Newburgh Area Transportation & Land Use Study

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Prepared for the Orange County Transportation Council

- Edward A. Diana, OCTC Chairman & County Executive
- David Church, AICP, Commissioner of Planning
- John Czamanske, AICP, Deputy Commissioner of Planning, OCTC Staff Director, Study Project Manager

OCTC Study Advisory Group

- Town of Cornwall
- Village of Cornwall-on-Hudson
- Village of Maybrook
- Town of Montgomery
- Village of Montgomery
- City of Newburgh
- Town of Newburgh
- Town of New Windsor
- Village of Walden
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Consultant Team

AKRF, Inc.
- Graham L. Trelstad, AICP, Project Manager
- Richard Klusek, AICP, Deputy Project Manager

Abrams-Cheewony Group of Gannett Fleming
- Walter Cherwony
- Joshua B. Diamond

Arch Street Communications, Inc.
- Cyd Averill, Public Outreach Lead
- Virginia Mold, Public Outreach Liaison

Cambridge Systematics, Inc.
- Brian ten Siethoff, AICP, Transportation Planning
- Shawn Pope, Transportation Simulation

Eng-Wong, Taub & Associates/VHB
- Martin Taub, PE, Transportation Studies Director
- Janet Jenkins, AICP, Transportation Planning Studies Manager
- Amir Rizavi, PE, Senior Traffic Analyst
- Noah Bernstein, AICP, Senior Transportation Planning Analyst

Lochner Engineering, P.C.
- Mark Pawlick, PE, Vice President
- Kyle Snyder, EIT, Project Engineer

Pattern for Progress
- Jonathan Drapkin
- Charlie Murphy

Regional Plan Association
- David M. Kooris, AICP, Land Use and Public Process Task Management
- Frank Hebbert, Build-out Analysis
- Paolo Ikezoe, Build-out Analysis and Workshop Materials
- Robert Lane, Urban Design and Public Process
- Andrew Turco, Zoning Analysis, GIS, and Workshop Materials
- Jeff Ferzoco, Final Report Graphic Design
- Osman Dadi, Final Report Graphic Design
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This document was prepared with a diverse audience of citizens, planning and transportation professionals, and local elected officials in mind. The document has been organized to allow readers of various levels of understanding and abilities to understand the basic planning concepts and principles that were employed as part of this study or to immediately focus on recommendations and methodologies used for various study components.

Executive Summary

This chapter provides a brief wholistic overview of the Newburgh Study.

Chapter 1: Introduction

This chapter identifies the overall purpose and approach for the Study.

Chapter 2: Study Context

Chapter 2 describes several of the overlapping local and regional contexts for the Study. It introduces local and national development, transportation, and socioeconomic trends that set the framework for the work being done as part of this Study. Chapter 2 also describes the rationale for conducting a study that simultaneously considers both transportation and land use. Using specific examples of how the Study Area evolved over time, Chapter 2 provides an overview of “The Big Picture” factors that led to embarking on the Study and the overall goal of the Study.

Chapter 3: Existing Conditions

Chapter 3 discusses the existing conditions found within the individual municipalities and the main corridors of the Study Area.

Chapter 4: Analysis & Assessment

Chapter 4 describes the land use build-out analysis and travel demand model and how an iterative approach was used to generate modeling results of relevance to both land use and transportation planning. Chapter 4 includes summaries of the quantitative analysis of both land use and transportation conditions.

Chapter 5: Implementation & Recommendations

Chapter 5 provides a detailed discussion of the transportation and land use recommendations developed by this Study. This information will be helpful to the OCTC and member communities in prioritizing funding for and planning for the long-term sustainability of the Newburgh area.
Executive Summary

A. Study Overview

The Newburgh Area Transportation and Land Use study was implemented by the Orange County Planning Department on behalf of the Orange County Transportation Council – a group comprising representatives of municipalities and representatives of transportation agencies – to identify key priorities for creating integrated solutions for transportation and land use within the northeastern portion of Orange County. The multi-modal plan for transportation, integrated with local and regional land use planning policies, was intended to identify strategies for enhancing mobility while preserving quality of life and the environment.

The primary elements of the Study were:

➔ A land use build-out to look at growth patterns in the future combined with a regional Travel Demand Model to assess future traffic flows and patterns;
➔ A series of corridor studies looking at land use and roadway conditions and identifying where strategic investments could be made to improve traffic flow;
➔ A transit study looking at short-term and longer-term options given existing needs and potential future needs;
➔ A bicycle/pedestrian study that sought new opportunities for improving connections for non-motorized trips.
➔ Illustrative examples of what a Smart Growth land use pattern would look like in the Study Area communities.

The Study Area comprised the City of Newburgh, Towns of Newburgh, Montgomery, New Windsor, and Cornwall, and the Villages of Walden, Montgomery, Maybrook, and Cornwall-on-Hudson. The Study Area also focused on key corridors: Route 17K, Route 32, Route 52, Route 207, Route 9W, and Route 300.

Today, the communities that comprise the Study Area are home to approximately 119,000 people in 46,400 housing units. Approximately 48,500 jobs are located within the Study Area. The area has seen 6.5% population growth over the past decade—slightly less than Orange County as a whole. Orange County Department of Planning projects that these communities will add approximately 13,820 housing units over the next 25 years and approximately 16,500 jobs over the same time period. If this occurred, it would result in 12% population growth and 34% job growth.

The Study Area’s location with respect to regional transportation facilities – primarily Interstate 84, Interstate 87, future Interstate 86 – and Stewart Airport suggest that it is poised to play a growing role in the movement of freight throughout the New York metropolitan region. But this strategic placement also poses potential challenges to these same communities. Over-development, or poorly located development, could adversely affect the community character and the environment – critical assets that attracted many people to settle in these communities in the first place. How these communities decide to grow, then, becomes a critical test in enhancing the economic vitality of the area while protecting the quality-of-life and environment for all to enjoy.

The overall context of the Study recognizes the potential for growth in this key portion of the County stemming from:
➔ Its strategic location along two major interstates (I-84 and I-87) and the upgraded interchange of those two roadways that makes this area a crossroads for freight travel (and jobs);
➔ The proximity of Stewart Airport and the potential for increased utilization of the airport for passenger and freight services as well as the attendant economic development that might serve the different needs of those user groups;
➔ Other regional transportation studies that are seeking to improve connections with the downstate and New York metropolitan regions through transit access and/or improvements to the Tappan Zee Bridge;
➔ The County’s own comprehensive planning efforts that focus on Priority Growth Areas, Open Space protection, water supply, and congestion management; and
➔ The comprehensive plans of each of the communities in the Study Area that each look to promote revitalization of existing centers and improvement of the quality-of-life for area residents.

The Study Team comprised a group of planners, engineers, and transportation experts who were guided by interaction with each of the Study Area municipalities and the general public through a series of focused interviews, roundtable discussions, and public design workshops and open houses. The Study was grounded in a review of numerous Comprehensive Plans and previous planning studies provided to the Study Team by the towns and villages. The Study Team also met with elected officials, local planners and engineers, and members of the interested public to understand key concerns of the community. Overall, several hundred individuals participated in meetings of one form or another – and many of those individuals participated at more than one meeting. There were nearly 500 people on the Study mailing list receiving updates and notifications for upcoming meetings. People were also able to obtain project information from the Study website: www.newburghareastudy.info.

At the core of the Study Team’s integrated transportation and land use planning process were the principles of Smart Growth, Sustainable Development, and Complete Streets – each of which seek to encourage multi-modal mobility and appropriate levels of investment in roadway, infrastructure, and land development based upon historic community patterns and desirable patterns of development that seek to minimize costs to the community and costs to the environment while enhancing the quality-of-life for the community.

The confluence of the national trends coupled with new State legislation and Orange County’s unique physical location within the metropolitan region discussed
above are the basis for establishing development and infrastructure recommendations that best position the Study Area communities for sustainable prosperity. This report summarizes a scenario based planning process looking at future land use and transportation alternatives for the Study Area. The multi-faceted planning process was intended to identify those investments that provide the greatest value to these communities now and into the future.

It should also be clearly stated that this report does not look at any one of these communities in isolation. All of the communities making up the Study Area share a common history and share common infrastructure. What affects one community affects all of these communities. Decisions made today by one community will have ripple effects on decisions made tomorrow in other communities. What this report presents is a regional approach to making strategic investments in stronger communities and a stronger region.

B. Key Study Assumptions

The fundamental building block of an alternatives analysis for a regional land use and transportation study is the build-out analysis. A build-out analysis demonstrates where growth may occur in the future. In this study, it was based on current zoning, land use regulations, ecological constraints, and development practices. The Study Team used population projections prepared by Orange County that indicate that the Study Area will likely see the need for another 13,820 new housing units and about 16,500 new jobs over the next 25 years.

The land use build-out analyses looked at three different patterns of development:

### Business As Usual

The “Business as Usual” analysis looked at growth according to how local communities are currently zoned – a pattern that tends to encourage a continuation of sprawl development and separation of residences from places of employment, shopping, and community. Using the 2035 population projections, this scenario would consume 96% of the Study Area’s residentially zoned land. In other words, these communities would be close to buildout in that relatively short span of time. Expected demand for commercially zoned land, however, is expected to make use of less than 16% of available land. Allocation of new jobs between the nine Study Area communities followed recent practice to locate jobs outside of Village centers and along major corridors easily accessed from I-87 or I-84.

Thus, the major corridors such as Route 17K, Route 300, and Route 207 would see large increases in employment while the Villages of Cornwall-on-Hudson, Montgomery, and Walden would see no increase in employment. The Village of Maybrook was estimated to see new employment under this scenario given the large amounts of land (e.g., the Yellow Freight and adjoining parcels) that could easily accommodate new jobs.
Smart Growth A

The “Smart Growth A” analysis is based on the stated vision of communities as expressed in comprehensive plans for new patterns of development that focus new residential and mixed-use development within centers or priority growth areas (mirroring the overall policy of Orange County’s Comprehensive Plan). The Smart Growth A Build-Out accommodated the 13,820 projected new dwelling units by allocating new units where comprehensive plan recommendations encourage new growth. However, it is notable that new residential units in the villages are in some cases less than the Business-as-Usual model. This suggests that the municipal comprehensive plans for those communities might not encourage residential development as much as they could or as much as zoning currently allows. While some additional residential development is accommodated within the City of Newburgh, much of the Study Area’s growth continues to be accommodated in the towns, outside of the existing centers. The same can be said for allocation of new jobs. Much of the growth in jobs in the Smart Growth A scenario is located outside of existing centers and along the corridors where growth has occurred more recently. Interestingly, the Smart Growth A scenario was not able to achieve the projected number of 16,500 jobs – the difference indicates that existing comprehensive plans might not contemplate as much commercial growth as market trends indicate might happen.

Smart Growth B

The final study, “Smart Growth B,” followed the same approach as Smart Growth A but sought opportunities to increase density and mix of uses within existing centers and limit reliance on “greenfield” development. Smart Growth B would take the communities’ comprehensive plans and fine tune them within the context of a regional integrated transportation and land use study. Under this scenario, the City of Newburgh is anticipated to reach its infill and redevelopment goals with neighborhood solidification, Broadway’s transition to a high-intensity mixed-use corridor, and the waterfront’s evolution into a strong mixed-use node. The village centers are demonstrated to evolve into strong mixed-use activity and population centers with new neighborhoods on their edges expanding their pedestrian-oriented cores. New hamlet centers are shown to be created at key locations that could be served by transit routes – specifically along Route 17K. Areas targeted for preservation in municipal comprehensive plans were assumed to be completely successful in preventing growth. Some areas targeted for growth in the municipal plans that were not near transit or existing centers were not projected to add significant population. Job growth in Smart Growth B was also directed more toward the City of Newburgh and village centers while still accommodating new commercial businesses within the towns.

It is interesting to note that the Smart Growth A scenario, following the current Comprehensive Plans and Zoning of the communities in the Study Area, accommodated only 4,500 dwelling units of the projected 13,820 new units within existing centers. The rest would have to be in areas outside of the centers on land that is now used for agriculture. The Smart Growth B scenario, which sought to enhance development within centers, was able to accommodate about 6,750 dwelling units in centers. Local stakeholders were given an opportunity to review results of the land use build-out scenarios and to provide input on how additional development in the Smart Growth B scenario could be accommodated. At the same time, stakeholders were asked to provide input on a range of different transportation improvement options – including options for transit and non-motorized (bicycle/pedestrian) options.

The analysis of regional traffic conditions and potential local improvements presented in this report is based on projected year 2035 traffic growth, which in turn was developed based on the build-out analyses discussed above. This input helped the Study Team to formulate a series of model runs using the Orange County travel demand model to predict future traffic volumes based on the 2035 projected population and traffic growth. Specifically, the Study Team evaluated if roadway improvements alone were considered in response to traffic congestion, could future conditions respond to: a) a combination of minor and moderate improvements at intersections that would primarily enhance operations, but not necessarily add substantial capacity; or b) require a more capital-intensive set of capacity improvements. The Study Team also considered whether there is a prospect that the level of traffic increase may not be able to be accommodated given current conditions and physical constraints. Although detailed intersection level of service analyses were not included as part of the scope of this study, the Study Team conducted several field reconnaissance efforts to develop possible approaches to resolving congestion at each location.
C. Summary of Key Lessons Learned

The land use build-out was used as one of the primary factors for evaluating potential investments in the Study Area’s roadways, transit systems, bicycle and pedestrian facilities, and land use patterns. It should be emphasized that implementation of only transportation improvement projects will not maximize long-term value. Any investment in roadway infrastructure without a coordinated modification of land use patterns or improvements to alternative modes of transportation will ensure that future traffic generated by new land uses will continue to result in congestion and other inefficiencies in the transportation network. Improvements in alternative modes of transportation, similarly, will not have long-term sustained benefit unless the land use pattern is in place to support that mode choice for multiple users.

Regional Traffic Growth

Based on areas of interest identified by OCTC, interviews with study participants, professional judgment and to best interpret outputs from the travel demand model, 18 traffic analysis locations were identified. Among other reasons for selection, congestion is known to occur or could occur at these locations given future land use patterns. At each of those locations, future traffic volumes were assessed and a volume/capacity ratio was calculated to assess the level of congestion anticipated in the future.

The following intersections were evaluated in greater detail:

1. Rte 17K and Rte 211/Union Street

2. Rte 17K and Rte 208 (Scotts Corner)

3. Rte 17K and Rte 747

4. Rte 17K and Rock Cut Road

5. Rte 17K and Rte 300

6. Rte 17K/Broadway and Rte 9W/Robinson Avenue

7. Rte 207 and Rte 747

8. Rte 207 and Breunig Road

9. Rte 207 and Rte 300

10. Rte 208 and Rte 52/Main Street

11. Rte 208 and Neelytown Road/I-84 Ramps

12. Rte 300 and Rte 52

13. Rte 300 and Rte 94 (Vails Gate)

14. Rte 300 and Rte 32

15. Rte 9W and Fostertown Road

16. Rte 9W and Rte 32

17. Rte 9W and Forge Hill Road

18. Rte 94 and Jackson Avenue

That analysis of future traffic volumes and future volume/capacity ratio shows that, of the 18 locations examined, some would be minimally affected or could accommodate added traffic via low-cost, readily-implementable traffic improvements such as lane striping, introduction of left turn lanes, etc. Other intersections could accommodate projected traffic growth via more moderate cost improvements such as converting shoulder areas to travel lanes, minor roadway widening without right-of-way (ROW) acquisition plus the low-cost measures cited above. Still others would be more substantially congested and would need more extensive roadway widening and lane additions and possible ROW acquisition – the intersection of Route 207 and Route 300 is a prime example of this. There are some locations where even substantial roadway improvements might not be sufficient to accommodate traffic – the intersection of Route 300 and Route 17K and the length of Route 300 from south of Route 17K to north of the Thruway on/off ramps is a prime example of this. This range of easy-to-improve locations to difficult-to-improve locations is not unusual, and can also be used to help guide land use development decisions going forward.

Minor Roadway Improvements

The following improvements were considered as a package of “minor roadway improvements” and modeled against the projected 2035 volumes from the Business-as-Usual land use scenario. It is important to emphasize that these are not necessarily improvements that OCTC is recommending at this time, but intersections where there are opportunities for improvements pending further evaluation of potential environmental impacts and community character impacts.

Intersection 1: NY 17K & Union Street/NY 211

- Addition of a northbound left turn lane by using the striped-out curb lane and removal of two curb parking spaces just south of the hatched-out area.
Intersection 2: NY 17K & NY 208

Future volume projections and analysis of v/c ratios at this intersection suggest that no improvements are necessary.

Intersection 3: NY 17K & NY 747

Future volume projections and analysis of v/c ratios at this intersection suggest that no improvements are necessary.

Intersection 4: NY 17K & Rock Cut Road

Addition of left turn lanes along the eastbound and westbound directions by converting the shoulders.

Addition of a travel lane along the southbound approach by converting the shoulder so that this approach operates with one left-turn lane and one right-turn lane.

Intersection 5: NY 17K & NY 300

Low- to moderate-cost improvements were not considered feasible at this location.

Intersection 6: NY 17K/Broadway & Robinson Avenue/Route 9W

Conversion of the angled parking along Broadway to parallel parking and the addition of one lane in each direction along Broadway.

Intersection 7: NY 207 & NY 747

Addition of a third southbound lane by converting the shoulders.

Addition of a westbound right-turn lane by converting the shoulder or the central hatched median.

Intersection 8: NY 207 & Breunig Road

Addition of an eastbound left-turn lane by converting the shoulders.

Intersection 9: NY 207 & NY 300

Widen the westbound approach to the intersection in order to provide a second westbound travel lane.

Intersection 10: NY 208/Main Street and NY 52

Removal of the shoulder area along the south leg of NY 208 in order to install a northbound left-turn lane.

Removal of the shoulder area along the east leg of Main Street/NY 52 in order to install a westbound left-turn lane.

Removal of curb parking along eastbound Main Street/NY 52 in order to install a right-turn lane.

Removal of curb parking along southbound NY 208 and striping the approach in order to install a left- or right-turn lane.

Intersection 11A and 11B: NY 208 & I-84 Ramps/Neelytown Road

Conversion of the shoulder area to provide a right-turn lane while restriping the through-right-turn lane as a through lane. Two receiving lanes would be provided in the northbound direction to accommodate this restriping.

Addition of a left-turn lane along the westbound I-84 exit ramp for vehicles turning onto NY 208.

Intersection 12: NY 300 & NY 52

Addition of eastbound and westbound left-turn lanes by converting the shoulders.

Reconfigure the westbound approach from one left-through and one right-turn lane into one left-turn lane and one through-right lane.

Intersection 13: NY 300/NY 94/NY 32 (Vails Gate)

This intersection would likely need to be redesigned requiring a more detailed study effort. It was decided by the study team that no improvements would be modeled here in the "Minor Improvements" package.

Intersection 14: NY 300 & NY 32

Low- to moderate-cost improvements were not considered feasible at this location. Any addition of lanes would require right-of-way acquisition.

Intersection 15: Route 9W & Fostertown Road

Low- to moderate-cost improvements were not considered feasible at this location. Any addition of lanes would require right-of-way acquisition. [It should be noted that at the urging of the County Planning staff, the study team performed an assessment of the signal timing in this location to determine if adjustments to the existing signal could improve congestion. The team found that signal timing adjustment would reduce congestion. NYSDOT Region 8 reviewed the analysis and agreed; the signal has been adjusted accordingly.]

Intersection 16: Route 9W & NY 32

Low- to moderate-cost improvements were not considered feasible at this location.

Intersection 17: Route 9W & Forge Hill Road

Low- to moderate-cost improvements were not considered feasible at this location.

Intersection 18: NY 94 & Jackson Avenue

Installation of a traffic signal and addition of a left-turn lane on the eastbound and westbound Route 94 approaches.

Addition of a through-right-turn lane on northbound Jackson Avenue.

Major Roadway Improvements

A set of “major roadway improvements” was reviewed that includes all of the “minor roadway improvements” identified above, along with the following, in order to help provide traffic capacity which may be “needed” in the future. While a number of stakeholders emphasized the need for improvements at the NY 207 & NY 300 intersection, there are no current plans to implement any solutions at this location and this, along with the even more
speculative improvements at NY 17K and NY 300, were considered primarily as part of a “what if” scenario.

Intersection 5: NY 17K & NY 300

→ While a more detailed design study might reveal the feasibility of an alternative configuration and knowing that this may not be at all desirable from community design, safety and aesthetic perspectives, nonetheless for ‘what if’ modeling purposes only, one additional lane on each approach was included.

Intersection 9: NY 207 & NY 300

→ Widen the existing bridge carrying the NYS Thruway over NY 207 to allow for two eastbound left-turn lanes, two eastbound through lanes, and two westbound travel lanes. (This improvement would be in addition to the widening of the westbound approach to provide a second westbound travel lane included in the “minor roadway improvements” package).

→ In addition, an additional lane in both the eastbound and westbound directions would be added to NY 207 between NY 300 and NY 747.

The travel demand model also identified a few locations where traffic growth could have an acute effect on roadway conditions and operations. One is the Route 207 corridor from Route 300 to west of Stewart Airport; it is clear that some significant level of roadway treatment will be needed, either with the addition of through travel lanes in each direction at some locations, the inclusion of left- and/or right-turn lanes at other locations, and a reconstruction of the bridge carrying the Thruway over Route 207 coupled with significant widening of Route 207. A second is the length of Route 300 approaching Route 17K from the south to as far north as Route 52. Segments of Route 300 may need to be widened, while other more “creative” treatments may be needed to deal with the issues at Route 300/Route 17K where widening itself may not be desirable or sufficient. Similar issues may be expected along Route 9W from the vicinity of Fostertown Road to south of Route 52. Detailed planning and engineering studies are warranted at these locations.

The Study Team evaluated the potential benefit of new roadway connections—links in the network that may not have been built as part of incremental subdivision or development of land to date, and which may be considered for the future. While natural features preclude the creation of a dense network of interconnections, there may be some opportunities to create strategic linkages to take pressure off existing points of congestion or congested corridors. The travel demand model did show that a parallel roadway east of Route 300 would serve to reduce congestion along Route 300, especially at the most congested intersections such as Route 52 and Route 17K. Additional study would be required to determine the feasibility of creating new roadway links such as this one. However, at a minimum, municipalities should be encouraged to retain existing roadways for through traffic and to identify opportunities to make new connections as part of the land subdivision process.

Chapters 4 and 5 of this report contain detailed summaries of the analyses conducted. The prevalent lesson learned from the analyses of regional land use and traffic growth is that even with significant levels of investment in new roadway infrastructure, traffic congestion will continue to be a problem into the future. Only with a balanced set of enhancements to regional land use patterns can long-term value from roadway investments be achieved.

Transit

While the Study Area is served by a variety of transit options creating links within and outside the Study Area, it was clear early on that several factors made it difficult for residents to make use of these services:

• Uncertainty of where the bus stopped or when it would run.
• Brand identity and visibility.
• The route of the buses relative to locations people needed to get to for work, shopping trips, or doctor visits.
• The time of day the bus ran.
• A land use pattern that scattered lower-density destinations over a broad area making it hard to link one location to the next using transit.

Because of these factors, many people ended up driving to their destinations. In downtown Newburgh, many people who don’t own cars had to rely on local taxi service as the easiest form of public transportation.

The Study Team conducted a detailed investigation of demographics of Study Area residents and generators of transit trips (job centers, shopping centers, and medical service providers) and conducted interviews with transit operators and transit users to come up with a proposed short-term solution for Newburgh local bus service – including the Newburgh-Beacon shuttle that operates between the Beacon train station, the Newburgh downtown, and Stewart Airport. From that investigation the Study Team developed recommendations regarding transit service improvements that are divided into short-term recommendations focused on improving fixed route service in the City of Newburgh and longer-term recommendations covering the entire Study Area.

Short-term recommendations for improving fixed route transit services in the City of Newburgh include the following:

→ Modifying the routes currently in operation to improve headways and more efficiently serve communities adjacent to downtown Newburgh;
→ Adding one new route to expand the geographic coverage of fixed route transit in an attempt to better serve parts of the Study Area north and south of the City of Newburgh that are major destinations for transit-dependent residents of the Study Area;
Area but currently are inaccessible or require a dial-a-bus, paratransit, or taxi trip;

→ Developing and implementing a marketing and branding initiative to improve visibility of the transit service and provide better information to existing and potential new users regarding routes and schedules; and

→ Producing, installing, and disseminating signage, bus graphics, shelters, maps, brochures, and other marketing materials to complement the marketing and branding initiative.

Included in this recommendation is a proposal that transforms the existing two-routes serving downtown Newburgh, the shopping areas on Route 300, and Vails Gate with buses that run every two hours into three routes that allow more frequent service along Broadway in downtown Newburgh and that better penetrate into the neighborhoods north and south of Broadway and extend to Newburgh’s waterfront and St. Luke’s Hospital in Cornwall. The new service would also have extended hours to better serve the wider range of trips that people are making.

These improvements to local bus service could be integrated with a proposal by the City of Newburgh to designate the triangular area between Broadway, Washington Terrace, and Lake Street as a potential “Mid-Broadway Transit Node” in its current draft Future Land Use Plan. The proposed route map is consistent with that concept with both the Northside and Southside routes serving that location. A secondary hub at Liberty Street could be created where the Northside and Southside routes also intersect with the Mid-Valley/Vails Gate route. That hub could be implemented through streetscape improvements and signage.

Orange County is purchasing six to eight new hybrid diesel-electric buses using Federal ARRA Stimulus funds that would be needed to serve these three routes and the shuttle (in addition to similar buses for other areas of the county). The County is also working to put in place Federal funding and a financial plan to support the operation of this expanded service. Orange County will also be working to make improvements to shelters and signs to make the new service more visible and accessible. The County’s Transit Orange initiative will help raise awareness of transit services throughout the County and increase the appeal and accessibility of local bus service.

The Study Team also looked at projected future demand for transit service with additional residents and economic activity in the Study Area. A potential longer-term plan could add two routes that would: 1) provide service to Woodbury Common from downtown Newburgh along Route 32; and 2) provide service along Route 17K to the villages in the western portion of the Study Area. The County is also planning other intra-county routes.

During the course of the Study, the Study Team discussed previous suggestions about bringing back a streetcar or light rail to Broadway that might run from the Newburgh waterfront to Stewart Airport. Many people were excited by this possibility as a way to enhance downtown redevelopment activities while recognizing the historic and essential role that Newburgh serves as an economic center for this area. While light-rail has been used elsewhere in the United States as a tool for downtown revitalization, it should be emphasized that implementing a light-rail solution is quite costly and that making improvements in bus service in the near term is a better way to invest scarce resources.

A US General Accounting Office report on mass transit options surveyed a number of different bus transit and light rail transit projects throughout the country. Based on those surveys, the average cost per mile of a light-rail system today would be between $30 million and $50 million per mile. A street-car system might cost between $5 million and $10 million per mile. Compare that to estimates for bus transit, which ranged depending on whether buses ran along arterials (less than $1 million per mile), in HOV lanes (about $10 million per mile), or in dedicated busways (about $15 million per mile). The order of magnitude difference between running buses on an existing right-of-way and creating new light-rail lines is evident. Where no new right-of-way or structures are involved, costs for implementing rubber-tire (bus) solutions are considerably less expensive than light-rail.

Investments in bus service, or other improvements to the streetscape in downtown Newburgh, would in no way preclude the community from implementing a light-rail solution in the future if the demand for transit and the availability of funding should be there.

In the longer term, the local fixed-route services and the Newburgh-Beacon Shuttle must be analyzed from a regional perspective, better integrating Newburgh local transit with other transit services such as Short Line Bus services operating between Middletown and Newburgh, Ulster County Area Transit (serving the 9W corridor and the Route 17K park-and-ride lot), and the dial-a-bus services operated by the Towns of Newburgh, Montgomery, and Cornwall. Local transit services must provide better access to employment opportunities inside the Study Area (e.g., around Stewart Airport) and outside the Study Area (e.g., West Point and other hubs of commercial

Caption: A train crosses the Moodna Viaduct on the Port Jervis Line.
activity in Orange County) as well as community amenities like St. Luke’s Hospital Cornwall Campus and frequent destinations for transit-dependent people living throughout the Study Area.

One way to meet the mobility needs of all Study Area residents, including aging seniors is to provide incentives for more people to move to transit-oriented, pedestrian-friendly developments. If development patterns associated with Smart Growth are pursued by one or more Towns, there may be opportunities for additional fixed route transit services connecting Newburgh to outlying villages and other areas that are developed to transit-supportive densities. Orange County and local municipalities can work with Short Line Bus and other existing service providers to determine how to best use available resources to initiate and operate these new services as demand materializes.

While many of the existing centers within the Study Area do have networks of sidewalks, the extent and condition of that sidewalk network varied extensively. There are seven NYSDOT designated or proposed bicycle routes. Only two have any formal signage; none have any pavement markings or other treatments to indicate that the road was used by both bicycles and cars. Further, many of the roads within the Study Area (including some of these bike routes) often times have traffic volumes, speeds, or other factors that were not conducive to safe bicycle use. As a consequence, non-motorized trips (e.g., walking or bicycle trips), while observed within the Study Area, were not prevalent and were conducted in less-than-optimal conditions for safety and convenience.

Orange County Planning mapped the existing route network and the Study Team assessed where users were most interested in improving these networks or making new connections. Important to the identification of these opportunities was an understanding of where existing and potential transit connections are, or could be located, and where centers of land use are or could be located.

The designation and implementation of an interconnected bicycle route system is desired. Official State bike routes have been designated in the County by the New York State Department of Transportation (NYSDOT); however, there are gaps in this network and some routes are inappropriate for bicycling in their current condition, which is why they are not designated. Therefore, additional new routes need to be identified, and additional design improvements made to existing routes to improve the safety, attractiveness, and ease of use of these routes. A recommended bicycle network was developed by identifying gaps in the existing network and filling these gaps with appropriate routes and connections. The goal was to achieve a network of bicycle routes to facilitate bicycling within, and between, each village and town in the Study Area.

One example of a fairly easy solution to implement would be to bypass the bike route between Walden, Montgomery, and Maybrook that currently runs along NY 208 and create a safer route along River Road (CR 29) south from Walden, onto NY 211 and Boyd Street in Montgomery, and then Beaver Dam Road and Clark Place into Walden. These roads are not only less trafficked, but also more scenic, and the new route could link each of the three villages together in a safe manner.

Based on an analysis of the Newburgh Study Area sidewalk and crosswalk inventory, each of the municipalities in the area are missing at least some pedestrian links within their networks.

One example that addresses pedestrian safety concerns within the Village of Cornwall-on-Hudson is modest improvements to the intersection of NY Route 218 and Academy Avenue. Here, addition of curb extensions, realigning one leg of the intersection through a new painted yellow line, and relocating crosswalks would calm traffic and improve sight-lines to make pedestrian crossings at this intersection safer.

Regional Land Use Patterns

Four overall strategies are presented for land use change that stabilize, revitalize, and strengthen existing neighborhoods and foster new neighborhoods with a high quality of life:

➔ Infill in the City and Village downtowns. Fostering mixed-use infill development on vacant or under-utilized sites in the city and village centers is paramount to creating nodes of walkable activity that would support a more robust transit system for the Study Area.

➔ Extension of village fabric with new contiguous neighborhoods. As new neighborhoods are built adjacent or contiguous to existing Village or City neighborhoods, they should be designed to act as extensions of that community rather than disconnected appendages with little relationship to their context. Too often, new subdivisions are located within walking distance of village centers, but feel

Caption: A brick-lined portion of Broadway in central Newburgh.
miles away because they are designed to be completely independent and distinct.

→ Creation of new hamlets. The commercial zoning along corridors runs the risk of changing those corridors into “placeless” strips of commercial development resulting in loss of community character and congestion. An alternative strategy would enable and encourage hamlet centers to develop at key junctions along these corridors. This land use pattern would lay the foundation for future enhanced transit service as each hamlet center

Collectively, these strategies will help the Study Area focus new growth to incrementally create more walkable and transit-oriented communities with a broad range of housing types that will meet the needs of the diverse population of the community now and into the future.

The Study Area communities have already begun the process of creating visions for the future. Each of the communities has recently undertaken a comprehensive planning process that has led to zoning amendments or investments in public facilities and community building. While direct investments in public facilities might not be possible during an economic downturn, building public support for municipal actions can lead to positive change when resources do become available.

The Study Team reviewed the comprehensive plans of each of the communities and held discussions with key elected officials, planners, and engineers to understand what direction the communities wanted to go in. From that review and those discussions, the Study Team also developed specific thoughts for each community. Those thoughts are presented in Chapter 5 of this report.

D. The Message

So what does the analysis tell us about how growth should be directed within the Study Area and how investments in transportation should be prioritized?

1) The analysis confirms the standard wisdom that we can’t build enough capacity in the roadways to solve all of our problems;

2) Strategic investments in transit and bicycle/pedestrian facilities need to be made to provide real alternatives to using automobiles; and

3) Land use patterns that support mixed-use development, shorter trips by non-motorized means, and transit must be made part of local comprehensive plans and must be feasible in local zoning codes.

The key conclusion of the Newburgh Area Transportation and Land Use Study is that, in order for land use and economic development to continue within the Study Area, strategic decisions about how to invest limited resources in transportation must be made and those decisions must be made in the context of local and regional decisions on land use.

Moving forward to implement Smart Growth will require substantial levels of support at all levels of government in order for it to happen in the right way:

1) The County will continue to work with local transit providers to implement the Short-Term plan and enhancements to the “Transit Orange” system.

2) The Communities should continue to evaluate their comprehensive plans to identify where zoning does not match the stated vision and then work to amend the zoning to be more consistent with the plans or even to find additional locations where Smart Growth can occur.

3) The OCTC should evaluate the schematic roadway improvements to see which deserve further study and which can be prioritized to move forward for funding.

4) The OCTC should also be encouraged to embrace new standards for “Complete Streets” to increase the safety and convenience of non-motorized trips within the Study Area.

5) The residents of the Study Area should continue to have a dialogue with elected officials on what Smart Growth means and how it can be implemented in their communities.
Figure 1-1: Primary Study Area
1. Introduction

A. The Newburgh Area Transportation & Land Use Study

Study Sponsors and Background

The Orange County Transportation Council (OCTC) is the designated Metropolitan Planning Organization (MPO) for Orange County, New York, and is responsible for fostering inter-municipal cooperation and coordinating planning activities among municipalities and government agencies to fulfill county-wide planning objectives, develop capital improvements, and supply public services. OCTC has three sub-regions: South-eastern Orange County, Mid-County or "western gateway," and the Newburgh Urban Area.

In 2008, using funding from the Federal Highway Administration and Federal Transit Administration through the New York State Department of Transportation and administered through its Unified Planning Work Program, OCTC initiated a comprehensive transportation and land use planning process for north-eastern Orange County. The study, known as the Newburgh Area Transportation & Land Use Study, was conducted on behalf of OCTC by the Orange County Planning Department (OCPD).

As a condition for receiving Federal transportation funding, the designated MPO must carry out certain transportation planning functions and must develop a transportation capital improvement program. The three main products of this work are the Unified Planning Work Program (annual), Long Range Transportation Plan (every four years), and the Transportation Improvement Program (every two years).

Purpose and Study Area

The process for this study included an overall assessment and multi-modal plan for transportation, integrated with local and regional land use planning policies, to enhance mobility while preserving quality of life and the environment. The primary Study Area is the City of Newburgh and the four surrounding Towns of Newburgh, New Windsor, Montgomery and Cornwall with their Villages of Walden, Montgomery, Maybrook, and Cornwall-on-Hudson (Figure 1-1). Included in this Study area are several key transportation corridors: New York State Routes 9W, 17K, 32, 52, 207, 208, 218, and 300. The study engaged in more detailed planning for certain corridors and nodes: Route 9W, Broadway/17K, and the Vails Gate area. A short-term transit improvement plan for the Newburgh area local transit service, a plan for the Route 218/Hudson Street corridor in the Village of Cornwall-on-Hudson, and a non-motorized transportation (bicycle/pedestrian) plan were also completed as part of the overall study process.

The Newburgh Area Transportation & Land Use Study (the Study) engaged residents, landowners, businesses, local officials and others in a forward-looking planning process that identified specific transportation infrastructure investments and land use planning policy recommendations. The Study was conducted within an overall context of anticipated continued residential and commercial growth within the Study Area, potential economic development activity generated by increased utilization of Stewart International Airport and lands directly surrounding Stewart, on-going study and implementation of regional transportation enhancements as well as global factors such as local responses to climate change and rising oil prices. The Study also sought to balance expectations for new infrastructure investments against anticipated limitations on funding capacity at the Federal, State, and local levels resulting from the recession economics starting in 2008.

The primary elements of the Study were:

➔ A land use build-out model to look at growth patterns in the future combined with a regional travel demand model to assess future traffic flows and patterns;

➔ A series of corridor studies and intersection analyses looking at land use and roadway conditions and identifying where strategic investments could be made to improve traffic flow;

➔ A transit study looking at short-term and longer-term options given existing needs and potential future needs;

Caption: The Village of Montgomery.
A bicycle/pedestrian study that sought new opportunities for improving connections for non-motorized trips.

Illustrative examples of what a Smart Growth land use pattern would look like in the Study Area communities.

A series of public outreach efforts including roundtable discussions and design workshops as well as a web-site containing study information to solicit input from a broad range of public stakeholders.

This Study was completed within the context of a number of other studies or improvements being conducted on mobility and development within Orange County including the NYS Thruway Authority’s completion of a direct connection between I-87 and I-84; MTA Metro-North’s West of Hudson Regional Transit Access Study (WHRTAS) evaluating potential rail connections to Stewart International Airport; the Port Authority of New York and New Jersey (PANYNJ) studies for Stewart International Airport; the ongoing Tappan Zee Bridge/I-287 Corridor environmental review; Orange County’s updates to its Master Plan, and the City of Newburgh’s waterfront redevelopment plans. While there is some degree of overlap and coordination among these studies, it should be noted that this Study was undertaken independently and that some differences in findings and recommendations may exist.

**B. Study Approach**

The Newburgh Area Study was conceived as a set of targeted studies of land use and transportation elements woven together by a broad public participation plan. The Study was managed by the Orange County Planning Department, which provides staff support to the OCTC. In addition to the OCPD, a Study Advisory Group was formed to help focus the effort on specific local planning projects and issues that may influence growth patterns and mobility in the region. Throughout the development of this study, the Study Advisory Group helped to ensure that specific local land use plans, laws, ordinances, issues and projects were appropriately considered. These key stakeholders were tasked with relaying information from the study to the community and encouraging constituent participation and feedback. The Study Advisory group comprised the following members:

- Orange County [County Executive/OCTC Chair, Planning Dept (project manager)]
- NYS Department of Transportation Region 8

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<th>Date</th>
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<td>06/14/2011</td>
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Table 1-1: Summary of Public Forums

*Caption: Traffic queues for a signal on NY Route 32 at Vails Gate.*
NYS Thruway Authority
MTA Metro-North Railroad
Port Authority of New York and New Jersey
City of Newburgh
Town of Newburgh
Town of New Windsor
Town of Cornwall
Town of Montgomery
Village of Cornwall-on-Hudson
Village of Walden
Village of Maybrook
Village of Montgomery

A team of transportation and land planning professionals was engaged by OCPD to carry out the study. This “Study Team” met with the OCPD throughout the study process to discuss project status and to discuss interim study findings. The Study Team also met with representatives of the transportation agencies and each of the Study Area municipalities. The purpose of these meetings was to develop an understanding and discuss land use and transportation issues that were most relevant and important at the local level.

