Summary Report

September 2021

Sleepy Hollow & Tarrytown

Multimodal Transportation Study



Overview

The **Sleepy Hollow & Tarrytown Multimodal Transportation Study** evaluated alternatives and provided recommendations for multimodal travel opportunities between the Edge-on-Hudson waterfront development (under construction) and the Metro-North Railroad stations at Tarrytown and Philipse Manor.

The purpose of the study was to shift trips from single-occupancy automobiles to walking, bicycling, and commuter shuttle options. The study considered three opportunities for such connections:

- Commuter shuttle from Edge-on-Hudson to Tarrytown Station
- Transit circulator serving the central business districts (CBDs) of Sleepy Hollow and Tarrytown
- Pedestrian and bicycle safety improvements between Edge-on-Hudson and both Metro-North stations

The study was managed by Scenic Hudson, Inc. in collaboration with the Villages of Tarrytown and Sleepy Hollow, and the Sleepy Hollow-Tarrytown Trails Committee as an implementation recommendation of the Sleepy Hollow-Tarrytown Trails Strategy (2015). FHI Studio was the project consultant. The project team would like to thank Scenic Hudson, the Villages of Tarrytown and Sleepy Hollow, and the Sleepy Hollow-Tarrytown Trails Committee for their thoughtful involvement throughout the study process.





Community Engagement

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The study included several efforts to ensure meaningful community engagement to inform technical analyses and recommendations. Throughout the study, the FHI Studio team met with stakeholders, including:

- Edge-on-Hudson
- Westchester County Planning
- Westchester County Bee-Line Bus
- Metro-North Railroad
- Sleepy Hollow Tarrytown Chamber of Commerce
- Hudson Valley Writers Center
- Westchester County Parks
- Philipse Manor Improvement Association

A project committee provided valuable feedback and oversight, with participants representing Scenic Hudson, the Village of Tarrytown, the Village of Sleepy Hollow, and the Sleepy Hollow-Tarrytown Trails Committee.

Public presentations on the study scope and approach were held on Monday, August 16, 2021 in Tarrytown and Tuesday, August 24, 2021 in Sleepy Hollow.

Multimodal Transportation Study

In July 2021, a public survey was distributed to the villages of Sleepy Hollow and Tarrytown to assess preand post- pandemic travel behaviors, along with interest in alternative modes of transportation. Respondents identified primarily as White (75%) and female (65%) within the age range of 35 to 65 years old. **A total of 177 survey responses were collected.**

Respondents of the survey **rely heavily on personal vehicle use and walking** for travel in and around the villages of Sleepy Hollow and Tarrytown.

Respondents mostly traveled for work and for shopping purposes. **Typical trips took less than 30 minutes within distances of 1-5 miles.**



What is your main way to travel? (Select up to three)

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Mobility Survey

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Although many respondents primarily drive, **there was interest in other modes of transportation including buses, bicycling and walking**. Of the participants that responded to this survey question, **69% of the responses received were in favor of biking and walking** as an alternative mode of transportation within the villages of Sleepy Hollow and Tarrytown.

38% 31% 27% 21% 19% 17% 11% 10% 9% 6% 6% 2% Drive- alone Car/Taxi Service Drive- carpool Bike Walk Bus Prefer not to Rail Ridehail Dial a bus Vanpool Other choose an (Uber/Lyft) (2+ people) service alternative

Would you consider any of the following as an alternative for getting around? (Select up to three)

Mobility Survey

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Respondents felt that **off-road paths and bicycle lanes with roadway infrastructure,**

including shared streets signage and shared lane markings, would encourage them to bicycle (or bicycle more).

They also felt **more, safer sidewalks and crosswalks** would encourage them to walk and bicycle more.

Safer walking and biking is key.



What changes would encourage you to bike or to bike more? (Select all that apply)

Mobility Survey

Sleepy Hollow & Tarrytown

Transportation Study

I would love to hear more about a shuttle between Tarrytown and Sleepy Hollow that would include stops to area cultural & recreation destinations not just the main retail areas of Main Street and upper Beekman.

I would LOVE for TTSH to be more bike friendly. Possibly a bus or trolley that rides only in Tarrytown-Sleepy Hollow and makes a constant loop.

