Walk
Bike
Ride
Hike

Orange County

A Framework for Non-Motorized Transportation in the Newburgh Area
Orange County, NY

February 2012

Orange County Department of Planning
INTRODUCTION, BACKGROUND AND PLAN DEVELOPMENT PROCESS

1.1. Introduction

In rural and suburban counties the question often arises about why non-motorized transportation is important. We have our cars and we can get everywhere we need to go. But what if there were options? What if we were not required to take our car on every little trip to the store? What if we really could walk to school or it was easy to get out there and jog or bike to improve our health? In Orange County we want to have all of these options – to drive when we need to, and to walk, run, bike, ride horses, or hike when we want to.

Today there are many opportunities in the County for non-motorized recreation, but we want to establish more. And for other transportation purposes – like going shopping or getting to school or work – we do not have much opportunity at all. Through good planning and policy, we want to support and encourage these activities. It is good for our health, can reduce the number of cars on the road, helps our environment, and supports economic development and tourism. To achieve these goals, we have to create a system that is safe and user-friendly for all.

The purpose of this document is to set the stage for a full planning effort for walking, biking, riding, and hiking in Orange County. By thinking through the key issues, meeting with members of the public, and studying best practices, we are establishing a focus on the most important ideals for how to create recreation and transportation alternatives in Orange County.

1.2. Orange County's role in planning

The Orange County Planning Department is responsible for environmental, land use and transportation planning, and is engaged in various issues affecting the County including public transit, education, trends research, resource management, agriculture, open space, and economic issues. The department staffs the Orange County Transportation Council (OCTC), which serves as the region’s metropolitan planning organization (MPO).

As the MPO, Orange County does not specifically implement non-motorized projects. Such decisions and actions would be made by individual municipalities or operating entities such as the New York State Department of Transportation (NYSDOT). Orange County Planning does, however, support these efforts through policy making, studies, planning, stakeholder engagement, funding and technical assistance.

1.3. Background

In 1998, the OCTC developed Orange County’s first Bicycle and Pedestrian Plan as an outgrowth of the Long Range Plan Update to identify existing facilities and recommend future actions to
promote bicycle and pedestrian facilities as viable travel alternatives. The plan provided a vision statement supported by goals and objectives, and performance measures were identified to gauge the effectiveness of the objectives. The application of this plan in developing new pedestrian or bicycling facilities, however, has not been sufficient. Nevertheless, the plan serves as an important starting point for our current efforts to bring the plan up to date and make it more relevant to current needs.

1.3.1. What’s new since the 1998 Plan?

In the past several years, a movement towards increased mobility, livability, and environmental, economic and socially equitable sustainability has been at the forefront of urban and regional transportation planning in the United States and abroad. This evolving perspective includes balancing mobility for all modes of travel through street design, creating environments that are safe and pleasant for walking and biking, making communities more livable through reduced congestion and improved access to recreational facilities, and protecting our environment through reduced fuel consumption, asphalt paving, and water treatment requirements. All of these items are benefits of a robust non-motorized transportation and recreational plan. Additionally, cities and municipalities are investing in transit-oriented development to shift land uses to housing, commercial and retail buildings near transit stations to increase the use of non-auto modes of transportation and reduce driving in order to achieve these mobility and sustainability goals.

These trends are also found in Orange County. Transit-oriented development is being pursued near some rail stations. Growth in housing and retail development has increased congestion on roadways. And residents are expressing their desire for safe streets and increased opportunities to walk, bike, hike, and ride horses.

Other efforts in the County also support these concepts. The County’s Design Manual establishes urban design criteria for neighborhoods, streets, and other elements. The Newburgh Area Transportation and Land Use Study has illustrated the implications of continued sprawl development and seeks to educate communities on how to revise their zoning to grow smarter. And now, this Framework is being created as the basis for a future non-motorized master plan update.

1.3.2. Current characteristics of non-motorized transportation in Orange County

There is a variety of non-motorized transportation activity in Orange County today. This is signified by the many bicycle, pedestrian, and trail groups that are actively organizing, promoting, and advocating non-motorized activity throughout the County and surrounding region. The following is a list of some of the major pedestrian and/or bicycle groups serving Orange County:

- New York/New Jersey Trail Conference (www.nynjtc.org)
- Harriman Hikers (www.harrimanhikers.org)
- Orange County Bicycle Club (www.ocbicycleclub.org)
- Fats in the Cats Bicycle Club (www.fatsinthecats.com)
There are several off-road hiking or multi-user trails in the County and some designated on-street bicycle routes, but there are no bikeways or striped bike lanes. However, bicyclists currently use roadway shoulders and low volume streets to bicycle through the county. While bicycling for recreation is quite popular within the County, it is less popular as a form of commuting, possibly due to the lack of facilities.

Walking within Orange County varies depending on the area. The City of Newburgh has a pedestrian-friendly grid street system with sidewalks on most streets, and has a lot of pedestrian activity. However, much of the rest of the County is more suburban or rural and is less accommodating to pedestrians. Many streets within the County do not have sidewalks.

1.4 Summary of what is in this document

Using the 1998 plan as a basis for moving forward, this Framework has modified and modernized that plan. This document 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. The final section of this report identifies Next Steps to advance this Framework and proposed recommendations for the Newburgh Study Area.

2 VISION, GOALS, AND ACTIONS

This Vision, Goals and Actions section is based on a similar section within the 1998 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. However, the overall vision of the 1998 Plan, and most of its goals and objectives, are reflected in this updated Framework.

2.1 Vision

The following vision statement has been developed to guide the future of non-motorized transportation in Orange County:
“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.”

2.2. Goals

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. Specific actions have been grouped by the goal they most directly contribute to achieving; however, many of these actions can contribute to achieving more than one goal.

**Goal 1:** Encourage the increase of non-motorized activity within Orange County.

*Actions:*

- Identify bicycling and walking routes currently being used (especially those being used by the non-driving population) as well as desired future routes, and develop appropriate pedestrian and bicycle facilities.

- Work in conjunction with local and regional agencies and organizations to develop campaigns and programs to promote bicycling and walking.

- Create policy/programming to encourage employers within the County to provide proper bicycle access, facilities, and amenities to their sites. Amenities such as secured bicycle parking, showers and lockers at places of work would encourage commuting by bicycle.

**Goal 2:** Improve the safety of bicyclists, pedestrians, and trail users throughout the County.

*Actions:*

- Implement a Safe Routes to School (SRTS) program to encourage children to safely walk and bicycle to school. Work with local school districts to create a SRTS program based on the five “E”s: engineering, education, evaluation, enforcement and encouragement.

- Collect and analyze crash data and share results with local agencies to assist in identifying and remediating traffic safety concerns.
- Educate the public regarding safety, awareness, and compatibility of pedestrians, bicyclists, and motorists. Increased sensitivity to and awareness of other users will contribute to safer conditions for bicyclists, pedestrians, and motorists.

- Collaborate with law enforcement agencies to develop strategies to increase adherence to traffic laws.

- Identify opportunities to retrofit the existing transportation system and recreational trails to new design standards.

- Develop a maintenance monitoring program of the existing transportation system. This would ensure that all existing streets, sidewalks, and trails are safe for users.

**Goal 3:** Develop comprehensive and interconnected bicycle, pedestrian, and trail networks that link users to all major destinations within the County.

*Actions:*

- Identify gaps in the existing networks and opportunities for future connections, including unused rail rights-of-way and vacant/underused land.

- Provide bicycle facilities and sidewalks around major destinations (shopping, library, school, park, transportation) in all communities, and ensure that these facilities connect to the greater non-motorized networks. This should start with Orange County's designated Priority Growth Areas (PGAs) and then expand to the rest of the County.

- Create county-wide non-motorized network maps that depict existing and future proposed routes. A detailed assessment of Bike Route 17 should be included as part of this effort.

- Work with local and regional transit service operators in Orange County to improve multi-modal linkages by: 1) connecting bicycle and pedestrian networks to transit; 2) providing bicycle parking at transit stations; and 3) allowing bicycles on-board trains and providing bicycle racks on buses.

