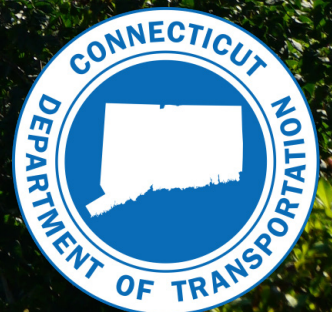


# Feasibility Study

## Shore Line East Station Stop in Niantic, Connecticut

July 2021

The Connecticut Department of Transportation (CTDOT) conducted this Niantic Station Feasibility Study to evaluate the potential for developing a new passenger rail station in the Niantic Village of East Lyme, Connecticut. This is a final report. An electronic copy of this report and appendices are available on the CTDOT's Transportation Studies webpage at [https://portal.ct.gov/DOT/PP\\_Bureau/Transportation-Studies](https://portal.ct.gov/DOT/PP_Bureau/Transportation-Studies).



*This page is intentionally left blank*

**Feasibility Study**

**Shore line East Station Station Stop in Niantic Connecticut**

**Pursuant to June Special Session, Public Act No. 15-1, Section 233.**

**For:**

**Connecticut Department of Transportation**

**2800 Berlin Turnpike**

**Newington, CT 06131-7546**

**Attention: Richard Andreski, Bureau Chief of Public Transportation**

**Prepared by:**

**AECOM**

**Rocky Hill, Connecticut**

**Summary of Results:**

Due to a combination of physical, operational, environmental and developmental limitations, none of the station alternatives evaluated as part of this study are viable at this time. A station stop in Niantic is not recommended.

# Table of Contents

1 - Executive Summary .....	5
2 - Introduction .....	9
3 - Existing Conditions of Study Area .....	12
4 - Market and Employment Conditions .....	19
5 - Corridor Capacity Analysis .....	25
6 - Ridership Data Overview .....	29
7 - Individual Site Analyses .....	32
8 - Traffic Analysis.....	40
9 - Transit Oriented Development Assessment.....	49
10 - Scoring of Conceptual Station Alternatives .....	56
11 - Conclusion .....	61

# 1 - Executive Summary





## Study Background

The Connecticut Department of Transportation (CTDOT) conducted this planning feasibility study to evaluate the potential for developing a new passenger rail station in the Niantic Village of East Lyme, Connecticut. Interest for a new station in Niantic first emerged in 2005 at an East Lyme community workshop which listed re-establishing rail service as a key long-term goal for the Town. Over the course of the next decade, as CTDOT continued to make investments in existing Shore Line East (SLE) stations, the State also examined potential locations for a new station within Niantic, which led to the identification of four potential sites for further evaluation: Rocky Neck State Park Pavilion, Rocky Neck State Park Main Beach, Hole-in-the-Wall, and Cini Park. A CTDOT report<sup>1</sup> introducing these four locations was developed in early 2012, which set the stage for a more comprehensive and technical investigation of the potential for reestablishing rail passenger service to and from Niantic.

In 2015, the State Legislature authorized funding to analyze the feasibility of a Niantic station stop on the Shore Line East (SLE).<sup>2</sup> This

report presents the results of that feasibility assessment. It addresses the four locations originally identified in 2012 plus two more conceptual sites - the Historic Niantic Station location and Columbus Avenue, which were added by CTDOT after further site reviews.

## Approach

The feasibility of a new station in Niantic is assessed using a wide range of critical evaluation criteria, including commuting patterns, demographics, market conditions, environmental impacts, physical constraints, rail operations and constructability. The evaluation of individual sites also assume the application of relevant CTDOT and Amtrak standards which include but are not limited to providing at least 200 dedicated vehicle parking spaces on site or within the vicinity of the rail station; inbound and outbound platforms that are 200 to 300 feet in length and accessible to all potential passengers (consistent with federal requirements outlined in the Americans with Disabilities Act); and avoiding siting a station along a curve in excess of 1 degree.

In addition, due to the study area location along the busy Northeast rail corridor, any station to be considered must include passing sidings to avoid impacting existing service on the Corridor. As part of this study Amtrak also requested that the

1 Niantic Shore Line East Railroad Station: Pursuant to Public Act 11-256, Section 44. Connecticut Department of Transportation, February 2012.

2 [June Special Session, Public Act No. 15-1, Section 233](#)

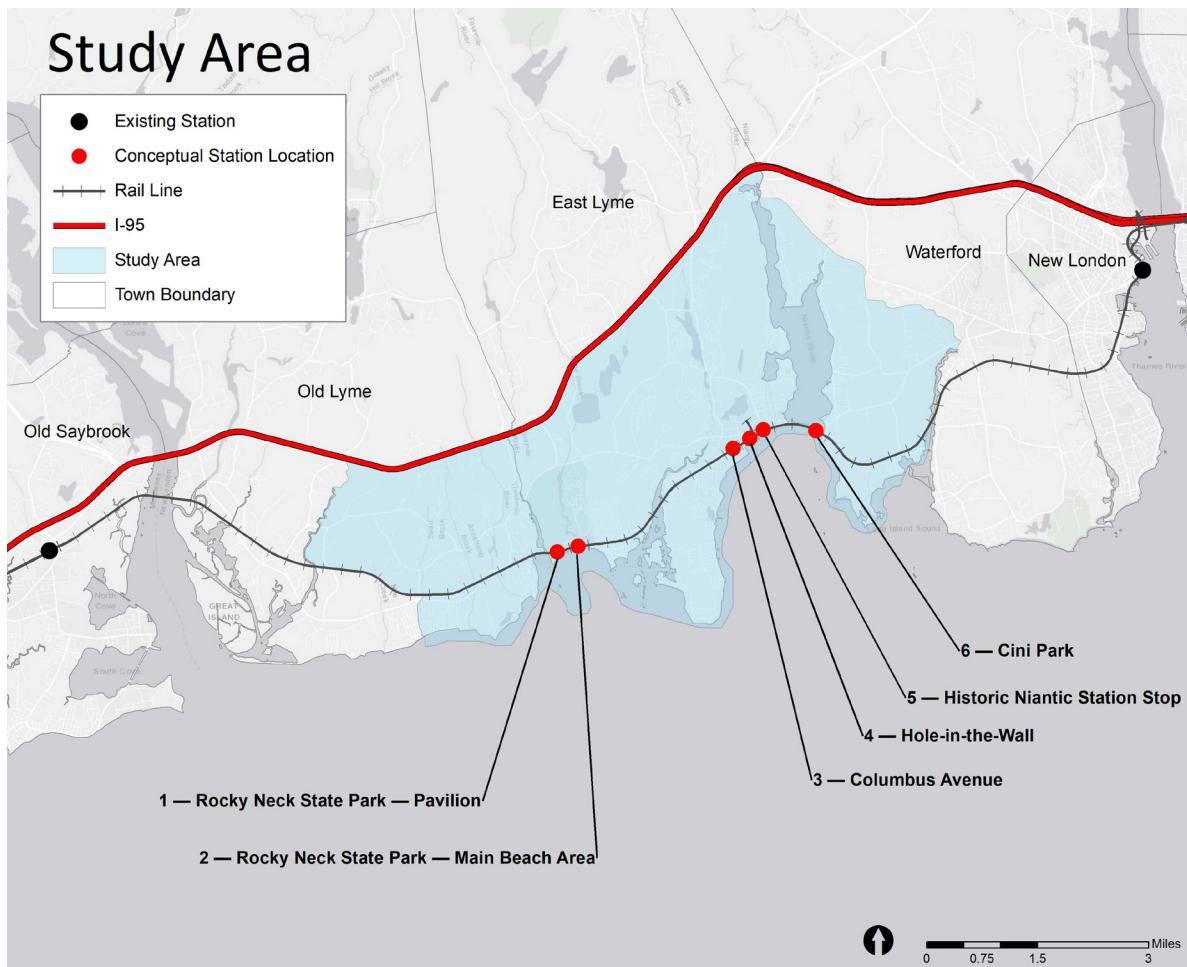


Figure 1 - Study Area

State perform a capacity analysis to determine whether there would be any impacts to existing and future Amtrak service if a new SLE station is added in Niantic.

use, development potential, and cultural and historic factors that would directly impact the placement of a station at any of the six potential sites reviewed.

## Study Area

The Niantic station stop study area outlined in this report (Figure 1) is defined by census block group boundaries adjacent to and containing the six station locations evaluated, with the northern border following I-95 along the length of the study area. For this reason, portions of Old Lyme and Waterford are included, while areas north of I-95 within the Town of East Lyme are not. This area was defined to address portions of the community in closest proximity to the station locations evaluated and highlight areas of likely users. Within this broader analysis boundary, the study used ¼ mile and ½ mile buffers to evaluate environmental factors, zoning, land-

## Key Findings

The results of this study, summarized in Figure 2, identify several key findings, listed below, that point to poor or limited viability for siting a station in Niantic:

- **Low Projected Ridership** - The most significant finding is the low projected ridership a new Niantic station would likely generate. This key finding is based on existing demographics, journey to work travel patterns, and ridership forecasts for a projected startup year of 2025, which estimates only about 100 - 110 people would utilize the station on an average weekday and

only about 40 - 50 on an average weekend day. These ridership projections are substantially lower than other existing SLE stations. Going out to the 2045 design year, additional riders are projected but still well below projections for other existing SLE stations. These low ridership estimates significantly diminish the merits of constructing a new station in Niantic.

- **Commuters Travel Short Distances**

- While Niantic is a net exporter of workers, most trips are auto-centric and short in nature, with more than 50% of commuters traveling to New London or Groton, less than six miles away. Typical rail commute patterns demonstrate passengers use SLE for distances greater than approximately 17 miles<sup>3</sup>. For shorter trip distances, a combination of personal auto, shared auto, bus transit service, biking and walking are proven to be more convenient and effective.

- **Limited Rail Service and Connections**

While a corridor capacity analysis conducted as part of this study shows there could be capacity for a new Niantic station, the frequency of service and connections to other services would likely be limited under current Northeast Corridor rail traffic conditions. Amtrak is not likely to provide service to a potential station in Niantic. Thus, a station in this community becomes less desirable and would force transfers for riders heading east and west to link up with other services.

- **Limited Development Potential** - A transit-oriented development (TOD) assessment conducted within the study area revealed limited potential for transit-supportive development within the half-mile radius of a potential station. This is primarily due to lack of adequate population, housing, and employment densities, limited available land-use surrounding sites, inhibitive zoning

Rocky Neck State Park: Pavilion



Rocky Neck State Park: Main Beach



Columbus Avenue



Hole-in-the-Wall



Historic Niantic Station



Cini Park



**Figure 2 - Conceptual Site Favorabilities**

regulations, and the seasonal nature of retail and commercial activity.

- **Significant Site Constraints** - All sites would be complex and expensive to build. Most sites would not be feasible based on numerous physical site constraints as well as not meeting CTDOT and Amtrak standards for parking, platform size, cross-platform access and passing sidings without costly engineering solutions and likely property takings. In addition, many sites would involve mitigation of numerous environmental impacts and re-zoning or re-building the surrounding areas to support a station.

## Conclusion

**Based on the analysis performed in this study, a station stop in Niantic is not recommended.**

This analysis shows that due to a combination of physical, operational, environmental, and developmental limitations, none of the station alternatives evaluated are considered viable. For the reasons outlined above, priorities should be maintaining a state of good repair and optimizing rail service for the existing stations on the SLE while also looking at opportunities to improve and address other transportation needs within the study area.



