# FAYETTEVILLE ROUTE 5 TRANSPORTATION AND LAND USE ANALYSIS


## Final Report

## June 2018

SMTC

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Syracuse Metropolitan Transportation Council

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## EXECUTIVE SUMMARY

The Fayetteville Route 5 Transportation and Land Use Analysis was completed as part of the Syracuse Metropolitan Transportation Council's (SMTC) Unified Planning Work Program (UPWP). The village's stated goal in requesting this analysis was to "identify methods to allow the Village of Fayetteville to continue to develop existing underutilized properties by improving and/or creating new vehicle capacity within the village." The study area for this analysis included all of the Village of Fayetteville, with a focus on Route 5. A Study Advisory Committee (SAC) consisting of the Village of Fayetteville, Town of Manlius, New York State Department of Transportation, and the Syracuse-Onondaga County Planning Agency was formed to guide the study.

As part of the overall study effort, a "travel time study" was conducted that used GPS data collected by SMTC staff to compare peak period travel times on Route 5 and Route 290. The methodology and resulting data are described in detail within the body of this report as well as an attached memorandum. The travel time data collection results showed that all average travel times (eastbound and westbound, morning and evening peak periods) were less than 20 minutes between Mycenae (Route 5/Route 290 intersection) and Midler Avenue on I-690 in the City of Syracuse. In all cases, the overall average travel time on Route 5 was greater than the average travel time on Route 290, but only by four minutes at most.

With input from the SAC, an anticipated future land use scenario was defined that included nearly 430 additional residential units and 100,000 square feet of additional commercial development within and adjacent to the Village of Fayetteville by the year 2020. The SMTC's travel demand model was used to evaluate the impacts of this anticipated development on traffic volumes within the village. The model indicated about 4 percent to 12 percent total growth on segments of Route 5 over six years with the anticipated development. This equates to up to 100 additional vehicles in the morning peak hour and up to 150 additional vehicles in the evening peak hour, which is not expected to substantially change the operating conditions along Route 5. The model was also used to evaluate a scenario with an additional travel lane in each direction on Route 290 between Basile Rowe and Route 5. This scenario resulted in very little traffic diversion from Route 5 to Route 290, suggesting that much of the traffic on Route 5 is generated by residents within and very nearby the village and that trips are attracted to Route 5 because of the numerous commercial destinations along the route.

After examining the existing and anticipated traffic flow in the village, "issues and opportunities" were identified and presented at a public meeting in February 2018. Public input was collected on the identified issues and potential opportunities for addressing these issues. Some suggestions have substantial impacts or challenges. For example, building-out new local street grid connections is challenging due to terrain and would likely bring negative impacts of additional traffic to streets that are narrow and currently carry very low volumes. The relatively low congestion, low cost of parking, and dispersed employment locations throughout the region make diverting trips to transit exceedingly difficult. The NYSDOT developed two initial concepts for converting the Route 5/Route 257 intersection to a roundabout or pair of roundabouts;

both are likely to have significant right-of-way impacts and would require additional operational and safety assessments.

The analysis presented in this study indicates that Route 5 serves many purposes, as a commuter route, commercial corridor, and "main street." Traffic volumes are likely to remain relatively high because of the many destinations along Route 5. The village's Comprehensive Plan does not support widening of Route 5, and capital funding for transportation projects in the region is largely focused on preservation and maintenance rather than adding system capacity. Other improvements, such as access management and the addition of a two-way left-turn lane where appropriate, could help alleviate some of the congestion within the village. Development within the village can provide conveniences to local residents, but also brings additional traffic. This study examined the many issues associated with traffic flow and future development, and explored some opportunities to address these issues. If desired, the village will need to work in partnership with the road owners and residents to pursue some of the ideas documented in this study.

# 1 Introduction

## 1.1 Overview and study area

The Fayetteville Route 5 Transportation and Land Use Analysis was completed as part of the Syracuse Metropolitan Transportation Council's (SMTC) Unified Planning Work Program (UPWP). This analysis was proposed by the Village of Fayetteville in late 2015 in response to a call for projects. The Scope of Work was approved in September 2016.

The village's stated goal in requesting this analysis was to "identify methods to allow the Village of Fayetteville to continue to develop existing underutilized properties by improving and/or creating new vehicle capacity within the village."

The study area for this analysis included all of the Village of Fayetteville, with a focus on Route 5. Some elements of the analysis incorporated development within the Town of Manlius near or adjacent to the Village of Fayetteville. A significant portion of this work effort focused on a comparison of travel times for Route 5 and Route 290 (primarily in the Town of Manlius) using data collected by SMTC staff. This "travel time study" is explained in more detail later in this report.

This report reviews and summarizes numerous previous studies for the Fayetteville area, examines existing traffic volumes and travel patterns, and examines likely future impacts of anticipated development in and around the village. Using this information, along with input from stakeholders and the public, existing transportation issues are identified and, where possible, opportunities for addressing these issues are also discussed. In some cases, significant challenges exist to implementing solutions to the existing concerns. Throughout this study, SMTC staff were mindful of the goals defined in the Village's most recent Comprehensive Plan, which seeks to preserve and enhance the character of this community.

## 1.2 Study process

This study was conducted with the advice and assistance of a Study Advisory Committee (SAC), which met twice during the study process. The SAC consisted of the following entities:

- Village of Fayetteville
- Town of Manlius
- New York State Department of Transportation (NYSDOT)
- Syracuse-Onondaga County Planning Agency (SOCPA).

A public meeting was held on February 28, 2018, to present initial findings on "issues and opportunities" within the study area and to seek additional feedback from the public. This meeting consisted of a presentation by SMTC staff, followed by an open question and answer period. The meeting attendees were then encouraged to speak directly to the SMTC staff members on-hand and to indicate their concerns and suggestions either on comment forms or on large maps of the study area that were available at the public meeting. About 20 community members, mostly village residents, attended this meeting, which was held in the evening at Fayetteville Elementary School. A meeting summary is available in Appendix A.

After the public meeting, SMTC staff continued to refine the identified issues within the study area and to investigate possible solutions. Throughout the study process, SMTC staff coordinated closely with the Region 3 NYSDOT staff to ensure that any suggestions made within this study would be acceptable to the NYSDOT as the owner of Route 5 through the study area.

The SAC reviewed a draft final report in April 2018. The report was then finalized after being presented to the SMTC's Planning and Policy Committees in May and June 2018.

# 2 Background research

## 2.1 Previous studies

### 2.1.1 Transportation planning studies

Onondaga County's eastern suburbs have long been the subject of transportation planning concerns. The studies summarized below are not an exhaustive list, but include the most substantial SMTC/NYSDOT study efforts beginning in the early 1990s.

➢ *Eastern Onondaga County Traffic Needs Study, Final Report,* September 1993, C&S Engineers, Inc.

In 1993, the SMTC and the NYSDOT initiated a substantial effort with the Eastern Onondaga County Traffic Needs Study to "examine the impact of proposed and projected roadway improvement alternatives on roadway operations in the Manlius and DeWitt areas." This 1993 study was an extension of previous efforts by SMTC and NYSDOT examining the potential for relocation of Route 290. This study evaluated ten alternatives to address traffic concerns in the eastern suburbs, including two options for extending/relocating Route 290, two alternatives for extending/relocating Route 173, two alternatives for widening Route 5, intersection improvements, construction of a High Occupancy Vehicle lane, commuter transit service, and a car-pool matching service.

The preferred alternative was determined to be the intersection improvements at 12 selected intersections, along with relocation of Route 290 as a four-lane facility from the Butternut Interchange to the intersection of Route 290 and Route 257 in Manlius Center. This study also recommended additional study of key links such as Burdick Street from Route 5 to Route 290 and the Routes 5/92 overlap from Erie Boulevard to Lyndon Corners, stating that "the goal would be to concentrate the business activity into centers adjacent to the highway, but with indirect access, possibly via a service or exclusive driveway. All of these links have too many points of access which hinders traffic flow, reduces capacity and increases the level of service and congestion." In short, the study acknowledged the need for "access management" along the major transportation routes as far back as 1993.

➢ *2020 Long Range Transportation Plan,* January 1995, SMTC.

In January 1995 – less than two years after the publication of the final report for the Eastern Onondaga County Traffic Needs Study – the SMTC published the 2020 Long Range Transportation Plan (LRTP). The Route 290 extension/relocation was discussed at length in the SMTC's 2020 LRTP. The relocation of Route 290 had been included in the 1994-1999 Transportation Improvement Program (the region's listing of federally-funded transportation capital projects) as an "unfunded project." The 2020 LRTP stated that "the purpose of the proposed facility was to increase highway capacity between Syracuse and the eastern suburbs in the towns of DeWitt, Manlius, and Sullivan." The 2020 LRTP included an analysis of the Route 290 project in terms of its effectiveness at meeting the plan objectives, and found that the project would have only a minimal positive impact on the most congested areas in the eastern suburbs and the cost would be substantial. The 2020 LRTP concluded that "this project is ineffective at meeting 2020 Plan objectives."

- *Traffic Needs Report Project Development Phase, DeWitt-Fayetteville-Manlius, Onondaga County, New York, Final Report*, August 1996, McFarland-Johnson Inc. with Fisher Associates and RSG.

This study was completed by a consultant team for the SMTC, NYSDOT, and OCDOT as a follow-up to the 1993 *Eastern Onondaga County Traffic Needs Study* "to address, identify, and prioritize improvements that will alleviate traffic congestion at key intersections." This was a direct response to the "preferred alternative" identified in the 1993 Needs Study, although the relocation of Route 290 had, by this time, been eliminated from consideration through the 1995 LRTP process.

Traffic counts, existing and future level of service analysis, and accident analysis were conducted for 15 intersections in the towns of DeWitt and Manlius (including the Village of Fayetteville). Conceptual diagrams were developed for future improvements at each intersection. The subject intersections were ranked for future project priority based on technical and social/environmental factors, as well as a combined ranking. The four locations examined in the Village of Fayetteville, and their resulting priority for implementation of the conceptual improvements, were:

- Route 5/North Burdick (priority 4 of 15)
- Route 5/Highbridge (priority 12 of 15)
- Route 257/Salt Springs (priority 14 of 15)
- Route 5/Route 257 (priority 15 of 15).

The conceptual diagrams developed for these intersections included a number of road widenings (to add auxiliary turn lanes) and redesignation of existing lanes. A few of the improvements have been implemented, but most – primarily those that involved widening – have not been implemented.

In 2015, the SMTC published the first entirely new LRTP since the original 2020 plan. The current 2050 LRTP focuses on preservation and maintenance of the current transportation system within the current funding situation. The transportation system in our region has extensive needs to bring it into a state of good repair, but federal funding for transportation has not kept pace with these needs. This means that very limited funding is available for new projects, making capacity expansion projects unlikely. The extension or relocation of Route 290 was discussed during the development of the SMTC's current 2050 Long Range Transportation Plan, and was again identified as a project that would not be included in the region's future plans.

- *Eastern Onondaga Area Study,* March 1998, SMTC.

Onondaga County's eastern suburbs were once again the focus of a traffic needs study in 1998. This study again pointed to population growth and commercial development in the area contributing to traffic growth, and sought to find "options for improved operations in the Route 5 and Route 92 corridor." This study identified that the NYSDOT had "recently" completed a capacity and safety improvement project near the Wegmans plaza, but that congestion was continuing to worsen and that alternative routes should be explored. The study examined, in various combinations, park-and-ride options, relocation of Route 173, new ramps at the Butternut Interchange, a bypass in the area of Jamesville Quarry, a reversible lane on Route 92, and a new Thruway interchange west of Chittenango. The study concluded that "of all the alternatives examined the one with the most promise seems to be Alternative 7 (Route 92 Reversible Lanes)." This was never implemented.

➢ *Project Scoping Report for Route 5 and Route 257 Intersection*, 2009, NYSDOT

The NYSDOT initiated further study of the Route 5/Route 257 intersection with an Initial Project Proposal (IPP) for reconstruction of the intersection in 2007. The project development process included the creation of a Project Scoping Report (PSR) in 2009. The expressed purpose was to address the condition of pavement at this intersection. Roadside quality, drainage, safety issues, operational/capacity needs, and pedestrian needs were also considered.

The PSR identified poor levels of service (LOS E/F) under existing (2009) and future (2035) conditions, during both the morning and evening peak hours, at this intersection. The PSR acknowledged the conditions that contribute to this LOS, stating:

> *The poor LOS at the intersection is influenced by the lack of adequate storage capacity of the turn lanes and also the proximity of the Salt Springs Rd. intersection. This is especially true for the northbound left turn movement during the AM Peak: only four cars can be accommodated in the available storage space and the high volume of this movement results in backups on Route 257 to the south and Salt Springs Rd. to the east. The proximity of the Salt Springs Rd. intersection also makes it difficult to implement an effective phasing plan, as movements must be coordinated by a single controller. (p.14)*

Ultimately, the PSR identified one of the project objectives as "improve traffic operations to a Level of Service 'D' or better." To address the operational needs, seven alternatives were considered, including:

- Signal modifications
- Roundabout
- Route 257 widening and Route 5 restriping
- Route 5 widening
- Route 92 widening
- Bypass of village
- New Thruway interchange.

All operations alternatives were dropped from consideration, due to minimal expected improvements coupled with high costs and substantial property/environmental impacts, or incompatibility with the village character.

### 2.1.2 Traffic impact studies

A number of traffic impact studies have been completed for proposed developments in the Village of Fayetteville within the last few years. These developments were be taken into account when determining likely future traffic volumes through the study area (see Chapter 4).

➢ Coffee Shop, January 2014, Clough Harbour & Associates.

This study was completed for the current Dunkin' Donuts shop on the former Friendly's restaurant site at the northeast corner of Route 5 and Route 257. The site has full-access driveways on Route 5 and Route 257, plus a right-turn out only driveway on Route 5. The study considered two intersections: Route 5/Route 257 and Route 257/Salt Springs Road (both signalized intersections). The intersections currently operate at LOS D and C, respectively. Traffic volume counts were conducted in September 2013, and

again in February 2015. The study used a 1% per year growth rate, but acknowledged that volumes on Route 5 have decreased over the past five years. Overall, the analysis indicated that "no significant impact" was expected from the re-opening of the site as a new coffee shop.

➢ Fayetteville Village Apartments, December 2017, SRF Associates.

This study examined the impacts of a mixed-use development proposal on the former OBG Tech site. The proposal includes 150 apartment units in five buildings, 50 townhome units in ten buildings, 6,000 SF of office space, 6,000 SF of retail space, 4,000 SF of restaurant space, and three additional apartment units above the restaurant. Access is proposed via two driveways on Route 5, with one driveway restricted to right-in/right-out only movements. The following intersections were studied:

- Route 5/Route 257
- Route 5/Salt Springs Road
- Route 5/Tracy Lumber driveway
- Route 5/Post Office exit
- Route 257/Salt Springs Road
- Route 5/site driveways

The study used a 0.5% per year growth rate. Intersection turning movement counts were conducted in February 2015. The study states that "the proposed development will not result in any potentially significant adverse traffic impacts to the study area intersections or nearby roadway network." Although the study did not find significant adverse traffic impacts at the site driveways, an eastbound left turn lane on Route 5 at the westerly site driveway is recommended due to the anticipated volume of left turns into the site during the evening peak hour.

This proposal requires a zone change approval from the Village Board of Trustees, which was still pending at the time of this writing. (The Village Planning Board had recommended approval with some caveats.)

➢ Highbridge Commons, August 2015 (revised December 2015), Dunn & Sgromo Engineers.

This study examined the potential impacts of a 13,900 square foot multi-use building (retail/office) and 2,700 square foot fast-food restaurant at the southeast corner of Route 5 and Highbridge Street. One right-in/right-out only driveway was proposed on Route 5, with a full-access driveway on Highbridge Street and a connection to Fitch Street, a local road at the south edge of the site. Two intersections were studied: Route 5/Highbridge Street/Limestone Plaza and Route 5/North Burdick Street. Traffic counts were conducted in March 2015. The study concluded that "under full-build conditions, operations will be maintained equal to the existing level-of-service at the two study area intersections." No mitigation measures were recommended. Westbound left turns are currently prohibited at the Route 5/Highbridge Street intersection, but this study indicates that the NYSDOT "will remove the no left turn sign upon request from the Village of Fayetteville."

## 2.2 Traffic data

### 2.2.1 Historic Route 5 traffic volumes

The NYSDOT publishes estimates of Annual Average Daily Traffic (AADT) on segments of all State roads in the annual Traffic Volume Report. These estimates are based on counts conducted by NYSDOT on a recurring basis. SMTC consulted the 2016 Traffic Volume Report (the most recent available report) for AADT estimates on segments of Route 5 through the Town of Manlius from 2000 to 2016. As shown in Table 2-1, these traffic volumes have generally declined over the past 10 years. The current (2016) NYSDOT estimates for AADT on Route 5 are based on declines or very minimal increases in volumes.

**Table 2-1: Traffic volumes on Route 5, Town of Manlius, 2000-2016**

| Segment eastern endpoint | T.Manlius/ V.Fayetteville* | | Highbridge Rd. | | Salt Springs Rd. | | Route 257 | | Duguid Rd. | | Route 290 | | C.Onondaga/ C.Madison | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | AADT | Annual growth | AADT | Annual growth | AADT | Annual growth | AADT | Annual growth | AADT | Annual growth | AADT | Annual growth | AADT | Annual growth |
| 2000 | 19,691 | | | | | | | | | | | | 10,314 | |
| 2001 | | | 27,056 | | | | | | | | | | | |
| 2002 | | | | | | | | | | | | | | |
| 2003 | | | | | | | | | | | | | 11,483 | 3.6% |
| 2004 | | | 28,818 | 2.1% | 22,133 | | 16,419 | | | | | | | |
| 2005 | 34,186 | 11.7% | | | | | | | | | 6,524 | | | |
| 2006 | | | | | | | | | | | 6,208 | -4.8% | | |
| 2007 | | | 28,783 | -0.04% | 21,126 | -1.5% | 15,615 | -1.7% | | | | | | |
| 2008 | 23,206 | -12.1% | | | | | | | 10,935 | | | | | |
| 2009 | | | | | | | | | | | 5,973 | -1.3% | 10,116 | -2.1% |
| 2010 | | | | | 20,983 | -0.2% | | | | | | | | |
| 2011 | | | | | | | 15,693 | 0.1% | 9,018 | -6.2% | | | | |
| 2012 | | | | | | | | | | | | | | |
| 2013 | | | | | | | | | | | | | | |
| 2014 | | | | | | | | | 8,845 | -0.6% | | | | |
| 2015 | *23,203* | *0.0%* | 22,712 | -2.9% | *21,236* | *0.2%* | *15,889* | *0.3%* | *8,875* | *0.3%* | 7,011 | 2.7% | 11,771 | 2.6% |
| 2016 | | | | | 21,319 | 0.4% | | | | | | | | |

*Sources: 2000-2014 volumes from NYSDOT Traffic Volume Report, July 2015; 2015 volumes from NYSDOT Traffic Data Viewer; 2016 volume from NYSDOT Traffic Count Hourly Report.*

AADT is given in vehicles per day.

*This segment begins at the intersection of Route 5 and Route 92 (i.e. Lyndon Corners).

Note: NYSDOT performs traffic counts on a recurring basis. Blank cells in the table indicate that the segment was not counted in that year. 2015 volumes shown in italic text are estimates based on historical data, as published in the NYSDOT Traffic Volume Report July 2015 (the most recent report available at the time of this writing). Annual growth rate is calculated from previous available count.

### 2.2.2 Intersection traffic volumes

Table 2-2 compares recent traffic volumes for intersections within the Village of Fayetteville to 1995 volumes included in the *Traffic Needs Report Project Development Phase, DeWitt-Fayetteville-Manlius, Onondaga County, New York, Final Report* (1996, McFarland-Johnson Inc. with Fisher Associates and RSG). The 2014/2015 volumes were found in recent traffic impact studies; all of these counts were conducted between January 2014 and March 2015. Data for the Route 5/North Burdick Street intersection in the PM peak hour show growth of about 1.3 percent per year from 1995 to 2015, but all of the remaining intersections saw either declines in total entering volume or growth of less than 1 percent per year during both the AM and PM peak hours.

**Table 2-2: Total peak hour entering volume for selected intersections, 1995 and 2014/2015**

| | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|
| Intersection | 1995 | 2014/ 2015 | Annual growth | 1995 | 2014/ 2015 | Annual growth |
| Route 5/ North Burdick | 2,200 | 2,403 | 0.4% | 2,805 | 3,630 | 1.3% |
| Route 5/ Highbridge | 2,165 | 2,178 | 0.0% | 2,785 | 2,862 | 0.1% |
| Route 5/ Route 257 | 1,725 | 1,465 | -0.8% | 2,035 | 1,588 | -1.2% |
| Route 257/ Salt Springs | 1,105 | 1,261 | 0.7% | 1,260 | 1,156 | -0.4% |
| Cedar Bay/ North Burdick | 780 | 843 | 0.4% | 1,169 | 1,226 | 0.3% |

**Sources:**

- 1995 volumes: *Traffic Needs Report Project Development Phase, DeWitt-Fayetteville-Manlius, Onondaga County, New York, Final Report* (1996, McFarland-Johnson Inc. with Fisher Associates and RSG)
- 2014/2015 volumes: Traffic Impact Study for Highbridge Commons (August 2015, revised December 2015, Dunn & Sgromo Engineers); NYSDOT Region 3 traffic counts; Fayetteville Village Apartments Traffic Impact Study (February 2015, SRF Associates).

