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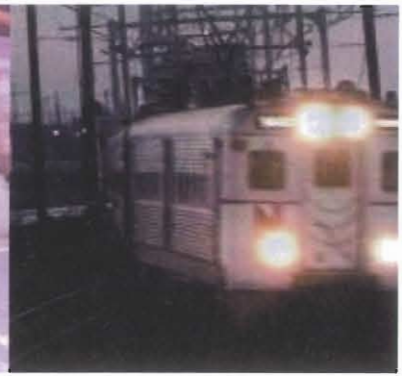
Center



Transit Utilization Analysis

Lighthouse Landing
Village of Sleepy Hollow, NY

prepared for:
Roseland Property Company

prepared by:
Alan M. Voorhees Transportation Center
Edward J. Bloustein School of Planning and Public Policy
Rutgers, The State University of New Jersey

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Summary

The Alan M. Voorhees Transportation Center (VTC) has reviewed the proposed Lighthouse Landing development in the Village of Sleepy Hollow, New York, addressing the projected usage of mass transit (i.e., Metro-North commuter rail) by Lighthouse Landing residents utilizing an on-site train station during weekday peak hours; the effect on that level of projected usage should Lighthouse Landing residents have to travel instead up to approximately 0.7 miles via a shuttle service to the existing Tarrytown and/or Philipse Manor stations; and the overall planning and design of the project as related to resident usage of Metro-North services. Our assessments can be summarized as follows:

Rail Usage and Shuttle Service

VTC evaluated rail usage levels for Lighthouse Landing with a new on-site station, as well as without a new station with shuttle service, to the existing Metro-North Tarrytown and/or Philipse Manor stations.

- With a New Station — The Final Environmental Impact Statement Traffic Study utilizes a 40 percent mass transit credit (reduction in weekday peak hour vehicular car trips among project residents), if a new train station is constructed at Lighthouse Landing. National research studies show that there is high transit usage in areas near stations and regional examples of new developments near transit report that more than 50 percent of residents commute by train. We believe that a 40 percent mass transit credit is very reasonable, if not somewhat conservative.
- No New Station, but with Shuttle Service — If a new station is not built at Lighthouse Landing, a well-run shuttle service to the existing Tarrytown and/or Philipse Manor stations (located approximately 0.7 miles south and 0.6 miles north, respectively, of the center of the project site) could effectively serve the new Lighthouse Landing community. Commuters in Westchester County are very much accustomed to driving to a station with available parking or being dropped off/picked up at the station. Based on this well-established pattern, it can reasonably be expected that a significant majority of New York City commuters from Lighthouse Landing will utilize Metro-North whether or not an on-site train station is constructed. This is primarily because the alternative of driving into Manhattan is a much more expensive and time consuming option: approximately $1,100 per month to drive into Manhattan and park, compared to a monthly commuter ticket from Tarrytown to Grand Central at $209; and, a 40-minute ride on the train versus an hour or more drive. Furthermore, many developments in the New Jersey/New York region within a mile of a transit station offer shuttle services that are proving to be a popular, valued amenity, particularly in inclement weather.

  There should be little or no reduction of transit usage by residents if an efficient shuttle service to nearby stations is implemented at Lighthouse Landing. While we consider a 35 percent mass transit credit without a new station to be acceptable, we believe that it should be the same as with a new station, 40 percent.

Project Design Qualities

As part of this assessment, VTC has also reviewed the FEIS Alternative Plan for the

proposed mixed-use development. The project design provides for an extensive network of sidewalks, compact blocks, and linkages with public open space areas and engaging streetscapes, resulting in a pedestrian-friendly environment which is conducive to walking. Offering a variety of rental and ownership residential products with significant amenities located proximate to the Metro-North Hudson Line, the project is expected to have a strong market orientation toward New York City commuters. The components of the FEIS Alternative Plan have been designed to optimize rail transit availability and convenience either through the provision of shuttle service to the existing Tarrytown and/or Philipse Manor stations or with a new on-site station. In our opinion, Lighthouse Landing is a well-designed project located close to commuter rail services. As discussed at the end of this report, we recommend a number of easily implemented measures to further enhance the project's compact, pedestrian-friendly design. These measures include bicycle racks, signage, and pavement markings.

Project Description

The project Site consists of three parcels totaling 94.5 acres on the former General Motors site along the Metro-North Hudson Line train tracks, lying between two stations: Tarrytown and Philipse Manor. From either of these stations Manhattan is approximately a 40-minute train ride away[1] (in contrast to commuting by car which could take up to twice as long). Clearly, this is a powerful draw for commuters and a compelling reason to live in close proximity to such an asset. Lighthouse Landing is a mixed-use development consisting of 1,250 residential units (629 rental apartments, 373 condominiums and 248 townhomes), 35,000 square feet of office space and 132,000 square feet of retail space, including a 25,000 square foot food market, an 18,000 square foot fine arts cinema, and 89,000 square feet of retail shops and restaurants. The project will also include a 140-room hotel. Upon completion, the project is expected to have a total resident population of approximately 2,500.

There is a proposal to install a new Metro-North train station within the new development. There are at least three reasons why this train station is not likely to occur in the near future: 1) two existing train stations are located less than a mile from the project Site, 2) construction costs for a new station, and 3) Metro-North's current focus on building a new station south of the Tarrytown stop that would complement prospective Tappan Zee Bridge improvements.[2] The plans for the East Parcel call for municipal service and recreational use, plus a 550-car surface commuter parking lot to support the ridership at the proposed new station. Per the Final Environmental Impact Statement (FEIS), commuter parking is very limited at both the Tarrytown and the Philipse Manor stations. We, therefore, reviewed the design of Lighthouse Landing under two scenarios: 1) with a new train station and a commuter parking lot as shown on Exhibit A; and 2) without a new train station at the site, but with shuttle service to the

[1] Per the Metro-North published schedule Tarrytown express trains take 35–38 minutes and Philipse Manor 38–41 minutes to Grand Central Station in New York City.

[2] See *Tappan Zee Bridge, I287/Environmental Review Alternatives Analysis Report*, January 2006, NY State DOT, Thruway Authority, MTA Metro-North Railroad.

existing Metro-North Tarrytown and/or Philipse Manor stations. As presented in Exhibit A, FEIS Alternative Site Plan, the project design provides for an extensive network of sidewalks, short/compact blocks, linkages with public open space area and engaging streetscapes, resulting in a pedestrian-friendly environment which is conducive to walking. The components of the FEIS Alternative Plan have been designed to optimize transit availability and convenience either through the provision of shuttle service to the existing Metro-North Tarrytown and/or Philipse Manor stations, or with a new on-site train station (e.g., the platform design, stairs leading from Beekman Avenue, passenger pick-up and drop-off areas, pedestrian overpass, etc.)