- Adopt Complete Streets legislation that ensures the County’s Design Manual is guiding all future land use plans, and in public and private development. Also, develop detailed non-motorized facility design guidelines to supplement the Design Manual.

- Maintain bicycle, pedestrian, and trail networks, and regularly evaluate whether they meet the needs all users (including hikers/joggers, bicyclists/inline skaters, and equestrians).
• Create a non-motorized network monitoring program, and designate staff to track all bicycle, pedestrian, and trail projects and how they relate to network development.

**Goal 4:** Collaborate with local officials and citizenry on non-motorized transportation planning.

*Actions:*

• Encourage local jurisdictions to develop bicycle, pedestrian, and trail plans and policies, including adoption of Complete Streets legislation. Also, provide assistance where possible.

• Enlist local citizens, stakeholders, public officials, and agency representatives to take part in the planning and design process of bicycle, pedestrian and trail projects.

• Support protection of public land that could potentially be used for bicycle, pedestrian, and/or multi-use trail facilities.

• Inform planners, designers, and other officials of existing and planned bicycle, pedestrian, and trail facilities and programs.

• Provide guidance on developer, landowner and municipality concerns regarding liability and risks involved in the construction and maintenance of non-motorized facilities.

**Goal 5:** Identify funding sources for non-motorized projects.

*Actions:*

• Prioritize bicycle, pedestrian, and trail projects in the Transportation Improvement Program (TIP) and long-range regional transportation funding programs.

• Investigate all Federal and State funding sources that could be relevant for non-motorized transportation projects, and collaborate with local agencies to obtain funding.

• Work with transit agencies and operators to identify funding opportunities for multi-modal transportation projects.

• Work with local school districts to identify and obtain Safe Routes to School (SRTS) program funding.

3 OUTREACH

A public workshop was held on October 14, 2010 in the Village of Montgomery to gather input from stakeholders and the general public regarding their vision for non-motorized transportation planning in Orange County. The public workshop was attended by approximately 45 individuals representing cyclists, pedestrians, and equestrians from throughout the County.
The workshop consisted of a presentation overview of the project followed by a breakout session where attendees circulated the room to all workshop stations that were of interest. Each station was staffed with a project team facilitator and focused on one of the three geographic sub-areas within the County: southeastern; western; and the Newburgh Area. Another station focused on receiving feedback on the County’s newly drafted non-motorized network map. At each station, attendees were asked to indicate on large aerial maps where they live, work, ride and walk (or where they would like to) by using color-coded stickers, markers, and notes. They were also asked to express any concerns or ideas for improving non-motorized activity in the County.

In addition to the breakout sessions, a questionnaire was distributed (which could be filled out on-site or taken home and returned by mail) asking many questions about non-motorized facility user needs. This survey was also available online and at municipal halls for several months. About 40 surveys were completed.

The input received during the workshop and from the questionnaires were then compiled and synthesized. A detailed summary of the major themes expressed during this public outreach process is presented below. This public input, along with the 1998 Plan, and input from the County and the consultant team, was used to establish the updated Vision, Goals and Actions for this Framework.

3.1. Bicycles

Many participants were interested in seeing bicycle routes developed throughout the County. Those who currently bicycle in the County described the roads they use and those they avoid. The concept of using shoulders of roads as bicycle facilities was popular amongst the group, and many riders currently use shoulders. Roadways with narrow and/or debris filled shoulders, or with no shoulders at all, were also identified by participants. Bicycle parking was also a popular topic. Participants noted that proper parking facilities were not available in some key shopping areas, and could encourage more bicycling if they were. It was also recommended that bicycle data be collected regularly to identify demand.

3.2. Pedestrians

Several pedestrian related issues were identified including the lack of sidewalks and the need to reconstruct and maintain existing facilities (i.e. broken sidewalks). There was interest in seeing walkability in neighborhoods improve as a way to promote and increase healthy living in the County, especially with regard to school-age and aging populations. Specific areas with either substandard pedestrian facilities or none at all were identified by participants. Areas cited included
commercial and residential streets, some of which were near schools and other community services. However, concern was also expressed that pedestrian facilities should follow demand, be useful, and based on thoughtful planning.

3.3. Trails

There was a lot of input regarding the County’s trail network including specific concern regarding access for equestrian riders. It was expressed that not enough trails accommodate equestrians and that they should be included in the trail planning “conversation”. Overall, the desire for trails that accommodate all users (including pedestrians, bicyclists, inline skaters and equestrians) was expressed. Gaps in the existing trail network were identified, many trail connections were recommended, and potential rail-to-trail conversions were identified. The need to protect public land and identify available private land that could be used for future trails was also expressed. The Heritage Trail in particular, which runs east-west through the County, was consistently identified as a key route and the “backbone” of the Orange County trail network, and should be completed and connected to other trails. The desire for more waterfront trails – especially along the Hudson River - was expressed. The need for improved maintenance of County trails was also cited. Restrooms, parking, and trash cans were the trail amenities most desired by survey respondents. It was suggested that a successful County-wide trail network could become a tourist attraction and a source of economic development for the County.

3.4. Other Issues

3.4.1. Safety and Education

Two major themes that were expressed during the outreach process were the need for education programs that could be used to increase awareness of pedestrians and bicyclists, and the development and implementation of Safe Routes to School programming. Traffic calming measures and improvements to existing pedestrian infrastructure were also desired by participants.

3.4.2. Implementation and Oversight

Other themes that arose during the workshops related to issues of implementation and oversight of non-motorized network development. The idea of encouraging and/or requiring developers to include pedestrian and bicycle facilities in their plans was raised. Concern was voiced that bike/ped facility planning and development processes address liability issues related to maintenance. With regard to the planning and oversight of a County-wide non-motorized transportation network, the need for interagency coordination and the creation of a guidance committee were stressed.

4 BEST PRACTICES & RESOURCES

This section provides examples of what is being implemented in non-motorized transportation facility design around the country, and describes some of the professional resources that could be used by the County and others when they are ready to implement such facilities. This section also
provides programs - both national and local - that relate to non-motorized facility planning and design.

Many United States cities are re-designing their streets to accommodate and encourage a multi-modal system for all modes including walking, bicycling, and transit in addition to vehicles. This approach, known professionally as “complete streets”, is being implemented in new development and on existing city streets. In order to guide the design and implementation of complete streets, many cities and local jurisdictions have developed, or are in the process of developing, design manuals. Major cities such as Boston, Chicago, Philadelphia and New York City have all developed street design manuals, but more rural jurisdictions such as Ulster County, New York have also been developing design guidelines for bicycle and pedestrian facilities on suburban and rural roads. These manuals set out their street design policy and provide guidance on how complete streets should look within their jurisdictions. These design manuals provide schematics of pedestrian and bicycle facilities and design treatments, and stipulate where and how each design should be implemented.

Local and regional plans are guided by national and state design manuals that provide engineering guidelines for the development of bicycle and pedestrian facilities. The American Association of State and Highway Transportation Officials’ (AASHTO) Guide for the Development of Bicycle Facilities (1999) and the Federal Highway Administration’s Manual on Uniform Traffic Control Devices are two major national resources used in bicycle, pedestrian, and multi-user facility design. The recently formed National Association of City Transportation Officials (NACTO) has also developed a Bikeway Design Guide to provide cities with state-of-the-practice design solutions that are not directly referenced in the AASHTO and MUTCD manuals. Also, the Pedestrian and Bicycle Information Center (PBIC), which is funded by the Federal Highway Administration, is a national clearinghouse of information relating to pedestrian and bicycle planning. Within New York State, the Department of Transportation’s (NYSDOT) Highway Design Manual provides design guidance for bicycle facilities on State roads.