### 2.2.3 Current intersection capacity analysis

Current level of service and delay information was available from recent traffic impact studies for four intersections in the village. This information is shown in Table 2-3. All of these intersections currently operate at an overall LOS D or better during both peak hours, although some individual movements operate at LOS E or F. The data indicate the greatest delay for the southbound approach at the Route 257/Salt Springs Road intersection, with 110 seconds of average vehicle delay.

**Table 2-3: Summary of existing intersection level of service and delay**

| **Intersection** Approach | Movement | **AM peak hour** LOS (delay) | **PM peak hour** LOS (delay) |
|---|---|---|---|
| **Route 5 / North Burdick** | | **B (19)** | **C (35)** |
| Eastbound | Left | F (83) | F (83) |
| | Through/right | A (8) | C (22) |
| Westbound | Left/through | B (13) | D (36) |
| | Right | A (2) | A (8) |
| Northbound | Left/through/right | D (47) | D (54) |
| Southbound | Left | D (50) | E (57) |
| | Through | D (51) | E (61) |
| | Right | A (4) | A (5) |
| **Route 5 / Highbridge** | | **C (25)** | **C (23)** |
| Eastbound | Through/right | B (15) | B (19) |
| Westbound | Left/through | B (20) | B (16) |
| Northbound | Left | D (44) | D (55) |
| | Right | B (12) | B (14) |
| Southbound | Left | D (40) | D (43) |
| | Right | E (64) | D (53) |
| **Route 5 / Route 257** | | **D (36)** | **C (35)** |
| Eastbound | Left | C (27) | C (23) |
| | Through/right | C (30) | D (39) |
| Westbound | Left | C (26) | E (68) |
| | Through/right | D (47) | C (32) |
| Northbound | Left | C (32) | B (14) |
| | Through/right | A (6) | A (4) |
| Southbound | Left | D (50) | E (60) |
| | Through/right | E (60) | E (76) |
| **Route 257 / Salt Springs** | | **C (24)** | **D (47)** |
| Eastbound | Left | C (26) | C (34) |
| | Through/right | C (22) | D (38) |
| Westbound | Left/through/right | B (14) | B (13) |
| Northbound | Left/through/right | D (37) | D (35) |
| Southbound | Left/through/right | C (21) | F (110) |

LOS = Level of service. Delay is the average delay per vehicle, in seconds.

**Sources:** *Traffic Impact Study for Highbridge Commons* (August 2015, revised December 2015, Dunn & Sgromo Engineers); Fayetteville Village Apartments Traffic Impact Study (December 2017, SRF Associates).

## 2.3 Existing plans

Current plans that will impact development in the Village of Fayetteville are listed below, along with items from each plan that are most relevant to the current transportation and land use study.

- Village of Fayetteville Parks Master Plan, 1997.

The 1997 Parks Master Plan included linear parks along Limestone Creek and Bishop's Brook. These could present multi-modal travel options within the village.

- Fayetteville Commercial Design Guidelines, EDR, August 2006.

The commercial design guidelines for the village identify "good" site design and architectural principles for each commercial character area. Pedestrian safety and traffic calming are themes throughout the document, with suggestions for sidewalks, parking, and streetscaping.

- Resolution Setting Forth Village of Fayetteville Commitment to Complete Streets, November 2012.

This resolution states that the village's Department of Public Works and the Village Engineer will make Complete Streets part of their operations and incorporate Complete Streets features into future projects.

- Village of Fayetteville Comprehensive Plan, updated August 2014.

The updated Comprehensive Plan recommends a number of notable transportation-related "actions" including:

- Explore the opportunity to create a center median and wider sidewalk on East Genesee Street in the lower business district
- Encourage westbound traffic on Route 5 to use Limestone Plaza for left turns onto Highbridge Road
- Provide additional Park N Ride parking spaces within the Village
- Additional bus service
- New sidewalks along East Genesee Street and North Burdick Street near Towne Center
- Traffic calming
- New pedestrian connections, especially to parks, and improved/new sidewalks
- Traffic police officer for 30 minutes in AM and PM to direct traffic at Burdick Street/East Genesee Street
- Bike lanes, encouraging bicycle use, bike racks.

The plan designates five areas for new sidewalks: Route 5 from Southfield Street to Briar Brook; Brooklea Drive from Center Street to Route 257; Sheffield Lane; Salt Springs Road from Orchard condos to Redfield Avenue; and Route 257 from Penwood Lane to Barker Lane. As of this writing, nearly all of this new sidewalk construction has been completed.

Residential growth to the east (in Manlius as well as Town of Sullivan/Village of Chittenango) is identified as the source of the village's traffic issues, with the Comprehensive Plan stating that "the cumulative traffic impacts of historic growth, particularly that of neighboring communities, are inhibiting current and future growth opportunities within the Village."

- Village of Fayetteville Climate Action Plan December 2014, Central New York Regional Planning and Development Board.

A Climate Action Plan was developed for the Village by the Central New York Regional Planning and Development Board (CNYRPDB) with the goal to reduce the amount of transportation-related greenhouse gas emissions by increasing options for low-carbon transportation and increasing use of alternative fuels. Transportation-related recommended actions include:

- Prepare a commuting analysis to evaluate the need for organized carpooling and ride-share opportunities such as "Uber", "Sidekick", and "Lyft"
- Use smaller school buses when only a few students are being transported to and from school events.

The Climate Action Plan noted that 78 percent of workers residing in the village drive alone to work, based on 2008-2012 American Community Survey data.

### 2.4 Background research summary

Based on the available previous transportation plans, historic and current traffic volumes, and existing planning documents, the following points are noted:

- Traffic congestion in the eastern portion of Onondaga County has been a concern for decades. SMTC conducted a number of large-area studies in the early- to mid-1990s on this topic.
  - In a 1996 study, 15 intersections were examined, including Route 5 at North Burdick, Highbridge, and Route 257 as well as Route 257/Salt Springs Road.
  - A number of road widenings to add turn lanes or travel lanes at Route 257/Salt Springs and Route 5/Route 257 were identified, but these intersections were given a priority ranking of 14 and 15, respectively, apparently due to the very high cost for relatively little benefit associated with these improvements.
- The Village's Comprehensive Plan, updated in 2014, identifies traffic congestion in the village as an issue, and posits that this traffic is largely "through traffic" attributable to residential growth outside of the village (in the surrounding Town of Manlius, as well as farther east into Madison County).
- At least three new developments have been proposed in the village, and have completed traffic impact studies, since 2014: Dunkin Donuts (redevelopment of former Friendly's restaurant), Fayetteville Village Apartments (redevelopment of former OBG Tech site), and Highbridge Commons. These studies:
  - Used low (1% or less) background growth rates.
  - Acknowledged poor levels of service for some existing turning movements at intersections, but did not find any significant impacts from the individual developments and did not propose any substantial mitigation measures (beyond some signage or suggestions to consider transportation demand management).
- Existing LOS calculated in recent impact studies show some individual lane groups operating at LOS E-F, although overall LOS was found to be D or better at the intersections studied.
- Comparison of 1995 intersection volumes with actual 2015 volumes generally shows annual growth of less than 0.5% per year (resulting in a total increase in traffic of less than 10%), with declines for

some intersections. The most substantial growth was at Route 5/North Burdick Street in PM peak, with nearly a 30% increase in traffic. This may be attributable to the development of the Fayetteville Towne Center.

- Review of historical traffic volumes (AADTs) on Route 5 through the Town of Manlius shows declining traffic or very minimal increases.

# 3 Existing conditions

## 3.1 Study area roadway description

### 3.1.1 Functional classification and ownership

Functional classification, or "functional class," categorizes roads according to their character and the role they play in the transportation network. This classification puts roads into categories ranging from interstates, which are designed for high-speed trips between cities, to low-speed local roads, which provide access to individual properties. Roads are also classified as being urban or rural based on the Urban Area Boundary, which is primarily dependent on population density reported in the most recent Census.

Functional classifications are directly related to federal-aid eligibility, which determines whether a road may receive federal transportation funding. Principal arterials, minor arterials, and major collectors are federal-aid eligible (also known as "FAE roads"). Minor collectors and local roads (urban and rural) are not federal-aid eligible.

Table 3-1 lists the FAE roads within the Village of Fayetteville. Remaining roads within the Village of Fayetteville are classified as local roads and are owned by the village. The entire Village of Fayetteville is within the SMTC's Urban Area Boundary. Road ownership and federal-aid eligibility are also indicated on Figure 3-1.

**Table 3-1: Road ownership and functional classification in the Village of Fayetteville**

| Road | Ownership | Functional Classification |
|---|---|---|
| Route 5 (East Genesee Street) | NYSDOT | Principal Arterial |
| Route 257 (North/South Manlius Street) | NYSDOT | Minor Arterial |
| North Burdick Street | OCDOT | Minor Arterial |
| Highbridge Street | OCDOT | Minor Arterial |
| Salt Springs Road | OCDOT | Major Collector |

### 3.1.2 Roadway cross-sections

Route 5 consists of two travel lanes in each direction plus turn lanes at some driveways between North Burdick Street and Limestone Plaza, and this configuration continues west of the village. Between Limestone Plaza and Brooklea Drive, the cross-section of Route 5 transitions, and the remainder of Route 5 east of Brooklea Drive consists of a single travel lane in each direction.

North Burdick Street has two southbound travel lanes, plus turn lanes, and one northbound travel lane.

All other roads within the study area are generally two-lane roads (one travel lane in each direction), with some turn lanes at intersections.

### 3.1.3 On-road pedestrian and bicycle facilities

Many roads within the village – including local roads as well as State- and County-owned facilities – already have sidewalks, although the Village's Comprehensive Plan suggests that the condition of sidewalks is not consistent. Some gaps exist along major roadways and residential streets. The Village's Comprehensive Plan identified five areas for sidewalk extensions. The Village was also awarded over $600,000 in Transportation Alternatives funding from New York State in April 2017 for the "Salt Springs to Beard Park Sidewalks Project," which proposed replacing about 1,800 linear feet of deteriorated sidewalk and installing about 1,700 linear feet of new sidewalk in the vicinity of Fayetteville Elementary School, Wellwood Middle School, and Immaculate Conception School.

Most of the western portion of the village falls within a "pedestrian priority zone" defined by the SMTC.[1] This zone also extends west of the village to encompass Fayetteville Towne Center and some nearby residential areas.

At present, there are no on-road bicycle facilities within the Village of Fayetteville. The SMTC's 2013 Bicycle Commuter Corridor Study identified some roads within the village as candidates for bike lanes, shared lane markings (sharrows), and bike boulevards.

Figure 3-1 shows the existing sidewalk network, locations proposed for sidewalk extensions per the village's Comprehensive Plan, and suggested bicycle treatments per the SMTC's previous study.

[1] As part of its Sustainable Streets Initiative, the SMTC developed a pedestrian demand model that uses factors such as proximity to schools, parks, and grocery stores, as well as population density, employment density, and demographic characteristics. The results of the pedestrian demand model were used to identify "pedestrian priority zones" throughout the region. These zones are intended to help municipalities prioritize locations for investment in sidewalk maintenance or construction. This does not preclude the construction/maintenance of sidewalks outside of the pedestrian priority zones.

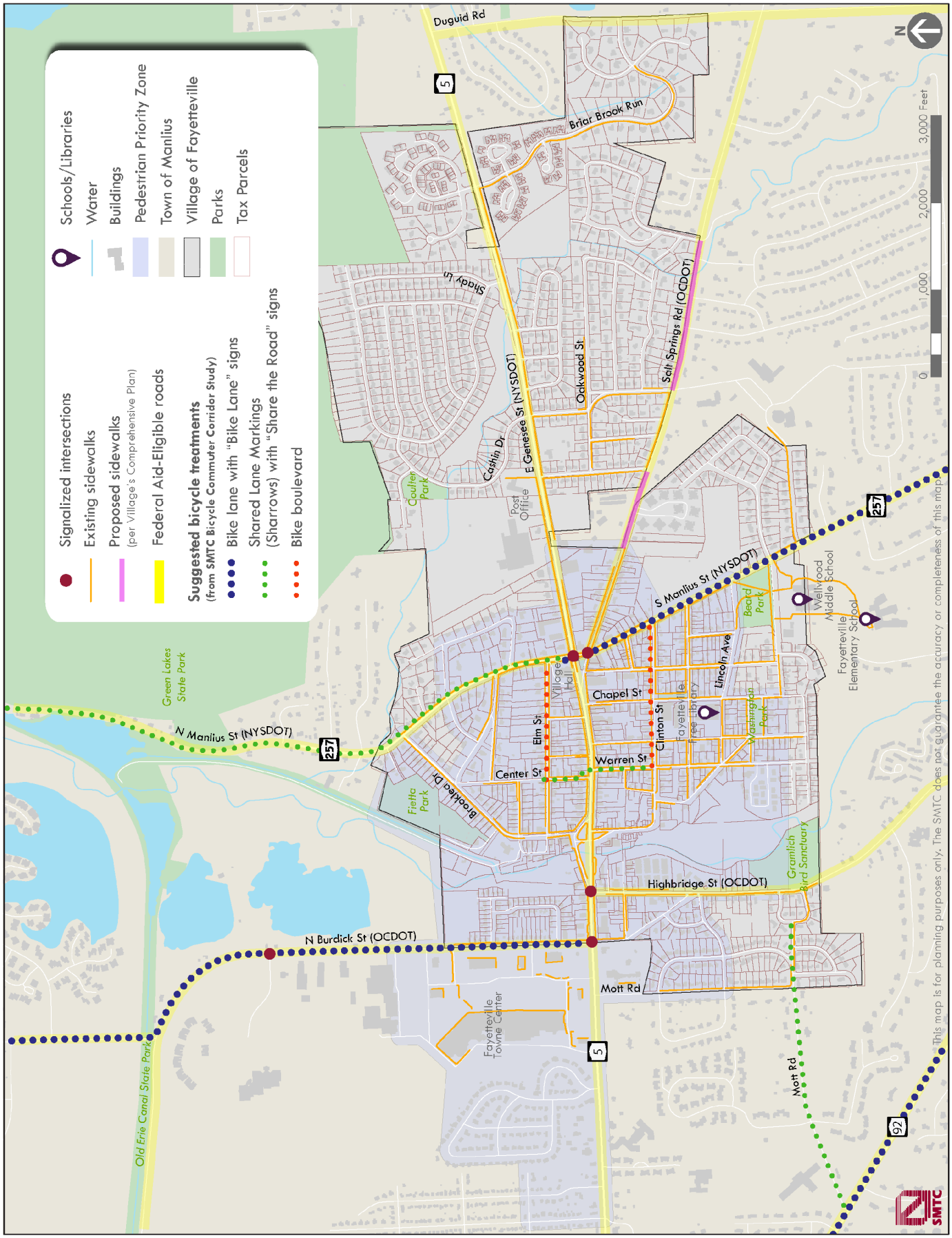


**Figure 3-1: Existing road facilities and suggested pedestrian and bicycle enhancements**

### 3.2 Travel time study

At the outset of this study effort, the village expressed interest in encouraging through traffic from the east to use the Route 290 corridor rather than Route 5 to reach I-481/I-690 and other points to the west. In response, a travel time study was conducted, which was designed to quantify average travel time on these two east-west commuter routes, as well as to identify areas of recurring congestion during the peak commuter periods. Note that most of Route 290 within the study area carries between 6,000 and 9,000 vehicles per day, although the segment west of Fremont Road (near I-481) carries about 18,000 vehicles per day. These figures are slightly lower than the current volumes on parallel segments of Route 5, which carries 15,000 to 23,000 vehicles per day west of Route 257 and about 7,000-9,000 vehicles per day east of Route 257 (see Table 2-1).

SMTC staff completed "floating car"-type travel time runs on each of the routes during morning and evening commuter periods with GPS units to record time and location. A summary of this data collection effort is presented here; see Appendix B for a thorough description of the methodology and detailed analysis of the resulting data.

The eastern endpoint for the study was the intersection of Route 5 and Route 290 in Mycenae. The western endpoint for the study was a point on I-690 approximately 1,100 feet east of the Midler Avenue exit. (West of the Midler Avenue exit, these two trips to/from downtown or points farther west converge so travel time west of this point would be the same.) The two route options are shown in Figure 3-2. The Route 290 travel route is about 1.4 miles shorter than the Route 5 travel route.

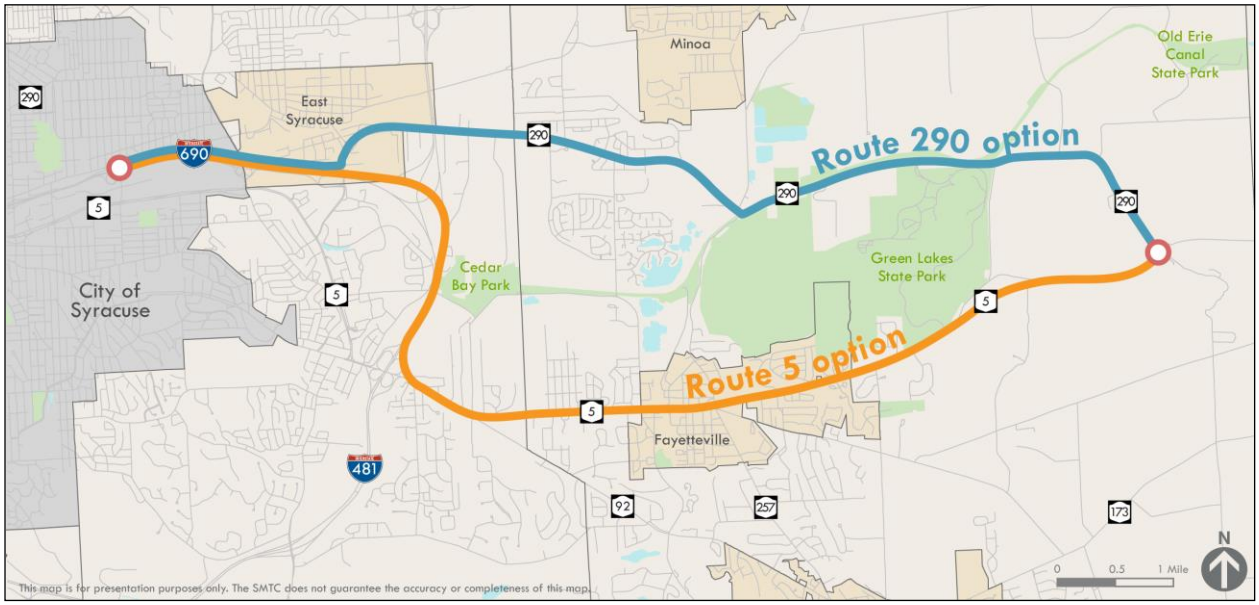


**Figure 3-2: Travel time study route options**

SMTC staff members were assigned to drive each route at specific start times throughout the peak periods. Start times were every 15 minutes from 7:00 a.m. until 8:45 a.m. (westbound trips) and from 4:00 p.m. to 5:45 p.m. (eastbound trips). Staff members were paired so that there was one driver starting each route at approximately the same time. Data collection took place over eight different days between

September 29, 2016, and October 25, 2016. All data collection was completed on a Monday, Tuesday, or Wednesday. There were no construction projects or other incidents that impacted the data collection. Three separate runs were completed for each start time on each route, for a total of 24 travel time runs in the primary commuter direction during each peak period. Staff were instructed to generally try to drive at the prevailing speed of traffic to capture a "typical" travel time under peak period conditions. Ten different staff members participated in the data collection effort. Each staff member carried a GPS unit in their vehicle that recorded the time and location at one-second intervals throughout the trip. Table 3-1 shows the resulting average travel time for Route 5 and Route 290 for each direction in both the morning and evening peak periods.

**Table 3-1: Summary of travel time data**

| | | Travel Time (mm:ss) | | |
|---|---|---|---|---|
| **Direction** | **Time Period** | **Route 5** | **Route 290** | **Difference*** |
| Westbound (Mycenae to Syracuse) | AM (peak) | 17:28 | 13:43 | 3:45 |
| | PM (off-peak) | 17:44 | 14:37 | 3:08 |
| Eastbound (Syracuse to Mycenae) | PM (peak) | 19:20 | 18:11 | 1:09 |
| | AM (off-peak) | 16:00 | 14:31 | 1:29 |

* Route 5 travel time minus Route 290 travel time

SMTC also examined the level of congestion along segments of each route using a measure called "travel time index" (TTI). The definitions of congestion levels are consistent with the SMTC's most recent Congestion Management Process, with a TTI less than 1.25 indicating that the segment is "not congested," a TTI from 1.25 to 1.50 indicating that a segment is "nearing congestion," and a TTI greater than 1.50 indicating that a segment is "congested." Note that a TTI of 1.50 indicates that the average travel time during the commuter peak period was found to be 50 percent higher than the free flow travel time (for example, a segment that can be traversed in 5 minutes during "free flow" conditions would take 7.5 minutes in the peak period if the TTI is 1.5). Figures 3-3 and 3-4 show the level of congestion on segments of each route during the morning peak period (westbound) and evening peak period (eastbound), respectively.