It should be noted that many terms are used to describe the area near or around transit stations. Transit-oriented development (TOD) is formally defined as the ½-mile circle around the transit station (walking distance) featuring compact, pedestrian-friendly development and a mix of land uses including housing. In the case where development does not occur directly at the station and/or lacks a mixed-use component as a result of conventional suburban single use patterns and parking requirements, the expression transit-adjacent development (TAD) is often used. Other phrases such as "transit districts" or "transit zones" are also employed to indicate a ridership catchment area. In reality, building types and configurations proximate to train stations vary widely. In the last section of this report we will discuss the historical and more formalized design qualities associated with transit place making. However, for the purposes of our discussions here about transit utilization let us consider the primary source of ridership to be households within a walkable or short driving distance from the station, roughly up to a mile. This geographic parameter is in keeping with the particular commuting culture traditional to Westchester County as discussed below.

Metro-North Commuter Use in Westchester County

One of the most important factors considered for this transit utilization analysis is the well-established pattern of commutation to New York City from Westchester County. This established pattern is summarized as follows:

- Metro-North commuters in Westchester County typically drive to the closest train station with available parking or are dropped-off/picked-up at the station if they do not reside within walking distance of a train station.
- Westchester County commuters are very much accustomed to the Metro-North Railroad schedule, which logically provides more frequent service during weekday morning and afternoon peak commuter periods than during off-peak periods.

For those commuters destined for New York City the only alternative to the train is driving (no express bus service is available). However, most people are deterred from driving into the City given the charge for parking in Manhattan, high gas prices, tolls and associated car expenses of maintenance and insurance. **The monthly costs for a driving commute between Sleepy Hollow and 42nd Street Manhattan (28 miles) are estimated to be around $1,100.** This figure represents the current average monthly

parking fee in mid-town Manhattan at $574[3] car operating costs of $498 for 20 days per month at $.445 per mile.[4] Tolls will vary depending on the route taken, but the minimum will be the E-Z PASS $6.67 per month for the Thruway at Yonkers Barrier taking the Third Avenue Bridge (free) into Manhattan. **This driving alternative at $1,100 per month is in dramatic contrast to the current Metro-North monthly Webticket from Tarrytown to Grand Central Station at $208.74.**

Important, too, is the time savings in taking the train. Metro-North provides around a 40-minute, one-seat ride to Grand Central Station from the Tarrytown or Philpse Manor station. By comparison, driving from Sleepy Hollow to mid-town Manhattan during weekday peak periods will take 70–80 minutes,[5] given the typical traffic and congestion of the New York metropolitan area which is compounded during inclement weather.

Therefore, whether by means of a new on-site station or through the provision of shuttle service to the existing Tarrytown and/or Philipse Manor stations, commuters living in Lighthouse Landing will be closely aligned with Metro-North train service to New York City in light of the significant financial and time advantages over driving.

Rail and Shuttle Usage

Rail Usage Research Findings

Rail usage among Lighthouse Landing residents will be high as this project is designed to satisfy a growing market — the consumer of housing located in areas near transit. Evidence of this demographic trend is well documented in *Hidden in Plain Sight: Capturing the Demand for Housing Near Transit*,[6] an extensive quantitative study of the growing demand for housing near transit. The future residents of Lighthouse Landing will be a self-selected portion of the population who are specifically drawn to this type of community.

According to *Hidden in Plain Sight,* the travel behavior of these residents is different from other commuters: "Transit ridership is much higher in regions with frequent service, high quality interconnections and wonderful, affordable places to live, work and play near transit stations."[7] This is an apt description of Lighthouse Landing.

Hidden in Plain Sight also points out that nationally, only 54 percent of residents living in transit zones commute by car. In the New York City region, with access to the nation's largest and most extensive transit system, only 36 percent of the residents living near

[3]Source: Moore, Ross. "Cost of Parking on the Rise for Third Consecutive Year". Colliers International; July 2006. http://www.colliers.com/Markets/USA/News/2006ParkingRelease

[4] Per Internal Revenue Service standard mileage rate for computing the deductible costs of operating an automobile for business (Revenue Procedure 2005-78).

[5] According to AAA, MapQuest, and Google Map websites, under ideal driving conditions the trip would take 40 minutes. Transportation specialists at the Voorhees Transportation Center indicate that precise real-time driving measures are not yet available (lack of adequate equipment to monitor conditions). However, they recommend doubling ideal driving times to approximate peak periods.

[6] The Center for Transit-Oriented Development. 2004. *Hidden in Plain Sight: Capturing the Demand for Housing Near Transit.* Oakland, CA: The Center for Transit-Oriented Development.

[7] p.10

transit commute by car while the remaining 64 percent rely on mass transit and non-motorized transportation.[8]

National studies confirm the high transit use by residents in transit areas. Lund, Cervero and Willson found:[9]

- Residents living near transit stations are five times more likely to commute by transit than those living in the same city without such transit proximity.
- Transit share was not sensitive to distance from the station if within reasonable walking distance of the station.

Research by Cervero et al adds further evidence of these findings: [10]

- They state that "simple bivariate regression plots reveal that among those living within a mile of a Bay Area rail stop, the '3Ds' of the built environment—density, diversity, and design—matter greatly. For the 129 Bay Area rail stations that were studied, a strong positive relationship was exhibited between shares of commutes by transit among station-area residents and each of the '3Ds'.... In general, year 2000 transit commute shares among those residing within a mile of a station rose with residential densities.... The likelihood that a Bay Area station-area resident commuted was 24.3 percent at densities of 10 units per gross acre. **Doubling densities to 20 units per acre increased the likelihood to 43.4 percent and quadrupling them to 40 units per acre catapulted the probability to 66.6 percent."**

  The same study reports that "residential densities within a mile of a station still matter when it comes to transit commuting among station-area residents. Controlling for other factors, every 10 additional units per gross acre (which on a net residential acre basis generally corresponds to 3 to 4 additional units) is associated with a 3.7 percent increase in transit commute modal shares. Of particular note, however, is the fact that density and design positively interact with each other. **That is, higher residential densities combined with small city blocks boost transit commuter usage up even higher.**

  Overall, the model (above) was a very good predictor, explaining over 90 percent of the variation in modal shares of transit commutes among neighborhoods surrounding the 129 Bay Area rail stations. **The results suggest that building housing around rail stops is positively associated with transit commuting; doing so at higher densities bumps up transit usage even more. Combining higher densities with a more walkable scale design of city streets and block patterns draws even larger shares of employed residents to transit.** In combination, these results underscore the importance of creating and redeveloping neighborhoods around rail stops that are transit-supportive in their designs.