## 2 - Introduction



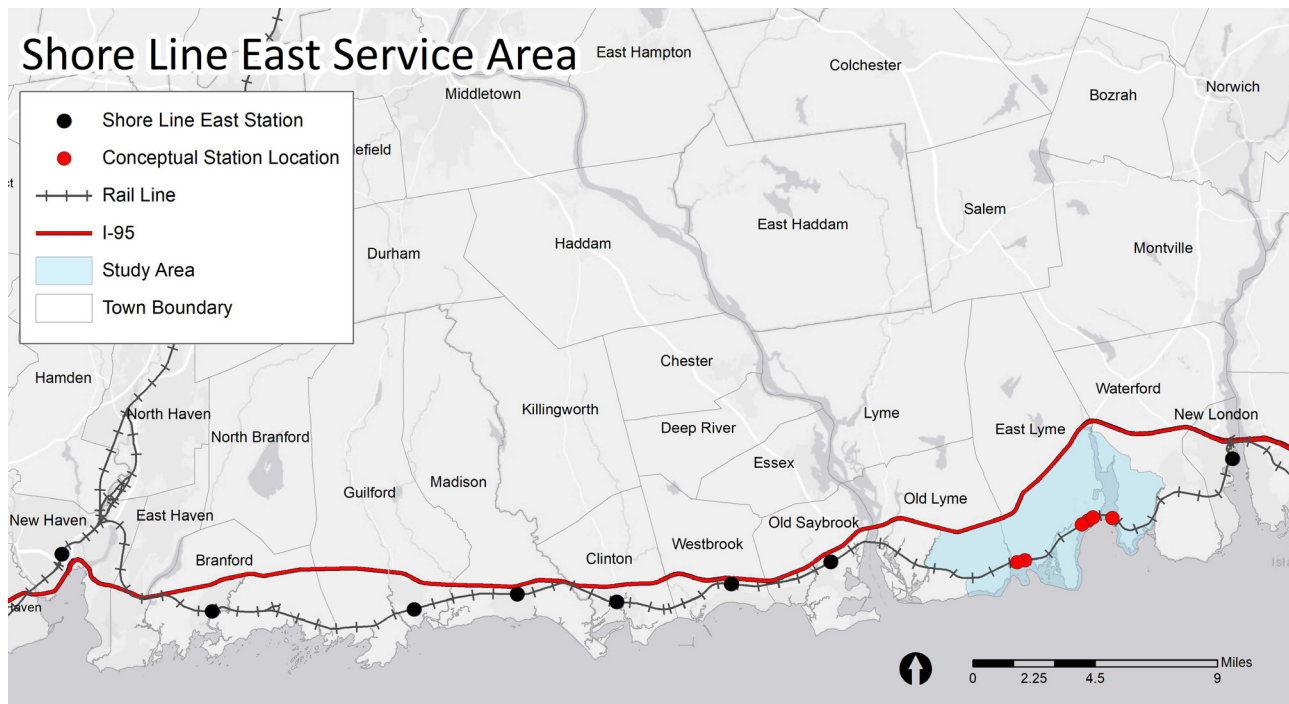


Figure 3 - Shore Line East service area

## COVID-19

The information provided in this document, including demographic and employment characteristics, as well as information regarding the operation of transportation and transit systems reflect data prior to the outbreak of the COVID-19 pandemic. Although much of the data gathering and analysis was conducted pre-COVID, the research and results are still applicable and are supportive of the perspective and outcomes of the study. In addition, while there may be unknown long-term changes to the transportation system associated with the pandemic, this study presumes that within a 5-10-year period, current employment, ridership numbers and service levels are expected to rebound.

## Rail Service History

Passenger rail service in Niantic began in the 1850s and continued intermittently into the 1970s and early 1980s as part of several different rail lines before it was ultimately discontinued, and Amtrak was given control over the intercity rail service. In 1990, CTDOT established the SLE

railroad to serve commuters of southeastern Connecticut (supplementing the existing Amtrak regional service), providing rail service in seven communities (excluding Niantic) between New Haven and Old Saybrook. In 1996 SLE was extended to New London. The SLE service, operated for CTDOT by Amtrak stands as an important transportation link for commuters along the coast. However, SLE service is limited east of the Connecticut River, with the only stop east of Old Saybrook being New London. Figure 3 depicts a map of the study area with the conceptual station locations as well as the Shore Line East service area with all existing stops.

In the years prior to COVID-19, SLE carried an average of approximately 2,000 weekday passengers. According to a 2019 SLE customer satisfaction study<sup>4</sup>, 37.1% of customers reported using SLE four to five days per week. Looking at combined weekday and weekend ridership, a little over one-half (50.8%) of customers utilized SLE for their work commutes, while 34% utilized the line for social or recreational activities, 7.3% used the line for "Business", 3.6% used the line

<sup>4</sup> Shore Line East Customer Satisfaction Study, CTrail. April 2019.

to commute to and from school, and 4.4% used SLE for “Other” trip purposes. These numbers change dramatically when looking at weekday and weekend ridership separately. About 70% of customers rode SLE during weekdays compared to approximately 30% using SLE on the weekend. Work commutes comprised 66.4% of all commutes for weekday customers, compared to only 12.8% among weekend customers. Nearly three quarters of weekend customers (73.3%) indicated that social or recreational activities were the purpose of their trip.

## Assumptions

This feasibility study assumes the application of relevant CTDOT and Amtrak standards (as well as additional assessment criteria), which would have to be met to move forward with the passenger station planning process. These criteria include:

- Any station alternative must have a target value of at least 200 dedicated vehicle parking spaces either on site or in proximity of the station site.<sup>5</sup>
- Any station must include separate inbound and outbound platforms between 200 feet and 300 feet in length with grade separated cross track accessibility designed for all prospective passengers, and meet all federal standards outlined in the Americans with Disabilities Act (ADA). An up and over structure (or pedestrian tunnel) may be required.
- The platforms for any station should not be placed along a curve over 1° due to the potential for an unsafe train-platform gap.
- To meet Amtrak’s requirements for limiting impacts to their operations, any alternative must include passing sidings.

<sup>5</sup> For parking capacity, 200 is a target value, not a hard minimum. It provides a good basis for siting a station and is based on the assumption that if a station is viable, that 200 spaces will eventually be required. In addition to Branford, Old Saybrook, and New London which all have 200 spaces or more, Guilford and Madison are close to the 200-space target. Clinton will add parking when the north lot is opened.

- Prior to the addition of a new stop along SLE, Amtrak has requested a capacity analysis be conducted to determine whether there would be any impacts to existing and future Amtrak service.

## Assessment Criteria

Each of the six sites assessed as part of this study were evaluated based on a set of specific market and development, as well as physical and environmental indicators, which include:

- Commuter potential
- Residential and employment density
- Proximal supportive land use and zoning
- Developable land
- Proximity to town center
- Existing multimodal access in the area
- Cross platform accessibility
- Site ownership
- Parking potential
- Level of effort required to construct a station
- Roadway impact
- Ease of access
- Flooding and storm surge inundation
- Impact to drinking water resources
- Impact to wetlands
- Impact to protected species
- Impact to historical resources
- Impact to parks

This assessment also includes insights gathered through field visits to build upon data derived from the Connecticut Department of Energy and Environmental Protection (DEEP), the United States Census Bureau’s American Community Survey (ACS), Connecticut Environmental Conditions Online (CT ECO), and the Town of East Lyme, as well as validation of conditions assessed through geographic information systems (GIS) analysis.

# 3 - Existing Conditions of Study Area



## Background Information

Observing some of the natural characteristics of the study area reveals potential environmental limitations for siting a new rail passenger station. Located in the Town of East Lyme, the Village of Niantic is a small coastal community with direct frontage on the Long Island Sound, and while there is varying topography, most of the land is close to sea level. This proximity has implications for the village's coastal resiliency, with storm surge and flooding posing a potential risk to some of the station site alternatives. Niantic is also host to several protected coastal species, and portions of land around the different station sites evaluated are protected from development, to conserve habitats for these species.

## General Environmental Conditions

The following section reviews the general environmental and physical conditions across the study area that could be impacted by the addition of a new Niantic rail station. Key environmental areas considered include: geology and surficial materials, storm surge inundation and flooding, water quality, wetlands, natural diversity database (NDDDB) areas, topography, and conserved land. Maps displaying these environmental conditions can be found in Appendix 4.

### Geology and Surficial Materials

Surficial materials at all six sites evaluated are generally composed of sandy soils, or sandy soils mixed with gravel; this is due to their proximity to the Long Island Sound. The geology varies at the sites: Rocky Neck State Park- Pavilion, the western-most site sits on gneissic granite; Rocky Neck State Park-Main Beach Area is located on quartz; the four eastern-most sites are located on the Tatnic Hill Formation, which is made up of schist and gneiss. These findings reveal nothing abnormal in terms of constructability, although the steep slopes at some of these sites could result in more complex construction. Further analysis,

including core sampling would be needed to fully understand potential impacts with a given site.

### Storm Surge Inundation and Flooding

Much of the Niantic coastline is prone to flooding and storm surge inundation. The area encompassing Rocky Neck State Park is particularly prone to flooding due to its low elevation and lack of mitigation measures. Much of the eastern portion of the Niantic coast, however, is protected by some form of breakwall, which serves to limit erosion and makes it more difficult for flood waters to penetrate. With this said, areas further inland are typically better protected than areas within 200 feet of the coast. Most of the conceptual sites that were assessed are within 200 feet of the coast except for Rocky Neck State Park Pavilion and Columbus Avenue, which are approximately 500 feet and 1,000 feet from the coast, respectively.

### Water Quality

DEEP has classified the groundwater that falls within the highly developed eastern portion of the study area as 'May be Impaired', meaning that the quality of the ground water does not meet the assigned standards for consumption<sup>6</sup>. The majority of the western portion of the study area, which largely falls within a state park, contains groundwater that has been designated as "Potential Water Supply, Suitable for Consumption Without Treatment". Impacts to water quality are less of a concern for much of the study area. There is a small lake adjacent to Route 161 (Pennsylvania Avenue) which does not contribute to the public water supply. Given the existing development surrounding this body of water, it is unlikely that the siting of a rail passenger station would have any adverse effects on the water quality.

---

<sup>6</sup> The data source for this ground water classification files provided by DEEP.

## Wetlands

Wetlands and tidal wetlands exist sporadically throughout Niantic and generally occur in lower lying areas that interface with a broader body of water. There are few wetlands in the eastern portion of Niantic, particularly close to developed areas. Further west are several river or stream systems that are host to wetland systems. This could be an area of possible concern for the two sites evaluated within Rocky Neck State Park. While neither of these sites is located within a wetland, they are both in close proximity to wetlands and are potentially within upland review areas.

## Natural Diversity Database (NDDDB)

Much of the Niantic coastline is classified as a Natural Diversity Database (NDDDB) area. Any NEPA process for siting a rail station within this area requires coordination with DEEP to identify the potential presence of listed species, including threatened, endangered and species of special concern. According to Information for Planning and Consultation (IPaC) mapping from the U.S. Fish and Wildlife Service, there are five endangered species within the study area. These species include the Northern Long-Eared Bat for mammals, the Piping Plover, Red Knot, and Roseate Tern for birds, and the Small Whorled Pogonia for flowering plants. These species would need to be accounted for with the construction and operation of a station stop within the study area.