Table 4-1 below provides a menu of major bicycle facility design treatments currently being used in the United States that are recommended for use in Orange County. Table 4-2 provides examples of pedestrian treatments recommended for Orange County that go beyond the basic building blocks of sidewalks and crosswalks to improve safety and mobility. These bicycle and pedestrian recommendations have been compiled based on the resources mentioned above and from other municipal design manuals such as the New York City Street Design Manual (New York City Department of Transportation, 2009).
# TABLE 4-1
## STANDARD BICYCLE TREATMENTS

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>CLASS 1: SEPARATED BIKEWAY</th>
<th>CLASS 2: BIKE LANE</th>
<th>CLASS 3: BIKE ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Multi-use Trail</td>
<td>Buffered Lane</td>
<td>Signed Route</td>
</tr>
<tr>
<td></td>
<td>Shared-Use Path</td>
<td>Standard Lane</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Protected Bikeway</td>
<td>Bike/Parking Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multi-use facility</td>
<td>Shoulder Lane</td>
<td>Marked bike route</td>
</tr>
<tr>
<td></td>
<td>physically separated from</td>
<td></td>
<td>that operates in</td>
</tr>
<tr>
<td></td>
<td>traffic; no/limited</td>
<td></td>
<td>mixed traffic</td>
</tr>
<tr>
<td></td>
<td>traffic interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typical Width</td>
<td>10 to 14 Feet</td>
<td>8 Feet</td>
<td>At Least 5 Feet</td>
</tr>
<tr>
<td>Ideal Application</td>
<td>County and regional trails; bike routes along roads with excess width or unused adjacent right-of-way</td>
<td>Roads with excess width; roads with high volumes and speed limits</td>
<td>Residential and commercial streets with moderate volumes</td>
</tr>
<tr>
<td></td>
<td>Roads with excess width;</td>
<td>Commercial streets with moderate volumes</td>
<td>Suburban and rural streets with moderate volumes</td>
</tr>
<tr>
<td></td>
<td>roads with high volumes and speed limits</td>
<td></td>
<td>Neighborhood streets and other low-volume roadways</td>
</tr>
<tr>
<td></td>
<td>Speed limits</td>
<td></td>
<td>Neighborhood streets and other low-volume roadways</td>
</tr>
</tbody>
</table>

(1) Photo Credits: [www.pedbikeimages.org](http://www.pedbikeimages.org)
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>SIDEWALKS</th>
<th>CROSSINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb Extension</td>
<td>Curb Ramps</td>
</tr>
<tr>
<td>Primary Purpose</td>
<td>Shorten crossing distance and reduce pedestrian exposure</td>
<td>Provide accessible street crossings</td>
</tr>
<tr>
<td>Ideal Application</td>
<td>Streets with parking lanes</td>
<td>Anywhere there is a crosswalk</td>
</tr>
</tbody>
</table>

Photo Credits: www.pedbikeimages.org
In addition to design guidelines, there are also national bicycle, pedestrian, and trail programs and organizations that assist in the development of bicycle and pedestrian friendly communities. The following is a list of several groups and programs that could serve as resources for the development and implementation of Orange County’s comprehensive non-motorized transportation network:

- **League of American Bicyclists** is a non-profit bicycle advocacy group that has created programs that promote bicycling and provide education on how to develop bicycle friendly communities. They have also developed a Bicycle Friendly recognition program that provides incentives, hands-on assistance, and award recognition for communities, businesses and universities that actively support bicycling. www.bikeleague.org

- **Safe Routes to School** is a nationwide movement to create safe and convenient ways for students to walk and bike to school. There is now federal funding designated for safe routes to school projects under the SAFETEA-LU act, and the National Center for Safe Routes to School provides guidance on how to start and sustain a safe routes program. This organization also provides resources for training and technical assistance. Within Orange County in the Town of New Windsor, a Safe Routes to School project has been developed for Union Avenue, but it has not yet been able to be implemented. www.saferoutesinfo.org

- The **National Complete Streets Coalition** is a coalition of organizations that advocates that streets should be designed to serve all users, of all abilities and ages. They provide policy support and information, technical information, and promote a fundamental transformation in the way streets look, feel and function. www.completestreets.org

- **Rails-to-Trails Conservancy** is a national non-profit group that works to create a national network of non-motorized trails from former rail lines, connecting corridors and enhancing the health of the environment, transportation and economy of American communities. The group advocates for rail-to-trail related legislation and funding. It also provides resources on how to find and develop rail trail facilities including a design toolbox for developing rail trails. www.railstotrails.org

- **American Trails** is a national, non-profit organization that advocates for all trail interests including hiking, bicycling, mountain biking, horseback riding, water trails, snowshoeing, cross-country skiing, trail motorcycling, ATVs, snowmobiling and four-wheeling. Their mission is to pursue a national infrastructure of trails and greenways that serves a full range of activities. They promote and support this mission through education, advocacy, partnerships, and timely information resources. www.americantrails.org

- **The National Center for Biking and Walking** aims to change the way communities are planned, designed and managed to ensure that people of all ages and abilities can walk and bike easily, safely and regularly. www.bikewalk.org

Non-motorized transportation planning in Orange County is also affected by other concurrent initiatives whose efforts complement this planning framework. Among these
efforts are the following, all of which are on the Orange County Planning Department’s website (www.orangecountygov.com/planning):

- **Orange County Design Manual** describes the underlying framework and design aspects of “smart growth” for the County, as well as the implementation tools and strategies to bring it about. The document is organized around the three smart growth themes of Green Infrastructure, Connectivity and Complete Communities. It is based upon the work of two concurrent planning initiatives commissioned by the Orange County Planning Department summarized in the reports *Illustrating Smart Growth for Southeast Orange County* and *Managing Growth in Central Orange County* New York. The connectivity section provides design recommendations for street and trailway layouts which are complemented by the recommendations set out in this document.

- **Orange County Comprehensive Plan** provides guidance on land use, development and preservation within the County. It also provides direction on financial, technical and infrastructure resources available to county and local officials. Additionally, it defines major trends, assets and challenges, and is updated by the County every five years.

- **Orange County Open Space Plan** is a supplement to the Comprehensive Plan and has been developed to define the environmental characteristics of the county, future open space needs, and to recommend actions needed to protect open spaces. Two primary areas of concern are addressed: management of development patterns, and the future of agriculture. In this plan several resource areas are considered, including recreation.

- **Orange County Existing and Proposed Trails** map, shown in Figure 5-1, is currently being created by the Orange County Planning Department. The planning done in this report is reflected on this map, and the map will continue to develop through the coming months.

Figures 5.1 through 5.9 were created for this planning process as very large format maps (roughly 30” x 30” or larger). We understand it is difficult to read or view the detail on a letter-sized page. These maps can be viewed and saved at full scale and detail by visiting Orange County’s bicycle and pedestrian web page: [http://www.orangecountygov.com/nonmotorizedtransportation](http://www.orangecountygov.com/nonmotorizedtransportation).
Figure 5.1: Orange County Existing and Proposed Trail Map. (Visit http://www.orangecountygov.com/filestorage/124/9893/9979/Figure_5.1_OC_Existing%26Proposed.pdf for larger maps)
Healthy Orange is a coalition of agencies, including the Orange County Department of Health and Department of Planning, that are working together to promote healthy lifestyles and develop healthy communities. This group also administers the Walk Orange program which promotes walking in communities throughout the County. www.healthyorange.com

The Orange County Citizens Foundation is a community advocacy organization that works to encourage innovative land use and transportation planning, recreational opportunities, water conservation, and preservation of our environmental and cultural heritage to improve the lives of Orange County residents. The group undertakes studies, policy-making, forums, educational seminars, exhibits and other events, and is involved in many planning initiatives in the County. Due to their similar missions, Orange Pathways, a non-profit organization founded by local residents to promote and develop multi-recreational trails in Orange County, has now been folded into the Foundation. www.occf-ny.org

New York-New Jersey Trails Conference is a non-profit organization that partners with parks to create, protect, and promote public trails in the New York-New Jersey metropolitan region. The group organizes volunteer service projects that keep these trails open, safe, and enjoyable for the public. They also publish maps and books that guide the use of these trails. www.nynjtc.org

New York State Department of Transportation – Region 8 Office is the local NYSDOT office for the Newburgh area. Within Region 8 there is bicycle coordinator, as well as planners and engineers who are significantly involved in the planning and implementation of non-motorized efforts throughout the region. NYSDOT coordinates with local municipalities to provide input, support and approval of plans and projects. www.nysdot.gov/regional-offices/region8/general-info

5 NEWBURGH STUDY AREA

The “Newburgh Study Area” is located in northeastern Orange County and includes the City of Newburgh, the Towns of Newburgh, New Windsor, Montgomery and Cornwall, and the Villages of Walden, Montgomery, Maybrook and Cornwall-on-Hudson. This was selected as the first area to receive a more detailed bicycle, pedestrian and trail master plan update as it has been part of the Newburgh Area Transportation and Land Use Study. It is anticipated that similar non-motorized master planning would be undertaken in the future for the remaining areas of the county.