Crosswalks need to be made safer. We need traffic calming measures almost everywhere. As someone who walks in town a lot and drives, it is hard at some crosswalks as both a pedestrian to see cars coming and as driver to see pedestrians.

Edge-on-Hudson Commuter Shuttle

The site of the former General Motors Assembly Plant in Sleepy Hollow is being redeveloped as <u>Edge-on-Hudson</u> (formerly known as Lighthouse Landing) as a mixed-use community with 1,250 condominium, apartment and townhouse residences, 132,000 sf of retail, cinema and restaurant space, 35,000 sf of office space, and a 140-room hotel.

The Environmental Findings Statement requires the developer to provide shuttle service for project residents and employees to Tarrytown Station. The applicant proposed that the shuttle operation would be initially geared toward weekday morning and evening commuting hours and committed to providing up to three shuttle buses, each with a seating capacity for 20-25 passengers.

The Findings Statement also stated that "In order to provide for efficient mass transit utilization and minimization of potential traffic impacts, the [Sleepy Hollow] Village Board will require phased implementation of the shuttle service with shuttle operation to commence no later than the issuance of a certificate of occupancy for the 100th residential unit, and the number of buses and level of service to be commensurate with demand."¹

¹ Environmental Findings Statement for Lighthouse Landing at Sleepy Hollow; 7/24/2007; p.88

Developer Requirement

At the time of this report, the Edge-on-Hudson developer anticipated reaching the threshold of 100 certificates of occupancy by the 4th quarter of 2021. This threshold triggers the requirement to begin operation of a commuter shuttle between the development and the Tarrytown railroad station.

While current rail ridership demand is lower than usual due to COVID-19 impacts, the shuttle remains a requirement and may evolve to meet travel needs if traditional morning and evening commute times do not appear to match primary demand.

Longer-term, the developer's shuttle operation may evolve into a component of a more universal mobility option in, and potentially beyond, the two Villages. This concept is discussed further in the **Village Centers Circulator** section of this report.

Images: Google Streetview

Service Design

Based on an interview with a principal at Edge-on-Hudson, the developer will contract with a shuttle provider to operate a shuttle service. The short travel distance between Edge-on-Hudson and the Tarrytown station allows for frequent, convenient service.

The study evaluated the operational consideration of serving the east or west sides of Tarrytown Station.

Conversations between the study team and Metro-North Railroad representatives revealed a preference for shuttle operations to take place adjacent to the station building on the east side of the tracks.

The study team evaluated the potential for serving the west side of the station, which would offer a slightly shorter shuttle route; however, the need to turn vehicles within a parking lot and lack of suitable curb space for passenger drop-off and pick-up may present challenges.

Tarrytown Station: East side, looking south



Sleepy Hollow



Tarrytown Station: West side, looking north

Recommendation

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The shuttle should serve the east side Tarrytown Station, which allows for better pedestrian boarding and alighting from shuttle vehicles as well as added transit connectivity including Westchester Bee-Line, regional Hudson Link bus services, and corporate shuttles.

Additionally, serving the east side would avoid conflicts with station parking operations on the west side, enable easier shuttle turnaround, and provide customer access to amenities such as snacks and coffee at the station. This location was preferred by Metro-North and the Village.



Tarrytown Station: East side, looking south



Tarrytown Station: West side, looking north

Village Centers Circulator

The study team evaluated local transit options to serve and link the central business districts (CBDs) of Sleepy Hollow and Tarrytown, responding to interest in a potential circulator. Options could include extending the Edge-on-Hudson shuttle or identifying another operator and service plan. The villages host numerous existing transit services, including Metro-North Railroad, Westchester Bee-Line local buses, regional Hudson Link buses, and private shuttles from Tarrytown Station.

Opportunity exists to provide local mobility to residents and visitors who may wish to avoid car travel for short trips, avoid parking, or take advantage of alternatives to walking up the hill from Tarrytown Station.

The study team evaluated traditional and flexible transit service models to serve key points in the two villages and the Tarrytown Station, incorporating feedback provided by the Transportation Committee, Metro-North Railroad, Westchester County Planning, the Sleepy Hollow-Tarrytown Chamber of Commerce, and the Edge-on-Hudson developer.