Project Chronology and Tasks

The Study comprised a set of tasks that ran concurrently and in an iterative fashion. Output from one task was often used as input for another task allowing for adjustment of Study methods or workflow, as necessary. While certain tasks were more or less independent of other tasks, the overall objective of creating an integrated set of transportation and land use recommendations was met through constant feedback from each of the tasks and the collaborative approach to the Study employed by the Study Team.

Each task and the overall project chronology is described below.

Task 1:
Study Initiation – The purpose of Task 1 was to allow the Study Team to develop a firm understanding of the issues, opportunities, and constraints that would affect planning in the Study Area. This task involved meetings with OCPD, the study advisory group, representatives from each of the Study Area municipalities, the MTA, PANYNJ, and NYSDOT.

Task 2:
Detailed Work Plan & Public Involvement Plan – Using input received from Study Area stakeholders in Task 1, the Study Team developed a more detailed work plan and public involvement plan to guide project related studies, activities, and public outreach initiatives. This task was critical in establishing priorities for the Study and the overall scope and schedule of work and meetings.

Task 3:
Information Gathering, Data Collection, Synthesis – Task 3 began immediately upon initiation of the Study and continued throughout most of the overall study process. The Study Team continually collected and analyzed various pieces of information including prior planning studies, existing zoning and land use information, geographic information systems (GIS) data on environmental features within the Study Area, existing transportation models, information about planned development projects, traffic counts, roadway configurations, and traffic signal timings. Much of this material was provided directly by the stakeholder municipalities as part of the initial interviews and meetings.

Task 4:
Outreach, Interviews, Public Focus/Visioning Meetings – A critical component of the Study was the public participation and outreach efforts that took place throughout the duration of the Study and across several distinct tasks.

The public participation plan was implemented through a series of intercept surveys of transit riders, bicyclists, and pedestrians; meetings with local communities, including elected officials, and planning and engineering staff; facilitated “roundtable” discussions with key stakeholders within the community including residents, business owners, and representatives of educational and health care institutions; and community “workshops” where members of the general public could work with the Study Team to identify appropriate strategies for implementing regional solutions at the local level. These meetings took place at various times during the two year study process to allow the Study Team to develop analyses and findings that could be reviewed and collaboratively discussed and adjusted with members of the general public (see Table 1-1). The public was also able to provide the Study Team with local insights and first hand knowledge of existing conditions, issues, and opportunities.

A mailing list was generated to allow the Study Team to send hard-copy or electronic announcements relating to the Study progress or to invite participants to roundtables and workshops. Approximately 400 names were collected on the Study mailing list. A Study website (www.newburghstudyarea.info) was established to alert interested stakeholders and members of the public to upcoming events and to share project documents. Binders containing project documents were distributed to each of the communities within the Study Area and to area libraries. Outreach to the Spanish-speaking community was conducted for
meets and workshops held within the City of Newburgh or relating to transit service.

Task 5: Short-Term Transit Improvement Program – The need for improvements to the transit system serving the City of Newburgh and adjacent portions of the Town of Newburgh, Town of New Windsor, and Town of Cornwall was established by OCTC before the study began. As such, it became a priority item to be addressed within the framework of the overall Study, while a long-range plan was developed that built upon the overall findings of the land use and transportation investigations.

Task 6: Evaluate Corridor Conditions – The major roadways within the Study Area serve a variety of roles: access to jobs, access to shopping, access to medical facilities, and access to regional transportation networks (e.g., Stewart Airport, bus park-and-ride lots, and train stations). The land uses adjacent to those roadways, together with the roads themselves, form the overall corridors to be evaluated. Task 6 consisted of an inventory of physical features and operating conditions, corridor land uses, identification of TIP projects in the Study Area, speed runs to measure average travel times and prevailing travel speeds, review of available traffic counts, and conducting supplementary traffic counts as needed. Information collected within each corridor was used to inform the land use model conducted in Task 7 and the travel demand model conducted in Task 9.

Task 7: Development & Build-Out Analysis – The development and build-out analysis was the primary tool used to forecast the amount of development potential that could take place under different land use planning scenarios (See Chapter 4, “Analysis & Assessment” for a detailed discussion of the build-out analysis). The purpose of the build-out analysis was to visualize different patterns by which new residential and commercial growth could be accommodated within the Study Area communities and to guide discussion as to how that growth could be managed to better match community visions and the capacity of the transportation network. Thus, results of this analysis became a critical input into the transportation models prepared in subsequent tasks. The results of the build-out analysis also fed into transit planning and formed the basis of the land use recommendations discussed in Chapter 5.

Task 8: Hudson Street/Route 218 Corridor Study – The Village of Cornwall-on-Hudson had received previous grant funding from the Orange County Department of Planning to conduct investigations on improving traffic and pedestrian conditions along the Hudson Street/Route 218 corridor in the Town of Cornwall and Village of Cornwall-on-Hudson. That funding resulted in development of several concept plans for physical improvements at three key intersections. It was determined that the Study could take the results of the earlier work and provide additional analysis of peak hour traffic conditions and feasibility for implementing the schematic solutions. In essence, the Hudson Street/Route 218 Corridor Study could be used as a pilot project for some of the overall Study objectives. Concept plans for reconfiguration of several key intersections were prepared and discussed with the public at a collaborative workshop held in October 2010. The details of this study are provided in Appendix F of this report.

Task 9: Travel demand model development – A travel demand model based on the existing OCTC county-wide model was developed to establish a testing ground for different scenarios of land use development and transportation improvements. Originally, this model was intended to be developed for each of the land use scenarios. However, as the project progressed it was determined that this regional model would not be robust enough to capture the differences resulting from very focused land use changes and transportation network changes. As such, the efforts of Task 9 were refocused to test different levels of roadway investments against a single future land use condition. Chapter 4 provides a more detailed discussion of the evolution of this model and how the results were used to identify appropriate types of roadway improvements and land use responses.

The Study Team presented initial modeling results at public forums and to the Study Advisory Group as a way of making interim corrections to model assumptions and to generate input for future improvements and for the micro-simulation model developed as part of Task 10.

Task 10: Micro-Simulation – Task 10 involved preparation of more detailed traffic simulations that were focused on existing and future traffic conditions along the Route 300 corridor. This corridor was selected because of its centrality to the Study Area and because it exhibited most of the congestion and variety of land use within the Study Area. Traffic volumes generated by the travel demand model developed in Task 9 were used as input to the VISSIM model for the Route 300 corridor from Route 207 to Route 52. The micro-simulation model was used to visualize...
traffic conditions for the year 2035 with and without certain major investments in the transportation network. The animated movies that were generated with VISSIM were displayed at an OCTC meeting and at the final public workshop where stakeholders and the general public could raise questions on the implications of future land use and transportation network decisions.

Task 11:
Non-Motorized Transportation Plan – A non-motorized transportation plan was prepared to evaluate bicycle and pedestrian conditions throughout the Study Area and make specific recommendations for improvements along Study corridors. While these efforts largely took place independent of traffic modeling and land use planning (the Orange County travel demand model does not have a module that accounts for non-motorized trips), the input from the non-motorized planning process became an important part of the integrated transportation and land use recommendations for this Study and the overall efforts to implement complete streets within the Study Area.

Task 12:
Strategies to Foster Sustainable Transportation and Land Use – The overall results of each of the tasks allowed the Study Team to develop a set of strategies to foster sustainable transportation and land use within the Study Area. The recommendations are intended to assist the OCTC and member communities in prioritizing fiscal and policy investments in new infrastructure and modifications to land use. While there is no “right answer” or preferred sequence of actions, the recommendations laid out in Chapter 5 represent a broad range of possible solutions that can result in local and regional benefits that can be measured in improved mobility, enhanced community character, preservation of environmental features, and quality-of-life. These recommendations were reviewed and discussed with the public at a final workshop that took place in June of 2011.
A. The Big Picture

Why an Integrated Approach to Transportation and Land Use?

Infrastructure and transportation investment can drive growth and shape our communities for generations to come. Historically, the location of new roads and transit lines literally opened up new areas to development that were previously wilderness. Transportation investments were the primary mechanism whereby development in the United States spread inland from the eastern seaboard, providing access to new land and adding value to unimproved property. Today, transportation investments can still be used, purposefully or not, to transform existing communities. Highways stringing together suburban communities to one another have enabled quicker travel times, new transit corridors in metropolitan areas across the country provide the foundation for revitalizing blighted or underdeveloped areas, and roadway improvements in a town center with new pavement and sidewalks can make the difference between spurring private investment and abandonment.

In the 21st Century, transportation infrastructure plays a crucial role in enabling our communities to meet the challenges facing them and capitalizing on their opportunities to foster good quality-of-life and long-term prosperity. At the same time, local land use policies and regulations within hamlets, villages, towns, and cities to facilitate community redevelopment and reinvestment will not be realized without investment in the street network to provide safe automobile, freight, transit, and pedestrian access. Residents without access to private automobiles in a region characterized by suburban sprawl will not have access to jobs, medical facilities, or shopping without an enhanced transit network. Residents looking to avoid filling their tanks with expensive gas will not have any alternatives for their daily needs without better transit options and transit-supportive land uses. Industrial parcels in districts planned for new growth cannot be developed without road capacity enhancements and road extensions to provide access to developable land.

National Trends that will Affect the Region

Despite the current recession and the slow growth taking place across the nation, natural population increases and immigration to the United States are projected to add 40 million people by 2025 and an additional 80 million people by 2050. Four million of those new 120 million people are projected to live in the New York Metropolitan Region (including Orange County). Regardless of whether the actual number is higher or lower than that estimated, the metropolitan region will need to identify locations to build the housing, employment centers, and other community supporting amenities necessary to accommodate some significant growth in population.

As the country and region grow, the demographic profile continues to evolve. Aging baby boomers make up an increasingly large share of the population and an increasing number of them are looking to downsize from large houses and property to smaller units within walking distance or a quick drive from their daily needs. At the same time, younger Millennials and Generation Xers are increasingly looking to live in urban and affordable environments where a broad range of activities is taking place and they don’t need to be dependent on cars for every trip. Immigrant families show demand for inner-ring suburbs and transit-rich, single-family neighborhoods where their traditional lifestyles meld best with the American Dream. And there will always be families with middle-aged adults and school-aged children looking for safe communities with good schools, recreation opportunities, and access to jobs.

Over the coming decades, regions across the nation will need to make the decisions necessary to ensure that the built environment is calibrated to the changing demands of an evolving population. To fail to do so risks a mismatch between housing...
supply and demand and a loss of value in many of the homes and neighborhoods that embody our collective investment.

As the nation’s economy emerges from the current recession, government’s fiscal strength will remain strained for some time. Funding for infrastructure investment and maintenance at all levels of government will be stressed as the battle between demands and the aversion to increased revenue plays out in Congress, the statehouses, and local council boards. At the time of writing this report, much uncertainty still exists surrounding the form and magnitude of the next Congressional transportation authorization. All trends point to it being smaller and more dependent on local commitment to larger funding matches. Some states and regions have demonstrated creative approaches to raising revenue for transportation through sales taxes, capturing a portion of the increases in property values that accompany transportation system investments, and other mechanisms. As the nation’s Interstate Highway System hits its semi-centennial and communities across the country clamor for expanded transportation alternatives, maintaining the infrastructure we have while making targeted expansions for the future will be a challenge.

All of the nation’s demographic and economic shifts are taking place within the context of climate change and resource limitations. Economic sustainability cannot exist without environmental sustainability. The earth’s climate is changing, we have some options to mitigate the impact of its effects through emissions reductions, and we will have to adapt to some of the inevitable impacts resulting from the changes that are already underway. Concurrently, gas prices are rising within a context of demand outpacing supply, and as the era of cheap gas to fuel our automobile and truck fleet passes, we will have to look for alternative sources of energy to power the transportation system. As we meet the needs of our changing population with the housing and employment centers for the next generation, the communities of the region must do so in a way that simultaneously limits greenhouse gas emissions, transitions the transportation sector from oil to other more sustainable sources of energy, and increases our resiliency to climate changes and extreme weather events.

Our transportation system can limit or enable our society depending on those investment decisions we make today. But our resources are not unlimited, and investments must be strategically prioritized.

Relevant Legislation at the State Level

Partly in response to some of these national trends, the New York State Legislature has adopted, and two different Governors have signed, two pieces of legislation that will affect how communities plan for and investment in infrastructure. The intent of both pieces of legislation is to ensure a coordinated approach to planning and investment and long-term, sustainable returns on those investments in the form of stable communities and improved environmental conditions.

The “Smart Growth Public Infrastructural Policy Act” (A. 8011, S. 4914) was signed by Governor David Patterson in August 2010 and the “Complete Streets” bill (A.8366, S. 5411) was signed by Governor Andrew Cuomo in August 2011.

The Smart Growth Public Infrastructural Policy Act requires State agencies and State authorities to prepare and file a Smart Growth Impact Statement prior to approving or funding any public infrastructure project. The statement must demonstrate that the project is consistent with the ten Smart Growth Criteria established by the State or justify why it is not practicable to do so. The Smart Growth Criteria include whether a project is located in a designated center, whether it makes use of existing infrastructure, and whether it fosters mixed land uses and compact development.

The Complete Streets bill seeks to consider mobility choices and transportation options for people of all ages and abilities when planning roadway projects. The intent is to achieve a cleaner, greener transportation system with less congestion while giving citizens the opportunity to realize the health benefits associated with more active forms of transportation. Plans for State roadways will now collectively consider pedestrians, bicyclists, public transportation riders, and motorists.

Newburgh within Its Regional Context

Orange County sits on the northwestern edge of the tri-state New York Metropolitan Region. Consisting of over thirty counties in the states of New York, New Jersey, and Connecticut, this metropolitan region is the largest in the nation (Figure 2-1). The region has a population of nearly 24 million people spread out across 13 thousand square miles, or an area equivalent to the state of Maryland or twice that of the state of Connecticut. While the region contains some of the most compact and dense communities in the nation, such as New York City and several
The Study Area itself demonstrates this range of land use types and residential densities. Within the Study Area are the City of Newburgh and the surrounding Towns of Newburgh, New Windsor, Montgomery, and Cornwall, and the incorporated Villages of Walden, Montgomery, Maybrook, and Cornwall-on-Hudson. The largest concentration of Study Area population resides in the City of Newburgh. The City contains 20% of the Study Area’s population living on 3% of the Study Area’s land. The blocks of the City of Newburgh are nearly four times as dense as the next-most dense blocks outside of the city, in the Village of Walden. Beyond the city, there exist concentrations of population throughout eastern New Windsor, eastern Cornwall, southern Newburgh, and central Montgomery. Those concentrations are often coterminous with villages but also include large tracts of suburban subdivisions ringing the city. Though some more recent subdivisions exist beyond these areas, the remainder of the landscape is still predominantly rural with very low housing and population densities.

The largest concentration of commercial development and employment exists in the Town of Newburgh just outside of the city limits along Route 17K and Route 300. In addition to this retail and office agglomeration, several large employers including St. Luke’s Hospital, Orange County Community College, and Mount Saint Mary College are located within the City or in close proximity. (The United States Military Academy is located just outside of the Study Area in West Point; but many West Point employees travel through the Study Area on a daily basis.) Neighborhood retail and some offices exist in the village centers and along other state and county routes radiating out from the city. Industrial activities are concentrated in the central portion of the Study Area around Stewart Airport, near interchanges on either I-84 or I-87, along certain railroad corridors, and along portions of the Hudson River waterfront.

As the region has grown, previously rural areas have consistently been drawn into the metropolitan area and incrementally urbanized as the growing population has sought affordable housing near transportation infrastructure and nature. While the Metro-North Railroad commuter lines (Port Jervis Line within Orange County and Hudson Line along the eastern shore of the Hudson River) and the New York State Thruway, constructed in the middle of the 20th Century, provide fast and convenient access between northeastern Orange County and downstream job markets, the distance between Orange County and employment centers generally protected its rural landscape from the development of the 1960s and 1970s that was so common in Connecticut, New Jersey, the Lower Hudson Valley, and on Long Island. The Palisades Interstate Park System and Harriman State Park acted as a greenbelt growth boundary, limiting the attractiveness of Orange County for households seeking affordable housing within convenient distance of employment centers.

But all this changed in the last decades of the 20th Century as easy development opportunities in closer-in counties became scarce and housing costs in the inner-ring and outer-suburbs steadily rose. The distance to Orange County was offset by its housing affordability, cheap gas prices, rural aesthetics and quality of life, and natural surroundings. Residential subdivisions and big box retail clusters were being proposed and constructed at a significant rate. Though concentrated initially in the southeastern portion of the county, comparable developments were becoming common elsewhere in the county at the outset of the 21st Century. While these developments provided short-term economic and fiscal benefits, their cumulative long-term impacts have not been exclusively positive.

The City of Newburgh and the surrounding Towns of Newburgh, New Windsor, Montgomery, and Cornwall, as well as the Villages of Walden, Montgomery, Maybrook, and Cornwall-on-Hudson are strategically located to capture a significant share of the residential and economic growth that might occur in Orange County in the future. This area’s proximity and access to I-84, I-87, the future I-86, Metro-North Railroad, and Stewart International Airport make land in this area very attractive to a number of economic development opportunities. Jobs generated by these opportunities fuel a need for new housing, and the area’s easy access to regional transportation infrastructure means that the labor force here can also seek jobs throughout the Lower Hudson Valley area.

But this strategic placement also poses potential challenges to these same communities. Over-development, or poorly located development, could adversely affect the community character and the environment – critical assets that attracted many people to settle in these communities in the first place.

How these communities decide to grow, then, becomes a critical test in enhancing the economic vitality of the area while protecting the quality-of-life and environment for all to enjoy.

B. Planning Context of the Study

The Newburgh Area Transportation & Land Use Study must also be considered within the context of several County and regional studies and planning efforts that identify key infrastructure elements or assumptions for future growth, principally the provision of water supply and wastewater treatment. The Study recognizes that without either of these key infrastructure elements, future residential and economic development is unlikely to generate substantial new growth. This Study does not specifically identify necessary improvements to water or wastewater infrastructure but assumes that recommendations of those separate studies have been successfully implemented.

Specifically, the plans that have been considered in developing this Study are:

- Orange County Comprehensive Plan
- Orange County Open Space Plan
- Orange County Water Master Plan
- Orange County Design Manual
- OCTC’s Congestion Management Process
- OCTC’s Long Range Transportation Plan
- MTA’s West of Hudson Regional Transit Access Study (WHRTAS)
Orange County Comprehensive Plan

Orange County’s Comprehensive Plan, “Strategies for Quality Communities,” is the basis of OCTC’s Long Range Plan. The 2004 Comprehensive Plan was first prepared in 2003 and updated in 2010 to include the Land Use Plan, Housing and Neighborhood Preservation Strategy, and the Water Master Plan. The Comprehensive Plan adopted by the County Legislature in 1980, “Growth Alternative: A Proposal for an Urban-Rural Concept of County Growth,” introduced the notion of welcoming "growth that comes as a natural course" by "stag[ing] and direct[ing] growth into areas where it can be supported efficiently and at least cost.” The prevalent notion at that time, and which continues today, is that "if growth were focused toward existing centers, the rural character of most of the County would be maintained by limiting growth in areas without preexisting infrastructure.”

The 2004 Comprehensive Plan continued the focus on areas with pre-existing infrastructure by identifying Priority Growth Areas (PGAs) – they are cities, villages, or hamlets – and six Elements: County-wide centers (e.g., the cities of Newburgh, Middletown, and Port Jervis); Community Centers (the 17 incorporated villages in the County and the hamlet of Pine Bush); Neighborhood Centers (hamlets and other unincorporated villages); Transportation Hubs within the three cities, the Monroe/Woodbury area, and the Village of Goshen; Interchanges with major regional retail centers or business parks; and Crossroads, major road intersections that serve or could serve as future community neighborhood centers. The Plan also identified a hierarchy of corridors "that act as linkages between the other structural land use elements." Different types of corridors were identified: natural feature and scenic roadway corridors; agricultural area corridors; residential/agricultural corridors; mixed use corridors; and intensive business corridors. (Rail corridors and pedestrian/bike corridors were also identified).

The 2010 Comprehensive Plan refined and simplified the PGAs with respect to central water and sewer service areas, land use, local zoning districts, environmental constraints, and protected open space. Growth Areas were given a specific definition and purpose:

Growth Areas — “It is within the boundaries of the Growth Areas that the County encourages additional urban/village growth, such as higher density residential, commercial and certain industrial uses, and other community services. The use of infill construction as a method of revitalization is especially appropriate in these areas. Priority should be given to the Growth Areas, and specifically the Villages and Cities within them, for County support, incentives, and investment in water and sewer infrastructure improvements/extensions, sidewalk construction, transportation infrastructure, opportunities for transit-oriented development, housing, and commercial development.”

In addition, the six Elements first identified in the 2004 Comprehensive Plan were redefined into two categories in the 2010 Comprehensive Plan: local centers and transit opportunities.

Local Centers — “County investment in these locations should be focused on addressing preexisting water and sewer infrastructure needs, improving transit and transportation, the enhancement of amenities (such as parks, trail development and tourist attractions), and small business development.”

Transit Opportunities — “The County strongly endorses the transit-oriented development concept that offers pedestrian-scaled projects and an appropriate mix of residential and commercial development at densities and scales sited to take advantage of transit connections.”

Figure 2-2 shows the County’s Priority Growth Areas. Much of the Study Area is included within one or several of these Priority Growth Areas.

The following corridors in the Study Area are considered "Intensive Business Corridors" (see Figure 2-3):

- Route 17K within the Town and City of Newburgh
- Route 300 between Route 52 and 207

NYSTA’s Tappan Zee Bridge/I-287 corridor enhancements.

In addition, OCPD’s previous integrated transportation and land use studies for southeastern Orange County and mid-County were used as models or precedents for the current Study.

Figure 2-2: Orange County Priority Growth Areas and Greater Newburgh Study Area Communities.
• County Route 99 (Neelytown Road) between Route 416 and Route 208.

There are several "Mixed Use Corridors" within the Study Area:
• US Route 9W within the Towns of New Windsor and Newburgh
• Route 32 both north of Route 17K/Broadway in the City of Newburgh to its intersection with Route 300 and south of Route 17K/Broadway to Quaker Avenue south of Vails Gate
• Route 207/300 from Breunig Road to Vails Gate
• South Street within the City of Newburgh

• Route 208 between the Village of Maybrook and Village of Walden.

Other major corridors in the Study Area are identified as "Residential/Agricultural" corridors.

Orange County Open Space Plan

The July 2004 Open Space Plan identifies strategies to protect a range of different open space types – watersheds and well-head protection areas, designated open spaces, agricultural lands, and areas of biological diversity—while recognizing the Priority Growth Areas, crossroads, and centers identified in the Comprehensive Plan. The Open Space Plan includes a number of Recommended Actions identifying both policy, regulation, and funding priorities for each of the types of open spaces identified in the Plan.

Of greatest relevance to the Study Area and land use and transportation issues are the following recommendations:
• Continue monitoring of land use trends
• Provision of municipal planning grants
• Maintain active farmland
• Expand trail and rail-to-trail systems
Many of the principal concepts of natural resource conservation and protection of environmentally sensitive areas that are cornerstones of the Open Space Plan were included in the land use build-out analysis conducted for this Study.

Orange County Water Master Plan

The Orange County Water Master Plan (WMP) was prepared through a partnership between the Orange County Water Authority (OCWA) and the OCPD. The WMP was completed in August 2010 and is an amendment to the 2010 Comprehensive Plan. The WMP identifies the collaborative approach “to continue to help meet the growing demand for water within the County as well as to protect and conserve the County’s source waters over the next decade.” The WMP uses the Priority Growth Areas in the Comprehensive Plan as the basis for considering priorities for provision of water supply.

Within the Study Area, the entire Villages of Walden, Montgomery, and Maybrook are served by municipal districts supplied by groundwater wells maintained by each Village. Portions of the Towns of Newburgh, New Windsor, and Cornwall and all of the City of Newburgh and Village of Cornwall-on-Hudson are served by municipal districts supplied by either the New York City Catskill Aqueduct or Delaware Aqueduct or Chadwick Lake and Lake Washington. Brown’s Pond/Silver Stream Reservoir provides backup supply to the City of Newburgh and Town of New Windsor. The remaining areas are served by private on-site wells.

The Comprehensive Plans of the Villages of Walden, Montgomery, and Maybrook each note the need to identify new sources of groundwater supplies to supplement existing supplies, especially in light of rising demand for new residential development. The Village of Walden has identified a specific project to create a new well at the Lake Osiris Well Field. The Village of Cornwall-on-Hudson (which supplies portions of the Town of Cornwall) has wellfields adjacent to the Moodna Creek as well as several reservoirs that have not been used recently pending completion of a water filtration plant. The Village is contemplating creation of new groundwater wells to offset increasing rates charged by New York City for water drawn from the Catskill Aqueduct.

The WMP notes the numerous inter-connections between several of the Study Area communities and that a regional approach to water supply management is “worthy of consideration as part of OCWA’s water master planning process.”

Orange County Design Manual

The Orange County Design Manual (July 2010) was prepared by the Orange County Planning Department, Regional Plan Association [a member of the current Study team], and Lincoln Institute of Land Policy on behalf of the OCTC. The Design Manual was an outgrowth of two previous planning studies initiated by Orange County Planning Department in the southeastern and central portions of the County. The purpose of the Design Manual is to graphically demonstrate how the Smart Growth principles of the County’s Comprehensive Plan can be implemented through protecting and enhancing green infrastructure, connectivity, and complete communities. These principles are applied at different scales within the Design Manual as Expansion of Existing Centers, Infill in Existing Centers, Commercial Corridors, Emerging New Centers, and Rural Residential Areas. The Design Manual provides tools to local communities to direct how new development can occur assuming that “the hard work of building consensus on where to grow has already been done.” The reader is encouraged to review the Design Manual for extensive discussion and graphic illustration of how to apply Smart Growth principles within the Study Area. (The document can be viewed at http://www.orangecountygov.com/planning.)

Regional Transportation Investment Studies

Like all other Metropolitan Planning Organizations (MPOs) in the country, OCTC carries out its transportation responsibilities in accordance with the requirements of Federal transportation legislation, the most recent of which is the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA) of 2005. Predecessor legislation to SAFETEA were the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and the Transportation Equity Act for the 21st Century (TEA-21) of 1998.

Each MPO must create three primary planning products: a Metropolitan Transportation Plan (also known as a “Long Range Transportation Plan”), a Transportation Improvement Program (“TIP”), and a Unified Planning Work Program.
Factors identified by SAFETEA:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

2. Increase the safety of the transportation system for motorized and non-motorized users.

3. Increase the security of the transportation system for motorized and non-motorized users.

4. Increase the accessibility and mobility of people and for freight.

5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

7. Promote efficient system management and operation.

8. Emphasize the preservation of the existing transportation system.

The Long Range Transportation Plan takes a broad perspective on demographic changes within the MPO and how the region’s road, transit, bicycle & pedestrian, and air & freight networks serve the needs of the population. The Long Range Plan also addresses issues of congestion management and conformance of regional transportation systems to national air quality standards.

The Long Range Plan must be updated every four years. OCTC’s last approved Long Range Plan was adopted in November 2007. The current Long Range Plan is due to be approved in mid-December 2011. OCTC’s Long Range Plan is based in part on Orange County’s Comprehensive Plan and stresses using the underlying principles of growth areas to guide decision-making on transportation investments.

The TIP sets out a schedule of transportation capital projects and their funding for a five-year capital planning cycle. Development of the TIP is an iterative process and engages local stakeholders to identify potential capital projects and to prioritize funding for those projects. The current OCTC TIP for the Federal Fiscal Years 2011 to 2015 was approved by OCTC on August 24, 2010.

At that time a total of approximately $333 million was programmed for the 2011-2015 TIP for transportation projects in Orange County. Approximately $224 million comes from Federal funding and $109 million in State and local funding. Of this total, $79 million is allocated to bus transit and $254 million is for highway projects. The 2011-2015 TIP emphasizes the preservation of the existing transportation system. The majority of funding is allocated to projects that support pavement and bridge preservation projects or maintenance and operations. Less than $1 million is currently programmed for highway capacity improvement projects and approximately $3 million is programmed for enhancements and upgrades of the mass transit systems.

In the current economic recession, it has become a significant challenge for OCTC and its member communities to prioritize funding for necessary improvements – be they for preservation of the existing system, essential improvements to safety, or enhancements that would allow for economic development – when available Federal and State funding levels are essentially flat from preceding years.

Detailed listings of all transportation projects in OCTC’s 2011-2015 TIP can be found on OCTC’s website: www.orangecountygov.com/planning/octc.

The UPWP presents the annual work program of the OCTC. It describes those planning and administrative activities programmed to be undertaken during the year. While the funding for the UPWP is from the Federal government, the annual cycle for the UPWP is based on the New York State fiscal year. The UPWP provides one way of coordinating different transportation activities, and to integrate countywide transportation programs into a regional transportation planning perspective.

UPWP activities are divided between program support administration, general and long range planning, transit coordination and planning, short range transportation planning, TIP development, and other activities.

This Study is an example of a long range planning study that would be conducted under the UPWP. OCTC has conducted, or is in the process of initiating, two other similar studies: 1) the Southeastern Orange County Traffic and Land Use Study completed in 2005.
identified land use trends and transportation needs for the areas in and around the Towns of Monroe, Woodbury and Blooming Grove including the Villages of Monroe and Harriman; 2) the mid- and western-County transportation and land use study covering the entire “western gateway” OCTC region and portions of southeastern Orange County that were not included in the previous study (e.g., Chester, Warwick, Tuxedo, Highlands).

### Congestion Management Process

SAFETEA also requires MPOs located within a Transportation Management Area (TMA) to institute a Congestion Management Process (CMP).

OCTC is located within the Mid-Hudson Valley TMA. OCTC, together with the Poughkeepsie-Dutchess County Transportation Council (PDCTC) and Ulster County Transportation Council (UCTC), adopted a single CMP for the TMA on October 1, 2005. In June 2006, the “Step 2 Report: Congested Roads” was released which identifies congested road segments and congested intersections using the performance measure “volume to capacity (v/c) ratio” to represent the degree of congestion. Calculations of v/c ratios use observed traffic volumes and an estimated value for roadway capacity (in vehicles per hour) based on standardized procedures used nationwide. Future v/c ratios can be estimated using projections of traffic volumes in a future year derived from each MPO’s travel demand model, coupled with assumptions about future roadway capacity.

Within Orange County 2 of 7 road segments and 5 of 11 intersections identified with “Heavy” congestion and 8 of 24 road segments and 19 of 32 intersections...
identified with “Moderate” congestion are located within the Study Area (see Figure 2-4).

This Study seeks to take a next step from the CMP completed in 2006. Following identification of those area roadways and intersections, this Study seeks to address, through a scenario planning process, how to strategize decisions regarding land use and development patterns, coupled with investments in new transportation infrastructure that encourage sustainable economic development and protect community character. The TMA transportation councils are also currently conducting a travel time survey of the most congested links within the TMA.

Several related regional transportation investment studies are currently being undertaken by other OCTC member transportation agencies that may have bearing on local transportation investments in the Newburgh Study Area.

West of Hudson Regional Transit Access Study (WHRTAS)

The Metropolitan Transportation Authority’s (MTA) Metro-North Railroad, in partnership with the Port Authority of New York and New Jersey (PANYNJ), is undertaking a planning study to identify and assess transit solutions to improve mobility and accessibility on MTA’s Port Jervis line between Stewart Airport, surrounding communities, and New York City and the Lower Hudson Valley. Metro-North currently provides commuter service, in conjunction with New Jersey Transit, along its Port Jervis line from Port Jervis in western Orange County to Hoboken, New Jersey. The Port Jervis line intersects with New Jersey Transit’s Northeast Corridor line at Secaucus Junction, allowing Orange County commuters access to midtown Manhattan.

MTA/PANYNJ conducted a two-level screening Alternatives Analysis (AA) process for alternatives and options for improving mobility and accessibility. Level 1 screening identified 6 groups of possible transportation approaches:

- Direct Bus (serving airport market only)
- Direct Bus/Bus Rapid Transit (BRT) (serving airport and commuter markets)
- Direct commuter rail connection to SWF from Port Jervis Line
- Combination of rail and bus/BRT using the Port Jervis Line
- Combination of rail and bus using the MTA Hudson Line at Beacon
- Transportation Systems Management/Transportation Demand Management

The Level 1 process identified a short-list of 4 options:

- Direct bus service with 4 possible origins (2 in New York City, 2 in northern New Jersey);
- Commuter rail connection from the Port Jervis Line Salisbury Mills station along several different right-of-way options;
- Hybrid of commuter rail to Salisbury Mills combined with bus rapid transit along similar right-of-way options;
- Hybrid of enhanced bus shuttle from Metro-North’s Hudson Line Beacon station.

The environmental analysis will evaluate these options with 2 no-build options: one with Port Jervis Line improvements including a mid-point yard, and one without the Port Jervis Line improvements. Following this environmental analysis, Metro-North may commence work on implementation of capital improvements and/or protecting the right-of-way for future construction. Also, as part of WHRTAS Phase 2, Metro-North will evaluate options for capacity improvements to the Port Jervis Line, including a new Mid-Point Yard and double-tracking between Sloatsburg and the eastern approach to Moodna Viaduct.

In addition, the Port Authority has indicated that it will work with local governments and transit providers to encourage expansion of bus service, ridesharing shuttles, and other “rubbertire” transportation services for SWF passengers and employees in proportion to growth of activity at the airport. These near-term initiatives require little or no infrastructure investment. They can proceed independent of the WHRTAS examination of more extensive transit investments for the commuter and/or airport markets.

Tappan Zee Bridge/1-287 Corridor Enhancements

Separately from the WHRTAS study and as the Newburgh Area Study was being undertaken, the MTA, New York State Thruway Authority (NYSTA), and the New York State Department of Transportation (NYSDOT) were undertaking a multi-faceted Alternatives Analysis and Environmental Impact Statement on the future of the Tappan Zee Bridge and the I-287 corridor from Suffern (Rockland County) to Rye (Westchester County). The completion of the Alternatives Analysis resulted in the announcement that the bridge would be replaced rather than continuously rehabilitated and that the new structure would support multiple transit opportunities across the Hudson River. In addition to the bridge, the Alternatives Analysis identified two potential transit modes in the corridor: commuter rail and bus rapid transit. The bridge portion of the study was then accelerated while additional review of the transit options could progress. As of the end of 2011 however, the State and the US Department of Transportation announced that the previous study would end and that, instead, an expedited review of just the river crossing would proceed. This new expedited study is called the Tappan Zee Hudson River Crossing Project and is being advanced in a manner that will not preclude transit being added at a later date.

The Basis of this Report

The confluence of the national trends coupled with new State legislation and Orange County’s unique physical location within the metropolitan region discussed above are the basis for establishing development and infrastructure recommendations that best position the Study Area communities for sustainable prosperity.

This report summarizes a scenario based planning process looking at future land use and transportation alternatives for the Study Area. The multi-faceted planning process was intended to identify those investments that provide the greatest value to these communities now and into the future.

It should also be clearly stated that this report does not look at any one of these communities in isolation. All of the communities making up the Study Area share a common history and share common infrastructure. What affects one community affects all of these communities. Decisions made today by one community will have ripple effects on decisions made tomorrow in other communities. What this report presents is a regional approach to making strategic investments in stronger communities and a stronger region.
3. Existing Conditions

A. Introduction

This chapter identifies existing conditions within the Study Area communities and the major elements that define the Study Area’s transportation network. Information for the municipalities was compiled from a variety of sources including Orange County Geographic Information System (GIS) data, aerial photography, and field surveys. The Study Team also interviewed elected officials and other representatives of each municipality and researched their comprehensive plans to develop an inventory of issues and concerns.

Study Area Overview

The Study Area’s economic history was originally tied to production and transportation of agricultural goods and building materials to the growing New York Metropolitan center. Early development in the greater Newburgh area began in the east, along the Hudson River. The Newburgh waterfront served as a major steamboat landing and shipyard. However, following World War I, the steamboat industry declined and Newburgh lost its role as a major point of transshipment of goods. The region entered a period of diminished activity when economic factors favored larger cities to the south. As land became scarce in the lower portions of the Hudson River valley, more residential and commercial development moved north to take advantage of access to open lands made possible by the construction of the New York State Thruway (I-87) in 1954 and I-84 in the 1960s. Later stages of suburban development followed the same national trends that focused on automobile-oriented residential and commercial development patterns that became more sprawling; furthering the decline of town and village centers.

Today, the communities that comprise the Study Area are home to approximately 119,000 people in 46,400 housing units (see Table 3-1). Approximately 48,500 jobs are located within the Study Area. The area has seen 6.5% population growth over the past decade—slightly less than Orange County as a whole. Orange County Department of Planning projects that these communities will add approximately 13,820 people over the next 25 years and approximately 16,500 jobs over the same time period. If this occurred, it would result in 12% population growth and 34% job growth.

As regional land use patterns shifted development to the northern and western fringes of the New York metropolitan area and with increased potential for a stronger transit link between Orange County and the metropolitan centers, the Study Area is at a crossroads to determine the future of the region’s land use patterns and mobility systems.

The Study Area’s location with respect to regional transportation facilities – primarily Interstate 84, Interstate 87, future Interstate 86 – and Stewart International Airport suggest that it is poised to play a growing role in the movement of freight throughout the New York metropolitan region. The Port Authority anticipates that freight will take on an increased role at Stewart as private shipping companies (e.g., UPS, FedEx, and Yellow Freight) capitalize on locational advantages of the Study Area and build facilities on lands near Stewart or along Neellytown Road. Like the area surrounding Cranbury, New Jersey, which is located at Exit 8A of the New Jersey Turnpike half way between Philadelphia and New York, Study Area communities may find it advantageous to market the economic development potential created by this transportation network.

B. Study Area Municipalities

The city, four towns, and four villages that make up the study area each have their own unique characteristics, challenges and opportunities. The following pages explore each of these nine municipalities, focusing on the land use and transportation issues that will be addressed throughout the remainder of this report. In addition to conditions on the ground, this section describes the planning documents of each community and the goals and objectives that each hopes to achieve in the coming decades. Though unique, many of the challenges and opportunities are similar. By addressing land use and transportation issues at the regional scale, common strategies can be employed to the benefit of each community.
The City of Newburgh contains the most densely populated portions of the Study Area. The downtown area, Broadway, is a mixed-use center with retail storefronts below apartments and/or office space typical of many older mixed-use centers. On side streets, many single-family and two-family townhouses with historic or architectural character can be found. However, many of the businesses located along Broadway have suffered as population has declined and larger retailers opened up outside the City. More automobile-oriented businesses can be found along Broadway west of the downtown and along Route 9W. This land use pattern presents opportunities for infill growth and redevelopment. The waterfront area in Newburgh also contains large areas of vacant land and parking areas that present opportunities for redevelopment.