5.1. Existing Facilities and Needs Assessment

This section describes the existing bicycle, pedestrian and trail facilities in the Newburgh Area, and provides an assessment of their current condition.

5.1.1. Bicycle Routes
Currently, the only official bicycle routes within the Newburgh Study Area are those designated by NYSDOT. This section describes these routes and provides comments on current network connectivity.

**NYSDOT Routes**

As shown in Figure 5-2, there are several proposed state bicycle routes through Orange County, however, only State Bike Route 17 (a state-wide route), State Bike Route 208, and a portion of State Bike Route 209 in Port Jervis are signed. Most of these routes begin in the City of Newburgh and radiate out through the study area and the rest of Orange County. Only three of these routes are marked by signage, and none 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 State bicycle route and specific issues that have been identified:

*State Bicycle Route 17* (not related to NY 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, Little Britain Road, to NY 207 toward Goshen. Beyond the study area, State Bicycle Route 17 continues to Port Jervis before heading north and west into the rest of New York State, terminating on the shores of Lake Erie in Chautauqua County. It is one of the three State-wide bicycle routes maintained by NYSDOT (the other two are not in Orange County). Within the City of Newburgh, this route is currently appropriate for cycling as it is comprised of streets that can safely accommodate bicycle usage. West of the City, the route transitions to NY 207, which is an east-west roadway in Orange County that proceeds along the south sides of Stewart Airport and Stewart State Forest, before continuing west beyond the study area to Goshen. This road operates with one lane per direction and shoulders on both sides. It has posted speeds of up to 55 mph and also has high traffic volumes, which are not ideal for a bicycle route. Also, the shoulder disappears as the roadway passes under I-87 which forces bicyclists to ride through the underpass in mixed traffic.

*Proposed Bicycle Route 32* has not been signed and designated as a NYSDOT Regional Bicycle Route like it has in Ulster County. It travels along NY 32 which begins in Woodbury, New York, in Orange County south of the Newburgh 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.
Figure 5-2: Existing Bicycle Network Map / NYSDOT Routes

Newburgh Area Study - Orange County, New York

Visit http://www.orangecountygov.com/filestorage/124/9893/9979/Figure_5_2_Existing_Bike_Newburgh.pdf for larger maps
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 NY 32/NY 300/NY 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.

**Proposed Bicycle 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; these segments are not appropriate for bicycles.

**Bicycle Route 52** travels through Orange, Dutchess, and Putnam Counties. Within the study area, this route travels east-west along NY 52 from the Village of Walden to I-84, at which point the bicycle route transitions from NY 52 to local streets within the City of Newburgh. Within the City, Bicycle Route 52 continues along South Plank Road and South Street until it terminates at the waterfront. NY 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 village center, 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 recently completed Walden-Wallkill Rail Trail. East
of Walden, NY 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.

*Proposed Bicycle Route 17K* travels along NY 17K and provides an east-west bicycle route through the Newburgh Study Area. The route begins on Broadway in the City of Newburgh and follows NY 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 NY 300 where there are no shoulders and the roadway widens to multiple travel lanes. Between NY 300 and the City of Newburgh, NY 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, NY 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.

*Bicycle Route 208* travels through Orange County along NY 208. This is a north-south roadway that generally operates with one lane per direction and has shoulders of varying width. Bicycle Route 208 originates in Ulster County and ends at Route 207, where it intersects with State Bike Route 17. Route 208 is signed as 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 NY 208/I-84 junction. Approaching I-84, NY 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

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A bicyclist crossing the NY 208/I-84 Junction in the wrong direction

NY 17K widens without shoulders in order to increase capacity at its intersection with NY 300
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, NY 208 reverts back to its typical character.

Proposed Bicycle Route 94 travels northeast-southwest through the study area along NY 94 which, beginning at US 9W just south of the City of Newburgh and traveling through Vails Gate and Salisbury Mills, continues west beyond the study area. NY 94 is an appropriate route for bicyclists as it generally has moderate vehicle traffic operating in one lane per direction with narrow shoulders. It also provides access to Salisbury Mills/Cornwall Station, the only MTA Metro-North Railroad station in the study area. This route also passes through the five-legged intersection of NY 32/NY 300/NY 94 in Vails Gate which is a very busy multi-legged, complex, high volume intersection that is not bicycle-friendly.

Network

In addition to the route-specific issues discussed above, some overall network issues have also been identified. As depicted previously in Figure 5-1, the Newburgh area bicycle network is a radial system that stems outward from the City of Newburgh, and there is a lack of connectivity between the routes and between destinations within the study area. Specifically, there are not enough north-south connections. Bicycle Routes 32 and 208 are the only north-south routes through the study area, and they are at opposite ends of the study area, almost ten miles apart.

Getting Around Town

As mentioned earlier, the only designated bicycle facilities in the study area are the seven routes designated by NYSDOT. While most of these routes pass through the City of Newburgh and some of these routes pass through the Villages within the study area, bicycle travel within each of these municipalities has not been fully considered. Local bicycle routes should be identified and developed in each municipality within the study area to provide users with facilities that guide them to and through the center of their city, town or village.
New development in New Windsor

5.1.2. Walking/Pedestrian

Orange County Planning Department prepared a sidewalk and crosswalk inventory for the City of Newburgh (Figure 5-3) and villages in the Newburgh Study Area. This included the Villages of Cornwall-on-Hudson (Figure 5-4), Maybrook (Figure 5-5), Montgomery (Figure 5-6), and Walden (Figure 5-7). The data collected were based on an analysis of aerial photography which has only been partially verified in the field. Completing this verification may provide an opportunity for public involvement by those looking to volunteer in the development of this plan. The sidewalk and crosswalk inventory is also supplemented by pedestrian-related field observations that were conducted during this study.

These data can be used to identify where proper pedestrian treatments exist and where there are gaps, as well as the ability to walk to key destinations within a municipality. The following is an assessment of the Newburgh Study Area based on the sidewalk inventory maps. This evaluates existing conditions and identifies gaps for the Newburgh Area’s pedestrian facilities and serves as an example for how pedestrian assessments can be performed in other parts of the County.
The City of Newburgh has an urban street grid system where most blocks have sidewalks. Broadway/Route 17K has crosswalks at most intersections, and South and Water Streets have crosswalks at some major intersections, but there are few marked crosswalks elsewhere in the City. Most schools and community facilities have 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 school schools in the Village have sidewalks on the streets fronting 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 (NY 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 (NY 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 marked 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 (NY 52). There are some destinations in Walden including one school that does not have pedestrian crossings. The Shawangunk, Walden, & Wallkill Rail Trail entrance (at the intersection of Woodruff Street and Willeman Avenue) does connect to East Main Street (NY 52) and the center of the Village via the sidewalk network.
Field Observations & Public Input

In addition to the sidewalk inventory assessment, field observations were conducted and additional location-specific pedestrian needs have been identified within the Newburgh Study Area. Specific pedestrian-related issues were also expressed by participants during public workshops. Below is a description of some location specific pedestrian issues observed in the field and raised during public workshops.

Quassaick Avenue (NY 94)

Pedestrian activity was observed on multiple occasions along the west curb of Quassaick Avenue near its intersection with US 9W, just south of the City of Newburgh. There is currently no sidewalk on either side of this street, but there are sidewalks along adjacent streets, including US 9W to the north. The uses alongside the road include a cemetery and residential development. However, there is a school and some commercial uses located further south along this road. There is a crosswalk on Quassaick near the school, but there no sidewalks in front of the school or anywhere along the road.