Funding does not currently exist to operate such a service; however, this document provides a path toward implementation, which could be pursued by a local organization/champion to lead the program development.

Guiding Principles

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Design considerations for a CBD circulator focus on the customer experience. The study team established several guiding principles to apply to the development of initial circulator concepts, lead discussion with stakeholders, and ultimately form a recommendation for this study.

An effective CBD circulator service should:

- Provide connection between the Sleepy Hollow and Tarrytown CBDs and the Tarrytown and potentially Philipse Manor train stations
- Maximize arrival frequency/minimize customer travel time
- Serve environmental justice communities
- Explore the potential to serve Edge-on-Hudson, Phelps Hospital, Regeneron, hotels, and neighborhoods
- Include consideration of zero emission vehicles

Note: Transit operators are increasingly adopting battery-electric vehicles, particularly for shorter routes like circulators. Santa Barbara, CA, has been a leader in electric vehicle adoption, and new systems (including CircuitNR in New Rochelle) are opting for fully electric fleets.



Harbor Point Trolley in Stamford, CT

Initial Circulator Route Alternatives

were developed based on key customer criteria and input from

Three initial alternative circulator routes were developed based on key customer criteria and input from the study committee. Designs focused on Tarrytown Station and both business districts.







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Recommended Fixed Route

Initial fixed route circulator options included variations to address serving Broadway, inclusion of environmental justice communities (e.g., Wildey Street), and maximizing coverage of the central business districts. Recognized trade-offs included potential delays associated with Broadway traffic versus greater utility and service to both village business districts.

More than six variations were developed before the study team narrowed route design to a preferred alternative, balancing travel time, frequency, geographic coverage, and user convenience.

The decision to serve Edge-on-Hudson depends on the potential to incorporate the developer's shuttle commitment into a broader circulator, while assuring convenient service to Tarrytown Station for Edge residents. In the near-term, with the developer's shuttle committed and anticipating launch, the circulator concept does not include Edge-on-Hudson.

This route provides efficient circulation and direct service to Tarrytown Station, Beekman Avenue, Main Street, Broadway, and Wildey Street.



Fixed Route Circulator

This route design could be structured to meet the most appropriate hours of customer demand and scaled to provide additional frequency and/or bidirectional service, depending on available funding. Bidirectional service roughly doubles cost.

Base service assumptions (one vehicle; single direction):

- 15-20 minute frequency
- Travel times of no more than 10 minutes to Tarrytown Station
- \$95/hour unit cost for contract service, to be negotiated with vendor (cost per vehicle, per hour)*
- 10-hour service span (e.g., 10am to 8pm)

High-level annual operating cost estimate: \$341,050

- 255 Weekdays x 10 hours x \$95/hour = \$242,250
- 52 Saturdays x 10 hours x \$95/hour = \$49,400
- 52 Sundays x 10 hours x \$95/hour = \$49,400

* Recent trends have revealed increased pressure on contract operators to recruit labor and obtain vehicles, resulting in rising costs. This estimate is subject to negotiation with vendors.



Micro-Transit Service

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An alternative to traditional fixed-route circulators, made increasingly feasible thanks to mobile technology, is micro-transit service. Microtransit is typically defined as a flexible system of on-demand vehicles allowing shared tide, point-to-point travel within a geographic boundary. A micro-transit network may cover the Villages of Sleepy Hollow and Tarrytown. Services are scalable and can adapt vehicle availability to customer trip demand and travel distances.

Micro-transit networks are often operated by private vendors, either as stand-alone services, municipality-sponsored services (e.g., Circuit in New Rochelle, Via JC in Jersey City, NJ), or as part of public transit networks (e.g., Wheels 2U in Norwalk, CT). Micro-transit sponsors negotiate coverage area, hours of operation, target wait times, fares, and operating subsidies as part of an operating contract.

Service providers may provide their own vehicles or use an existing fleet, increasingly taking advantage of senior van services and/or paratransit vehicles to offer flexible, on-demand service to the public.





