a poster showing the transportation and land use assumptions, an evaluation of the alternatives based on the study goals, and a map showing traffic volume differences. An SMTC staff member was available at each station and SAC

members were also available at some stations. Meeting attendees were asked to visit the stations, review the graphics, discuss the scenario with staff, and provide feedback. The meeting concluded with an open question-and-answer period.

Many of the people that attended the public meeting were concerned about the amount of development occurring in Clay and Cicero. Concerns were expressed about additional traffic and additional demand on school facilities. However, there were also a few residents that expressed a desire for growth to continue unabated and for any necessary road capacity projects to be advanced to meet the future demand. Residents also had questions about the future of the Clay Business Park and its potential impacts. Consistent with the first two public meetings, residents expressed a desire for more walking, biking, and public transit opportunities. Residents were eager to discuss the proposed alternatives, but no clear preferred option emerged at the public meeting.

A more detailed summary of this meeting and the public comments is included in Appendix B.

4.5 Evaluation Summary

A total of eleven future scenarios were evaluated as part of this study: the Future Base scenario plus ten alternatives. Five alternatives were evaluated in the first round of analysis and presented to the SAC and the public. Based on the analysis results, SAC input, and public feedback, five additional alternatives were developed and evaluated in a second round of analysis. The Round 2 alternatives included new alternatives as well as combinations of the Round 1 alternatives.

All future scenarios result in additional traffic on Route 31 and throughout the study area compared to the existing conditions. The Limited Growth scenario results in the smallest increase in total traffic of all the future scenarios analyzed, with a projected increase in total 24-hour vehicle miles traveled of 25 percent from 2003 to 2027. In comparison, the Future Base scenario results in 40 percent growth in VMT and the Alternative Land Use scenario results in 36 percent growth in VMT from 2003 to 2027. The analysis showed that land use changes (both in spatial distribution and in magnitude of total growth) have a much more significant impact on total traffic in the Town of Clay and Town of Cicero than any of the transportation network modifications that were modeled. The transportation network changes each had some modest benefits, but with limited geographic reach.

Evaluation of future alternatives

- All future scenarios included growth in households and employment and result in additional traffic on Route 31 compared to existing conditions.
- Limited Growth scenario results in the smallest increase in traffic from the existing conditions.
- Land use changes have a more significant impact on traffic conditions than transportation network changes.
- Limited Growth scenario achieves the most study goals.
- Alternatives with a new I-81 interchange achieve the fewest study goals.

Each of the alternatives was also evaluated against the study goals. This evaluation was based on the travel demand modeling results, input from the SAC members, and input from the public. The Future Base scenario achieved only one study goal (minimize capital cost). The Limited Growth alternative clearly achieved the most study goals, while alternatives that included a new I-81 interchange (Alternatives 1, 2 and 9), achieved the fewest study goals.

5 RECOMMENDATIONS AND IMPLEMENTATION

5.1 Overview

After reviewing all of the modeling results, alternatives evaluation, and public input, the SAC and SMTC staff developed a list of recommendations for the Town of Clay and the Town of Cicero. These recommendations include elements of multiple alternatives that were included in the analysis. The recommendations are described below, in no particular order. An implementation plan is included at the end of this chapter.

Summary of recommendations

- Revise the existing Town of Clay and Town of Cicero planning documents to include lower levels of future growth.
- New development should focus on increasing density and mixing uses.
- Enhance transit service, with supportive land use practices.
- Upgrade Verplank Road.
- Build new local road connections in the Clay commercial area through developer mitigation.
- Build new local roads in the Clay Business Park area as development occurs.
- Reconfigure the Route 481 interchange (split the southbound on-ramp from Soule Road).
- Reconfigure the I-81 interchange to increase capacity and enhance safety.
- Do not build additional interchanges unless regionally significant development occurs that would necessitate additional interstate access.
- Require new development to include pedestrian, bicycle, and transit accommodations.
- Practice good access management in commercial areas.
- Require roadway connections between residential areas (discourage cul-de-sacs).

5.2 Recommendations

1. Revise the existing Town of Clay and Town of Cicero planning documents to include lower levels of future growth.

The Town of Cicero Comprehensive Plan was completed in 2006 but never officially adopted by the town. This presents an opportunity to revise the Comprehensive Plan prior to adoption.