North Plank Road (NY 32)

Pedestrian activity was observed along the segment of North Plank Road between Chestnut Lane and Powelton Road, just north of the City of Newburgh. This section of North Plank Road is a commercial corridor where some of the newer developments have sidewalks adjacent to their property but the sidewalk is not continuous. Pedestrians were observed walking in the shoulders of the street.

City of Newburgh

The City of Newburgh has many historic residential streets that are lined with impressive old homes, cobblestone streets, and slate sidewalks. Unfortunately, some of these sidewalks have fallen into disrepair, and are either cracked, uneven, or both, which poses problems for pedestrians, especially those using wheelchairs, walkers, or strollers.

Route 17K Park & Ride

Located east of the intersection of Route 17K and Route 300 is the bus park and ride facility used by commuters. Currently, buses pull in and out of the parking facility to pick up and drop off passengers. The reconstruction of the lot, however, and proposed changes to future bus services,
could impact pedestrians. The bus traveling eastbound from the airport would not pull into the lot, but would stop along the south side of 17K. However, there is no sidewalk located here, nor is there a traffic or pedestrian signal that would allow dropped off passengers to cross 17K to the park and ride lot. There is a proposal that construct a sidewalk from the park and ride, west to the nearest signalized intersection with Route 17K and the highway ramp, however, realistically pedestrians would likely not walk to this intersection to cross, then walk back to the parking lot. These proposals should be carefully examined from a pedestrian safety perspective.

**Trails**

There are a variety of trail types in the Newburgh Study Area. The following is brief description of these trails:

**Rail Trails/Multi-Use Trails**

The Shawangunk, Walden & Wallkill Rail Trail is a 3.2-mile trail that begins in the Village of Walden (where Woodruff Street intersects Wileman Avenue) and travels north along the Wallkill River and continues into Ulster County terminating in the Hamlet of Wallkill. This is a multi-use trail that is paved and is ADA accessible. The Quassaick Creek Trail is a nearly two mile multi-use trail that is being developed by the City of Newburgh and the Orange County Planning Department hopes to develop along the north bank of the Quassaick Creek on the City of Newburgh and Town of New Windsor. The project is supported by the Quassaick Creek Watershed Alliance.

There are also short distance trails in municipal parks (as shown previously in the Sidewalk Inventory figures). There is a trail in Downing Park in the City of Newburgh, and also in Pleasure Ground Park in the Village of Montgomery.

**Walking Trails**

Within the City of Newburgh, there are several walking trails and self-guided tours along City sidewalks, including the Trail of Two Cities and the Frederick Douglass Trail. These trails are for pedestrians only. The Trail of Two Cities connects Newburgh with the City of Beacon via the pedestrian walkway on the Newburgh-Beacon Bridge; the Frederick Douglass Trail is located wholly within the City.

**Rugged Trails**

There are mostly unpaved hiking, mountain biking and equestrian trails in Stewart State Forest in the middle of the study area, and rugged hiking trails on Schunemunk Mountain, and in Storm King State Park and Black Rock Forest in Cornwall in the southeast section of the study area.

The Long Path Trail is a long-distance hiking trail that extends between Fort Lee, New Jersey and Altamont, NY, near Albany. The trail currently only traverses a small portion of the southeast corner of the study area in the Town of Cornwall. However, a proposed re-routing of this trail would expand the trail north-south through the study area.
As expressed through the public outreach effort, there are too few multi-user trails in the study area. Even with the proposed Long Path Trail extension in place, there would only be one continuous trail passing through the area. There are also, currently, no non-motorized connections between the state forest hiking trails within the study area. It was also expressed that not all trails are accessible to all users. For example, some trails are accessible to hiking, and bicycling, but not for horseback riding.
5.2. Recommendations

Recommendations for improvements to existing bicycle, pedestrian and trail facilities, as well as the identification of new facilities, are discussed in this section. These recommendations have been made for the Newburgh Study Area, and can serve as an example for how recommendations can be developed for the rest of the County. Detailed design of each route needs to take place, especially at key locations and/or complex intersections.

5.2.1. Bicycling

As discussed in the previous section, the designation and implementation of an interconnected bicycle route system throughout the County is desired. Official State bike routes have been designated throughout 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. 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. 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 Figure 5-9. A brief description of each proposed route in the study area is provided below.

City of Newburgh - Downtown Newburgh

North-South Streets

Bicycle Routes 9W and 32, both north-south bicycle routes through the City of Newburgh, operate along Robinson Avenue within the City. Robinson Avenue remains a recommended bicycle route within the City, however, several other north-south routes are suggested as well. These include the following:

Dubois Street is a relatively low trafficked street with one lane per direction and parking, spanning the length of the City. It is mostly residential and – as is typical in Downtown Newburgh – has a historic housing stock with slate sidewalks (albeit some in poor condition). The street abuts the “back” of Downing Park and there is no access to the park, but the views are attractive. North of South Street,
Dubois Street becomes *Powell Avenue* and passes alongside the Mount Saint Mary College campus.

*Carpenter Avenue* travels through the center of Downing Park and connects Gidney Avenue with Third Street (two recommended east-west on-street routes). There are very low traffic volumes on this street and it provides access to the park as well as an attractive connection between two recommended east-west routes.

*Liberty Street* spans the length of the City of Newburgh near its eastern end, and has one lane per direction with parking. The road passes along the “back side” of Mount Saint Mary College and provides access to the campus (via Carobene Court). Between Broadway and the northern end of Newburgh, Liberty Street is treated with attractive red stone paving.

*Front Street* travels along the waterfront east of the railroad tracks. It primarily serves the many waterside restaurants that have opened in recent years, and portions of it have been enhanced with streetscaping treatments such as cobblestone crosswalks. There is potential for this street to be enhanced and connect with the riverwalk along the water to create a waterfront loop trail for bicyclists and pedestrians. The steep grade from inland to the waterfront is a hurdle for non-motorized uses, and would need to be addressed, but there are already some attractive pedestrian connections including passageways under the railroad trestle leading to the waterfront restaurants.

**East-West Streets**

South Street, Broadway (NY 17K), and Washington Street are east-west bicycle routes in the City of Newburgh. While these routes are important east-west connections, there are additional east-west streets that are recommended as future bicycle routes.

*Third Street* operates in Downtown Newburgh and follows the southern border of Downing Park. This is a quiet residential road with low traffic volumes and one lane per direction with parking. It operates as one-way westbound east of Dubois Street, but *Farrington/Catherine Street* could be used as a one-way pair with this segment of Third Street.
Figure 5-9: Proposed Bicycle Route Network

(Visit http://www.orangecountygov.com/filestorage/124/9893/9979/Figure_5.9_Proposed_Network_Newburgh.pdf for larger maps)
*Gidney Avenue* is a winding road that enters the City of Newburgh from the north and runs southeast through the City to Liberty Street. The road has one lane per direction with parking and is recommended as an east-west route in Newburgh because it is scenic and winding, has low volumes, and passes over I-84 providing a safe and easy connection to roads north of the City. Gidney Avenue is primarily a residential street but also has community, education and recreation uses, and passes along the southern border of the Mount Saint Mary College campus before it terminates. Portions of the pavement along this roadway are in need of repair in order to safely accommodate bicyclists.

*South William Street* is a local residential and commercial street with one lane and parking in each direction. It extends from Lake Street/NY 32 to the waterfront, passing the southern border of Delano-Hitch Park and intersects recommended north-south bicycle routes along US 9W/NY 32/Robinson Avenue, Liberty Street and Dubois Street; therefore, it is recommended as an east-west bicycle route in southern Newburgh.

**North of City of Newburgh**

There are four roads leading north out of the City of Newburgh and into the Town of Newburgh. One of these routes, US 9W, is not a viable option for a bicycle route since it widens to a very busy, multi-lane intersection at the I-84 access ramps. The other three routes – Gidney Avenue, Old Balmville Road, and Grand Avenue – are all viable alternative routes out of Newburgh since they are “calmer” streets and do not intersect with I-84 ramps. These roads all connect with Bike Route - either directly or via east-west connector routes. These recommended routes are discussed below.