[8] pp. 21 and 29

[9] Lund, Cervero & Willson. 2004. Travel Characteristics of Transit-Oriented Development in California. Oakland, CA: Bay Area Rapid Transit District and California Department of Transportation.pp. iii & iv.

[10] Cervero et al. 2004. Transit-Oriented Development in United States: Experiences, Challenges, and Prospect, TCRP Report 102. Transportation Research Board: Washington, D.C. pp. 148-152.

Earlier studies also give support to high transit ridership in areas near transit:

- Research from metropolitan Washington, D.C. and Toronto found transit capturing over half of all commute trips made by apartment dwellers living near (within 1/2-mile) rail stops (JHK and Associates 1987, 1989; Stringham, 1982).
- Another reason for high market shares in rail-served areas like Portland is "self-selection"—those with a predisposition to ride transit...consciously move to neighborhoods well-served by transit to economize on commuting (Gerston & Associates, 1995).
- A study of Santa Clara County's light rail corridor found residents living near transit used transit as their predominant commute mode more than five times as often as residents countywide; self-selection was evident in that 40 percent of the respondents who moved close to transit stops said they were influenced in their move by the presence of transit (Gerston & Associates, 1995).
- Studies suggest a "TOD impact zone" can be stretched considerably (as much as doubled by creating pleasant, interesting urban spaces and corridors" (Untermann, 1984).

These findings are impressive evidence for a high percentage of transit users at Lighthouse Landing. We feel that the projected 40 percent mass transit credit (reduction in weekday peak hour vehicular car trips among project residents) for the Lighthouse Landing project with a new station (see Exhibit A) is a minimum level. Local examples of new construction near transit suggest there will be a much higher usage rate:

Gaslight Commons
South Orange, New Jersey
The Gaslight Commons development was built in 2001. This 199-unit rental project is located in the Township of South Orange Village, a designated Transit Village.[11] Gaslight Commons offers 103 one-bedroom and 96 two-bedroom units with upscale amenities. However, the most significant attraction to residents is the accessibility to transit (0.3 miles from the station). NJ TRANSIT Mid-town direct train service to Penn Station is a 30–40 minute ride. Communications with the management of Gaslight Commons indicate that **65 percent** of the residents commute by rail and access to transit is the primary reason why they have chosen to live in the community.

River Place
Rahway, New Jersey
This is an upscale 136-rental project (65 one-bedroom and 71 two-bedroom units) built in 2005 in Rahway, also a Transit Village, and located 0.3 miles from the station. Train service is along the NJ TRANSIT Northeast Corridor line, 43 minutes from Penn Station,

[11] The Transit Village Initiative is a State of New Jersey program that seeks to revitalize and grow selected communities with transit as an anchor. Although the Transit Village Initiative is staffed and directed by the New Jersey Department of Transportation, a Task Force of representatives from several state agencies meets regularly to guide the Initiative. To date there are 17 designated Transit Villages.

New York City. The on-site rental agent indicated that **60–70 percent** of the residents, mostly 25–35 year-olds, commute to New York City by train.

Bank Street Commons
White Plains, New York
Bank Street Commons Apartments in White Plains, New York, is a $137 million project with 500 units of luxury residential housing (252 one-bedroom, 82 two-bedroom/one bath, and 168 two-bedroom/two bath units) in two towers located within a 3-minute walk of the Metro-North Railroad station. From here it is around a 30-minute ride to Manhattan's Grand Central Terminal. As an added benefit, the project is in walking distance to the Galleria at White Plains and other shopping opportunities. The first residents moved into the apartments in May 2003. A household survey conducted by management revealed that **50–60 percent** of residents commute by train.

Rail Usage Conclusion
The growing number of empty nesters and young professionals are the demand factors for developments located proximate to transit services. These households without children prefer higher density, mixed-use neighborhoods with mass transit connections. In addition, national research indicates that people living in areas close to a station are more likely to use transit, especially if the area is compact and walkable. These findings were supported in a review of new developments near transit in the New York/ New Jersey region that found that over 50 percent of residents use transit.

Shuttle Usage Research Findings

Shuttle buses or jitneys operate as feeders to the transit system. These services can allow for an intensified use of a fixed transit hub, such as a commuter rail station.[12] In situations where walking distances are more than a half-mile, walking conditions can become unpleasant or additional parking facilities close to a transit hub are unfeasible, such feeder service can provide an attractive option. In the case of the Lighthouse Landing residential community, a shuttle could overcome any issues of walking distance and conditions, and serve as a viable temporary or permanent alternative to an onsite rail station. Zupan and Pushkarev have shown that people will ride transit from beyond a half-mile distance provided they have good feeder service or bike access.[13]

Essentials of a Shuttle to Transit System
The usage of a shuttle to transit depends on reliability. Commuters need all parts of their commute to work as seamlessly as possible. The shuttle leg of the trip is no exception. Daily riders will only depend on the service if they can reasonably expect the service to be available to them on a regular basis and that the service is designed to work easily into the commuter's schedule.

[12] For an exhaustive review of shuttle descriptions and discussion on how they function see "Shuttle Services" in the Victoria Transport Policy Institute's TDM (Transportation Demand Management) Encyclopedia: http://www.vtpi.org/tdm/tdm39.htm
[13] Zupan, Jeffery and Boris Pushkarev. 1977. *Public Transportation and Land Use Policy*

In order to assure this, the daily rider needs to know that the shuttle will:

- be at the pickup location at the appointed time
- take a determined (short) amount of time to reach the destination
- arrive at the station at an appropriate time, 5–10 minutes prior to the train departure with enough time to get ticket, and perhaps, coffee and paper

Further, the return trip should be equally convenient. The shuttle should meet the evening commuter trains and return riders to morning pickup locations without delay.