Source: Via

Case Studies from the Region

New Rochelle, NY

CircuitNR is an electric shuttle service that has been operating in downtown New Rochelle since 2019. Users may either request a pick-up via the phone app or flag the shuttle. The City of New Rochelle used CARES Act funding to expand the service to a grocery store, Montefiore New Rochelle Hospital, and adjacent neighborhoods. The service completed about 34,000 passenger trips in the first year of operation, which is about 90 passenger trips per day.

Jersey City, NJ

The City of Jersey City launched a city-wide micro-transit service in early 2020. By spring of 2021, the service averaged nearly 1,500 daily rides with a wait time of about 17 minutes. Within the central zone, home to the major transit hubs, rides are \$2 for the user. An additional \$0.50/mile is charged outside this zone. Jersey City's two-year contract with Via had a fee of \$3.85 million. The fleet includes 24 gas-powered Mercedes Metris and two electricpowered Kia Niros.

Norwalk, CT

Wheels2U is an on-demand shuttle service offering \$2 rides throughout the central area of Norwalk. The Norwalk Transit District owns and operates the shuttles. Operations funding comes entirely from the Connecticut Department of Transportation (CTDOT); vehicles were funded through the Federal Transit Administration (80%) and CTDOT (20%). Pre-pandemic, the service provided 2,200 rides per month, up from 300 trips per month when the service launched in fall 2018.

Circulator Preferences

Circulator concepts were developed based on committee and stakeholder feedback concerning priority points or areas to serve. This table highlights areas of preference and priority and demonstrates an absence of uniform direction regarding route design.

Circulator Decision Points	Trails Committee	Edge-on-Hudson Developer	Chamber of Commerce	
Broadway				
N. Washington St.				
Philipse Manor				
Phelps Hospital				Ko
Edge-on-Hudson				rej
Microtransit				

Indicates Preference

Indicates Priority

The study team recommends planning for a micro-transit service rather than a traditional fixed route circulator. Micro-transit service delivery is better suited to a wider variety of destinations, provides door-to-door service, and is more scalable and customizable to meet local needs.

Critical to advancement of any local, village-focused transit program is a continued focus on refining planning decisions among this study committee and local partners. Above all, **the transit program requires an administrative home and a local champion** to "own" its development and operation.

Funding for the program, however, should not be limited to this champion. Local transit programs have great potential when they are established through partnerships among key interests, including the business community, the municipalities, and key destinations such as hospitals, social services, and educational facilities. In time, a micro-transit network in Sleepy Hollow, Tarrytown, and potentially other Hudson River villages could incorporate the operational requirements of Edge-on-Hudson, offering potential for another valuable partner and an evolution of the developer's commuter shuttle.

Additionally, private shuttle operators including corporations (e.g., Regeneron), educational and cultural institutions, and healthcare facilities may join such partnerships to expand and enhance the micro-transit network. The network must be robust and demonstrate ample utility to existing shuttle providers to encourage their participation in a coordinated network.

While direct cost comparisons between micro-transit and traditional circulators are difficult due to different variables, the following assumptions are generally consistent with the CBD circulator estimate outlined in the preceding pages.

Base service design assumptions:

- 2-3 vehicles
- Operating hours: 8 a.m. to 6 p.m.
- Average wait time: 10-15 minutes
- Average trip time: 7-8 minutes
- Per hour ride requests: 10-15

High-level annual operating cost estimate (funding opportunities follow in this report)

- \$500,000-\$750,000 based on feasibility studies of similar locations; actual cost will depend on geographic scope and service level expectations.
- Costs for contract service highly variable due to vehicle driver availability and fleet availability
- Opportunity to start small and expand service, similar to New Rochelle's Circuit.

Edge-on-Hudson Bicycle/Pedestrian Connections

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Background

As evidenced in the study survey, there is **significant interest in walking** and bicycling for at least some trips. Stakeholders and the public noted the lack of dedicated facilities and high roadway speeds as issues that create an inhospitable environment for those on foot or bike.

The team examined the feasibility of two routes for a connection to Tarrytown Station and determined the best route through Kingsland Point Park to Philipse Manor Station.