Zoning

Zoning in the city of Newburgh allows for a variety of residential, commercial, office, and industrial uses. Approximately 50 percent of the City is zoned for single-family residential development with scattered two-family and multi-family zoning located primarily near the downtown area. The primary commercially zoned areas are located along Broadway, Route 17K, Route 32, and Route 9W. A unique feature of the Newburgh Zoning Map is a mixed-use waterfront zone that runs along the entire stretch of the City of Newburgh Waterfront. It should, however, be noted that several planning documents for the City of Newburgh recommend rezoning portions of the downtown and waterfront areas for increased density and mixed-use development opportunities.

Transportation Network

The City of Newburgh and the greater urbanized area have and are adjacent to numerous transportation features which create a crossroads of the region. These transportation features include the Hudson River, a major freight rail line, access to passenger rail across the river in Beacon, Interstates 84 and 87, New York State highways, and Stewart Airport. Major roadways running through the City include Broadway/Route 17K, Robinson Avenue/Route 9W, and Lake Street/Route 32. A well-established urban grid pattern of roadways, which is somewhat unique for the Study Area, feeds into these major roadways and lays the groundwork for redevelopment opportunities.

The Newburgh Beacon Bus Corporation provides two fixed route bus services—the Northside and the Southside—which operate in the City of Newburgh and to several locations just outside of the city. Both routes operate continuously along Broadway/Route 17K from Liberty Street in the City of Newburgh to the shopping destinations in the Town of Newburgh along Union Avenue/Route 300 (including the Newburgh Mall and Walmart). Where the services differ is in their alignments after turning off of Broadway: the Northside route provides service to the residential areas directly to the north of Broadway and to the Mid-Valley Mall and the Shop-Rite in the Town of Newburgh, while the Southside route offers service to the residential areas south of Broadway in the City of Newburgh and the Town of New Windsor to the shopping destinations in Vails Gate (including the Big V Shopping Plaza and Price Chopper). Both the Northside and Southside routes offer relatively infrequent service due to the length of each trip and the assignment of one bus to each line, with each bus offering 120 minute headways throughout their service day. Since both routes operate the same routing along the Broadway/NY State Route 17K corridor and the shopping areas on NY State Route 300, service on the trunk portion of the lines offer hourly bus service in these areas.

The Newburgh Beacon Bus Corporation also operates a commuter shuttle, the Newburgh-Beacon Shuttle, which offers service to Metro-North’s Beacon station from Broadway in the City of Newburgh, and from the 17K Park-Ride lot and Stewart International Airport. The Newburgh-Beacon Shuttle offers morning peak service that is more frequent eastbound, to accommodate the Newburgh area residents who are traveling towards New York City on the MTA Metro-North Hudson Line, while offering more frequent service westbound during the Afternoon peak, evening and late night service. The Newburgh-Beacon Shuttle is scheduled to meet the majority of each northbound and southbound MTA Metro-North Hudson Line trains throughout the shuttle’s service day.

More details on local transit service and regional transit service within the Study Area are provided in Appendix D.

Environmental Constraints

The majority of land within the City of Newburgh has, at one point, been developed. Downing Park and Washington’s Headquarters State Historic Site are two urban parks that provide some natural relief from the urban pattern. However, on the City’s southern and western boundaries, there are two significant areas that the City has designated as Conservation/Open Space Areas: Quassaick Creek and Crystal Lake/Snake Hill.

Comprehensive Planning Goals

The City has been engaged in a city-wide comprehensive planning and land use planning process that has raised interest in potential redevelopment of the Waterfront area with a mixed-use community and redevelopment of other portions of the City. The City of Newburgh’s comprehensive plan, Plan-it-Newburgh, includes a combination of goals, targets, and strategies about how the city will grow, accommodate development, and evolve by 2040. The issues addressed in Newburgh’s comprehensive plan differ from many of its neighboring communities’ plans in ways that reflect the very different issues that Newburgh faces. Newburgh must contend with attracting growth and redevelopment while other communities seek ways to manage that growth. Newburgh must also address issues relating to crime and extreme poverty and has fewer resources to dedicate to a wide range of aims. The Plan stresses that community health, educational attainment, sustainability, and economic prosperity must be a focus of City policies and actions.

The City wants to harness its existing assets and this emerging growth to create a thriving, walkable, and attractive community with upgraded public transportation,
a range of housing options, higher educational attainment, and a community that takes pride in its neighborhoods.

**Key Issues**

The City of Newburgh is focused on attracting redevelopment within its boundaries and has been actively engaged in planning studies to do so. Most notably, the Leyland Alliance has proposed a major redevelopment of the waterfront and the City is interested in moving that plan forward. There have also been several other planning studies in the City where various forms of redevelopment activity have been considered including a plan to create more commercial development along Broadway with a series of "squares" or parks and a plan to develop a Transkit Oriented Development and transit hub at Lake Street and Broadway.

**Land Use**

The Town of Newburgh has a wide variety of land uses and development densities within its limits. Much of the Town’s land use comprises single-family residential homes in subdivisions scattered throughout the Town and vacant land/ agricultural land located primarily in the northern and western portions of the Town. However, there are also areas of higher density residential development and significant commercial, industrial, and retail areas. Commercial and industrial areas are generally located near Stewart Airport and along Routes 9W, 17K, 32, 52, and 300. The intersection of Route 17K and 300 serves as a regional commercial shopping destination with a mall and several national retailers. Another major shopping area, Market Place, was also recently approved on the east side of Route 300 just north of Interstate 84; however, construction has been delayed during the economic recession.

Development in the Town has generally occurred in a sprawling pattern where residential subdivisions have been scattered throughout the Town and commercial development is primarily auto oriented. The Town does not have a well defined town center but there are apparent areas where development densities are concentrated. In general, there are numerous opportunities for greenfield development and redevelopment throughout the Town.

**Zoning**

Zoning in the Town generally limits development in the northern areas to low-density residential development. The central portion of the Town allows for higher density residential development with areas of commercial uses along corridors. The southern portion of the Town, generally near Stewart Airport, Route 300, and Route 17K allows industrial and heavy commercial development. This zoning configuration generally results in a clear separation of uses and promotes a pattern of sprawl and auto oriented commercial development.

**Transportation Network**

The key assets in the transportation network in the Town of Newburgh include Stewart Airport and the Interstate 84 and 87 interchanges. These interstate highways, coupled with Routes 9W, 17K, 32, 52, and 300 provide the most extensive network of arterial roadways in the Study Area. Many residents in the region travel through the Town of Newburgh in order to reach shopping areas and the interstate highways. Throughout the Town, a series of local roadways feed into the State highways with generally limited connectivity, thereby forcing travelers to use the main roads. Fixed route public transportation in the Town currently serves the shopping centers at the intersection of Routes 300 and 17K, the Mid Valley Mall located along Route 32, Stewart Airport, and a park-and-ride lot on Route 17K. The transit routes primarily serve residents of the City of Newburgh seeking shopping opportunities. Transit routes generally do not serve residential areas in the Town.

**Environmental Constraints**

There are several areas of vacant and undeveloped land in the Town and opportunities for growth are located in all portions of the Town. However, many of the parcels potentially most suitable for development due to their location along corridors or adjacent to previously developed areas are no longer available as wetlands, floodplains, and steeply sloped areas are scattered throughout the Town on undeveloped land. Wetlands in particular constrain many of the undeveloped areas west of Interstate 87 and near Orange Lake.

**Comprehensive Planning Goals**

The Town of Newburgh’s comprehensive plan sets the goals of preserving open spaces, implementing smart design guidelines, maintaining the municipality’s small-town character, and advocating for mixed-use development in appropriate locations within the Town that have adequate existing infrastructure available. The Town of Newburgh lacks a central downtown, but several hamlets with slightly higher amenities and more diverse land uses serve as focal points throughout the Town. The Plan expresses a desire to create a new central downtown and encourages the study of public transit options.

The Town is poised for new development, due to newly expanded infrastructure for water and sewer and a fair amount of available developable land. The Plan states a desire to harness new development to direct growth into certain areas. Key concerns noted in the Plan include traffic congestion, the affordability of housing, economic development, and community aesthetic.

**Key Issues**

Key issues of concern expressed by the Town include the need for better pedestrian facilities near the intersection of Routes 300 and 17K and along Route 17K. The Town is also preparing for continued growth with many commercial and residential projects in the planning process.

Traffic is also a major concern in the Town, especially as congestion increases and truckers and other motorists use residential streets to bypass major roadways. In some instances, the Town has identified traffic calming measures and intersection improvements to address these concerns.
The transportation network in the Town of Montgomery includes a portion of Interstate 84 and four key state highways: Routes 17K, 52, 208, and 211. The Town also includes some County roadways but connectivity is otherwise limited within the Town. The Route 208 interchange at Interstate 84, the intersection of Route 208 and 17K, and the Route 17K/Coldenham Road intersection comprise a few of the key intersections within the Town. The Route 208/Interstate 84 interchange was recently reconstructed to facilitate truck movements in the area.

Environmental Constraints

There are numerous environmental constraints in the Town of Montgomery that affect development potential including wetlands and areas of steep slopes. Despite these constraints, there is still a significant amount of land within the Town that is not affected and is available for development. It is also important to note that the Wallkill River runs generally north-south through the center of Montgomery with limited roadway connections across the River.

Comprehensive Planning Goals

The Town of Montgomery has conducted a number of comprehensive planning studies over the last several years. In March 2010, the Town adopted a major amendment to its previous (1988) comprehensive plan that outlines a vision of preservation of the current character and quality exhibited in the Town. The Plan recognizes the three villages as “economic and social centers” with lands outside the villages being predominantly rural residential and agricultural.

The Plan’s proposed land use section outlines goals and implementation steps for preservation of rural residential lands through low density residential zoning in areas where environmental constraints limit development, including the Ridge Preservation Area which is recognized for its scenic qualities. More suburban density residential development could occur in the areas of the Town surrounding the villages or near major intersections along State roads such as Scott’s Corners and Coldenham along Route 17K. If central water and sewer services are provided to some of these areas, the Plan does allow for greater density. Commercial development is envisioned to occur in six areas so as not to compete with the commercial activity within the villages: Scott’s Corners, Coldenham, Allards Corners and portions of Route 52 and 208 just outside Walden, and Hawkins Drive. Because of its proximity to the recently reconfigured I-84 interchange with Route 208 and the amount of commercial activity occurring on Neelytown Road, the Hawkins Drive area is potentially a more likely area for an evolving Town center than the Scott’s Corners area further north on Route 208 at Route 17K.

With respect to industrial land uses, the Plan recognizes the Town’s strategic location within Orange County and along major transportation corridors. While...
respecting the need to buffer residential areas from industrial uses, the Plan identifies a number of areas for industrial development, “far more than will probably be needed in the next twenty years.” This surplus of industrially zoned areas was intentional as it “allows industry to pick its sites with greater flexibility.” The Town is interested in extending water and sewer services to these areas as the need arises.

### Key Issues

The key issues facing the Town of Montgomery relate to zoning changes to address recent growth and development in the Town. The Town is particularly interested in preserving the agricultural areas in the western portion of the Town, economic activity within the villages, and creating opportunities for new commercial development at specific locations. The Town is interested in accommodating new industrial uses so long as existing residential areas can be suitably buffered.

### Village of Maybrook

#### Land Use

The Village of Maybrook is primarily occupied by single-family residential uses on roughly quarter-acre lots. While residential uses comprise the majority of development within the Village, there are also some neighborhood service businesses at the southern end of the Village along with industrial uses and rail yards found primarily along the railroad tracks which generally form the eastern boundary of the Village. Yellow Freight occupies a large area of former rail yards for a warehousing and distribution operation. These rail yards were once a critical element of regional rail freight movements, but now serve a similar role for freight shipped by truck. Many of the areas in the eastern part of the Village present redevelopment opportunities along with infill opportunities throughout the Village.

#### Zoning

Zoning in the Village permits relatively high density residential development typical of existing densities seen within the Village. There are also several districts in the Village that permit multi-family development. Business districts are located primarily along Route 208 and along the railroad tracks. There are significant areas of land near the railroad tracks that can be redeveloped with higher intensity uses under current zoning and there is a potential opportunity for community design that would emphasize the proximity and direct adjacency to Stewart State Forest.

### Transportation Network

The primary elements of the transportation network in Maybrook include Route 208 and the railroad tracks on the east side of the Village. Currently, these railroad tracks are only used for freight. Maybrook is also situated just south of Interstate 84 which provides convenient access to other communities in the region. Several small local roads feed into Route 208 within the Village and also provide sidewalks. Maybrook Road connects the village directly to Old Neelytown Road and nearby warehousing/distribution centers, the closest of which are walkable for Village residents.

### Environmental Constraints

The Village of Maybrook has some wetland areas but they generally do not pose significant development or redevelopment constraints. The most notable wetland areas are located along the Village’s eastern border with the Town of Montgomery. Despite these wetland areas, development and redevelopment opportunities do exist along the railroad tracks.

### Comprehensive Planning Goals

The Village’s 2005 comprehensive plan aims to concentrate growth from the surrounding countryside in annexed land currently adjacent to the Village to prevent sprawl. However, it recommends reducing the density on the remaining undeveloped residential parcels. It speaks of improving the quality and attractiveness of the downtown area with streetscape and façade improvements but has no mention of transportation alternatives or transit connections to activity centers elsewhere in the county.

#### Key Issues

A primary concern of the Village expressed during outreach meetings for this Study is transit service given the fact that it has a significant senior population. The Village would like to see greater availability of efficient transit service to shopping areas which might include bus or rail service. Route 208 has also been identified as a concern, especially as heavy truck traffic moves through the Village.
**Village of Montgomery**

**Land Use**

Following the Civil War, the creation of the railroad made the Village of Montgomery a center for commerce for the surrounding region. When rail use subsided and highway use increased, the Village still had an advantage largely due to Route 17K and Route 211, which linked the Village to the City of Middletown. In general, the Village is characterized by single- and two-family homes with lots of approximately 0.25 acres. The downtown includes pockets of higher density residential and a mixed-use core that meets some of the commercial needs of the surrounding neighborhoods and broader community. (Other commercial needs are met by commercial centers located outside of the Village on Routes 211 or 17K). There are several institutional uses centrally located within the Village that serve a larger community beyond the Village borders. Areas of parkland and agricultural land are on the eastern and western borders of the Village. The Village has opportunities for infill development and redevelopment but also has some vacant land located at the southern end of the Village. It is important to note that the Village of Montgomery serves as a gateway to much less densely populated and agricultural areas to the west of the Study Area.

**Zoning**

The majority of the Village is zoned for one-family residential development at densities that are generally consistent with existing development patterns. Two-family and multi-family development is permitted in areas just south and east of the Village Center, which is located at the intersections of Routes 211 and 17K. This intersection also contains a commercially zoned area. The Village has industrial zoned areas in the southern portion of the Village where development potential currently exists and in areas currently occupied by industrial uses.

**Transportation Network**

The Village of Montgomery is served by Routes 211 and 17K. Route 211 provides a connection to the City of Middletown and Goshen (via Routes 416 & 207) and Route 17K provides connections to Newburgh and Interstate 84. The Village is reasonably close to the Port Jervis Line station in Campbell Hall. The Village of Montgomery and Walden are both served by a branch freight line, which the villages hope may one day be upgraded to provide some form of passenger rail and a connection to the Port Jervis Line. Local roadways in the Village create a grid pattern that provides connectivity within the downtown and between neighborhoods. Boyd Street and Goodwill Road are important local roads as they serve as a bypass to Route 17K and provide important connections to local grocery stores.

*Caption: NY Route 17K crosses the Walkill River in downtown Montgomery.*
Environmental Constraints

The key natural resource within the Village of Montgomery is the Wallkill River which forms the northwestern boundary of the Village. There are floodplains along the river that somewhat constrain waterfront development. While there are some steeply sloped areas in the Village, they generally do not pose constraints to redevelopment in the Village. There are no large, State mapped wetland areas in the Village, though smaller wetlands exist.

Comprehensive Planning Goals

The Village of Montgomery’s Comprehensive Plan aims to preserve the traditional neighborhoods, the vibrancy and quality of the central business district, and the community’s quality of life. The Plan calls for repositioning the community for sustainable transit-oriented development with the hopes of restoring passenger rail service to New Jersey (and NY City) via the Port Jervis line. There are targeted opportunities for infill mixed-use development in the Village center.

Key Issues

The most notable issue expressed by the Village relates to traffic congestion at the intersection of Routes 17K and 211. The Village is also concerned with vehicle speeds along its roadways. The Village seeks to maintain its historic character, increase the availability of affordable and senior housing, and increase the availability of transit service.

Village of Walden

Land Use

Besides the City of Newburgh, the Village of Walden has the largest and most densely populated downtown in the Study Area. The Village is easily walkable and pedestrian oriented with mixed-use development in its core. Incorporated in 1855, the Village of Walden is located in the Town of Montgomery along the Wallkill River directly north of the Village of Montgomery and along the same infrequently used branch freight rail line running through its neighboring village. By the early 1900’s, Walden was
a booming center for manufacturing, commerce, banking and retailing. These industries relied upon Walden’s skilled workforce and access to markets using rail and the proximity to major transportation corridors such as Routes 52 and Route 208. However, during the 1980’s and 1990’s, the Village saw an increase in the vacancy rate of downtown buildings and a loss in market share. There are commercial pockets in four main locations: south of Bradley Park along the River, in the center of town at the intersection of Route 208 and Route 52, in the southern portion of the Village along Route 208, and just north of Wooster’s Grove Park, along Route 52. All are surrounded by walkable residential neighborhoods. About twenty percent of the land is passive open space including the Wallkill River and waterfalls just north of downtown. Like the Village of Montgomery, the Village of Walden serves as a gateway to less densely populated and agricultural areas to the north and west.

**Zoning**

Most land within the Village is zoned for residential development at densities typical of what is currently seen throughout the Village. Within the core of the downtown area there are business and mixed-use zoning districts that allow retail uses with residential development above. Industrial districts are located primarily in the southeast quadrant of the Village. Overall, this zoning allows for infill development opportunities throughout the Village and redevelopment of formerly industrial areas with new mixed-use development.

**Transportation Network**

The primary elements of the transportation network in the Village of Walden are Routes 52 and 208, the intersection of which is one of the more congested intersections of the Study Area. The Village has an extensive network of sidewalks that facilitate pedestrian activity along its network of grid pattern roadways. It should, however, be noted that the Wallkill River largely bisects the Village with Oak Street and Route 52 serving as the only connections between the east and west sides. The Village is also located in a unique location at the terminus of a rail line and at the origin of a rail-trail heading north into Ulster County. The Village has sought to take advantage of this access to rail by studying the feasibility of operating commuter rail along this line connecting south to Metro-North’s Port Jervis Line.

**Environmental Constraints**

The Wallkill River is the most notable environmental feature in the Village. It bisects the Village into Eastern and Western sections and results in limited east-west connections across the Village. Tin Brook is another waterway that feeds into the Wallkill River and meanders through the northeast portion of the Village. Wetlands located primarily at the eastern and western ends of the Village slightly limit growth of the Village, but no significant environmental constraints exist within the Village core.

**Comprehensive Planning Goals**

The Village of Walden’s Comprehensive Plan aims to build on Walden’s economic and social strengths in a way that protects its character while enhancing its role in the region. The Plan focuses in part on bringing mass transit options to the downtown and spurring transit-oriented development. The Village aims to capitalize on its unique location at the potential terminus of a commuter rail spur line and the origin of a rail-trail heading north into Ulster County. Infill development utilizing principles of traditional neighborhood design are encouraged in close proximity to the potential transit station and the existing main street mixed-use fabric. The Plan builds off of three other Village documents prepared shortly before the Comprehensive Plan that created a revitalization strategy for downtown, established visions for the main entry corridors to the Village, and a trail connectivity plan.

**Key Issues**

The Village of Walden is interested in developing a Transit Oriented Development (TOD) with rail connections to Campbell Hall and service to New Jersey and New York City via the Port Jervis Line. It has developed zoning to allow densities of 20 units per acre near its railroad tracks. This new TOD and reinforcement of the Village center is the focus of the Village. The Village prepared a preliminary feasibility study to investigate the potential for this rail connection. The study determined that a shuttle rail car might be used between Walden, Montgomery, and Campbell Hall with a pedestrian bridge over the Port Jervis line to its passenger platform. The very rough estimate of cost for improving the freight line and purchasing a vehicle was a substantial $31 million in 2007 dollars. In terms of the existing transportation network, a key concern is the Intersection of Route 52 and 208 which has some difficult turning maneuvers due to the existing geometry of the intersection.
Town of Cornwall

Land Use

The Town of Cornwall is located in the southern most portion of the Study Area and is characterized by suburban housing, some low intensity commercial uses, and significant areas of open space in preserved parklands or conservation lands. The Town is limited development potential within the Town. Residential neighborhoods are concentrated around the Village of Cornwall-on-Hudson and in areas straddling Routes 9W and 94. A senior living complex on Quaker Avenue is partially constructed but is not yet occupied. A large residential and mixed-use development known as Cornwall Commons was also recently approved to add approximately 500 units and some commercial space to the area near Route 9W and 218. Commercial and industrial uses make up only 5 percent of the land use in the Town. The Town has prevented commercial activity along Route 9W to protect the rural character of the Town and allow for greater through-traffic as discussed below. Commercial activity is located along County Route 9 and has two distinct characters. East of the traffic circle at Angola Road and Quaker Avenue, there is a strong historic fabric and a mixed-use and walkable stretch. Areas to the west of the traffic circle have more automobile-oriented strip malls.

Zoning

The majority of zoning districts within the Town are intended to permit low density suburban residential development. The portion of the Town closest to the Village of Cornwall-on-Hudson along Quaker Avenue allows for higher density development with 0.5 acre or 0.25 acre lots. There is also some commercially zoned land along the Quaker Avenue, Route 9W, and Route 32 corridors.

Transportation Network

The transportation network in the Town of Cornwall is focused on two main north-south roadways, Routes 9W and 32. Interstate 87 runs through the Town but does not have any interchanges within the Town boundaries. In general, Routes 9W and 32 collect traffic from County roads such as Orrs Mills Road, Quaker Avenue, and Angola Road and carry traffic north towards Vails Gate and Newburgh or south towards Woodbury and Interstate 87. It should be noted that Route 9W generally provides grade separated intersections as it runs through Cornwall and allows for higher speeds. This is in contrast to many other State roadways in the Study Area that are lined by commercial development with lower speeds. Route 9W currently serves as a major through-route for people traveling between West Point and areas to the north.

The Town of Cornwall also includes the only passenger railroad station in the Study Area at Salisbury Mills in the northwest corner of the Town (Metro North / New Jersey Transit Port Jervis Line service to northern New Jersey and access to Manhattan via Secaucus and Hoboken). This station is accessed via Route 94 and provides a large parking area for commuters.

Environmental Constraints

As noted above, of the areas that aren’t protected open space and parkland, the Town of Cornwall is predominantly developed with limited unprotected land available for development. Most areas of vacant land contain wetlands and steep slopes which limit development opportunities. It should also be noted that the Moodna Creek and several tributaries flow through Cornwall before emptying into the Hudson River. These waterways further limit development potential and roadway connections.

Comprehensive Planning Goals

The Town’s comprehensive plan was updated in 2005 and calls for maintaining and preserving the remaining open space and reinforcing the Town’s downtown with a mixture of housing types and small business development to meet the needs of existing and future residents. The Plan also discusses the creation of public transit options downtown, and increased connectivity between residential areas and the employment district. Concerns about the high volume of traffic and the perception of a lack of parking downtown dominate much of the land use and transportation sections of the document. Though the main thrust of the Plan revolves around leveraging tourism and other local assets for economic development, the sections of the plan that do address land use and transportation reference important Smart Growth principles.

Key Issues

One of the key issues faced by the Town is availability of water and sewer service in areas of relatively dense development that were established before water and sewer service were available. The Town is seeking opportunities to extend these services to

Caption: The Town of Cornwall.
those areas. The Town also has concerns about traffic, especially given the role of Route 9W as a major through route in the Town. Furthermore, as infrastructure, most notably bridges and sidewalks within the Town, deteriorate, the Town is interested in investigating opportunities to improve traffic flow and community character when reconstruction takes place.

Village of Cornwall-on-Hudson

Land Use

The Village of Cornwall-on-Hudson was incorporated in 1884. Through the late 19th and early 20th centuries, Cornwall-on-Hudson was a major transfer point for coal shipped on the Hudson River. It was also a famous summer getaway for New Yorkers. Density in the Village came close to capacity in the 1960’s. The Village of Cornwall-on-Hudson is mostly built out (at currently allowed densities), with a few opportunities for infill development. There are some opportunities for subdivision in the current residential districts abutting the Village center.

There is one small industrial district along the riverfront in the Village’s northwestern corner, and a mixed-use district along Hudson Street, the Village’s Main Street, located in the northwestern portion of the Village. Hudson Street, which also incorporates Route 218, serves as the economic heart of the Village. The Hudson Street corridor is surrounded by a central business and shopping district and suburban residential units. In the southern portions of the Village, there are conservation residential districts mixed with public and protected parkland.

Zoning

Zoning within the Village allows for residential development at both high and low densities. Within the Village center, higher densities are permitted while lower densities are permitted in the hills near Mountain Road and Route 9W. A central business district allowing for neighborhood commercial uses is located in the Center of the Village.

Transportation Network

The Village of Cornwall-on-Hudson has an established grid of local roadways that serves the transportation needs of the community. Route 218 also runs through the Village but serves primarily as a local Village road due to lower speeds and Village scale development. Primary access to the Village is via Route 9W by using Mountain Road or traveling through the Town of Cornwall. A freight rail line operated by CSX runs along the Hudson River through the Village.

Environmental Constraints

The key environmental features in the Village are areas of steep slopes and the Hudson River. While there are few topographic features within the Village center, areas along the Hudson River and near Mountain Road do present development constraints with steep slopes.

Comprehensive Planning Goals

The Village’s 2007 comprehensive plan calls predominantly for maintaining the healthy balance between built and natural environments through targeted preservation and infill development. The Village’s Comprehensive Plan focuses on four main issues that it aims to address:

➔ A worry about increasing taxes and that housing will become a net negative to taxpayers
➔ The need for revitalization and increasing the sustainability of businesses in the Village Center in order to attract more residents
➔ The need to provide more affordable housing options to counter current real estate trends
➔ A desire to capitalize on the historic waterfront and reconnect the Village with the Hudson River

Key Issues

The Key Issues facing the Village are related to safe pedestrian mobility throughout the Village and enhancing the overall character of the downtown. The Village has been in the process of identifying potential intersection reconfigurations in order to have good traffic flows and safe pedestrian crossings.

Town of New Windsor

Land Use

The Town of New Windsor contains a variety of land uses and development densities within its limits. In general, the western portion of the town contains agricultural land, lower density development with scattered subdivisions, and the Stewart State Forest. The eastern portion of the Town contains higher density development with commercial and industrial uses along State highways. Two key areas of the Town are Stewart Airport and surrounding commercial areas and the commercial area at Vails Gate. Vails Gate is a major commercial area but has also seen several new senior living developments.
in recent years. Development opportunities exist in the low density areas in the western portion of the Town while redevelopment and infill opportunities exist along commercial corridors in the eastern portion of the Town.

Zoning

All areas south of Route 207 and west of Interstate 87 are zoned for residential development with the exception of some commercial areas along Route 207. While permitted densities vary, this zoning pattern does present numerous residential development opportunities in the western portion of the Town. Areas north of Route 207 are zoned for airport related uses. East of Interstate 87, zoning varies with scattered districts permitting low and high density residential, commercial, and industrial development. This zoning allows numerous opportunities for redeveloping areas with higher density and more intensive commercial uses.

Transportation Network

The Town of New Windsor contains several important intersections and some of the most congested roadways in the Study Area. Routes 9W, 32, 94, 207, and 300 all run through the Town. Key intersections within the Town include Vails Gate and the intersection of Routes 207 and 300 which have both been identified as congested intersections. Many residential neighborhoods in the eastern portion of the Town are also developed with interconnected roadways that provide connections between the State highways. In the western part of the Town, there are fewer connections as most roadways run north-south between Routes 94 and 207 making these roads the primary east-west routes in the Town. Fixed route transit opportunities are generally limited in the Town, but the Newburgh-Beacon shuttle serving Stewart Airport does run along Route 207.

Environmental Constraints

There are several wetland areas in the Town of New Windsor, but they do not pose significant development constraints in the western portion of the Town. The largest wetland areas are located in the Stewart State Forest which is already protected. The eastern portion of the Town also has some wetland areas and areas of steep slope but they generally do not limit redevelopment opportunities. One exception is the area between Route 300 and Interstate 87 which is occupied by a large wetland area. The Hudson River is a notable environmental resource in the Town but the waterfront is primarily used for industrial purposes.

Comprehensive Planning Goals

The Town of New Windsor’s Comprehensive Plan aims to balance residential, commercial, and industrial uses with open space while encouraging economic activity and creating a sense of vibrancy in the Town’s downtown. Although the town can be characterized by a large number of single-family homes, automobile dependence for getting to work, and by its rural character, the Plan’s recommendations for increased density, cluster development, mixed land-uses, expanded public transportation, and pedestrian-scale amenities point to a willingness to take firm actions to achieve its end goals.

The Plan’s broad goals include:

➔ Balancing residential and non-residential development in a way that allows for improved protection of natural resources and maintenance of the traditionally more rural residential areas of New Windsor

➔ Increasing the tax base and encouraging economic activity

➔ Providing a variety of housing types and municipal services that meet the needs of current and future residents

➔ Enhancing the Town’s sense of community by providing a central focus of activity and increased opportunities to live, work, and shop in New Windsor.

Key Issues

The most important concerns expressed by the Town relate to traffic congestion and potential new roadway connections to address those concerns. The Town has considered using abandoned railroad corridors and former roadways to create new roadways to bypass congested roadways. Key areas of concern include Vails Gate and the Intersection of Routes 207 and 300. Union Avenue and Forge Hill Road are also areas of concern because they provide the primary east-west connections to access Route 9W and the waterfront from western portions of the Town.

Caption: Vails Gate is a major intersection in the Town of New Windsor.
C. Existing Transportation Network

Regional Roadway Elements

Two major interstate highways cross in the center of the Study Area, adjacent to Stewart Airport and the major commercial areas in the Towns of Newburgh and New Windsor. Interstate 87, the New York State Thruway, is a north-south roadway that links the New York City metropolitan area with upstate New York. Interstate 84 is an east-west roadway that links southern New England and the Boston metropolitan area with Scranton, PA and points west. A third major highway corridor, NY Route 17 (future I-86), is just south of the Study Area, but as it undergoes major investments to bring the roadway to Interstate Highway standards, it is becoming an increasingly important trade corridor linking Orange County and the New York City metropolitan area to New York State’s Southern Tier.

Regional Transit Elements

Two commuter rail services link the Study Area to the metropolitan core: Metro-North’s Port Jervis Line and Metro-North’s Hudson Line. The Port Jervis Line is primarily a single-track rail line that begins in the western portions of Orange County at the Pennsylvania state line and makes a sweeping arc over the northern tier of the County, turning due south within the Study Area and continuing across the State line (becoming the NJ Transit Main Line) to its terminus in Hoboken. Port Jervis Line riders can transfer at Secaucus to other NJ Transit rail services on the Northeast Corridor, including rail service to New York Penn Station on Manhattan’s east side (served by Long Island Rail Road and Amtrak intercity service to points in New England), Newark Penn Station (served by Amtrak intercity service towards points south and west), and Newark Liberty International Airport. At the end of the Port Jervis Line in Hoboken, riders can transfer to PATH or ferries to Manhattan or to the Hudson-Bergen Light Rail for connections to Jersey City.

A ferry and a shuttle bus from Newburgh to Beacon Station, across the Hudson River in Dutchess County, provide transit connections to Metro-North’s Hudson Line. The Hudson Line provides direct service to Poughkeepsie and Grand Central Terminal.

Additional service to the Port Authority Bus Terminal on Manhattan’s west side is provided by Short Line Bus/Coach USA. Short Line Bus and Adirondack Trailways also offer intercity bus services throughout the Lower Hudson Valley, notably to employment centers in White Plains, and to destinations in Long Island, Connecticut, and upstate New York.

Local bus routes link the City of Newburgh to surrounding neighborhoods but have more limited service in the Towns because of the difficulty in attracting sufficient riders from that lower density area. Within the Town of Newburgh, bus routes generally only serve major shopping areas. Existing bus routes are shown in Figure 3-1. The western villages and surrounding portions of the towns operate “dial-a-bus” services on-demand rather than fixed routes, due to the relatively low volumes of transit riders generated by outlying areas. The Route 17K park-and-ride lot serves as a hub for local, commuter, and intercity bus services.

Taxis serve as the primary means of “public” transportation for many residents of the City of Newburgh who have origins and/or destinations in locations that are not served by existing fixed-route transit services.

Air Transportation

Stewart International Airport, also known by its symbol “SWF”, is operated by the Port Authority of New York and New Jersey (PANYNJ). It is located between Routes 17K and 207 west of I-87 and has primary access points from Route 747 and Route 207. Stewart provides both passenger and freight service as well as an active New York Air National Guard base. The airport has two runways capable of handling large commercial passenger aircraft (e.g., Boeing 747) as well as military transport aircraft (C-5A), and even NASA’s former Space Shuttle.

Passenger levels peaked at approximately 900,000 in 2007 after JetBlue and AirTran began providing discounted air fares to a number of points along the east coast (including Florida) and the Midwest. Direct flights are provided to Detroit, Atlanta, Philadelphia, and several Florida locations. However, following surges in aviation fuel prices and an
impending national recession, passenger levels began to decline in 2008. AirTran ceased operations in September 2008 and several other airlines cut the number of flights into and out of SWF.

Throughout this time, PANYNJ has implemented several marketing campaigns as part of an overall Air Service Development Plan to attract air passengers throughout the Hudson Valley region and surrounding region for both business and leisure travel. Approximately 11 million people live within a one-hour drive of SWF. PANYNJ envisions low fare carriers as the future of SWF and hopes to see passenger levels increasing. PANYNJ currently estimates that 3.3 million passengers per year will fly into or out of Stewart Airport by sometime between 2030 and 2040. Attracting greater corporate aviation services is also a goal of PANYNJ to generate jobs and to take advantage of the skill set of the Air National Guard members.

With SWF’s access to I-84 and I-87, PANYNJ foresees continued growth in air cargo activity, including less-than-full-plane-load package shipping. Also, shipments of livestock are considered advantageous due to the proximity of the USDA Animal Import Center on Route 747. have pavement demarcations or design treatments such as separated bikeways, on-street bike lanes, or shared bike/vehicle pavement markings to facilitate bicycle usage. While portions of these roads can safely accommodate bicyclists, many are not appropriate for cycling in their current configuration and conditions for a variety of reasons including high traffic volumes and/or high speeds, debris and poor pavement conditions, complex intersections, or large numbers of active curb cuts and driveways.

The following is a description of each bicycle route and specific issues that have been identified:

Non-Motorized Transportation

Currently, the only official bicycle routes within the Study Area are those designated by NYSDOT. There are several proposed State bicycle routes in the Study Area; however, only State Bike Route 17 and State Bike Route 208 are designated State Bicycle Routes. Most of these routes begin in the City of Newburgh and radiate out through the Study Area and the rest of Orange County. Only two of these routes are marked by signage, and none

State Bicycle Route 17

State Bicycle Route 17 (not related to Route 17 or 17K) enters the Study Area from the Newburgh-Beacon Bridge, and continues south along Grand Avenue, Leroy Place, North Street, Fullerton Avenue, South Street, West Street, and Little Britain Road to Route 207 and then southwest toward Goshen. Beyond the Study Area, State Bicycle Route 17 continues to Port Jervis before heading north into the rest of New York State. It is one of the three state-wide bicycle routes maintained by NYSDOT (the other two

Caption: Stewart International Airport, operated by the Port Authority of New York and New Jersey.
shoulder disappears as the roadway passes under I-87 which forces bicyclists to ride through the underpass in mixed traffic.

Route 32

A proposed bike route along Route 32 travels along Route 32 which begins in Woodbury, New York, south of the Study Area. It then travels north-south through the Study Area from the Town of Cornwall in the south, passing through Vails Gate and the City of Newburgh via Lake Street and North Robinson Avenue (also known as US 9W). The route then continues northwest along North Plank Road, and eventually veers northward at Chadwick Lake through the rest of the Study Area. Much of this route is appropriate for bicycling as there are shoulders and only one lane of traffic per direction.

However, there are sections, particularly at approaches to major intersections, where the road geometry and traffic levels are inappropriate for bicycling. This includes the approaches to the five-legged intersection of Route 32/Route 300/Route 94 in Vails Gate and on Plank Road between Chestnut Road and I-84, at the north end of the City of Newburgh. In these areas, the shoulders disappear and the roadway widens to multiple lanes to accommodate heavier traffic volumes. There are also numerous curb cuts along these sections due to the presence of commercial uses such as shopping centers, restaurants and gas stations.

Route 9W

A proposed bike route along Route 9W runs north-south through the Study Area along US 9W. This route can be broken into three separate segments: north of the City of Newburgh; within the City; and south of the City. North of the City, US 9W is also called Albany Post Road and operates with one lane per direction with shoulders and left turn bays at major intersections. This segment is appropriate for bicyclists accustomed to riding alongside higher speed vehicles (posted speed limit of 45 mph). An exception is at US 9W’s junction with I-84 where traffic volumes increase dramatically, the shoulder disappears, the road widens to three lanes per direction and there are ramps carrying traffic to and from I-84. Therefore, this segment is not an appropriate bicycle route. Within the City of Newburgh, US 9W travels along Robinson Avenue (as does Bicycle Route 32) and operates with one lane per direction with parking. This is currently appropriate as a bicycle route since traffic levels are moderate and US 9W travels through the center of Newburgh. South of the City, US 9W transitions to a higher-speed suburban route and, further south (near the Village of Cornwall-on-Hudson), into a limited-access arterial with two lanes of traffic per direction; this segment is not appropriate for bicycles.

Route 52

A proposed bike route along Route 52 travels through Orange, Dutchess, and Putnam Counties. Within the Study Area, this route travels east-west along Route 52 from the Village of Walden to I-84, at which point the bicycle route transitions from Route 52 to local streets within the City of Newburgh. Within the City, Route 52 continues along South Plank Road and South Street until it terminates at the waterfront. Route 52 generally operates with one lane of traffic per direction with a shoulder of varying width, and vehicles travel at high speeds in areas where posted speed limits are up to 55 mph. Within the Village of Walden, travel speeds decrease as the road passes through the center of town, and there are striped parking lanes/shoulders on both sides of the street. This route does pass through one busy uncontrolled intersection (Bank Street/East Main Street/Orange Avenue) in the Village. It also provides access to the Walden-Wallkill Rail Trail. East of Walden, Route 52 reverts back to its original character until the southeast side of I-84 where it widens to two lanes per direction with no shoulders. Once the route transitions to South Street, the adjacent area is residential and the roadway operates with one wide travel lane per direction with parking.