Shuttle Issues

Length of trip — as the trip length grows, additional uncertainty is added to the system. Typically successful community jitney service operates within a five-mile radius of a transit station.

Number of stops — as the number of stops grows, passengers from early stops spend additional time on the shuttle and the chance for a delay along the route increases.

Number of vehicles — there should be a sufficient number of vehicles to meet needs based on ridership, length of trip, etc. Arrangements should be made for a substitute vehicle during maintenance and repair.

Size of vehicle — Most shuttle/jitney operations use 20 or 25-seat minibuses. All vehicles should be equipped for handicapped use.

Timing — Shuttle service should be scheduled to anticipate transit departure times. In the case when timing between trains does not allow time for multiple runs, connections to express service should be given priority.

Shuttle/Jitney Models

1. Community shuttles — initial sponsorship by transportation agency or transportation management association; community run or contracted to private operator; serves local feeder service to transit station
2. Employer shuttles from transit — typically provides transportation to suburban work locations for those commuting by transit
3. Enhanced paratransit — adding service to transit stations to existing paratransit systems, for use by people with disabilities and other underserved populations
4. Private shuttles — operated by private ownership for a specific group of residences as an amenity

There are times when a shuttle is actually more desirable than walking to a train station. In periods of inclement weather, especially when the pickup location is protected, commuters may be more inclined to utilize a shuttle than walk. Also, the quality of the walking experience affects its desirability. In cases where the streetscape is unpleasant

and/or is in an area of questionable safety, shuttle use is preferable, even when the trip is a walkable distance.

Existing Shuttle Service to Tarrytown Station
At the present time, two "shuttle" routes travel to/from the Tarrytown Station — the Westchester County Bee-line system's Loop T Shuttle and the Rockland County TAPPAN ZEExpress. Neither of these operates on the community shuttle or jitney model.

Briefly, the Bee-line's Loop T Shuttle provides service from the Tarrytown Station to suburban corporate locations. Amongst the corporate stops along the shuttle route are KRAFT/General Foods, Tarrytown Corporate Park, Marriott Courtyard Hotel and Bayer Corporation. The shuttle operates on weekdays with six morning and nine evening runs. When all stops are made, the trip takes more than a half hour and travels about seven miles. **Note:** ***A jitney from Lighthouse Landing to the Tarrytown station would allow residents to transfer to the Bee-Line shuttle service and reach several corporate locations by transit.*** The fare is $2 one way. Unitickets, discounted fares, are available to holders of weekly or monthly rail or bus passes.

The TAPPAN ZEExpress operates from the Spring Valley Transit Center in Rockland County and provides trans-Hudson connections to the Tarrytown station and White Plains Transit Center. The trip from Spring Valley to the Tarrytown station is about 13 miles and takes 50 minutes. It costs $1.50. ***Despite the fact that the shuttle is the second seat of a three or more seat trip and the considerable length of the trip, the Tappan ZEExpress has high daily ridership with 240 Uniticket commuters connecting to the Tarrytown station (2006).*** This demand reflects the superior quality of the train service to New York City from the Tarrytown station and the dearth of other transit options.

Other Shuttles — Metro-North
Many bus and/or feeder routes operate with connections to Metro-North railroad stations.[14] However, these routes do not function as shuttles or jitneys. While these routes do extend the availability of commuter rail service to a wider geographic area, they operate similarly to commuter bus service, with longer routes length and duration. Among the stations served are:
Brewster station (Harlem)
Katonah (Harlem)
White Plains station (Harlem)
Beacon station (Hudson)
Croton Falls station (Hudson)

Private Shuttle as an Amenity — Regional Examples

Dixon Mills, Jersey City, New Jersey

[14] See *You've Got Connections!*, a 2002 report by Ellyn Shannon and Katherine Brower for the Permanent Citizens Advisory Committee to the MTA about increasing shuttle bus services to the MTA railroads.

This is an adaptive re-use project (Dixon Crucible Company, maker of "Ticonderoga" pencils) opened in 1988. It is located in the Van Vorst Park section of Jersey City — a pleasant urban neighborhood of classic brownstones — approximately four/five blocks (0.4 mile) from City Hall and the PATH Grove Street Station. Dixon Mills has 467 rental apartments (primarily one- and two- bedroom units) with several different floor plans in four separate buildings on 12 acres of land. The population is mostly young professionals, 25–35 years old.

A shuttle service has been offered to residents of Dixon Mills since the development opened in 1988. Originally it was considered a *necessary amenity* for this luxury rental complex as the portions of the walk to transit were not pleasant. Today, the neighborhood has gentrified, but the shuttle is still necessary in order to compete with newer housing developments closer to transit. Unfortunately, Dixon Mills does not keep ridership data, but management indicated that ridership is significant and always goes up during inclement weather. This is a private service as opposed to a community service and is more representative of the proposed Lighthouse Landing shuttle to the Tarrytown and/or Philipse Manor station.

Dixon Mills operates a 25-seat handicapped equipped minibus both morning and evening from 6:00 to 9:30 AM and from 5:00 to 8:30 PM. The single route includes three stops within the Dixon Mills property and connects to the Grove Street PATH Station. The shuttle departs every 10 minutes. Riders of the Dixon Mills shuttle do not give significant thought to arrival time as frequent departure, short trip length and PATH service regularity (every 10 minutes from 5:30 to about 7 and every 4 to 5 minutes from 7 to 9:30 AM) virtually assures a transit connection. A second vehicle is parked on the property to serve as a backup.

It should be noted that not only can residents of Dixon Mills walk or take the shuttle to the PATH station, they can easily walk to the Jersey Avenue Hudson Bergen Light Rail (HBLR) station or take a bus. In addition, it's only a short distance (another 4–5 blocks) beyond the Grove Street Station to the waterfront highrise office buildings, a major employment center in Jersey City. While it is difficult to say what percentage of Dixon Mills residents use transit, they have many alternatives to driving to work.

Toll Brothers Properties, Hoboken and Jersey City

Offering shuttle service from residential developments to transit stations appears to be gaining in popularity. VTC polled management/sales representatives of large new developments along the New Jersey "Gold Coast".[15] Those interviewed indicated that such service is commonplace at larger properties which are at some distance from transit terminals. Toll Brothers has three major condominium properties along the waterfront: Hudson TEA and Maxwell Place in Hoboken and 700 Grove in Jersey City. These projects are not yet fully built out, but shuttle service is anticipated for all of them. Currently, from the first completed building at Hudson TEA a 20-passenger van makes the 10-minute, one-mile trip to the Hoboken Station between the hours of 6:30 AM to

[15] New Jersey's Gold Coast consists of contiguous communities on the west bank of the Hudson River, facing New York City, from Englewood Cliffs at the northern edge to Bayonne at the southern end.