The Town of Clay completed a Comprehensive Plan in 1965, and it is unclear whether this document was ever officially adopted. The 1965 Comprehensive Plan is rarely referred to in town planning decisions, with the Town Board and Planning Board instead using more recent studies such as the Route 31/Route 57 Corridor Study and the Northern Land Use Study to support planning decisions. Both of these studies have a limited geographic scope. The Northern Land Use Study, which was the primary basis for the future land use assumptions in this study, only applies to the area of the town north of Route 31/Route 481. While this northern section is indeed the area that has experienced the most development pressure in recent years, opportunities exist for infill development south of Route 481, and those opportunities should figure in to the overall growth plan for the town. The town has reconvened the committee that worked on the Northern Land Use Study and is examining possible revisions to that study. At a minimum, a revision of the Northern Land Use Study should include guidelines for future growth that are consistent with the Limited Growth scenario; however, this study recommends that, ideally, the Town of Clay complete a full Comprehensive Plan process with expectations of the amount of growth and future land

use pattern consistent with the Limited Growth scenario analyzed as part of the Route 31 Transportation Study.

How the Limited Growth scenario (Alternative 6) differs from the existing town Land Use Plans (Future Base):

- Lower levels of future growth in both towns
- Preserves open space along Route 11 north of Route 31 by concentrating commercial development in denser, mixed-use nodes and infill areas.
- Preserves open space north of Route 31 in the Town of Clay.
- More mixed-use development in existing commercial areas (Moyers Corners, COR Center area, Great Northern Mall area, Route 31/Route 11) rather than continuing single-use, low-density commercial development.

2. New development should focus on increasing density and mixing uses.

Increasing density and mixing land uses will help achieve many of the study goals such as preserving open space, supporting transit service, and encouraging walking and bicycling, in addition to the benefits to the road network that were demonstrated through the travel demand modeling. The towns should focus on infill development before considering additional greenfield development. When new areas of the town are developed, these areas should be developed primarily as mixed-use hamlets. When reviewing the town planning documents, as suggested in the previous recommendation, the towns should also strive to create a land use pattern that is more consistent with the Limited Growth scenario analyzed for this project.

The Town of Cicero Comprehensive Plan identified a future hamlet between South Bay Road and Whiting Road and the Brewerton Revitalization Project developed recommendations for a hamlet in Brewerton as well. These two hamlets represent the type of land use pattern that the Town of Cicero (and the Town of Clay) should encourage for future development. (Note that both of these hamlets were included in the travel demand modeling for Alternative 5: Alternative Land Use and Alternative 6: Limited Growth.) The Town of Cicero should also reduce the amount of single-use commercial development planned for Route 11 north of Route 31 and instead focus on developing a denser, mixed-use node near the intersection of Route 31 and Route 11. Opportunities for commercial infill development south of Route 31 should also be considered.

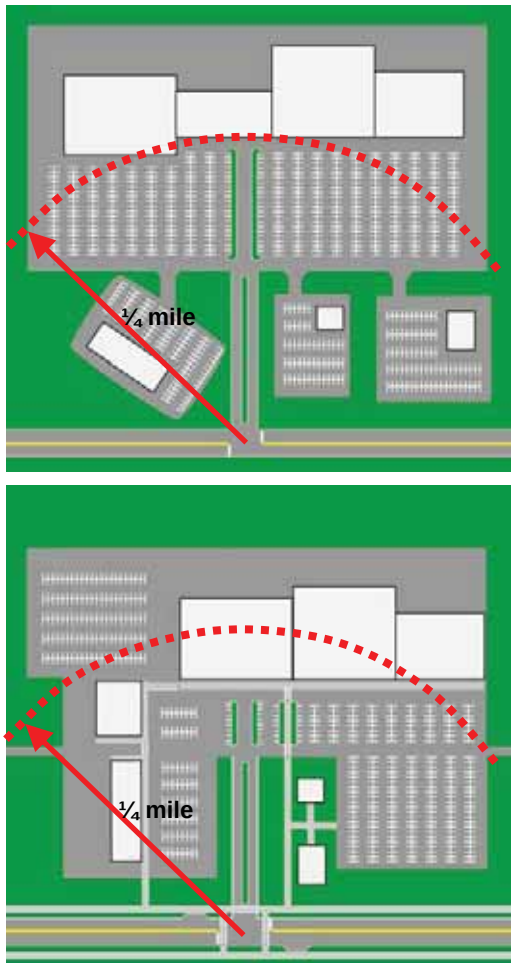
The Clay Northern Land Use Study identified hamlet-type developments at Three Rivers and Euclid, but the zoning recommendations for these sections include only relatively low density residential areas (R-15 or R-60, so approximately ¼ to 1 ½ acre lots) and lack a provision for mixed-use development. In addition to these mixed-use areas, the Limited Growth scenario also included mixed-use development at Moyers Corners and infill mixed-use development adjacent to Great Northern Mall and the existing Clay commercial area (near COR Center) south of Verplank Road (with a buffer along Verplank Road).