Route 17K

A proposed bike route along Route 17K travels along Route 17K and provides an east-west bicycle route through the Study Area. The route begins on Broadway in the City of Newburgh and follows Route 17K west through the Study Area, passing Stewart International Airport, through the Village of Montgomery and continuing west beyond the Study Area through the rest of Orange County. Much of this route operates with one lane per direction with a relatively wide shoulder, and is suitable for bicycling. East of Stewart International Airport, however, there are sections that are not suitable for bicycling under current conditions such as at the intersection with Route 300 where there are no shoulders and the roadway widens to multiple travel lanes. Between Route 300 and the City of Newburgh, Route 17K operates with two lanes per direction and a striped median/turning lane, and no shoulders. Vehicles travel at high speeds and there are multiple curb cuts to active uses such as shopping centers and gas stations, making this stretch inappropriate for bicyclists under current conditions. Within the City of Newburgh, Route 17K is called Broadway and the road narrows to one lane per direction with parking and is more appropriate for bicycling; however, parking maneuvers and observed truck activity create less than optimal conditions for bicyclists.

State Bicycle Route 208

State Bicycle Route 208 originates in Ulster County and travels through Orange County along Route 208 to its end at Route 207, where it intersects with State Bicycle Route 17. This is a north-south roadway that generally operates with one lane per direction and has shoulders of varying width. State Bicycle Route 208 is one of two signed NYSDOT regional bicycle routes in the Study Area. Within the Study Area, it travels through the Town of Montgomery, passing through the Villages of Walden and Maybrook. It was observed to have vehicle traffic traveling at relatively high speeds, but there are sufficient shoulders along much of the route that could accommodate cyclists. One section that is inappropriate for bicycle travel under current conditions is in the vicinity of the Route 208/I-84 junction. Approaching I-84, Route 208 traffic volumes increase and the road widens to two lanes per direction to accommodate the I-84 ramp access and egress. There are also gas stations and restaurants with large curb cuts in this area serving the Interstate exit, and heavy truck activity from nearby freight and warehousing uses along Neelytown Road. South of I-84, Route 208 reverts back to its typical character.

Route 94

A proposed bike route along Route 94 travels northeast-southwest through the Study Area beginning at US 9W just south of the City of Newburgh and traveling through Vails Gate and Salisbury.
network, only an east-west sidewalk does not have a complete sidewalk intersections. Several do not have crosswalks at nearby sidewalks on adjacent streets, however several do not have crosswalks at nearby intersections.

The Village of Cornwall-on-Hudson does not have a complete sidewalk network, only an east-west sidewalk system that spans the Village. Portions of this route have sidewalks on both sides of the street; however much of it only has sidewalks on one side of the street. County Road 9 travels north-south through the Village and has a sidewalk on the west side of the street and connects to the Cornwall Central Middle School. All three schools in the Village have sidewalks on the streets facing them. There are a few north-south streets with sidewalks that spur off of Bayville Avenue/Hudson Street in the center of the Village, but they end mid-block without any connections. There are approximately 18 intersections in the Village of Cornwall-on-Hudson that have crosswalks, most of which are along the east-west sidewalk networks that traverse Bayville Avenue and Hudson Street.

In the Village of Maybrook, there are sidewalks on only some of the streets, and the network is not completely connected. In the southern end of town, most streets have sidewalks but in the northern end of town there are only a few streets with sidewalks. Homestead Avenue (Route 208), the north-west spine of the Village, has a sidewalk on one side of the street throughout most of Maybrook but it ends several blocks before the Village’s north border. There are approximately eight crosswalks in the Village most of which are in one housing development. There are crosswalks in front the Village’s library, school, and churches.

The Village of Montgomery has a sidewalk network that does not cover the entire Village. Sidewalks in the Village are mostly present on Union Street (Route 211), which is the primary north-south street in Montgomery, and on commercial streets at the northern end of the Village. There are only three intersections with crosswalks in Montgomery, two of which are adjacent to the Village’s middle school. Walden has an interconnected pedestrian network in the center of town where Main Street, Ulster Avenue and Orange Avenue intersect and where there is a concentration of commercial and community uses. However, the pedestrian network disappears as it radiates outward from the Village’s commercial core to more residential uses. There are approximately 20 intersections in Walden with pedestrian crossings; however, most are located in the center of the Village and along Main Street/Montgomery Street (Route 52). There are some destinations in Walden including one school that does not have pedestrian crossings. The Shawngunk, Walden, & Wallkill Rail Trail entrance (at the intersection of Woodruff Street and Willemar Avenue) does connect to East Main Street (Route 52) and the center of the Village via the sidewalk network.

Appendix E of this report, “Walk/Bike/Ride/Hike Orange County: A Framework for Non-Motorized Transportation in Orange County, NY,” provides additional details about the existing bicycle routes, pedestrian facilities, and
trails located throughout the County. That document also provides more specific assessments and recommendations relating to the bicycle and pedestrian facilities within the Study Area.

**Key Study Area Corridors**

Six key roadways are described in this section: Routes 17K (Broadway), 9W, 300, 32, 52, and 207. The characteristics of each of these roads vary significantly, in terms of the configuration of the roadway, the destination points served, and the land use characteristics. In many cases, roadway cross-sections and the character vary substantially all along their lengths; many don’t have “typical” cross-sections, except for short segments.

This initial existing conditions description does not report on detailed traffic volumes or congestion characteristics. Rather, the purpose here is to provide a picture of the physical characteristics of these roads, and establish an understanding of their importance within the Study Area, as well as within the specific communities they serve. Generally, each corridor is discussed in segments, typically determined based on the physical configuration of the road, but occasionally due to shifting land uses.

**NY Route 17K/Broadway**

New York State Route 17K (Route 17K) is a 22-mile long, east-west roadway that stretches from Route 9W in the City of Newburgh, across all of Orange County to its western terminus at Route 17 near Bloomingburg. The eastern half of Route 17K is located within the Study Area of this project, and it extends from the City of Newburgh, through the Town of Newburgh, and the Town and Village of Montgomery. Within the City of Newburgh, Route 17K is a city roadway named Broadway that extends east of 9W almost to the Hudson River. Route 17K serves a variety of communities and has varied land uses and roadway configurations along its entire length. More than any of the other roadways addressed in this report, the cross-section and traffic attributes of Route 17K/Broadway vary considerably segment-by-segment.

Although within the City of Newburgh the Route 17K designation does not begin until further west at 9W/Robinson Avenue, Broadway actually begins at Colden Street, at the top of the bluff overlooking the Hudson River.

From its origination, Broadway is steeply inclined for a single block to Grand Street with one wide lane plus angled parking and sidewalks on each side of the street. The curb-to-curb width is about 90 feet and the speed limit is 30 mph. Halfway from Washington Place to Grand Street, the street is paved with bricks, with the west leg of the intersection of Broadway and Washington Center also having a raised median to channelize traffic and provide pedestrian refuge for pedestrians crossing the wide intersection.

From Grand Street to West Street, Broadway maintains the same width but now consists of two wide, striped travel lanes in each direction, with angled, metered parking adjacent to a wide sidewalk on either side of the street. Some blocks of this segment have street trees and decorative brick pavers next to the sidewalk as streetscaping. Four-way intersections are signalized and have pedestrian signal indicators, and three-way intersections are under stop control. Broadway is the main commercial and retail corridor in the City of Newburgh, and the land uses along this segment consist of civic, institutional, and street-level retail uses, with warehouse, office or residential space on upper floors. East of 9W/Robinson Avenue, the street wall is continuous, with few curb cuts. West of 9W, land uses become more suburban, with curb cuts, off-street parking lots, and lower density development. This segment is a transitional area between the downtown to the east and suburbs to the west. Traffic varies through the day, being lighter in the morning, and heavier in the afternoon. In addition, mid-block U-turns were observed, which could present a safety issue.

From West Street to the City line (between McDowell Place & Stony Brook Court), Route 17K has one wide travel lane per direction with narrow sidewalks on either side of the street. On westbound Route 17K at West Street, there are no signs warning motorists of the lane drop. There is parallel parking allowed on the south curb for a portion of this segment and there are “No Parking” signs along parts of the north curb, but parking signs are infrequent and it is unclear what portions of this block allow on-street parking. The curb-to-curb width is 46 feet and the speed limit is 30 mph. Most intersections are signalized east of Wisner Avenue, but only Wisner Avenue and Chestnut Street/Fowler Avenue have pedestrian signals. Single family homes are the dominant building type in this dense suburban area, but the dominant land use has converted most of these homes to small offices and commercial buildings. Each property has a curb cut for a driveway. Between West Street and Wisner Street, the road narrows to 38 feet, but maintains the same configuration. Consistent with downtown Newburgh, traffic was observed to vary through the day, being lighter in the morning, and heavier in the afternoon.
Upon crossing from the City into the Town of Newburgh and continuing to I-87, Route 17K widens significantly to a 53 foot width, with two travel lanes in each direction, a three-foot painted median buffer, occasional sidewalks on the north side of the street, and no sidewalks on the south side. There is no on-street parking and the speed limit is 40 mph. The Target Shopping Center intersection is signalized and there is a left turn lane into Target from eastbound Route 17K. At Auto Park Place, Route 17K widens slightly, adding shoulders and a 12-foot painted median buffer also used for left turn lanes at major intersections. The major bus commuter facility, the Route 17K Park and Ride, is located just east of Auto Park Place. Overall, land uses are less dense commercial uses, consisting of car dealerships and big box retailers. Because of the large, suburban parcels, there are not excessive curb cuts. Speeding may be a concern along this segment, as a speed trap was observed on westbound Route 17K approaching the 30 mph zone near the City line. During the morning and afternoon, traffic was observed to be moderate to heavy, with a moderate percentage of trucks because of the I-87/Thruway ramps. The most critical intersections are the I-87/Thruway ramps and NY Route 300, which lead to I-84.

Entrances to the Air National Guard facility are located along Route 17K between Interstate 87 and Interstate 84. After crossing over I-87, Route 17K narrows to one lane in each direction with shoulders, and a painted or raised median buffer also used for left turn lanes at major intersections, which are typically signalized. There are no sidewalks or on-street parking, and the speed limit is 55 mph. Stewart International Airport is along the south side of Route 17K. Access to the airport or properties on the south side of Route 17K is limited to the entrance to the Air National Guard and two industrial/office parks. On the north side of Route 17K, the land use is rural industrial consisting of gas stations and corporate parks. At Governor Drive, Route 17K widens from two to four lanes in each direction to accommodate the I-84 interchange. There is also a wide raised median that provides for left turn lanes. On the west side of the interchange at Lakeside Road, long truck queues were noticed originating from the truck stop.

West of Lakeside Road, Route 17K again narrows back to its previous configuration of one lane in each direction with shoulders, but with no left turn lanes or median. This configuration continues until Route 17K intersects Factory Road, just inside the Village of Montgomery. Along this segment, the speed limit is 40 to 55 mph and major intersections are signalized. Land uses are rural residential, commercial and industrial consisting of homes, gas stations, auto repair shops, two elementary schools, and Valley Central High and Middle Schools. There are many curb cuts where there is commercial development. In this portion of the corridor, Route 17K crosses several key roadways including the newly constructed State Route 747, which intersects I-84 and provides direct access to Stewart Airport. At Route 747, Route 17K widens to two lanes per direction with a westbound left turn lane and eastbound right turn lane, and then narrows back to one lane per direction. The intersection capacity at State Route 208 and Route 17K was recently expanded to provide separate left, through and right turn lanes, another recent construction project to accommodate area growth.

Within the Village of Montgomery, Route 17K consists of one travel lane per direction, with shoulders (curbed on the north side), discontinuous sidewalks on the north side, and no sidewalks on the south side of the street. Parking regulation signs are not posted along this segment and the speed limit is 30 mph. Only the State Route 211 intersection is signalized, and it does not have pedestrian signals. Single-family homes, one story commercial buildings, and one story professional offices are the dominant building type in the Village center. Each home or business has a curb cut for a driveway, and access control is a potential safety issue, especially near the Route 211 intersection in the center of the Village. West of this segment, Route 17K curves and crosses the Wallkill River, continuing west with narrower shoulders, an increased speed limit of 55 mph, and rural residential land uses.

**Route 9W**

U.S. Route 9W (9W) is a U.S. highway that extends about 140 miles from the foot of the George Washington Bridge in Fort Lee, NJ, and terminates in Albany, NY. The Study Area includes the section...
of 9W from just north of the U.S. Military Academy at West Point and Storm King State Park in the Village of Cornwall-on-Hudson, extending north through the Towns of Cornwall and New Windsor, the City of Newburgh, and the Town of Newburgh, to the Ulster County line. North of I-84, 9W is designated as a National Highway System corridor. Route 9W is typically one to two lanes in each direction, with shoulders and occasional medians or turning lanes at key intersections. Land use along its length varies from the dense residential and commercial centers in the City of Newburgh to the more sparsely populated residential areas and local retail areas both north and south of the City.

Beginning in the southern portion of the Study Area, Route 9W descends from Storm King Mountain through forested lands to the intersection of Reservoir Road in the Village of Cornwall-on-Hudson. Along this section, Route 9W is two lanes in each direction with a “jersey barrier” median and has a speed limit of 45 mph. Near the intersection with Continental Road, Route 9W continues as a limited access highway for approximately two miles within the Town of Cornwall and, after crossing over Quaker Avenue, enters a residential enclave of the Town where it directly intersects with local neighborhood streets and driveways to commercial and retail establishments. Route 9W still has two lanes in each direction, separated by a grassy median. At key intersections, such as at Laurel Avenue, the inside lanes in each direction are hatched to narrow the roadway to a single through lane and then used to add left turning bays in each direction. Laurel Avenue is a signalized intersection that provides access to St. Luke’s Cornwall Hospital. Based on preliminary observations, moderate to heavy traffic flows were seen in this area.

Once north of Laurel Avenue, the roadway resumes as two travel lanes in each direction until approaching Forge Hill Road (County Route 74). Forge Hill Road is a key roadway connecting 9W to Vails Gate to the west, one of the few roadways making this east-west connection. Approaching Forge Hill Road, the northbound center lane of 9W is gradually hatched out to channel traffic into a single northbound travel lane; the inside lane then becomes a left turn bay to facilitate northbound lefts onto Forge Hill Road. Congestion was observed at this location and has been reported during conversations with local municipalities.

Continuing north through the Town of New Windsor, 9W resumes as two lanes in each direction with a grassy center median, and land uses alternating between commercial and residential. The area from Caesars Lane to Lafayette Drive is dominated by large commercial buildings, with some smaller residential neighborhoods. At Union Avenue (County Road 69), a major east-west roadway connecting to New Windsor to the east and Stewart International Airport to the west, the median is paved to accommodate left turn lanes in each direction. The median resumes north of Union Avenue. Other key roadways intersecting 9W in this area are: Blooming Grove Turnpike, which connects to Route 94 to Vails Gate; River Road, which provides north-south access along the river and connects to southbound 9W; and Old Route 9W, which connects to northbound 9W and provides access to residential areas to the west. Old Route 9W then intersects Union Avenue just east of the intersection of Union Avenue and 9W. This area remains characterized by a mix of large commercial businesses and residential neighborhoods.

Continuing north, 9W remains in the same configuration, and land uses become largely residential to the west and a mix of retail, commercial and industrial to the east, up until Walsh Avenue. At the intersection of 9W, Walsh Road and Route 94 (Quassaic Avenue), 9W is no longer a divided roadway. The two moving lanes are reduced to a single wide lane in each direction with some on-street parking, and the posted speed limit is 30 mph. From Walsh Avenue to John Street, Route 94 merges with Route 9W. For a single block between Walsh Avenue and Mill Street, 9W has parking lanes along the small local retail center in this area.

Just north of Mill Street, where Route 9W enters the City of Newburgh, Route 9W is known as South Robinson and Robinson Avenues until it intersects Interstate 84 (I-84)/Route 52 at the northern boundary of the City of Newburgh. Robinson Avenue was recently reconstructed within the City of Newburgh using American Recovery and Reinvestment Act stimulus funding from the Federal Highway Administration and New York State. A major issue during the construction period was the costs of funding non-road infrastructure that was in disrepair. While reconstruction of all infrastructure with a road makes sense, communities often-times have to seek multiple sources of funds to complete a single project.

South Robinson Avenue is configured primarily with one to two travel lanes in each direction with sidewalks, and parking along some blocks. All intersections are signalized, and sidewalks are found along the entire segment of 9W within the City. South of the intersection of 9W with Route 17K/Broadway, land uses along 9W are a mix of uses including single and multifamily homes, schools, parks, and local retail. At this intersection, left turn lanes are added to the one travel lane in each direction. 17K/Broadway is the primary retail street in the City, and also connects the City to all points east. North of Broadway, 9W/Robinson Avenue has primarily residential, park, and school land uses until I-84, with the roadway configuration changing between one or two lanes in each direction and generally no parking. Some heavy traffic is noticeable around the area of I-84 where double left turn lanes and two through lanes exist.

North of the City of Newburgh and the 9W/I-84 interchange in the Town of Newburgh, Route 9W traverses a less dense residential area. The roadway configuration in this segment is typically one wide travel lane in each direction separated by a double solid yellow line.
and the posted speed limit increases to 40 to 45 mph. A moderate level of traffic was observed at Chestnut Lane, which connects to the west to Route 32. Approaching Fostertown Road, where left turn bays are added to northbound and southbound 9W, initial observations indicated heavy queues and delays as far south as Lester Road. Continuing north, land uses along 9W are predominantly residential and commercial, and the lane configuration generally remains one traffic lane per direction. The speed limit north of the City of Newburgh increases to 40 to 45 mph. Continuing to the Ulster County line, the land use shifts back and forth between largely isolated residential areas and light commercial businesses.

NY Route 300

New York State Route 300 (Route 300) is a north-south roadway, extending about 15 miles from Vails Gate in the Town of New Windsor, through the Town of Newburgh and then northwest to where it terminates in the hamlet of Wallkill.

Within the Study Area, it is aligned just east of and generally parallel to I-87. Land uses along Route 300 are mixed throughout the corridor, but dominated by heavy commercial and retail uses between Route 17K and Route 52.

Route 300 originates at the complicated five-legged intersection with Routes 94 and 32 in Vails Gate, known locally as “Five Corners.” Five Corners is an expansive intersection with automobile-oriented development on all corners. Development includes big box retail, fast food restaurants, gas stations and local retail. There are numerous driveways and curb cuts, many of which are within a few feet of the intersection. Each approaching roadway has multiple turning lanes with directional signage; multiphase traffic signalization is used to operate the intersection. Route 32, described later, has two to three lanes in each direction, and Route 94 has two approach lanes and one receiving lane in each direction. Route 300 has two southbound turning lanes and one receiving lane at this intersection. Heading north from Five Corners, Route 300, also known as Temple Hill Road, is approximately 45 feet wide and consists of one travel lane per direction, a center left turning lane and narrow shoulders. The posted speed limit is 40 mph and there are no sidewalks. The center turning lane serves small to medium commercial businesses, small retail shopping strips and restaurants.

At the unsignalized intersection of Route 300 and Old Temple Hill Road, Route 300 narrows to one travel lane per direction with wide 12 foot shoulders, and generally remains in this configuration until its junction with Route 207. In the southern portion of this segment, land uses are characterized by large areas of undeveloped land with some residential uses such as single family homes and a large complex of multifamily housing located at Continental Mountain. The National Purple Heart Hall of Honor is located near Fisher Lane. Heading northward toward the unsignalized Industrial Way intersection, land uses become increasingly commercial. For example, uses include small executive park offices, a rental storage facility, auto body collision shop, restaurants, hotel, animal hospital, light to medium truck equipment rentals/sales retail, and a Coca-Cola distribution center.

Continuing northward past the signalized intersection of County Route 69 (Union Avenue), Route 300 merges with Route 207, known as “Little Britain Road”, and runs concurrently with Route 207 for approximately one-third of a mile until the NYS Thruway I-87 overpass. The roadway is narrow, with one travel lane per direction and very narrow shoulders. At the signalized T-intersection of Route 300 at 207, Route 300 makes a right turn and continues north while Route 207 continues west. The southbound approach of Route 300 is striped with dual left turn lanes turning onto Routes 207/300 and one exclusive right turn lane turning onto Route 207.

The next segment of Route 300, which is also known as Union Avenue, continues north to Route 17K. The roadway is approximately 57 feet wide and consists of two lanes per direction, a two-way-left-turn lane (left turns made in either direction) and no shoulder lanes. The roadway has slight grade changes and the center left turn lane serves small to medium commercial businesses, including an Orange County Department of Public Works facility. The two-way-left-turn lane reverts to exclusive left turn lanes at key shopping center entrances and roadway

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intersections. The land use in this segment is significantly big box retail, with small to medium commercial businesses, gas stations, and fast food chain restaurants. Key retailers in this area include the Walmart Supercenter, Home Depot, Lowes, Adam’s Super Farm Market, Barnes and Noble, Michael’s Art and Crafts, and Pier One Imports. Traffic volumes would be expected to be heavier in this area than the more southerly segment of Route 300.

At the intersection of Routes 300 and 17K, the northbound approach roadway widens to approximately 85 feet and consists of dual left turn lanes, two through lanes, and one right turn lane. Both eastbound and westbound approaches on Route 17K have the same five lane configuration; however the southbound approach of Route 300 has only three lanes, one left turn lane, one through lane, and one shared thru-right turn lane. This intersection of two of the major arterials in the area is prone to substantial congestion.

For approximately the next mile, Route 300 provides access to and from Route 17K and two interstate highways, I-87 and I-84. At the end of 2009, a major construction project was completed to create a direct interchange between I-87, the New York State Thruway, and I-84. Whereas previously vehicles would have to exit I-87 onto Route 300 to be able to connect to I-87, now this is no longer required. Exit ramps to and from each highway still connect to Route 300, including Exit 17 of I-87 and Exits 7N and 7S of I-84. Within this segment, the roadway width and lane configuration of Route 300 varies, with added acceleration/deceleration lanes and turning lanes to enable access to the highways. At Stewart Avenue, located between the two intersections, Route 300 widens to about 100 feet.

From I-84 to Route 52, the roadway returns to its previous configuration of 60 feet wide, with two travel lanes per direction, a reversible center left turn lane and no shoulder lanes. The reversible center left turn lane reverts to exclusive left turn bays at key shopping center/mall entrances and rural local road intersections like Meadow Hill Road/Meadow Avenue. Commercial retail and small businesses predominate, with the Newburgh Mall located just north of the I-84 interchange.

North of the intersection with Route 52, entering the hamlet of Gardnertown, Route 300 narrows to about 32 feet wide with a single travel lane in each direction and narrow shoulders. The speed limit ranges from 40 and 45 mph. Alternative names for Route 300 in this area are Union Avenue, which then splits off to the west, after which Route 300 is also known as Plattekill Turnpike. The land use in this segment is primarily residential with sparse commercial businesses. Jeanne Drive services a sizeable industrial area, and a number of local retail uses are located near the junction of Routes 32 and 300.

At the junction of Route 32 and 300, Route 300 turns left while Route 32 continues north as Plattekill Turnpike. Route 300 (known as North Plank Road) continues to travel in the northwest/southeast direction and resumes the former configuration with one lane in each direction until reaching the boundary of the Study Area at the edge of the Town of Newburgh.

NY Route 32
New York State Route 32 (Route 32) extends throughout much of New York State, from Harriman and Woodbury at its southern end where it intersects with State Routes 6 and 17, and I-87, to Glens Falls near the Adirondacks in the north. Within the Study Area, Route 32 traverses the Towns of Cornwall and New Windsor, Vails Gate, the City of Newburgh (where it operates concurrently with 9W for approximately 10 blocks), and the Town of Newburgh where it continues north of the Chadwick Lake reservoir to the Ulster County border. Generally, the roadway is one lane in each direction with few divided and no limited-access sections. Land uses along Route 32 vary along its length, and include undeveloped wooded areas, hamlet centers, residential neighborhoods and retail development. Along with 9W and I-87, Route 32 provides motorists with an important access route north and south through the Study Area.

At the south end of the Study Area between the communities of Mountainville and Orrs Mills, Route 32 parallels Moodna Creek through a forested valley and sparsely developed residential area. Driveways to individual homes or roads to upland small neighborhoods intersect Route 32 every few hundred feet along this segment at stop controlled intersections. The roadway is one lane in each direction, with shoulders, and a posted speed limit varying between 40 and 55 mph. After passing the Storm King Art Center to the west, Route 32 intersects Quaker Avenue (County Route 107), a signalized intersection which extends to the east to the Village of Cornwall-on-Hudson. North of Quaker Avenue, Route 32 crosses over Moodna Creek via a steel bridge just south of the intersection with Orrs Mills Road (CR 20).

Proceeding north from Orrs Mills Road, Route 32 enters the Town of New Windsor and has a wider cross-section with two northbound lanes, one southbound lane, and shoulders on each side of the road. This segment is more heavily developed with additional residential uses and commercial businesses with parking lots. Approaching Ardmore Street, the roadway narrows to one travel lane in each direction, then widens significantly approaching the five way intersection in Vails Gate (described as part of Route 300). On Route 32 specifically, the northbound leg has three approach lanes and two receiving lanes, while the southbound leg has two approach lanes and one receiving lane. The other three legs of the intersection have a similar roadway configuration, with Routes 300 and 94 each having two approach lanes and one receiving lane.

North of Vails Gate, Route 32, also known as Windsor Highway, narrows to one lane in each direction with a center left turn lane or hatched median. North of Old Forge Hill Road, the center lane no longer exists, and Route 32 resumes as a single lane in each direction, widening at major intersections to accommodate left turn lanes. Land uses north from Five Corners are predominantly retail and commercial stores, fast food restaurants, strip malls, and other developments. Each has its own parking lot and access driveways, resulting in frequent curb cuts. North of Willows Lane, the land use is a mix of residential, recreational and commercial. At Union Avenue, there are moderate levels of traffic from Union Avenue extending back onto Route 32. North of Union Avenue until the City of Newburgh, land uses remain primarily commercial, but with some industrial and undeveloped land (which may be in the process of being developed).

Caption: Route 32 northbound between Vails Gate and Old Forge Hill Road Route
Upon entering the City of Newburgh, the roadway width and configuration varies from one lane in each direction, to two lanes per direction at Lake Drive, to two lanes plus left turning lanes at South William Street. Once north of Washington Street, Route 32 narrows again to one lane in each direction. Within the City, sidewalks are typically found. At its intersection with Route 17K, Route 32 turns east to run concurrent with 17K/Broadway, then turns north to run concurrent with 9W (refer to Route 17K and 9W for the description of Route 32 in this segment).

Just north of I-84, Route 32 turns left to the northwest while 9W continues to the north. Alternatively named North Plank Road along this segment, Route 32 resumes its typical configuration of one traffic lane in each direction with occasional additional left turn lanes, such as at Mid Valley Shopping Mall at Winding Lane. North of Chestnut Lane, the commercial oriented land use becomes more mixed, with some residential neighborhoods located on the east side of Route 32 and Cronomer Hill Park to the west. The roadway widens at the intersection with Route 300 to accommodate three moving lanes northbound and two moving lanes the southbound. At Route 300, Route 32 turns right to head north, with a single lane in each direction, and traverses a wooded and less populous area until reaching the boundary of the Town of Newburgh and this Study Area. Just north of this boundary, however, Route 32 is met by Fostertown Road, which connects to 9W to the southwest.

**NY Route 52**

New York State Route 52 (Route 52) extends generally east-west. Its westerly terminus is the Pennsylvania state border near Narrowsburg, and its easterly terminus is on the east side of the Hudson River in Carmel in Putnam County. Within the Study Area, Route 52 traverses the Towns of Newburgh and Montgomery, and the Village of Walden. The roadway is primarily one lane in each direction with narrow shoulders, but land uses vary along the corridor.

Route 52 enters the Town of Newburgh from the east on the I-84 right-of-way over the Newburgh-Beacon Bridge, and continues concurrent with I-84 along the north edge of the City of Newburgh line. It begins its own right-of-way at Exit 8 in Glenwood Park where Route 52 has one travel lane per direction, narrow shoulders, no sidewalks and a posted speed limit of 30 mph. The major intersections are signalized. Nearly all the property along this segment is developed; land uses consist of single family homes with some small commercial development, and there are frequent curb cuts at each house and business. Preliminary observations indicate moderate to high volumes of turning traffic on and off Route 52, with critical intersections at Powder Mill Road and the I-84 ramps. The I-84 ramps have two left turn lanes and one right turn lane, while Powder Mill Road does not have any turn lanes; eastbound and westbound Route 52 consist of single-lane approaches at Powder Mill Road. North of Powder Mill Road, land uses along Route 52 become commercial and consist of strip malls and stand-alone retail and restaurant businesses with off-street parking; there are frequent curb cuts and stretches of open access at some businesses. The intersection with Route 300 has no left turn lanes, which could contribute to area congestion.

Route 52 continues with the same configuration of one lane in each direction from Route 300 to where it enters the Village of Walden. Within this segment, only the intersections of Lakeside Road and Rock Cut Road/Orange County Route 23 are signalized. The character of the area is rural and the land uses consist of single family homes, condominiums, and limited, small commercial developments; there are infrequent curb cuts. Berea Road is a local residential street that also serves as a cut-through from eastbound Route 17K to eastbound Route 52. Heavy vehicle traffic was observed turning from Berea Road onto eastbound Route 52.

From East Avenue, located near the border of the Village of Walden, until the intersection with Route 208 in the Village center, Route 52 has sidewalks and the narrow shoulders widen to eight feet to accommodate parking. On-street parking is allowed in places and the speed limit is 30 mph. Only the intersection of Route 208 is signalized, and there are no left turn lanes or pedestrian signals. Land uses consist of single family homes and commercial, and there are frequent curb cuts. Route 52 merges with Coldenham Road (County Route 75) just east of the intersection of Routes 52 and 208. Heavy vehicle movements and sight lines create problematic conditions at this merge.
Route 52 continues through the Village of Walden, across the Wallkill River Bridge. It is 40 feet wide with one travel lane per direction, sidewalks, and with on-street parking. Major intersections are signalized and have pedestrian signals, and there are no left turn lanes. The density is consistent with a Village center with two-to-three story buildings, with street level retail and with office and residential uses on upper floors. There are no curb cuts within the Village. All signalized intersection approaches have a single lane, causing traffic to wait behind turning vehicles.

From the Village line to the Study Area boundary at the edge of the Town of Montgomery, Route 52 remains in the same configuration, but sidewalks and on-street parking are no longer present. The posted speed limit is 55 mph, there are no left turn lanes, and the only signalized intersection within this segment is Albany Post Road. The area is rural; its land uses consist of single family homes and very little commercial, with infrequent curb cuts.

**NY Route 207**

New York State Route 207 (Route 207) is a 19-mile long, east-west roadway that runs from Route 17K in the City of Newburgh, across Orange County to its western terminus at Route 17 in Goshen. The eastern half of Route 207 is located within the Study Area of this project and is also known as Little Britain Road. It extends from the City of Newburgh, through the Town of Newburgh, passing alongside the southern portions of Stewart International Airport and Stewart State Forest. The posted speed limit on this road is primarily 40 to 45 miles per hour (mph). Route 207 is also a designated roadway in Orange County for NYSDOT State Bicycle Route 17 which travels east-west through the entire state.

Within the City of Newburgh, Route 207 begins as the south leg of the signalized intersection of Broadway and West Street/Little Britain Road (Route 207). It quickly transitions from a north-south roadway to northeast-southwest oriented roadway until the western end of the City. For most of this segment, Route 207 operates with one lane per direction and has a sidewalk on one or both sides of the street. West of Clark Street at the southwestern end of the City, Route 207 loses its sidewalk and transitions to one lane per direction and shoulders on both sides of the road, and generally maintains this character throughout the rest of the Study Area. There are also guardrails along portions of Route 207 including its scenic crossing of Lake Washington. Land uses along this segment include residential and commercial, but there are also long stretches without any development adjacent to the road.

Route 207 continues west from the City of Newburgh into the Town of Newburgh. The section between Route 207 and Route 52 is not included in the Study Area of this project.
300 and Route 747 to the west is the heaviest traveled and most congested portion of the route. At the beginning of this section, Route 207 meets Temple Hill Road. This is a three legged (or "T") intersection where eastbound vehicles can either turn left to Temple Hill Road or right to continue along Route 207. There are some commercial uses surrounding this intersection; however, Route 207 quickly transitions back to its previous character.

As it reaches Union Avenue (Route 300), Route 207 overlaps with Route 300 for a short stretch and widens to one through lane and one turning lane with very narrow shoulders on each side of the road. The westbound approach also has a wide striped median. Just west of this intersection, Route 207 passes under the New York State Thruway, I-87. The bridge over Route 207 constrains this currently congested intersection and makes any future improvements complex and expensive.

West of I-87, Route 207 continues to operate with one lane per direction, but also has increased commercial activity and has several curb cuts. There are no signalized intersections along this segment until Breunig Road which is the southern entrance to Stewart International Airport from Route 207. Westbound Route 207 widens at this intersection to one travel lane and one channelized right turn lane to accommodate vehicles accessing the airport.

Between Breunig Road and the western end of the Study Area, commercial activity along Route 207 decreases substantially, and the roadway becomes rural in character. Route 207 continues to operate with one lane per direction and shoulders on both side along this segment except at its two signalized intersections, Avenue of Americas and New York Route 747. At both of these intersections, Route 207 widens to accommodate an eastbound left turn lane and a westbound striped median. At Avenue of Americas, Route 207 also has a westbound right turn lane.
Figure 4-1: Current Zoning in the Greater Newburgh Study Area.
4. Analysis & Assessment

A. Introduction

The Study Team used an iterative process, a land use build-out model, and a travel demand model to assess future land use effects on the transportation network and to help identify priorities for investments to the transportation network and changes to land use practices.

This chapter describes how the two separate models – one for land use and one for traffic – were developed for the Study Area and how the two models were then integrated with stakeholder outreach efforts to develop a set of scenarios for testing of future conditions.

Recommendations for transportation and land use are presented in Chapter 5.

B. Land Use Build-Out Scenarios

Build-Out Analysis Methodology

The fundamental building block of an alternatives analysis for a regional land use and transportation study is the build-out analysis. A build-out analysis demonstrates where growth may occur in the future. In this study, it was based on current zoning, land use regulations, ecological constraints, and development practices (see Figures 4-1 to 4-3).

Beginning with an updated map of existing land use and approved but unbuilt developments, the Study Team identified properties that were not currently developed nor protected from future development as parkland or open space. These parcels were classified as “developable” parcels. The Study Team also identified any projects that were recently approved or pending approval before local municipal planning boards – the amount of residential and/or commercial development on those parcels was then entered into the database to supplement existing levels of development.

Ecological constraints including water bodies, floodplains, wetlands, and steep slopes were identified and subtracted from the developable parcels and the remaining areas are classified as developable land. Each municipality’s zoning code was translated into allowable number of housing units per acre and allowable commercial square footage (accounting for such needs as parking and stormwater management). These ratios, specific to each zoning category within each community, were applied to all developable land across the Study Area. As a result, each parcel that was not currently developed or protected was assigned a number of...
potential housing units or the amount of commercial square feet that can be built on it under current zoning, accounting for ecological constraints and parking needs. Depending on the commercial establishment type allowed in each zone (e.g., industrial, retail), the potential square footage of each commercially zoned property is multiplied by a job density factor for that commercial establishment type to get a potential number of jobs enabled on each parcel. The result is an estimate of the total number of households and jobs that could be built across the entire Study Area under current zoning.

It is important to note that the build-out methodology does not make any specific accommodation for provision of water supply or wastewater treatment infrastructure. For the purposes of this analysis it is assumed that adequate water supply and wastewater treatment is either available or would be made available to accommodate that new growth. In the scenarios that do constrain development based on future population, priority was given to those parcels that are within existing water supply or wastewater treatment districts. The study team recognizes the challenges confronted by Orange County communities in providing these essential pieces of infrastructure but could not address these challenges within the scope of this study.

A build-out can be unconstrained by time or population and economic conditions (i.e. what amount of development would occur based simply on what the zoning permits) or constrained by a time factor or other socio-economic factor (i.e. how much development would occur to meet projected population forecasts).

The Unconstrained Build-Out analysis demonstrates the capacity for development under current zoning, but tells us nothing about the future demand for housing units or commercial space. The population constrained build-out analysis demonstrates where development...
is likely to go in the foreseeable future to meet projected population growth and is referred to here as the “Business as Usual” scenario. Comparing the unconstrained build-out with the constrained build-out is useful to see whether local zoning regulations are consistent with anticipated demand for housing and commercial development. Two other land use scenarios were developed. Smart Growth A evaluates projected land development patterns following the stated vision of Study Area communities as reflected in their latest comprehensive plans. Where specific new zoning districts or densities were identified, the Study Team estimated future development based on those numbers. Where only a general vision or intent to achieve density was identified, the Study Team approximated density based on what was determined reasonable. Smart Growth B built upon the Smart Growth A scenario but increased density in certain locations where the Study Team felt additional development could occur, still in keeping with the visions established by local community comprehensive plans.

For purposes of this analysis, the Study Team used Orange County Department of Planning’s population forecasts for the year 2035. That forecast projects approximately 13,820 additional housing units and 16,500 additional jobs over the course of the next 25 years. Figure 4-4 summarizes the results of each of the build-out scenarios.

Unconstrained Build-Out

The Unconstrained analysis revealed that while the Study Area communities had only slightly more land zoned for residential uses than are projected to be needed, the Study Area communities had an excessive amount of land zoned for commercial uses than could be used to meet current projections for new employment by 2035. Based upon existing zoning codes, the Study Area enables development that might support 105,000 new jobs (compared to the 48,457 jobs that exist now within the Study Area). However this is very unlikely to occur in anything but a very long term given that current Orange County projections indicate that 16,500 new jobs would be added to the Study Area by 2035.

Table 4-1 summarizes existing residential dwelling units and employment and the Unconstrained Build-Out analysis for each of the Study Area communities. The difference between the area’s capacity for development and its projected growth enables one to draw some initial conclusions about future development patterns under current zoning.

Applying the 2035 population projections to the Study Area (at the ‘old’ pre-recession pace) would consume 96% of the Study Area’s residentially zoned land. In other words—these communities would be close to built out in that relatively short span of time. That this now seems unlikely to occur may be some indication of the unsustainability of the pace of growth that had been occurring. On the other hand, many other communities around the country have indeed been completed built out in such short spans of time that residents wake up one day to wonder how such a thing could happen; and come to regret not planning for things that they could or should have, such as, among other things, a logical transportation network, parks, community centers and services, schools and open space. It is not known whether the pace of growth that had been occurring will resume in the future. For the purposes of planning, it would be prudent to presume that population, economic and other pressures will lead to a resumption of a robust development pace in Orange County. Given the potential of quick build-out across the landscape, instead of using a 20 year planning and zoning horizon, which can be typical, communities may find it desirable to extend the planning horizon to consider longer-term growth and ways to prioritize where growth should happen within the first 20 year horizon to be consistent with community vision, community character, and present (or planned) infrastructure capacity. This approach would allow the communities to more carefully plan for roadway investments, open space acquisition, and provision of water and sewer infrastructure in a manner that makes best use of limited funding while protecting community character and the environment.

Projected commercial demand would only necessitate the utilization of just less than 16% of these nine municipalities’ commercially zoned land. This is not surprising given the common practice that occurs in New York and other northeastern states where there is a tendency to over-zone for those land uses that produce – or are perceived to produce – the highest net revenue after the cost of services and tax breaks/incentives are deducted. Commercial uses are typically more revenue-positive than neighborhoods of single-family houses.
Figure 4-4: Study Area Buildout Footprints by parcel showing Existing Developed and the Business As Usual Buildout.
Figure 4-5: Study Area Buildout Footprints by parcel showing Existing Developed, Smart Growth A, and Smart Growth B Buildouts.
which generate costs for community services such as schools, police, and fire. Therefore, this dramatic over-zoning for commercial development is not surprising in communities that may be trying to attract revenue-positive land uses. However, enabling nearly seven times as much commercial development as is likely to occur over a 25-year period results in significant unpredictability regarding the location of commercial establishments, and may suggest that there is an opportunity for communities to more carefully plan for where new commercial development should go and should down-zone (reduce permitted density/intensity of land use) in areas that are not actually preferred for commercial uses.