## Topography

Topography varies throughout the study area, although the majority of the land is generally close to sea level. Topographic concerns principally relate to the rail bed alignment which generally runs above or below grade level, meaning that the rail bed is either above surrounding topography or depressed in topography. Either of these conditions could impact costs and operation of a rail station stop in Niantic due to the need for terracing, filling, or earth removal, depending on the location and scenario.

## Conserved Land

For the purpose of this study conserved land is any land, publicly or privately held, that is protected from development and generally accessible to the public. This includes, but may not be limited to, municipal parks or open space, state parks or forests, playing fields, and private open space or national wildlife refuges. Throughout the study area there is a broad assortment of conserved lands, several of which abut or contain one or more of the evaluated locations.

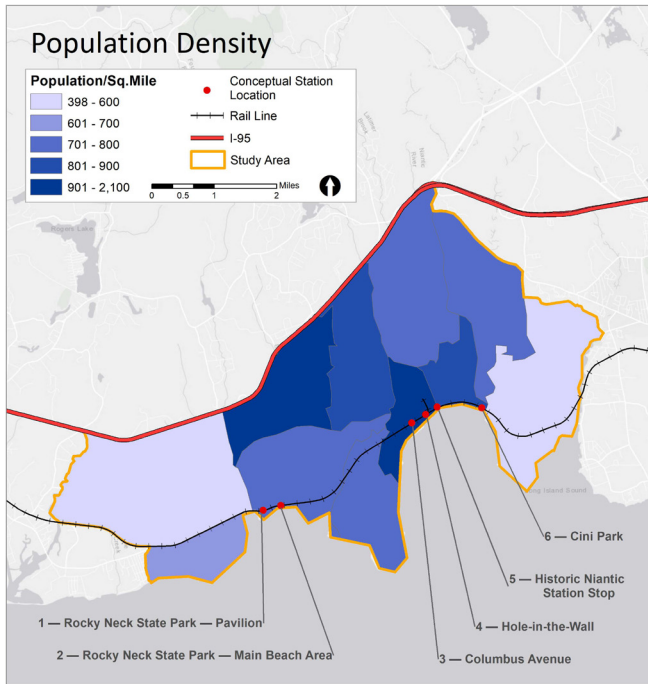
## Demographic and Market Conditions

The demographic conditions of the study area are key to understanding whether and how a passenger rail station could either support or be supported by the surrounding community. For rail to attract passengers, stations need to service the commuting needs of those living in or working in the community. Successful stations are typically located in rail communities that have high population, housing, and employment densities; strong market and transit-supportive development conditions, walkability around stations; and adequate bus transit or other last mile transportation options.

This section references data from a variety of sources including the ACS 2015-2019 five-year estimate, the 2017 Longitudinal Employer-Household Dynamics (LEHD)<sup>7</sup>, and the American Public Transportation Association's (APTA) 2017 report "Who Rides Public Transportation"<sup>8</sup>, which analyzes passenger demographics and travel data collected from respondents representing 163 transit systems nationwide (herein referred to as the APTA Passenger Report).

<sup>7</sup> It is important to note that these datasets come with certain caveats and limitations. For example, while the ACS data is available at the smaller block group geography, it has a relatively high margin of error and covers topics as reported by residents (e.g. by where people live). Conversely, LEHD uses administrative records from employers; however, it excludes some employment categories (e.g. self-employed, military, etc.).

<sup>8</sup> Who Rides Public Transportation: Passenger Demographics & Travel, APTA. January 2017.



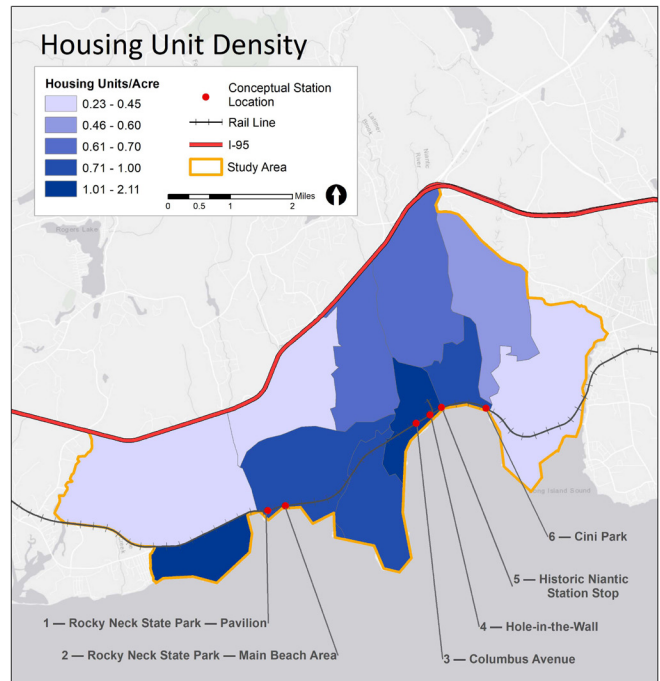
**Figure 4 - <No data from link>**

## Population Density

The correlation between transit usage and population density is well known – areas with higher density often have higher levels of transit ridership and areas with lower density often have lower levels of transit ridership. While it is difficult to set thresholds for population densities that correlate to certain transit modes, density around existing SLE and New Haven Line (NHL) stations may provide some guidance. Currently, density around SLE stations is greater than 1,000 people per square mile at all locations except Madison, at 920 people per square mile, and Westbrook, at about 700 people per square mile. Between New Haven and the New York State line along Metro North’s New Haven Line (NHL), the average population density surrounding each station is greater than 2,500 people per square mile, with a higher end of around 10,500 in Stamford. The population density within the Niantic Station study area shown in Figure 4, is about 760 people per square mile, with the densest pockets located within the village center, as illustrated in Figure 4. While the eastern site alternatives have a higher population density compared to the western sites, the overall population density throughout the study area is lower compared to many other rail communities in Connecticut.

## Housing Unit Density

A 2014 Federal Transit Administration (FTA) report<sup>9</sup> uses dwelling units per acre as a measure to determine adequate density to support commuter rail transit. According to the report, the area surrounding a commuter rail station should have a density of 25-35 housing units per acre. According to ACS 2015-2019 five-year estimate housing unit data for the study area, housing unit densities fall well below the 25-35 range determined by the FTA, with a high of only 2 housing units per acre within the block group containing Columbus Avenue, Hole-in-the-Wall, and Historic Niantic Station Stop (Figure 5). The block groups containing the remaining conceptual station locations have even lower housing unit densities, at less than one housing unit per acre.



**Figure 5 - Housing Unit Density**

## Median Housing Value

Median housing value largely corresponds with proximity to Long Island Sound and prevailing land use within the block group. Median housing values range from a high of \$434,400 to a low of \$240,400. This data is derived from the 2015-2019 ACS five-year estimate data tables and is presented in 2019 inflation adjusted dollars.

<sup>9</sup> [Planning for Transit-Supportive Development: A Practitioner’s Guide, FTA, June 2014](#)

## Median Household Income

Study area household incomes range from \$35,000 to \$150,000. This data is also derived from the 2015-2019 ACS five-year estimate data tables and is presented in 2019 inflation adjusted dollars. The wide range in household income within the study area could signal differences in transit use according to the 2017 APTA Passenger report, which notes that higher-income households are more likely to use rail while lower income households are more likely to use bus transit.

## Race and Ethnic Origin

East Lyme has limited ethnic or racial diversity, with a significant majority of its population identifying as white alone. Note that the numbers in Table 1 do not add up to 100% because a person who is both Black and Hispanic or Latino, for example, is counted in both categories.

Table 1 - Race and Ethnic Origin

Race in East Lyme, Connecticut	
White alone	84%
Black or African American alone	3.6%
Asian alone	5.8%
Some other race alone	0%
Two or more races	3.3%
Hispanic or Latino (of any race)	6.2%

## Environmental Justice Communities

Environmental Justice (EJ) is defined by the Environmental Protection Agency (EPA) as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” EJ is a term used to describe populations that are disadvantaged when compared with the average population. However, there is no one criteria to assess who, what or where an EJ community is. EJ communities are typically

assessed using markers such as low income and minority populations; however, assessments can further include linguistic characteristics, access to transportation, as well as other factors that may place a group at a disadvantage when compared with the surrounding population.

For this feasibility study, methodology approved and used by the CTDOT in past Environmental Impact Analyses was applied. This combined methodology uses thresholds for income and percent minority population (specifically defined as non-white) to determine who is part of an EJ community (Figure 6).

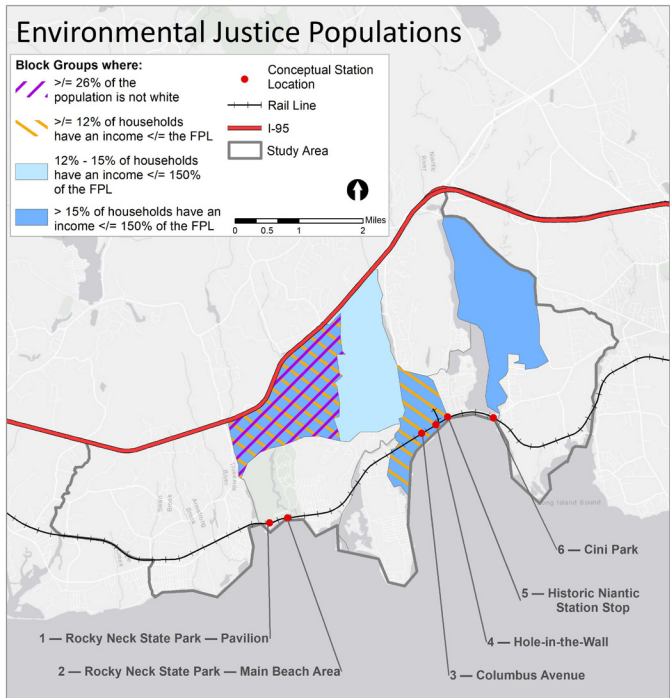


Figure 6 - Environmental Justice Populations

To evaluate income, two measures were used. The first measure examined the percent of the population, at the block group level, with incomes less than or equal to 150% of the federal poverty line (FPL) and the second with incomes less than or equal to the FPL. For both measures, block groups where about 12% or more of the population is at or below the FPL or 150% of the FPL were considered EJ populations. The federal poverty line is defined by a base value (b) of \$12,760 with an incremental value (i) of \$4,480 added for each additional household member. For this analysis, federal poverty line was defined through the average number of household members.



## Federal Poverty Line:

$$FPL = [(\bar{x} \text{ household members}) - 1] * i + b$$

This led to a defined FPL for the study area of approximately \$20,000 and a defined 150% FPL of approximately \$30,000. Within the study area four block groups had populations with about 12% or greater at or below 150% FPL and one block group had a population with about 12% or greater at or below FPL. Both locations, Hole-in-the-Wall and the Columbus Avenue alternatives are within the block group assessed to have a population about 12% or greater at or below FPL.

Minority populations are identified as those whose race is anything other than white non-Hispanic. Census block groups whose populations consisted of about 26% or greater non-white were considered to constitute a minority population and considered to be an EJ population.