The following photosimulations illustrate what infill and hamlet development might look like in Clay and Cicero.


Infill development at an existing commercial plaza (COR Center entrance from Route 31).


Cicero Center hamlet (Route 31 at Whiting Road).


Infill at a major intersection (Route 31 at Route 298 in Bridgeport).



The site at top is typical of many suburban commercial developments. There are no bus stops, no pedestrian walkways, and buildings located beyond ¼ mile from the main road (a typical walking distance). The site at bottom includes the same buildings, with some minor modifications: bus pull-offs, clearly-defined pedestrian pathways, some parking to the rear of the site, and buildings closer to the road.

3. Enhance transit service, with supportive land use practices.

The lack of transit service in the Town of Clay and Town of Cicero was repeatedly mentioned by residents at the public meetings for this study. Residents expressed a desire for additional express service into downtown Syracuse and the University Hill area as well as more in-town local service, such as an east-west connector along Route 31 through Clay and the western part of Cicero. Adding transit service and/or increasing service frequency requires a land use pattern that supports transit use: a mix of uses, higher densities, pedestrian access, appropriate commercial site design, and convenient park-and-ride locations.

A mix of uses creates both origins and destinations in a corridor, which makes for a more efficient local bus system. For short local trips, people need to be able to access a bus stop on foot. Higher density areas are more likely to generate enough riders to support a convenient bus service. Typically, a residential density of seven units per acre is required to support "intermediate" bus service (twenty buses per day) and fifteen units per acre are required to support "frequent" bus service (forty buses per day).[5] Pedestrians will generally walk up to ¼ mile to access a transit stop. Creating nodes of dense, mixed-use development within ¼ mile of a transit stop encourages people to use transit.

Large suburban commercial sites are not generally very pedestrian- or transit-friendly. However, relatively minor modifications to site design can make a site easier to serve by transit and safer and more comfortable for all pedestrians (even those people just walking from their car to the front door). With good pedestrian access from the main arterial to the buildings, transit vehicles can stop on the arterial rather than pull in to individual plazas, which makes transit service in the corridor more efficient. A site can be made more pedestrian- and transit-friendly by:

- placing buildings towards the front of the site, with most (or all) of the parking located to the side or rear of the building;
- breaking up large parking lots into smaller parking bays separated by landscaped areas with pedestrian paths; and
- providing clearly marked pedestrians walkways from the main road to the buildings. Pedestrian pathways should be direct and convenient.

[5]Victoria Transport Policy Institute. Online TDM Encyclopedia. Transit Oriented Development. http://www.vtpi.org/tdm/tdm45.htm

For longer-distance trips, such as the morning and afternoon commute or special events, a park-and-ride system is appropriate. An efficient park-and-ride system will require a series of park-and-ride lots along I-81 or Route 481 located close to the exits, allowing a bus to quickly and easily exit the highway, pick-up/drop-off passengers, and return to the highway. The towns can assist with this by looking for opportunities to reserve land close to the highway exits. The park-and-ride lots could also serve as a transfer point between local, community circulator routes and the express routes to downtown.

4. Upgrade Verplank Road from Route 57 to Morgan Road and Verplank/Mud Mill Road to Route 11 as the Clay Business Park develops.

An upgrade of Verplank Road was previously recommended by the SMTC in the Town of Clay Travel Demand Modeling Task, which focused only on the commercial area in the Town of Clay. The benefit of this upgrade was also demonstrated by the analysis completed for the current study. Verplank Road would be upgraded to current design standards for a collector roadway, with lane and shoulder widening and improvements to the road base to allow it to carry additional traffic (but no additional travel lanes would be added).

This study recommends that the Town of Clay maintain a buffer along the south side of Verplank Road and that the County Department of Transportation allow only a limited number of driveways, which should be required to serve multiple developments between Verplank Road and Route 31. This will allow for infill development between Verplank Road and Route 31 while discouraging development north of Verplank Road (consistent with the Limited Growth scenario).

A concept for infill development between Great Northern Mall and Verplank Road. New development fronts onto an internal street network, leaving an undeveloped "buffer" along the south side of Verplank Road.

As development progresses at the Clay Business Park, similar upgrades to Verplank and Mud Mill Roads between Morgan Road and Route 11 should be considered to provide access to the Park.