- Site Visit Members of the Trails Committee met with Edge-on-Hudson representatives and the project team to walk the alternative route options, noting existing conditions and the impact of the ongoing construction.
- Stakeholder Input The team met with stakeholders over the course of the study to discuss **feasibility** of alternative routes and facility design, amenity placement, and implementation considerations.
- Long-Term Planning The H bridge will need renovation in the shortto medium-term.





Facilities should be designed to provide safe and attractive options for users of all ages and abilities.

Bicycle and pedestrian paths should be comfortable for all people, of a variety of ages and confidence levels. Where space permits, routes should be separated and protected from vehicular traffic, especially where speeding or erratic driver behavior has been noted. Intersections should be designed with highly visible crosswalks.

Routes should feel safe for all users. In the Northeast, typical commuting hours for office workers occur before or after daylight hours for about half of the year. A safe, comfortable, and attractive path is one where there is a high level of visibility, frequency of passersby, and minimal slopes that discourage use by people using a mobility enhancement device or pushing a stroller.

Directness of route is of primary importance. Commuter rail riders minimize time at the station – they are likely to leave for the train with minimal buffer time. For those commuting by Metro-North, the directness of the route (and travel time compared to their car trip) is of critical importance.

Along walking and bicycle routes, traffic should move calmly and predictably. Cartways should be designed for reasonable context-sensitive travel speeds. They should meet progressive design criteria (e.g., NACTO, AASHTO*) for lane widths, curb radii, and crosswalks. Crosswalks at intersections should be mandated.

Some designs should be reasonable to accomplish in the near-term. Capital-intensive designs and those requiring significant design should align with long-term planning and capital investment.

* AASHTO: A Guide for Achieving Flexibility in Highway Design

Considerations – Tarrytown

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Comfort for Non-Drivers. Narrow, uninviting pedestrian infrastructure, lack of pedestrian wayfinding to the waterfront, and speeding all contribute to a feeling that walking and biking to and from the waterfront is not desirable today. Wayfinding and street improvements should be prioritized to support active transportation.

Creating a Bicycle Network. Division Street is sufficiently wide for bicycle lanes in the short-term, but the route would only be separated for two blocks. When longer-term improvements are programmed, this street will be a critical connection between the waterfront and the train station.

Trade-offs Exist. Where there is excess width, it is currently devoted to parking, which often blocks sight lines for pedestrians and drivers at crosswalks. Unmarked parking spaces visually look like extra wide lanes when they are infrequently used, encouraging faster driving. Removal of some parking at intersections, striping of travel lanes and parking spaces, and introduction of traffic calming measures would lead to safer intersections and slower speeds.

Accessing the Station. The final stretch for bicyclists reaching the station is worrisome on a bike, notably during rush hour, due to the wide intersection, high speeds, and parking spaces at Green Street / Railroad Avenue. Clarifying turns and tightening intersections would also keep traffic moving predictably.



Division Street



Hudson View Way



Tarrytown Station (west)

Considerations – Philipse Manor

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Edge-on-Hudson to Kingsland Point Park. Currently the park closes at dark; for a complete commuter connection, coordination between Westchester County Parks and the Village of Sleepy Hollow is required to extend hours of operation.

Riverwalk Extension. The connection between the proposed access point near the Lighthouse is currently unpaved with some grading concerns. Paving a shared use path to the existing parking lots is recommended. An alternate, preferrable path would use the proposed Edge-on-Hudson access road off Legend Drive and continue east along the lower paved path adjacent to Metro-North right-of-way.

Park Access Roads. Drivers currently speed to the waterfront along the narrow park access road. Physical separation of walking and bicycling paths is recommended for safe travel. Reduction in vehicle lane width (park entry/exit, Riverside Drive, etc.), should be explored to afford the necessary space for designated walk/bike facilities.

Station Circulation: Based on discussions with the Philipse Manor Improvement Association, improvements to the west side are not recommended at this time. Crossing improvements should be made along Riverside Drive. The Village should consider one-way travel on Riverside Drive to allow for incorporation of protected bicycle and pedestrian infrastructure.

Neighborhood Connectivity: Limited pedestrian and bicycle infrastructure restrict comfort for those accessing the station without a vehicle today.

Accessibility: This station is not ADA accessible.