### Business-as-Usual Build-Out

To determine which residential parcels were most likely to be developed in order to accommodate projected demand, a “Business-as-Usual” Build-Out model was developed. Based on proximity to existing neighborhoods, proximity to retail and employment, and access from State and County roads, each residentially zoned parcel was assigned its relative attractiveness for development. The most likely properties to be developed were selected until the projected number of housing units was accommodated. The remaining parcels – accounting for only 4% of zoning-enabled housing units across the Study Area – retained their previous land use whether that was vacant, forest, or farmland.

To determine which commercial parcels were most likely to be developed in order to accommodate projected demand, the spatial distribution of Orange County employment projections was used in combination with a similar model as that which was developed for residential development. Those 16,500 additional projected jobs are broken down by employment type and assigned to sub-areas within the Study Area. Within each of those sub-areas, the most likely to develop commercial properties by commercial type (e.g., retail) were selected based on their proximity to existing commercial concentrations, proximity to Stewart Airport, proximity to highway interchanges, and access from State and County roads. The remaining parcels retained their previous land use whether that was vacant, forest, or farmland.

### Table 4-1: Unconstrained Build-Out

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<td><strong>105,651</strong></td>
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*Notes: DUs = Dwelling Units. Approved or pending project dwelling units and jobs were included in the Build-Out estimates.*

### Table 4-2: Business-as-Usual Build-Out

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*Notes: DUs = Dwelling Units. Approved or pending project dwelling units and jobs were included in the Build-Out estimates.*

### Table 4-3: Smart Growth A Build-Out

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*Notes: DUs = Dwelling Units. Approved or pending project dwelling units and jobs were included in the Build-Out estimates.*

### Table 4-4: Smart Growth B Build-Out

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<td>40%</td>
<td>16</td>
<td>1%</td>
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<tr>
<td>Village of Montgomery</td>
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<td>532</td>
<td>223</td>
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</tr>
<tr>
<td>Village of Walden</td>
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<td>Town of Cornwall</td>
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<tr>
<td>Town of Montgomery</td>
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<td>5,896</td>
<td>3,944</td>
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<tr>
<td><strong>Study Area</strong></td>
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<td><strong>13,564</strong></td>
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<td><strong>16,654</strong></td>
<td><strong>34%</strong></td>
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</tbody>
</table>

*Notes: DUs = Dwelling Units. Approved or pending project dwelling units and jobs were included in the Build-Out estimates.*
Table 4-2 summarizes existing residential dwelling units and employment and the Business-as-Usual Build-Out analysis for each of the Study Area communities. Allocation of new jobs between the nine Study Area communities followed recent practice to locate jobs outside of Village centers and along major corridors easily accessed from I-87 or I-84. Thus, the major corridors such as Route 17K, Route 300, and Route 207 would see large increases in employment while the Villages of Cornwall-on-Hudson, Montgomery, and Walden would see no increase in employment. The Village of Maybrook was estimated to see new employment under this scenario given the large amounts of land (e.g., the Yellow Freight and adjoining parcels) that could easily accommodate new jobs.

Smart Growth A

The first alternative scenario to the Business-as-Usual scenario was based on the comprehensive plans of the nine communities of the Study Area. Each comprehensive plan contains recommendations regarding the location of future development, specifically identifying portions of the city, town, or village that should be protected from growth and portions of the same community where growth should be targeted. In areas of each community targeted for protection or preservation, it was assumed that zoning and other regulatory tools put in place by that municipality would be 75% effective at maintaining their preservation from residential development. For areas identified in each community’s comprehensive plan for additional growth and investment, it was assumed that suburban areas would be permitted to develop at 150% their existing residential density, villages would accommodate infill development at the low end of typical village-scale residential densities, and that the City of Newburgh would be successful at achieving half of its waterfront redevelopment and residential infill objectives. After allocating future growth to the priority growth areas identified by the communities and determining the partial protection of the preservation areas, the remaining projected development not yet accommodated was spread across the communities of the Study Area using the model developed for the Business-as-Usual to distribute that growth to those residential parcels most likely to be developed. For commercial development, this scenario assumes that the City of Newburgh and village centers would achieve employment growth commensurate with their population growth and that the majority of the commercial development would occur in areas more contiguous with Stewart International Airport and – along with the new jobs in centers – would be significantly less dispersed than under the Business-as-Usual scenario.

Table 4-3 summarizes existing residential dwelling units and employment and the Smart Growth A Build-Out analysis for each of the Study Area communities.

The Smart Growth A Build-Out accommodated the 13,820 projected new dwelling units by allocating new units where comprehensive plan recommendations encourage new growth. However, it is notable that new residential units in the villages are in some cases less than either the Unconstrained or Business-as-Usual models. This suggests that the municipal comprehensive plans for those communities might not encourage residential development as much as they could or as much as zoning currently allows. While some additional residential development is accommodated within the City of Newburgh, much of the Study Area’s growth continues to be accommodated in the towns, outside of the existing centers. The same can be said for allocation of new jobs. Much of the growth in jobs in the Smart Growth A scenario is located outside of existing centers and along the corridors where growth has occurred more recently. Interestingly, the Smart Growth A scenario was not able to achieve the projected number of 16,500 jobs – the difference indicates that existing comprehensive plans might not contemplate as much commercial growth as market trends indicate might happen.

Smart Growth B

The second alternative scenario to the Business-as-Usual scenario was a smart growth scenario that went beyond each municipality’s comprehensive plan recommendation or which indicated a greater
level of achievement of plan goals to explore an even more centers-oriented and transit-oriented development pattern that emphasized infill development in existing communities over new subdivisions. The City of Newburgh is anticipated to reach its infill and redevelopment goals with neighborhood solidification, Broadway’s transition to a high-intensity mixed-use corridor, and the waterfront’s evolution into a strong mixed-use node. The village centers are demonstrated to evolve into strong mixed-use activity and population centers with new neighborhoods on their edges expanding their pedestrian-oriented cores. New hamlet centers are shown to be created at key locations that could be served by transit routes—specifically along Route 17K. Areas targeted for preservation in municipal comprehensive plans were assumed to be completely successful in preventing growth. Some areas targeted for growth in the municipal plans that were not near transit or existing centers were not projected to add significant population. Job growth in Smart Growth B was also directed more toward the City of Newburgh and village centers while still accommodating new commercial businesses within the towns.

Table 4-4 summarizes existing residential dwelling units and employment and the Smart Growth B Build-Out analysis for each of the Study Area communities. A public workshop was held to obtain input from stakeholders on how allocation was assigned between the models and to discuss how the additional residential and employment projected in the Smart Growth B scenario could be accomplished within the Study Area communities. The study team used the Orange County Suburban Design Manual as a tool to guide the discussion of placemaking and focused discussion on how mixed-use and different housing types/densities could be integrated into the existing land use pattern. The workshop also explored the notion of creating walkable communities and better access to transit as a benefit of the denser community design. Finally, the context of provision of infrastructure and protection of open spaces were explored as benefits of guiding growth into existing and new centers.

While many workshop participants expressed their preference for a suburban lifestyle, participants recognized that some higher-density centers, or nodes, were necessary to provide opportunities for increased mobility and affordability while simultaneously allowing for large tracts of open space to be preserved. Participants collaborated on potential locations for development of varying densities. Referring aerial photography of the Study Area and maps showing existing environmental constraints, participants discussed appropriate areas for future development. Photographs of existing developments from across the region were used to describe the densities and housing types that were appropriate for each area. Most participants agreed that development should be channeled into existing centers such as the City of Newburgh and Study Area villages in order to provide for transit and pedestrian opportunities. However, recognizing that the existing centers could not reasonably accommodate all of the region’s forecast growth, participants also identified locations for new development at major crossroads and existing hamlet centers.

Table 4-5: New Dwelling Units within 0.5 miles of Parks and Open Space

<table>
<thead>
<tr>
<th>Business-as-Usual</th>
<th>Smart Growth A</th>
<th>Smart Growth B</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,080</td>
<td>10,164</td>
<td>11,103</td>
</tr>
</tbody>
</table>

Table 4-6: New Dwelling Units and Employment within 0.5 miles of Transit

<table>
<thead>
<tr>
<th></th>
<th>Business-as-Usual</th>
<th>Smart Growth A</th>
<th>Smart Growth B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwelling Units</td>
<td>1,822</td>
<td>1,579</td>
<td>3,812</td>
</tr>
<tr>
<td>Employment</td>
<td>10,448</td>
<td>12,655</td>
<td>12,655</td>
</tr>
</tbody>
</table>

Caption: NY Route 17K is lined with commercial establishments in proximity to major facilities.
One quick measure of how well the various build-out analyses meet Smart Growth or quality-of-life standards is the number of households within walking distance (one-half mile) of either open space or transit service. Table 4-5 and Table 4-6 show the number of households projected to meet those criteria for each of the land use build-out analyses.

The Smart Growth B scenario has 82 percent of new households located within walking distance of protected open space either in the form of local parks or regional forestland or farms. For both the Smart Growth A scenario and the Business as Usual scenario, 73 percent of their new households are located within walking distance of those open spaces. Since many of the existing protected open spaces are in developed areas, it is not surprising that new development concentrated in existing downtowns and neighborhoods would be most closely aligned with those parklands. Given that additional lands can always be protected within the Study Area, the lower rate of proximity in the Smart Growth A and Business-as-Usual scenarios does not necessarily imply that there would be lower access to open space, but rather that under those scenarios additional investment would need to be made to protect new lands in order to match the level of access to existing protected lands achieved in the Smart Growth B scenario. This investment would have to be made as part of a long-term plan to ensure adequate amounts of open space within each community. If that planning does not occur, access to open space cannot be guaranteed, and may, in the end, be more costly. Figure 4-5 demonstrates the total development footprint for each of the build-out scenarios.

Transit service to Study Area communities is currently provided by a variety of companies providing both local and inter-city or inter-regional bus service and commuter rail. Transit facilities are located at the Route 17K Park-and-Ride facility, along several of the Study Area corridors, and at the Metro-North Salisbury Mills station in the Town of Cornwall. Curiously, fewer housing units would be located along transit routes in the Smart Growth A scenario, principally because zoning codes do not fully implement the visions of community comprehensive plans that call for greater density within existing centers. Under the Smart Growth B scenario, those housing units are able to be provided closer to transit. Since many of the employment centers are currently located along the major corridors, transit service is available; however, under both Smart Growth A and Smart Growth B, more employment would be located within existing centers, thereby boosting access to jobs via transit.

### C. Building a Travel Demand Model

In order to forecast the effects of proposed changes in development patterns and modifications to the transportation system over a 25-year planning horizon, an analysis tool known as a travel demand model must be used. For this study, the primary objective of the travel demand modeling effort was to estimate how traffic conditions in the Study Area would be affected by future year land use changes and roadway network improvements. For this study, a two-stage modeling process was implemented:

- First, a “macro-level” regional travel demand model was used to forecast traffic conditions from a regional perspective on major roadways in the Study Area. Regional travel demand models are appropriate for large-scale analyses of the transportation system. For example, they can assess the impact of adding a new roadway to the transportation network, adding a new lane, or otherwise making a major change that is expected to have a regional impact on travel patterns.
- Second, microsimulation models were used to assess operational conditions on specific corridors and intersections needing more detailed analysis. Compared to a regional model, a microsimulation model can help determine how more small-scale improvements will affect the transportation system. For example, microsimulation can help analyze how changing signal timings or adding a left turn lane might affect the travel time for any given vehicle passing through a corridor or a specific intersection.

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**The travel demand model DOES...**

- provide information to help support decisions, along with other data and analyses
- analyze automobile trips
- count trips from one “traffic analysis zone” to another zone
- forecast traffic conditions within the “PM peak hour” (5-6pm)

**The travel demand model DOES NOT...**

- serve as a “crystal ball” and provide perfect representations of current or future conditions
- analyze transit, bicycle, pedestrian, or truck trips
- count very short trips entirely within one zone, or longer trips with multiple stops
- forecast morning, mid-day, overnight, or weekend traffic conditions
The regional travel demand model uses the VISUM software platform, while the microsimulation models applied to this project included VISSIM and Synchro. (Both VISUM and VISSIM were developed by PTV America, Inc., while Synchro is a product of Trafficware, LTD.)

Figure 4-6 is a generalized representation of how data are input to the regional travel demand model and then how, in turn, data from the regional model are used in the microsimulation model. Three main pieces of data are required to run the regional model:

- **Socioeconomic characteristics of the people living in the Study Area (which determines their value of time, where they travel, and how they travel)**
- **Characteristics of the land use in the Study Area (which helps determine how many trips are generated by and attracted to each part of the Study Area); and**
- **Characteristics of the roadway network in the Study Area. As indicated in Figure 4-6, for purposes of the regional travel demand model, the roadway’s speed and capacity are the main inputs. The microsimulation model needs much more detailed data, including detailed information on roadway geometry, signal timing, etc.**

In addition, the regional travel demand model software allows a user to modify certain assumptions about how people travel, for example a person’s tolerance for congestion or their average travel speed, that can affect the results of a model run. For the most part, these assumptions are held constant so that, over time, results of various applications of the model can be compared.

All of the tools used in this study have the following characteristics:

Figure 4-7 shows the four steps in a typical macro-level regional travel demand model. For this project, the first step, Trip Generation, was run in an off-model spreadsheet process and directly input to the VISUM software. The Trip Generation step determines how many trips are generated by land uses in each Traffic Analysis Zone (TAZ) in the Study Area and how many trips are attracted to land uses in each zone.

The second step, Trip Distribution, determines how many trips flow between each origin-destination pair, where an “origin” or “destination” is defined as a traffic analysis zone. The VISUM software contains algorithms to generate an origin-destination matrix (O-D matrix), based on factors like how attractive each destination zone is for people in any given origin zone, and how far each destination zone is from that origin zone.

Despite its sophisticated ability to develop a Trip Distribution matrix with hundreds or even thousands of rows and columns, the model does not estimate how many trips remain within each zone. Consistent with accepted travel demand modeling practice, it is assumed that such short “intra-zonal” trips, if made by automobile, have little or no impact on the roadway system. Thus, the model is not able to capture the potential substitution of pedestrian or bicycle trips for automobile trips that may occur under more compact, pedestrian and bicycle-friendly development patterns.

The third step in a typical model, Mode Choice, is omitted from the Newburgh Model because the underlying model, the Orange County Model, does not have the capability to estimate mode choice. In this Study Area, a minimal percentage of trips are currently taken

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1 A “TAZ” is a geographic unit similar (or sometimes identical) to a Census Tract defined by the U.S. Census Bureau. A typical TAZ contains around 3,000 people, and thus may vary in size, with smaller zones in more densely populated urban areas and larger zones in more sparsely populated rural areas.

2 However, this assumption can potentially introduce a source of error that can result in an artificially low estimate of the total number of trips in the Study Area. The process used to define Traffic Analysis Zones is typically careful to avoid zones that may allow for intra-zonal vehicle trips that exit a community onto a major, congested road and then enter another nearby community. In many of the Towns of Montgomery and New Windsor, large TAZs may allow for exactly that scenario. As will be described below, near congestion hot spots and key intersections in the Study Area, large TAZs were subdivided to reduce the potential for uncounted intra-zonal trips to pass through these hot spots.
using transit or non-motorized mode. Therefore, all trips in the model are assumed to be accommodated over the roadway network by automobiles. Similar to the discussion of bicycle and pedestrian trips above, the model cannot assess the impact of policies or investments to make transit a more attractive option for trips in the Study Area.

The fourth step, Traffic Assignment, determines which facilities in the transportation network are used by each trip between an origin-destination pair. The VISUM software uses information about the capacity of each link in the roadway network and the volume of traffic using or expected to use that link in the future. Initially, the network assignment may be weighted towards the shortest path for each trip, but through an iterative process, the software eventually converges on an optimal assignment of vehicles to the network.

Once these four steps have been completed and the model has reached convergence, the origin-destination information from Step 2 and the segment-level roadway network volumes from Step 4 can be used in a microsimulation model like VISSIM or Synchro to conduct a more detailed operational analysis of roadway network involving multiple intersections (VISSIM) or an isolated intersection (Synchro).

The travel demand model was calibrated to conditions specific to the Study Area using recent traffic counts obtained from manual turning-movement and automatic traffic recorder (ATR) counts collected by the Study Team in September 2010, manual and ATR counts collected by New York State Department of Transportation, and traffic impact studies prepared by various parties for land development projects within the Study Area. The Study Team also revised the Orange County Model to account for the new configuration of the I-87 and I-84 interchange. The Study Team also met with municipalities, NYSDOT, and Orange County Department of Public Works representatives to learn of any planned improvements within the Study Area.

The Study Team also estimated future trips associated with increased passenger activity at Stewart Airport. PANYNJ currently estimates that 3.3 million passengers per year will fly into or out of Stewart Airport by sometime between 2030 and 2040. That number of passengers translates into approximately 9,000 passengers per day or 693 passengers within the PM peak hour (evenly split between passengers arriving and passengers departing). Using estimates of the number of passengers PANYNJ hopes will use bus service to/from the Airport, the Study Team estimated that approximately 154 cars would be arriving and 154 cars would be departing during the PM peak hour. These numbers were included in the overall trip generation values layered on top of the existing conditions land use and the future land use scenario.
**D. Evaluation of Travel Demand Model Results**

### Intersection Analysis

A set of 18 traffic analysis locations was selected for assessing the potential effects of the proposed development scenarios (see Figure 4-8). These locations were selected based upon input from Study Area stakeholders and the Study Team’s own observations and professional judgment. These 18 intersections represent key locations along important corridors and a select number of locations within the Villages. They are considered to be a representative set of locations at which the effects of the land use scenarios could be assessed, potential roadway improvement packages outlined, and broad findings generalized for the Study Area as a whole. They do not reflect the only locations that could be affected. The 18 intersections are:

- Route 17K and Route 211/Union Street
- Route 17K and Route 208 (Scotts Corner)
- Route 17K and Route 747
- Route 17K and Rock Cut Road
- Route 17K and Route 300
- Route 17K/Broadway and Route 9W/Robinson Avenue
- Route 207 and Route 747
- Route 207 and Breunig Road
- Route 207 and Route 300
- Route 208 and Route 52/Main Street
- Route 208 and Neelytown Road/I-84 Ramps
- Route 300 and Route 52
- Route 300 and Route 94 (Vails Gate)
- Route 300 and Route 32
- Route 9W and Fostertown Road
- Route 9W and Route 32
- Route 9W and Forge Hill Road
- Route 94 and Jackson Avenue

### Measuring Congestion

The travel demand model produced outputs of volumes of new traffic and a “volume to capacity” (“v/c”) ratio at each of the 18 intersections. Net change in traffic volume is one indicator that improvements may be necessary at a location. The v/c ratio, as it is referred to, is another key metric for traffic engineers to identify locations where new volumes would cause additional congestion. The theoretical maximum capacity

**Table 4-7: 2010 Existing and 2035 Forecast Volumes and V/C Ratios**

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Volume-Capacity Ratio</th>
<th>Volume-Capacity Ratio</th>
<th>Volume-Capacity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exist. BAU SGA SGB</td>
<td>Exist. BAU SGA SGB</td>
<td>Exist. BAU SGA SGB</td>
</tr>
<tr>
<td>1 NY 17K &amp; Union St/Route 211</td>
<td>1,414 1,565 1,601</td>
<td>1,561 0.87 0.97 0.99</td>
<td>0.96 0.96 0.96</td>
</tr>
<tr>
<td>2 NY 17K &amp; NY 208</td>
<td>2,260 2,762 2,788</td>
<td>2,765 0.57 0.70 0.71</td>
<td>0.70 0.70 0.70</td>
</tr>
<tr>
<td>3 NY 17K &amp; NY 747</td>
<td>1,939 2,519 2,591</td>
<td>2,671 0.48 0.62 0.64</td>
<td>0.65 0.65 0.65</td>
</tr>
<tr>
<td>4 NY 17K &amp; Rock Cut Rd</td>
<td>1,769 1,792 1,839</td>
<td>1,794 0.97 0.98 1.01</td>
<td>0.99 0.99 0.99</td>
</tr>
<tr>
<td>5 NY 17K &amp; NY 300</td>
<td>3,668 4,062 4,125</td>
<td>3,956 0.88 0.98 0.99</td>
<td>0.95 0.95 0.95</td>
</tr>
<tr>
<td>6 NY 17K &amp; Robinson/US 9W</td>
<td>2,235 2,445 2,324</td>
<td>2,439 0.75 0.82 0.78</td>
<td>0.82 0.82 0.82</td>
</tr>
<tr>
<td>7 NY 207 &amp; NY 747</td>
<td>1,477 2,361 2,321</td>
<td>2,315 0.58 0.93 0.91</td>
<td>0.91 0.91 0.91</td>
</tr>
<tr>
<td>8 NY 207 &amp; Breunig Rd</td>
<td>1,361 2,557 2,187</td>
<td>2,115 0.46 0.86 0.73</td>
<td>0.71 0.71 0.71</td>
</tr>
<tr>
<td>9 NY 207 &amp; NY 300</td>
<td>3,025 3,137 3,172</td>
<td>3,196 0.90 0.94 0.95</td>
<td>0.95 0.95 0.95</td>
</tr>
<tr>
<td>10 NY 208 &amp; Main St/NY 52</td>
<td>1,270 1,629 1,737</td>
<td>1,735 0.64 0.82 0.88</td>
<td>0.88 0.88 0.88</td>
</tr>
<tr>
<td>11A NY 208 &amp; I-84/Neeleytown</td>
<td>1,587 2,253 2,213</td>
<td>2,214 0.59 0.83 0.82</td>
<td>0.82 0.82 0.82</td>
</tr>
<tr>
<td>11B NY 208 &amp; I-84/Neeleytown</td>
<td>1,594 2,450 2,413</td>
<td>2,363 0.52 0.80 0.79</td>
<td>0.77 0.77 0.77</td>
</tr>
<tr>
<td>12 NY 300 &amp; NY 52</td>
<td>2,522 2,756 2,738</td>
<td>2,703 0.96 1.05 1.05</td>
<td>1.03 1.03 1.03</td>
</tr>
<tr>
<td>13 NY 300 &amp; NY 94</td>
<td>2,540 2,637 2,642</td>
<td>2,745 0.98 1.02 1.02</td>
<td>1.06 1.06 1.06</td>
</tr>
<tr>
<td>14 NY 32 &amp; NY 300</td>
<td>1,793 2,565 2,483</td>
<td>2,340 0.63 0.90 0.87</td>
<td>0.82 0.82 0.82</td>
</tr>
<tr>
<td>15 US 9W &amp; Fostertown Rd</td>
<td>2,012 2,264 2,285</td>
<td>2,192 0.88 0.99 1.00</td>
<td>0.96 0.96 0.96</td>
</tr>
<tr>
<td>16 US 9W &amp; NY 32</td>
<td>2,719 3,047 3,043</td>
<td>3,003 0.67 0.76 0.76</td>
<td>0.75 0.75 0.75</td>
</tr>
<tr>
<td>17 US 9W &amp; Forge Hill Rd</td>
<td>2,292 3,225 3,327</td>
<td>3,481 0.58 0.81 0.84</td>
<td>0.87 0.87 0.87</td>
</tr>
<tr>
<td>18 NY 94 &amp; Jackson Ave</td>
<td>2,125 2,024 2,077</td>
<td>2,020 0.51 0.85 0.87</td>
<td>0.85 0.85 0.85</td>
</tr>
</tbody>
</table>

**Notes:** BAU = Business as Usual; SGA = Smart Growth A; SGB = Smart Growth B.
of a roadway or intersection is when the volume of cars passing through is equal to the design capacity of the roadway (based on travel speed, lane widths, and other physical features of the road). That theoretical maximum expressed as a v/c ratio is 1.0. Some locations may have high volumes but low v/c ratios because those locations were designed to accommodate high volumes of vehicles. Where the travel demand model projected increases in volumes but v/c ratios reflective of good operating conditions, additional analysis was not warranted in regard to capacities.

Based on standard values, the Study Team established the following relationships between v/c ratio and operating conditions: 0.0 to 0.8 was “below capacity,” 0.8 to 0.9 was “approaching capacity,” 0.9 to 1.0 was “at or near capacity,” and higher than 1.0 “exceeded capacity.”

Table 4-7 summarizes the existing and projected future traffic volumes and v/c ratios at each of the 18 intersections for each of the land use scenarios.

As noted earlier, the Orange County Model does not specifically recognize alternative modes for trips or intra-zone trips. While the Smart Growth A and Smart Growth B land use models represent viable and desirable land use scenarios, the trip types they would generate (principally shorter trips using a variety of modes including non-motorized modes) would not be accurately reflected in the travel demand model. This can be seen in the similarity of volume and v/c ratio results between the Business-as-Usual and Smart Growth A and B model results shown in Tables 4-3 and 4-4. To compensate for this modeling issue, it was determined that the Business-as-Usual land use model, which would generate the most automobile trips, would be the basis for evaluating potential future traffic conditions. This land use scenario was coupled with a range of potential transportation investments to determine potential traffic impacts in the Study Area and whether regional traffic issues could be accommodated simply with a low-level of investment or would require a higher level of investment in strategic improvements. The travel demand model results generally indicate that certain roadway or intersection improvements could alleviate current congestion levels; but that as traffic increases in the future with additional residential and commercial growth, the ability of these same improvements to manage future congestion is limited.

In considering the volume capacity ratios in Table 4-7, it needs to be remembered that the projections are for a 25-year period and that, even at an annual background traffic growth rate of 1 to 1.5 percent per year (compounded), which is reflective of recent experience in communities heavily reliant on automobiles, 25 years of growth would produce an overall volume increase of about 30 to 45 percent. Also, in considering the growth projections in Table 4-7, it needs to be recognized that some locations with substantially higher growth may be attributable to relatively low existing (base) volumes or their location near high growth areas such as Stewart Airport (e.g., the intersection of Route 207 and Breunig Road).

The travel demand model also showed that roadway improvements would attract volume to the roadway network. In some cases, this may be local traffic drawn from local streets to arterial roadways and would be beneficial in reducing the volume of traffic that today may be cutting through residential areas. For some corridors, it may mean the diversion of some traffic from other roadways around the region that are being used by motorists to avoid currently congested conditions on what would otherwise have been their preferred route. By adding capacity at certain locations (e.g., through a roadway widening), the travel demand model does suggest that additional traffic (and vehicle-miles traveled) would be added as a result of the changes.

Additionally, it should be reiterated that the full benefits of a Smart Growth land use plan are not quantifiable in the travel demand model that was used for this study for several reasons. First, the Orange County travel demand model only considers longer-distance automobile trips between relatively large traffic analysis zones and does not have the capability to assess potential mode shifts (particularly from driving to walking or biking) that would be expected with increasing densities and mixed uses that are hallmarks of Smart Growth. Second, in many cases Smart Growth development is designed and implemented in a way that makes the area attractive to people from across the Study Area and potentially even outside the Study Area, and therefore can lead to a smaller number of concentrated pockets of congestion rather than spreading traffic and congestion across a larger extent of suburban arterial roadways. Smart Growth has the potential to shift short-distance trips from driving to nonmotorized modes, improving public health and quality of life, and increased densities of

residences, employers, and community amenities could make future transit service more viable.

Evaluation of Alternative Roadway Investment Strategies

The Study Team next evaluated if roadway improvements alone were considered in response to traffic congestion, could future conditions respond to: a) a combination of minor and moderate improvements at intersections that would primarily enhance operations, but not necessarily add substantial capacity; or require b) a more capital-intensive set of capacity improvements. The Study Team also considered whether there is a prospect that the level of traffic increase may not be able to be accommodated given current conditions and physical constraints. Although detailed intersection level of service analyses were not included as part of the scope of this study, the Study Team met several times and conducted several field reconnaissance efforts to develop possible approaches to resolving congestion at each location. The recommendations that appear in Chapter 5 are intended to serve as a very preliminary, draft set of suggestions that indicate, more than anything, the level of roadway improvements that could be needed in the future and which can be carried into a more detailed physical planning and design stage. Some recommendations are specific enough at this time to potentially be included in the Transportation Improvement Program (TIP) over the coming five-to-ten year time frame; at other locations, detailed engineering studies would be needed.

At each of the 18 traffic analysis locations, the study team reviewed existing conditions and volumes, existing (modeled) v/c ratios, existing geometries and operational issues and observed problems, as well as projected volumes and v/c ratios. At some locations, the model’s v/c findings were used while at some locations where modeled intersection v/c ratios did not adequately match observed conditions “in the field,” the Study Team’s field observations were used instead.
Minor Roadway Improvements

The following improvements were considered as a package of “minor roadway improvements” and modeled against the projected 2035 volumes from the Business-as-Usual land use scenario.

Intersection 1: NY 17K & Union Street/NY 211

- Addition of a northbound left turn lane by using the striped-out curb lane and removal of two curb parking spaces just south of the hatched-out area.
- Removal of the shoulder area along westbound Route 17K and addition of a westbound left-turn lane.

Intersection 2: NY 17K & NY 208

- Future volume projections and analysis of v/c ratios at this intersection suggest that no improvements are necessary.

Intersection 3: NY 17K & NY 747

- Future volume projections and analysis of v/c ratios at this intersection suggest that no improvements are necessary.

Intersection 4: NY 17K & Rock Cut Road

- Addition of left turn lanes along the eastbound and westbound directions by converting the shoulders.
- Addition of a travel lane along the southbound approach by converting the shoulder so that this approach operates with one left-turn lane and one right-turn lane.

Intersection 5: NY 17K & NY 300

- Low- to moderate-cost improvements were not considered feasible at this location.

Intersection 6: NY 17K/Broadway & Robinson Avenue/Route 9W

- Conversion of the angled parking along Broadway to parallel parking and the addition of one lane in each direction along Broadway.

Intersection 7: NY 207 & NY 747

- Addition of a third southbound lane by converting the shoulders.
- Addition of a westbound right-turn lane by converting the shoulder or the central hatched median.

Intersection 8: NY 207 & Breunig Road

- Addition of an eastbound left-turn lane by converting the shoulders.

Intersection 9: NY 207 & NY 300

- Widen the westbound approach to the intersection in order to provide a second westbound travel lane.

Intersection 10: NY 208/Main Street and NY 52

- Removal of the shoulder area along the south leg of NY 208 in order to install a northbound left-turn lane.
- Removal of the shoulder area along the east leg of Main Street/NY 52 in order to install a westbound left-turn lane.
- Removal of curb parking along eastbound Main Street/NY 52 in order to install a right-turn lane.
- Removal of curb parking along southbound NY 208 and restriping the approach in order to install a left- or right-turn lane.

Intersections 11A and 11B: NY 208 & I-84 Ramps/Neelleytown Road

- Conversion of the shoulder area to provide a right-turn lane while restriping the through-right-turn lane as a through lane. Two receiving lanes would be provided in the northbound direction to accommodate this restriping.
- Addition of a left-turn lane along the westbound I-84 exit ramp for vehicles turning onto NY 208.

Intersection 12: NY 300 & NY 52

- Addition of eastbound and westbound left-turn lanes by converting the shoulders.

Intersection 13: NY 300/NY 94/NY 32 (Vails Gate)

- This intersection would likely need to be redesigned requiring a more detailed study effort. It was decided by the study team that no improvements would be modeled here in the “Minor Improvements” package.

Intersection 14: NY 300 & NY 32

- Low- to moderate-cost improvements were not considered feasible at this location. Any addition of lanes would require right-of-way acquisition.

Intersection 15: Route 9W & Fostertown Road

- Low- to moderate-cost improvements were not considered feasible at this location. Any addition of lanes would require right-of-way acquisition. It should be noted that at the urging of the County Planning staff, the study team performed an assessment of the signal timing in this location to determine if adjustments to the existing signal could improve congestion. The team found that signal timing adjustment would reduce congestion. NYSDOT Region 8 reviewed the analysis and agreed; the signal has been adjusted accordingly.

Intersection 16: Route 9W & NY 32

- Low- to moderate-cost improvements were not considered feasible at this location.

Intersection 17: Route 9W & Forge Hill Road

- Low- to moderate-cost improvements were not considered feasible at this location.

Intersection 18: NY 94 & Jackson Avenue

- Installation of a traffic signal and addition of a left-turn lane on the eastbound and westbound Route 94 approaches.
- Addition of a through-right-turn lane on northbound Jackson Avenue.
Major Roadway Improvements

A set of “major roadway improvements” was reviewed that includes all of the “minor roadway improvements” identified above, along with the following, in order to help provide needed traffic capacity. While a number of stakeholders emphasized the need for improvements at the NY 207 & NY 300 intersection, there are no current plans to implement any solutions at this location and this, along with the even more speculative improvements at NY 17K and NY 300, are considered primarily as part of a “what if” scenario.

Intersection 5: NY 17K & NY 300

While a more detailed design study might reveal the feasibility of an alternative configuration and knowing that this may not be at all desirable from community design, safety and aesthetic perspectives, nonetheless for ‘what if’ modeling purposes only, one additional lane on each approach was included.

Intersection 9: NY 207 & NY 300

While the existing bridge carrying the NYS Thruway over NY 207 to allow for two eastbound left-turn lanes, two eastbound through lanes, and two westbound travel lanes. (This improvement would be in addition to the widening of the westbound approach to provide a second westbound travel lane included in the “minor roadway improvements” package).

In addition, an additional lane in both the eastbound and westbound directions would be added to NY 207 between NY 300 and NY 747.

Enhanced Major Improvements (New Connections)

Based upon initial modeling results for the minor improvements and major improvements packages, the Study Team began evaluation of a set of theoretical new connections to the roadway network. The VISUM travel demand model is an excellent tool for evaluating how new roadways would alter travel patterns within a network and could also provide data on changes to volumes at Study Area intersections. Driving this evaluation was an acknowledgement that the communities within the Study Area developed along a series of radial access roads that historically focused on the City of Newburgh. These State roads were intended to carry most traffic from the village centers in the west into the City of Newburgh which served as a major port and place of employment. As job locations and residential locations shifted in the second half of the 20th century, these travel patterns no longer made sense.

However, due to certain limitations such as the presence of Stewart International Airport within the middle of the Study Area and constraints imposed by environmental features such as ridgelines and wetlands, new roadways were not created to better serve the new patterns of development. The Study Team evaluated whether there were any opportunities to facilitate east-west and north-south travel through the introduction of new connections.

The concept of introducing new connections into the roadway network was tested with stakeholders in a workshop forum. While stakeholders recognized that new roadways such as these could have significant impacts to environmental conditions and to community character, a number of participants found evaluation of new connections to be a worthwhile exercise. Several participants recommended evaluation of additional or alternative new connections including connections that would facilitate travel between the Village of Walden and Route 9W in Ulster County and along Riley Road west of the Thruway. Participants also raised the feasibility of creating a new NYS Thruway interchange south of the existing interchange in Newburgh.

The “enhanced major improvements” package included both the “minor improvements” and “major improvements” identified above, but also tested the potential benefits of new/revised roadway links (see Figure 4-9). As with the previous set of major improvements, these potential new connections are considered speculative and reviewed as part of a “what if” scenario. Further analysis of whether these new connections could be implemented without significant adverse environmental or community character impacts would have to be done.

The ongoing WHRTAS study has identified another potential connection in the vicinity of the Route 207/Route 300 intersection that could be considered in planning for improvements to the roadway network in this area. WHRTAS’s “short list” of alternatives includes an optimized express bus service for airport travelers and local commuters, incorporating new ramps to and from the Thruway main line which
buses could use to enter the southern end of the airport complex that would shorten their running time to and from New York City significantly. While there are several unresolved concerns about this concept, its status should be monitored as future improvements are considered for the Route 207/Route 300 area.

Route 207 to Route 94 Connector

➔ New four-lane roadway (two lanes in each direction) posted at 45 miles per hour running between NY 747 at its intersection with NY 207 and Jackson Avenue south of Lake Road. This theoretical new connection within the roadway network could potentially allow traffic from the northwestern portion of the Study Area to reach the southern and southeastern portions of the Study Area (and destinations beyond, such as West Point) without having to pass through either of the Study Area’s most congested points (e.g., NY 17K & NY 300 or NY 207 & NY 300). Creation of this connector would require substantial right-of-way acquisition and would likely generate significant community opposition; it was only evaluated in a ‘what if’ there were a regional arterial connecting these areas manner to determine whether the travel demand model would show any benefit.

Old Little Britain Road to Route 52 Connector

➔ A new two-lane roadway posted at 30 miles per hour running between Old Little Britain Road, underneath I-84, north to NY 52. This new parallel road to NY 300 could use existing rights-of-way for local streets, but would require a new underpass to I-84 and may result in significant impacts to wetlands south of NY 52. However, this connector was considered as a potential relief to NY 300 which carries a disproportionate share of traffic within the Study Area.

Vails Gate Reconfiguration

➔ Removal of the portion of NY 32 between Forge Hill Road and the main intersection of NY 32/NY 300/NY 94. Access to business along this segment would be provided through a new driveway/cul-de-sac. Southbound NY 32 traffic would be diverted to NY 94 using Forge Hill Road. A new roadway would be created along the railroad right-of-way south of Merters Lane and continue to NY 94 west of the main intersection. This new roadway could take southbound NY 300 traffic destined for westbound NY 94 traffic out of the main intersection. A second new roadway would be created along the continuation of Forge Hill Road west of NY 32 connecting to NY 300. This new roadway could take southbound NY 300 traffic destined for eastbound NY 32 or NY 94 traffic out of the main intersection.

Table 4-8: 2035 Forecast Volumes and V/C Ratios

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Intersection Volumes</th>
<th>Volume-Capacity Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NoBld</td>
<td>Minor</td>
</tr>
<tr>
<td>1 NY 17K &amp; Union St/Route 211</td>
<td>1,565</td>
<td>1,662</td>
</tr>
<tr>
<td>2 NY 17K &amp; NY 208</td>
<td>2,762</td>
<td>2,772</td>
</tr>
<tr>
<td>3 NY 17K &amp; NY 747</td>
<td>2,519</td>
<td>2,679</td>
</tr>
<tr>
<td>4 NY 17K &amp; Rock Cut Rd</td>
<td>1,792</td>
<td>2,263</td>
</tr>
<tr>
<td>5 NY 17K &amp; NY 300</td>
<td>4,062</td>
<td>4,023</td>
</tr>
<tr>
<td>6 NY 17K &amp; Robinson/US 9W</td>
<td>2,445</td>
<td>2,858</td>
</tr>
<tr>
<td>7 NY 207 &amp; NY 747</td>
<td>2,361</td>
<td>2,531</td>
</tr>
<tr>
<td>8 NY 207 &amp; Breunig Rd</td>
<td>2,557</td>
<td>2,858</td>
</tr>
<tr>
<td>9 NY 207 &amp; NY 300</td>
<td>3,137</td>
<td>3,289</td>
</tr>
<tr>
<td>10 NY 208 &amp; Main St/NY 52</td>
<td>1,629</td>
<td>1,735</td>
</tr>
<tr>
<td>11 NY 208 &amp; I-84/Neeleytown</td>
<td>2,253</td>
<td>2,271</td>
</tr>
<tr>
<td>12 NY 208 &amp; I-84/Neeleytown</td>
<td>2,450</td>
<td>2,429</td>
</tr>
<tr>
<td>13 NY 300 &amp; NY 52</td>
<td>2,756</td>
<td>2,841</td>
</tr>
<tr>
<td>14 NY 300 &amp; NY 94</td>
<td>2,637</td>
<td>2,646</td>
</tr>
<tr>
<td>15 US 9W &amp; Fostertown Rd</td>
<td>2,264</td>
<td>2,118</td>
</tr>
<tr>
<td>16 US 9W &amp; NY 32</td>
<td>3,047</td>
<td>2,985</td>
</tr>
<tr>
<td>17 US 9W &amp; Forge Hill Rd</td>
<td>3,225</td>
<td>3,319</td>
</tr>
<tr>
<td>18 NY 94 &amp; Jackson Ave</td>
<td>2,024</td>
<td>2,196</td>
</tr>
</tbody>
</table>

Notes: NoBld = No Build – Future traffic volumes based on Business-as-Usual land use scenario with no traffic improvements.
Major = Major Roadway Investments and Minor Roadway Investments.
Major+ = New Connections with Major and Minor Roadway Investments.