5. Build new local roads in the Clay commercial area as developer mitigation. Build new local roads/extensions in the Clay Business Park area as development occurs.

This recommendation includes all the transportation network changes included in the analysis of Alternative 10 (see Figure 4-7). The new local roads in the Clay commercial area will provide access to the existing commercial developments and the mall as well as to any future infill development in this area. This will allow travelers to access these areas from Verplank Road and provide an alternative for short trips on Route 31. These roads could be required as developer mitigation and should be included as an alternative in any future traffic impact studies for development in this area. The new roads and road extensions in the eastern part of the Town of Clay will enhance access to the Clay Business Park; however, these improvements should be tied to future development in the Park.

6. Reconfigure the Route 481 interchange as previously recommended in the Soule Road Break-in-Access Study.

This was included in the Future Base analysis and has repeatedly been shown to improve traffic flow around the Route 481/Route 31 interchange. The original analysis for this concept was completed in 2003. The SMTC completed an addendum to the original report in 2007, which included some updated future traffic volumes and development information. The 2007 addendum concluded that the recommendations of the 2003 study are still valid (relocate Soule Road to the west to intersect Route 31 opposite Carling Road and create a direct on-ramp to Route 481 southbound from Route 31).

7. Reconfigure the existing I-81 interchange to increase capacity and enhance safety.

Congestion around the I-81 interchange on Route 31 in Cicero was a primary issue voiced by many residents of the study area at the public meetings for this study. The NYSDOT is in the early stage of developing a project to address traffic safety and operations on Route 31 from Route 11 to Cicero Center. During this stage the highway needs, project objectives, and design criteria will be defined. Also, feasible solutions and costs will be established. It is anticipated that the project will involve significant highway modifications. The NYSDOT plans to hold a public information meeting in 2010 to present their findings.

Also near this interchange, the NYSDOT, OCDOT, Town of Cicero, and the North Syracuse Central School District should work together to examine options for improving traffic flow at the Lakeshore Road/Route 31 intersection and around the schools on Route 31. One initial suggestion that merits further consideration is to create a connection from Lakeshore Road to Route 31 east of the Cicero Elementary School, aligning with the Cicero-North Syracuse High School entrance.

8. Additional interchanges should only be considered if a regionally significant development occurs within the study area.

Constructing additional interchanges on Route 481 or I-81 is a monumental undertaking that will require significant time and resources. A new interchange would need to meet

federal interchange spacing requirements, which would likely be a challenge given the proximity of the current interchanges on Route 481 and I-81. Environmental constraints would present additional challenges. Also, the building of a new interchange does not support many of the study goals, such as preserving open space, supporting transit, supporting walkability and bikeability, or promoting infill development. However, if a regionally significant employment center is developed in the study area, a new interchange may be considered to provide access to that site. More detailed analysis would be required to clearly demonstrate the need for a new interchange and show that less resource-intensive mitigation measures, such as upgrading existing roads and employing travel demand management techniques, are not adequate to provide safe and efficient access.

9. Require new development (residential and commercial) to include pedestrian and bicycle accommodations and encourage commercial site plans to include bus stops.

Residents that attended the public meetings for this study repeatedly expressed a desire to walk and bike more and expressed frustration with the lack of necessary facilities. Mixing land uses and developing at higher densities will make walking, biking, and using transit more viable transportation choices. Recommendations for specific requirements related to pedestrian and bicycle accommodations are discussed below.

Pedestrian accommodations

A complete pedestrian network within the Town of Clay and Town of Cicero will require four components:

- sidewalks within residential subdivisions;
- sidewalks along arterials and collector roads to connect residential and commercial areas;
- sidewalks along commercial frontages; and
- pedestrian access to buildings.

Sidewalks within residential subdivisions (local roads)

A town can require new residential subdivisions to include sidewalks along local roads through the town's subdivision regulations or a general town-wide policy. Subdivision regulations or the town sidewalk policy can require that all new residential subdivisions include sidewalks on both sides of the street (and can specify a minimum width, minimum buffer, and appropriate construction material) or may require sidewalks based on a residential density threshold. Federal Highway Administration (FHWA) guidelines recommend that sidewalks be constructed on both sides of the street where density exceeds four units per acre and/or significant pedestrian generators (such as a school or bus stop) exist. On lower density streets, a sidewalk on only one side of the street may be acceptable, although both sides are preferred.[6] As an example, the Town of Malta, NY, includes a requirement in their subdivision regulations that is consistent with the FHWA guidelines.[7] The Town of Penfield, NY, has adopted a town-wide sidewalk policy that states that "all new development approved by the Town of Penfield is required to install sidewalks along both sides of all local roads" (this policy includes a procedure for granting

[6] Federal Highway Administration, *Pedestrian Facilities Users Guide: Providing Safety and Mobility*, FHWA-RD-01-102, March 2002.
[7] Torzynski, Robert – Genesee Transportation Council. (July 2007) Technical Memorandum: Bicycle & Pedestrian Supportive Code Language.

waivers and requires a payment in lieu of sidewalk installation).[8] The Town of Penfield Sidewalk Policy is included in Appendix G for reference.