Because these block groups are considered to contain EJ populations, any further consideration of siting a rail station in these locations should ensure that land use decisions and related planning activities surrounding a potential station in these locations are made with careful consideration to the well-being of the affected EJ populations.

## Transit Dependent Populations

Transit-dependent populations are those exhibiting socioeconomic and demographic characteristics that make them more likely to use public transit than others. Certain groups such as older adults, low income populations, and those without access to a vehicle, often use transit to a greater extent than other groups as they lack access to a reliable vehicle or are unable to drive themselves for some other reasons. Accounting for these populations in a siting analysis is key for understanding which conceptual locations best serves populations that rely on transit infrastructure out of need. It is important to note that higher income households are more likely to use rail while lower income households are more likely to use bus transit, according the 2017 APTA Passenger Report.

## Older Populations

According to APTA, individuals aged 65 and above represent the second largest transit user group. This group's high level of transit ridership, however, is disproportional to the relatively small percentage of the population that the group represents. Senior populations tend to be economically vulnerable, with many individuals on fixed incomes, which reduces their ability to own a vehicle. Additionally, health issues such as poor eyesight can deter them from driving. In southeastern Connecticut it is projected that the median age will increase, resulting in larger proportions of older adults. The village center and Attawan Beach neighborhood have the highest percentage of populations over the age of 65 (Figure 7).

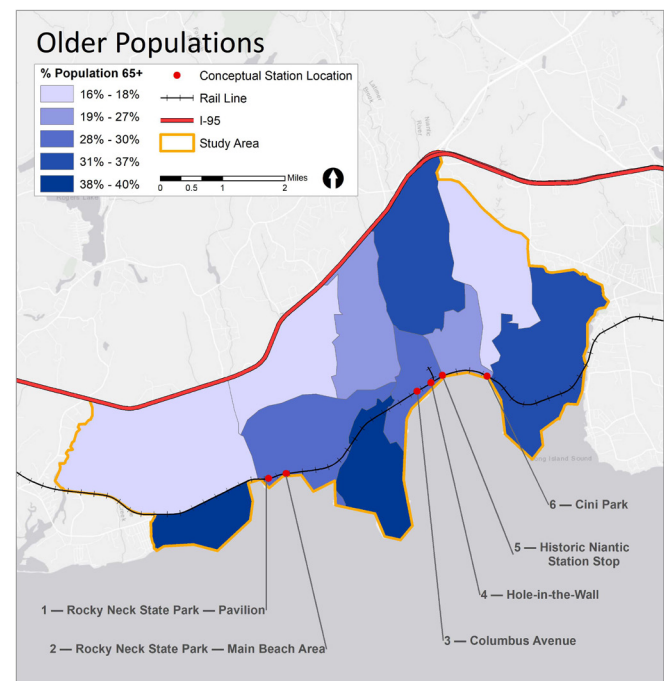
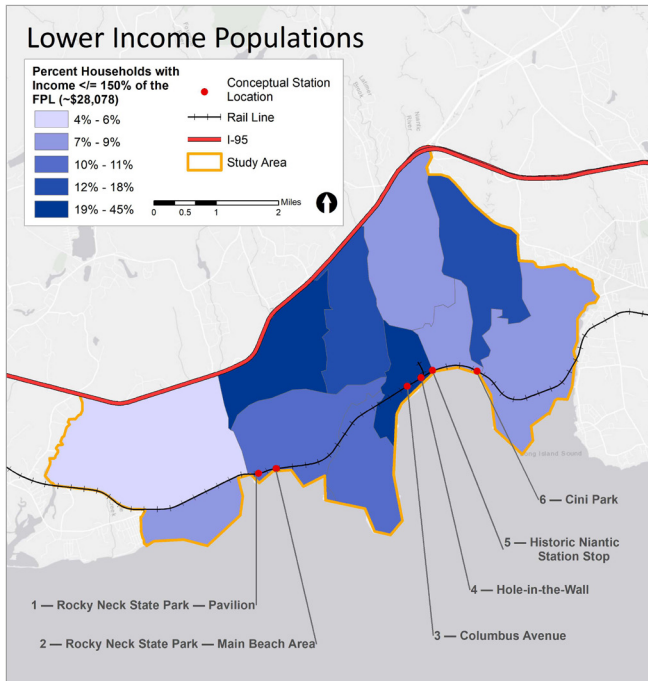


Figure 7 - Older Populations

## Low Income Populations

As noted earlier, income is a key determinant for the mode of transportation used to commute. Generally, individuals with lower incomes are more likely to use public transportation than those with higher incomes, although this is complicated by the high cost of living in some central business districts which tend to have robust transit service which make transit more appealing than driving. The work-trip market shares from the ACS shows that as income rises,

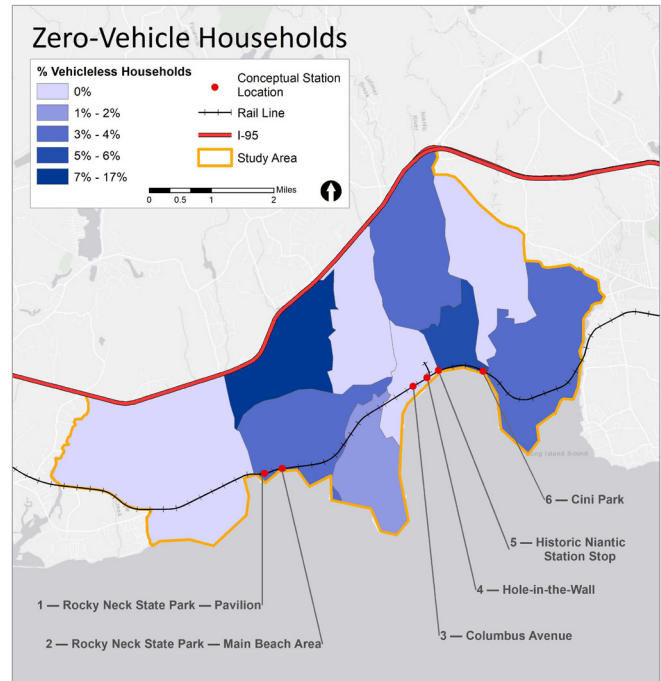


**Figure 8 - Lower-Income Populations**

the percentage of people using transit decreases, with the exception of the highest income bracket. The APTA Passenger Report examined median household income and mode of transit amongst transit users. While, as a whole, higher income groups are less likely to use transit, the report also found that higher income households are more likely to use rail while lower income households are more likely to use bus transit. With that said, looking at Figure 8, a sizable percentage of households within the study area have incomes  $\leq 150\%$  of the Federal Poverty Line (FPL) ( $\sim \$28,078$ ). These populations would more likely use the Southeast Area Transit District (SEAT) bus service rather than Shore Line East.

### Zero-Vehicle Households

Another common measure of transit dependence and demand is the number of cars per household. Zero-vehicle households are considered to be entirely dependent on alternate transportation modes. As stated earlier, the APTA Passenger Report found that among existing transit riders, bus transit users are less likely to have a car than rail riders. Within the study area, 4.4% of households do not have a vehicle. The highest percentages of zero-vehicle households are found in western Waterford between I-95 and



**Figure 9 - Zero-Vehicle Households**

Route 1 and in western East Lyme between I-95 and Route 156. It is worth noting that the zero-vehicle map depicted in Figure 9 does not correct for York Correctional Institution, a women's prison just south of I-95, which is likely the reason why the block group where it is located has such a high percentage of zero-vehicle households. Areas south of I-95 have greater percentages of households with one vehicle or less.

## Key Findings

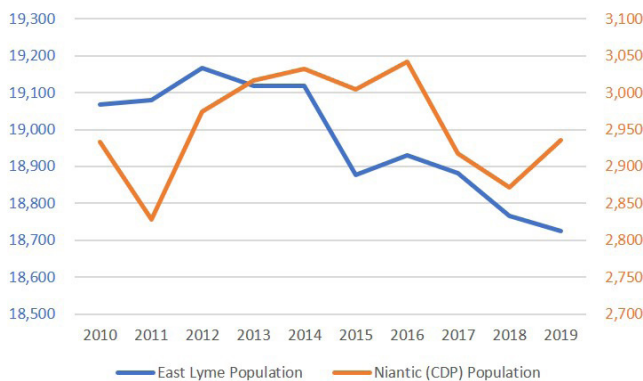
- Several locations within the study area are vulnerable to flooding inundation from storm events, which may impact many of the sites evaluated as part of this study
- Conserved land is prevalent throughout the study area, especially within, near or surrounding many of the station sites evaluated as part of this study
- The study area lacks adequate population, housing and employment densities needed to support a viable station
- The Southeast region and study area have low population and economic growth projections
- The study area has limited market and transit-supportive development conditions.

# 4 - Market and Employment Conditions



## Background Information

Future growth and development are generally projected at the regional planning level. For the Southeastern Connecticut Council of Governments (SCCOG) region, employment is expected to remain flat through 2025<sup>10</sup>. This is lower than the projected state growth (2%) and national (5%). The strongest employment sectors are tourism and defense. The population of the region is expected to rise slowly through 2025 at a 1% growth rate. Figure 11 shows population change for East Lyme and the Census Designated Place (CDP) of Niantic, which is a smaller census region that contains the three sites—Columbus Ave, Hole-in-the-Wall, and Historical Niantic Station—where a station would most likely be located. The population for East Lyme is steadily declining while Niantic, which is a denser pocket of East Lyme, increased from 2018 to 2019.

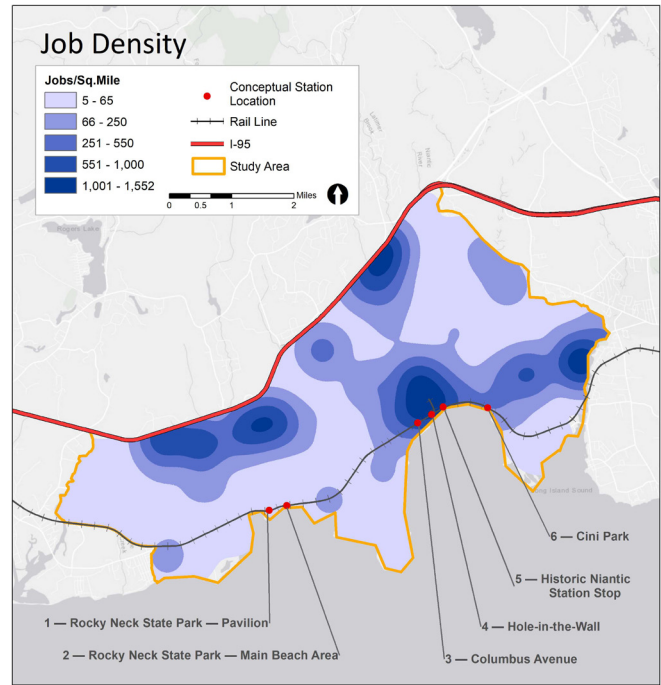


**Figure 11 - East Lyme and Niantic (CDP) Population Change**

## Employment Density

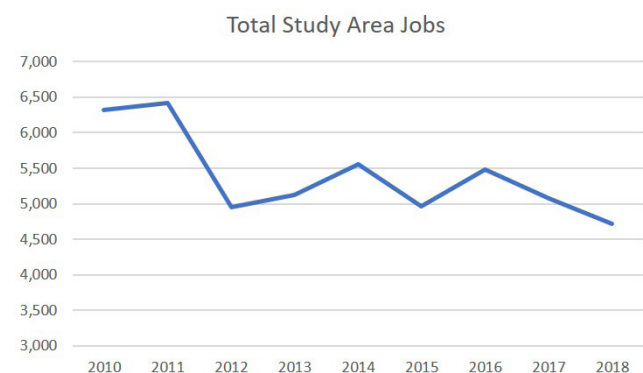
Employment density, measured as jobs per square mile, ranges significantly within the study area from a low of 5 to a high of about 1,600. Locations within the study area with some of the highest employment density are nearest the Hole-in-the-Wall and Historical Niantic Station sites located within the village center. Figure 10 maps the employment density within the