Philipse Manor Station West Approach



Kingsland Point Park

Considerations – Edge-on-Hudson

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The site provides a new walkable district for the Villages, with local amenities that will serve as a draw for the surrounding communities

- Park access, boat docks, and waterfront
- Grocery
- Hotel

To date, no bicycle facilities are

planned within the site. Legend Drive and the roundabout at Beekman Avenue are routes where bicyclists should be accommodated to provide a connection to the train stations. Without any bicycle amenities within the site, it is less likely that residents and visitors would consider this mode.



Near-Term Recommendation

The study team recommends bicycle and pedestrian access on local streets through Hudson Harbor as a short-term priority for connections to Tarrytown Station. Improvements should target retrofitting neighborhood streets to increase safety and comfort.

- Take advantage of maintenance needs to rethink neighborhood streets. The municipal takeover of private owned roads can be used to support improvements such as lighting, bicycle storage, parking management, and lane striping.
- Install a No Left Turn sign Ichabods Landing potentially with time-of-day limitations.
- **Install wayfinding and amenities** to improve public awareness and make non-motorized travel in the study area safer and more attractive.
- **Adjust striping** to improve safety and speed along notable barriers such as Beekman Street and River Street.
- Plan for long-term changes capitalizing on development potential. Although not viable in the short-term, the Villages can pursue early steps to activate the space under H Bridge as coordination continues with property owners.



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Near-Term Recommendation – Sample Cross Sections



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Long-Term Recommendation

Promote a walking and biking friendly waterfront district by capitalizing on future development potential. Although not viable in the short-term, the Village can pursue early steps to activate the space under H Bridge with landowners.

- **Commission a study** to determine if structural improvements for public and commercial space underneath the bridge.
- **Retrofit streets** within Edge-on-Hudson and on River Street before Ichabods Landing to encourage low vehicular speeds and improve safety for bicyclists and walkers.
- Widen sidewalk and adjust parking on west side of Tarrytown station.
- Coordinate recommendations with Cortland/Main/Depot redesign effort.
- Work with Hudson Harbor to establish a separated path along the current unnamed street south of Division Street, and along Hudson View Way to connect to the proposed under-bridge alignment.
- **Establish a strategic plan** for programming of the site, consolidate advocates and form a committee to take ownership.
- Update Village Comprehensive Plan to identify this as a future off-road connection, create a land development vision for private sites, and update land use regulations accordingly.



Under H Bridge Today



Underground at Ink Block, Boston MA

Long-Term Recommendation

Increase attractiveness and comfort alongside future development. The wide travel lanes and lack of comfortable non-vehicular means of crossing H Bridge to access the Hudson River waterfront is a barrier. Although not viable in the short-term, the Village should pursue long-term design changes to the H Bridge.

- **Pursue adding H Bridge Redesign** to the NYMTC Transportation Improvement Program (TIP). This project could include modernization and repair of the Bridge (including sidewalk widening and circulation improvements), and bicycle and pedestrian connectivity to the RiverWalk at Horan's Landing.
- After bicycle facilities are provided on either side of H Bridge, design changes to H Bridge will be desirable. These should be a long-term alternative to preferred routing on the west side of the Tarrytown Station. At that point, separated bicycle lanes or a shared use path should be evaluated.

Project Partners: NY Department of State, Metro-North, New York Metropolitan Transportation Council, Hudson Harbor, Westchester County Department of Planning, Westchester County Department of Public Works and Transportation

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Long-Term Recommendation Options

Hudson View Way (extending current right-of-way via future development)

Near-Term Recommendation

The best connection for pedestrians and bicyclists accessing Philipse Manor Station is through the access road north of Legend Drive.

Based on positive conversations with Westchester County regarding this access location, the Village of Sleepy Hollow and Westchester Department of Parks should pursue opening this access point.

- Stakeholder interviews indicated interest from relevant parties in this solution.
- Ongoing coordination regarding water line management for Edge-on-Hudson construction is the catalyst for improvements including sidewalk paving, striping and signage. Improvements at bridges, speed humps and pavement markings are short-term measures to slow traffic through the park.
- Lighting, benches, bicycle parking and additional wayfinding signage should be considered to further encourage regular use of the station for first and last mile connectivity.