Installing sidewalks adjacent to existing residential development is more difficult. Some town codes authorize the town board to direct that sidewalks be constructed on existing roads at the town's expense or the property owner's expense (obviously, the former is generally more palatable to residents). When sidewalks are constructed at the town's expense, this may be accomplished through the use of general town funds, grants, or proceeds from fees paid for sidewalk installation waivers.

One barrier to sidewalk construction is the perceived ambiguity surrounding maintenance responsibilities. The New York State Highway Law requires that villages, towns, and cities maintain and repair sidewalks within their jurisdictions (including those along State and County-owned roads); this maintenance includes the removal of accumulated snow and ice[9]. A town may place responsibility for maintenance (including snow removal) and repair of sidewalks on the owner or occupant of the adjacent property through the adoption of a town sidewalk ordinance.[10]

Sidewalks along arterials and collector roads to connect residential and commercial areas

While it is relatively straightforward to require sidewalks in new residential subdivisions and adjacent to new commercial development, there are often significant gaps in the system along existing arterials and collectors, which are typically State or County-owned roads. These roads may be primarily residential with some existing commercial development, but are not facing significant commercial development pressure. Sidewalks along these roads provide a link for pedestrians from residential subdivisions to more intense commercial areas.

SMTC Bicycle and Pedestrian Policy
The following policy was adopted in 2005 as part of the SMTC's Bicycle and Pedestrian Plan (excerpted here, see Appendix G for the complete policy resolution):

Bicycle and pedestrian ways should be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:

- *Bicyclists and pedestrians are prohibited by law from using the roadway.*
- *The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use.*
- *Where sparsity of population or other factors indicate an absence of need.*

As previously stated, installing sidewalks adjacent to existing development – residential or commercial – is more difficult than requiring sidewalks as part of the development process. Whenever possible, the town should attempt to coordinate sidewalk construction with planned highway construction or reconstruction projects. According to the Onondaga County DOT, there may be an opportunity to install sidewalks on a County road as part of a County highway project; however, the town should have a comprehensive strategy to fund construction and maintenance of sidewalks before approaching the County for inclusion in a highway project. It is the policy of the Onondaga County DOT that the town would then be expected to share in the project design cost, fund the incremental cost associated with the sidewalk, and share in the construction inspection costs. The NYSDOT evaluates the

[8] Town of Penfield Sidewalk Policy, Adopted 4/23/79, last amended 5/3/00.
[9] New York State Highway Law Sections 46, 140, and 349-c.
[10] New York State Highway Law Section 151.

need for pedestrian accommodations during project scoping for all construction and reconstruction projects using a Pedestrian Generator Checklist and through consultation with the Regional Bicycle and Pedestrian Coordinator. It is the NYSDOT's policy to include sidewalks in their projects "whenever they are determined to be necessary and consistent with needs identified in the Project Scoping Report, Final Design Report, and the guidelines in [Chapter 18 of the NYSDOT Highway Design Manual]"[11]

One of the items on the NYSDOT's Pedestrian Generator Checklist that indicates a potential need to accommodate pedestrians is whether the community's comprehensive plan calls for the development of pedestrian facilities in the area. A town sidewalk plan or sidewalk component of the comprehensive plan can help the town identify priority areas for sidewalk construction, whether constructed by the town or through State or County highway projects. As an example of a town sidewalk policy, the Town of Penfield's Sidewalk Policy (Appendix G) clearly identifies a primary sidewalk system consisting of minor arterials, major collectors, and minor collectors and funds the installation of sidewalks along these roads through general town funds, grants, and sidewalk waiver fees. New sidewalks along State or County highways require the approval of the State or County Commissioner of Transportation (which applies even if the sidewalk location is identified in a town sidewalk policy or comprehensive plan).[12]