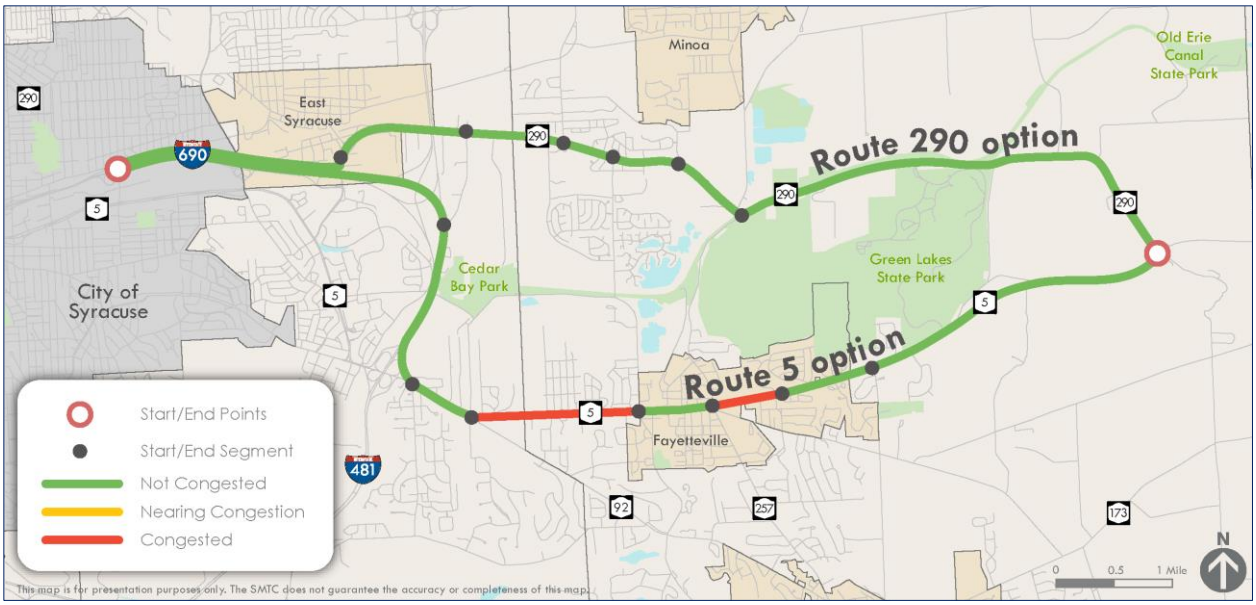


**Figure 3-3: Level of congestion during AM peak period for westbound trips, by route segment**

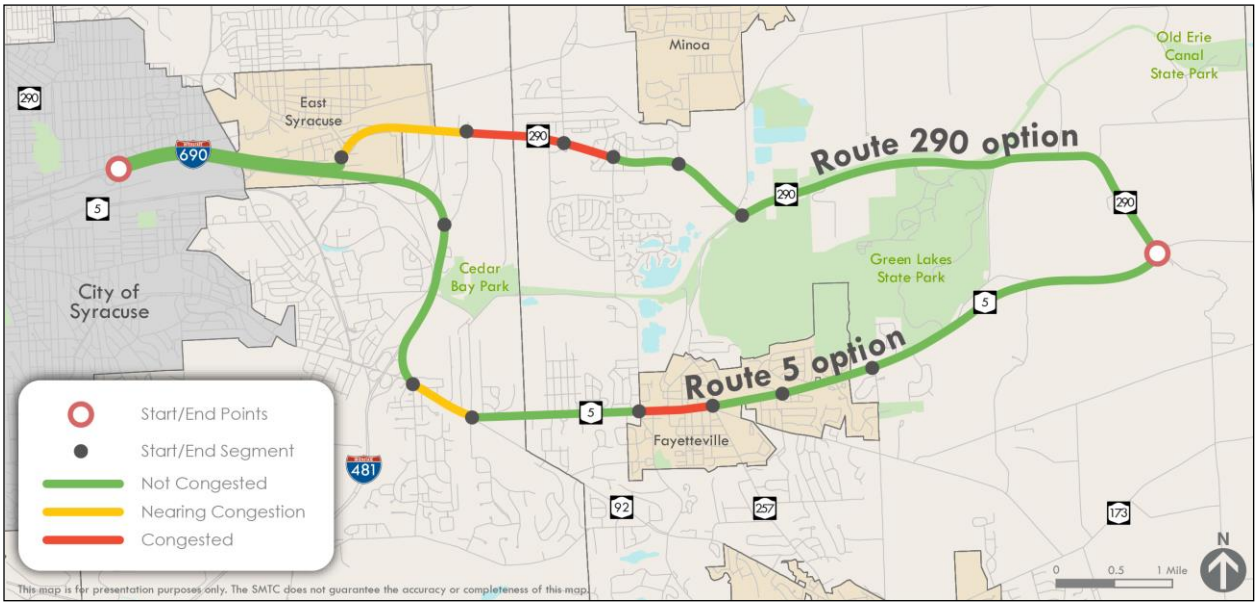


**Figure 3-4: Level of congestion during PM peak period for eastbound trips, by route segment**

The travel time study data could also be used to determine where vehicles stop along the two routes. This was done by examining the density of the data points collected by the GPS: when a vehicle was slowing down and stopped, the data points became very close together along the travel route. In response to concerns about queuing and delay on Route 5 westbound at the intersection with Route 257 in the morning commuter period, SMTC examined the GPS data specifically for this road segment. Figure 3-5, below, shows where each of the 23 westbound morning peak hour runs first stopped approaching this

intersection. The GPS data show that only two vehicles in the study had to wait through two cycles of the traffic signal at Route 5/Route 257 to pass through this intersection (i.e. these vehicles stopped twice before passing through the intersection).

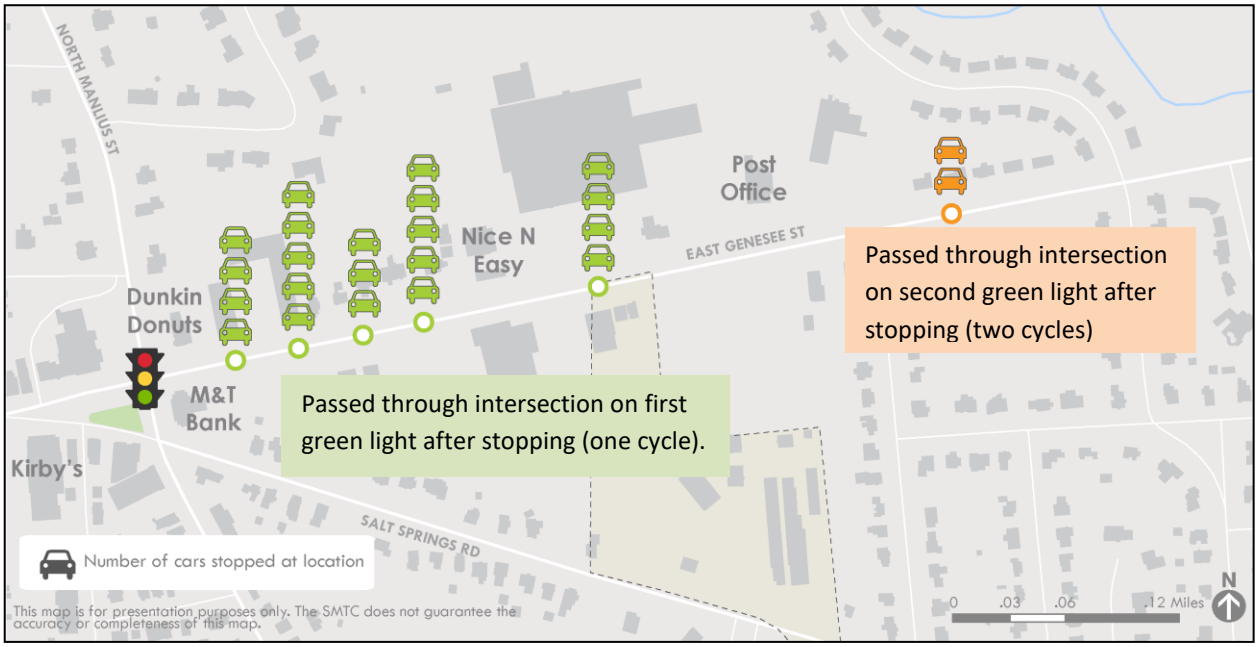


**Figure 3-5: Location of first stop for vehicles traveling westbound on Route 5 approaching Route 257, morning peak hour**

Some major conclusions are noted based on the results shown in Table 3-1 and Figures 3-3, 3-4, and 3-5:

- Within each peak period, the overall average travel time for Route 5 was found to be greater than the overall average travel time for Route 290. However, the difference in average travel times was relatively small. The most significant difference was in the westbound direction during the morning peak period, with the average travel time on Route 5 nearly 4 minutes greater than the average travel time on Route 290.
- The average eastbound travel time was greater in the evening peak than in the morning peak for both routes. Both routes had an average eastbound travel time in the evening that was over three minutes longer than the same trip in the morning.
- For westbound trips, the evening travel times were slightly greater than the morning travel times on the same route, although the differences were both less than one minute. For westbound trips, the morning was considered the "peak" but the results show that travel times are comparable between the morning and evening commuter periods in the westbound direction.
- The greatest range of travel times over the peak period on a single route was observed on eastbound Route 5 during the evening, with a low of 16 minutes 48 seconds and a high of 24 minutes 35 seconds, or a difference of just under 8 minutes.
- During the morning peak period in the westbound direction, trips that started in Mycenae at 7:45 a.m. had the highest average travel time on both routes. During the evening peak period in the

eastbound direction, trips that started at Midler Avenue at 4:45 p.m. had the highest average travel time on both routes.

- In the westbound (commuter) direction during the morning peak period, only two segments on Route 5 were found to be congested based on the calculated TTI: Southfield Drive to North Manlius Street and North Burdick Street to Route 92/Highbridge Road.
- More segments were found to be congested or nearing congestion for the eastbound (commuter) trips during the evening peak period. On Route 290, the segment from Bridge Street to Butternut Drive was "nearing congestion," while the segments from Butternut Drive to North Burdick Street were congested. On Route 5, the segment from the I-481 exit to Route 92/Highbridge Road was "nearing congestion" and the segment from North Burdick Street to North Manlius Street was congested, based on the calculated TTI.
- During the morning commuter peak, approaching Route 257 westbound on Route 5, only two out of a total of 23 vehicles in the data collection stopped twice (i.e. waited through more than one cycle of the traffic signal) before passing through this intersection.

In conclusion, SMTC's travel time data collection results showed that all average travel times (both directions, both peak periods) were less than 20 minutes between Mycenae and Midler Avenue. In all cases, the overall average travel time (across all starting times) on Route 5 was greater than the average travel time on Route 290. The greatest difference in average travel times was observed for the westbound trips during the morning peak period with the average travel time on Route 5 just under four minutes greater than the average travel time on Route 290.

Both routes appear to offer fairly consistent travel times during the peak periods. The greatest range of travel times over the peak period on a single route was observed on eastbound Route 5 during the evening, where the shortest travel time was just under eight minutes less than the longest travel time.

Although greater congestion was observed during the evening peak period, most segments of both routes were found to be uncongested during the peak periods and areas of congestion were relatively short.

### 3.3 Traffic flow in western village

Traffic volumes on Route 5 are significantly higher in the western portion of the village – west of Route 257 – than in the eastern portion of the village. This is clear from the daily traffic volumes available from NYSDOT, which show 15,000 to 23,000 vehicles per day on Route 5 west of Route 257 compared to under 9,000 vehicles per day east of Route 257 (see Table 2-1). There are also a number of other major travel routes that converge with Route 5 in the western portion of the village, as opposed to the mostly residential streets that intersect Route 5 farther to the east. Therefore, SMTC staff examined intersection turning movement counts for six intersections in the western portion of the Village to gain a better understanding of the existing pattern of traffic flow.

Turning movement counts from previous traffic impact studies (described in Section 2.2.2) were utilized for the Route 5/North Burdick Street, Route 5/Highbridge Road, Route 5/Route 257, and Route 257/Salt Springs Road intersections. These four counts were completed in 2014 and 2015. SMTC staff conducted counts at the Route 5/Brooklea Drive and Route 5/Salt Springs Road intersections in July 2017. The turning

movement counts for the morning and evening peak hours at each of these intersections are shown on Figure 3-6, and the resulting traffic flow patterns for each peak hour are illustrated on Figure 3-7.

The following points are evident from the turning movement volumes and the traffic flow diagram:

- The evening peak hour traffic volume is greater, overall, than the morning peak hour volume.
- The segment of Route 5 between North Burdick Street and Highbridge Road carries the highest volume of traffic during both peak hours, with the eastbound traffic volume reaching over 1,500 vehicles per hour on this segment during the evening peak hour.
- Generally, the turning movements to and from Route 5 are relatively low volumes – under 200 vehicles per hour – with the notable exception of the movements to/from North Burdick Street.
- As eastbound traffic on Route 5 approaches the intersection with Salt Springs Road, the traffic splits nearly evenly between these two roads.
- Since traffic cannot travel westbound on Salt Springs Road from Route 257 to Route 5, there is a relatively large northbound left-turn volume at the Route 5/Route 257 intersection (nearly equivalent to the westbound through volume at the same intersection).
- There is clearly a "loss" of vehicles traveling eastbound on Route 5 between Highbridge Road and Salt Springs Road. This is particularly apparent during the evening peak hour, when about 100 more vehicles travel eastbound through the Highbridge Road intersection than "arrive" at the Salt Springs Road intersection. It is likely that these vehicles are turning off of Route 5 and onto one of the residential side-streets between Brooklea Drive and Salt Springs Road, likely returning home from work.
- There are also notable changes in the traffic volumes along North Burdick Street, with higher volumes at the southern end of this road (near Route 5) than on the portion near Cedar Bay Road. This is likely due to the significant traffic "generators" along North Burdick Street closer to Route 5, particularly the Fayetteville Towne Center shopping plaza.

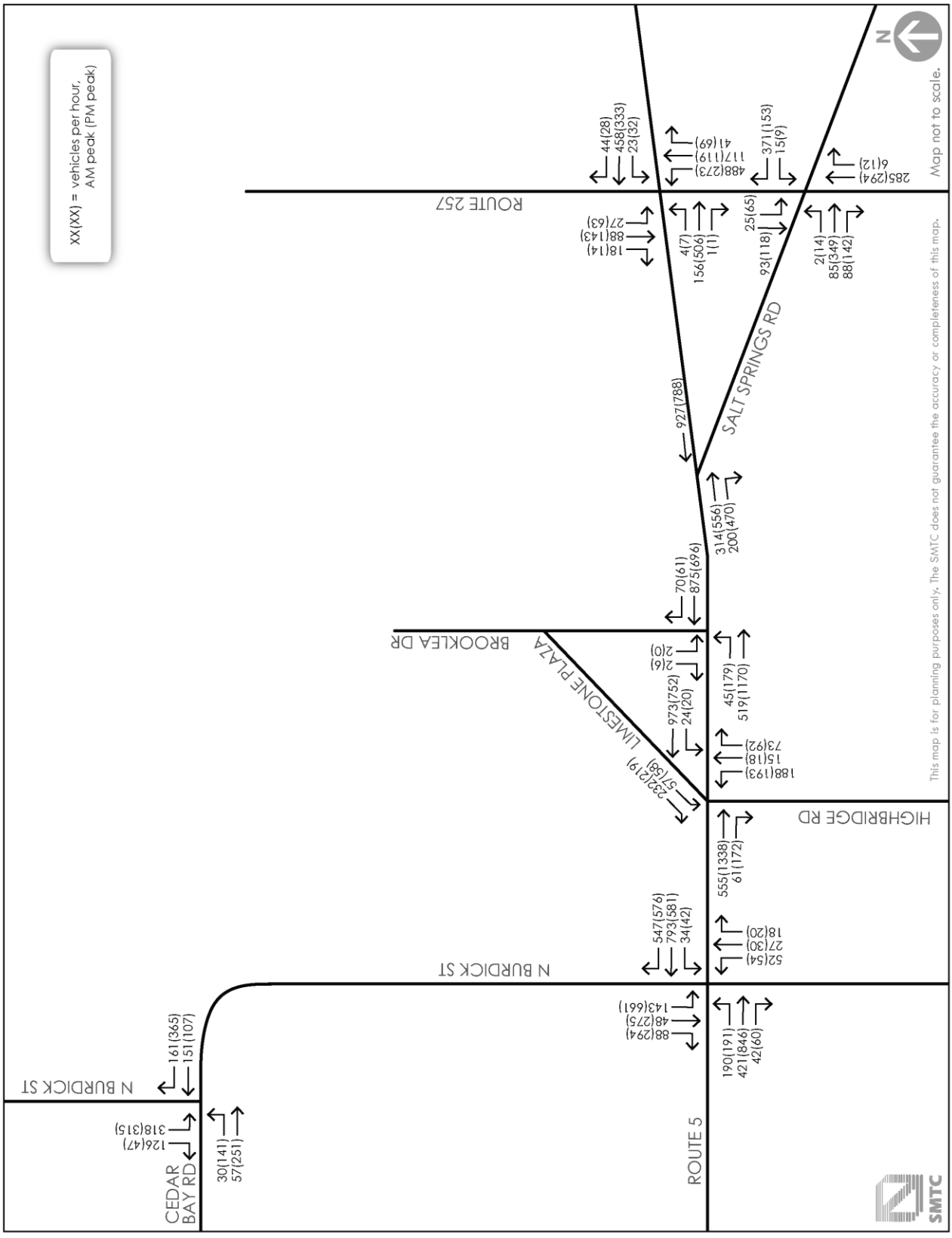


**Figure 3-6: Turning movement volumes at study area intersections**

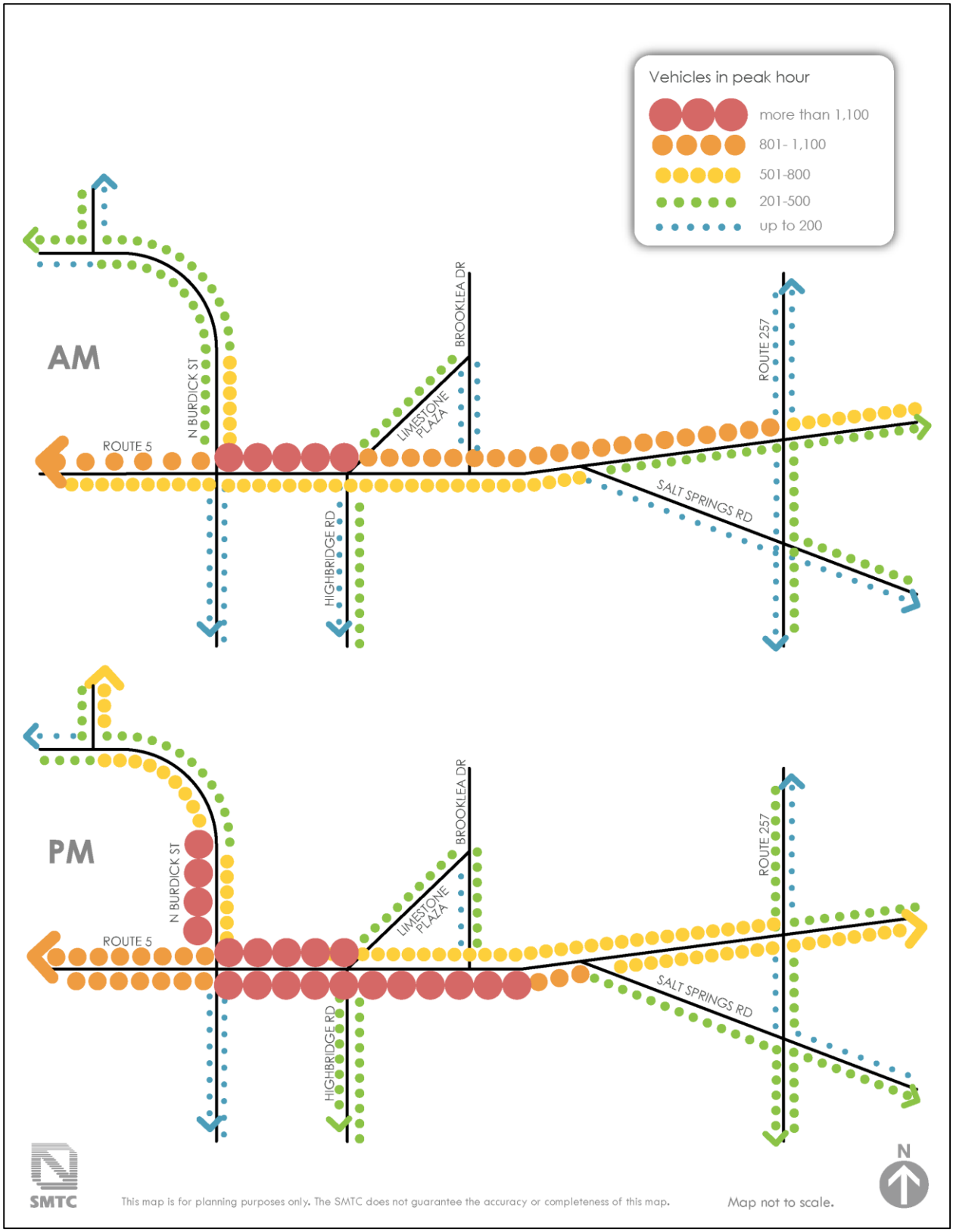


**Figure 3-7: Traffic flow pattern in western portion of village, AM (top) and PM (bottom) peak hours**

## 3.4 Travel demand model outputs

### 3.4.1 Consistency with observed existing conditions

SMTC's current "existing conditions" regional travel demand model is based on population and employment data collected in 2014. SMTC staff examined traffic volume outputs from this model for ten segments of Route 5 between Fayette Drive on the west and Duguid Road on the east. Model outputs were also reviewed for some roads intersecting Route 5 such as Highbridge Street, Route 257, Salt Springs Road, and Brooklea Drive. Data were examined for the morning and evening peak hours (commuter peaks).