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Long-Term Recommendation

Pursue capital improvement program for route from Kingsland Point Park to Philipse Manor station.

- Pedestrian and bicycle enhancements for the eastern side of the station include redesign of the Palmer Avenue/ Riverside Boulevard intersection, designing for circulation changes within the park, commissioning a study to assess, repair, and reopen the abandoned bridge over Metro-North to provide a pedestrian connection between Devries Park and Kingsland Point Park, and advance the concept of converting Riverside Drive to one-way north.
- Neighborhood mini-roundabouts have been shown to increase safety at intersections and would provide a gateway entrance for the park.
- Pedestrian and bicycle improvements along Palmer Avenue and Riverside Drive would promote desired neighborhood access to the station, in addition to supporting connectivity to Edge-on-Hudson.



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Longer-Term Recommendation

Pursue capital improvement program for route from Kingsland Point Park to Philipse Manor station.

- The Village should coordinate with local stakeholders to consider a shared street model for the Palmer Avenue Bridge.
- Coordination between the Village, County, and Edge should continue. Longterm circulation improvements suggested by the Trails Committee (such as routing vehicular traffic into the park via Edge-on-Hudson rather than via Palmer Avenue) are the best option for separating bicyclists and pedestrians from traffic. Widening the paved park access roads is less desirable and not recommended due to environmental considerations including potential for wetland or grading restrictions.



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Near-Term Recommendation



Long-Term Recommendation





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Edge-on-Hudson

- With relatively low traffic and low travel speeds, bicyclists can share the road with drivers. Signage should be installed indicating that bicyclists may use the full lane. The Villages should monitor traffic volumes and make necessary improvements as the development comes online, to ensure continued safety for bicyclists.
- Shared lane markings should be provided in the center of travel lanes, encouraging bicyclists to use the full lane to avoid conflicts with on-street parking. At a minimum, install lane markings and bicycle signage on Legend Drive and Hollows Pass and <u>accompanied with "In Lane" signage</u>.
- Convenient bike parking, covered where possible, should be provided across the site and notably at commercial uses and public amenities.
- Along Legend Drive north of Hollows Pass, an off-road separated bicycle path should be installed, extending between the southern approach to the roundabout and Kingsland Point Park, and along the parking area to connect to the existing paved path.



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Edge-on-Hudson

Short-Term Recommendations

- Construct planned sidewalk along Legend Drive extension to Kingsland Point Park.
- Install separated bike lane along east side of Legend Drive extension to Kingsland Point Park.
- Modify Beekman Street westbound approach and install raised crosswalks at all four approaches to the River Street / Beekman Street/ Legend Drive roundabout.
- Install shared lane markings and bicycle "In Lane" signage along Legend Drive and Hollows Pass.

Long-Term Recommendations

- Retrofit River Street / Beekman Street / Legend Drive roundabout for bicyclists.
- Install shared lane markings and signage along interior streets.



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Amenities

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Wayfinding signage should be added at pedestrian / bicycle scale to direct residents and visitors to communicate off-road and direct paths to train stations.

KEYPORT, NJ

HAIN STREET 1.0 MI

Lighting should

provide visibility for pedestrians and bicyclists. Light fixtures should be shielded to prevent spill and direct illumination on the street and sidewalk and when possible, conform to Dark Sky Association standards.

Sleepy Hollow

Bicycle parking (and lockers) should be installed on the west side of Tarrytown Station, encouraging the recommended route. If possible, covered parking should be provided.

Benches, planters, and brightly painted asphalt

make walking and biking more attractive and reinforce pedestrian scale commercial activity.



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Guidelines for Residential Streets

Several steps should be taken in the longer-term to provide increased visibility and safety for bicyclists and pedestrians, as development in the waterfront area continues, especially in the vicinity of the unnamed street between Division Street and Hudson View Way.

- The Villages should adjust local guidance and land development regulations to allow for 9' lanes in residential, low traffic environments and require driveways to be constructed at sidewalk grade. This will allow further separation of vulnerable modes and reinforce slow speeds in residential settings.
- Along residential, low volume streets on the route, shared lane markings can be phased out and bicycle lanes striped. The evaluation of traffic volumes and speeds along these routes should precede this design change.
- Strong wayfinding signs should be installed to reflect that an alternate, if slightly less direct, off-street path to the train station exists via the RiverWalk and West Main Street.