Sidewalks along commercial frontages

New commercial development should include sidewalks along the parcel frontage. Sidewalks can be required as part of the subdivision or site plan review process. To be most effective, this requirement should be applied uniformly throughout the town and, ideally, based on a town-wide sidewalk policy. A town sidewalk policy can specify the appropriate design for sidewalks along commercial arterials and collectors, and ensure consistency in design. FHWA recommends a minimum sidewalk width of six to eight feet along arterials, with a four to six-foot landscaped buffer between the road and the sidewalk.[13] In denser environments with lower travel speeds, such as hamlets, a more urban-type sidewalk may be appropriate. Where sidewalks directly abut storefronts, sidewalks should be wider (two feet) to accommodate doors opening. Also, it may be appropriate in this environment to extend the sidewalk to the curb without a planting strip to provide additional space for street furniture. Ideally, a buffer between pedestrians and the travel lanes should still be incorporated into the design in some form, such as a bike lane, on-street parking, or a shoulder.[14]

Pedestrian access to buildings

The most difficult part of a pedestrian's trip is often the final connection from the street to the front door of their destination. This link is often neglected in the design of commercial sites, which typically include large parking areas, buildings placed at the rear of the site, and no defined pedestrian walkways. These are the same issues that make large commercial sites difficult to serve by transit, as previously discussed. By placing buildings towards the front of the site with most (or all) of the parking located to the side or rear of

[11] New York State Department of Transportation, Highway Design Manual, Chapter 18.
[12] New York State Highway Law Section 151.
[13] Federal Highway Administration, *Pedestrian Facilities Users Guide: Providing Safety and Mobility*, FHWA-RD-01-102, March 2002.
[14] Ibid.

the building, breaking-up large parking lots, and providing clearly marked pedestrian walkways, large commercial sites can be more conducive to walking and using transit.

Bicycle accommodations

Bicycle accommodations should be considered in all development projects and road projects. The appropriate type of bicycle accommodation varies by the type of road and expected vehicular traffic. For example, no additional features may be needed on low-volume residential streets, while wide shoulders or bike lanes may be appropriate on high-volume arterials. Creating a grid pattern of local streets allows bicycles more choice of routes and shorter routes (of course, this benefits vehicular traffic in the same ways). Bicycle parking should also be provided at commercial destinations, which can be accomplished by requiring developers to install bicycle parking equivalent to a certain percentage of the vehicle parking requirements. Bicycle parking should be located to be safe, secure, and at least as convenient to the destination as the majority of vehicle parking spaces.

This study does not recommend relocating Bike Route 5 away from Route 31. The New York State Bike Routes are intended to be long-distance travel routes for experienced cyclists that are comfortable sharing the road with motorized traffic. However, the towns, the County DOT, and the State DOT should still strive to make their roads bicycle friendly.

SMTC created a Bicycle Suitability Map in 2003, which showed much of Route 31 (primarily the

A lack of shoulders on Route 31 near the Route 481 interchange makes this area challenging for cyclists. (Top: Looking west along Route 31 at the Route 481 interchange. Bottom: Looking east along Route 31 near the Marketfair North entrance).

Looking east along Route 31 near the I-81 interchange. Cyclists must ride in the travel lane.

more rural portions) to have an "average," "good," or "excellent" suitability for bicycle commuting. Two segments – Belgium Bridge to Soule Road and Lawton Road to Route 11 – were rated "fair," primarily based on high traffic volumes. These two segments have shoulder stripes and adequate shoulder width to ride a bicycle outside of the travel lane.

Soule Road to Henry Clay Boulevard and Route 11 to New Country Drive rated "poor" and "fair", respectively, due to a lack of shoulders for cycling. Since the time that SMTC's 2003 Bicycle Suitability Map was completed, Route 31 has been improved between Great Northern Mall and Morgan Road and now includes wide shoulders through this area. SMTC is currently in the process of updating the Bicycle Suitability Map and it is expected that this segment will receive a more favorable rating. However, the Route 481 overpass area is still constrained and does not offer space for cyclists to ride outside the travel lane. The Route 11 to New Country Drive segment is also still constrained; however, there may be an opportunity to improve this area for cyclists (such as adding shoulders) through the NYSDOT's future Route 31/I-81 interchange project.

10. Adopt an access management ordinance and create access management plans for developing commercial corridors.

As discussed in Chapter 3, neither the Town of Clay nor the Town of Cicero currently has an access management ordinance as part of the municipal zoning code, although access management principles are implemented through other avenues such as the NYSDOT's SEQR and highway work permit processes, the County DOT's work permit procedures and Access Management Policy (currently under development), and the recommendations from County Planning Board referrals. Adoption of an access management ordinance would formalize the requirement for good access management and lead to more consistency in implementation. Examples of items that should be detailed in an access management ordinance include:

- Minimum spacing between traffic signals
- Maximum number of driveways per mile
- Requirements to provide shared access and cross connections between adjacent parcels
- Maximum number of access points per property
- Minimum separation between driveways and signalized intersections

Examples of access management ordinances from the Town of Virgil and Town of Livonia are included in Appendix H.