As shown in Figure 3-8, the total (two-way) PM peak hour modeled traffic volumes on Route 5 in and near the Village of Fayetteville range from a low of about 800 vehicles per hour near Duguid Road, just east of the village, to a high of about 2,200 vehicles per hour between Burdick Street and Highbridge Street. Modeled volumes are highest in the western portion of the village, and then decline steadily moving farther east. The PM peak hour volumes are generally about 10 percent greater than the AM peak hour volumes on the same segment. These model outputs align with the traffic flow analysis, based on existing turning movement counts, described in the previous section.

SMTC's **travel demand model** is a "four step model" that can be used to predict the amount, type, and location of travel that residents will undertake, now and in the future. The model uses inputs such as population and economic forecasts, the geographic dispersion of people and jobs throughout the region, and a description of the transportation system (roads and transit system). The model outputs can be used to evaluate the regional impact of changes to the transportation system, changes in land use, or changes in policy (such as pricing). The travel demand model cannot forecast future land use or evaluate traffic operations at specific intersections.

The NYSDOT hourly count reports for these segments of Route 5 indicate that the peak hour accounts for about 10 percent of the total daily traffic. The peak hour volumes from the SMTC travel demand model are consistent with the daily volumes published by the NYSDOT in the 2016 Traffic Volume Report (see Table 2-1).

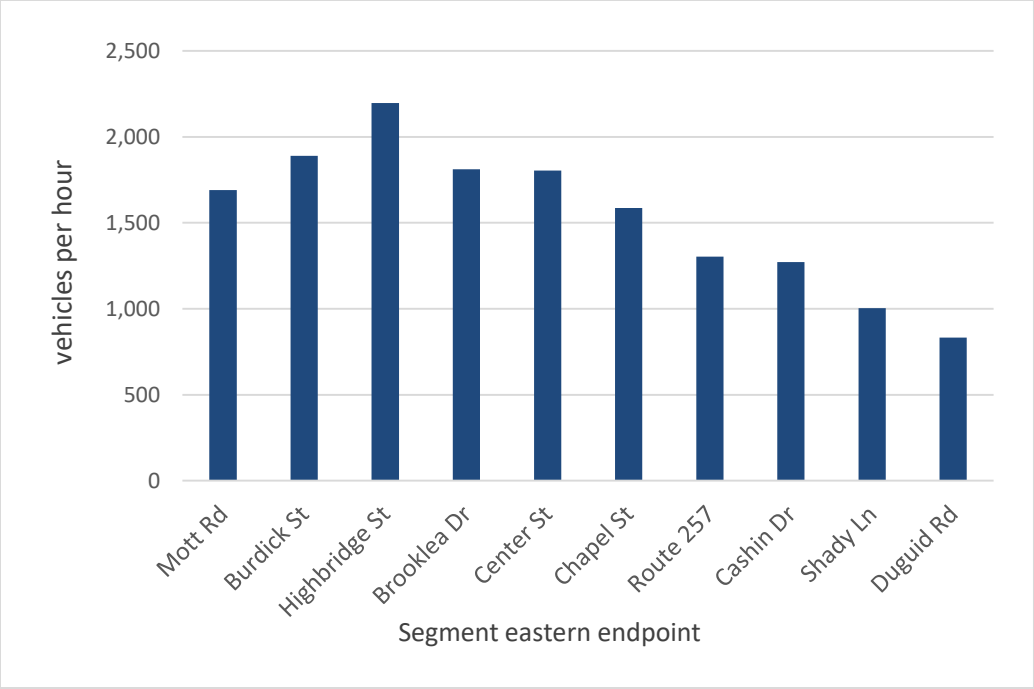


**Figure 3-8: 2014 PM peak hour traffic volumes (two-way) on segments of Route 5**
*Source: SMTC travel demand model*

### 3.4.2 Volume-to-capacity ratios

The travel demand model also indicates a "volume-to-capacity (V/C) ratio" for segments and intersections within the study area. The V/C ratio is a measure of congestion, with values up to 0.7 generally representing "uncongested" operations, values between 0.7 and 0.9 indicating that a segment is "approaching congestion," and values above 0.9 indicating congestion. The existing conditions model indicates that there are no segments with an existing V/C ratio over 0.7. In fact, most segments of Route 5 in the study area have V/C ratios under 0.5. The highest V/C ratios in the study area are between Brooklea Drive and Chapel Street, with values from 0.6 to 0.7 for westbound AM traffic and eastbound PM traffic. These results are very similar to the results from the travel time study (see Section 3.1).

### 3.4.3 Trip origins and destinations

Throughout this study, questions were raised about the "type" of traffic on Route 5; specifically, there was a desire to understand how much of the traffic is commuter trips made by residents of areas east of the Village of Fayetteville and how much of the traffic is generated by village residents. This could be answered most accurately by conducting license plate surveys or a household travel survey, both of which are beyond the scope of the current study. However, outputs from the SMTC's travel demand can be used to help answer this question.

SMTC staff examined eastbound evening peak hour trips and westbound morning peak hour trips along Route 5 between North Burdick Street and Highbridge Road (since this segment has the highest peak hour volume within the study area). The model can identify how trips on a specific segment of roadway travel through the road network (this is called a "select link analysis"). The model results show that of the

vehicles traveling eastbound during the evening peak and westbound during the morning peak on Route 5 between North Burdick Street and Highbridge Road:

- About 20 percent have an origin or destination located within the Village of Fayetteville west of Route 257.
- About 25 percent have an origin or destination located within the Village of Fayetteville east of Route 257.
- About 25 percent travel along Route 5 from an origin or to a destination east of the Route 5/Route 290 intersection.
- About 20 percent travel to/from various points south of the village on Highbridge Road or Route 257.
- The remaining 10 percent of vehicles disperse to various origins/destinations outside of the village.

These results are also illustrated on Figure 3-9.


**Figure 3-9: Origins/destinations for trips on Route 5 between North Burdick Street and Highbridge Street (westbound AM peak, eastbound PM peak)**

Based on these modeling results, the majority of the traffic traveling eastbound on the highest-volume section of Route 5 during the evening peak hour has a destination within the Village of Fayetteville or south of the village. About a quarter of the eastbound traffic on Route 5 between North Burdick Street and Highbridge Road continues on through the village to a destination east of the Route 5/Route 290 intersection, towards Chittenango. The eastbound traffic on Route 5 at the intersection with Route 257 is just about evenly split between traffic that has a destination in the eastern part of the village, and traffic that has a destination farther east past the intersection with Route 290. However, as the total traffic on Route 5 decreases as one travels farther east, the "through" traffic makes up a larger proportion of the overall traffic. The travel pattern for the westbound morning peak period traffic mirrors the eastbound evening peak period pattern.

Also interesting is where traffic on this segment of Route 5 originates during the evening peak period. The model indicates that about 60 percent of those vehicles traveling eastbound on Route 5 between North Burdick Street and Highbridge Street were already traveling eastbound on Route 5. About 25 percent come from the Fayetteville Towne Center area, and the remaining 15 percent were previously traveling southbound on North Burdick Street. This shows the strong influence of the retail areas on trip patterns, especially during the evening commute when retailers are open and many people "chain" shopping trips into their commute home.

These model results show a pattern of travel through the village that is consistent with the pattern evident from the existing turning movement counts, shown in Figures 3-6 and 3-7. The model indicates that a substantial portion of traffic on Route 5 is generated by origins and destinations in or immediately surrounding the village.

### 3.5 Hourly traffic volumes

The NYSDOT completed an hourly traffic volume count on Route 5 between Highbridge Road and Salt Springs Road in November 2016. The resulting average hourly volumes for eastbound, westbound, and total two-way traffic are shown on Figure 3-10. Westbound traffic peaks at about 900 vehicles per hour between 7:00 a.m. and 9:00 a.m., then remains steady at around 700 vehicle per hour throughout most of the day (until about 5:00 p.m.). Eastbound traffic climbs steadily throughout the day, reaching a peak of nearly 1,200 vehicles from 5:00 p.m. to 6:00 p.m. The combined result of the two directions of traffic is that overall, Route 5 experiences a sharp increase in traffic after 7:00 a.m., followed by a fairly steady increase in traffic overall to a peak of over 1,800 vehicles between 5:00 p.m. and 6:00 p.m. After 6:00 p.m., the traffic volume declines significantly. The midday volume (11:00 a.m. to 1:00 p.m.) is nearly equivalent to the morning "peak" and traffic in the later afternoon – before the traditional evening peak hour – is greater than in the morning commuter peak period. This pattern of traffic volumes over the course of a day is indicative of a road that is highly varied in use, serving both commuter traffic and providing access to numerous commercial destinations throughout the day.

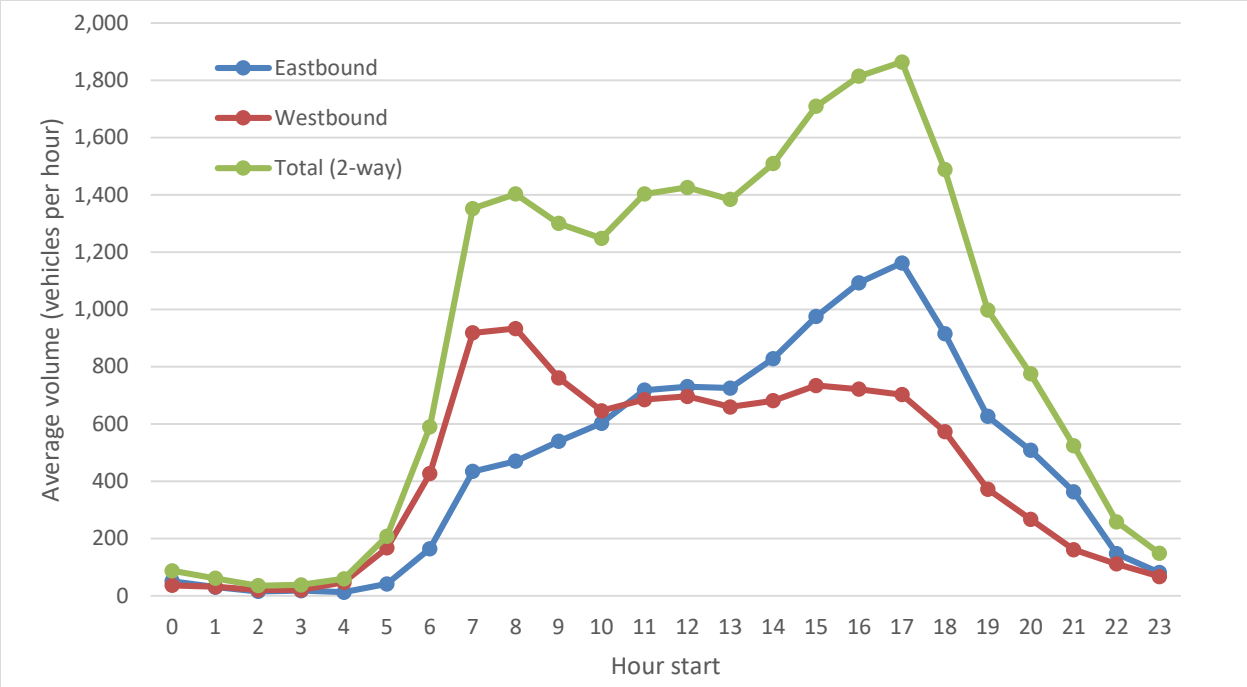


**Figure 3-10: Average traffic volume by hour of day, Route 5 from Highbridge Road to Salt Springs Road**
*Source: NYSDOT, 2016*

### 3.6 Transit routes and ridership

Centro provides bus service to Fayetteville and Manlius on Route 62 and its variations. The "local" 62 and 262 routes provide service along East Genesee Street. The Wegmans – DeWitt Park-N-Ride is also served by "local" routes 330 and 530, which travel along East Genesee Street to/from Westcott Street and the University Hill area.

Route 262X provides express service during weekday morning and afternoon commuter peak periods, traveling on Route 257 and Route 5 between the Village of Manlius and Wegmans - DeWitt, then on I-481 and I-81 to downtown. Free parking is available for bus commuters at Fayetteville Towne Center and Wegmans - DeWitt. These trips stop at the Sarah Loguen Street shelter near Upstate University Hospital, East Washington Street/State Street in downtown, and at the Centro Transit Hub. Travel time between the Fayetteville Towne Center and the Hub is 36 minutes for morning trips and 30 minutes for afternoon trips. Morning trips arrive at the Hub at 7:10 a.m., 7:47 a.m., and 8:20 a.m., and afternoon trips depart the Hub at 3:30 p.m., 4:45 p.m., and 5:20 p.m.

The Route 162 Express service travels on I-690 between downtown and ShoppingTown mall with only one "inbound" (i.e. to downtown) trip in the morning and two "outbound" (i.e. from downtown) trips in the afternoon. Route 362 Express travels on I-690 between downtown and Wegmans – DeWitt with one outbound trip in the morning and one inbound trip in the afternoon (in other words, Route 362 provides a "reverse commute" express service).

Overall, the 62 "line" (including all service on the 62, 162, 262, 362, 462, and 262X routes) ranks 22nd out of Centro's 25 lines based on total ridership for 2015. Individual stop-level data from 2017 for the 262X route indicate, on average, no more than 15 people use this route daily to commute (based on the sum of average daily boardings east of I-481 and alightings in downtown during the morning, and the sum of average daily boardings in downtown and alightings east of I-481 in the evening). The Park-N-Ride locations at Wegmans – DeWitt and Fayetteville Towne Center are the highest-usage stops on this route, but average only three boardings and alightings per day at each location. Many of the stops in Fayetteville/Manlius on this route average less than one rider per day.

The Wegmans – DeWitt location was evaluated as a Park-N-Ride location for a dedicated University Hill shuttle in the SMTC's University Hill Park & Ride Feasibility Study (2010). At the time that study was completed, 10 vehicles were observed parked near the designated Park-N-Ride bus shelter mid-morning on a weekday. One of the short-term recommendations from this study was to provide direct service from the existing Wegmans – DeWitt Park-N-Ride to University Hill.

There is no transit service on Route 5 east of Route 257, so commuters from the eastern part of the village or beyond who desire to utilize transit still need to drive through the Village of Fayetteville to the Park-N-Ride at either Towne Center or Wegmans. Since the University Hill Park & Ride Feasibility Study sought to identify options for suburban Park-and-Ride locations that could provide a total commute time – including drive time to the Park-and-Ride lot and the time on the shuttle – of 35 minutes or less, that study did not consider locations east of the Village of Fayetteville. Also, Centro does not provide service in Madison County.

# 4 Future traffic flow conditions

## 4.1 Future Base traffic volumes

The SMTC's travel demand model was used to determine the likely future traffic volumes on Route 5. The horizon year for this analysis was 2020. The SMTC's current 2020 Future Base model includes household and employment growth assumptions that were developed in cooperation with local officials and planners during the model update process in 2014. At that time, this growth was assumed to be minimal, with about 24 additional households and 34 additional jobs in the 2020 Future Base model compared to the 2014 Existing Conditions model within the analysis zones that encompass the Village of Fayetteville. The 2020 Future Base model was updated for this current analysis to account for the 2015 opening of the Yellow Brick Road Casino in Chittenango.[2] The results from the 2020 Future Base model, with the additional casino jobs, indicate higher growth in traffic volumes at the eastern end of the study area, nearest to the location of the new casino, than at the western end of the study area. Generally, the model indicates about 0.3 percent per year growth in traffic volumes, or about 1 percent to 1.7 percent total growth, from 2014 to 2020 on segments of Route 5 within the study area. This is consistent with the annual growth rates published by the NYSDOT in the 2015 Traffic Volume Report (see Table 2-1). The V/C ratios for segments of Route 5 in the study area under the 2020 Future Base scenario are nearly identical to the V/C ratios under the existing conditions.

## 4.2 Anticipated future development

Since the current 2020 Future Base model included a relatively small number of additional households and jobs within the study area, an additional model scenario was examined that includes proposed and likely future development in and adjacent to the Village of Fayetteville. SMTC staff and SAC members identified these development sites, which are shown on Figure 4-1 and listed in Table 4-1. (The Wegmans – DeWitt food court expansion is about two miles to the west of the village on Route 5, but was included at the request of the SAC members.) All developments were assumed to be complete by the year 2020. The number of units (for residential developments) or specific use and size information (for commercial developments) were determined from published information where available, or based on input from the Village of Fayetteville.

[2] 250 jobs were added at the casino location, based on information in an April 2015 news article. (Yellow Brick Road Casino job fair attracts hundreds; restaurant lineup revealed. April 21, 2015. Elizabeth Doran. Syracuse.com)

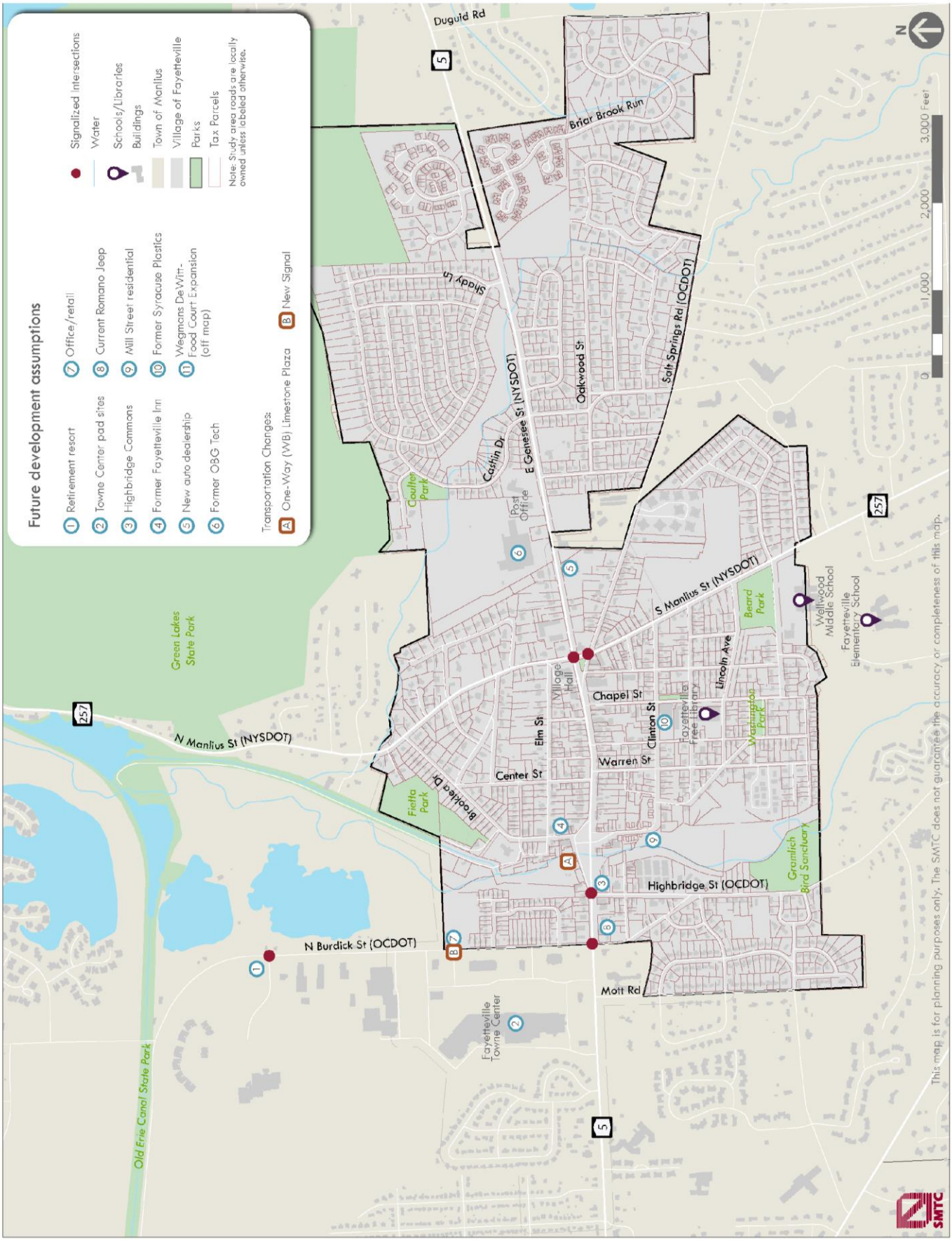


**Figure 4-1: Future development assumptions**

**Table 4-1: Future (2020) development assumptions**

| Map location | Development | Residential units | Commercial use/size |
|---|---|---|---|
| **1** | Retirement resort | 128 apartments | na |
| **2** | Towne Center pad sites | na | 10,000 SF retail/restaurant |
| **3** | Highbridge Commons | na | 6,100 SF retail<br>1,700 SF coffee shop<br>6,100 SF office<br>2,700 SF restaurant[1] |
| **4** | Former Fayetteville Inn | 20 apartments | 5,000 SF retail |
| **5** | 540 E. Genesee St. (former Jay Chevrolet) | | 30,000 SF auto sales |
| **6** | 547 E. Genesee St. (Former OBG Tech) | 239 apts. and single-family | na |
| **7** | Office/retail | na | 6,000 SF office/retail |
| **8** | Current Romano Jeep | na | 6,100 SF retail<br>1,700 SF coffee shop<br>6,100 SF office<br>2,700 SF restaurant |
| **9** | Mill Street residential | 17 townhomes and single-family | na |
| **10** | Former Syracuse Plastics | 24 apartments | 3,000 SF office |
| **11** | Wegmans food court expansion | na | 12,350 SF restaurant |
| | **TOTAL** | 428 units | 99,550 SF |

[1]Use/size information from *Traffic Impact Study for Highbridge Commons*, Dunn & Sgromo Engineers, December 2015.