9:30 AM and 5:00 PM to 8:00 PM. This shuttle service is paid out of the monthly condominium fees. Once again, management does not keep track of ridership, but the sales office observed that the evening drop-offs are high.[16] This building has 525 units (40 percent studio, 40 percent two-bedroom, and 20 percent one- and three-bedroom). The resident composition is mixed, but there are many young professionals commuting into New York City.

Port Imperial, New Jersey

North of the HBLR line as it turns west to Union City is a very large tract of old railroad yards (known as Port Imperial) that has been systematically developed over the last 10 years with high-end housing by Roseland Properties and K. Hovnanian Companies. The transit attraction for these units has been the New York Waterways ferry terminal with convenient service to mid-town and lower Manhattan. Since the beginning of 2006, residents can also choose to board the HBLR directly across from the ferry terminal. New York Waterways provides complementary shuttle bus service to the Port Imperial developments of Jacob/Bulls Ferry (Hovnanian townhomes, about one mile away) and Riverbend (Roseland Properties — multi-story rental units, about 0.5 miles away) from 5:30 AM to 10:30 AM in the morning and 4:30 PM to 9 PM at night.

Other Proposed Shuttles

Significant other private shuttle services include those planned for the Peninsula at Bayonne Harbor in New Jersey, a mixed-use waterfront community of residential light industrial, commercial and recreational space. This 430-acre tract, bordered on the west side by the HBLR, is currently the largest redevelopment effort underway in the metropolitan region. The master plan for the Peninsula places a high priority on connections to the light rail stations at 34th and 45th Streets and a proposed water connection to the rest of New York harbor. As a result, all developer agreements include the condition that regular shuttle service must be provided by the builder to nearby HBLR stations and a future ferry terminal (this distance could be up to a mile depending on the location of the development on the peninsula) until a public streetcar system is established.[17]

NJ TRANSIT Community Shuttle Program

One of the largest shuttle programs in the nation is run by NJ TRANSIT through its Community Shuttle program. Started in 1999, NJ TRANSIT provides a limited number of free minibuses and three years of decreasing funding to communities and county organizations.

Communities are chosen through a grant application process. Selected communities are given a 20-passenger mini-bus for their use to transport commuters to and from transit service. These vehicles are equipped with a wheelchair lift and two wheelchair securements, making them accessible to people with disabilities. Communities are

[16] Since sales and rental staff are not on site until after 9 AM, personnel at Hudson TEA and Dixon Mills could not comment on morning shuttle usage.

[17] Per discussion with Bayonne Local Redevelopment Authority.

allowed to use the vehicles for other community-based transportation services during off-peak hours and on weekends.

NJ TRANSIT does not require the community to administer the service themselves. Towns may choose to hire a private operator to manage their shuttle program and to maintain their vehicle(s). However, privately operated shuttle programs are a more expensive option as commercial shuttles must make a profit. Many communities operate their programs on a cost recovery model. Overall, NJ TRANSIT estimates that each community shuttle program has operational cost between $50,000 to 60,000 per vehicle per year.

Glen Ridge, New Jersey Jitney Bus

The most successful of the NJ TRANSIT Community Shuttle programs is operated in the borough of Glen Ridge, New Jersey, a small municipality with a 2005 estimated population of 7,020.[18] Glen Ridge is on the Montclair-Boonton Line with mid-town direct service to Penn Station, New York City (37 minutes). The town, 1.3 sq. miles in area, is composed largely of stately single-family detached homes with manicured lawns, mostly built in the early 20th century. The borough was awarded its first 20-passenger minibus in January 2002 and began operations three months later. The program was very quickly deemed a winner. A second vehicle was granted to the community and an additional route initiated in November of that year. The community continues operating the two routes free of charge for residents and for those non-residents who park in commuter lots. Each route makes 6 stops, traveling about two miles. The run of each route takes 8 or 10 minutes, respectively. Timing of the routes is keyed to train schedules, arriving 4 to 5 minutes prior to departure time of most trains and all express trains. Morning service begins at around 6 AM and finishes around 8:30 AM. Return trip service meets evening commuter trains and drops off at the same locations as morning pick up. Evening service runs from about 4 PM to after 7 PM. A single shuttle operates along the route for the first two and last run of the day.

As would be expected, since that the service is free to riders, usage of the shuttles has been excellent. In November 2005, the community reported an average 15.9 passengers per vehicle trip or a total of 6,663 passenger trips. Unfortunately, it is difficult to estimate the percentage of resident commuters that use the shuttle because the shuttle picks up at commuter parking lots that do allow non-resident parking (with permit).

Shuttle Research Conclusion

Much like the Dixon Mills, Hudson TEA and the Port Imperial cases, the proposed Lighthouse Landing shuttle is going to be privately operated as an amenity to commuting residents from a compact development with a very short ride to transit — almost a private taxi service. Our interviews with management representatives confirmed that residents value this convenience, particularly when carrying parcels and/or there are inclement weather conditions. While the NJ TRANSIT Community Shuttles described above may be considered successful, they are not really comparable to private shuttles — they serve larger, less dense suburban areas marked by single-family detached homes; they travel

[18] New Jersey State Data Center

farther with more stops; and, they compete with the travel patterns of households with multiple children that tend to trip-chain by car — dropping the commuter off or picking them up on the way to or from delivering children to school, sports, etc. However, they do represent good examples of implementation, addressing the issues that affect shuttle use.

Lighthouse Landing Transit Use

With New Train Station

The Lighthouse Landing development plan is a rich mix of housing types, office and retail use, restaurants, hotel, parks and pedestrian amenities. In addition, there is a proposal for a new Metro-North train station at the project site. A 550-space commuter parking lot would be constructed on the East Parcel to support ridership at the new station. Almost all of Lighthouse Landing would be within a quarter-mile of this station, easily accessible by walking (see Exhibit D). We have cited numerous national research studies showing that people living near transit are more likely to use it and local examples support this finding. Indeed, information from these new developments near rail stations showed transit usage rates well above 50 percent among residents.