10 [Comprehensive Economic Strategy for the Southeastern Connecticut Economic Development District, The Southeastern Connecticut Enterprise Region CEDS Strategy Committee. 2017.](#)

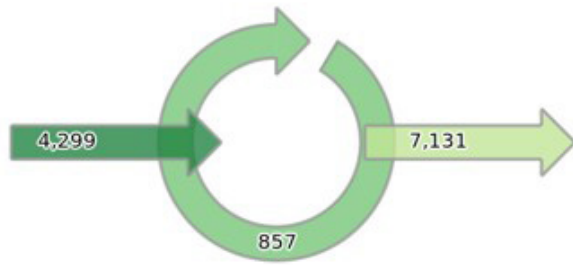


**Figure 10 - Job Density**

study area. According to Longitudinal Employer-Household Dynamics (LEHD) data, most people who work within the study area work in health care and social assistance at 21%, followed by construction at 12%. These are followed by retail trade, accommodation and food services, management of companies and enterprises, and wholesale trade, all at around 10%. Figure 12 depicts total jobs within the study area, showing a steady decline in jobs from 2010 to 2018. New senior living facilities as well as a Costco opened in 2020 in Niantic, which could mean an upward trend in jobs in more recent years. Additionally, job centers in Groton and New London not depicted in Figure 10 comprise many of the jobs within this region. This is further depicted in the following section which shows New London and Groton as important destinations for residents within the study area.



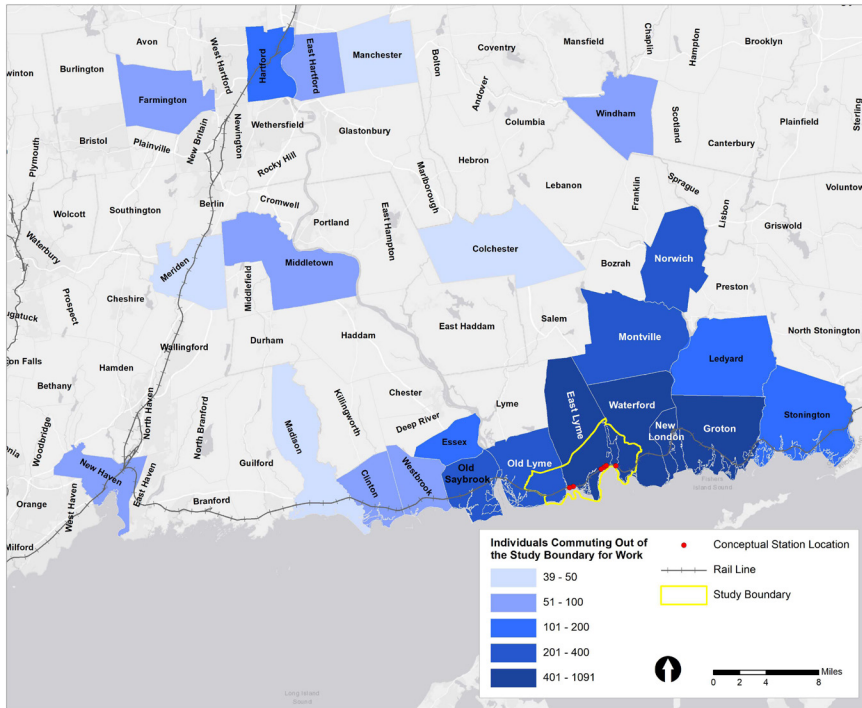
**Figure 12 - Total Jobs within the Study Area**



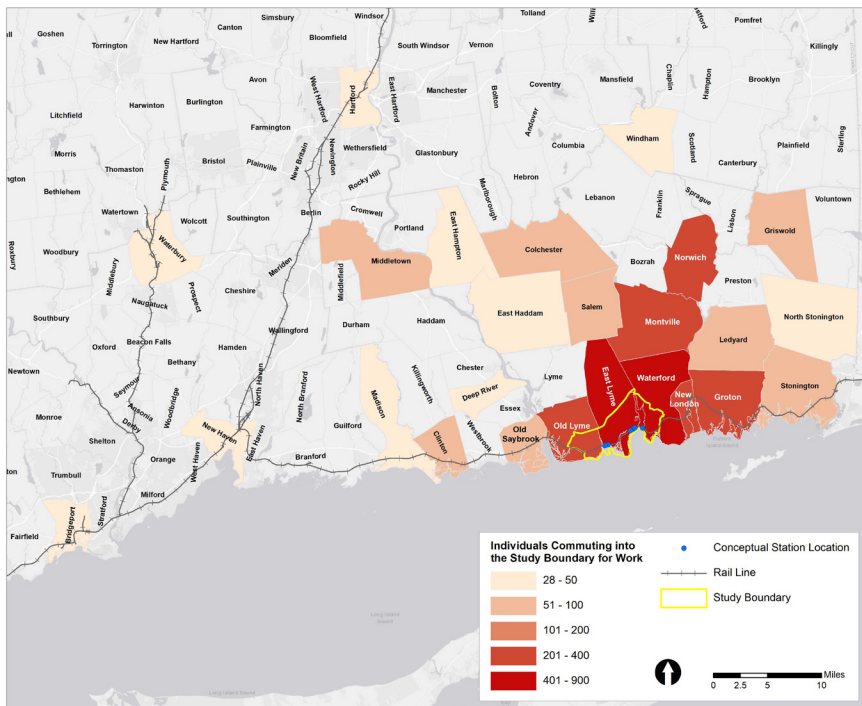
**Figure 15 - Employment Inflow-Outflow of the Niantic Study Area**

## Commuting Patterns

This section examines the employment commuting trends for those living in or working in the study area. Longitudinal Employer-Household Dynamics (LEHD) data was used to assess where residents within the study area commute for work.



**Figure 13 - Commuters Out of Study Area**



**Figure 14 - Commuters to the Study Area**

Figure 15 presents the inflow-outflow of employment for the Niantic Station study area. It is estimated that 7,988 employable individuals live within the study area, and that 857 are employed within the study area. This means that 7,131 individuals commute out of the study area, which is approximately 1.66 times the number of people who commute into the study area for work (4,299).

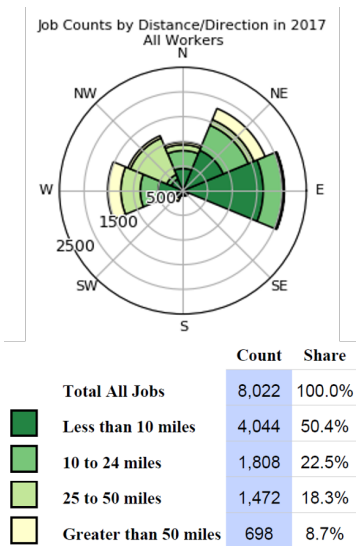
Further, according to LEHD data, more individuals who reside within the study area travel east to Groton (1,091) for work than all communities with rail stations to the west combined. A total of 783 individuals from the study area commute west to towns with either a SLE or an NHL rail station. Of those 783 individuals, over half are traveling to just three towns served by SLE— Old Saybrook (249), New Haven (97), and Westbrook (89)— which together make up 55% of westbound trips (Table 2).

Overall, the commuter analysis for workers in the study area clarifies that most workers are staying close to the study area, particularly to the north and east of the catchment boundary. Additionally, very few workers within the study area are commuting west, and very few workers originating west of the

**Table 2 - Place of Residence and Place of Work for Individuals within the Study Area**

Individuals Commuting into the Study Boundary for Work (Top 25)			Individuals Commuting out of the Study Boundary for Work (Top 25)		
Town Name	Count	Share	Town Name	Count	Share
East Lyme	900	17.5%	Groton	1,091	13.7%
Waterford	511	9.9%	East Lyme	949	11.9%
New London	360	7.0%	Waterford	757	9.5%
Groton	317	6.1%	New London	738	9.2%
Montville	244	4.7%	Old Lyme	350	4.4%
Norwich	229	4.4%	Norwich	346	4.3%
Old Lyme	206	4.0%	Montville	271	3.4%
Ledyard	98	1.9%	Old Saybrook	249	3.1%
Stonington	82	1.6%	Hartford	194	2.4%
Colchester	77	1.5%	Ledyard	173	2.2%
Griswold	64	1.2%	Stonington	152	1.9%
Middletown	57	1.1%	Essex	127	1.6%
Salem	56	1.1%	New Haven	97	1.2%
Clinton	53	1.0%	Westbrook	89	1.1%
Old Saybrook	52	1.0%	Middletown	64	0.8%
North Stonington	42	0.8%	East Hartford	61	0.8%
East Haddam	41	0.8%	Clinton	55	0.7%
East Hampton	35	0.7%	Farmington	54	0.7%
New Haven	34	0.7%	Windham	52	0.7%
Waterbury	33	0.6%	Madison	50	0.6%
Bridgeport	32	0.6%	Meriden	47	0.6%
Deep River	32	0.6%	Colchester	44	0.6%
Madison	31	0.6%	Westerly (RI)	41	0.5%
Windham	31	0.6%	Manchester	39	0.5%
Hartford	28	0.5%	Boston (MA)	37	0.5%

study area are traveling east to the catchment boundary for work (Figure 13, Figure 14).