The 2020 Proposed model includes 428 additional housing units and 334 additional jobs compared to the 2014 model within the same analysis zones, not including the additional jobs associated with the Wegmans expansion or the casino. In other words, the 2020 Future Proposed scenario represents a substantially different future vision than the original 2020 Future Base scenario of the SMTC's regional travel demand model.

### 4.3 Future traffic volumes with proposed development

The impacts of the proposed future developments are reflected in the 2020 Future Proposed scenario model results, as shown in Table 4-2. The following conclusions are noted from these model results:

On Route 5:

- The overall distribution of traffic remains the same as the existing condition, with the segment between Burdick Street and Highbridge Street carrying the most traffic, and traffic volumes gradually decreasing east of Highbridge Street.
- The growth percentage varies by segment, ranging from about 4 percent to about 12 percent total growth when comparing the 2020 Future Proposed results to the 2014 Existing Conditions model results.
- This percentage equates to an increase in total traffic of about 100 vehicles or less in the AM peak hour and 150 vehicles or less in the PM peak hour.
- The highest growth in traffic (both in number of additional vehicles and percentage growth over existing) associated with the 2020 Future Proposed scenario is between Route 257 and Cashin Drive (i.e. the segment just east of Route 257).
- Growth is higher in the commuter direction in a given time period (i.e., westbound in the morning, eastbound in the afternoon).
- Overall, very little change in V/C ratios is expected under the 2020 Future Proposed scenario. Increases in V/C ratio are minimal, although the segment between Brooklea Drive and Center Street is expected to experience a V/C ratio of 0.72 for westbound AM traffic and eastbound PM traffic (compared to 0.69/0.67 for existing conditions). This suggests that the segment is approaching congested conditions.
- As previously noted, the Route 5/Route 257 intersection currently operates at LOS D/C (AM/PM) overall (see Table 2-3). The SMTC's model indicates that total entering traffic volumes during the evening peak hour would increase by about 5 to 8 percent (total) during the peak hours from 2014 conditions to the anticipated 2020 conditions with the casino and the developments listed in Table 4-1. This amount of total volume increase is likely to have only a minimal impact on the average vehicle delay experienced at the intersection.

On other roads in the study area:

- Volume increases on Highbridge Street, South Manlius Street, and Salt Springs Road are minimal, with fewer than 12 additional vehicles in the peak hours.
- North Burdick Street, Brooklea Drive, and North Manlius Street show greater increases, with the addition of about 60 vehicles on North Burdick Street and up to 30 vehicles per hour on Brooklea Drive and North Manlius Street, as compared to the existing conditions.

**Table 4-2: Traffic volume comparison on segments of Route 5 under Existing, Future Base, and Future Proposed conditions**

| | Segment eastern endpoint | Mott Rd | Burdick St | Highbridge St | Brooklea Dr | Center St | Chapel St | Route 257 | Cashin Dr | Shady Ln | Duguid Rd |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | *AM Peak Hour* | | | | | | |
| **2014** | Peak hour volume | 1,487 | 1,617 | 1,984 | 1,610 | 1,676 | 1,496 | 1,335 | 1,142 | 918 | 770 |
| **2020 Base** | Peak hour volume | 1,500 | 1,628 | 2,001 | 1,643 | 1,675 | 1,497 | 1,336 | 1,160 | 936 | 785 |
| | Change, from 2014 | 13 | 11 | 17 | 33 | -1 | 1 | 1 | 18 | 18 | 15 |
| | % change, from 2014 | 0.9% | 0.7% | 0.9% | 2.0% | -0.1% | 0.1% | 0.1% | 1.6% | 2.0% | 1.9% |
| **2020 Proposed** | Peak hour volume | 1,548 | 1,697 | 2,079 | 1,619 | 1,750 | 1,560 | 1,399 | 1,245 | 1,009 | 797 |
| | Change, from 2014 | 61 | 80 | 95 | 9 | 74 | 64 | 64 | 103 | 91 | 27 |
| | % change, from 2014 | 4.1% | 4.9% | 4.8% | 0.6% | 4.4% | 4.3% | 4.8% | 9.0% | 9.9% | 3.5% |
| | | | | | *PM Peak Hour* | | | | | | |
| **2014** | Peak hour volume | 1,691 | 1,890 | 2,197 | 1,812 | 1,803 | 1,586 | 1,303 | 1,271 | 1,003 | 833 |
| **2020 Base** | Peak hour volume | 1,715 | 1,912 | 2,226 | 1,839 | 1,830 | 1,616 | 1,327 | 1,296 | 1,030 | 857 |
| | Change, from 2014 | 24 | 22 | 29 | 27 | 27 | 30 | 24 | 25 | 27 | 24 |
| | % change, from 2014 | 1.4% | 1.2% | 1.3% | 1.5% | 1.5% | 1.9% | 1.8% | 2.0% | 2.7% | 2.9% |
| **2020 Proposed** | Peak hour volume | 1,746 | 1,976 | 2,310 | 1,943 | 1,922 | 1,697 | 1,413 | 1,424 | 1,113 | 872 |
| | Change, from 2014 | 55 | 86 | 113 | 131 | 119 | 111 | 110 | 153 | 110 | 39 |
| | % change, from 2014 | 3.3% | 4.6% | 5.1% | 7.2% | 6.6% | 7.0% | 8.4% | 12.0% | 11.0% | 4.7% |

*Source: SMTC travel demand model*

### 4.4 Route 290 capacity increase

The idea of modifying Route 290 to act as an alternative route to Route 5 through the eastern suburbs has been discussed since the early 1990s. Previous studies examining various such options were reviewed in detail in Chapter 2 of this report. Capacity expansion on Route 290 was again examined as part of this study.

Route 290 is currently a three-lane facility (one travel lane in each direction and a center turn lane) from Basile Rowe to Fremont Road. Between Fremont Road and the intersection with Route 5 in Mycenae, Route 290 is generally a two-lane facility with one travel lane in each direction. The SMTC travel demand model reflects the existing geometry of Route 290. An alternative was examined using the travel demand model in which an additional travel lane was added to Route 290 between Basile Rowe and Route 5, so that two travel lanes were available in each direction for this entire segment.

The resulting changes in AM and PM peak hour traffic volumes are shown on Figures 4-2 and 4-3, respectively. The following points summarize the results of this analysis:

- Total (two-way) traffic volumes on Route 5 decreased by about 70 vehicles per hour with the increased capacity on Route 290. This equates to about a two to eight percent decrease in peak hour traffic on individual segments through the village, which is unlikely to be perceptible to the average driver and is within the range of typical expected daily variations in traffic.
- The reduction in traffic on Route 5 was mostly in the peak commuter direction (westbound in the morning, eastbound in the evening), and overall the reduction was greater during the PM peak hour (which has more overall traffic to begin with).
- The volume of traffic removed from Route 5 was fairly consistent between I-481 and the intersection with Route 290, suggesting that the trips that divert to Route 290 are commuter trips with a “home” end east of the Route 5/Route 290 intersection and a “work” end accessible from the Interstate system.

Taken together, these findings suggest that a large proportion of the traffic on Route 5 in the Village of Fayetteville is generated by residences or commercial development in and near the village.

Traffic volumes also decreased on many other east-west roads with the addition of lanes on Route 290. Mostly the reductions were very minor and were distributed among many east-west options. However, the reduction in peak hour volume on Kirkville Road was notable, with over 100 vehicles removed from Kirkville Road east of I-481 in the during the peak hours. Since this is currently a relatively low-volume road, this equates to a decrease of 20 to over 35 percent on segments of Kirkville Road with the additional lanes on Route 290.

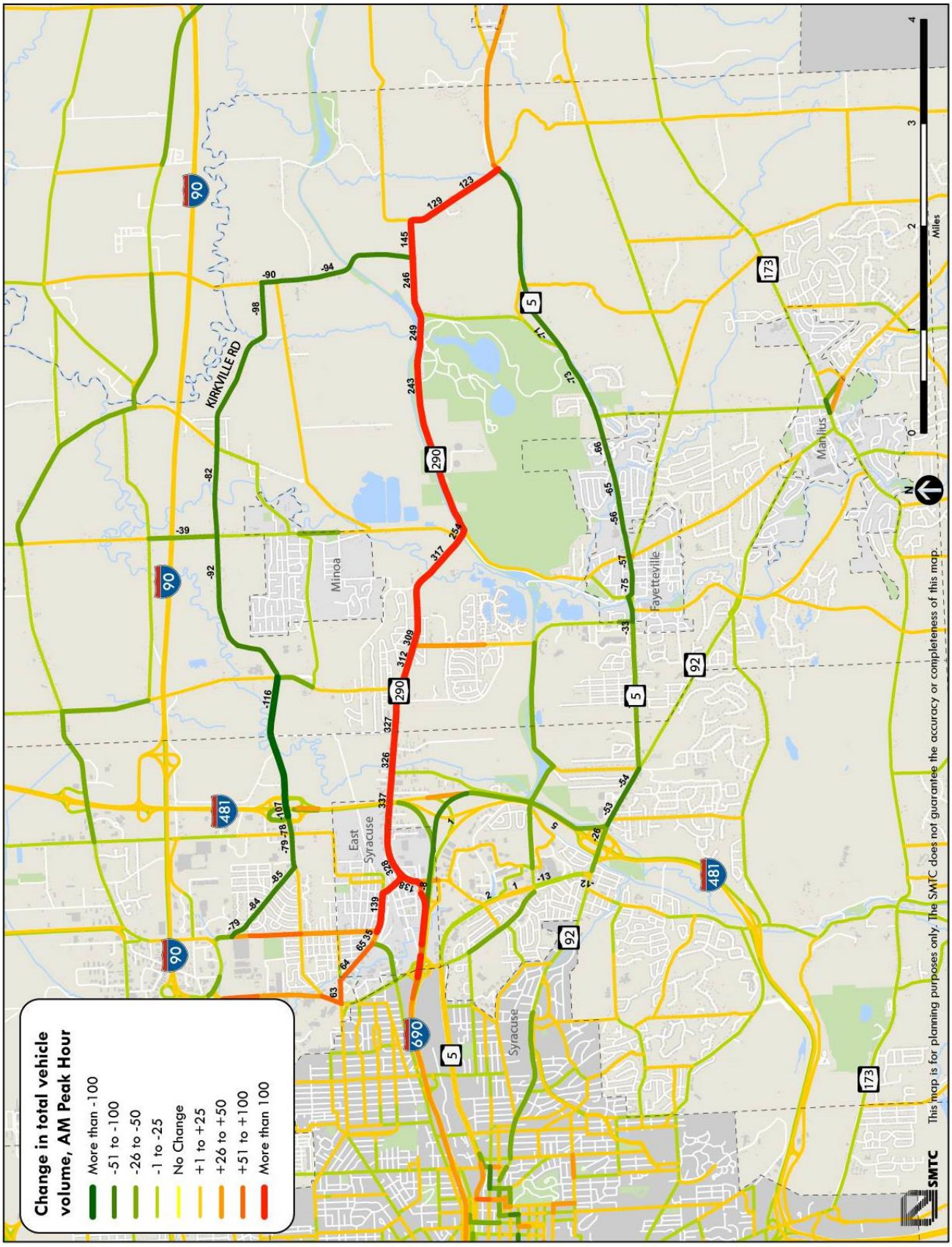


**Figure 4-2: Change in AM peak hour traffic volume with addition of lanes on Route 290**

*Source: SMTC travel demand model*

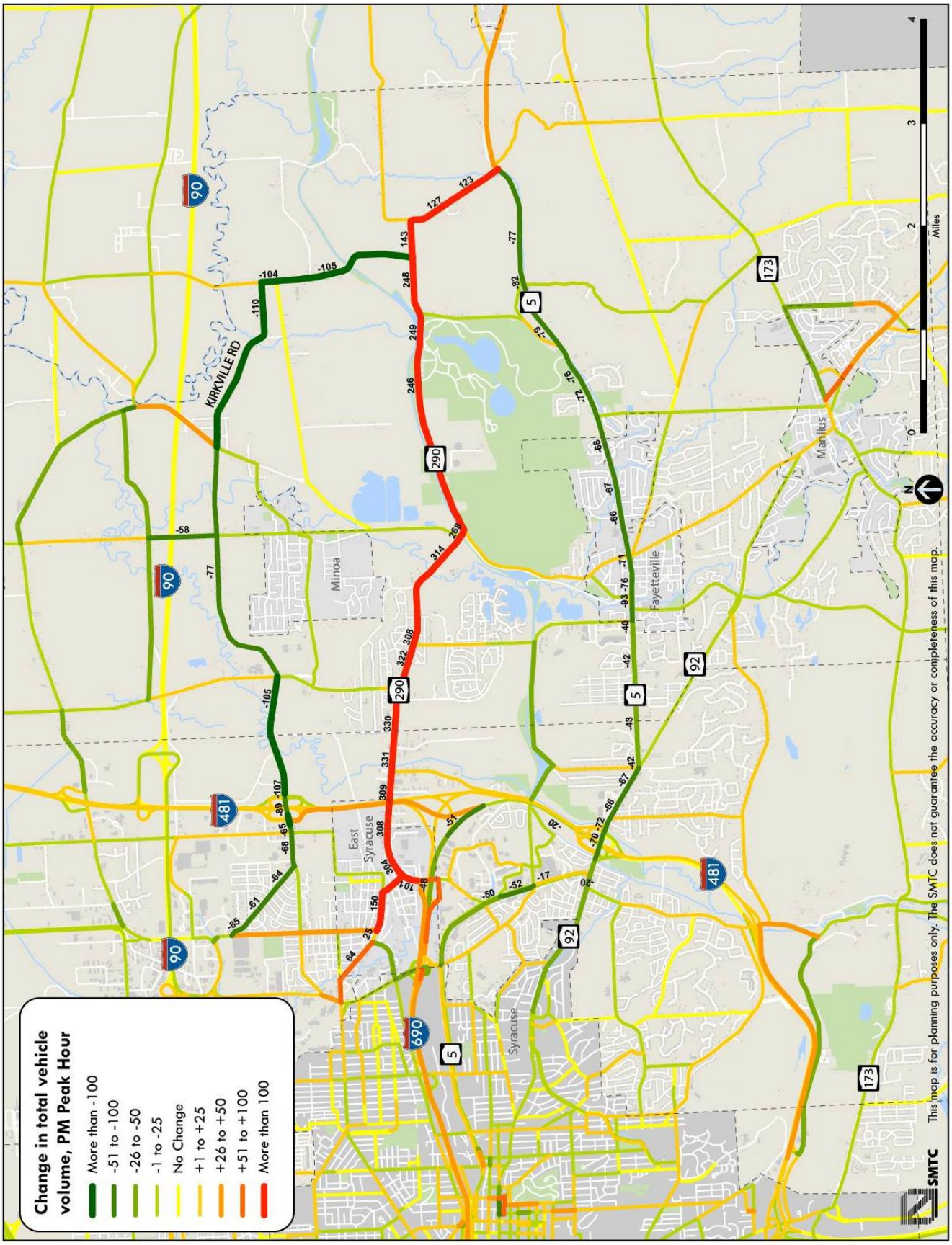


**Figure 4-3: Change in PM peak hour traffic volume with addition of lanes on Route 290**

*Source: SMTC travel demand model*

Travel time outputs from the model also indicated relatively minor changes, as shown by Table 4-3. The slight reduction in traffic on Route 5 resulted in a reduction of only 17 seconds for the average travel time on Route 5 eastbound during the evening peak hour. Route 290 experienced a decrease in average travel time of under two minutes with the additional travel lanes (in combination with the additional traffic drawn to this route), also eastbound in the evening peak hour.

**Table 4-3: Average travel times for peak hour trips on Route 5 and Route 290 with current roadway conditions and with additional lanes on Route 290**

| | Travel time (mm:ss) | | | |
|---|---|---|---|---|
| | AM peak, westbound | | PM peak, eastbound | |
| | Rt. 5 from I-481 ramps to Rt. 290 | Rt. 290 from Bridge St. to Rt. 5 | Rt. 5 from I-481 ramps to Rt. 290 | Rt. 290 from Bridge St. to Rt. 5 |
| 2020 Future Proposed with existing road conditions | 15:34 | 16:46 | 16:28 | 16:53 |
| 2020 Future Proposed with additional lanes on Route 290 | 15:19 | 14:52 | 16:11 | 15:11 |
| Difference | 0:14 | 1:53 | 0:17 | 1:42 |

*Source: SMTC travel demand model*

# 5 Issues and opportunities

## 5.1 Overview

The preceding chapters of this report examined previous studies for the Fayetteville area, historical traffic volumes, current travel patterns, the potential impacts of additional development in and around the village, and the impact of a capacity increase on Route 290 as an alternative travel route to Route 5. All of this information is useful in identifying the current issues and the potential opportunities for transportation in the Village of Fayetteville.

With input from the SAC, SMTC staff identified specific issues within the village and potential opportunities to address those issues, along with the potential impacts of any solutions. This analysis was presented at the public meeting on February 28, 2018, and additional input from the public was collected (see Appendix A for a summary of the public meeting).

## 5.2 Overall traffic characteristics

### 5.2.1 Impact of local trips on overall traffic volumes

The segment of Route 5 between North Burdick Street and Highbridge Road carries the highest traffic volume within the study area. Travel demand model outputs show that about 45 percent of the traffic traveling westbound in the morning and eastbound in the evening peak on this segment has an origin or destination within the Village of Fayetteville (see Figure 3-9). This suggests that much of the overall traffic volume is attributable to residents of the village, either commuting or traveling to/from the destinations along Route 5 near the village. Further supporting this conclusion, existing intersection turning movement counts show a notable decrease in vehicles traveling eastbound on Route 5 between Highbridge Road and Salt Springs Road, particularly during the evening peak hour (see Figures 3-6 and 3-7). It is likely that these vehicles are turning off of Route 5 and onto one of the residential side-streets between Brooklea Drive and Salt Springs Road.

Creating new connections to serve local traffic while avoiding Route 5 – "building out the grid" – would be the logical solution given the traffic flow patterns in the village. For example, connections from North Burdick Street to North Manlius Street and from Mott Road to South Manlius Street would increase options for local traffic and remove some of the burden from Route 5. However, any such solution would require crossing Limestone Creek and would likely bring more traffic to residential streets. These options were considered infeasible due to the undesirable impacts and construction challenges.

### 5.2.2 Impact of route and mode choice for commuters

Modeling suggests that trips with an origin/destination east of the village represent only about a quarter of the traffic on the busiest segment of Route 5, but this equates to a higher proportion of the traffic east of Route 257.