Figure 4-10: VISSIM/VISUM Corridor Evaluation Areas
Table 4-8 summarizes the travel demand model results for the three different scenario runs. Each of the roadway investment strategies was compared to No Build conditions: future traffic levels (using the Business-as-Usual land use scenario) without any traffic improvements.

To further evaluate the potential effects of the various roadway investment packages, a micro-simulation model (using VISSIM software) was developed for the NY 300 corridor from NY 207 north to NY 52. Figure 4-10 identifies the corridors evaluated within this micro-simulation. The micro-simulation allows for a more detailed investigation of corridor conditions as it is based on a higher degree of detail than the travel demand model.

The Study Team prepared the following three (3) different micro-simulations that were presented to stakeholders within the OCTC and to the general public:

➔ Base Scenario: Existing Volumes and Intersection Conditions
➔ Future Scenario 1: Future 2035 Volumes with Minor and Major Roadway Improvements
➔ Future Scenario 2: Future 2035 Volumes with Minor Roadway Improvements and the Old Little Britain Road to Route 52 Connector

Caption: Image from VISSIM simulation model of NY Route 300 Corridor at NY Route 17K.

Caption: Image from VISSIM simulation model of NY Route 300 near proposed Marketplace Mall.

Caption: Commercial sprawl and traffic along busy Broadway/NY Route 17K.
The micro-simulation animations that were produced using VISSIM were effective tools for conveying to OCTC members and the general public how future traffic volumes might actually look. The animations showed the length of queues waiting at intersections and the degree to which Study Area intersections would remain congested – even with significant investments in roadway infrastructure. These animations provided greater weight to the statistical analyses developed from the VISUM travel demand model.

E. Analysis

This analysis shows that, of the 18 locations examined, some would be minimally affected or could accommodate additional traffic via low-cost, readily-implementable traffic improvements such as lane striping, introduction of left-turn lanes, etc. Other intersections could accommodate projected traffic growth via more moderate cost improvements such as converting shoulder areas to travel lanes, minor roadway widening without right-of-way acquisition plus the low-cost measures cited above. Still others would be more substantially congested and would need more extensive roadway widening and lane additions and possible right-of-way acquisition—the intersection of Route 207 and Route 300 is a prime example of this. And there are some locations where even substantial roadway improvements might not be sufficient to accommodate traffic—the intersection of Route 300 and Route 17K and the length of Route 300 from south of Route 17K to north of the Thruway on/off ramps is a prime example of this. This range of easy-to-improve locations to difficult-to-improve locations is not unusual, and can also be used to help guide land use development decisions going forward.

The travel demand model also identifies a few locations where traffic growth could have an acute effect on roadway conditions and operations. One is the Route 207 corridor from Route 300 to west of Stewart Airport; it is clear that some significant level of roadway treatment will be needed, either with the addition of through travel lanes in each direction at some locations, the inclusion of left- and/or right-turn lanes at other locations, and a reconstruction of the bridge carrying the Thruway over Route 207 coupled with significant widening of Route 207. A second is the length of Route 300 approaching Route 17K from the south to as far north as Route 52. Segments of Route 300 may need to be widened, while other more “creative” treatments may be needed to deal with the issues at Route 300/Route 17K where widening itself may not be desirable or sufficient. Similar issues may be expected along Route 9W from the vicinity of Fostertown Road to south of Route 52. Detailed planning and engineering studies are warranted at these locations.

While natural features and to some extent the design of existing development preclude the creation of a dense network of new interconnections, there may be some opportunities to create strategic linkages to take pressure off existing points of congestion or congested corridors. The travel demand model did show that a parallel roadway east of Route 300 would serve to reduce congestion along Route 300, especially at the most congested intersections such as Route 52 and Route 17K. Additional study would be required to determine the feasibility of creating new roadway links. However, at a minimum, municipalities should be encouraged to retain existing roadways for through traffic and to identify opportunities to make new connections as part of the land subdivision process.

There are locations within the Study Area where there are opportunities to dramatically improve the area’s land use/development, urban design and transportation, all as part of a package of treatments. Two very prominent locations are the Broadway corridor within the City of Newburgh, and the Vails Gate area. The Broadway corridor can be redesigned for better use of its overly-generous curb-to-curb width to incorporate various roadway or urban design treatments such as a landscaped median, bike lanes, bus lanes, and corner “bulb-outs”. Reconstruction based on a new streetscape design approach could result in an exceptionally attractive urban corridor for the City. Vails Gate, with its five-legged, multiple curb cuts, and congestion-prone, difficult-to-traverse characteristics would need a major planning and design effort, but doing so could vastly improve intersection operation and therefore add value to the commercial properties — even more so if the intersection and roadway reconstructions were designed in concert with redesign of the adjacent commercial areas.

Several of the corridors in the Study Area have opportunities for significant new development and several of the communities have specifically modified their comprehensive plans to identify this potential for growth. Route 17K west of Route 300 and Route 207 between Routes 300 and 747 are two areas of particular note where new economic development activity is envisioned by the local communities. While there is certainly room in those corridors to expand the right-of-way to handle additional traffic demand, in

Caption: Some roadway modification alternatives for addressing congestion at Route 17K/Route 300 could result in significant changes to community character, which may not be desirable.
some cases the level of investment needed to handle all of the projected traffic could alter community character. The communities should proactively determine if such an infrastructure improvement is consistent with local plans. Communities should continue to use all of the tools at their disposal (e.g., site plan/subdivision review, State Environmental Quality Review) to ensure that potential impacts of new development are considered beyond the immediate local network and that long-term impacts are evaluated considering regional growth.

F. Conclusion

This Study used an integrated approach to address mobility within the Study Area and options for guiding new land use. The analysis indicates that a variety of potential solutions could be implemented, which are described in Chapter 5. However, it is important to note that to achieve the synergy possible with integrated solutions, certain of the land use decisions may take precedence to the roadway improvements. Put another way, roadway changes alone will not solve future problems of congestion and limited mobility. Communities need to look at a better balance of roadway, transit, bicycle/pedestrian, and land use solutions to reduce demand pressure on roadways, especially when it is impossible to provide an unlimited supply of roadway lane miles (and would not want to even if we could). Chapter 5 identifies potentially strategic investments in roadway, transit, bicycle/pedestrian, and land use. While presented separately, these recommendations have been considered and developed as part of an integrated analysis.
5. Implementation & Recommendations

A. Introduction

This chapter identifies the primary roadway, transit, bicycle/pedestrian, and land use recommendations that have been developed following analysis of the land use build-out and travel demand model results.

It should be emphasized that implementation of only transportation improvement projects will not result in long-term value. Any investment in roadway infrastructure without a coordinated modification of land use patterns or improvements to alternative modes of transportation will ensure that future traffic generated by new land uses will continue to result in congestion and other inefficiencies in the transportation network. Improvements in alternative modes of transportation, similarly, will not have long-term sustained benefit unless the land use pattern is in place to support that mode choice for multiple users.

This caution should not be a surprise coming from an integrated transportation and land use study. The benefits of considering transportation enhancements in tandem with land use strategies are well documented. This Study Area is no different from other areas throughout the United States that have struggled with managing growth and transportation infrastructure. While specific community and environmental conditions may make certain types of transportation or land use investments challenging, there are many ways that the principles of smart growth and complete streets can be integrated into our older communities.

B. Roadway Strategy Recommendations

Preliminary Roadway Improvement Recommendations

Table 5-1 summarizes the findings of the project team’s preliminary assessment and is discussed in further detail in the remainder of this section of the report both by traffic analysis location and also, more importantly, in terms of the more overall conclusions for the Study Area as a whole.

For some of the 18 traffic analysis locations, the level of roadway improvement needed appears relatively clear. For some locations, further study and preliminary design will be needed. That is also why Table 5-1 shows two levels of roadway improvement for some traffic analysis.
locations – because the level of roadway improvements that would be needed are not clear enough from the preliminary analyses conducted in this first-cut planning study.

The identification of these improvements does not mean that each is recommended for design and implementation, but that they would be the types of measures -- low or low-to-moderate costs or high capital investments -- that would appear able to accommodate future traffic increases. Low level investments would typically include items such as restriping the roadway to include a new left- or right-turn lane, removing parking or a striped median to add roadway capacity, or signal phasing and timing modifications. Moderate cost improvements would also include converting shoulder areas to provide one or more additional travel lanes or minor roadway widening, but without right-of-way acquisition or costly utility relocations. High capital investment improvements would typically include items such as major roadway or intersection widening, which could include right-of-way acquisition and significant utility relocations. The following diagrams illustrate the types of low, moderate, and high level of investment that could occur at certain intersections. Subsequent analyses can verify or modify these very preliminary assessments as projected future development does, or does not, materialize as estimated in the travel demand model.

Corridor & Intersection Improvements

The analyses of the travel demand model found that at some of the 18 traffic analysis locations, there would be little, if any, reason for significant roadway improvements. At others, a moderate level of roadway improvements would probably be able to accommodate projected traffic growth, if desired. These moderate cost improvements might include converting available right-of-way into turn lanes or the addition of a through lane, for example. At other locations, a more capital-intensive set of improvements would be required, including right-of-way acquisition where available right-of-way is not sufficient to provide the amount of capacity that might be desired in the future by the community. And at a smaller number of locations, the ability of roadway improvements to be engineered into the area and accommodate projected traffic growth may not be achievable either due to engineering feasibility issues, community and/or environmental concerns, or cost. This “global statement” of findings is discussed in more detail on a corridor level below.

The traffic model provided projections for key traffic analysis locations along several key corridors – Route 9W “North” from approximately Route 32 through Fostertown Road, Route 9W “South” from the northbound approach to Forge Hill Road to the City line, Route 207 from Route 300 to Route 747, Route 300 from Route 207 to Route 32, Route 17K and Broadway, plus the Vails Gate area. Based on the discrete model findings at the 18 traffic analysis locations, extrapolations to corridor-wide and area conclusions are discussed below.

Schematic illustrations and cost estimates for each of the 18 intersections where some level of improvement is suggested are described below. These very preliminary engineering studies were based on field observations and readily-available sources of environmental information. They are not based on actual surveys or detailed investigations and additional technical studies would be required to confirm their accuracy. These illustrative studies do, however, provide the basis for further discussion and evaluation and may be informative to local communities in prioritizing roadway improvements in the OCTC Transportation Improvement Program (TIP).

Route 9W “North”

The Route 9W corridor north of the City of Newburgh is a mixed commercial and lower density residential corridor. Much of the existing development has occurred in an incremental fashion, meaning that between Newburgh and the hamlet of Marlboro there is no real center. There is little opportunity for non-motorized transportation on this busy route. In the future, a better mix of land uses along this corridor could help to enhance the overall sense of place and character.

Because Route 9W serves as a major route for traffic from the north into the Study Area and through the Study Area and because there is no other option for conveying this traffic, congestion along Route 9W in both the AM and PM peak hours is notable, especially at the intersections of Route 9W with Fostertown Road and Route 32.

While adding one travel lane in each direction along Route 9W from Route 32 north to beyond Fostertown Road would have substantial traffic benefits, environmental and community character impacts might preclude this option from being feasible. The cost of roadway improvements and land acquisition might make widening altogether impracticable.

It is recommended that a large-scale engineering study be added to the OCTC TIP to determine the full range of options, benefits, impacts, and costs for a range of corridor or intersection improvements for Route 9W between and including Route 32 and Fostertown Road.

Route 9W and Fostertown Road

While Route 9W generally carries one travel lane per direction along much of its length, at its approaches to Fostertown Road, located in the Town of Newburgh, northbound and southbound Route 9W each have one travel lane and a left turn lane. Eastbound Fostertown Road has one travel lane along its winding vertical and horizontal alignment. Both approaches of Route 9W and eastbound Fostertown Road are characterized by extensive queuing and delays. Projected future traffic volume increases are substantial (39 percent). Widening Route 9W and possibly Fostertown Road do not appear to be viable options, although a detailed engineering study may be needed to determine if any widening can be accommodated.

An analysis of operating conditions at this intersection with an optimized signal timing demonstrates potential improvements primarily for the northbound/southbound movements.

Table 5-2 compares the existing conditions at the intersection, as modeled by Synchro, with the optimized signal conditions. The overall delay calculation shows that the optimized signal timing scenario reduces the overall delay for the intersection by 15.1 seconds per vehicle, from 54.9 seconds per vehicle to 39.8 seconds per vehicle.

<table>
<thead>
<tr>
<th>Table 5-2: Delay and LOS Analysis</th>
<th>Overall Delay (secs)</th>
<th>Level of Service</th>
<th>Approach Delay (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>NB</td>
</tr>
<tr>
<td>Initial Condition</td>
<td>54.9</td>
<td>D</td>
<td>62.0</td>
</tr>
<tr>
<td>Optimized Signal</td>
<td>39.8</td>
<td>D</td>
<td>36.0</td>
</tr>
</tbody>
</table>
When the delay is calculated for each approach, the largest reduction is shown in both the northbound and southbound directions. This is where the majority of the queuing was present in observations of existing conditions. While the delay increased for the westbound and eastbound approaches, these volumes were much lower than the northbound and southbound movements, the overall delay for the intersection decreases in the optimized signal scenario.

Level of Service D is defined as delays in a range from 35 to 55 seconds per vehicle, so both the existing conditions and the optimized scenario correspond to Level of Service D, despite the improvement in delay. However, this Level of Service classification masks the fact that the existing condition is bordering on Level of Service E and the optimized conditions are closer to Level of Service C. While the signal timing changes identified above are being implemented by NYSDOT, it is clear that a higher-cost, longer-term investment would be required to realize more substantial improvements in delay per vehicle at this intersection, but the low-cost, short-term improvement associated with a retiming of the signal will result in measurable improvement for traffic passing through this intersection.

**Route 9W and Route 32**

This intersection is situated just north of I-84, at the border of the City and Town of Newburgh, and has had significant widening on each of its three approaches. Northbound Route 9W has two left turn lanes for traffic destined to Route 32 and I-84 to the west and two through lanes. Southbound Route 9W has two through lanes and a right turn lane. Eastbound Route 32 has one left turn lane and two right turn lanes. It may be very difficult to achieve meaningful capacity improvements at this location. Projected traffic volume increases are highest along the northbound Route 9W approach, with about 13 percent expected overall for the intersection. There are some potential improvements available, but additional study would be needed to determine their effectiveness at accommodating the traffic movements that would increase in volume. For example, potential removal of the shoulder area along southbound Route 9W at the intersection in order to provide a second right turn lane could be accommodated, but would not provide meaningful improvement if this is not a critical movement at the intersection and the overall intersection and its critical movements do not benefit. Additional capacity (two through lanes in place of the one existing lane) would likely be needed in the northbound direction and the widening of Route 9W further north would be a high capital investment improvement that might not be feasible and might not be desirable environmentally or to the local community. A detailed engineering study would be needed.

**Route 9W “South”**

The Route 9W corridor south of the City of Newburgh is less heavily developed than the corridor north of the City of Newburgh but generally has two full travel lanes per direction for nearly all or most of its length south of the City. There has also been discussion as to what the overall configuration or function of Route 9W should be. Route 9W at different sections is either a grade-separated limited access arterial or an arterial with signalized crossings at grade providing access to land uses on Route 9W and cross streets. Given the projected cost of rehabilitating or replacing existing bridges carrying Route 9W over local streets, NYSDOT is interested to learn from area residents whether Route 9W should continue to have portions that are limited-access or whether the roadway should be reconfigured as a surface arterial.

From discussions with stakeholders within the Town of Cornwall and Village of Cornwall-on-Hudson there appeared to be a general consensus that the through capacity was a greater priority than access to properties along Route 9W. In fact, the stakeholders generally agreed that
commercial land uses along the portion of Route 9W where the road runs at grade should be discouraged in favor of locations along Quaker Avenue within the Town or along Hudson Street within the Village. Stakeholders also suggested converting the intersections on Quaker Avenue at the Route 9W ramps to roundabouts as a way of facilitating movement from Route 9W to Route 32.

Route 9W and Forge Hill Road
The key part of this roadway segment extends from the south side of the intersection at Forge Hill Road, over the bridge over Moodna Creek, and to the first intersection north of the bridge (Caesars Lane). Whereas there are two travel lanes in each direction on much of Route 9W north and south of this location, there is only a left turn lane and just one general through/right turn lane northbound, and a left turn lane and two other travel lanes southbound at this intersection. Eastbound Forge Hill Road has one lane in each direction.

Projected future volumes are substantial – 62 percent for the overall intersection. Adding a second northbound through lane is needed from the approach to Forge Hill Road to north of the bridge, and would have long-term traffic benefits. In accommodating the added northbound lane, there are two options – widening the intersection at Forge Hill Road, or converting the northbound left turn lane to a through lane and potentially accommodating left turns via a jughandle. The addition of a northbound lane would also need to be carried over the bridge over Moodna Creek by using the striped-out area in the middle of the roadway, as well as further north through the intersection north of the bridge.

A detailed study of this location and resulting design recommendations should be added to the TIP.

Route 207

The Route 207 corridor currently contains a lower density mix of commercial uses in comparison to other commercial corridors in the Study Area. Although there are a number of commercial uses with multiple curb cuts off Route 207 in the vicinity of the entrance to Stewart Airport, there is significant potential for additional development and redevelopment of this corridor that could exacerbate existing congestion problems – principally at the intersection of Route 207 and the NYS Thruway overpass.

The traffic model indicates that a one lane widening is needed along Route 207 at virtually all of the key traffic analysis locations, so that overall widening of the corridor needs to be strongly considered. The model and field observations also support a recommendation that a major capital investment will be needed at the intersection of Route 207 and Route 300 to improve intersection level of service and mitigate anticipated future congestion. These improvements may include bridge reconstruction and widening that would enable the addition of one through lane in the eastbound and westbound directions plus an additional eastbound left turn lane. West of the bridge, a determination will need to be made as to whether full corridor widening is needed or whether widening improvements just at the intersections would be sufficient. One of several issues to be addressed include whether right-of-way is available via the conversion of existing shoulders or whether property acquisition will be needed, and the result of this investigation has major implications for the cost of improving the Route 207 corridor. Another issue is whether widening of this corridor represents an opportunity to better manage land use patterns along the corridor and to integrate a complete streets plan that would facilitate non-motorized trips between land uses along the corridor. NYSDOT has previously indicated to the County that widening to add a two-way-left-turn lane (at least) is probably needed. A full engineering study should be conducted to determine whether available right-of-way is sufficient, whether additional right-of-way is needed, and the extent or limits of any lane additions. This project should also be added to the TIP.
Route 207 and Route 747

This intersection, located southwest of Stewart Airport in the Town of New Windsor, has one eastbound through lane and one very short left turn lane, one westbound lane for use by through traffic and right turns, and a southbound approach (Route 747) with one left turn lane and right turn lane. Projected future volume increases would be substantial on all approaches, i.e. approximately 87 percent over the 25-year planning period, a near doubling of traffic. This large volume increase can be attributed to potential development associated with Stewart Airport. Potential improvements at this intersection could range from moderate level to high capital investment improvements and could include: lengthening the eastbound left turn lane; providing a westbound right turn lane in addition to the one existing all-purpose lane; potentially adding a third southbound lane if needed to accommodate projected demands; and/or, as a more cost-intensive measure, a more extensive widening of Route 207 providing two through travel lanes in each direction plus the existing eastbound left turn lane and an additional westbound right turn lane, for which acquisition of private property would be needed along the south side of Route 207. The potential need for widening along much of the Route 207 corridor is discussed later in this chapter. These improvements are not considered needed in the short-term, but could be considered beneficial over the longer 25-year planning term if land use development along Route 207 or within Stewart Airport intensifies.

Route 207 and Breunig Road

This T-intersection is one of the entry points to Stewart Airport. Eastbound Route 207 has a single lane used by through traffic and left turns into the airport property; westbound Route 207 has one through lane and one channelized right turn lane. And, the southbound roadway leaving the airport has one left turn lane and one right turn lane. Projected future volume increases would be substantial, especially along the southbound approach, with an overall increase of approximately 129 percent (more than a doubling of the existing volume through the intersection by the year 2035). Potential improvements at this intersection could range from moderate level to high capital investment improvements including, for example, adding an eastbound left turn lane and adding a southbound lane to accommodate increased traffic leaving the airport. As was discussed above for the intersection of Route 207 and Route 747, a more cost-intensive option would entail a more extensive widening of Route 207 that would provide for two travel lanes per direction along Route 207 as well as an exclusive eastbound left turn lane into the airport property.

Route 207 and Route 300

Located southeast of Stewart Airport, this intersection was chosen since it represents one of the most critical locations in the Study Area. The most serious capacity constraint is the narrowness of the New York State Thruway Bridge, which only affords room underneath it for an eastbound through lane and a left turn lane, and one westbound travel lane. Just east of the bridge, the intersection of Route 207 and Route 300 has two southbound left turn lanes and one right turn lane, one eastbound left turn lane and one through lane, and one westbound through lane and one right turn lane. Southbound queues accumulate and extend back even with the double left turn lane; the southbound right turn lane is not as heavily used. Significant eastbound queues are prevalent, both for through traffic and for left turns. Projected future volume increases are substantial; even though the percentage increase is a relatively moderate 22 percent over a 25 year period, due to existing traffic conditions at this location and a projected traffic volume increase of approximately 650 vehicles in the peak hour, significant deterioration in congestion and delays can be expected. It is clear that high capital cost improvements will need to be considered. These may include: 1) widening the bridge to allow for two eastbound left turn lanes and two eastbound through lanes, and two westbound travel lanes, basically a doubling of the...
Figure: Theoretical Improvements at NY Route 207 at Bruenig Road - Town of New Windsor

Route 207 cross-section; 2) potential widening of the westbound approach to the intersection in order to provide a second westbound travel lane; and 3) east of Route 300, the east leg narrows from two lanes per direction down to one lane per direction, it may also be necessary to widen Route 207 east of the intersection, which would require right-of-way acquisition and the relocation of utilities on the north side of the roadway. These potential improvements should also consider incorporation of any additional improvements that may be necessary from any selected recommendations of the WHRTAS study. As currently envisioned, the improvements identified above would not preclude any potential bus-only exit ramp from northbound I-87 as envisioned in the WHRTAS Alternatives Assessment.
Route 208

The Route 208 corridor serves several important land use and transportation functions. It is the principal link between the Villages of Walden, Montgomery, and Maybrook and is one of the key north-south connections between the Study Area’s primary east-west routes. As such, it serves a critical role in conveying traffic between the Study Area communities and in routing traffic between the north and south sides of Stewart Airport. Trips originating in the northwestern portion of the Study Area may find Route 208 to be a preferred route to Route 17K, I-84, or Route 207. Route 208 also connects communities in Ulster County to the north and the Village of Washingtonville to the south. A large volume of traffic also uses Route 208 to continue south to Route 17 (future I-86) thereby bypassing the NYS Thruway and the congested access to that roadway in the central portion of the Study Area. Land uses along the Route 208 corridor vary by location with higher density mixed-uses within the villages and lower-density automobile or truck oriented uses between the villages. It should also be noted that the intersection of Route 208 and Neelytown Road serves as a major gateway between the freight related businesses and services along Neelytown Road and the newly reconstructed ramps to I-84. This intersection is a strategic element of the region’s freight system and NYSDOT has made efforts to streamline freight movement at this location.

Route 208/Main Street and Route 52

This intersection is located in the commercial core of the Village of Walden. Each approach to the intersection has just a single travel lane. The south and west legs of the intersection have parking on both sides; the north and east legs have modest shoulder areas. Projected future volume increases are moderate – about 35 percent – and it would appear that moderate cost improvements would be sufficient including, potentially: 1) removing the shoulder areas along the south leg of Route 208 in order to install a northbound left turn lane; 2) removing the shoulder areas along the east leg of Main Street/Route 52 in order to install a westbound left turn lane; 3) removing curb parking in front of several business establishments along eastbound Main Street/Route 52 in order to install a right turn lane; and 4) removing curb parking along southbound route 208 and striping the approach in order to install a left or right turn lane.

Route 208 and I-84 Ramps/Neelytown Road

This newly reconstructed interchange/intersection area, located just north of the Village of Maybrook, has available shoulder areas and painted median areas along most, but not all, approaches to the two signalized intersections that could potentially be converted into additional travel lanes if needed to accommodate projected future volumes. According to the VISUM model, projected future year 2035 volumes would be approximately 53 percent higher than existing volumes. Potential moderate cost improvements could include: adding a left turn lane to the exit roadway from westbound I-84; restriping the northbound approach to the southern-most intersection and using the shoulder area to add a northbound lane, or removing the full painted median and replacing it with an additional left turn lane, if needed. Also, the shoulders could be converted to a right turn lane while the existing through-right turn lane could be restriped as just a through lane. Two receiving lanes would be needed in the northbound direction to accommodate this restriping as would restriping the northern-most intersection by removing the painted median and replacing it with an additional left turn lane.

Route 300

Route 300 is the primary commercial corridor within the Study Area. Given its location at the heart of the Study Area with easy access from residential areas in the Towns of New Windsor and...
Newburgh and in the other Study Area communities, the Route 300 corridor has evolved into the primary shopping destination for residents. That attribute, coupled with the presence of the interchange with I-87 and I-84 makes Route 300 the focal point for much of the traffic that flows within the Study Area.

Between Route 207 and north of the ramps to and from the New York State Thruway, Route 300 is a very wide roadway with a varying (multiple) number of travel lanes in each direction. The model has indicated that roadway widening is needed at Route 300’s intersection with Route 207, as noted above, and some form of significant investment at Route 300’s intersection with Route 17K could improve vehicle through-put. At the Route 300/Route 17K intersection, the model tested the addition of a travel lane in each direction on each approach as a surrogate for major capital improvements. This is not to imply that a lane widening
in each direction is recommended, but that a detailed engineering study is needed for a range of options, including those described previously. At the intersection of Route 300 and Route 52, the model is also projecting a substantial increase in traffic that could warrant a roadway widened to add one lane in each direction. And, at the intersection of Route 300 and Route 32 further north, the model is showing that widening of the intersection to provide additional right turn lanes could be an effective solution; such widening would likely require right-of-way acquisition.

Thus, the overall interpretation from the modeling effort and, therefore, looking solely at throughput, is that the substantial width of Route 300 at Route 17K and northward past the New York State Thruway interchange area needs to be carried further northward to and through Route 300’s intersection with Route 52, but may not necessarily be needed north of Route 52 since only right turn lane additions may be needed at Route 32. This would need to be verified via a detailed capacity analysis of two key intersections.

A secondary model run was evaluated that considered a parallel roadway to Route 300 that might follow an alignment east of Route 300 between Old Little Britain Road and Route 32. (This alignment was considered in a strictly theoretical manner and no specific alignment is proposed. It is recognized that the pattern of existing land uses and environmental features in this area would make any actual alignment very expensive and possibly infeasible.) The secondary model run was developed to establish how traffic along Route 300 would change if an additional parallel road were in place. As anticipated, the additional capacity provided by the parallel road would relieve existing and projected congestion along Route 300, including at the key intersection of Route 17K and Route 300, but that the parallel roadway would not solve all of the problems of congestion now or in the future. While multiple routes through an area is considered a theoretical ideal for providing several options for the traveling public, it is recognized that previous patterns of development and/or environmental conditions may make such improvements infeasible.

**Route 300 and Route 52**
This intersection is located in the Town of Newburgh north of the interchange of I-87 and I-84. It has one through travel lane on each approach. The northbound and southbound approaches of Route 300 also have left turn lanes; westbound Route 52 has a right turn lane; eastbound Route 52 has no turn lanes. Although the percentage increase in traffic is projected to be a moderate 20 percent over 25 years, projected volume increases are expected to be highest in the PM peak period in the northbound direction, possibly with a significant increase in northbound left turns towards Walden. Due to the tightness of the right-of-way, the most likely solutions here would be high capital investment improvements due to right-of-way acquisition for potential roadway widening needs: providing eastbound and westbound left turn lanes along Route 52 (there are shoulders along the west leg of Route 52 that might accommodate this, but there may not be sufficient width available on the east leg without property acquisition). It may also be necessary to widen Route 300 to gain an additional through lane northbound and southbound or right turn lanes; right-of-way acquisition would be needed.

**Route 300 and Route 17K**
Located in the Town of Newburgh, this is probably the most heavily trafficked and congested location in the Study Area,
Newburgh Area Transportation & Land Use Study

Schematic Intersection Improvements • Route 300 Corridor

NOTE: THESE DRAWINGS DEPICT SCHEMATIC DIAGRAMS ONLY. NO FORMAL PROPOSALS HAVE BEEN MADE.

Route 300 at Route 17K  - Town of Newburgh
Route 300 at Route 32 - Town of Newburgh
Route 300 at Route 52 - Town of Newburgh
Route 300 at Route 207 - Town of New Windsor

Vails Gate (Route 300, Route 94, and Route 32) - Town of New Windsor

Figure: Theoretical Improvements at NY Route 300 at NY Route 17K - Town of Newburgh

Despite it having a total of 18 travel lanes amongst its four approaches (five lanes each along eastbound and westbound Route 17K and northbound Route 300, and three lanes along southbound Route 300), Projected traffic volume increases would be substantial according to the model, with the maximum overall increase of approximately 22 percent (about 800 vehicles per hour, or vph) for the intersection as a whole. Continued roadway widening, which has successively sought to add capacity, may no longer be possible or desirable; a range of high capital cost improvement alternatives would need to be studied, potentially including:

1) Adding a lane on each approach to the intersection if continued roadway widening is still desirable (or, one or more approaches may need the additional lane more than other approaches) although continued roadway widening and lane additions may not be popular;
2) Constructing an overpass/underpass

Figure: Theoretical Improvements at Vails Gate (NY Route 300, NY Route 94, and NY Route 32) - Town of New Windsor
to expedite through traffic in either the east/west or north/south direction (this may prove to be infeasible from a design perspective, excessively costly, and/or undesirable by the community but should not be eliminated from consideration); 3) potentially evaluating interchange construction options such as a diamond interchange or a single-point urban interchange or even a continuous flow intersection. It would also make sense to investigate alternative route connections to divert traffic away from this highly congested location.

An alternative route could be accomplished by linking or upgrading local roads that currently exist with minimal new roadways or it could be accomplished through construction of an entirely new roadway. The latter option would require extensive analysis to determine feasibility. Community reaction to a major redesign project that could result in a new interchange or overpass/underpass would also need consideration. The key point here is not the specifics of the recommendation but that a major high capital cost improvement would likely be needed for this location to be able to process continued traffic growth and development.

**Route 300, Route 94, and Route 32/Windsor Highway (Vails Gate)**

This five-legged intersection is located in the Town of New Windsor near the border with the Town of Cornwall. The intersection has several serious issues that restrict traffic conditions: five signal phases, which means that green time needs to be shared amongst each of the five approaches to the intersection, leaving minimal green time for each; an insufficient number of lanes along several legs of the intersection; high volume of turns and a significant amount of heavy vehicle traffic, also making turns; access drives to numerous properties right at the intersection including multiple gas stations. Improvements at this location are likely to require a major redesign effort. Projected future traffic volume increases are moderate-to-high at approximately 21 percent. A major design project at this location would require high capital investment improvements, potentially including alternatives such as: 1) closing one of the five legs of the intersection and converting the intersection to a more conventional four-legged intersection (the choice of which leg of the intersection to close would require detailed analysis); 2) widening several of the approaches to increase capacity, which would entail significant commercial property acquisition; and/or 3) total redesign of the area including property acquisition to increase capacity and possible consideration of a roundabout (see the discussion of possible traffic circulation and land use modifications to Vails Gate in the discussion of Land Use Recommendations below). One “low end” improvement options could include prohibiting left turns along all or most approaches to the intersection; although this, by itself, is not likely to be sufficient, it could be evaluated as a short-term measure if it proves beneficial overall.

**Route 94 and Jackson Avenue**

This unsignalized intersection is located to the west of Vails Gate in the Town of New Windsor west of I-87. While Route 94 was not one of the primary corridors analyzed, input from local stakeholders identified this intersection as one requiring evaluation. It has one travel lane per approach and is located in a generally low traffic area with very little current development along the approaches to the intersection. However, current turning movements and north-south traffic across Route 94 make this intersection a possible location for safety improvements. Stakeholders identified the existing grade changes crossing Route 94 as a cause of concern. Projected future traffic volume increases would be substantial – approximately 112 percent for the overall intersection. Potential improvements might include installing a traffic signal and adding a left turn lane on....
the eastbound and westbound Route 94 approaches, and adding a through/right turn lane on northbound Jackson Avenue which would require property acquisition at the southeast corner of the intersection. Any improvements at this location should consider ameliorating the change of grade experienced by drivers crossing Route 94.

**Route 17K**

Route 17K could be considered the central east-west spine of the Study Area. Route 17K begins near the waterfront in Newburgh where Route 17K is actually Broadway, a City of Newburgh street that serves as the downtown core, and continuing west along the northern edge of Stewart Airport and into the more rural portions of the Study Area in the Town of Montgomery. When it was first constructed in the early 1800’s, Route 17K was the Newburgh and Cochecton Turnpike linking the Hudson River with Sullivan County and the Delaware River to the west. This Turnpike served as a major trade route and made development of settlements west of the City of Newburgh possible. Today, Route 17K serves a similar function – carrying traffic from the western portions of the Study Area to shopping centers along Route 300 and in the City of Newburgh as well as to the NYS Thruway and points further south. Land use conditions along Route 17K vary from the higher density mix of uses within the City of Newburgh and Village of Montgomery and at small hamlets such as Coldenham and Scott’s Corners, to rural stretches in between.

The modeling effort tested four locations along Route 17K west of Route 300 – at Route 211 in the Village of Montgomery, at Route 208, at Route 747, and at Rock Cut Road – and showed that roadway widening is typically not needed, but that select intersections may need turn lanes in order to eliminate conflicts and improve capacity. At some locations, turn lanes can be accommodated via use of available shoulder areas. Based on these four test locations, it can be inferred that other significant intersections along Route 17K west of Route 300 may also need improvements, but would likely be low-to-moderate cost improvements that can be added to the TIP at an appropriate budget level. Major capital investments, however, would be needed at Route 17K’s intersection with Route 300 and may include any of the alternatives described earlier.
Broadway

Further east, the intersection of Route 17K (Broadway) with Route 9W was representative of the “downtown” segment of Broadway within the City of Newburgh. Broadway was a special focus of the study team and the work included a Public Design Workshop at which several redesign options were developed that would reconstruct Broadway as a “complete street” (see Figures 5-1A to 5-1F).

The Public Design Workshop elicited a number of interesting ideas that the community should pursue further. Because of its width, there are multiple feasible treatments for Broadway in downtown Newburgh. The width should be managed to improve vehicular and pedestrian safety, provide access to bicycles and transit, and enhance the streetscape, while still allowing for vehicles to efficiently move through the downtown.

Angled parking does not need to be preserved along the entire length of the street within the City. A parking strategy that combines angled and parallel parking can be employed coupled with improvements to municipal parking lots on side streets. The parking strategy can vary from block to block and from side to side in a way that best accommodates parking demand and alternative uses of the right-of-way.

Several small scale improvements should be implemented to foster increased pedestrian activity. The vast sidewalk should be enhanced with shade trees, landscaping, visually interesting paving techniques, and pedestrian amenities such as garbage cans, human-scaled lighting, benches, and planting boxes.

Bumpouts or curb extensions should also be used to calm traffic while shortening crossing distances in an attempt to encourage pedestrian activity and balance transportation modes.

New bicycle infrastructure should be developed to improve bicycle safety and encourage bicycle use. Any bicycle infrastructure improvements should facilitate current usage by students at the college and within the downtown area. Bicycle improvements should also be accommodated within the Town of Newburgh along Route 17K.

The commercial portion of Broadway towards the City’s western boundary should incorporate access management strategies to limit the number of curb cuts and conflicts between cars and between cars and pedestrians.

Participants were divided as to whether a full-width median would be appropriate for Broadway as either a landscaped area or location of bus or rail transit. Many agreed that street trees along the curb would be more successful in creating an enhanced streetscape and some argued that locating transit in the center of the street might create safety issues for pedestrians seeking to use the transit.

Enhanced transit is necessary to provide an alternative to private automobiles to get around the City and region. Short-term transit improvements are described below. Over the long-term, transit along Broadway could be more frequent and could be extended to other portions of the Study Area where people work or shop. Given the
low volumes on the street currently, the lack of demand, and the short distances, a phased approach is appropriate to implement transit improvements over time and as funding becomes available. The first phase should include increased service and improved bus stations with seating, shelter, and up-to-date schedule information. The second phase could increase level of service by adding buses to the new routes and increasing frequency of service or extending hours of operation. Over time, as ridership grows, and as economic activity within Newburgh makes it viable, this transit corridor could evolve into enhanced service further west along Route 17K. It should be noted that the cost of light rail transit in comparison to bus transit is prohibitively expensive and would not be warranted with current levels of ridership. Vast increases in ridership and intensity of surrounding land uses would have to be seen in order to make light rail feasible.
Route 17K and Route 211/Union Street
This T-intersection is located in the Village of Montgomery with modest commercial uses along each leg of the intersection. Each approach to the intersection has one travel lane. The curb lane along both sides of Route 211/Union Street is hatched as it approaches Route 17K and allows on-street parking in each direction. Projected future traffic volume increases are modest with the maximum overall increase of approximately six percent – an increase in all traffic volumes passing through the intersection of about 85 vehicles in the PM peak hour, which can be considered a nominal traffic volume increase since it would be split amongst all three approaches to the intersection. Traffic operations today are generally acceptable.

Based on this projected increase in traffic and observed conditions, it is likely that the development scenarios would have either little or no impact on traffic flow. However, if improvements are desired or eventually needed at this location, several low cost improvements are possible, such as: adding a left turn lane on northbound Route 211/Union Street by using the striped-out curb lane and removing two curb parking spaces; and/or removing the shoulder area along westbound Route 17K and determining if there is enough lateral space to add a left turn lane along westbound Route 17K for turns onto Route 211/Union Street. This latter measure would need to be verified from a right-of-way and engineering perspective.