**Figure 16 - Distance/Direction Between Residence and Employment for Workers in the Study Area**

The ‘radar’ graph in Figure 16 shows that over half of individuals who live in the study area work less than 10 miles away. Those who commute farther typically travel east and northeast, while fewer individuals travel west. Similarly, those who work in the study catchment area generally live in southeast Connecticut. This indicates that most commuters would

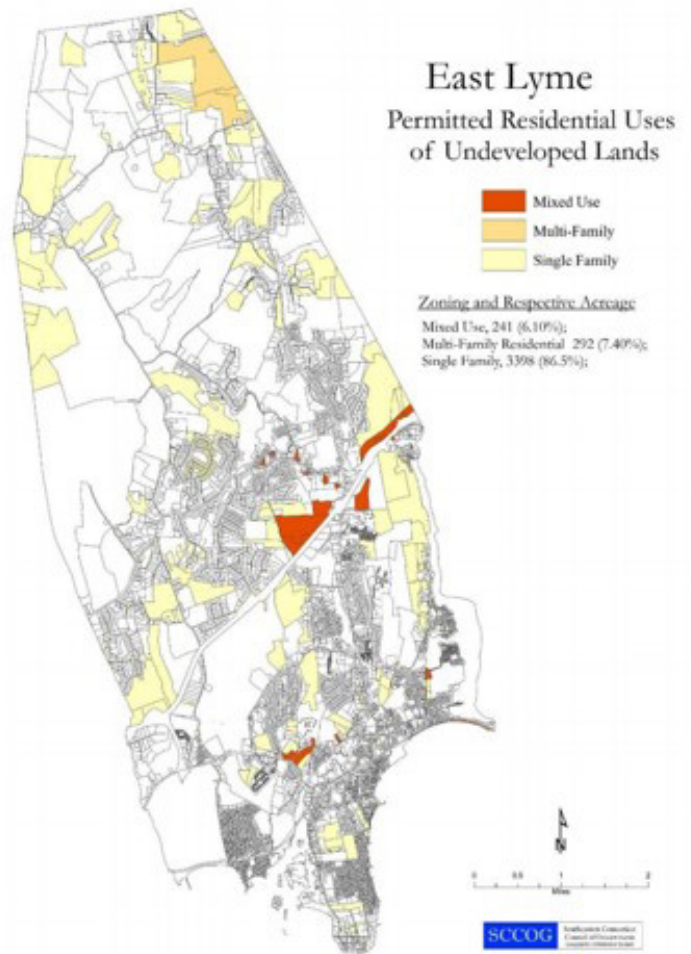
not necessarily need or want to use rail as a transportation option, given that most work trips are short in distance (<10 miles). Note that typical rail commute patterns demonstrate passengers use SLE for distances greater than approximately 17 miles.<sup>11</sup>

## Residential Occupancy Rates

Looking broadly at the Town of East Lyme and zooming into the Census Designated Place (CDP) of Niantic, which is a smaller census region and contains the three sites—Columbus Ave, Hole-in-the-Wall, and Historical Niantic Station—where a station would most likely be located, this section looks at residential occupancy rates as well as vacancy rates. Figure 17 and Figure 18 show owner-occupied housing, renter-occupied housing, and vacancy rates

<sup>11</sup> CTDOT Office of Rails

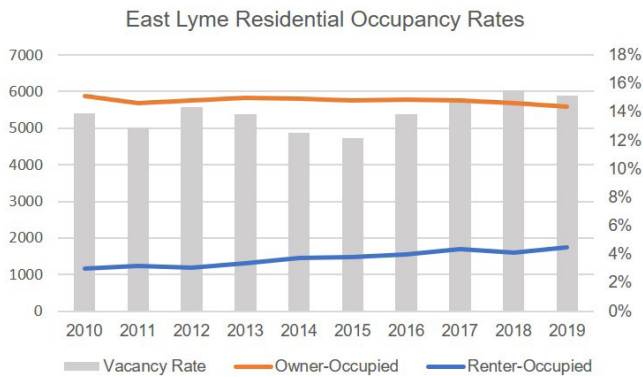
for East Lyme and Niantic. Both areas being observed have similar trends in residential occupancy rates and vacancy rates. As a caveat to the data being depicted in this section, it is important to note that many of the homes in Niantic were constructed as summer homes and may be vacant due to inadequate heating during the winter. For both, owner-occupied housing is on the decline while renter-occupied is rising. Similarly, both have high vacancy rates, particularly Niantic. Vacancy rates for East Lyme and Niantic (CDP) are higher than both the national average of 6.4% and the northeast region average of 5.2% (these are both 4th quarter 2019 to reflect Pre-Covid numbers). The high vacancy rates and low owner-occupancy rates within the region, likely due to the seasonality of housing, points to there not being sufficient ridership year-round to support a rail station.



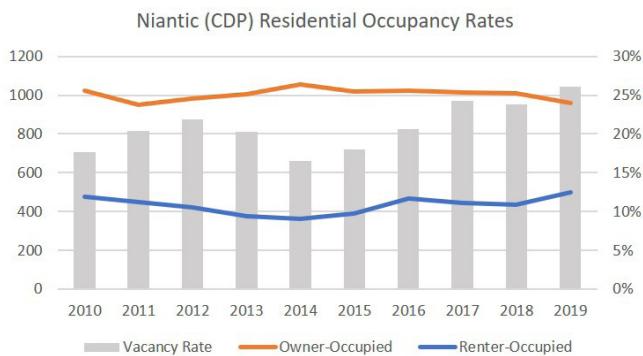
**Figure 19 - East Lyme Permitted Residential Uses of Undeveloped Lands**

## Developable Land

According to the East Lyme Plan of Conservation and Development (POCD), approximately 5% of East Lyme is zoned for commercial uses, while the remaining developable land (minus open space, municipal facilities etc.) is zoned for residential use. Figure 19 shows permitted uses of undeveloped lands in East Lyme. For most of the land, single-family housing is permitted with pockets of mixed-use development allowed along the I-95 corridor. Currently, vacant land is not available within a quarter mile buffer of the three alternatives—Columbus Ave, Hole-in-the-Wall, and Historical Niantic Station—where a station would most likely be sited.



**Figure 17 - East Lyme Residential Occupancy Rates**



**Figure 18 - Niantic (CDP) Residential Occupancy Rates**

## Key Findings

- Niantic is a net exporter of workers and more commuters travel east to New London or Groton than all other SLE communities combined
- Those working in Niantic and the study area largely live in the study area or nearby in southeastern Connecticut
- Most commuters would not necessarily need or want to use rail as a transportation option, given that most work trips are short in distance (less than 10 miles)
- Passengers tend to use SLE for distances greater than approximately 17 miles
- Vacancy rates are high in both East Lyme and Niantic (CDP)
- The study area lacks developable land



# 5 - Corridor Capacity Analysis



## Background Information

A corridor capacity analysis was performed as part of this study to estimate the potential impacts a new passenger rail station in Niantic may have on SLE and Amtrak Northeast Corridor rail service. The completion of a corridor capacity analysis is a requirement by Amtrak for any potential new stations sited along their right-of-way.

The corridor capacity analysis for this study assumes a new passenger rail station would be sited somewhere in the vicinity of mile post 115.7. However, the exact location of a new station in Niantic does not affect the analysis in any significant way. The analysis also assumes a potential new station would have two side platforms, one for each track. The inclusion of passing sidings is another Amtrak requirement for any potential new stations sited along their right-of-way. Having a passing siding located at the station would be desirable for more convenient rail service, allowing for Amtrak service to bypass SLE trains stopping in Niantic. Service operations would function better and could potentially save sometime within the overall schedule. However, in the case of Niantic, including such sidings may be difficult to build at most of the station sites evaluated given the significant constraints for each site, including the parcels surrounding each site. Further, it is believed that Amtrak would not be willing to have any of their trains stop at Niantic to carry SLE passengers since Niantic will be a non-Amtrak Station.

Based on existing rail infrastructure and operational conditions in the corridor including track configurations, bridge conditions, slow zones, speeds for diesel-powered SLE trains and speeds for electric powered Amtrak trains, etc. it is assumed for this analysis that adding a Niantic station stop for SLE trains would increase trip times by approximately 2.5 to 3.0 minutes. This increased trip time is due to the time lost while decelerating, stopping to dwell at the station, and accelerating back to speed. For this analysis, a scheduled trip-time increase of 3 minutes is

assumed for any train stopping in Niantic.

No Train Performance Calculator (TPC) simulations have been processed for this analysis, therefore precise recommended times for the new scheduled station stops cannot be set. However, a manual, string line diagram analysis was performed to roughly assess potential rail operational impacts in the corridor. For the purposes of this feasibility study, the manual string line diagram analysis performed is adequate to detect any potential key operational impacts of train movements and instances of service crossings.

The corridor capacity analysis addresses two SLE service options for a new station stop in Niantic. Each of these options are outlined and described in more detail below.

The first option, referred to in this study as “Option 1” or “Existing SLE Service”<sup>12</sup> includes adding a station stop in Niantic and only stopping existing SLE trains passing Niantic to and from New London.

The second option, referred to in this study as “Option 2” or “Extended SLE Service” includes adding a station stop in Niantic and stopping all SLE trains extended to and from New London.

SLE (2017) and Amtrak (2021) schedules were used to evaluate impacts of adding a station in Niantic. Each schedule was chosen to represent the most comprehensive service offered, avoiding outages and COVID impacts. Analysis of the train schedules provided for this study as well as existing track and interlocking configurations can be found in Appendix 5.

### Option 1 – Existing SLE Service

The following is an analysis by individual SLE revenue trains. Exhibit 2, which can be found

<sup>12</sup> The “Existing Service” scenario (Option 1) keeps the SLE schedule the same, adding a stop in Niantic. The “Extended Service” scenario (Option 2) extends all SLE trains from New Haven to New London, adding a stop in Niantic. For the Extended Service scenario, Old Saybrook would no longer be a terminus for any SLE train.

in Appendix 5, shows the proposed conceptual timetable modifications to the Baseline Provided Timetable. Exhibit 2 incorporates the new Niantic station stop and is titled “Option 1 Conceptual Timetable”. In lieu of the scheduled stopping time at Niantic, XXX in the timetable exhibit means that the precise scheduled times for Niantic Station need to be computed by TPC simulation, but that (if done later) does not affect this analysis in any way. The detailed train operations for Option 1 can be found in Appendix 5.

### Option 1 - Proposed Niantic Train-Service Pattern

The following table shows the proposed Option 1 train service at Niantic based upon the station being served only by the existing SLE trains operating to and from New London. The times shown for the Niantic station stops are very approximate and are only provided to illustrate the relative service times and gaps in train service. Option 1 results in significant gaps in train service at Niantic, including gaps of five and six hours, as seen in Table 3.

Westbound	Eastbound
5:50 AM	
	6:20 AM
7:00 AM	
	11:37 AM
12:10 PM	
	5:43 PM
6:19 PM	
	7:01 PM
7:33 PM	
	7:57 PM
9:12 PM	
	10:09 PM
10:48 PM	

**Table 3 - Option 1: Niantic Train Service**

Under Option 2, Niantic will have the same or better train-service pattern as provided at all the other SLE stations that are not also served by Amtrak. Some of the SLE trains that are being extended to and from New London will have longer running times to and from Niantic and New London because of the many necessary scheduled “overtakes” at Old Saybrook.

### Option 2 – Extended SLE Service

The following is an analysis by individual SLE revenue trains. Exhibit 3, which can be found in Appendix 5, shows the proposed timetable modifications to the Baseline Provided Timetable and to the Option 1 Conceptual Timetable. In lieu of listing the scheduled stopping times at Niantic, the notation XXX in the exhibit means that the precise scheduled times for Niantic Station need to be computed by TPC simulation, but that (if done later) does not affect this analysis in any way. The major study assumptions, detailed train operations, as well as operational concerns and issues for Option 2 can be found in Appendix 5.

### Option 2 - Proposed Niantic Train-Service Pattern

#### Option 2 - Comments

SLE train-equipment requirements, equipment manipulation and turns, and crew duty times have not been investigated. However, before extending all the SLE trains to New London, the following issues may need to be explored in more detail:

- Determine whether an additional trainset or two will be required for the “extended” train service. It is suggested for the revised timetable presented herein that an equipment assignment and manipulation plan be developed for that timetable. After that is accomplished, a new crewing plan should be prepared. The timetable train schedules may have to be revised somewhat by an iterative process to minimize or optimize the train-equipment and crewing requirements.