At the northern end of the City of Newburgh, Liberty Avenue transitions to *Balmville Road* where it travels northwestward and intersects US 9W/Albany Post Road. This street is a scenic and winding road. It operates with one lane per direction and has no shoulders. The posted speed limit is 30 mph, but traffic appears to move faster.

Balmville Road becomes *Fostertown Road* west of US 9W and operates similar to Balmville Road with the addition of narrow shoulders. However, these shoulders would need to be widened in order to serve as bicycle lanes. This road continues northwest through the study area and terminates at NY 32.
Grand Avenue/Commonwealth Avenue is part of New York State Bicycle Route 17 until the Newburgh-Beacon Bridge, where the route continues over the bridge. This street would be an appropriate bicycle route even north of the bridge where the road continues for approximately one mile, passing the historic Balmville tree and then merging with Balmville Road. Grand Avenue operates with one lane per direction and no shoulders but has low traffic volumes and is scenic, and even provides some views of the Hudson River.

While Grand Avenue/Commonwealth Avenue and Balmville Road provide alternative bicycle routes north from the City of Newburgh east of US 9W/NY 32, Gidney Avenue (described earlier) provides an attractive alternative west of it. Gidney Avenue eventually connects with Bicycle Route 32 close to where it transitions to a more bicycle-friendly roadway. However, the intersection where these roads connect is relatively busy and improvements should be considered to safely accommodate bicycle activity through this intersection. Additionally, the roadway surface is in poor condition and should be repaved.

Leslie Road is an east-west residential street with one lane per direction and no shoulders. It provides a connection to US 9W/Albany Post Road and Fostertown Road (via Frozen Ridge Road) for cyclists as an alternative to having to use the intersection of Fostertown Road and US 9W/Albany Post Road. The road has low volumes and is scenic, but has some steep topography.

Chestnut Lane is an east-west street that connects Balmville Road, US 9W/Albany Post Road and NY 32, and provides another bypass to the busier US 9W intersections. It operates with one lane per direction and no shoulder. The posted traffic speed is 30 mph, but traffic appears to move faster.

South of City of Newburgh
In addition to Routes 94 and 32, additional bicycle routes have been recommended to accommodate bicyclists. These routes were identified to provide safe and convenient bicycling within the Village of Cornwall-on-Hudson and between the Village and the City of Newburgh and points west. The following is a brief description of these recommended routes:

**Water Street** is an alternative to Route 32 as a route south of the City of Newburgh. South of the City, it becomes *River Road* and is lined with more industrial land uses. It operates with one lane per direction but there is truck activity related to the surrounding uses and the speed limit is 40 mph. River Road eventually crosses US 9W and merges with NY 94. In order for this roadway to become a viable bicycle route, the narrow shoulders would need to be widened and enhanced to accommodate bicycle users.

**Forge Hill Road (County Road 74)** is the recommended route to access the Village of Cornwall-on-Hudson from NY 94. This road travels east-west and crosses US 9W. Most roads that cross US 9W in this area have ramps that carry traffic to and from US 9W; however, Forge Hill Road crosses US 9W at a signalized intersection, making it a safer route for bicycles. Forge Hill Road is a mostly residential road with one lane per direction and no shoulders. The road is very scenic but has a curved alignment and has steep grades along some portions. East of US 9W, Forge Hill Road becomes *Shore Road* as it enters the Village of Cornwall at the northern border. As Shore Road, the roadway maintains its character and travels along the Hudson River waterfront until it reaches Donahue Memorial Park, where it terminates. There are several local residential streets that could be used to connect from Shore Road to the center of the Village.

Within the Village of Cornwall-on-Hudson, *Main Street, Academy Avenue*, and *Hudson Street/Bayview Avenue* are recommended as bicycle routes. These are the primary streets within the Village and have a variety of potential destinations including shopping, restaurants, schools and community uses.

The recommended route traveling west from the Village of Cornwall-on-Hudson is *Quaker Avenue* (CR 107) to NY 32 to *Orrs Mills Road* (CR 20) and *Otterkill Road*. These roads all have one lane per direction and low observed volumes. NY 32 has wide shoulders that would be appropriate for bicycle lanes while the other roads have no shoulders or very narrow ones. Orrs Mills and Otterkill Roads are scenic rural roads and would make enjoyable bicycle touring routes.

*Jackson Avenue* and *Station Road* are two recommended north-south routes that can serve as connector routes between NY 94 in the Beaverdam Lake-Salisbury Mills area and
NY 207. These are both low volume rural residential roads with one lane in each direction.

**West of City of Newburgh**

Bicycle routes have been recommended in the western part of the Newburgh Study Area to provide an east-west bike route while connecting the three Villages of Walden, Montgomery, and Maybrook to each other and to other destinations such as the Stewart State Forest. Routes have also been recommended to provide additional north-south routes to supplement Bicycle Route 208. Two other recommended routes provide bypasses to the heavier trafficked portions of Bicycle Route 208 such at its junction with I-84. Below is a brief description of the recommended routes in the western portion of the Newburgh Study Area.

*County Road 29* is a north-south road that operates between the Village of Walden and the Village of Montgomery. It is recommended as an alternative to Bicycle Route 208 and as a connector between Bicycle Routes 52 and 17K, two east-west bicycle routes in the area. CR 29 operates with one lane per direction. Within the Village of Walden, the road has no shoulders and traffic operates at 25 to 30 mph. South of Walden, traffic speeds increase but there are narrow shoulders on the road at this point. The road is quite scenic and has views of the Wallkill River along portions of it.

*NY 211* extends through the Village of Montgomery and to points south. Within the Village, this road is called Union Street and it operates with one lane per direction and has wide shoulders/parking lanes giving it potential for a bike lane treatment. South of the Village, the road operates with one lane per direction and narrower shoulders.

*NY 416* spurs off of NY 211 and continues south until it reaches NY 207 providing another north-south bike route and one that conveniently culminates at New York State Bike...
Route 17. NY 416 operates with one lane per direction and has narrow shoulders. The shoulder on the west side of the road has guardrails.

*Beaver Dam Road to Maybrook Road/Clark Road* is recommended as an alternative route between the Villages of Montgomery and Maybrook. This is a less trafficked and more direct route than using Bicycle Routes 17K to 208, and it bypasses the busy NY 208/I-84 junction.

*Boyd Street/Goodwill Road* is a recommended alternative to Bicycle Route 17K as a connector route between NY 211 and NY 208. It passes through a residential area and operates east-west through the Village of Montgomery and extends east to NY 208. The road operates with one wide lane per direction. There are newly constructed sidewalks along a portion of Goodwill Road where a new residential subdivision is being developed.

*Coldenham Road (County Road 75)* is recommended as a southeast connector route between the Village of Walden and NY 17K. It operates with one lane per direction and has shoulders on both sides. As Coldenham Road reaches NY 17K, it is a short transition across NY 17K to the slightly offset intersection with *Ridge Road* which begins at NY 17K and travels south (over I-84) into Stewart State Forest. There is a signal at this intersection which would help facilitate making this transition.

*Rock Cut Road (County Road 23)* and *Lakeside Road* are two parallel north-south roads that are recommended as connectors between the east-west bike routes along NY 17K and NY 52. Rock Cut Road also continues north into Ulster County. Lakeside Road provides access to Orange Lake and the Orange County Little League facility. Each road operates with one lane per direction with narrow shoulders and has guardrails in some sections.

**Connections to Transit**

A bicycle network is not complete unless it ties into the local and regional transit network. Therefore, connections to bus and rail service within the Newburgh Study Area were also considered while developing the bicycle route recommendations.

**MTA Metro-North Railroad Commuter Rail**

The Salisbury Mills-Cornwall station is the only passenger rail station in the study area. The station is accessed by NY 94 which is one of the NYSDOT regional bicycle routes. The addition of the recommended bicycle routes along Jackson Avenue, Station Road, and Otterkill Road would provide additional routes to the station via NY 94.