Increasing the capacity of Route 290 to attract through trips from Route 5 was suggested early-on in this study effort, and the potential impacts were analyzed and described in Section 4.4. Travel times on the two routes are comparable now and Route 290 has available capacity. Model results show that a capacity increase on Route 290 does not noticeably reduce Route 5 volumes. This suggests that Route 5 is a more

"attractive" route regardless of the higher volumes because of nearby land uses. Additionally, the benefit-to-cost ratio of a Route 290 capacity expansion would be very low, and residents near Route 290 may oppose the project.

Encouraging the use of transit for commuter trips was also discussed as a way to reduce through traffic volumes. There are a number of challenges associated with transit ridership – especially in suburban locations and for potential "choice" riders (i.e. riders that do have access to their own vehicle and, therefore, are not transit-dependent). These challenges include:

- *Relatively low congestion in the region.* In regions with very significant congestion and high parking costs, there are clear incentives to transit use. In Central New York, the current levels of relatively low congestion and relatively low parking costs in the urban core do not encourage transit use by suburban commuters. In general, the transit mode split for suburban commuters in our region is extremely low (only about 1% of commuters outside of the City of Syracuse use public transportation), and, specific to this study area, the current ridership on the 62 line is also very low, as detailed in Section 3.6. A shift to transit that would meaningfully reduce vehicular traffic is unlikely (and there is a real possibility that any capacity created by a mode shift would be filled by "latent demand" during peak times).
- *Park-and-ride usage.* Potential transit riders from the Village of Fayetteville or points farther east still have to drive through the Village of Fayetteville to reach the existing Park-and-Ride lots at Fayetteville Towne Center or Wegmans – DeWitt, so moving commute trips to transit would not reduce traffic volumes in the village under the current route configuration. Creating a new park-and-ride location near the eastern edge of the village for express service to downtown and University Hill would create a situation with the potential to remove trips from the village core. However, this would likely reduce service to Manlius and the likelihood of attracting significant numbers of commuters is low. In general, transit is most attractive when riders can walk to a transit stop. Once commuters are in their cars, it is difficult to convince them to switch modes, especially in the absence of significant congestion.
- *Dispersed work locations.* Transit works best when a lot of people are all going from the same place to the same place. Although downtown and University Hill represent the largest concentrations of jobs in our region, there are still many workplaces scattered throughout the region and numerous suburb-to-suburb commuters. There are about 2,300 workers that live in the Village of Fayetteville, and they work in many locations throughout the region. Of the workers that reside in Fayetteville, 19 percent also work in Fayetteville, 4 percent work in the Village of Manlius, and 37 percent work in the City of Syracuse (at various locations). That leaves 40 percent that work at various other locations throughout the region.[3] This dispersion of workplaces is very difficult to serve by transit.

[3] U.S. Census Bureau, Census Transportation Planning Products (CTTP) data from the 2006-2010 American Community Survey.

## 5.3 Western portion of village (west of Salt Springs Road)

### 5.3.1 Delay at signalized intersections

Analysis shows that the Route 5 intersections at Burdick Street and Highbridge Street currently operate at acceptable conditions (overall LOS B/C during both peak hours – see Table 2-3). However, there are some individual movements – particularly at the Route 5/Burdick Street intersection – that operate at LOS E/F.

In response to public comments in the past, the NYSDOT previously investigated the feasibility of signal phasing and/or lane configuration changes at Route 5/North Burdick Street. NYSDOT considered the addition of a westbound left-turn storage lane at this location, but found that trucks (turning left from North Burdick Street, southbound, onto Route 5) drive over the painted median. Thus, a new stop bar with a deep setback would be required to accommodate these truck movements if a left-turn storage lane was added, resulting in a relatively short left-turn storage lane (only about 50 feet, or about two car-lengths). Also, the limited existing pavement width would mean an additional lane would be narrower than the required minimum. A turn lane would also require the installation of new detection loops, which would add to the complexity and cost of the modification. The NYSDOT reviewed accidents over a six-year period and found no pattern of left-turn or rear-end accidents that could suggest the need for a left-turn lane here. For all of these reasons, the addition of a westbound left-turn storage lane at Route 5/Burdick Street was determined to be infeasible.

### 5.3.2 Capacity of Route 5 between Highbridge Street and Salt Springs Road

The highest volume of traffic on Route 5 is between Burdick Street and Highbridge Street, which currently has two travel lanes in each direction. However, the highest volume-to-capacity ratio is between Brooklea Drive and Center Street, where Route 5 narrows to only one lane in each direction. SMTC's travel time data showed congestion (based on Travel Time Index) between Burdick Street and Salt Springs Road, which includes this "merge" section, but the congestion is very geographically-limited, with the segment of Route 5 just east of Salt Springs Road/Route 257 showing no congestion based on our data collection. A substantial portion of the eastbound traffic splits-off to Salt Springs Road, and the volume on Route 5 decreases significantly at that point.

Members of the public have previously suggested restriping Route 5 eastbound between Brooklea Drive and Salt Springs Road with two eastbound travel lanes. This was identified as a potential option in the NYSDOT's 2009 project Route 5/Route 257 intersection. However, further investigation by the NYSDOT in 2013 determined that the current pavement width from the centerline of the road to the curb is not sufficient to accommodate two eastbound travel lanes.

This idea was revisited with NYSDOT again as part of the current study. NYSDOT confirmed that adding a second eastbound travel lane would require repaving the entire segment of road in order to change the location of the crown (which is currently at the centerline); this would add substantially to the cost of any changes here. Since no accident pattern has been identified, the project would not be eligible for Federal funds related to safety projects, and other fund sources would likely be very difficult to obtain given competing regional priorities. There are also some existing benefits to the current configuration. The existing cross-section allows traffic to maneuver around a vehicle waiting to make a left turn; under a

three-lane section, left-turns may cause new queuing and delays. Changing this to a three-lane cross-section could introduce new safety and operational concerns with pedestrians that would have to cross more lanes of traffic and "weaving" vehicles trying to position themselves in the correct lane. On-street parking is currently allowed on both sides of Route 5 (with the exception of a restriction from 4:00 to 6:00 p.m.). On-street parking would be prohibited if the cross-section changed to three lanes.

### 5.3.3 Driveways on Route 5 in lower business district

Numerous driveways along Route 5 serve individual homes or businesses. The resulting turning movements, even at very low-volumes, can cause queuing and general "friction" along the roadway, decreasing its actual capacity. The Village's Comprehensive Plan identifies the need for access management for existing developments and future developments, and presents concepts for implementing good access management. Figure 5-1, below, shows the concept for the lower business district as presented in the Comprehensive Plan. Achieving this level of access control on Route 5 will involve working with individual property owners and developers over time; the Village should continue to pursue this to the extent feasible.

**Figure 5-1: Lower Business District Concept Plan, from Village of Fayetteville Comprehensive Plan (2014 Update)**

## 5.4 Route 5/Route 257/Salt Springs Road intersections

### 5.4.1 Signalized intersection operations

Overall, the Route 5/Route 257 and Route 257/Salt Springs Road intersections currently operate at LOS C/D during the peak hours, which is an acceptable level of service. However, some individual turning movements experience higher delay and undesirable LOS.

This is a complex configuration, with two traffic signals operating on a single controller. The northbound approach of Route 257 at Route 5 receives a green indication twice within one cycle of the signal in order to clear vehicles out of the short segment of Route 257 between Salt Springs Road and Route 5. This may contribute to the perception that vehicles on Route 5 must wait through multiple cycles of the signal before receiving the green light. However, the travel time study data collected by SMTC staff showed that fewer than 10 percent of trips westbound on Route 5 in the morning waited through more than one cycle of the signal. The NYSDOT has reviewed and optimized the timings here multiple times in the recent past. These intersections operate under saturated conditions during peak hours, so any signal timing changes would simply move delays from one approach to another without any net reduction in delay. It does not appear that further signal timing modifications will significantly alleviate delay at this intersection.

Widening the approaches to these intersections has also been suggested. Widening of multiple approaches at these intersections was proposed in the 1996 study, although this option ranked low in the conclusions at that time. Various options for widening these approaches, as well as options for constructing a roundabout, were considered by NYSDOT in the 2009 PSR for the Route 5/Route 257 intersection and were eliminated due to property impacts and the potential to negatively impact the village character. The Village's own Comprehensive Plan (Appendix 6 – Transportation) acknowledges this concern, stating that "widening of major roadways to accommodate the demands of commuter traffic is seen as a threat to Fayetteville's community character."

### 5.4.2 Potential for roundabouts

Reconfiguration as a roundabout was once again considered as part of the current study. The NYSDOT Main Office roundabout group reviewed the intersections and provided two possible concepts: a "circulator" that encompasses all three intersections into a single, elongated roundabout; and a second option with mini-roundabouts at Route 5/Route 257 and Route 257/Salt Springs Road. Figures 5-2 and 5-3 show very preliminary sketches for these two concepts. Initial operational analysis suggests that both options could be functional, though at this point neither are recommended. Some caveats and cautions are noted regarding these concepts:

- The roundabout concepts have not been fully evaluated for operational and/or safety issues, and there are some initial concerns with operation of several merge points.
- Both options present unconventional designs that will result in a "learning curve" for users.
- These are likely to have significant right-of-way impacts. Additional space would be necessary for snow storage and sidewalks, outside of the lines shown.

Additional lanes at these intersections or conversion to a roundabout(s) would require a full reconstruction project. This would be a large project for the region, and would have to compete with other regional needs for capital funding.

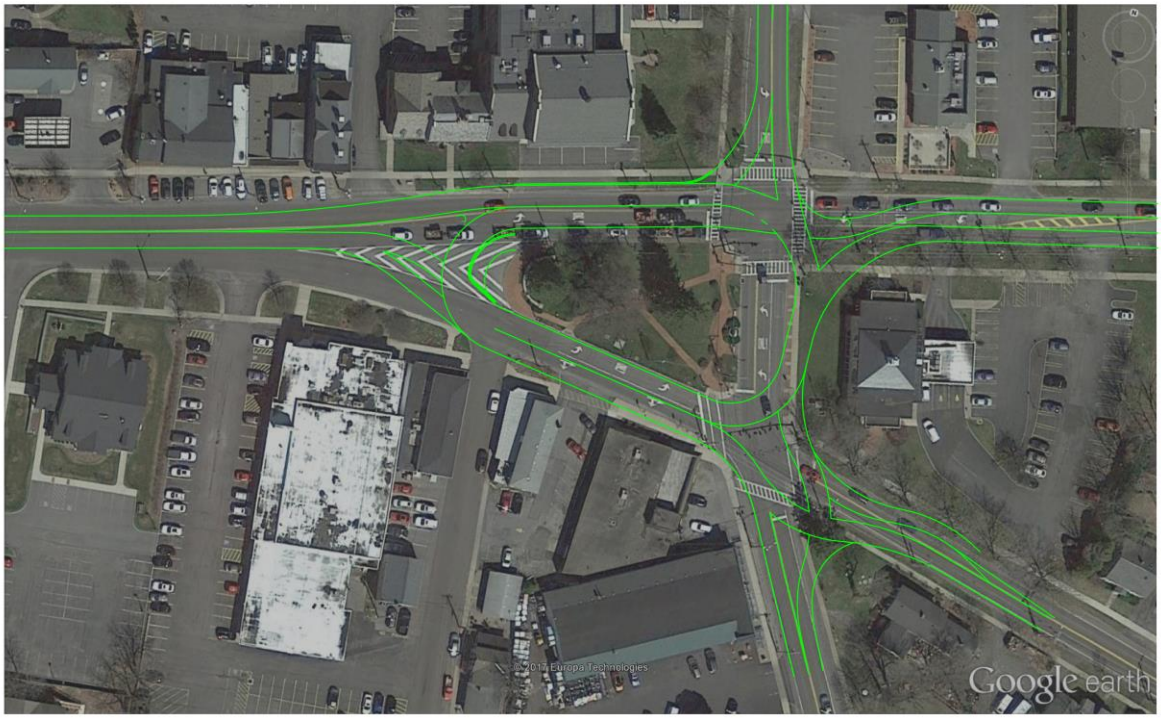


**Figure 5-2: Preliminary concept for "circulator" encompassing Route 5/Route 257, Route 257/Salt Springs Road, and Route 5/Salt Springs Road intersectionsz**
*Source: NYSDOT*

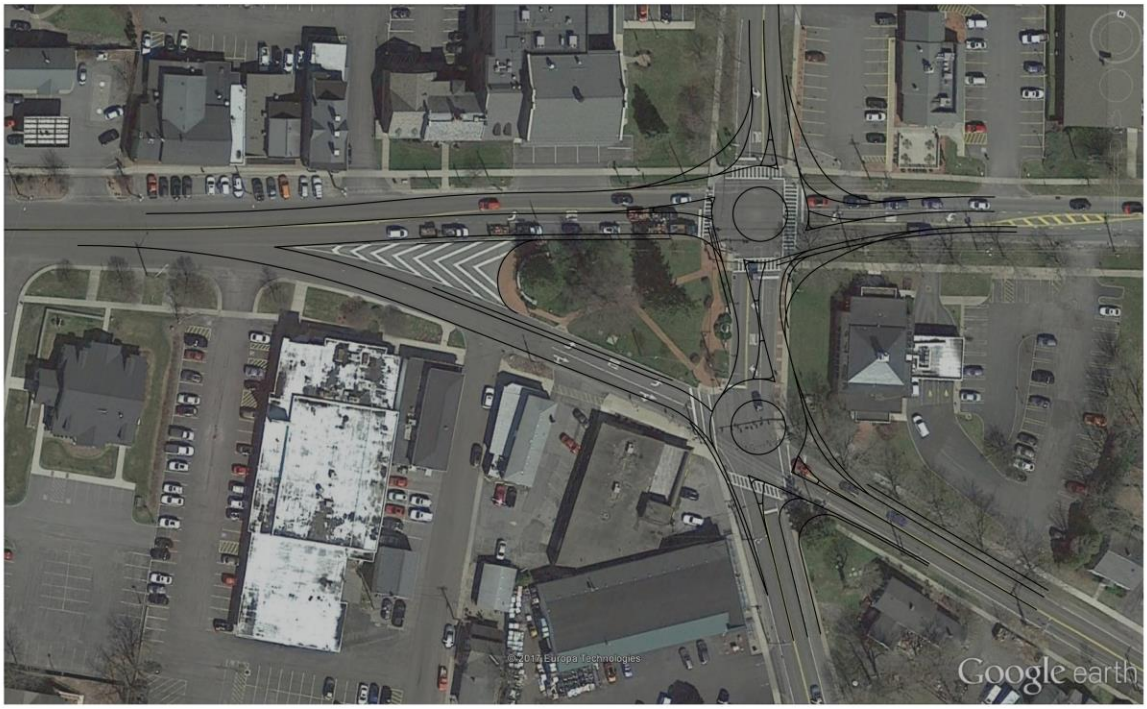


**Figure 5-3: Preliminary concept for mini-roundabouts at Route 5/Route 257 and Route 257/Salt Springs Road**
*Source: NYSDOT*

### 5.4.3 Other changes

Other suggestions made during the course of this study for streamlining traffic flow in the area around these intersections included:

- *Change existing on-street parking from perpendicular (i.e. nose-in) to parallel.* Vehicles backing out of existing perpendicular spaces on Route 5 could block traffic and add to congestion in this area. Parallel or back-in, angled parking is generally preferred for on-street parking.
- *Restrict Spring Street to right-in/right-out only movements at Salt Springs Road.* There was a question about whether left-turns from Spring Street onto Route 5 (which require crossing eastbound traffic on Salt Springs Road) present a safety concern. SMTC reviewed accident data within NYSDOT's Accident Location Identification System (ALIS) in the vicinity of Spring Street/Salt Springs Road for a ten-year period (September 1, 2008 – August 31, 2017) and found only one accident that involved a vehicle crossing over the painted median between Route 5 and Salt Springs Road. This initial review does not suggest that left turns from Spring Street are contributing to an accident concern here; however, given the configuration of the roads in this area, restricting left turns from Spring Street would support good access management.
- *Restripe Salt Springs Road eastbound approach to Route 257 ("Salt Springs spur") as a shared left-turn/through lane and a right-turn lane* (from the current left-turn only and shared through/right-turn configuration). This was not analyzed in detailed, but it is noted that the left turn volume here is very low. However, the left-most lane on the "spur" does not align with the receiving lane on Salt Springs Road east of Route 257, so there may be concerns about redesignating this lane for through movements. This would need to be evaluated in more detail.

## 5.5 Eastern portion of village (east of Salt Springs Road)

### 5.5.1 Numerous driveways and side streets along Route 5

Similar to the issue in the lower business district area, numerous driveways on Route 5 can cause queuing and "friction" along the roadway east of Route 257.

The SMTC met with the NYSDOT to discuss the appropriateness of a two-way left-turn lane (TWLTL) along Route 5 from the Fayetteville Square driveway to a point east of the former OBG Tech site. The NYSDOT suggested that the SMTC review accident data for this portion of the roadway to determine if rear-end, head-on, or left-turn collisions were common. The SMTC reviewed these types of collisions during a ten-year period (September 1, 2008 to August 31, 2017) and found that rear-end collisions were common along this section of roadway (17 out of 40 multiple-vehicle collisions). Accident data are summarized in Table 5-1.

Additionally, the STMC found that more than 20 driveways exist within a half mile east of the Route 257 intersection, which is more than twice the density suggested for considering a TWLTL, according to the NYSDOT's Highway Design Manual. A TWLTL would extend 1,300-feet or longer if it started near the left-turn bay at Route 257 and extended to east of the former OBG Tech site. The potential length of the TWLTL far exceeds the minimum length recommendation of 260 feet. The posted speed limit is 30 mph in the village and is 40 mph in the town, which both fall below the recommended maximum speed limit

of 45 mph for installation of a TWLTL. Therefore, several criteria indicate that it would be appropriate to consider a TWLTL for this segment of Route 5.

However, the existing width of the road segment presents a challenge to installing a TWLTL. The roadway is classified as an urban arterial; therefore, the preferred minimum width for travel lanes in 12 feet with at least an 11-foot wide TWLTL (i.e., at least 35-foot wide road, exclusive of shoulders). Route 5 within this segment is curbed and ranges from 33-feet wide to 39-feet wide. Widening would likely be necessary to accommodate a TWLTL, which is a major capital expenditure. Other factors to consider with TWLTLs is that they do not provide a safe refuge for pedestrians, can create problems between closely spaced access points, and can encourage strip development with closely spaced access points.

**Table 5-1: Summary of collisions on Route 5 between Fayetteville Square driveway and Briar Brook Run, September 1, 2008 – August 31, 2017**

| | | Fayetteville Square to Huntleigh | Huntleigh to Briar Brook | Total |
|---|---|---|---|---|
| Multiple vehicle collisions | | 40 | 30 | 70 |
| | *Left-turn* | *1* | *1* | *2* |
| | *Rear-end* | *17* | *21* | *38* |
| | *Head-on* | *0* | *0* | *0* |
| | *All other types* | *22* | *8* | *30* |
| Collision with | Bicyclist | 0 | 0 | 0 |
| | Pedestrian | 0 | 0 | 0 |
| | Fixed object | 6 | 5 | 11 |
| | Animal | 8 | 31 | 39 |
| | Other | 2 | 0 | 2 |
| **Total collisions** | | **56** | **66** | **122** |
| Segment length (mi.) | | 0.33 | 0.64 | 0.97 |
| **Accident rate (per MVMT)** | | **5.248** | **3.19** | **3.89** |
| Average rate for similar facilities* | | 3.5 | 3.5 | 3.5 |
| Number of driveways and side streets | | 20 | 15 | 35 |

*Source: NYSDOT ALIS*

**From NYSDOT's 2015-2016 Average Accident Rates for State Highways: Urban, undivided, 2-lane facility; mainline & juncture accidents; all types.*

*https://www.dot.ny.gov/divisions/operating/osss/highway-repository/Average%20Accidents%20Rates%20Table_2016.pdf*

In addition to a TWLTL within this segment of Route 5, the Village also needs to be cognizant of good access management practices as development occurs. Shared driveways and new connecting roadways can minimize turning movements to/from Route 5 and preserve capacity on Route 5. The Village's Comprehensive Plan already includes a concept for aligning access points at the former OBG Tech site and the properties at 540 and 550 East Genesee Street (dependent on future redevelopment on these parcels), and creating a new road connection between Route 5 and Salt Springs Road. This represents good access management and enhancement of the local road network.

**Figure 5-4: 540 & 500 East Genesee Street Concept Plan, from Village of Fayetteville Comprehensive Plan (2014 Update)**

### 5.5.2 Turning movements from side streets onto Route 5

Some members of the public expressed frustration with the delay they experience when trying to complete a turn (especially a left turn) onto Route 5 from the residential side streets and suggested that new traffic signals could address this concern. Quantifying this concern for all side streets in this segment would require collecting data on traffic volumes at these locations and the available gaps in traffic on Route 5; this was outside of the scope of the current study. However, SMTC and NYSDOT staff did review existing available data for the Route 5/Duguid Road intersection to determine if that location would be likely to meet the criteria for a traffic signal.