Route 17K and Route 208
Each approach of Route 17K and Route 208 to this intersection at Scotts Corner has a left turn lane, a through lane, and a right turn lane. Projected future traffic volume increases are modest with the maximum overall increase of approximately 10 percent, with traffic increases projected primarily along the northbound and southbound approaches of Route 208 to the intersection. Based on the projected traffic volume increases and observed conditions, it is likely that the development scenarios would have either little or no impact on traffic flow. However, if capacity improvements are needed, low to moderate cost improvements could be explored, such as signal timing modifications and/or the use of available shoulders to add a travel lane in critical directions.

Route 17K and Route 747
Located northwest of Stewart Airport, in the Town of Montgomery, Route 17K’s approaches to the intersection each have one left turn lanes and one right turn lane.

Route 17K and Rock Cut Road
This intersection is located to the east of the intersection of Route 17K and Route 747. Each approach to this intersection has just one approach lane and one receiving lane on the far side of the intersection. The south leg of the intersection is a driveway leading to a commercial complex. Projected future traffic volume increases are modest with the maximum overall increase of 9 percent. This intersection could have low or potentially no impacts under the development scenarios, or might need a moderate level of improvements, e.g., potentially adding left turn lanes along the eastbound and westbound Route 17K approaches by converting the shoulder areas, and potentially adding a travel lane along southbound Rock Cut Road by converting the shoulder area there so that this approach can operate with one left turn lane and one right turn lane.

Route 17K and Route 300
See the discussion above, in the description of Route 300 improvements, for information about this intersection.

Route 17K/Broadway and Robinson Avenue/Route 9W
Located within the City of Newburgh, Route 17K (Broadway) is extremely wide and has angled parking. Robinson Avenue/Route 9W generally provides a left turn lane and a through lane per direction. There are several capacity improvements available at this location, primarily because of the considerable curb-to-curb width of Broadway. (See the discussion above, relative to Broadway and the results of...
However, the results of the model indicate that only a 7 percent increase in traffic is expected over the next 25 year period, so impacts could be modest or there could be no potential impacts given the expected low volume increase. Low-to-moderate cost improvements might, for example, include: conversion of angled parking along Broadway to parallel parking and the addition of one travel lane in each direction along Broadway; lane designation changes that could assess the need for exclusive left turn lanes, through lanes, and right turn lanes; and others.

**Route 218**

Hudson Street/Route 218 within the Village of Cornwall-on-Hudson is one of the primary gateways into the Village and serves as the Village’s “Main Street.” The Village of Cornwall-on-Hudson has conducted studies evaluating options for improving traffic and pedestrian conditions at three intersections: Academy Avenue, Duncan Avenue/Idlewild Avenue, and Dock Hill Road. The Study Team prepared more detailed traffic analysis and pedestrian observations at these intersections and prepared recommended plans that would provide traffic calming and pedestrian safety improvements, and improved traffic flow (see Figures 5-2A to 5-4B). The details of this study are included in Appendix F of this report.

**Figure 5-2A:** The current configuration of the intersection of NY Route 218 at Duncan Avenue, Idlewild Avenue, and River Avenue.

**Caption:** Intersection of Hudson Street and Idlewild Avenue/River Avenue looking north-east. NY Route 218 at Duncan Avenue, Idlewild Avenue, and River Avenue.
Figure 5-2B: Two potential configurations of the intersection of NY Route 218 at Duncan Avenue, Idlewild Avenue, and River Avenue.
Figure 5-3A: The current configuration of the intersection of NY Route 218 at Hudson Street.

Figure 5-3B: A potential configuration of the intersection of NY Route 218 at Hudson Street.
Figure 5-4A: The current configuration of the intersection of NY Route 218 (Bayview Avenue) at Dock Road/River Street and Dock Hill Avenue.

Figure 5-4B: A potential configuration of the intersection of NY Route 218 (Bayview Avenue) at Dock Road/River Street and Dock Hill Avenue.
C. Transit Recommendations

Recommendations regarding transit service improvements are divided into short-term recommendations focused on improving fixed route service in the City of Newburgh (see Figures 5-5 to 5-8) and longer-term recommendations covering the entire Study Area. For additional detail of the transit analysis and recommendations, please see Appendix D.

Short-Term Transit Recommendations

Short-term recommendations for improving fixed route transit services in the City of Newburgh include the following:

➔ Modifying the routes currently in operation to improve headways and more efficiently serve communities adjacent to downtown Newburgh;

➔ Adding one new route to expand the geographic coverage of fixed route transit in an attempt to better serve parts of the Study Area north and south of the City of Newburgh that are major destinations for transit-dependent residents of the Study Area;
Area but currently are inaccessible or require a dial-a-bus, paratransit, or taxi trip;

➔ Developing and implementing a marketing and branding initiative to improve visibility of the transit service and provide better information to existing and potential new users regarding routes and schedules; and

➔ Producing, installing, and disseminating signage, bus graphics, shelters, maps, brochures, and other marketing materials to complement the marketing and branding initiative.

Appendix D, "Interim Report: Service Alternatives," contains details about the recommended short-term improvements to the fixed-route transit system in the Study Area, including both the existing Newburgh-Beacon Bus local service and the Newburgh-Beacon shuttle operating between the City of Newburgh, the Route 17K park-and-ride lot, the Beacon Metro-North Railroad station across the river in Dutchess County, and Stewart Airport.

Figure 3-1 shows existing local bus service in the City and Town of Newburgh. Figures 5-5 to 5-8 show the proposed new local bus services with the addition of a new route (shown in purple) from the Mid-Valley Mall/Shop-Rite area on north side of Newburgh, through downtown, to St. Luke's Cornwall Hospital Cornwall Campus south of the city. While the
current local bus service is operated by two vehicles each providing service every 120 minutes. The portion of the route covered by both vehicles (Broadway and the commercial corridor along Route 300) effectively provides service every 60 minutes. Service is offered Monday through Saturday with weekday service operating between 6:55 AM and 5:30 PM, while Saturday service operates between 8:30 AM and 5:30 PM.

In the proposed short-term service recommendation, the portion of the service indicated by the “red” and “blue” routes in Figures 5-5 and 5-6 would be operated by three vehicles instead of two, allowing for 90-minute headways on each route, or effectively 45 minutes on the overlapping portion of the routes on Broadway and in the Route 300 commercial corridor. A fourth vehicle would operate the “purple” route shown in Figure 5-7 on 90-minute headways. The service plan developed for the Short-Term Transit Recommendations suggests increasing the span of service to the hours of 6:00 AM and 9:00 PM on the weekdays and 7:00 AM and 7:00 PM on Saturdays.

In the short term, operations of the Newburgh-Beacon Shuttle between Newburgh and the Beacon Metro-North Railroad station should be improved via discussions between regional stakeholders, Orange County, the service operator, the Port Authority of New York and New Jersey, and the New York State Department of Transportation. Changing traffic patterns at Stewart Airport, opportunities to provide better access to emerging
Employment centers around Stewart Airport, and increasing demand for shuttle service to the Metro-North station should be taken into account during these discussions to ensure that the shuttle is operated in a cost-efficient manner.

These improvements to local bus service could be integrated with a proposal by the City of Newburgh to designate the triangular area between Broadway, Washington Terrace, and Lake Street as a potential “Mid-Broadway Transit Node” in its current draft Future Land Use Plan. The proposed route map is consistent with that concept with both the Northside and Southside routes serving that location. A secondary hub at Liberty Street could be created where the Northside and Southside routes also intersect with the Mid-Valley/Vails Gate route. That hub could be implemented through streetscape improvements and signage.

Orange County has already placed an order for six to eight new hybrid fuel buses that would be needed to serve these three routes and has a Federal grant application pending to help pay for the new service. Orange County will also be working to make improvements to shelters and signs to make the new service more visible and accessible. The County’s Transit Orange initiative will help raise awareness of transit services throughout the County and increase the appeal and accessibility of local bus service.
Figure 5-9: Enhanced intra-County bus service could be provided in the future.
Potential Long-Term Transit Investments

In the longer term, the local fixed-route services and the Newburgh-Beacon Shuttle must be analyzed from a regional perspective, better integrating Newburgh local transit with other transit services such as Short Line Bus services operating between Middletown and Newburgh, Ulster County Area Transit (serving the 9W corridor and the Route 17K park-and-ride lot), and the dial-a-bus services operated by the Towns of Newburgh, Montgomery, and Cornwall. As shown in Figure 5-9, local transit services must provide better access to employment opportunities inside the Study Area (e.g., around Stewart Airport) and outside the Study Area (e.g., West Point and other hubs of commercial activity in Orange County) as well as community amenities like St. Luke’s Hospital Cornwall Campus and frequent destinations for transit-dependent people living throughout the Study Area.

An emerging issue for the Study Area and many communities around the U.S. is the challenge of providing mobility for an aging population that has chosen to “age in place” in low-density residential areas that are not suitable for fixed route transit services. It is untenable for Orange County or local municipalities to provide fixed-route or on-demand dial-a-bus services to a rapidly-growing population of transit-dependent seniors in locations that are not transit-supportive. A variety of technologies exist and are being developed to improve the operational efficiency of on-demand transit services (e.g., more efficient routing and dispatching) and provide additional mobility options via ridesharing. The stakeholders in this Study Area must work together and with Orange County and the New York State Department of Transportation to improve mobility management and anticipate rather than respond to this coming wave.

One way to meet the mobility needs of all Study Area residents, including aging seniors is to provide incentives for more people to move to transit-oriented, pedestrian-friendly developments. If development patterns associated with Smart Growth are pursued by one or more Towns, there may be opportunities for additional fixed route transit services connecting Newburgh to outlying villages and other areas that are developed to transit-supportive densities. Orange County and local municipalities can work with Short Line Bus and other existing service providers to determine how to best use available resources to initiate and operate these new services as demand materializes.

A US General Accounting Office report on mass transit options surveyed a number of different bus transit and light rail transit projects throughout the country. Based on those surveys, the average cost per mile of a light-rail system today would be between $30 million and $50 million per mile. A street-car system might cost between $5 million and $10 million per mile. Compare that to estimates for bus transit, which ranged depending on whether buses ran along arterials (less than $1 million per mile), in HOV lanes (about $10 million per mile), or in dedicated busways (about $15 million per mile). The order of magnitude difference between running buses on an existing right-of-way and creating new light-rail lines is evident. Where no new right-of-way or structures are involved, costs for implementing rubber-tire (bus) solutions are considerably less expensive than light-rail.

Investments in bus service, or other improvements to the streetscape in downtown Newburgh, would in no way preclude the community from implementing any other solution in the future if the demand for transit and the availability of funding should be there.

Finally, working with the MTA and the Port Authority, Orange County and local stakeholders should identify opportunities to achieve the greatest possible benefit from potential major investment in Metro-North facilities and service for local commuters and airport travelers to and from New York City, consistent with the goals and objectives of their communities. Coordinated long-term planning is essential to ensure compatibility of additional commuter service and parking, expansion of airport facilities, and proximate transit-oriented development. Each use creates distinct traffic and transit demands, which converge on an area confined by existing roads, runways, and other constraints.

D. Non-Motorized Transportation Recommendations

Appendix E of this report, “Walk/Bike/Ride/Hike Orange County: A Framework for Non-Motorized Transportation in Orange County, NY,” presents an updated vision for Orange County’s non-motorized transportation, establishes goals and objectives, describes the public outreach process, presents best practices and resources for non-motorized transportation planning, and specifically focuses on the Newburgh Study Area through the evaluation of existing conditions and needs and recommends non-motorized
transportation treatments. This section will provide an overview of the Framework recommendations.

First, a Vision statement, with Goals and Objectives, has been recommended to guide the development of future bicycle, trail, and pedestrian elements. This section of the Framework plan is based upon a similar section within the County’s 1998 Bicycle and Pedestrian Plan, but has been modified and reorganized to reflect input from the public outreach process, the County’s current vision, and the latest in transportation planning trends. The overall vision of the 1998 Plan, and most of its goals and objectives, are reflected in this updated Framework. This Vision is as follows:

“Orange County will be a place where bicycling and walking are encouraged, and are safe and viable modes of transportation in daily life. Bicycle, pedestrian, and trail facilities will be part of an interconnected transportation and recreation network for all non-motorized users. This network will provide communities with bicycle and pedestrian access to places of work, shopping, learning and play, and will be interconnected with the public transportation system to provide a comprehensive multi-modal network for the County. Overall, bicycle, pedestrian, and trail users’ travel and recreation options will increase throughout Orange County.”

The following five goals need to be reached for Orange County to carry out its vision. These goals are supported by specific actions by which each goal can be achieved. Each of these goals is mutually supporting and interdependent so that reaching one goal will contribute to, or is reliant on, reaching the others.

Encourage the increase of non-motorized activity within Orange County.

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**Figure 5-10:** Summary of Standard Bicycle Treatments.

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<th>CLASS 1: SEPARATED BIKEWAY</th>
<th>CLASS 2: BIKE LANE</th>
<th>CLASS 3: BIKE ROUTE</th>
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<td>Protected Bikeway</td>
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<tr>
<td>Protected Bikeway</td>
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</table>

**Description**

- Multi-use facility physically separated from traffic; no/limited traffic interaction
- Physically separated bike facility along roadway traffic; limited traffic interaction
- On-street bike lane separated from traffic by striped buffer
- On-street bike lane striped along curb or parking lane
- Shared curbside bike and parking lane
- Painted shoulder that is maintained to accommodate bikes; could feature bike lane marking
- Marked bike route that operates in mixed traffic
- Signed as a bike route; bikes operate in mixed traffic

**Typical Width**

- 10 to 14 Feet
- 8 to 14 Feet
- 8 Feet
- 5 Feet
- 12 Feet
- At Least 5 Feet
- N/A

**Ideal Application**

- County and regional trails; bike routes along roads with excess width or unused adjacent right-of-way
- Roads with excess width; roads with high volumes and speed limits
- Residential and commercial streets with moderate volumes
- Suburban and rural streets with moderate volumes
- Neighborhood streets and other low-volume roadways
- Neighborhood streets and other low-volume roadways

**Possible Application in Newburgh Study Area**

- Newburgh Waterfront, Downing Park, Stewart State Forest
- US 9W, Portions of 17K
- South Street, Water Street
- Union Street (NY 211)
- NY 17K, NY 52, NY 94, NY 207, NY 208, NY 416, US 9W, Fostertown Road, CR 29, Coldenham Road, Rock Cut Road
- Dubois/Liberty Street, Balmville Road, Leslie Road, Gidney Avenue, Forge Hill Road, Shore Road, Otterkill Road, Clark Place/ Maybrook Road, Beaverdam Road, Boyd Street/ Goodwill Road, Ridge Road, Lakeside Road, South William Street

Photo Credits: www.pedbikeimages.org
→ Improve the safety of bicyclists, pedestrians, and trail users throughout the County.
→ Develop comprehensive and interconnected bicycle, pedestrian, and trail networks that link users to all major destinations within the County.
→ Collaborate with local officials and citizenry on non-motorized transportation planning.
→ Identify funding sources for non-motorized projects.

The Newburgh Study Area, because it is the focus of the larger Transportation and Land Use Study, was selected as the first part of the County to receive a more detailed bicycle, pedestrian, and trail master plan planning. Similar non-motorized master planning will be undertaken in the future for the remaining areas of the county following completion of this Study. Recommendations are made for improvements to existing bicycle, pedestrian, and trail facilities, as well as identifying new facilities. Detailed design of each route would need to take place, especially at key locations and/or complex intersections, to implement the proposed routes. Figures 5-7 and 5-8 summarize the options for improving bicycle and pedestrian facilities.

Bicycling Recommendations

The designation and implementation of an interconnected bicycle route system is desired. Two official State bike routes have been designated throughout the County by the New York State Department of Transportation (NYSDOT). More routes are needed along appropriate corridors to create a network. Additional design improvements may need to be made to existing routes to improve the safety, attractiveness, and ease of use of these routes.

A recommended bicycle network was developed by identifying gaps in the existing network and filling these gaps with appropriate routes and connections. The goal was to achieve a network of bicycle routes to facilitate bicycling within, and between, each village and town in the Study Area. Routes were identified by studying maps and aerial photography, conducting field visits, and using input received from the public outreach process. Potential routes were evaluated based on observed traffic volumes and speeds. Other criteria included connectivity to destinations and other routes, topography, scenery, pavement conditions, and shoulders (or lack thereof). The proposed bicycle route network for the Newburgh Study Area is shown in Appendix E, along with a brief description of each proposed route in the Study Area.

One example of a fairly easy solution to implement would be to bypass the bike route between Walden, Montgomery, and Maybrook that currently runs along NY 208 and create a safer route along River Road (CR 29) south from Walden, onto NY 211 and Boyd Street in Montgomery, and then Beaver Dam Road and Clark Place into Maybrook (see Figure 5-12). These roads are not only less trafficked, but also more scenic, and the new route could link each of the three villages together in a safe manner.

<table>
<thead>
<tr>
<th>SIDEWALKS</th>
<th>CROSSINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb Extension</td>
<td>Curb Ramps</td>
</tr>
<tr>
<td>Shorten crossing distance and reduce pedestrian exposure</td>
<td>Provide accessible street crossings</td>
</tr>
<tr>
<td>Streets with parking lanes</td>
<td>Anywhere there is a crosswalk</td>
</tr>
<tr>
<td>Broadway (Newburgh), Union Street (Montgomery), Hudson Street (Cornwall-on-Hudson)</td>
<td>Everywhere</td>
</tr>
</tbody>
</table>

Photo Credits: www.pedbikeimages.org

Figure 5-11: Summary of Pedestrian Safety and Mobility Improvements
Pedestrian Recommendations

Pedestrian networks are made up of two major components: sidewalks and crosswalks. Based on an analysis of the Newburgh Study Area sidewalk and crosswalk inventory, each of the municipalities in the area are missing at least some pedestrian links within their networks. Orange County has recently developed a Design Manual which outlines desirable policies, design criteria and implementation guidance for smart growth development. This manual focuses heavily on pedestrian-scale development and connectivity and can provide guidance for improving the missing pedestrian links in the Newburgh Study Area.

One example of a possible improvement to pedestrian conditions addresses existing safety concerns within the Village of Cornwall-on-Hudson. At the intersection of NY Route 218 and Academy Avenue the addition of curb extensions, realigning one leg of the intersection through a new painted yellow line, and relocating crosswalks would calm traffic and improve sight-lines to make pedestrian crossings at this intersection much safer.

Trail Recommendations

Opportunities for identifying new off-road trails as ways to connect people from residential areas into village centers should be evaluated. As noted in the Orange County Design Manual, all trails should be no less than 8 feet wide, and ideally 10 feet wide (12 feet is the recommended width in high-use areas). Trails can have a variety of surfaces such as paved asphalt, packed gravel, and dirt depending on the uses and environmental conditions. A comprehensive trail network should be interconnected and have a variety of trail types. All users should be considered when designing a trail system.

Next Steps

The Framework is the first step in a larger process to be undertaken in developing and implementing a new countywide non-motorized transportation master plan, and achieving a comprehensive transportation network. The next step to be taken involves additional public outreach to evaluate the vision, goals, and
recommendations, and to further refine them, if necessary. Public and stakeholder workshops should also be held to examine the specific non-motorized transportation recommendations and proposed treatments provided for the Newburgh Study Area. Additionally, the following steps should be taken (though not necessarily in this order):

➔ **Complete the Master Plan:** Guided by the Framework and the Newburgh area-specific recommendations, a detailed master plan should be developed for the entire County at least to the level that was performed for the Newburgh Area. It should also include a Needs Assessment section based on existing conditions and develop recommended bicycle, pedestrian, and trail improvements.

➔ **Adopt Policy:** Develop and implement policy at the County and local levels that supports the vision and goals set out in the Framework, and encourages and enables bicycle, pedestrian, and trail projects to be funded. Complete Streets policies can ensure that infrastructure for non-motorized facilities are included in future development and highway projects.

➔ **Develop Projects:** Begin planning non-motorized transportation projects based on the bicycle, pedestrian, and trail improvements recommended here and in the future countywide master plan.

➔ **Track Progress:** Oftentimes, bicycle, pedestrian, and trail improvements are implemented as stand-alone projects, so the master plan would likely not be implemented in phases, but rather incrementally. Therefore, the progress of the master plan should be tracked carefully in order to determine which aspects of the plan have been implemented and which still need to be undertaken. Improvements should always be working towards completing a comprehensive countywide non-motorized transportation network.
E. Land Use Recommendations

This section outlines a series of strategies that can guide future residential and commercial development in the Study Area in a way that reinforces existing communities, maximizes the efficiency of past investments, enables transportation alternatives and relieves pressure on the area’s strained road network. The overall strategies are accompanied by further recommendations for master plan amendments and zoning changes that will best position the nine municipalities of the Study Area for more livable and sustainable neighborhoods.

Re-Imagining our Communities

Four overall strategies are presented for land use change that stabilize, revitalize, and strengthen existing neighborhoods and foster new neighborhoods with a high quality of life: 1) infill in the City and Village downtowns, 2) extension of village fabric with new contiguous neighborhoods, 3) creation of new hamlets, and 4) redesign of commercial corridors. Collectively, these strategies will help the Study Area focus new growth to incrementally create more walkable and transit-oriented communities with a broad range of housing types that will meet the needs of the diverse population of the community now and into the future.

Downtown Infill

Fostering mixed-use infill development on vacant or underutilized sites in the city and village centers is paramount to creating nodes of walkable activity that would support a more robust transit system for the Study Area.

A successful downtown has its foundation a network of focal public spaces that form the public realm, venues for civic activity, and organizing structure for private development. This network can include parks and plazas, with greenways and complete streets that link them to one another. A central plaza or green can act as the focal point for the community and can serve as the gateway into the community from a public transit node or hub. Plazas and parks should not be too large as to be out of scale with the surrounding buildings and neighborhood and efforts should be made to activate them with a range of events including farmers markets and music shows to bring people to the space. The downtown’s street network should be treated as an extension of these open spaces and landscaped to facilitate pedestrian activity and stormwater management.

The local street network should be fine-grained to enable short walking distances between activities and space within roadways should be allocated to the full range of potential users (e.g., drivers, walkers, bicyclists, and transit users). Large blocks in suburban communities often discourage walking when circuitous routes are required to accommodate the lack of indirect paths. In some instances, new streets can transition a local road network into more of a grid and simultaneously distribute traffic and reduce congestion while creating more direct walking paths. In other cases, pedestrian connections and walkways can link areas of a downtown to one another directly without the need to change or increase automobile access as well. In almost every instance, public rights-of-way (the space from building front to building front across a street) in downtowns should be shared space so that pedestrians, bicyclists, transit vehicles, cars, and trucks all have access to these activity centers. Complete streets provide such access.

Private investment should be encouraged to activate the public realm by ensuring that buildings are oriented to the street with their facades and primary entrances facing the sidewalk and parking lots and structures designed to minimize their impact on the neighborhood’s streetscape. Parking should be located behind (or at a minimum to the side) of new buildings unless there is no feasible way for doing so. In downtown cores, buildings should be mixed-use with retail or offices on the ground floor to activate the public realm and residential or offices above to fill the downtown with users. In adjacent neighborhoods, residential buildings should be oriented to the street with stoops or porches and individual entrances to each unit for multi-family structures. The adaptation and reuse of underutilized structures should be encouraged (within the appropriate context of historic preservation of certain structures). Creative alterations to older buildings are often the most attractive and interesting aspects of downtowns.

Village and City Extension

As new neighborhoods are built adjacent or contiguous to existing Village or City neighborhoods, they should be designed to act as extensions of that community rather than disconnected appendages with little relationship to their context. Too often, new subdivisions are located within walking distance of village centers, but feel miles away because they are designed to be completely independent and distinct.

As with any greenfield development (development on previously vacant land, farmland, grassland, or forest), the natural features of the site and area should be the defining feature of the new neighborhood. Whether the site contains hillsides, stream valleys, wetlands, or some other unique feature, these aspects should be highlighted as amenities and utilized to create a defining structure for the neighborhood. Chances are that this ridge or valley also extends into the nearby village center and can be used to create a greenway linkage between the two. The neighborhood should be organized around a focal open space that forms part of a network connecting it to adjacent neighborhoods and stitches them together into a single community.

The road network of the new neighborhood should never be a large cul-de-sac with only one (or even only two) entrances/exits creating only slight connection to the surrounding street pattern. Learning from the historic and previously developed street system, strategies should be employed that create multiple linkages for cars so that traffic is distributed and (more importantly) multiple connections for bikes and pedestrians so that residents of the new neighborhood can easily walk to the existing village or city downtown. Any neighborhood within walking distance of the mixed-use downtowns of the Study Area should have a comfortable and direct walk to that center – potentially replacing car trips with pedestrian trips for quick, local errands.

New village neighborhoods should be predominate residential land uses with potentially a commercial or institutional use to meet some local demand. These neighborhoods can act as transitional areas, offering the opportunity for a range of housing types at different densities. Closer to the village center, apartment or condo buildings several stories high could often be developed in keeping with contextual building scale and heights. Moving farther from the village,
townhouses and attached single-family houses could transition into detached single-family homes. This pattern would prevent harsh juxtaposition of conflicting housing types or land uses and contextually link the surrounding neighborhoods to the village centers and increase the likelihood that they will look to that center for retail, restaurants, and entertainment.

Hamlet Centers

The commercial zoning along corridors runs the risk of changing those corridors into “placeless” strips of commercial development resulting in loss of community character and congestion. An alternative strategy would enable and encourage hamlet centers to develop at key junctions along these corridors. This land use pattern would lay the foundation for future enhanced transit service as each hamlet center node would be a natural “stop.”

Given that many of the parcels developed for hamlet centers will be located on greenfields, the principles outlined in the village extension section apply here as well. The natural features of the area should define development of the hamlet center sites. Green corridors should be harnessed to link the hamlet with surrounding residential streets and neighborhoods. Defining green features should be incorporated into the area plan as a mechanism to add value and character to the hamlet. And, much as in the village infill strategy, a set of key open spaces and plazas should be created at the heart of the hamlet center to act as civic gathering spaces and activity centers for the adjacent properties and surrounding neighborhoods.

Potential hamlet centers often exist at rural crossings between two county routes or along a county route at an intersection with a local road. Three road strategies are essential to evolving the street network into one that facilitates hamlet center formation. First, a set of parallel and perpendicular streets should transform the crossroads into a small street grid – which need not be rectilinear. Often, there are multiple perpendicular routes that can be integrated into the pattern, but parallel local roads are essential to provide internal circulation to the hamlet center without necessitating that all traffic occur on the main road. Second, curb cuts off the main road must be limited – ideally eliminated – in lieu of access to shops and housing off of the secondary streets (see first step). Finally, the county route traveling through the hamlet center must be redesigned so that it has more of a “main street” feel along that stretch (including sidewalks) and traffic is calmed when passing through the pedestrian-oriented zone.

The land uses along the County routes at the heart of the hamlet center will likely still be predominantly commercial in nature – the primary difference between the hamlet and a commercial strip will be the buildings’ orientation to the street, parking tucked behind, provision of public spaces, and the ability to walk between multiple establishments located on both sides of the road rather than drive between them. Behind the commercial shops, residential buildings (likely consisting predominantly of townhouses and single-family houses with perhaps some apartments) will transition between the commercial corridor and the surrounding neighborhoods and/or rural landscape.

Corridor Redesign

At several key locations within the Study Area, concentrations of activities currently exist to support transit, but the land uses are separated from one another and the streetscape is not pedestrian friendly. Suburban retail and office areas with residential neighborhoods disconnected from them but nearby are a hallmark of suburban, auto-oriented development in America. These can be incrementally transitioned into more pedestrian-oriented mixed-use town centers that act as focal points for the surrounding community.

Just as the natural features of the landscape should define development on greenfields in village extensions and new hamlets, the hidden landscape should be rediscovered and uncovered to define the reinvention of suburban commercial areas into town centers. In many instances, development over time has turned its back on river valleys or hillsides that exist in close proximity to housing and shops, but are far removed from them. In some instances, creeks have even been buried in culverts in an attempt to create more developable flat land. The first strategy for these areas is to read the landscape, recognize the naturally occurring patterns and then elevate them to amenities adding value to adjacent parcels. As described in the hamlet and village infill strategies, public open space is a key mechanism for placemaking. In addition to the natural spaces and corridors, public plazas and greens located at primary intersections or at the heart of the suburban commercial area should form the foundation of future private development.

Oftentimes, the street network in commercial areas consists of a few primary arterials with many lanes of traffic and a series of secondary residential roads radiating off of those arterials. This landscape is dominated by parking lots and curb cuts, and is not particularly pedestrian friendly. A series of streets should be integrated into the parking lots, creating alternatives to the few arterial routes, and providing a grid-like street pattern that distributes traffic rather than concentrates it. This will also serve to break down block size and facilitate pedestrian movement. Private development can then be accessed from multiple sides and the need for curb cuts on the main streets will be minimized. Parking behind the structures limits their impact on the pedestrian realm. The streets themselves should be made more complete as described in the infill strategy to enable pedestrian, bike, and transit flows alongside automobiles and trucks.

New development should balance the land use mix so that the commercial district can evolve into a mixed-use town center that seamlessly links residential neighborhoods with a commercial node where residents can meet their weekly needs. Some buildings in these areas can consist of residential or office uses above retail, but other buildings may certainly be single use. It is their relationship to one another in a complete neighborhood that differentiates them from commercial strips. Given existing development and the complexity of these types of districts, strong coordination between development parcels is essential. Though they will likely be built one at a time over the course of decades, a strong up-front vision, implementation strategy, and ongoing conversations with property owners will ensure that new access roads, open space links, and active facades will relate to one another and incrementally evolve these areas into town centers for the surrounding community.
Case Study

Village of Walden
By way of example, the Study Team created a potential infill scenario in the Village of Walden (see Figure 5-13). The area selected represents a typical infill location in that it is close to existing development, contains vacant or under-utilized properties (including one or more structures), and could be redeveloped to enhance walkability and access to potential transit. It should be noted that this scenario is entirely theoretical and neither the Study Team, nor the County, nor the OCTC is suggesting that this scenario ought to be fulfilled as envisioned. It would be up to the Village and the several property owners to discuss whether this scenario could actually be implemented at this location.

➔ A new focal public space could be created in close proximity to the historic train station. This could be directly adjacent to the station building or even north of a small tributary to the Wallkill River, linked to the station area by a pedestrian bridge over the creek.

➔ Connectivity would be improved within the grid for pedestrians and vehicles by reconnecting Woodruff Street and John Street across the rail right-of-way (depending on the length of trains utilized if service is restored.
to this station, reconnecting John Street may not be possible because parked trains will cross the street right-of-way) and potentially Richardson/Jessup Street across the stream.

➔ A cluster of transit-oriented and/or pedestrian-oriented mixed-use buildings could be developed as infill on either side of the rail right-of-way between John St and Woodruff St.

➔ Mixed-use buildings along the north side of Main St between Ulster Ave and Valley Ave would continue the walkable and pedestrian-oriented character, linking the urban fabric of West Main St with the station area along East Main St.

➔ Targeted multifamily infill residential buildings radiating out from the Village’s mixed-use core could provide housing options for the community and would taper down in density to be contextual with existing neighborhood fabric.

➔ The industrial building along the Shawangunk, Walden, and Wallkill Rail Trail could be redeveloped into a mixed-use hub of incubator and flex-use commercial space to anchor entrepreneurial activity in the Village.

• Promote street-oriented mixed-use development
• Adapt and re-use underutilized properties
• Create new linkages in the network of streets and sidewalks
Case Study:

Village/Town of Montgomery
By way of example, the Study Team created a potential village extension scenario in and adjacent to the Village of Montgomery (see Figure 5-14). The area selected represents a typical location for potential village expansion in that it was vacant or agricultural land adjacent to an existing village and could be redeveloped as an extension of an existing neighborhood fabric, thus enhancing a community without changing the overall character. It should be noted that this scenario is entirely theoretical and neither the Study Team, nor the County, nor the OCTC is suggesting that this scenario ought to be fulfilled as envisioned. It would be up to the Village and the several property owners to discuss whether this scenario could actually be implemented at this location.

➔ Assuming the area along Railroad Ave at Clinton St evolves into a transit-oriented mixed-use hub of infill in the Village Center, the area east of the railroad between Boyd St and Chandler Lane could act as an extension of the Village neighborhoods (assuming development can take place without adversely impacting the wetlands) in contrast to developments like Angelo Dr that are completely disconnected from the Village.

➔ The string of wetlands running north-south in this area of the Village can be transformed into a passive...
park and greenway that adds value to surrounding neighborhoods and links them to the Village center.

➔ An extension of Prospect Terrace linking eventually into Washington Ave and/or Chandler Lane and/or Senior St across the railroad could create a curvilinear grid in this area that would distribute traffic and offer multiple options for pedestrian connectivity. A new road parallel to Prospect Terrace’s extension would serve to create a set of new developable blocks alongside the wetland greenway.

➔ A mixed-use building at the southeast corner of Prospect Terrace and Boyd St could provide an amenity for daily needs within walking distance of the southeastern neighborhoods and act as a bridge between activity in the Village center and these parts of the Village.

➔ A range of housing types built on the new blocks formed by Prospect Terrace extension and the new parallel road could meet the needs of a diverse population and create a transition between the more dense Village center and the lower density surrounding neighborhoods.

• Create a network of linked open spaces
• Provide a variety of housing choices
• Encourage context-sensitive infill development
Case Study

Town of Montgomery (Route 17K and Coldenham Road)

By way of example, the Study Team created a potential new hamlet scenario in the Town of Montgomery (see Figure 5-15). The area selected represents a typical rural crossroads with limited commercial or residential activity that can evolve into a small-scale, pedestrian or transit-oriented mixed-use center. It should be noted that this scenario is entirely theoretical and neither the Study Team, nor the County, nor the OCTC is suggesting that this scenario ought to be fulfilled as envisioned. It would be up to the Village and the several property owners to discuss whether this scenario could actually be implemented at this location.

➔ To enable a greater concentration of activities at this intersection without compromising the regional traffic flow of Route 17K, a parallel local access road could be created north of Route 17K linking Coldenham Road with Browns Road and south of Route 17K curving as an extension of Coldenham Road to a “T” intersection with Maple Avenue. Similarly, south of Route 17K, Ridge Road could curve to the east continuing on to Maple Avenue and intersecting with an extension of Coldenham Road eliminating an intersection with Route 17K and simplifying traffic flows in the area.

➔ Mixed-use buildings could be developed along Route 17K between Ridge Road and Browns Road. These would be pedestrian-oriented and built up to the sidewalk with parking located in the rear along the new parallel local access roads.

Figure 5-15: Case Study - Town of Montgomery
This stretch of Route 17K would be landscaped to feel like a stretch of town center. A new extension of Sleepy Hollow Road across Route 17K could link both access roads at their middle, but a pedestrian crossing at this point would be necessary to link mixed-use activity on both sides of the road regardless of whether or not a vehicle crossing is warranted.

A focal civic building located at the corner of Browns Road and Route 17K could anchor the hamlet center and provide an identity to this new "place."

Multifamily units could be developed behind the mixed-use buildings to provide housing options for the community and shoppers for the stores along Route 17K. Incorporating some of the existing mobile homes into the neighborhood, the range of housing choices and costs would provide affordability for residents.

New residential neighborhoods to the east of the hamlet center at lower densities could transition this small downtown into the surrounding countryside and provide an even greater range of housing choices in close proximity to neighborhood retail and amenities.
Town of New Windsor (Vails Gate)

By way of example, the Study Team evaluated a potential corridor redesign scenario in the Town of New Windsor (see Figure 5-16). The area selected is the Vails Gate intersection and surrounding land uses. This location is a highly complex, and highly congested, traffic node. While much of the congestion comes from traffic passing through (and not from the land uses surrounding the intersections), the local land uses and access points do contribute to the inability of this complex intersection to function properly. The Study Team evaluated what could happen if one of the roadway segments coming into the main intersection could be removed to simplify traffic operations and if the land use could be reorganized into a pattern that is more pedestrian friendly. The southernmost portion of Route 32 was identified as one leg of the complicated Vails Gate intersection that could possibly be removed. This segment of the road was selected as it was the one that formed an acute angle with the main intersection (creating difficult turning movements for some vehicles) and because access to private businesses along this segment could still be maintained by creating a new driveway that terminates short of the main intersection.

It should be noted that this scenario is entirely theoretical and neither the Study Team, nor the County, nor the OCTC is suggesting that this scenario ought to be fulfilled as envisioned. It would be up to the Town, State, and the several property owners to discuss whether this scenario could actually be implemented at this location.

➔ Eliminating the segment of Route 32 west of Old Temple Hill Road would transform the five corners into a typical four-cornered intersection and could dramatically improve traffic flow in the area despite the re-routing of north-south traffic continuing on Route 32.

➔ There is a creek that runs to the northeast of the five corners that could become a focal point to the neighborhood. It is currently underneath a large surface parking lot for a stretch and could be daylighted with bridges crossing it. It could evolve into a greenway with trails along its banks and radiating out from its course to the elementary school and residential clusters not directly along the creek.

➔ Land freed up from the removal of the one block of Route 32 could become a landscaped plaza or other public space that would anchor the core of the neighborhood and act as a gathering space.

➔ Several new road connections would serve to break down the block sizes and create alternatives for vehicles and pedestrians. This better-distributed traffic flow would alleviate pressure on the intersection at the heart of Vails Gate. These could include a fine-grained public street grid overlaid on top of the commercial parking lots along Route 32 (allowing for
incremental redevelopment of those sites) and new commercial and industrial blocks created west of Route 300.

➔ The Route 32 corridor and the new public space could become a key mixed-use spine of activity for the town with a new cluster of buildings with ground-floor retail and offices or residential units above activating the street and defining the new center.

➔ Along Old Temple Hill Rd and behind new mixed-use buildings there would be opportunities for new multifamily residential development that could function as neighborhood extensions of the town center rather than disconnected appendages merely adjacent to the mixed-use core.

➔ Industrial and commercial activity could continue along the rail right-of-way edge to enable tax base development without compromising the community character and pedestrian-oriented nature of the new center.

Application of this concept for Vails Gate or any one of the four strategies for re-imagining our communities to specific locations within the Study Area would

- Coordinate development between parcels
- Create a smaller network of streets and blocks sidewalks
- Promote mixed-use development
require additional study. Such an evaluation would require looking holistically at the context of the site or sites with respect to location, surrounding land uses, and environmental features — and not just at the particular challenges or constraints of the site. Many potential sites might be considered challenging due to fragmented property ownership, existing use of the site or adjacent properties, or existing traffic patterns. However, many of these challenges can be overcome with creative planning strategies. This type of broad-based strategic planning is exactly what communities within the Study Area need to do to ensure that they are well positioned to guide growth and change over the next several decades. Planning during an economic downturn allows a community to get out ahead of the private sector so that when conditions improve the community can lead the way forward in a manner consistent with an overall vision.

Strategies for Study Area Communities

The Study Area communities have already begun the process of creating visions for the future. Each of the communities has recently undertaken a comprehensive planning process that has led to zoning amendments or investments in public facilities and community building. While direct investments in public facilities might not be possible during an economic downturn, building public support for municipal actions can lead to positive change when resources do become available.

The Study Team reviewed the comprehensive plans of each of the communities and held discussions with key elected officials, planners, and engineers to understand what direction the communities wanted to go in. From that review and those discussions, the Study Team developed the following thoughts for each community.