The Campbell Hall station is just south of the Newburgh Study Area and is accessed by Eagerston Road via NY 207. The recommended bicycle route along NY 416 would provide
a direct route to the station from the Town of Montgomery (via NY 207 and Eagerston Road).

Additionally, Metro-North and NY Waterways operate a ferry service between the Downtown Newburgh waterfront and the Beacon Metro-North Rail station. The recommended route along Front Street would provide access to the ferry dock in Newburgh. There is bicycle parking at Beacon Station, but secured parking, such as bicycle lockers, should also be provided for Newburgh area commuters at the ferry dock.

Buses

Various local and commuter bus lines serve the Newburgh Study Area. This includes Leprechaun Lines (also known as the Newburgh/Beacon Bus Corporation) which operates the Newburgh area local bus service and the Newburgh/Beacon commuter shuttle. Other operators providing bus service in the area include Ulster County Area Transit, Coach USA/Short Line, Adirondack Trailways, and municipal dial-a-ride operators. For the Newburgh/Beacon shuttle and Newburgh area local bus service, the new fleet of buses will be equipped with bicycle racks. Efforts should be made to install bicycle racks on other buses as well. Additionally, secured bicycle parking should be provided at the NY 17K Bus Terminal Park & Ride (Newburgh Bus Terminal) and other key bus stops within the study area.

Recommended Design Treatments

There are a variety of levels of bicycle design treatments that range from markings and signage to constructing a physically separated bikeway, depending on what is most appropriate for the particular roadway. Under-designing can lead to unsafe conditions while overdesigning could result in costly construction and maintenance that might not be necessary, were such an intense treatment not needed on that roadway. The key is to find the appropriate design treatment for each proposed bicycle route based on the existing and projected future conditions once the facility is in place. The section that follows should be used as an initial planning tool and not for design. Further data collection and studies (i.e. field observations, traffic studies, site surveys) would be needed in order to determine the appropriate treatments along each route.

Most roads recommended above as bicycle routes for the Newburgh Study Area are relatively low-trafficked rural roads that operate with one lane per direction. The presence of shoulders along these roads varies from wide to narrow to no shoulders at all. The following are general recommendations for some of the common roadway types in the study area:

- On low-volume, slow-speed roads with no shoulder, a shared lane demarcated by painted share the road arrows, known as “sharrows”, and/or bicycle markings and signage are recommended. On roadway segments that have shoulders of at least five feet (four feet could be sufficient on roads without drainage grates depending on the road width, grade, and traffic volume levels), it is recommended that the shoulder be marked as a bicycle lane and that signage be
provided. All shoulder bike lanes should be cleared of debris and maintained before and after being designated as bicycle lanes.

- On roads that have narrow shoulders and low volumes, shared lanes are recommended; however, if traffic volumes are high, it is recommended that shoulders be widened and a shoulder bicycle lane be striped. Shoulder widening could be achieved either by restriping existing roadways (on roads with excess lane width) or widening the roadway and restriping.

- For high-speed, high-volume, multi-lane roadways, it is recommended that a physically separated bikeway be installed. This could be achieved by taking a lane of traffic if traffic studies are conducted and show this is viable, or by constructing a facility adjacent to the roadway.

- Within the City of Newburgh and the villages within the Newburgh Study Area, shared lanes are recommended on low volume residential streets, unless there are excess travel lanes or lane width. In those cases, the street can be restriped with a bicycle lane. On streets with moderate traffic volume and/or truck traffic, bicycle lanes are recommended adjacent to the curb or the parking lane if on-street parking is allowed; however, parking might need to be removed on some roads in order to accommodate separate bike lanes. On streets with wide parking lanes (at least 12 feet), shared parking/bicycle lanes could be designated by adding bicycle lane demarcations.

Table 5-1 provides specific bicycle treatments (based on Table 4-1: Standard Bicycle Treatments, presented earlier) that could be considered for each of the existing and recommended bicycle routes within the Newburgh Study Area.
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<th>CATEGORY</th>
<th>CLASS 1: SEPARATED BIKEWAY</th>
<th>CLASS 2: BIKE LANE</th>
<th>CLASS 3: BIKE ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Multi-Use Trail</td>
<td>Buffered Lane</td>
<td>Shoulder Lane</td>
</tr>
<tr>
<td></td>
<td>Shared-Use Path</td>
<td>Standard Lane</td>
<td>Shared Lane</td>
</tr>
<tr>
<td></td>
<td>Protected Bikeway</td>
<td>Bike/Parking Lane</td>
<td>Signed Route</td>
</tr>
<tr>
<td>Ideal Application</td>
<td>County and regional trails; bike routes along roads with excess width or unused adjacent right-of-way</td>
<td>Roads with excess width; roads with high volumes and speed limits</td>
<td>Residential and commercial streets with moderate volumes; roads with excess width and existing on-street parking lane</td>
</tr>
<tr>
<td>Possible Application in Newburgh Study Area</td>
<td>Newburgh Waterfront, Downing Park, Stewart State Forest</td>
<td>South Street, Water Street</td>
<td>Union Street (NY 211)</td>
</tr>
</tbody>
</table>

Photo Credits: www.pedbikeimages.org
Intersections

Most vehicle crashes involving bicycles occur at intersections, so it is important for intersections to be considered when implementing on-street bicycle facilities. This is especially important at intersections where two bicycle routes intersect or where a route transitions from one road to another since there will be more bicyclists making turns. While many of the bicycle routes recommended for the Newburgh Study Area travel along calm roads with few intersections, there are several complicated intersections along some recommended routes including NY 208 and 32 at their respective junctions with I-84, North Plank Road/NY 32 at Albany Post Road/US 9W, and NY 17K at NY 300 amongst others.

The following are some design guidelines to consider at intersections to improve safety:

- Provide clear paths for bicyclists by extending bike lane markings through the intersection with a combination of either dotted lines or “sharrows”.

- Extend bicycle lanes past vehicle stop bars, and consider providing dedicated turn lanes for bicycles in advance of vehicle stop bars, known as “bike boxes”, to reduce bicycle-vehicle conflicts.

- Provide adequate signal time for bicyclists, and consider implementing exclusive bike signal phases and bike detectors (at actuated signals) where it would improve safety.
5.2.2. Pedestrians

Pedestrian networks are made up of two major components, sidewalks and crosswalks. As discussed earlier, 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 on connecting missing pedestrian links in the Newburgh Study Area. Additionally, this manual could serve as a guide for future development and land use decisions within the study area and elsewhere in the County.

Recommended Design Treatments

Table 4-2, presented earlier, provided an illustrated menu of sidewalk and crosswalk enhancements to improve pedestrian safety and mobility. Table 5-2 provides some sample locations within the Newburgh Study Area where these design improvements could potentially be applied. These recommendations are based on preliminary criteria, and additional detailed studies would be required to determine the appropriateness and effectiveness of such measures at each potential location.
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>SIDEWALKS</th>
<th>CROSSINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb Extension</td>
<td>Curb Ramps</td>
</tr>
<tr>
<td></td>
<td>Streets with parking lanes</td>
<td>Anywhere there is a crosswalk</td>
</tr>
<tr>
<td>Possible Application in Newburgh Study Area</td>
<td>Broadway (Newburgh), Union Street (Montgomery), Hudson Street (Cornwall-on-Hudson)</td>
<td>Everywhere</td>
</tr>
</tbody>
</table>

Photo Credits: www.pedbikeimages.org
5.2.3. Trails

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.

5.2.4. Example Projects

The following two proposed projects are presented to serve as examples of how to implement the recommendations of this document into specific bicycle and pedestrian improvements. The following projects were identified because they could be implemented relatively easily in the short-term, and would immediately contribute to achieving the goals and recommendations outlined in this Framework.

Walden/Montgomery/Maybrook Bicycle Route Bypass to NY 208

The Villages of Walden, Montgomery, and Maybrook are connected by Bicycle Route 208. However, as mentioned earlier, there are high vehicle speeds and heavy volumes (including trucks) along this segment of NY 208, especially near the I-84 junction between Montgomery and Maybrook. The following route is proposed as a bicycle-friendly alternative to using NY 208.