Therefore, we believe that the projected 40 percent mass transit credit for Lighthouse Landing with an on-site station is not only reasonable, but will likely be higher.

Without New Station — Shuttle Service to Tarrytown and/or Philipse Manor Stations

As we stated earlier, being near superior transit service into New York City is going to be a tremendous draw for housing demand. If an on-site station is not built at Lighthouse Landing, the Applicant will provide a private shuttle from Lighthouse Landing to the Tarrytown station and/or Philipse Manor station (located approximately 0.7 miles south and 0.6 miles north, respectively of the center of the project Site) to facilitate transit ridership among project residents (see Exhibit B for a suggested shuttle route and stops). The Applicant is amenable to providing a covenant for the development to ensure such future shuttle operation without a new station. Given the planned reliability and convenience of the proposed shuttle service, very few Lighthouse Landing residents would be expected to drive to and park at the Tarrytown train station (and incur the non-resident parking permit cost of $950 annually).

As outlined in the Lighthouse Landing Traffic Study, without a new station, Lighthouse Landing shuttle bus trips to the Tarrytown train station would be completely localized along the east side of the railroad tracks using River Street, and therefore, would not add external vehicular traffic to intersections along Beekman Avenue or Route 9. In addition, as pointed out earlier, residents could even take the Lighthouse Landing shuttle to the Tarrytown station and connect with the Bee-line's Loop T shuttle for jobs in more suburban locations, further reducing car trips generated by the development.

The schedule for shuttle service will be established with consideration of project occupancy levels and Metro-North's train schedule. The shuttle hours of operation will initially be geared toward weekday morning and evening commuting hours, but service could be increased or varied as necessary to meet the changing needs of the residents. At

the present time, the Applicant envisions the shuttle bus operating on weekdays during the Metro-North weekday morning and afternoon peak fare periods, which extend from approximately 5:00 AM to 9:00 AM and from 5:00 PM to 9:00 PM. A nominal fee may be charged to project residents to ride the shuttle.[19] For off-peak needs, a local taxi service is readily available.

Finally, the potential of pedestrian access should not be underestimated. Some Lighthouse Landing residents will opt to walk to and from the existing Philipse Manor and Tarrytown stations if a new station is not constructed on-site. As illustrated by the yellow dashed lines in Exhibit C, project residents will be able to walk or bike 0.49 mile to and from the Philipse Manor station through Kingsland Point Park using the new park entry proposed in the northern section of the West Parcel. Residents will also be able to walk or bike from the vicinity of the proposed Village Green 0.55 miles to and from the Tarrytown station using River Road. We recommend that the Villages of Sleepy Hollow and Tarrytown review the pedestrian/bike connection from the new development to the nearby stations with an eye to promoting safety and enjoyment of the route. The distances to the Philipse Manor and Tarrytown stations are not so far that many health conscious individuals may prefer to walk or bike, especially in fair weather conditions. These are important connections that offer some redundancy in travel mode to transit. This recommendation also assumes that adequate provisions for bicycle storage are made at the Philipse Manor and/or Tarrytown stations and Metro-North should provide financial assistance for this.

In conclusion, we strongly feel that there will be very little, if any, reduction of the development's projected 40 percent mass transit credit (with a new station) if no station is built, and a well-run shuttle service to the existing stations is provided. We have shown that shuttles to transit stations are a popular amenity in other developments, particularly in inclement weather. Because a Lighthouse Landing resident who commutes to New York has only one alternative to taking the train — an expensive and time consuming drive — it is unlikely that a comfortable 10-minute shuttle ride to the Tarrytown or Philipse Manor station will act as a deterrent to using high quality train service into New York City. As stated previously, Westchester County Metro-North commuters are very much accustomed to driving to the closest train station with available parking or being dropped off at a train station if they are not within walking distance. Therefore, we believe that a 35 percent mass transit credit is a minimum level in this case (no new train station and shuttle service) and recommend that a credit equal to that used in the case of a new station(40 percent) is more appropriate.

Project Design Qualities

There are certain general characteristics that exemplify quality placemaking near transit. In 1993, Calthorpe set forth some basic descriptive principles:

- Organize growth on a regional level to be compact and transit-supportive;

[19] It should be pointed out that, although the private shuttle examples that have been cited indicate that there is "no charge" for shuttle use, residents do pay some amount indirectly through condominium fees or rents.

- Place commercial, housing, jobs, parks, and civic uses within walking distance of transit stops;
- Create pedestrian-friendly street networks which directly connect local destinations;
- Provide a mix of housing types, densities, and costs;
- Preserve sensitive habitat, riparian zones, and high quality open space;
- Make public spaces the focus of building orientation and neighborhood activity; and
- Encourage infill and redevelopment along transit corridors within existing neighborhoods. [20]

Over the years this rather long description has been abbreviated to: the ½-mile circle around a transit station with a mix of uses and compact development. The ½-mile limit is roughly the distance that most people are willing or able to walk. However, many people will only walk ¼-mile and some will walk more than ½-mile, particularly if the walk is pleasant and interesting. As noted previously, a "TOD impact zone" can be stretched considerably, as much as doubled, by creating pleasant, interesting urban spaces and corridors (Untermann, 1984).

Therefore, Dittmar and Poticha argue that a new definition is needed because different places function differently. They suggest a performance-based evaluation in light of specific goals:[21]

- Location efficiency — density, transit accessibility, pedestrian friendliness
- Rich mix of choices — activities, shopping, housing choices
- Value capture — frequent, high-quality transit service; good connections between transit and the community; community amenities; financial returns (increased property values and business activity)
- Place making — attractive and pedestrian-friendly places
- Resolution of the tension between node and place — traffic vs. quality of life

We reviewed the West Parcel of the FEIS Alternative Site Plan with an eye to the goals of a transit-proximate, performance-based development:

- Location efficiency — Lighthouse Landing has commendable density, and appears to be very pedestrian friendly with a generous amount of sidewalks and traffic calming features such as on-street parking, medians and short blocks. Exhibit D illustrates walkability from the proposed train station. Actual walking distances from locations in the development farthest from the proposed

[20] Peter Calthrope, *The Next American Metropolis,* p. 43.