- Using the final operating plan, the New London area track configuration should be analyzed to ensure that it would properly accommodate the operating plan without impacting the Amtrak or SLE train operations. It is not clear that New London Track 6 would be adequate for handling all of the SLE train traffic.
- The need for train-overtake capability at or near Old Saybrook Station has been firmly established. It should be decided upon as to what train-overtake or passing option will be used for the eastbound trains, as well as what speed improvements would be provided for both directions.
- Qualifying the SLE trains for the Amtrak Train Type B speeds would be needed.<sup>13</sup>
- Quantifying the speed, trip time and capacity improvements that SLE electric trains would bring when compared with the existing SLE diesel trains would be needed and useful as well.
- When the SLE Old Saybrook trains are extended to New London regardless of whether a new Niantic Station is constructed, the location(s) of SLE train storage and servicing should be examined.

---

<sup>13</sup> The SLE trains fall into either Type C or D, which at many locations requires SLE trains to operate slower than Type B trains.

## Key Findings

### Option 1 Key Findings

- The analysis has established that stopping the existing SLE New London trains at Niantic will not have any significant impact on Amtrak's train operations in the Baseline Provided Timetable.
- SLE train-equipment requirements would not change, and crew duty times would increase very slightly for the SLE New London trains.
- The level of train service that can be provided at Niantic under Option 1 is limited and very irregular with large gaps in service.

### Option 2 Key Findings

- The analysis has established that it is feasible to extend all of the SLE trains to New London and have all SLE trains stop at a new Niantic Station without causing any issues.

# 6 - Ridership Data Overview



## Background Information

The SLE passenger ridership projections included in this feasibility study were modeled and provided by the CTDOT Travel Demand and Air Quality Modeling Unit. The Connecticut Statewide Travel Demand Model that was used to estimate future daily ridership for Niantic and other SLE stations is an average daily trip-based traditional four-step model utilizing the Tranplan software package. The travel forecasted by this model is mainly based on information from 2015 datasets, including population, employment, journey to work, income data, average daily traffic counts, and Highway Performance Monitoring System (HPMS) vehicle miles of travel.

Prior to a potential build of a station in Niantic between 2017 and 2025 the model assumes approximately a 4.75% annual SLE ridership growth rate (pre-Covid). If a potential build of a station occurs the model assumes the Opening Year for a Niantic Station would be 2025 and anticipates annual ridership would grow along the entire SLE by about 3.0% to 3.5% between 2025 and the Niantic Station design year 2045.

Table 4 below shows existing modeled (2017) daily ridership for weekday, weekend, weekday summer and weekend summer prior to the potential build of a Niantic Station. Tables 6 and 7 below show estimated 2025 Opening Year and 2045 Design Year average daily ridership including the build of a potential Niantic Station for weekday, weekend, weekday summer, and weekend summer.

Table 5 and 6 include ridership projections for two scenarios: Option 1 – Existing SLE Service and Option 2 – Extended SLE Service as described in the corridor capacity analysis section above. With the exception of New London, average projected ridership at other SLE stations is higher than what is projected for a new station stop in Niantic.

Additionally, like other SLE stations, anticipated ridership for the potential build of a Niantic Station is estimated to be somewhat higher

during the summer months, especially July. With that said, it should be noted that there is a discrepancy between how the summer weekday and summer weekend factors were calculated. The summer weekday factors were calculated using the months of June, July, and August as there was a smaller or flatter peak observed across these summer months. While the summer weekend factors were calculated using only the month of July due to the significant peak seen in ridership for that month.

## Key Findings

Ridership is projected to be low in Niantic due to the shorter commuting patterns seen in Section 3 of this report. Most trips are short (around 6-8 miles) and with service levels of SLE it makes traveling by rail less desirable as its faster to drive or take the bus. The analysis performed shows that Niantic would likely take riders that currently board in either New London or Old Saybrook which offers some convenience for a some riders but siting a station in Niantic doesn't substantially generate new riders and most of the peak ridership is summer seasonal.

# Projected Ridership

**Table 4 - Existing 2017 Daily People utilizing SLE Stations**

2017 Existing	Weekday	Weekend	Weekday Summer	Weekend Summer
New London	72	130	86	253
Niantic	N/A	N/A	N/A	N/A
Old Saybrook	229	181	250	298
Westbrook	98	60	112	177
Clinton	116	24	117	39
Madison	215	43	226	71
Guilford	243	98	253	158
Branford	273	26	270	19
New Haven	849	146	797	202

**Table 5 - 2025 Opening Year Forecasted Daily People Utilizing SLE Stations, Including Potential Niantic Station**

2025 Opening Year	Weekday		Weekend		Weekday Summer		Weekend Summer	
	Existing SLE	Extended SLE	Existing SLE	Extended SLE	Existing SLE	Extended SLE	Existing SLE	Extended SLE
New London	95	100	151	157	115	122	279	286
Niantic	98	111	44	49	106	120	73	79
Old Saybrook	275	272	220	217	300	296	376	370
Westbrook	131	130	76	73	146	144	212	199
Clinton	155	157	35	37	156	158	63	71
Madison	291	295	68	75	308	313	157	194
Guilford	344	344	138	138	359	359	223	223
Branford	390	391	39	40	387	388	32	32
New Haven	944	950	147	148	930	936	181	182

**Table 6 - 2045 Design Year Forecasted Daily People Utilizing SLE Stations, Including Potential Niantic Station**

2045 Design Year	Weekday		Weekend		Weekday Summer		Weekend Summer	
	Existing SLE	Extended SLE	Existing SLE	Extended SLE	Existing SLE	Extended SLE	Existing SLE	Extended SLE
New London	208	210	347	347	253	255	647	644
Niantic	173	193	80	87	185	207	132	141
Old Saybrook	472	468	377	373	517	513	648	637
Westbrook	254	256	163	165	292	296	490	497
Clinton	320	320	73	73	323	323	138	138
Madison	633	634	279	281	686	688	1044	1053
Guilford	602	603	247	248	632	633	398	399
Branford	570	570	59	59	564	564	53	53
New Haven	1712	1716	278	279	1647	1651	355	356

# 7 - Individual Site Analyses





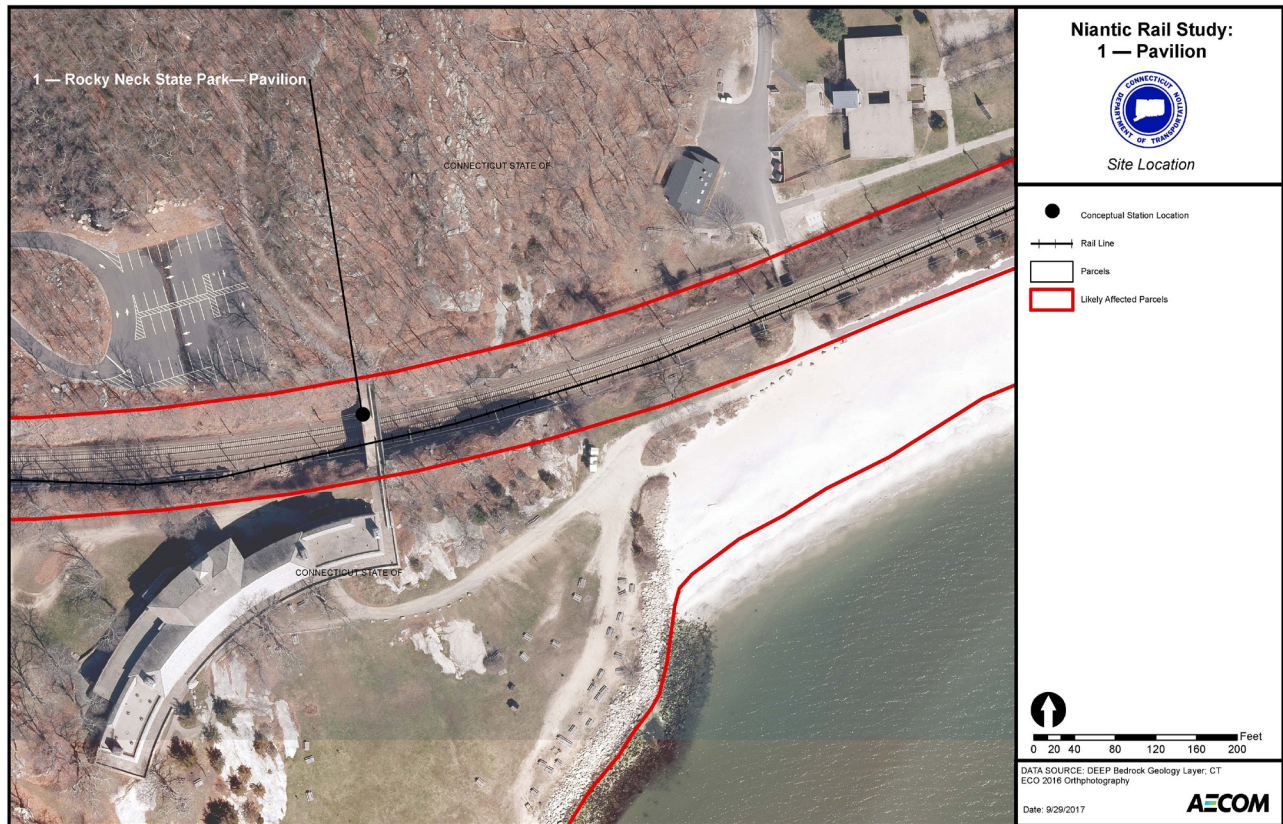
## Background Information

The following section provides summaries of the individual site analyses that were conducted as part of this study. The individual site analysis includes a review of the environmental and demographic indicators discussed above, environmental and demographic mapping (see Appendix 3 for full site analyses), and site visits. Following each site, a favorability graphic is provided to indicate the general sentiment towards the viability of the site as a potential Niantic station. Additional details pertaining to the comparative analysis of all sites is included in Chapter “10 - Scoring of Conceptual Station Alternatives”

## Conceptual Site Favorability Comparison

Cini Park, threshold From a physical and environmental site perspective, Cini Park, and the two Rocky Neck State Park locations are considered poor locations for a station. Columbus Avenue, Hole-in-the-Wall and Historic Niantic Station are also considered to be less than fair. The lowest-scoring conceptual locations had low developmental potential, particularly the two Rocky Neck locations, and limited space for platforms and parking, which was the case for the Cini Park location. While the remaining three conceptual locations have more developmental potential and slightly more available space for necessary station facilities, they still have major limitations. Like Cini Park, Historic Niantic Station lacks space for parking and station platforms and is close to the flood zone. Columbus Avenue is located in a residential neighborhood which lowers its developmental potential, and is below grade, which would make building station facilities a significant challenge. Finally, Hole-in-the-Wall conceptual site borders 100- and 500-year flood zones, making flooding possible down the line, particularly with the threat of sea-level rise. Additionally, it is likely that the underutilized church parcel in vicinity of this location would also need to be acquired to meet the CTDOT 200-space target.