The Manual on Uniform Traffic Control Devices (MUTCD) identifies eight signal warrants that define the minimum conditions under which installing traffic control signals might be justified. The most-commonly used warrant is Warrant 1 – Eight-hour Vehicular Volume Warrant, which requires that both the major road and the minor approach meet a minimum traffic volume threshold for the same eight hours of a day. As shown in Table 5-2, the existing average hourly traffic volumes on Route 5 and Duguid Road do not satisfy the conditions of this warrant.

In addition, NYSDOT staff reviewed six years of accident data for this intersection, and found only eight accidents. None of these were right-angle type accidents, which a signal could help mitigate. It was determined that the location would not meet the warrants for a three-color signal based on the accident history and the low traffic volumes.

**Table 5-2: 8-hour volume warrant analysis for three-color signal, Route 5 and Duguid Road**

| Hour start | Major road (Route 5) volume, 2-way total | Minor approach (Duguid Rd northbound) volume | Both roadways meet threshold? *Condition A – Minimum Vehicular Volume* 350 vph major 105 vph minor | Both roadways meet threshold? *Condition B – Interruption of Continuous Traffic* 525 vph major 53 vph minor |
|---|---|---|---|---|
| 7:00 | 627 | 61 | No | **Yes** |
| 8:00 | 579 | 36 | No | No |
| 9:00 | 531 | 38 | No | No |
| 10:00 | 565 | 34 | No | No |
| 11:00 | 627 | 35 | No | No |
| 12:00 | 611 | 41 | No | No |
| 13:00 | 623 | 43 | No | No |
| 14:00 | 655 | 44 | No | No |
| 15:00 | 778 | 75 | No | **Yes** |
| 16:00 | 838 | 74 | No | **Yes** |
| 17:00 | 860 | 84 | No | **Yes** |
| 18:00 | 648 | 67 | No | **Yes** |
| 19:00 | 473 | 42 | No | No |
| | | **Meets 8-hour warrant?** | **No** | **No** |

**Sources:** Manual of Uniform Traffic Control Devices (MUTCD) 2009 Edition, Part 4 – Highway Traffic Signals, Section 4C.02 Warrant 1, Eight-hour Vehicular Volume. Traffic volumes from New York State Traffic Data Viewer**:** Route 5 Traffic Count Hourly Report – Station 330178, begin date: 6/4/2014; Duguid Road Traffic Count Hourly Report – Station 331006, begin date 4/14/15.

**Note:** Per MUTCD guidance, the 70% volume thresholds were used because Route 5 at this location has a posted speed limit of 55 mph.

# 6 Summary and conclusions

## 6.1 Summary of significant findings

SMTC reviewed various types of existing data sources for the Village of Fayetteville including intersection turning movement counts, available AADT data, and hourly traffic count data to develop an understanding of current conditions and travel patterns within the village. The SMTC's travel demand model was also utilized to understand where trips through the village originate and where they end, and to determine the likely future impacts of anticipated development within the village. A travel time study comparing trips on Route 5 and Route 290 during peak conditions was also conducted as part of this analysis. Chapters 3 and 4 provide detailed analysis of these various data sources. Chapter 5 drew on the analysis of existing and future traffic conditions, as well as input from the public and the SAC, to identify transportation issues and opportunities throughout the village. These are summarized below.

- **Route 5 serves a lot of "local" trips, but there are significant challenges to creating new alternative routes for these trips.** The traffic flow in the village suggests the need for alternatives to Route 5 for "local" trips (to/from a destination within or adjacent to the village), but new local road connections do not appear feasible due to undesirable impacts to existing residential neighborhoods and construction challenges (especially crossing Limestone Creek).
  - Traffic volumes on Route 5 are significantly higher in the western portion of the village than in the eastern portion of the village. Volumes on Route 5 progressively decrease east of Highbridge Street, suggesting that many vehicles turn on/off Route 5 at the side streets and driveways east of Highbridge Street.
  - Travel demand model outputs show that the majority of the traffic traveling eastbound on the highest-volume section of Route 5 (between North Burdick Street and Highbridge Street) during the evening peak hour has a destination within the Village of Fayetteville or south of the village.
- **Route 290 currently presents a reasonable alternative to Route 5 for through trips – it is shorter and slightly faster. But it is clear that, in spite of these factors, people are choosing to travel on Route 5.** Traffic data suggest that this is because Route 5 has many destinations that are desirable, and it is likely that people "chain" trips to other destinations within their commute.
  - Route 5 and Route 290 offer comparable travel times, both averaging less than 20 minutes from Mycenae to the east side of the City of Syracuse.
  - Travel time index calculations, using travel time data collected by staff, and volume-to-capacity outputs from the SMTC's travel demand model both show very geographically confined areas of congestion that last for a short period of time.
  - Modeling suggests that trips with an origin/destination east of the village represent only about a quarter of the traffic on the busiest segment of Route 5, but this equates to a higher proportion of the traffic east of Route 257.
  - Route 5 is more than just a commuter route, with significant midday traffic volumes and both commuter, local, and commercial trips contributing to high volumes during the evening peak hour. Traffic volumes on Route 5 increase sharply after 7:00 a.m., climb fairly steadily throughout the day, and decline significantly after 6:00 p.m.

- **Transit is unlikely to reduce commuter volumes from and through Fayetteville** due to the relatively low congestion in the region, relatively cheap parking at destinations, and the dispersal of job sites throughout the region.
- **The current design of Route 5 west of Salt Springs Road offers flexibility, and revising the lane configuration would be a substantial capital project**. The current design of Route 5 between Brooklea Drive and Chapel Street (one wide lane in each direction) offers flexibility – on-street parking is allowed (with minimal restrictions) and vehicles are able to maneuver around other vehicles that are waiting to make a left turn. Changing this segment to a three-lane cross-section, with two eastbound travel lanes, would remove these advantages, could introduce a new safety concern, and would be a major project requiring reconstruction of the road.
- **Access management could help alleviate some congestion along Route 5.** The Village's current Comprehensive Plan includes concepts that support the principles of access management, including shared access and ideal driveway alignment. The village should continue to support these concepts to the extent feasible, dependent on future redevelopment plans.
- **The Route 5 – Route 257 – Salt Springs Road intersections present current challenges and no simple solutions.** Overall, the intersections of Route 5/Route 257 and Route 257/Salt Springs Road operate at acceptable levels, although some individual movements experience higher delay during peak hours. However, significant improvement to operations here would require widening of the roads or major reconstruction, which run counter to the goals of the Comprehensive Plan. Two initial roundabout concepts were developed as part of this study; both would require additional, more detailed analysis to be determined feasible.
- **A TWLTL east of Route 257 has merit, but also challenges.** Data suggest that a two-way left-turn lane on Route 5 between Fayetteville Square and Briar Brook Run would be appropriate and beneficial; however, the existing pavement is narrow in part of this segment and may present a construction challenge. More investigation is needed. This should be coordinated with the redevelopment of the former OBG Tech property.

### 6.2 Conclusion

The village's overarching objective in this study was to "identify methods to allow the Village of Fayetteville to continue to develop existing underutilized properties" by addressing existing and future transportation constraints. Traffic concerns in Fayetteville are based on two primary issues: high traffic volume and areas of constrained capacity. Addressing these issues requires that either traffic volumes are reduced or capacity is increased, or some combination of the two.

The review of previous studies shows that traffic congestion in the eastern portion of Onondaga County has been a concern for decades, with a number of large-area studies completed in the early- to mid-1990s. Yet analysis has shown potential solutions to be too resource-intensive and/or to have too many negative impacts, particularly in the context of the character of the Village of Fayetteville.

Our analysis shows that Route 5 has many purposes: it is a commuter route, a commercial corridor, and a "main street." Cumulatively, this results in Route 5 west of Route 257 being one of the highest volume roadways in the region, exclusive of the interstates and other limited-access highways. But, these traffic

streams cannot be neatly divided. Many commuters also take advantage of the numerous commercial destinations on or nearby Route 5, likely "chaining trips" from work to shopping to home. This complexity makes it hard to identify a single solution to the village's traffic-related concerns. It also offers convenience to many village residents, while creating some traffic frustrations during peak times.

High traffic volume can be a good thing if businesses can capture some of the through trips. Directing travelers to parking areas with clear signage and providing pedestrian connections enables them to "park once" and patronize multiple village businesses. The Village of Fayetteville has a unique character, and the current Comprehensive Plan recognizes that some potential traffic mitigation options may threaten that character. This study has taken a deeper look at some ideas that have surfaced in the community in the past, and the current and future issues have been documented in this report. The Village may decide to pursue some of the ideas that require more analysis, as documented in Chapter 5, working in partnership with road owners and village residents.

## Appendix A: Public meeting summary

**MEETING SUMMARY**

**Village of Fayetteville Route 5 Transportation and Land Use Analysis**
**Public meeting**
February 28, 2018
6:00 p.m.
Fayetteville Elementary School

**Attendance**

Twenty-one people attended, including five Study Advisory Committee (SAC) members. All but six people indicated they were village residents, and all but five people indicated 13066 as their ZIP code. Elected officials included: Mark Olson, Village of Fayetteville Mayor; Dennis Duggleby, Village Trustee; and Sara Bollinger, Town of Manlius Councilor.

**Presentation**

Meghan Vitale, SMTC Principal Transportation Planner, gave a presentation that included an overview of the SMTC, background information about the study, a summary of the SMTC's travel time data collection, historical and existing traffic volume information, and a review of "issues and opportunities" identified by the SMTC and the SAC.

**Question and Answer**

Following the presentation, Ms. Vitale asked if there were any questions about the information in the presentation. A synopsis of the questions and answers follows:

Q: Did you study the traffic cutting through the neighborhoods on Huntleigh Ave and Redfield Ave?
A: No, SMTC did not specifically examine traffic on these two streets. We did examine traffic counts on Route 5, which suggest that many trips come from or go to residential side-streets within the village.

Q: Did you study the people trying to get from the neighborhoods onto Route 5?
A: No, we did not do an analysis of the wait time to complete a turn onto Route 5 from the side streets.

Q: Parking is not necessary on Route 5 eastbound, it would be better to just stripe it as two lanes. This is an easy solution that just requires paint.
A: We appreciate the feedback regarding parking on Route 5. This is a State-owned facility, so the NYSDOT would make the determination, but we believe that input from the village would be a key factor in that determination. If the consensus of the village is that parking is not necessary, the village should communicate this to the State. It was also noted that there are some signs along Route 5 that indicate "No Standing 4-6 PM."

Q: Clarify the accident information for Route 5/Burdick Street and for Route 5 between Fayetteville Square and Huntleigh Drive. Why does one location meet the criteria for a turn lane, while the other does not?
A: These locations are not being compared to each other. In each case, staff looked for an accident pattern that would suggest a need for the particular treatment being considered. The segment of Route 5 from Fayetteville Square to Huntleigh was evaluated for a two-way left-turn lane, while the Route 5/Burdick intersection was evaluated for the addition of a westbound left-turn storage lane.

**Comments**

Participants were able to leave comments on large maps of the corridor, or to use a generic comment form. For those commenting on the maps, the corridor was divided into three segments, as shown below along with the comments.

West (Towne Center to Chapel Street)

- WB left turn lane on Route 5 at Burdick

Central (Chapel Street to Huntleigh Ave)

- Route 257/5 going west, 15-17 cars during green light. Increase in through truck traffic.
- Pull-in parking concerns (area in front of former Hullar's)
- Did NYSDOT evaluate an option with only one roundabout at 5/257?
- Dunkin Donuts – close driveway closest to 5/257
- Old/rusty street signs
- Create dedicated left turns and right turns on each approach at 5/257
- Check on parking regulations along the Salt Springs "spur"
- Change Spring Street to a right-out only onto Salt Springs
- Change Salt Springs approach to Route 257 to a shared left-turn/through lane and a right-turn-only lane.
- Salt Springs WB at Route 257 – Green light delay lefts
- Issue: lack of green arrow on Route 5 WB near Dunkin Donuts (i.e. WB approach at 5/257)
- There was a brief discussion about the concept of reducing the Salt Springs spur to a single travel lane (which would eliminate the left-turn lane on this approach) so that a parking lane could be delineated. Feedback was not in favor of this idea.
- Suggestion to look at the location of first stop for EB PM trips approaching Route 5/257 intersection (like what was done for the WB AM trips using the travel time study data).

East (Huntleigh Ave to Briar Brook)

- Suggestions to add a signal at Route 5/Cashin Drive
- Issue: "constant cut-throughs" on Redfield Drive
- Suggestion: connect subdivisions between Southfield and Oakwood
- Very difficult to make a left-turn from side streets (esp. Redfield) onto Route 5.

One comment form was returned, which stated: "Would <u>love</u> to see round-abouts @ Veteran's Park! I thought I was the only one to think of it. Would love to take out parking – Highbridge to 257."

**Evaluation**

One meeting evaluation form was returned, with positive ratings.

The meeting concluded at approximately 7:30 p.m.

**Additional public comments**

In response to media coverage of the public meeting, one additional public comment was received via email:

> I found your recent article regarding Fayetteville traffic in a recent Eagle Bulletin very "informative". My first thought when reading the article was "here we go again". That isn't a slam on the article or the person writing it. It's a good article. It's because this subject has been approached several times over the last 30 plus years. I can recollect many discussions regarding various traffic issues in this area. When Rt. 81 was first built it was discussed that an additional lane both south and north was needed for the huge growth that was going to come about north of the city of Syracuse. So we built an additional lane all the way to Central Square. That growth never really happened. Then when Rt. 690 was put in going west bound many people felt that they were ignored because for many they have to "jump through hoops" to get to 690 east bound to get into the city. Many still take West Genesee St. into the city which, needless to say, is slow in the morning and evening computes. There never was a connect to the north bound Rt. 81. Now we come to the traffic going east bound. Before Rt. 481 was built not too many people thought that the Fayetteville, Manlius, Jamesville area was going to grow like it has. In my mind 30 years or so ago they made another big mistake. If you look closely at where Rt. 690 and Rt. 481 come together you will see there are blocked off and on and off ramps. 30 plus years ago the county had easements and right-of-ways for the sole purpose of extending Rt. 690 to the other side of Fayetteville merging into Rt. 5 eastbound on the other side of Green Lakes State Park. There was also to be an on and off ramp at Burdick St. The previous County Executive allowed those easements and right-of-ways to expire. If I remember right someone at the county indicated that this decision was made because those did not do anything for the city of Syracuse. I could never figure that reasoning out. I'm not sure at that time whether Wegmans had anything to do with that decision. Now, here we are 30 plus years later and we are still trying to solve this traffic issue eastbound which is only getting worse.
>
> Your idea of using Rt. 290 to alleviate the traffic is very similar to the one I mentioned above it's just a little farther north than where the easements and right-of-ways were decades ago. For this to work in my mind there would have to be quite a bit of work done on Rt. 290 and maybe a better connection @ Rt. 481. Would there be something to Burdick St.? If not I don't think some people would use it. Your route ends at Rt. 5 around Green Lakes. The one I mentioned of some time ago ended on the other side of Green Lakes heading toward Chittenango. I hope someone this time gets it right. Thanks for listening. Good article, very informative!

## Appendix B: Route 5 and Route 290 Travel Time Study Memorandum

# Memorandum

**TO:** Village of Fayetteville Route 5 Transportation and Land Use Analysis Study Advisory Committee

**FROM:** Meghan Vitale, Principal Transportation Planner

Jason Deshaies, Senior Transportation Analyst

**DATE:** December 19, 2016

**RE:** Route 5 and Route 290 Travel Time Study

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This memorandum documents the methodology and findings of a travel time study conducted as part of the Route 5 Transportation and Land Use Analysis. The Syracuse Metropolitan Transportation Council (SMTC) is completing this analysis for the Village of Fayetteville as part of the 2016-2017 Unified Planning Work Program.

The village expressed interest in encouraging through traffic from the east to use the Route 290 corridor rather than Route 5 to reach I-481/I-690 and other points to the west. The travel time study was designed to quantify average travel time on these two east-west commuter routes, as well as to identify areas of recurring congestion during the peak commuter periods.

**Data Collection Methodology**

SMTC staff completed "floating car"-type travel time runs on each of the routes during morning and evening commuter periods with GPS units to record time and location. The eastern endpoint for the study was the intersection of Route 5 and Route 290 in Mycenae. The western endpoint for the study was a point on I-690 approximately 1,100 feet east of the Midler Avenue exit. (West of the Midler Avenue exit, these two trips to/from downtown or points farther west converge so travel time west of this point would be the same.) The two routes are shown on Figure 1. The total distance for each route is shown in Table 1 (note that the distances vary by direction, primarily due to the configuration of the Interstate ramps). The Route 290 travel route is about 1.4 miles shorter than the Route 5 travel route.

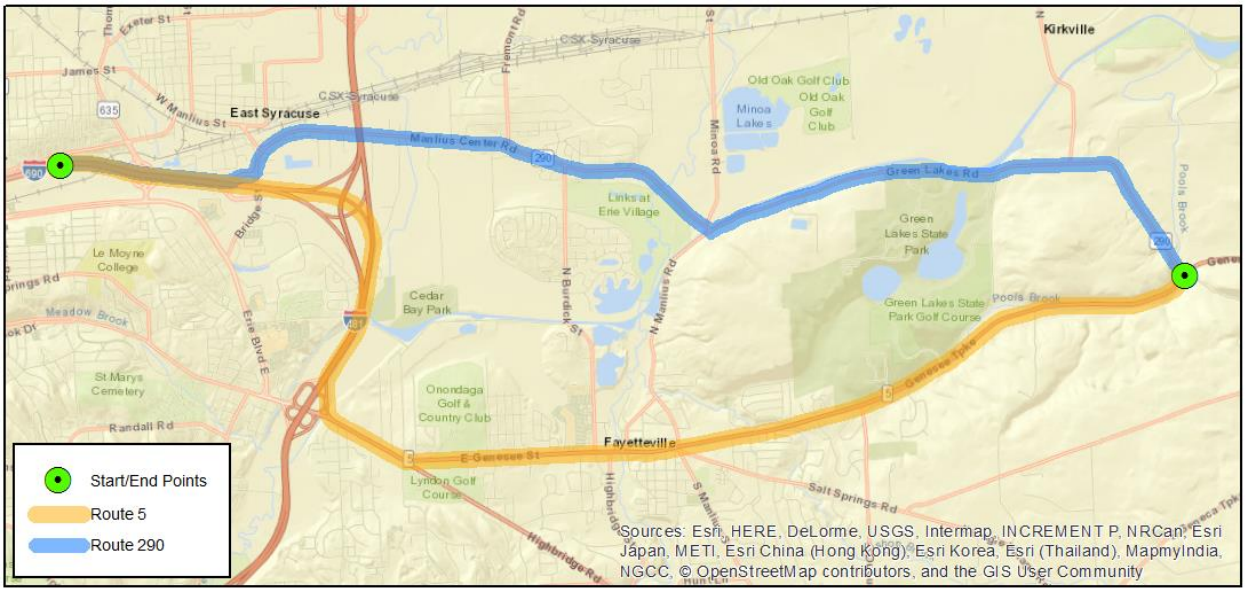


**Figure 1: Study routes**

**Table 1: Travel distance between Route 5/Route 290 (Mycenae) and Midler Avenue exit on I-690**

| Travel route | Direction | Distance (miles) |
|---|---|---|
| Route 5 – I-481 – I-690 | Westbound | 10.65 |
| | Eastbound | 10.93 |
| Route 290 – I-690 | Westbound | 9.28 |
| | Eastbound | 9.51 |

SMTC staff members were assigned to drive each route at specific start times throughout the peak periods. Start times were every 15 minutes from 7:00 a.m. until 8:45 a.m. (westbound trips) and from 4:00 p.m. to 5:45 p.m. (eastbound trips). Staff members were paired so that there was one driver starting each route at approximately the same time. Data collection took place over eight different days between September 29, 2016, and October 25, 2016. All data collection was completed on a Monday, Tuesday, or Wednesday. There were no construction projects or other incidents that impacted the data collection. Three separate runs were completed for each start time on each route, for a total of 24 travel time runs in the primary commuter direction during each peak period. In some cases, data were also recorded for the "return" trip (i.e. eastbound in the morning, westbound in the evening). Staff were instructed to generally try to drive at the prevailing speed of traffic to capture a "typical" travel time under peak period conditions. Ten different staff members participated in the data collection effort. Each staff member carried a GPS unit in their vehicle that recorded the time and location at one-second intervals throughout the trip.

**Data Analysis Methodology**

The resulting dataset was analyzed in ArcMap. The data collection effort resulted in over 150 individual trip datasets with each trip dataset including, on average, approximately 1,000 data points. Figure 2 shows, as an example, the points collected for a single travel time run on a portion of Route 5. Several models were built using Model Builder in ArcMap to streamline the data processing.