City of Newburgh

The economic development and land development strategies for the City of Newburgh are very different from those for the surrounding communities; the City needs to spur growth while the Towns in the Study Area need to channel growth that is coming. The City’s efforts should focus on two broad categories: neighborhood stabilization and focused development nodes.

Neighborhood stabilization in the City is crucial to ensure that residential areas maintain existing value and can improve over time; caution must be paid so that areas of the City do not slip further into disinvestment and decline. This effort must include public sector leadership to use limited resources to incentivize façade and property maintenance, to remove dead trees and abandoned vehicles or trash, and — most importantly — to control and beautify vacant properties. The urban land bank that has been launched should be expanded and continue to be used in partnership with the private sector to consolidate ownership of vacant land, clean properties and reposition them for future use. Of those properties that are least well suited for development but well located in neighborhoods, some should be turned into pocket parks by the City and others turned over to the community for use as community gardens or other neighborhood amenity. Those that are suitable for development should be cleaned and maintained until they can be resold for a higher and better use.

Economic development efforts must be very strategically focused in a handful of locations so that they are not spread too thin. Initiatives and incentives should work in partnership with the private sector and build off of anchor institutions like the universities and hospital. The waterfront, as has been prioritized in the recent master plan, is one of the greatest opportunities to reclaim some of the urban and mixed-use character that made the City such a successful place historically. The Broadway corridor leading west from the waterfront should anchor transit-oriented and walkable efforts. The corridor can evolve over time from multiple bus routes to a thriving bus rapid transit or fixed guideway transit corridor that anchors the region’s public transit system. The recent Request for Proposals for several vacant parcels on the Broadway corridor is emblematic of the right strategy to attract investment in clusters of development opportunities, but caution should be paid to ensure that value is created through incremental development and that too much City-owned land isn’t sold at low prices before its value is raised by each redevelopment project.

Because of Newburgh’s unique set of issues, a focus should be placed on access — whether to schools, transit, or jobs — for its underprivileged population. And conversely, the City must seek economic development in order to attract residents from other socio-economic groups that would allow Newburgh to support a healthy range of incomes and populations.

The City’s Plan follows the format of laying out its general vision for certain urban issues and then stating benchmark targets to be achieved by 2040. While this accountability and the setting of firm goals is helpful in directing policies, the benchmark numbers do not provide justification for why they were chosen or for how they will be achieved. For example, going from 30% to 70% home ownership by 2040...
seems overwhelming when presented without intermediary steps and without a more specific plan about how progress will be assessed over time. A more effective way of using the document to direct growth and policies could be to incorporate these benchmark targets into the overall text describing the goals and explaining why these numbers were chosen. At the same time, using call-out boxes that highlight these benchmarks but also establish interim benchmark numbers would make them seem more achievable and would help measure whether the city is on track over the coming decades.

Key to Newburgh’s success will be using resources and growth efficiently. Channeling the City’s resources and growth into specific sections of the City so that a critical vibrancy, population, and energy can be obtained that makes cities attractive places to live and work is critical. The recommendations provided below include steps that would move Newburgh towards this strategy.

Development
Newburgh faces the challenge of a high number of unoccupied and dilapidated buildings. At the same time, many of these buildings are historic and architecturally attractive and are oriented towards the street in a way that supports pedestrian movement and active streets. The Plan has identified portions of the City along the Broadway corridor that could be redeveloped to take advantage of existing services. Because the City’s resources are limited and because there are so many buildings that need rehabilitation, a strategy that concentrates growth into a few designated areas would likely benefit the City more than trying to channel growth anywhere in the city. These areas, like the Broadway corridor, would be areas with existing infrastructure capacity and would be areas where the City should invest when possible to upgrade public amenities, the pedestrian environment, and public transportation. Similarly, incentives or a more rapid permitting and approval process in these target areas would serve to channel potential development in a more productive way, creating pockets of healthy and vibrant neighborhoods, from which the City could build off of over time. Logical areas for this type of channeled development would be around the waterfront, along Broadway, and around Newburgh’s colleges and hospitals. Zoning should reflect this vision by allowing for mixed-use, higher density development or redevelop in these areas, while restricting this type of development in other parts of the city so that any growth and investment is not diluted.

Recreation
The Plan acknowledges that more parks and recreational areas are needed and that they need to be developed with a greater range of uses in mind. These parks are helpfully mapped in the Plan to show that the northern and western parts of the city are most lacking in these resources. Since Newburgh contains many underutilized properties, a strategy could be explored that targets certain underutilized parcels outside the desired development areas for conversion to parks.

Additionally, accessibility to parks from specific neighborhoods should be assessed to ensure each community within Newburgh has access to open space. Programmed activities within these parks could also begin to contribute to neighborhood and civic pride. A study could be done to map the location of abandoned lots and existing parking space to determine the locations of potential future parks. By taking these properties out of the real estate market, it also provides more incentive for development to be directed into growth areas, like the Broadway corridor.

Transportation
The Plan advocates for upgraded public transportation playing a role in the City’s rejuvenation. In other sections of this report, expanded bus routes within Newburgh are described that would provide a bigger catchment for bus service. Along all bus routes, stops should be made attractive to incentivize their use. They should include covered waiting areas that make them more comfortable for use year-round, and they should be clearly signed so that they are easy to use.

These improvements to local bus service could be integrated with a proposal by the City of Newburgh to designate the triangular area between Broadway, Washington Terrace, and Lake Street as a potential “Mid-Broadway Transit Node” in its current draft Future Land Use Plan. The proposed route map is consistent with that concept with both the Northside and Southside routes serving that location. A secondary hub at Liberty Street could be created where the Northside and Southside routes also intersect with the Mid-Valley/Vails Gate route. That hub could be implemented through streetscape improvements and signage.

Arts
The Plan proposes positioning Newburgh as an arts city in an effort to boost the economy, improve quality of life, attract new residents, and build civic pride. The Plan lists the many ways in which Newburgh is well positioned to do this, as it has lower rents than its neighboring communities, good architecture, and a walkable, urban layout. Nonetheless, the Plan acknowledges the City’s current deficiencies, which include a lack of performing or visual arts facilities, limited funding, and the lack of group that promotes these activities.

A company has recently invested in developing a performing arts space in the old train station on the waterfront, and recent development of the SUNY Orange satellite campus in Newburgh near the waterfront have begun to lay a foundation for the elevation of arts in Newburgh. The next step in this trend is ensuring that good connections exist between the waterfront area and the rest of the city and that further investment in the arts be made in this area to create a critical mass. The strategy laid out in the Plan of patronizing artist work for public spaces and for city facilities and for identifying and recognizing art around the city is a good one.

Urban Design
Newburgh benefits from having historic urban fabric, with buildings that front the street, that are human in scale, and that have traditionally contained a mix of uses along the main commercial corridors. The Plan also recognizes the importance of community design and planning on the health of residents. Recommendations could be included in the Plan that reinforce historic development patterns for new buildings and that support walking. These same recommendations for designs that activate the street could also include components that make streets feel safer.

Housing
The Plan acknowledges that Newburgh needs more safe, habitable, and affordable housing. The Plan expresses concerns about the condition of much of the city’s housing stock, about low ownership rates, and about the resulting poor aesthetic impact on the city’s neighborhoods.

Commendably, the Plan recognizes that restorations that make units greener and more energy efficient can reduce the cost of living for residents. The city should explore potential incentives and work with private and non-profit developers to include energy saving components in housing construction and renovation.
Additionally, the Plan advocates for taking larger single-family houses and splitting them into condos or apartments. This has the effect of maintaining the visual appeal of these older structures, while creating more opportunities for ownership.

The Plan expresses an interest in taking advantage of the SUNY Orange student population to activate parts of the city with new residents. Recognizing that the college’s location coincides with one end of the Broadway corridor and is adjacent to the waterfront, incentives for student housing that spills outside the campus and into this area of the city should be explored.

The Plan recognizes the effect of even a few dilapidated structures on an entire neighborhood. Taking this into account, the City should work with private developers and non-profits to restore dilapidated buildings in areas where the majority of the neighborhood is intact in order to begin creating strong communities that can be extended outwards to the rest of the city. The City should use its limited resources in a directed way to incentivize the renovation of buildings in areas the City would like to see grow and in areas where robust infrastructure exists.

Natural Environment
The Plan talks about the strategy of using tax incentives for developers to incorporate plazas and create more open space within the city. This should be qualified with certain standards that ensure these plazas are oriented towards the public sphere and aren’t designed in a way that makes them attractive only to residents.

Other goals of preserving views of the night sky through better use of lighting in the city; the encouragement of community gardens as a way of reducing carbon emissions, creating ownership within the community, and providing a greater range of food choices; and the recognition of the importance of remediating and redeveloping brownfield sites for reducing sprawl and for increasing property values are all valuable goals.

Water and Sewer
The Plan indicates that Newburgh has twice the water capacity that it currently needs. The city can, therefore, take advantage of not having the expenditure of enlarging this infrastructure system with new development. Redevelopment should be targeted to specific areas with adequate capacity.

The City could also take advantage of collecting gray water on redeveloped sites, in new parks, and on city-owned properties to continue to maintain this adequate capacity.

Town of Cornwall
Landscape preservation and a focus on infill development and neighborhood solidification are strategies to maintain the existing character of the Town of Cornwall and reinforce its existing smart growth development patterns. Working in collaboration with the Village of Cornwall-on-Hudson, the Town has developed strategies to focus commercial development along Main Street in a way that supplements commercial businesses within the Village without competing against those businesses. As a result, even though the two centers are geographically separated, the distinction between the Town’s downtown and the Village’s downtown becomes less obvious to residents and visitors alike.

Growth should be directed to two focal areas of the Town: in a transit-oriented development district located within close proximity to the Salisbury Mills – Cornwall Metro-North Railroad station and in the town center oriented around Main Street. Outside of these two growth nodes, development should be limited in all portions of Town.

Very little commercial or residential growth should be encouraged west of Route 9W and rural land uses should be protected west of Route 32 (except for the area directly surrounding the rail station). The areas of Town most at risk to sprawling development and congested traffic are the stretches of Route 32 and Route 94 leading out from the Town of New Windsor. These segments of road are prime targets for commercial strip expansion from Vails Gate that would create traffic congestion and would limit demand for commercial activities in other, more walkable parts of the town. In the town center, infill development should be enabled and incentivized to create an increasingly walkable downtown along Main Street with the addition of new parking opportunities behind Main Street to serve the downtown. Quaker Avenue should incrementally transition from large-lot strip commercial to a continuation of the Main Street fabric from the east. New residential neighborhoods should act as extensions of existing neighborhoods and be well connected to the town center with pedestrian paths and roadways.

The Town of Cornwall’s Comprehensive Plan encourages density in its downtown, the conservation of open space elsewhere in the Town, the creation of public transit options downtown, and increased connectivity between residential areas and the employment district. Concerns about the high volume of traffic and the perception of a lack of parking downtown dominate much of the land use and transportation sections of the document. Though the main thrust of the Plan revolves around leveraging tourism and other local assets for economic development, the sections of the plan that do address land use and transportation hit the right notes.

Land Use
The Town’s downtown currently consists of a mix of residential, retail, office, and local commercial uses along Main Street just east of the roundabout. This pattern, and the transition from the more auto-oriented uses along Quaker Avenue, gives the appearance of being a village-like setting even though it is not in the Village of Cornwall-on-Hudson. As the Plan mentions, there are few empty parcels along Main Street that are suitable for development. However, the Plan suggests expanding the town center with a proposed assisted living and office development that would result in the linking of two mixed-use centers.

Provisions about limiting strip development and about screening parking and placing it behind buildings in locations where it would be allowed are all in line with maintaining a vibrant downtown. Community stakeholders made clear at a roundtable discussion that commercial development along Route 9W (especially north of Quaker Avenue) should be limited to reflect the community’s desire to retain Route 9W as more of a through-road and less a commercial corridor. The Town has adopted zoning amendments to implement that vision.

Density bonuses given to mixed-income housing should still ensure that these buildings are oriented towards the street and should ideally be located near the downtown rather than in isolated areas throughout the Town. A separate, but related strategy would allow for a transfer of development rights between outlying parcels in the Town and those closer to Main Street or the Village.
PARKING AND TRAFFIC CIRCULATION
Cornwall’s view of parking downtown is in line with its vision for a denser and more transit-oriented community. Converting existing lots right along Main Street into parks or plazas, maintaining on-street parking, and promoting the idea of shared parking between properties would serve to maintain the vibrant downtown. By improving the pedestrian experience further, as is suggested, through benches, better sidewalks, and other improvements that make walking more comfortable, the perception of this portion of Town as being pedestrian-friendly may increase.

The Plan’s proposal to ensure road connections between new subdivision developments and existing roads or neighboring parcels is important for ensuring good connectivity and a variety of routes through the Town.

TOWN OF MONTGOMERY
The Town of Montgomery’s comprehensive plan lays out an appropriate strategy for smart growth in the coming decades. With a focus on landscape preservation to prevent sprawl and the concentration of development in a handful of emerging centers and adjacent to the three villages, this land use pattern would maintain the community character while laying the foundation to support transit, walking, and alternatives to the automobile.

Specifically, Route 17K presents the greatest opportunity to prevent strip commercial development and instead channel growth towards evolving existing rural crossroads into hamlet centers. Though several are mentioned in the comprehensive plan, initial focus should be directed to Scotts Corner and Coldenham as these exist at primary road junctions linking the major population centers of the Town in the three villages to one another. As described in the Hamlet Center case study, the incremental development of these activity nodes must include neighborhood road networks, pedestrianization of Route 17K, sidewalk-oriented mixed-use development, focal public open space, and integration between the hamlet center and adjacent residential areas. Community stakeholders had a chance to explore design options for new hamlet centers at one of the roundtable discussions held as part of the Study. Input from that roundtable helped to inform the case study presented above.

In addition to the hamlet centers, there are targeted opportunities around the Villages of Montgomery and Walden to create residential neighborhoods that function as extensions of those villages, as described in the Village Extension case study. Attention should be paid to ensure that any neighborhood built in the Town adjacent to the villages are within walking distance of the main street areas and integrated into the Village fabric through road network extension and pedestrian linkages. Outside of these areas and the emerging centers, the continued protection of open space and preservation of agricultural uses will complement the developed areas of the Town, maintaining a high quality of life.

The Town’s approach to providing flexibility to future commercial development is a savvy approach, and should work as long as the Town’s intended protection of residential neighborhoods abutting commercial properties can be achieved through appropriate review of projects by the Planning Board. The balance of larger scale commercial development along State roads with the protection of smaller-scale commercial activity in the village centers and agricultural activity in the remaining portions of Town should provide a balanced and sustainable land use mix.

TOWN OF NEWBURGH
The Town of Newburgh is facing some of the most significant growth pressures in the region and its plan lays out an appropriate strategy to mitigate some of the impacts of future development. The proposed zoning changes will protect agricultural land and open space outside of the town’s growth area where existing infrastructure exists. The Plan includes good recommendations for hamlet centers and walkable neighborhoods, but a proactive approach by the Town will be necessary to ensure that these concepts translate into developments that truly protect open lands and intensify appropriate areas for growth.

The Town’s comprehensive plan concept of hamlet centers is an appropriate strategy for concentrated growth in limited locations that have the ability to accommodate it without creating significant negative impacts to the community. This strategy would serve as an alternative to commercial strip development and would prevent the current trends taking place on Routes 9W and 32 and emerging on Routes 17K, 300, and 52 from creating similar traffic, congestion, and “placeless” character that currently exists at the intersection of Routes 17K and 300. Possible hamlet center locations include the area near the intersection of Route 17K and Rock Cut Rd, Cronomer Valley, and a location along the stretch of Route 9W north of Fostertown Road. These hamlet concepts need to be translated into concept designs and zoning ensures that their development realizes the potential articulated in the Town’s plan. A town-wide retail and commercial development strategy will be necessary to better understand the ability of the Town and region to absorb commercial activity.

Caption: Downtown Newburgh has extensive street parking.
and the implications of the Marketplace development for land use in other areas of the Town.

Outside of the hamlet centers, the land use strategy aptly focuses on landscape protection and agricultural preservation. Residential subdivisions are limited to areas of the town that can potentially be served by transit in the future and are within close proximity to – even within walking distance of – hamlet centers and commercial areas that can meet daily needs. Allowable density could be lowered even further in much of the R-1 zone that is beyond the Town’s growth area. Where residential subdivisions do occur, principles of connectivity and conservation outlined in the master plan should drive their structure. Ecologically valuable land should not only be protected on individual site, but mapped alongside the ecologically sensitive lands on adjacent parcels so that the protected land in each subdivision stitch together into larger corridors. Additionally, the local street networks of the subdivisions should be planned to maximize the route alternatives for drivers across the town, limiting the traffic that will be concentrated in the few currently congested intersections.

The Plan states a desire to increase transit options and expresses displeasure with the impact that high levels of traffic have on the Town’s main thoroughfares. While some roadway improvements mentioned in other sections of this report will help ease congestion going forward, the concentration of growth in certain areas with a mix of uses could provide the necessary density needed to support public transit. By identifying and developing certain hamlet areas of commercial and residential development into more substantial centers, especially along the 17K corridor, the Town could create natural stops for future transit service down this commercial corridor.

Additionally, many of the Town of Newburgh’s recent subdivision developments rely on one entrance/exit roadway access to connect with the major arterial roads. Because there is low connectivity between these new developments, all drivers are forced onto the same roads, which leads to congestion. The extra travel distances required by these inefficient routes also leads to extra time in the car. By requiring greater road connectivity to neighboring parcels and with existing roadways when new subdivision developments are constructed, the resulting variety of route options could lower travel times and decrease congestion at existing choke points.

The Plan talks about the need to incorporate sidewalks and bike routes as ways to promote alternatives to the car. The Plan should follow through on these recommendations. Additional strategies like traffic calming street design will also contribute to a less auto traffic-oriented environment.

The Plan expresses a desire to protect the existing neighborhoods of single-family homes while preserving open space. By channeling growth into newly designated hamlets, surrounding areas can retain their low density character. Concentrating new residential growth in these commercial nodes would also contribute to a sense of vibrancy that’s an integral part of downtowns. As the Plan states, these areas should be zoned to include certain design guidelines that prioritize the pedestrian and encourage a mix of commercial and residential uses. The Plan should prioritize its infrastructure so that developers have to contribute or pay for a greater portion of water and sewer infrastructure costs in areas that are to remain low density but pay much less in areas that have been targeted for efficient growth.

Similarly, the Town should provide density bonuses for mixed-income housing, as it suggests in the Plan, and should do so in these more centralized areas. In the surrounding areas, large-scale multi-family housing that is not oriented to the road or accessible to public transit should not be allowed.

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Similarly, the Town should provide density bonuses for mixed-income housing, as it suggests in the Plan, and should do so in these more centralized areas. In the surrounding areas, large-scale multi-family housing that is not oriented to the road or accessible to public transit should not be allowed.

The Town of New Windsor is faced with the challenge of capitalizing on the existence of Stewart Airport as a potential economic driver without completely changing the Town’s rural and natural landscape with sprawling development. To help to establish a real “center” for the Town, growth should be focused in three or four areas of the Town: the Stewart Airport area including portions of the Route 207 Corridor closest to the Airport, Vails Gate, the urbanized eastern section near the City of Newburgh, and potentially a limited area in the southwest within close proximity to the Salisbury Mills – Cornwall Metro-North Railroad station. The remainder of the Town – the majority of the area west of the New York State Thruway – has ecologically and aesthetically valuable open space that can be preserved to the benefit of the town’s residents.

To alleviate growing traffic volumes on Route 207, this report has explored the potential to widen the corridor with an additional lane in each direction. While this costly investment will alleviate some congestion and facilitate some economic development, if the design of the corridor does not incorporate essential components of community design, access management, and complete streets, the resulting corridor could transform this section of the Town in an adverse manner. If, on the other hand, an integrated approach to transportation and land use planning
and community design is followed, the transformation of this corridor could be seen as an important step in the Town’s long-term success at guiding growth and generating sustainable economic activity and residential neighborhoods. Measures should be taken to manage the land use pattern and access to different land use to minimize the effects of excessive curb-cuts on an arterial street. Principles of complete streets should be introduced to any modifications to Route 207 to facilitate vehicle and non-motorized trips between adjacent land uses.

In the vicinity of Stewart Airport along portions of Little Britain Road and entering into the airport zone along Breunig Road, there is significant physical capacity for commercial and airport-oriented industrial growth. A full-scale aerotropolis is unlikely given the volume and profile of activities at the airport projected into the future, but there are opportunities to better capitalize on the air access for economic development in the town. Additionally, Vails Gate (as described in the case study earlier in this chapter) can evolve over time into a more walkable, mixed-use town center for New Windsor. The third, less localized node for future development is the cluster of neighborhoods east of Route 32. A potential hamlet center could be developed at the intersection of Union Ave and Route 32 that could serve the surrounding residential areas. These can incrementally intensify over time with accessory units added to existing single-family housing. Finally, there are several sites that are within one mile of the Salisbury Mills – Cornwall Metro-North Railroad station, though not within ½ mile walk of the station, that could house future transit-oriented commercial and residential development. If the WHRTAS Study results in the recommendation to implement a rail or bus rapid transit extension from this vicinity into the airport, this area will become increasingly valuable for transit-oriented development.

The Plan proposes a special economic development area along Route 747 adjacent to Stewart International Airport. Although increased use of the airport may bring new jobs to the area, consideration should be given to the type of development that would be attracted to this area, about the form that it would take, whether it would detract from efforts to establish a more identifiable Town center, and what its effect would be on the open space in that area.

The Town’s Plan recognizes the need for more affordable housing options. Its suggestion for zoning incentives to encourage mixed-income housing in the right locations would be appropriate. Additionally, the Plan proposes increased densities in neighborhoods abutting the Town center. Finally, the proposed cluster zoning would help maintain open space.

The Plan sets out the aim of improving the functionality of major arterials without expanding the roads and acknowledges that the transportation system is highly affected by land-use patterns.

The Plan highlights the traffic problems at Vails Gate as being some of the most serious. Recommendations in other sections of this report to remove the fifth leg of the intersection and have the intersection evolve into a hamlet could reduce the existing congestion and turn this area into an asset for the Town in the form of a hamlet where people could get out of their cars and live, shop, and work in proximity to each other. Because the intersection is so congested, the idea of establishing a bypass, as proposed in the Plan, is also worth considering as a complementary solution.

The Plan suggests more connections within and from new subdivisions to neighboring parcels and nearby roads. The Town could additionally ban cul-de-sacs in any new development.

The Plan’s section on parks primarily addresses the issue of access. It recommends increasing physical access to the Hudson River and ensuring there are neighborhood sidewalks that connect communities and subdivision developments with their nearest parks.

The Plan still allows many areas of the Town to be developed without any residential uses. If the aim of the Plan is to increase the vibrancy of New Windsor’s downtown, more emphasis should be placed on channeling residential and commercial growth into the same areas in order to create a healthy mix of uses and activities. Therefore, some of the office-only districts could be revisited.

### Village of Cornwall-on-Hudson

The strategy for the core of the Village should continue to center on commercial development and the provision of affordable housing while the strategy for other areas of the Village should continue to focus on resource protection and preservation of the landscape and rural character. Within the Village center, additional parking for retail vibrancy should be balanced with the need to make the streets of downtown as attractive as possible for pedestrians. As the walk from surrounding neighborhoods to the Village center becomes a more attractive option to getting in ones car, more people will shop and dine downtown and businesses will grow. The effect of this high quality, walkable village with sufficient anchor establishments will attract people from outside the village and create synergistic commercial growth, especially with the commercial businesses along Main Street in the Town of Cornwall. As described in the 2007 draft comprehensive plan, a density bonus can be an effective mechanism to achieve affordable housing production but care should be placed to ensure that any density bonuses are only granted in locations that are within walking distance of the Village center (or town center of the Town of Cornwall) or at locations that will be served by transit over the short term.

The Village’s Plan focuses a substantial amount of attention on concern about the financial and tax implications of different development scenarios. While increasing the Village’s ratables has potential to build resident support for a plan, it’s important not to let the quest for ratables determine all land use and development decisions, but for the Comprehensive Plan to lay out a desirable vision of the community’s future that takes into account a range of criteria, such as environmental health, quality of life, and accessibility to a range of residents. Although the Plan recognizes and is sometimes couched in a desire to increase the Village’s ratables, it argues that there is a false conflict between simultaneously pursuing the goals of increased ratables, providing affordable housing, protecting open space, and supporting local businesses. Throughout the document, the emphasis is on showing how pursuing these other desirable goals can, in the process, also increase the ratables.

The Plan does a good job of looking at the integration of different systems in creating a vision and emphasizes that the recommendations of the Plan must be enacted jointly to be effective. For example, encouraging the development of a mixed-use building downtown with commercial space on the first floor and residential on the second succeeds in creating a range of housing options, revitalizing downtown, and protecting open space outside the downtown. But only implementing a strategy that preserves open space on the outskirts alone won’t create the same synergies.
The way in which the Plan is written is extremely accessible and should serve as a model to other plans for its readability. It also successfully describes what a Comprehensive Plan is intended to do and makes clear that, though it lays out a community's goals and future vision, the Plan itself is not legally enforceable and must be adopted through zoning laws, in budget allocations, and by policy makers to have a tangible effect.

A few small adjustments could strengthen the document and its recommendations even further:

**Commercial**
- When describing the different characteristics of downtown, in terms of where the clusters of retail uses and restaurants are, it would be helpful to have maps and diagrams integrated in the document near the text to be able to visualize how the different recommendations and designated areas fit together.

**Zoning**
- The Plan distinguishes between the suburban-style residential zone immediately surrounding the downtown and the “conservation residential zones” that are meant to preserve the Village’s rural landscape. Parcels in these areas can only be developed on a 1-4 acre lot. While requiring such high acreage for development would not be appropriate around the downtown, perhaps increasing the minimum lot size in this rural district above one acre would better preserve the rural characteristics in these outskirts and help channel growth towards the downtown.
- The Plan includes a preliminary build-out for the Village under existing zoning; however, while a build-out can be useful for assessing whether zoning channels growth in a desired way, no analysis of, or discussion about, the desirability of the build-out results was conducted.

**Central Business District**
- The Plan emphasizes that the provision of parking for shoppers and visitors is key to the revitalization of the business district. While cars will remain an integral part of getting around Cornwall-on-Hudson and elsewhere in the area, automobile infrastructure should not come at the expense of a walkable and pleasant downtown. Parking should be inserted downtown in a way that does not detract from the experience of walking along sidewalks downtown and should not, if provided off-site, be located in front of buildings but to the rear. Additionally, the Plan could explore the possibility of shared parking agreements that take advantage of different businesses requiring parking at different times of the day.

**Design Guidelines**
- The Plan introduces a creative incentive structure for the renovation of historic facades downtown by recommending that higher taxes as a result of improved properties not be assessed for two years after any restoration is completed so as not to discourage these types of renovations.

**Governance**
- The Plan highlights the public’s concerns about the consistent enforcement of zoning regulations. The Plan could go further in elaborating that variances should not be granted or considered unless they actively help implement the Village’s vision.

**Public Viewshed**
- The Plan mentions the desire to preserve certain viewsheds within the Village; however, there is a need to follow through on the recommendation to identify specific views and corridors that need protecting before any meaningful recommendations can be made. Since the Plan is a living document, this update and a map illustrating what these viewsheds include would be beneficial to include in a revised document.

**Trails**
- Similarly, the plan for trails could be fleshed out further in an update, and a map showing how the trails connect parcels of open space and the downtown with open space would be helpful.

**Affordable Housing**
- The Plan suggests density bonuses as a way of encouraging affordable housing that would allow for both older and young residents to remain in the community. Density bonuses are an effective way of encouraging affordable development; however, care should be taken to allow them only in areas like downtown, where the Village is already seeking to increase activity in the area. In more rural areas of the Village, making accessory apartments more feasible, as the Plan suggests is a better way of providing a range of housing options.

**New Construction**
- The Plan discusses the need for new buildings to be sited appropriately in the context of their surroundings; however, greater detail for the downtown area could briefly touch on buildings’ relationship with the sidewalk and other specific ways to improve on a building’s contextual siting.

**Natural Resource Protection**
- Cornwall-on-Hudson could really be a leader in natural resource protection by further exploring the “zero runoff” requirements for new development spelled out in the Plan.

**Implementation**
- Finally, the Plan does an excellent job at laying out the different players and ways in which these visions can be realized and should serve as a model for other Comprehensive Plans.

**Village of Maybrook**
Currently, the commercial activity in the Village of Maybrook is more geared to meet the needs of traffic passing through rather than oriented to the Village population’s needs. In fact, as expressed by stakeholders in initial meetings held by the Study Team, identifying a village...
The amount of developable land within and immediately adjacent to the Village should call for an emphasis in planning here on village extension: how can development taking place adjacent to existing residential fabric best complement those neighborhoods and reinforce commercial activity in the village center. Residential development within ½ mile or 1 mile of the village center should be designed to be walkable and well integrated with the existing streets. Density of development should taper off as distance from the village center increases, resulting in the higher density attached housing within closest proximity to the village center and single-family homes on approximately ¼ acre lots farther from the village center. Beyond 1 mile, the Village should work with the Town of Montgomery to ensure that residential neighborhoods be built as low-density cluster subdivisions, protecting the ecologically sensitive lands while keeping the intensity of development low since these houses will be automobile dependent. The Yellow Freight site and former rail yard are both opportunities for potential infill redevelopment that incorporate additional dwelling units and/or a higher intensity of employment opportunities than exist there today.

A combination of traffic calming and streetscape enhancements along Route 208, new residential development within an attractive walk of downtown, and design guidelines and incentives to ensure that new commercial development has a “main street” character will result in an increase in commercial activity in the downtown.

Zoning, Housing, and Community Appearance

➔ The Plan highlights that the area around Homestead Avenue and Main Street serves as the village center but doesn’t currently feel like a “downtown.” The document suggests that the area could be made to feel more like a downtown through targeted zoning and streetscape improvements. A specific vision of how this could happen would strengthen the Plan.

➔ Improving the streetscape in this targeted area of the village could be done by constructing wider sidewalks that are more comfortable for pedestrians, by planting street trees that shade and protect pedestrians, and by reducing the number of curb cuts and paved areas that abut sidewalks and streets so that the area feels less car-oriented and more like a place to walk around and spend time.

➔ The Plan advocates for reducing the residential densities in the Village in order to maintain the rural character and suggests cluster ordinances to improve site planning on the larger undeveloped parcels. The Village should go forward in fleshing out these plans and should identify areas where it would both like to see increased density in order to provide housing that is within reach of a growing population and identify areas that it would like to remain undeveloped or developed at a lower density.

➔ The Plan expresses concern about the proliferation of multifamily units in some parts of the village and about the congestion, parking concerns, and lack of a sense of ownership that accompanies them. Nonetheless, the Village must ensure that it can retain and attract younger residents, so measures should be taken to ensure the provision of accessory units or multifamily units in the area designated as the “downtown” of the Village.

➔ Generally, the Village’s two goals of increasing the vibrancy and attractiveness of the “downtown” area and maintaining the rural character of the rest of the Village are complementary. Policies should be enacted that channel growth into the center of town, provide a market for additional commercial uses, and increase...
the number of people who can easily walk to local retail instead of having to drive.

Environment

➔ The Comprehensive Plan Amendment and Environmental Zoning Study from June 2002 addresses the protection of important environmental features such as steep slopes, watercourses, and wetlands, but the Village should identify if there are additional environmental features or landscapes within the Village that warrant protection. By establishing any desired features or areas for protection in its plan, the Village avoids having to play a reactive role to future development proposals.

Population

➔ The Plan acknowledges that population growth has been significant since 1970; however, the Plan makes no mention of any changing demographics of that population or how this growth relates to any housing pressures or costs. Providing small and affordable housing with easy access to small retail or restaurants for younger residents is critical in attracting the next generation of Maybrook residents, just as the provision of right-size units is for empty nesters who may no longer want the expense of maintaining a large house but who want to remain in the community where they raised their families. These varied housing needs should be assessed, and zoning should reflect the different housing needs of these varied populations.

Transportation

➔ The Village can be entered from three main approaches, and changes to the feel of these roads as they enter the Village center, as well as other visual indicators, could help signal the existence of a core downtown area and could make the area more desirable for stopping and walking around.

➔ The number of curb cuts and parking lots that abut the edge of the sidewalks along Homestead Avenue, the lack of landscaping between the sidewalks and the road, and the fact that parking is often placed between the sidewalks and the downtown buildings, makes the existing sidewalks less attractive for pedestrian and increases the attractiveness of driving within the downtown. By requiring parking to be located on the street or behind and to the side of buildings, by widening and better landscaping the sidewalks, a clear prioritization of the pedestrian realm would be established and make the downtown more attractive for pedestrian movement.

Recreation

➔ The Plan highlights the existence of two Village parks, as well as the elementary school playground and acknowledges the lack of mini-parks or passive recreation areas in the village. Incorporating small plazas into the downtown area, strengthening the connections between existing parks with improved streetscape, and creating better connections with the existing resource of Stewart State Forest could solve some of these issues. The Village should develop a plan for how it can connect the existing recreational resources and for where mini-parks could be placed within the Village center to attract people to this area.

Village of Montgomery

The Village of Montgomery’s comprehensive plan outlines an appropriate and achievable vision for a mixed-use and walkable Village center that serves the surrounding neighborhoods. Acknowledged in that report, the higher density residential developments on the Village’s east and the single family neighborhoods

Caption: Looking south along Union Street/NY Route 211 in the Village of Montgomery.
Traffic calming is an essential component of improving the pedestrian quality of downtown and neighborhood streets and facilitating walking in the area. It is a necessary step so that existing and future development are not exclusively automobile dependent and growth can therefore occur in the Village center without choking local roads. An infill strategy should be formulated to guide future development that identifies sites best suited for redevelopment that are outside of historic districts, massing guidelines to ensure that buildings are scaled within their neighborhood context and reinforce the character of the Village, and design guidelines to ensure that new developments complement historic structures and existing neighborhood fabric. New development should be viewed as an opportunity to expand the growing network of open spaces that will balance out urbanity of the village. These should emphasize additional access to the Walkill River and network together the area’s streams and wetlands into a larger trail system that facilitates pedestrian connections to the downtown and exercise adding value to the community.

The Village’s Comprehensive Plan includes different recommendations that are clearly listed at the end of each chapter, and the Plan’s visions of how different areas of the Village should develop are clearly indicated and coded on maps. For issues relating to traffic at intersections, the roadway recommendations from this report should be taken into account. While the importance of providing increased water and sewer service for a growing population is mentioned, ensuring that this infrastructure can be constructed will incentivize infill and, therefore, help advance additional goals spelled out in the Plan. Finally, the Plan discusses the need to provide more transit service for seniors; however, emphasis should also be given to siting senior housing in walkable areas to mitigate the need for vehicular travel.

### Village of Walden

The Village of Walden has the framework of a vibrant and walkable, transit-oriented urban center that can act as the downtown for surrounding residential areas. Sprawling residential development taking place just beyond its borders could be better connected to the village and leveraged to add value to downtown properties. While these neighborhoods present potential patrons for downtown village businesses, their design ensures that their residents are automobile dependent. This will contribute to traffic on Village roads and hinder Walden’s ability to evolve into a more pedestrian-oriented and walkable village that supports a future transit connection. The rail trail will anchor additional trails and sidewalks linking neighborhoods to one another. First and foremost, the Village should work with the Town of Montgomery to ensure that any development taking place nearby the village outside of its borders is designed in a way to maximize the likelihood that residents would walk or take a potential shuttle to the village for day-to-day needs.

Traffic calming is an essential component of improving the pedestrian quality of downtown and neighborhood streets and facilitating walking in the area. It is a necessary step so that existing and future development are not exclusively automobile dependent and growth can therefore occur in the Village center without choking local roads. An infill strategy should be formulated to guide future development (as illustrated in the infill case study earlier in this report) that identifies sites best suited for redevelopment that are outside of historic districts, massing guidelines to ensure that buildings are scaled within their neighborhood context and reinforce the character of the Village, and design guidelines to ensure that new developments complement historic structures and existing neighborhood fabric. The Village’s new zoning takes a strong step in this direction. New commercial infill along Route 52 should be designed in response to existing historic fabric with street walls at the sidewalk, mixed-use activities above retail, and parking set behind or to the side. The Walkill River and dam should be leveraged to anchor a passive park network that networks together the neighborhoods with one another and with downtown.

Walden’s Comprehensive Plan clearly sets its priorities and describes the policy and zoning changes that need to be made to reach its vision. While the Plan is comprehensive and well-organized, additional areas of focus could include:

### Population and Demographics

The existing Plan includes a useful section on demographic statistics and trends in Walden. The population growth rate
is significantly less in Walden than in surrounding villages and towns and than the county as a whole. At the same time, Walden’s real estate prices generally tend to be lower than its neighboring communities. Although part of this is likely due to Walden’s large size, perhaps existing zoning should be reevaluated to ensure that it provides enough opportunity for redevelopment and infill in the downtown area and its immediate residential surroundings.

There is an encouraging trend of more Walden residents relying on public transit and walking to commute to work, and as the Plan acknowledges, this trend can continue with smartly placed new development.

Land Use and Zoning
The mixed-use central district that had been proposed for the area between the historic downtown and Thruway Shopping Center makes sense in an effort to link to two major commercial districts so that they form a more vibrant, coherent downtown rather than competing with one another; however, because the plan expresses concern that this historic residential neighborhood has no mixed-uses currently and would lead to an unappealing mix of older residential houses set back from the street and larger commercial buildings fronting the street, it is appropriate to return to this area’s original zoning. Nonetheless, efforts should be made to better link the Thruway Shopping Center with the downtown, and zoning should be oriented so that new mixed-use and commercial development is channeled into the historic downtown rather than to the outskirts around the Thruway Shopping Center. In fact, by eliminating this new mixed-use district and reducing the area of land available for commercial development, this can help channel development into a more limited space and maintain the density and vibrancy of a select area of downtown. An assessment about how much commercial development potential there is under current zoning, inclusive of the redevelopment opportunities, may help the Village better assess how much land should be open for commercial development in order to ensure that this type of development is concentrated downtown rather than sprawls.

Transportation and Parking
The Plan describes clear suggestions and regulations about how to prioritize the pedestrian experience and minimize the impact of parking on the downtown environment through better landscaping, improved placement of any needed off-street parking, and shared curb cuts. The document could strengthen the proposal for shared parking agreements in the development approval process and could include bike parking facilities as a way to reduce the use of cars at certain times of the year.

Sewer and Water
The document lays out a proposal to enhance the water supply on the west side of the Village and to upgrade the water and sewer infrastructure in older neighborhoods. Creating additional water and sewer capacity in certain desired redevelopment areas, such as the Railroad Avenue mixed use district, would likely help spur growth in those areas by removing one of the large obstacles towards redevelopment and infill downtown.

Environment and Trails
As envisioned in the Plan, the Village of Walden has completed a rail trail between downtown Walden and the hamlet of Wallkill in the Town of Shawangunk. This trail serves as an excellent example of how non-motorized transportation infrastructure can stimulate activity within a community. The Plan mentions a network of trails that connect open spaces and provide access from residential and commercial neighborhoods. Including a map in the Plan would facilitate the understanding of these trails’ locations and could be coordinated with other specific development objectives.