In designated commercial corridors, specific access management plans should be created. An access management *ordinance* typically impacts individual proposals (and often individual parcels), while an access management *plan* can address issues that span the entire corridor. For example, an access management plan can identify the optimal location for signalized access points along the length of the corridor, appropriate locations for raised medians, and opportunities for frontage roads, shared access, or cross-connections between parcels. This is most useful before significant development has occurred, as retrofitting access can be difficult. While an access management ordinance would apply throughout the town, an access management plan can focus on a high-priority corridor where significant commercial development is expected to occur.

11. Require roadway connections between residential areas (discourage cul-de-sacs) and from residential to commercial areas.

As discussed in Chapter 3, development patterns that have favored cul-de-sacs and individual commercial driveways have resulted in a lack of local street connectivity, which adds short local trips to Route 31 and contributes to congestion. A well-connected grid of local streets provides multiple options to drivers and decreases travel distance between destinations for pedestrians and bicyclists. A requirement for cross-access between residential subdivisions and between residential and commercial areas can be included in an access management ordinance and/or incorporated into subdivision and site plan review.

5.3 Implementation Plan

The implementation plan that follows identifies the action or tool necessary to achieve the recommendations listed in the previous section along with the appropriate implementing agency, an approximate cost and potential funding source where applicable, and an anticipated timeframe. Details of the cost calculations and the assumptions used are included in Appendix I. These cost estimates are very rough approximations for planning-level comparisons only, and more detailed analysis and cost estimates should be completed before programming any capital funds.

As noted on the implementation plan, the Town of Clay or the Town of Cicero could apply for funding through the SMTC's Unified Planning Work Program (UPWP) to complete the transportation portion of a comprehensive plan, to create a town-wide bicycle and pedestrian plan, or to create a corridor-specific access management plan. The UPWP is the SMTC's annual program of transportation planning studies. Applications are accepted annually through a competitive process once a call letter is issued, based on the total available funds for that program year.

The SMTC's Transportation Improvement Program (TIP) is identified as a potential fund source for some of the projects in the implementation plan. TIP funding can be used for projects on federal-aid eligible roads in the SMTC's planning area, which is based on the road's functional classification (a complete map of eligible roads can be obtained from the SMTC). The portion of Verplank Road west of Caughdenoy Road is currently classified as an urban collector on SMTC's approved Functional Classification Map and is, therefore, eligible for federal funding through the TIP. Mud Mill Road (east of Caughdenoy Road) is a local road and is not currently eligible to receive TIP funds. The SMTC would need to revise the approved Functional Classification Map and reclassify Mud Mill Road with a "higher" functional class (likely a collector) to allow TIP funds to be used to upgrade this portion of Mud Mill Road. New roads (such as those around the Clay Business Park) would need to be added to the SMTC's Functional Classification Map as "planned roads" in order to be eligible for TIP funds for construction.