Guidelines for Future Developments

The completion of the full walking and biking connection relies on development of several parcels along River and Division Streets.

- Driveways interrupt the sidewalk network and create potential conflict points. New development in the study area should be oriented toward pedestrian travel and new curb cuts for driveways should be minimized. At driveways, sidewalks should be maintained at-grade through the zone.
- Adequate sidewalk widths for two passing wheelchairs should be provided where possible. A minimum sidewalk width of 6' provides comfortable space for two passing pedestrians in residential settings (and should be widened for sidewalk buffer in commercial settings).
- Streets (and intersections) should be designed to provide connectivity for pedestrians and bicyclists, as well as motorists. Crosswalks should be used to enhance or highlight desired crossings wherever practical, and continental crosswalks are preferred over standard, striped crosswalks.



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Guidelines for Future Developments

Future Recommendation

- Separated bicycle facilities should be accommodated by partnering with the site development to expand the right-of-way along three sides of the parcel.
- Bicycle parking should be provided for commercial development. Privately owned parking spaces should not be located on-street.
- Developments should, to the extent possible, adhere to NACTO design guidelines.

High level cost estimate: \$225,000 for separated bicycle lanes along Hudson View Way and the unnamed street



High Level Cost Estimates

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Tarrytown – Short-Term	Approx.	Cost
Hudson View to River Street Sidewal	k	\$ 90,000
Sharrow Markings & Signage	:	\$ 11,000
Crosswalk		\$ 6,000
Curb Extensions	:	\$ 80,000
Railroad Avenue / River Street Marki	ngs	\$ 11,000
Roundabout Raised Crosswalks	:	\$ 50,000
W. Main Street Bike Lanes		\$ 3,000
W. Main / Railroad Ave/ Green Street Intersection Improvements		\$ 50,000
-	FOTAL \$ 3	301,000

Philipse Manor – Short-Term	Approx. Cost	
Sidewalk	\$ 36,000	
Kingsland Point Park Roadway Pavement Markings	\$ 5,000	
Speed Humps	\$ 8,000	
Palmer Avenue Station Entrance Crosswalk	\$ 6,000	
Bike rack	\$ 2,000	
TOTAL	\$ 57,000	

Philipse Manor – Long-Term		Approx. Cost	
Roundabout		\$ 250,000	
Shared Use Path		\$ 420,000	
	TOTAL	\$ 670,000	

Tarrytown – Long-Term – *Premature at this stage*

Implementation

Recommendation – Funding

Numerous funding sources exist to launch and fund operation of a micro-transit service and to implement the bicycle/pedestrian recommendations in the villages. No one source is likely to fully cover costs; however, several may be combined to strategically fund the program and minimize burden for any one partner.

Potential funding sources include, but may not be limited to:

- MTA First mile/last mile initiatives (MTA initiating study in Fall 2021)
- Congestion Mitigation Air Quality (CMAQ)
- Possible CARES Act unspent balances
- NYSDOT Local Transit Funding
- Federal Transit Administration (FTA) Low or No Emission Vehicle Program (vehicles, service, charging facilities)
- Local Partnerships
 - Villages
 - Edge-on-Hudson
 - Existing private shuttle operators
 - Chamber of Commerce members
- Foundations and grants

Recommendation – Governance

Sleepy Hollow Tarrytown Multimodal Transportation Study

The **Sleepy Hollow-Tarrytown Multimodal Transportation Study** provided a unique opportunity for convening a wide variety of stakeholders that was key to development of the primary recommendations. Establishing a forum for implementation of the initiatives is a compelling need, along with initiating several additional activities.

- **Continue coordination on shared priorities.** The Trails Committee should continue to serve as a convener for coordination between the Villages, Kingsland Point Park, Westchester County, and Edge-on-Hudson.
- **Develop a strategic plan for Hudson Harbor development and H-Bridge** and form a committee to lead implementation.
- Pursue funding sources and partnerships.

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- Naomi Klein, Craig Lader Westchester County/Bee-Line
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