Proposed Route

The proposed route would begin to the north at River Road/County Road 29 in the Village of Walden at its intersection with NY 52. The route would travel south along County Road 29 to the Village of Montgomery where it joins Ward Street (NY 17K). The route would travel over the Ward Street Bridge, then east to Union Street/NY 211 and continue south to Boyd Street where the route would travel east again to Beaver Dam Road at the eastern edge of Montgomery. At this point, the route would transition to Beaver Dam Road and travel south to the Village of Maybrook via Maybrook Road/Clark Place. These roads, as described earlier, are all relatively bicycle-friendly and have substantially slower traffic, lighter volumes, and are more scenic than the parallel segment of NY 208. This proposed route would also traverse through or to the center of each village, making it an attractive alternative to NY 208.

Proposed Design Treatment

Another advantage to this route is that designing and implementing suitable bicycle facilities along these roads would be relatively easy. Since the roads are “calm” and have only one lane of traffic per direction, most of the route could be implemented as a shared road facility which would typically require the installation of “Share The Road” signage and sharrows (share the road arrows) demarcations in the street to remind motorists to share the roadway with bicycles.

1 A village center bypass route would entail continuing south from Ward Street to Bridge Street and east on Bachelor Street which meets Union Street/NY 211 just north of Boyd Street. This alternate route could compliment the primary route by providing a bypass of the busy village center. This route would also pass the Wesley Hall Senior Center and Pleasure Ground Park.
(Note: County Road 29 does have narrow shoulders and could potentially be widened to accommodate shoulder bicycle lanes; however this would be costly and would be more appropriate as a potential long-term improvement). This treatment is depicted in Figure 5-10.

**Figure 5-10**
**PROPOSED SHARED ROADWAY TREATMENT ALONG NY 208 BYPASS**

It is recommended that a shared parking/bicycle lane be installed on-street for the segment that travels along Union Street/NY 211 in the Village of Montgomery. This roadway has very wide parking lanes that could be converted to shared parking/bicycle lanes by installing bicycle lane demarcations, as depicted in Figure 5-11. The installation of “Bike Lane Ahead” signage is recommended to provide advanced warning to users and motorists that the facility is ahead. Also, “Bike Lane Begins” and “Bike Lane Ends” signage should be installed at the beginning and end of the facility.

**Figure 5-11**
**PROPOSED BIKE LANE MARKING TREATMENT ON UNION STREET**
In addition to these treatments, “Bike Route” signage should be installed along the entire route to direct bicyclists where the route transitions from one road to another. As an option, wayfinding signage could also be installed to direct motorists to nearby village centers and other attractions such as museums, landmarks, parks and trails. The recommended design treatments are conceptual-level and are for planning purposes only. Detailed engineering and design would be required to implement such a treatment.

**Cornwall-on-Hudson Intersection Improvement/Pedestrian Safety Project**

As part of the Newburgh Area Transportation and Land Use Study, a study of NY 218 was conducted on behalf of the Orange County Transportation Council (OCTC) the Village of Cornwall-on-Hudson, and New York State Department of Transportation. The goals were to improve pedestrian and traffic safety at three intersections along NY 218. The three intersections are NY 218 (Academy Avenue) at Hudson Street, NY 218 (Hudson Street) at Duncan Avenue/Idlewild Avenue/River Avenue, and NY 218 (Bayview Avenue) at Dock Hill Road/River Street. Each proposed concept simplifies traffic operations and improves the pedestrian experience in the Village of Cornwall-on-Hudson. The improvement to the intersection of NY 218 (Academy Avenue) at Hudson Street was chosen as the example project here since it is the easiest to implement in terms of engineering, cost and time. However, all three intersection improvements are proposed and fully detailed in the *Village of Cornwall-on-Hudson Hudson Street/Route 218 Corridor Study Technical Report* (February 18, 2011)

**NY 218 (Academy Avenue) at Hudson Street**

This intersection is a stop controlled (traffic is controlled by a stop sign) three-legged “T” intersection. NY 218 forms the southbound and westbound intersection approaches and Hudson Street forms the eastbound approach. Observations at the intersection revealed that the southbound approach crosswalk (the north crosswalk) is long at approximately 60 feet in length. Vehicles on southbound NY 218 were observed to edge up towards the intersection, sometimes stopping in the crosswalk, to afford a better view of the approaching westbound NY 218 traffic. Vehicles turning right from westbound NY 218 onto northbound NY 218 were also observed to turn at relatively high speeds, which can be attributed to the large corner turning radius which allows for higher turning speeds.

The concept for the proposed intersection improvement is to shorten and relocate existing crosswalks, add a new crosswalk and curb extensions, and restripe stop bars in order to calm traffic and reduce speeds on westbound NY 218, improve the visibility of oncoming traffic, and increase the safety of pedestrians crossing the street.

The specific proposed improvements are listed below and depicted in Figure 5-12:

- **Install a curb extension on the north side of eastbound Hudson Street to facilitate pedestrian crossings.** The size of the extension is limited by the need to accommodate the turning radii of large trucks such as tractor-trailers (“WB-50s”) turning from eastbound Hudson Street to Academy Road. Should the Village wish to install a larger curb extension, approval could be sought to restrict trucks from making this turn. If restricted signage is included, then a larger curb extension could be installed.
- **Install a curb extension on the northeast corner of westbound Hudson Street (east of Academy Avenue).** This would narrow the width of the NY 218/Hudson Street westbound approach, reduce the existing curb radius, and shorten the southbound approach crosswalk length. This improvement would help slow vehicle speeds and reduce the crossing distance for pedestrians.

- **Realign the southbound NY 218 approach.** By restriping southbound NY 218/Academy Avenue, the approach can be shifted to the west to meet Hudson Street at a more perpendicular angle than exists today. This would place the crosswalk perpendicular and nearer to Hudson Street, which would enable vehicles traveling south on Academy Avenue to have a better view of pedestrians and oncoming Hudson Street vehicles.

- **Relocate existing crosswalks.** As stated above, the crosswalk across Academy Avenue would be restriped perpendicular to Hudson Street, and shortened due to the curb extension. On the west side of the intersection, the crosswalk on Hudson Street would be relocated to west of the driveway.

- **Add a new crosswalk.** A new crosswalk is proposed on the east side of the intersection, across Hudson Street. When located at the crest of the hill, this proposed crosswalk would be clearly visible from all approaches and improve overall pedestrian access.

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**Figure 5-12**

**PROPOSED INTERSECTION IMPROVEMENTS TO NY 218 (ACADEMY AVENUE) AND HUDSON STREET**

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- Existing landscaping
- Re-align intersection approach
- Construct curb extension
- Re-stripe center line and relocate stop bar
- Re-locate crosswalk
- Add new crosswalk
- Construct curb extension
- Location map
- Existing landscaping
- Graphic scale

NOTES:
1. Every attempt was made to show drainage and existing street furniture in the project design.
2. Existing signs are typically 4x30".
3. Existing barriers are typically 3' wide.
4. Crosswalks are typically 5' wide.
5. Signboards are typically 12" x 18".
6. Storm drains are typically 36" wide.
6 NEXT STEPS

This Framework has been developed to lay the groundwork for a countywide non-motorized transportation master plan update, and the Newburgh Study Area recommendations section was developed to provide an example of how a detailed bicycle, pedestrian, and trail assessment is undertaken and how specific recommendations are developed. This is just the first step in a larger process to be undertaken in developing and implementing a countywide non-motorized transportation master plan, and achieving a comprehensive transportation network.

The next step that needs to be taken is holding additional public outreach to evaluate the vision, goals, and recommendations provided in this Framework, and 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**

Develop a countywide non-motorized master plan update based on what has been completed here for the Newburgh Study Area. 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 Newburgh. 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 this 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. This would entail a process that includes the following steps:

- Identify potential project scope, costs, schedule, and funding sources
- Add projects to the Transportation Improvement Program (TIP) list for federal funding
- Implement projects through design and construction

**Track Progress**

Often times, 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.