[21] Hank Dittmar and Shelley Poticha, Defining Transit-Oriented Development: The New Regional Building Block in Hank Dittmar and Gloria Ohland, *The New Transit Town*, pp. 22–32.

station were computed, and it can be seen that all of the development is within a ½-mile pedshed.[22]

- Rich mix of choices — internal amenities of pool and tennis courts coupled with access to Kingsland Point Park and the proposed water activities should provide residents with plenty of recreational opportunities. It appears that there will be adequate space for shopping basics (food market) and convenience services such as banking, dry cleaning, nail and hair salon, café etc., as well as specialty stores and restaurants. There is ample choice in housing types (townhomes, flats, lofts) with a mix of target residents with varying incomes.

- Value capture — as discussed previously, even without an on-site station, a well-run shuttle to the Tarrytown and/or Philipse Manor stations will provide the "convenient connection" between Lighthouse Landing and high quality transit service, thereby providing the site with a valuable transportation asset. In addition, the development will host a variety of amenities — recreation, shopping, hotel, restaurants, theater and office space. The results should be a lively, fun place to live and visit, enhancing property values and business activity.

- Place making — the design elements appear to be attractive, human scale and pedestrian-friendly. There is adequate, well-placed open space. The hotel plaza area with spectacular views of the river and lighthouse should become a popular destination point, along with the concomitant recreation features of the waterfront park.

- Resolution of the tension between node and place — Because the proposed station is at the periphery of the development (see Exhibit A), within easy walking distance for residents, and commuter parking is not contiguous to the residential and shopping areas, it appears that there will be minimal conflict between the transit node and the quality of life at Lighthouse Landing. Platform design, stairs leading from Beekman Avenue, pedestrian overpass, and drop-off areas have been planned to optimize transit availability and convenience. (Note: there will be some increased traffic along Beekman Avenue if a commuter lot is built.)

After reviewing the FEIS Alternative Site Plan and *Volume 1: Narrative*, we feel that the proposed Lighthouse Landing is a well-designed project, located proximate to commuter rail services. To further enhance the project's compact, pedestrian-friendly design, a number of easily implemented measures are recommended.

If a rail station and commuter lot should be built as indicated on Exhibit A:

- To assist arriving passengers unfamiliar with Lighthouse Landing, map signage indicating the best route to various destinations within the site is recommended.

[22] A pedshed represents the actual walking distance from a location.

- Also, in this station plaza area there will most likely be some pick-up and drop-off activity. It should be clear to the pedestrian — with painted crosswalks or distinctive pavers — where to safely cross to the sidewalk along Building I or A, or to the green median (if there is to be a sidewalk through the middle of the green area) with continued safe crossing at Road 4.
- We suggest using the proposed commuter lot for supplementary activities on weekends, such a farmer's market, to give more life to the area.

Other Site Recommendations

Bicycle racks should be provided in a variety of places around the project (recreation areas, food market, in the "doughnut" parking areas behind the retail, train station) to encourage people to use this form of transportation and leave their cars at home.


LEGEND
RESIDENTIAL - TOWNHOUSES
RESIDENTIAL - APARTMENT BUILDINGS
R RENTAL
C CONDO
SC SENIOR CONDO
RETAIL
MIXED USE (RESIDENTIAL ABOVE RETAIL)
OFFICE
HOTEL
LL RESIDENTS' COMMUNITY BUILDING
OPEN SPACE
PHILIPSBURG MANOR RESTORATION
BARNHART PARK
VILLAGE DPW YARD
SOUTH PARCEL
SCHABOO'S LANDING
EAST PARCEL
AREA FOR OTHER VILLAGE USES
COMMUTER/RESIDENT PARKING
TENNIS COURTS
SOCCER FIELDS
POCANTICO RIVER
METRO-NORTH RAILROAD TRACKS
DEVRIES PARK
WEST PARCEL
HUDSON RIVER
APPROXIMATE LOCATION OF FEDERAL NAVIGATION CHANNEL
LIGHTHOUSE
KINGSLAND POINT PARK
HUDSON RIVER
GM
ROSELAND
0
275
550
RTKL
FEIS ALTERNATIVE PLAN - LAND USE PLAN
LIGHTHOUSE LANDING AT SLEEPY HOLLOW
SLEEPY HOLLOW, NEW YORK
FEIS FIGURE NO. II-1

EXHIBIT A

EXHIBIT B

● Suggested Lighthouse Landing Shuttle Route

US ROUTE 9
VILLAGE OF SLEEPY HOLLOW
VILLAGE OF TARRYTOWN
US ROUTE 9
MAIN STREET
BEEKMAN AVENUE
TARRYTOWN STATION
2,900' (0.55 MI)
BARNHART PARK
PHILIPSE MANOR STATION
DEVRIES PARK
METRO-NORTH RAILROAD
2,586' (0.49 MI)
KINGSLAND POINT PARK
HUDSON RIVER
SOURCE: EARTHATTRIBUTES
DATE OF PHOTOGRAPH: APRIL 24, 2000
TRAIN STATION WALKING DISTANCES
LIGHTHOUSE LANDING AT SLEEPY HOLLOW
SLEEPY HOLLOW, NEW YORK
04/25/06