IMPLEMENTATION PLAN

Recommendation	Action or tool	Implementing Agency	Approx. cost	Potential funding	Anticipated Timeframe
1 Revise the existing Town of Clay and Town of Cicero planning documents to include lower levels of future growth.	Convene committee to review and revise Town of Cicero Comprehensive Plan.	Town of Cicero	$100,000 (consultant)	Town funds, grants, UPWP (for traffic portion only)	Within 5 years
	Encourage the existing Northern Land Use committee to undertake a town-wide comprehensive planning process.	Town of Clay	$150,000 (consultant)	Town funds, grants, UPWP (for traffic portion only)	Within 5 years
2 New development should focus on increasing density and mixing uses.	Encourage infill development and hamlet growth through site plan review.	Towns of Clay and Cicero	low cost	Town funds	Ongoing
	Review zoning and revise as necessary to create higher-density and mixed-use areas.	Towns of Clay and Cicero	Variable, depending on extent of revision	Town funds, grants (Local Waterfront Revitalization Program, NYS Dept. of State, EPA)	Within 5 years
3 Encourage transit enhancements with supportive land use practices.	Increase density	*See recommendation #2*			
	Design commercial sites to be transit and pedestrian friendly	Towns of Clay and Cicero	NA	NA	Ongoing
	Identify and establish park-and-ride facilities	Centro, Towns of Clay and Cicero, NYSDOT *	$5.1 million (for study and construction)	Combination of town funds, NYSDOT, and Federal Transit Administration (FTA).	Begin study Spring 2010. Construction: 10 years.
	Expand express bus service to downtown and investigate feasibility of east-west service on Route 31 (dependent on land use changes discussed above)	Centro	$2 million capital cost + $490,000 annual operating cost	Capital: FTA, NYSDOT, Centro Operating: NYSDOT, Centro	10 years
4 Upgrade Verplank Road from Route 57 to Morgan Road (short-term) and Verplank/Mud Mill Road to Route 11 as the Clay Business Park develops.	Upgrade Verplank Road from Route 57 to Morgan Road	Onondaga County DOT	$12 million	Cost-sharing agreement between the Town of Clay, OCDOT, and NYSDOT, with a portion funded through developer mitigation. This segment is eligible for TIP funds.	Within 5 years
	Upgrade Verplank Road and Mud Mill Road from Morgan Road to Route 11 as Clay Business Park developers.	Onondaga County DOT	$18 million	Cost-sharing agreement between the Town of Clay, Town of Cicero, OCDOT, NYSDOT, and OCIDA or their developer. Part of this segment is eligible for TIP funds.	Linked to development of Business Park
5 Build new local roads in the Clay commercial area as developer mitigation. Build new local roads/extensions in the Clay Business Park area as development occurs.	Require that developers include these new local road connections in future traffic impact studies.	Town of Clay	$39 million (total, as shown in Alt 3)	Developer mitigation	Linked to development proposals
	Include new local roads in the Clay Business Park GEIS and identify development thresholds that will "trigger" improvements.	OCIDA, Towns of Clay and Cicero	$42 million (total, as shown in Alt 4)	Developer mitigation, possibly TIP funding (see discussion in Section 5.3)	Linked to development of Business Park

Note: These cost estimates are very rough approximations for planning-level comparisons only, and more detailed analysis and cost estimates should be completed before programming any capital funds

IMPLEMENTATION PLAN

Recommendation	Action or tool	Implementing Agency	Approx. cost	Potential funding	Timeframe
6 Reconfigure the Route 481 interchange as previously recommended in the Soule Road Break-in-Access Study.	Realign Soule Road and create direct southbound on-ramp from Route 31	Town of Clay, NYSDOT, in coordination with OCDOT	$6 million	TIP	Begin construction in 5-7 years
7 Reconfigure the existing I-81 interchange to increase capacity and enhance safety.	Undertake detailed study with significant public participation	NYSDOT, FHWA	$15 million	TIP	Study start immediately, construction begin in 5-6 years
8 Additional interchanges should only be considered if a regionally significant development occurs within the study area.	Include additional interchange in future traffic studies along with other options, such as local road upgrades, demand management, and transit.	Town of Cicero, NYSDOT	NA	NA	Long-term
9 Create more pedestrian and bicycle-friendly streets.	Create town-wide bicycle and pedestrian policy	Towns of Clay and Cicero	$50,000 (consultant)	Town funds, grants, UPWP	Ongoing
	Require sidewalks with all new residential and commercial construction	towns	$15-$20/SF	Developers	Ongoing
	Include bike lanes or wide shoulders and sidewalks in all highway reconstruction or new construction projects in accordance with the policy of the SMTC's Bicycle and Pedestrian Plan	NYSDOT, OCDOT, towns	8-10% of total project construction cost**	Town funds, TIP	Ongoing
	Identify "missing links" in the sidewalk system. Prioritize links for new sidewalk construction.	towns	$15-$20/SF	Town general funds, grants, selected TIP fund sources (for construction)	Within 5 years
10 Adopt an access management ordinance and create access management plans for developing commercial corridors.	Create and adopt town-wide access management ordinance	Towns of Clay and Cicero	$1,000 or more (depending on complexity)	Town funds, UPWP (for model ordinance)	Within 5 years
	Identify high-priority corridors and create access management plans. (ex: Route 11 north of Route 31)	Towns of Clay and Cicero	$50,000 per corridor	Town general funds, grants, UPWP	Within 5 years
11 Require roadway connections between residential areas (discourage cul-de-sacs) and from residential to commercial areas	Subdivision and site plan approval	Towns of Clay and Cicero		Town general funds or developer mitigation for new developments.	Ongoing

*Ongoing maintenance and ownership will need to be determined.
**Assumes no additional right-of-way acquisition is necessary.

Note: These cost estimates are very rough approximations for planning-level comparisons only, and more detailed analysis and cost estimates should be completed before programming any capital funds

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