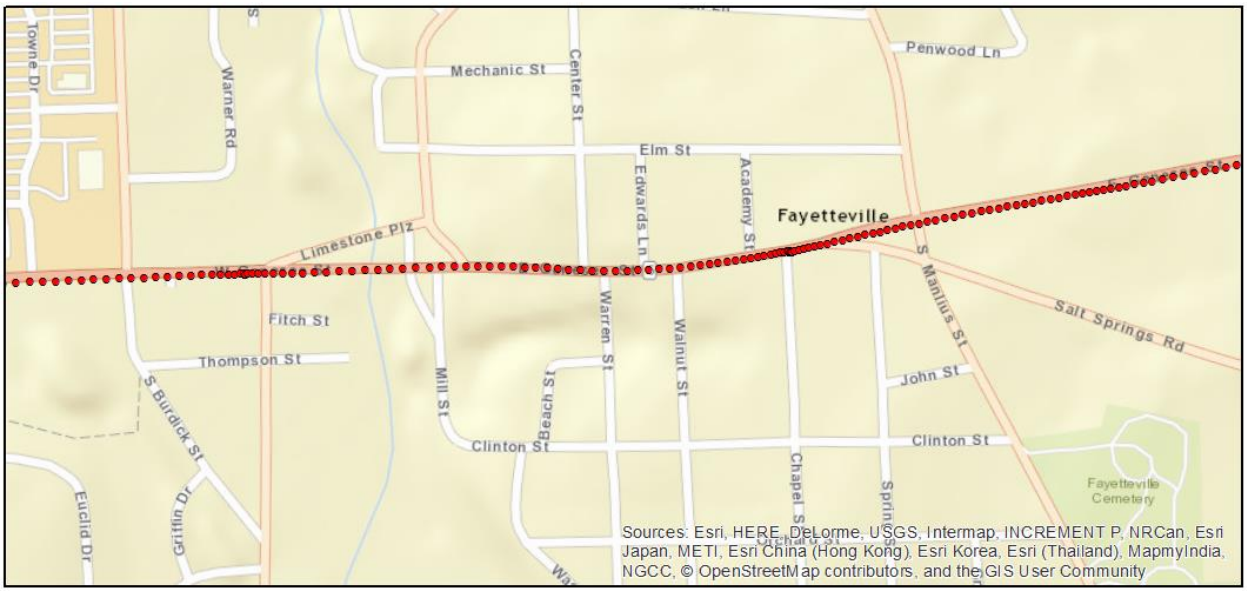


**Figure 2: Example of GPS points collected during the travel time runs, for a portion of Route 5**

The GPS data points were clipped to the start and end points of the routes, as shown in Figure 1, and the timestamps for those points were extracted and exported to a database. Staff used Excel to summarize the data by route, direction, and time period as shown in the results section below.

The next step was to analyze the data at a more local level by splitting the routes into several segments. The Route 290 route was split into 7 segments and the Route 5 route was split into 8 segments. These segments were identified by considering key intersections and changes in speed limits. Similar to the process mentioned above, timestamps were extracted at the start and end points for each identified segment and exported to a database. Again, Excel was used to summarize the data by route, direction, time period, and segment. Average peak period travel times were divided by the free flow travel times to calculate the Travel Time Index (TTI) for each segment. TTI is often used as a measure of congestion on a road segment. For this analysis, the morning eastbound (i.e. non-commuter direction) average travel time was used to represent the free flow travel time, based on the assumption that this represents an uncongested travel time. The results were grouped into categories and mapped, as shown in the results section below.

**Results**

Table 2 summarizes the travel time data for all completed runs, by direction and time period.

**Table 2: Summary of travel time data**

| Direction | Time Period | Measure | Travel time (mm:ss) | | |
|---|---|---|---|---|---|
| | | | Route 5 | Route 290 | Difference* |
| Westbound (Mycenae to Syracuse) | AM (peak) | **Average** | **17:28** | **13:43** | **3:45** |
| | | Low | 14:59 | 12:31 | 2:28 |
| | | High | 21:20 | 17:36 | 3:44 |
| | | St.Dev. | 1:39 | 1:13 | 0:26 |
| | PM (off-peak) | **Average** | **17:44** | **14:37** | **3:08** |
| | | Low | 15:46 | 12:36 | 3:10 |
| | | High | 20:38 | 16:07 | 4:31 |
| | | St.Dev. | 1:29 | 1:04 | 0:25 |
| Eastbound (Syracuse to Mycenae) | PM (peak) | **Average** | **19:20** | **18:11** | **1:09** |
| | | Low | 16:48 | 15:44 | 1:04 |
| | | High | 24:35 | 22:56 | 1:39 |
| | | St.Dev. | 1:42 | 1:54 | -0:12 |
| | AM (off-peak) | **Average** | **16:00** | **14:31** | **1:29** |
| | | Low | 14:28 | 13:14 | 1:14 |
| | | High | 17:38 | 16:08 | 1:30 |
| | | St.Dev. | 0:57 | 0:54 | 0:03 |

*Route 5 travel time minus Route 290 travel time

Figures 3 and 4 show the average travel time by start time of the runs over the course of each peak period (each point is an average of three different runs). Figure 3 is for the westbound trips during the morning peak period and Figure 4 is for the eastbound trips during the evening peak period (i.e. the primary commuter directions during each time period).

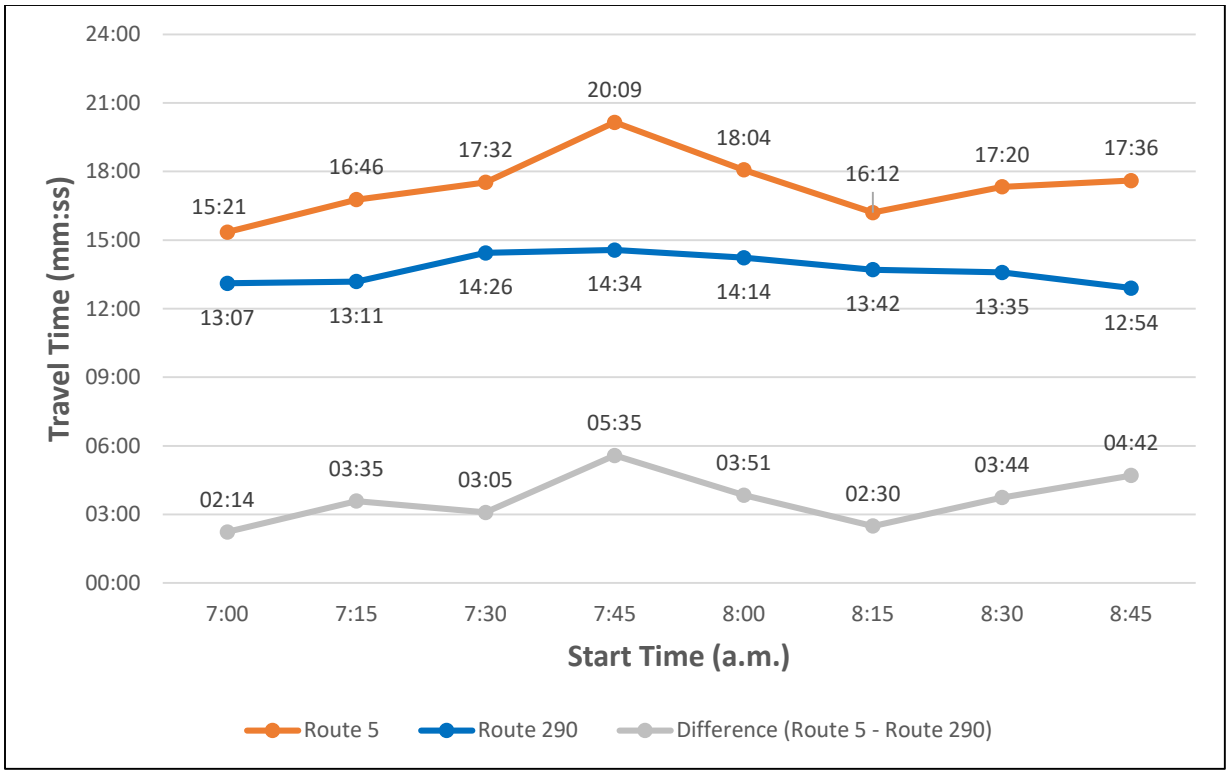


**Figure 3: Average travel time by start time, westbound trips during AM peak period**

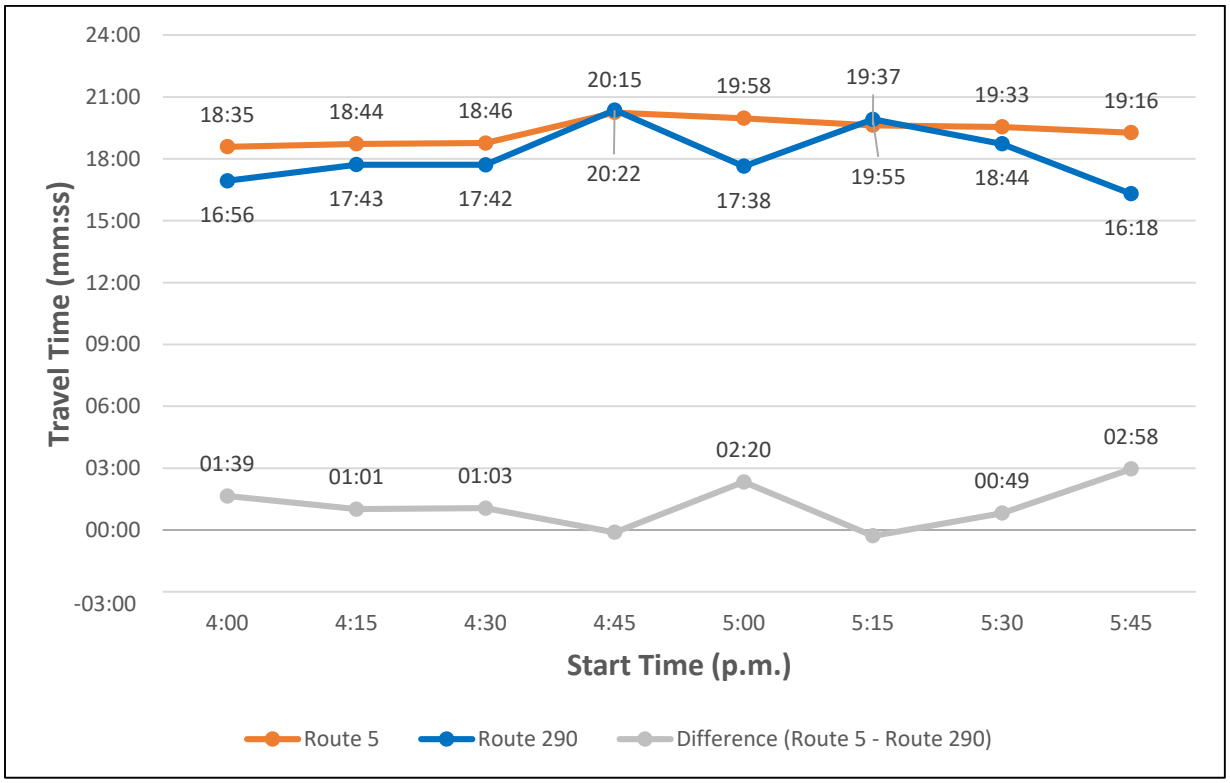


**Figure 4: Average travel time by start time, eastbound trips during PM peak period**

Figures 5 and 6 show the level of congestion by route segment[2] on Route 5 and Route 290 during the commuter peak periods, using the Travel Time Index (TTI) as the measure of congestion. The definitions of congestion levels are consistent with the SMTC's most recent Congestion Management Process, with a TTI less than 1.25 indicating that the segment is "not congested," a TTI from 1.25 to 1.50 indicating that a segment is "nearing congestion," and a TTI greater than 1.50 indicating that a segment is "congested." Note that a TTI of 1.50 indicates that the average travel time during the commuter peak period was found to be 50 percent higher than the free flow travel time (for example, a segment that can be traversed in 5 minutes during "free flow" conditions would take 7.5 minutes in the peak period if the TTI is 1.5).

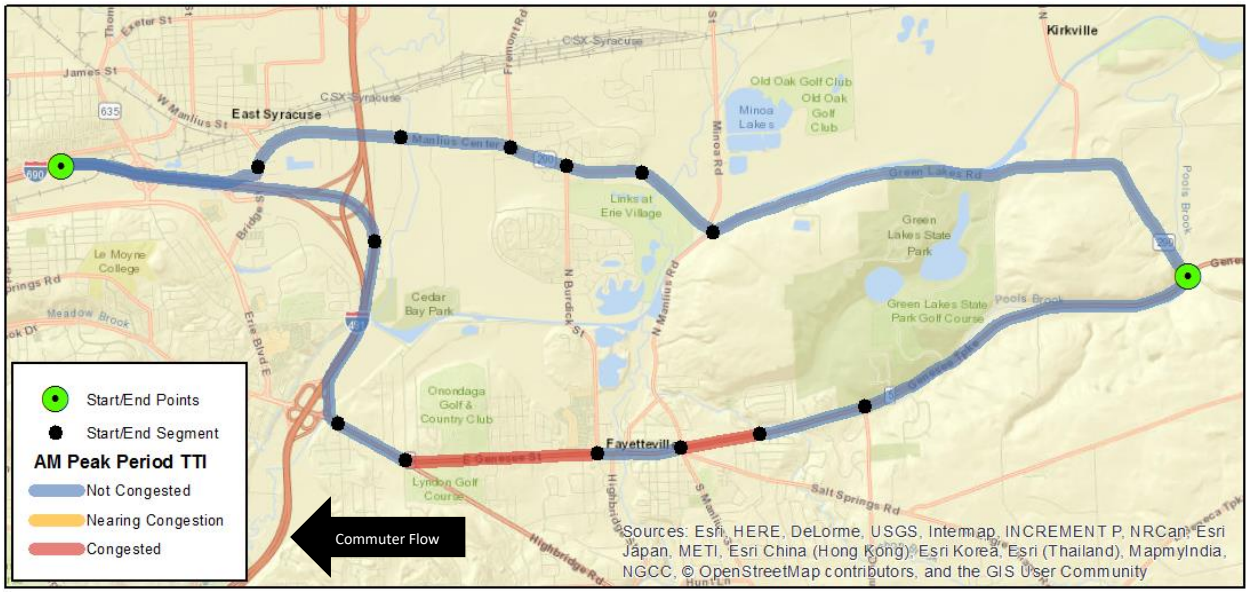


**Figure 5: Level of congestion during AM peak period for westbound trips, by route segment**

[2] Segment endpoints were defined as follows:

- Route 290: I-690 at Midler – Bridge St – Butternut Dr – Fremont Rd – N Burdick St – Manlius Center Rd – Clemons Rd – N Manlius St – Route 5 (Mycenae)
- Route 5: I-690 at Midler – I-481 – Rts 5 & 92 – Rt 92 (Highbridge Rd) – N Burdick St – N Manlius St – Southfield Dr – Duguid Rd – Rt 290 (Mycenae)

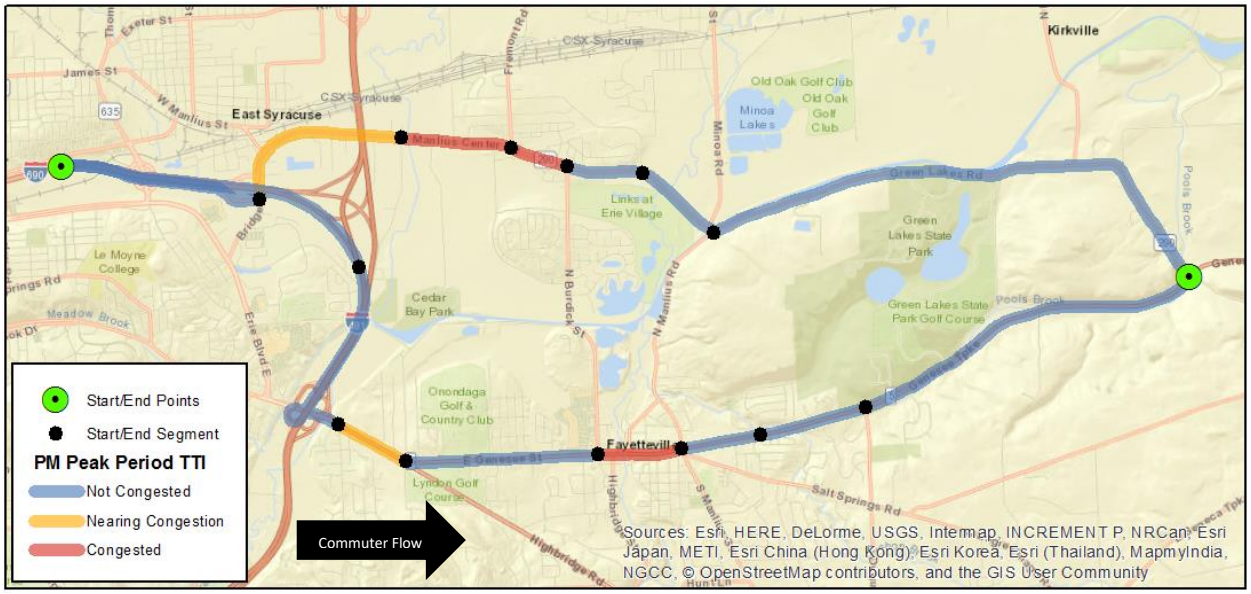


**Figure 6: Level of congestion during PM peak period for eastbound trips, by route segment**

The following points are noted based on the results shown above:

- Within each peak period, the overall average travel time for Route 5 was found to be greater than the overall average travel time for Route 290. However, the difference in average travel times was relatively small. The most significant difference was in the westbound direction during the morning peak period, with the average travel time on Route 5 nearly 4 minutes greater than the average travel time on Route 290.
- The average eastbound travel time was greater in the evening peak than in the morning peak for both routes. Both routes had an average eastbound travel time in the evening that was over three minutes longer than the same trip in the morning.
- For westbound trips, the evening travel times were slightly greater than the morning travel times on the same route, although the differences were both less than one minute. For westbound trips, the morning was considered the "peak" but the results show that travel times are comparable between the morning and evening commuter periods in the westbound direction.
- The greatest range of travel times over the peak period on a single route was observed on eastbound Route 5 during the evening, with a low of 16 minutes 48 seconds and a high of 24 minutes 35 seconds, or a difference of 7 minutes 47 seconds.
- The standard deviation for travel times on a single route (which can be thought of as a measure of the variability of the observed travel times) was greatest for the westbound trip in the morning on Route 5 and the eastbound trip in the evening on Route 290, at nearly two minutes each. The standard deviations observed across all runs in for each direction/time period ranged from a low of 54 seconds to a high of 1 minute 54 seconds, suggesting that both routes offer relatively consistent travel times during each peak period.
- During the morning peak period in the westbound direction, trips that started in Mycenae at 7:45 a.m. had the highest average travel time on both routes. During the evening peak period in the

eastbound direction, trips that started at Midler Avenue at 4:45 p.m. had the highest average travel time on both routes.

- In the westbound (commuter) direction during the morning peak period, only two segments on Route 5 were found to be congested based on the calculated TTI: Southfield Drive to North Manlius Street and North Burdick Street to Route 92/Highbridge Road. All remaining segments on the Route 5 travel path as well as the entire Route 290 travel path were found to be uncongested.
- More segments were found to be congested or nearing congestion for the eastbound (commuter) trips during the evening peak period. On Route 290, the segment from Bridge Street to Butternut Drive was "nearing congestion," while the segments from Butternut Drive to North Burdick Street were congested. On Route 5, the segment from the I-481 exit to Route 92/Highbridge Road was "nearing congestion" and the segment from North Burdick Street to North Manlius Street was congested, based on the calculated TTI.

**Conclusion**

SMTC staff conducted over 20 individual travel time runs in the primary commuter directions on both Route 5 and Route 290 during the morning and evening peak periods. Additional data were also collected for the reverse (i.e. non-commuter) direction. Data collection was completed by staff with GPS units in their vehicles over a variety of weekdays in September and October 2016.

All average travel times (both directions, both peak periods) were less than 20 minutes between Mycenae and Midler Avenue. In all cases, the overall average travel time (across all starting times) on Route 5 was greater than the average travel time on Route 290. The greatest difference in average travel times was observed for the westbound trips during the morning peak period with the average travel time on Route 5 just under four minutes greater than the average travel time on Route 290.

Although greater congestion was observed during the evening peak period, overall, most segments of both routes were found to be uncongested during the peak periods. Areas of congestion were relatively short.

Overall, both routes appear to offer fairly consistent travel times during the peak periods. The standard deviations observed across all runs in for each direction/time period ranged from a low of 54 seconds to a high of 1 minute 54 seconds. The greatest range of travel times over the peak period on a single route was observed on eastbound Route 5 during the evening, where the shortest travel time was just under eight minutes less than the longest travel time.

In conclusion, this travel time study suggests that the Route 5 option and the Route 290 option between Mycenae and Syracuse offer comparable travel times, both under 20 minutes on average.