EXHIBIT C

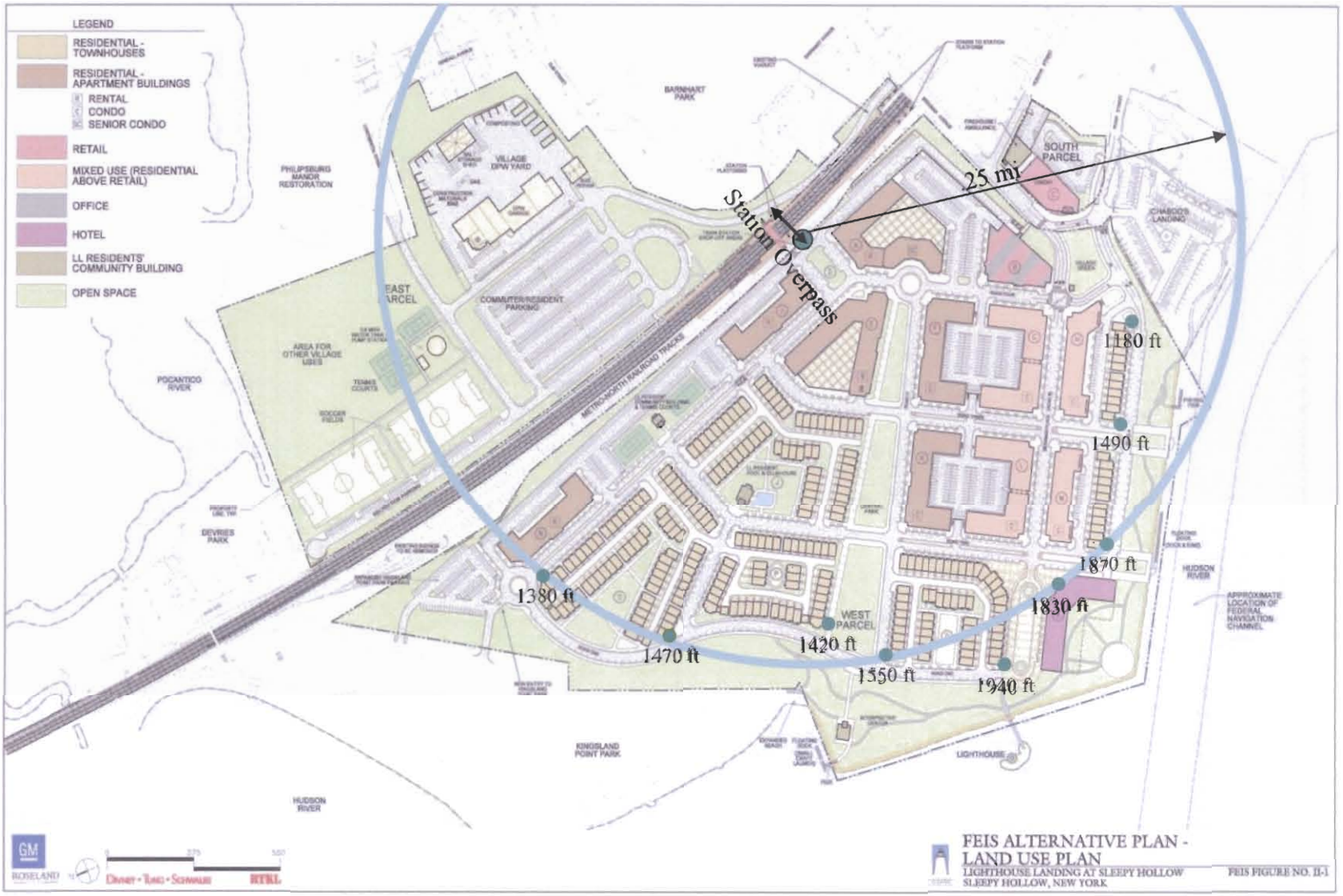

EXHIBIT D

● Walking Distance from Proposed Rail Station
(For reference—¼ mile = 1320 ft, ⅓ mile = 1760 ft, ½ mile = 2640 ft)

References

Calthrope, Peter. 1993. *The Next American Metropolis* New York: Princeton.

Cervero, Robert. 1994. Transit-Based Housing in California: Evidence on Ridership Impacts. *Transport Policy* 3: 174-183. As cited in Transit Cooperative Research Program. 2002, October. *Research Results Digest, Transit-Oriented Development and Joint Development in the United States: A Literature Review* 52.

Cervero et al. 2004. *Transit-Oriented Development in United States: Experiences, Challenges, and Prospect* TCRP Report 102. Transportation Research Board: Washington, D.C.

Dittmar, Hank and Shelley Poticha. 2004. Defining Transit-Oriented Development: The New Regional Building Block. In Hank Dittmar and Gloria Ohland, Eds. *The New Transit Town: Best Practices in Transit-Oriented Development* Washington, D.C.: Island Press.

Gerston & Associates. 1995. *Transit-Based Housing* San Jose, Santa Clara County Transportation Agency and the Santa Clara Valley Manufacturing Group. As cited in Transit Cooperative Research Program. 2002, October. *Research Results Digest, Transit-Oriented Development and Joint Development in the United States: A Literature Review* 52.

JHK and Associates. 1987. *Development-Related Survey I* Washington, D.C.: Washington Metropolitan Area Transit Authority. As cited in Transit Cooperative Research Program. 2002, October. *Research Results Digest, Transit-Oriented Development and Joint Development in the United States: A Literature Review* 52.

JHK and Associates. 1989. *Development-Related Survey II* Washington, D.C.: Washington Metropolitan Area Transit Authority. As cited in Transit Cooperative Research Program. 2002, October. *Research Results Digest, Transit-Oriented Development and Joint Development in the United States: A Literature Review* 52.

Lund, Holly M., Cervero, Robert, & Richard W. Willson. 2004. *Travel Characteristics of Transit-Oriented Development in California.* Oakland, CA: Bay Area Rapid Transit District and California Department of Transportation.

Saccardi & Schiff, Inc. *Sleepy Hollow Waterfront Linkage Study* White Plains, NY

Shannon, Ellyn & Katherine Brower. 2002. You've Got Connections!: Increasing Shuttle Bus Services To The MTA RailRoads. Permanent Citizens Advisory Committee to the MTA: New York, NY.

Stringham, M. 1982. Travel Behavior Associated with Land Uses Adjacent to Rapid Transit Sections. *ITE Journal* 52 (1): 18-22. As cited in Lund, Holly M., Cervero, Robert, & Richard W. Willson. 2004. *Travel Characteristics of Transit-Oriented Development in California.* Oakland, CA: Bay Area Rapid Transit District and California Department of Transportation.

NY State DOT, Thruway Authority, & MTA Metro-North Railroad. 2006, January. *Tappen Zee Bridge, I287/Environmental Review Alternatives Analysis Report.*

The Center for Transit-Oriented Development. 2004. *Hidden in Plain Sight: Capturing the Demand for Housing Near Transit.* Oakland, CA: The Center for Transit-Oriented Development.

Transit Cooperative Research Program. 2002, October. *Research Results Digest, Transit-Oriented Development and Joint Development in the United States: A Literature Review* 52.

Turnbull, Katherine F. 2004, July–August. Transportation Partnerships in the Parks. *TR News* 233, 14-23.

Untermann, Richard K. 1984 *Accommodating the Pedestrian: Adapting Towns and Neighborhoods for Walking and Bicycling* New York: Van Nostrand Reinhold.

Zupan, Jeffery and Boris Pushkarev. 1977. *Public Transportation and Land Use Policy.* Bloomington: Indiana University Press. As cited in The Center for Transit-Oriented Development. 2004. *Hidden in Plain Sight: Capturing the Demand for Housing Near Transit.* Oakland, CA: The Center for Transit-Oriented Development.