# Rocky Neck State Park: Pavilion



**Figure 20 - Rocky Neck State Park: Pavilion Conceptual Site Area**

This conceptual site is located towards the western end of Rocky Neck State Park near the historic pavilion structure (Figure 20). This site was outlined in the 2012 CTDOT report and thus reviewed as part of this study. Due to grade constraints it is unclear where a station could be sited at this location. The facility would need to expand on currently available parking, either the paved parking on the north side of the tracks or the larger parking facilities to the east of the site. This site is within the boundary of a DEEP owned State Park, and is thus considered protected. Any consideration of a station on this site would trigger Section 4(f) which requires that no other feasible alternative exists. It would also trigger 6(f), requiring that the conversion of lands or facilities acquired with Land and Water Conservation Act funds under the State Assistance program be coordinated with the National Park Service. While this site is not impacted by wetlands, tidal wetlands, or marshes

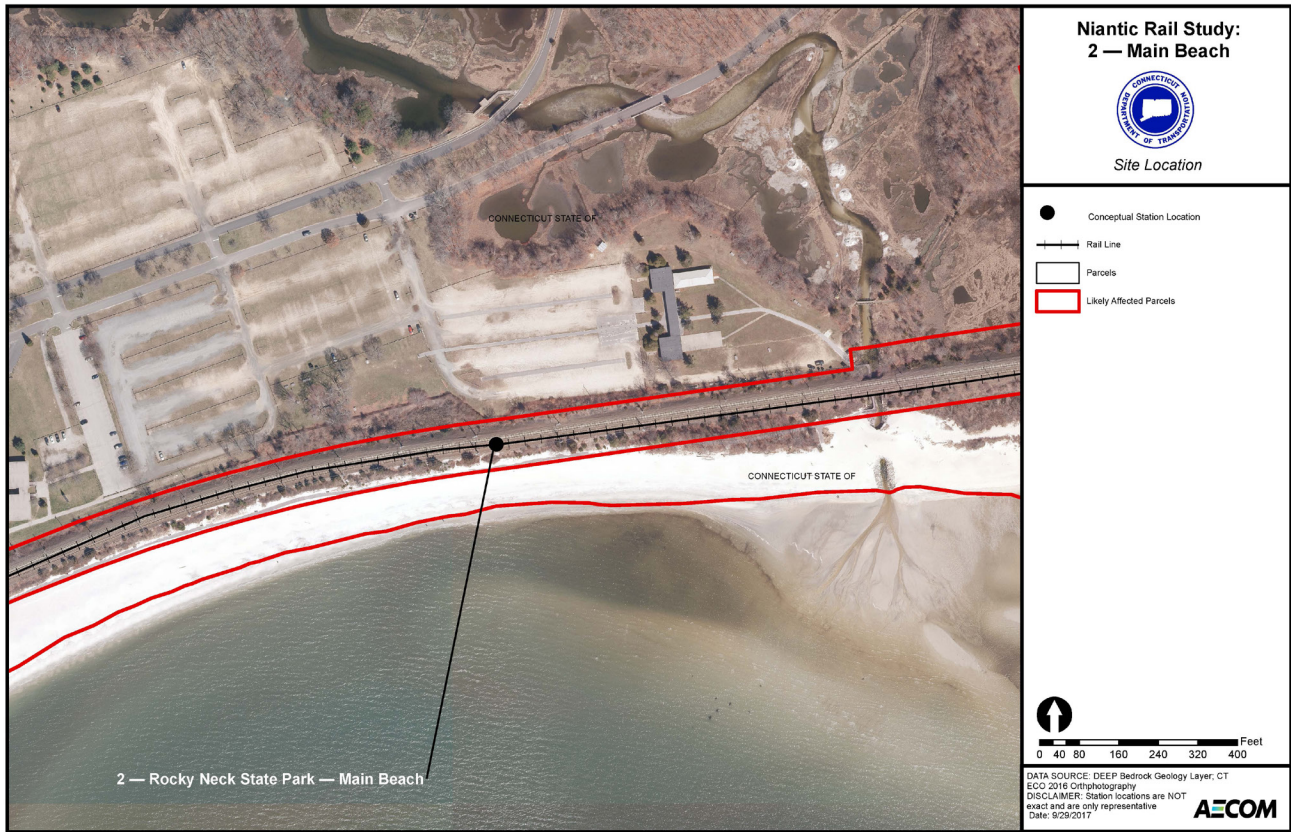
much of the remaining park and main parking area is at risk from flooding and storm surge inundation.

The operations of a station at this location are limited by the lengthy (2-mile) access road within Rocky Neck State Park from State Route 156, as well as the poor proximity to the village center of Niantic and development. While there are commercial land uses farther to the north and residential zones farther to the east, the site is generally isolated. The protected status of the state park would prevent any TOD near the site. Additionally, the site is not well served by pedestrian or bicycle infrastructure and is not proximal to the Southeastern Area Transit District (SEAT) Route 3 which serves Niantic. These facilities and additional SEAT bus service would need to be added with the construction of this site. Station viability at this location is considered poor (Figure 21).



**Figure 21 - Rocky Neck State Park: Main Beach Conceptual Site Favorability**

# Rocky Neck State Park: Main Beach Area



**Figure 22 - Rocky Neck State Park: Main Beach Conceptual Site Area**

This conceptual site is situated at the eastern end of the Rocky Neck State Park main parking area and on the North side of the tracks within the state-owned boundary of Rocky Neck and is designated 4f/6f (Figure 22). This site was outlined in the 2012 CTDOT report and thus reviewed as part of this study. This site is elevated from the surrounding topography and would require a significantly elevated platform to meet grade with the tracks. On the north side of the tracks there is ample space for a platform; however, this is not the case on the south side of the tracks where the beach directly abuts the viaduct. Portions of the facility lie within both the 100-year and 500-year flood zones and are susceptible to hurricane events categories 1 through 4.

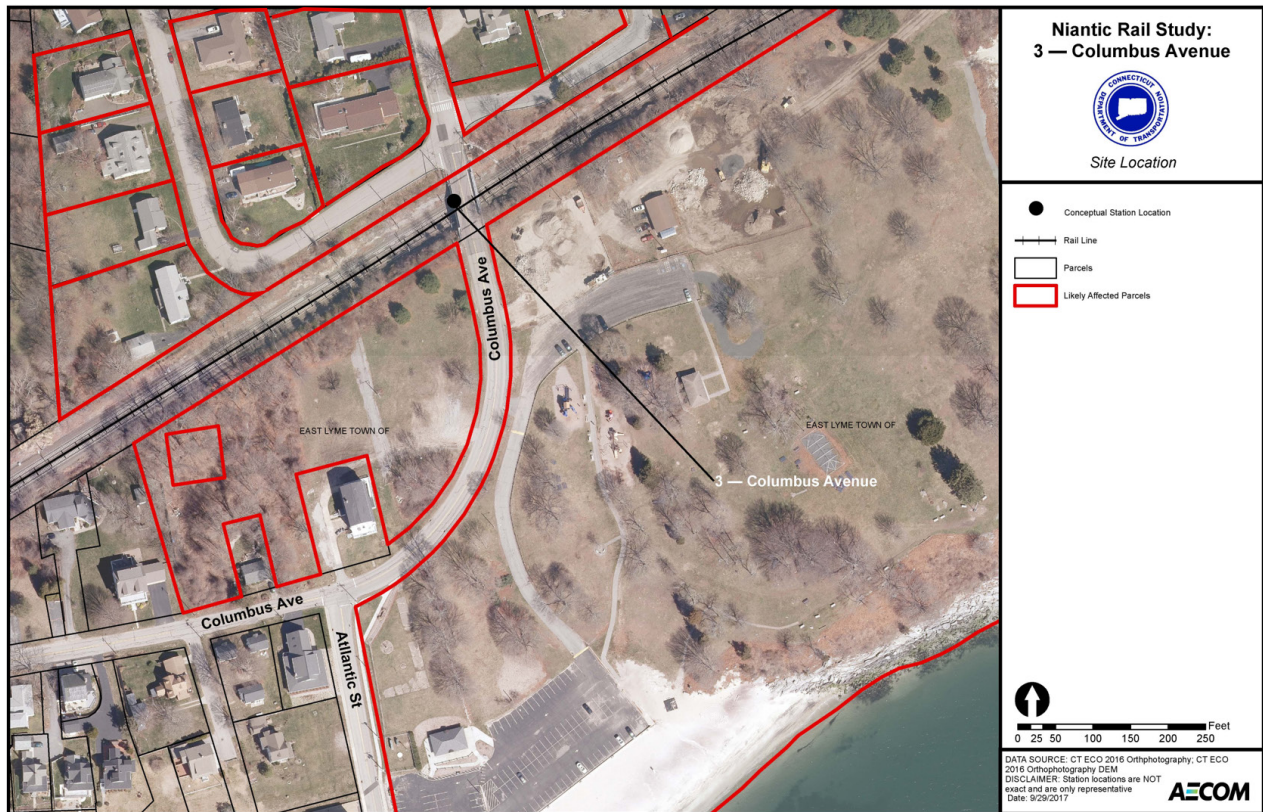
This location is not close to Niantic Village Center or other residential or commercial development. This site is not proximate to any current bus route.

Access to the nearest Southeast Area Transit District (SEAT) bus route would be approximately 3.5 miles from the site. Currently, no sidewalks connect the site to State Route 156 (Main Street), which is about a 1.5-mile distance through the Rocky Neck State Park, and no dedicated bike infrastructure provides access into or out of the site. These facilities and additional SEAT bus service would need to be added with the construction of this site. Given the location it would be unlikely to foster mixed-use and redevelopment as most surrounding land is protected open space or is residentially developed land. A train station at this location would not realistically be a catalyst for development and would only support the beach goers and potentially the adjacent neighborhood, but likely only during the beach season. Station viability at this location is considered poor (Figure 23).



**Figure 23 - Rocky Neck State Park: Pavilion Conceptual Site Favorability**

# Columbus Avenue



**Figure 24 - Columbus Avenue Conceptual Site Area**

This conceptual site is located in proximity to 35 Columbus Avenue on the town-owned parcel behind VFW Post #5849 (Figure 24). This site was not included in the 2012 CTDOT report and is thus an additional site evaluated as part of this study. Parking facilities would have to be developed at the VFW, or on the adjacent McCook Point Park parcel. At this location, the railroad tracks run below grade and substantial measures would have to be taken to support platform and station infrastructure. However, because the site is further from Long Island Sound it is at reduced risk to flooding.

While this site is located close to (about 1/2 mile west of) the village center, it is in a residential neighborhood, which would limit the type of development that could be accommodated for this alternative. Columbus Avenue is one of two streets

that provide access to McCook Point Park and the Black Point area, which are both crowded with beach traffic in summer months. Additionally, Columbus Ave is a one-way street north of the track, which could complicate the traffic flow into and out of the site. This would need to be modified to allow for heavier traffic flow. This conceptual site is relatively close to transit, as there is an existing SEAT bus stop at the corner of Columbus Avenue and Main Street and sidewalks provide pedestrian access from the bus stop and the village center. Currently, no dedicated bicycle infrastructure serves the area, however, the low traffic volumes on streets near the site make dedicated bike infrastructure less critical. Station viability at this location is considered less than fair (Figure 25).



**Figure 25 - Columbus Avenue Conceptual Site Favorability**

# Hole-in-the-Wall



**Figure 26 - Hole-in-the-Wall Conceptual Site Area**

This conceptual site is located at 4 Baptist Lane, and while it may utilize the facilities of Hole-in-the-Wall Beach (Figure 26). buildable space at this site is limited. The majority of the two parcels owned by the Town of East Lyme are currently used for beach parking, however more parking would be required to meet the CTDOT 200-space parking target. It is likely that the underutilized church parcel, St. John’s Episcopal Church, would also need to be acquired. Other impacted parcels would be McCook’s Park, Hole-in-the-Wall Beach, and Amtrak railroad ROW. While this site is not prone to inundation from hurricane events, due to its location behind a sea wall, it does border the 100-year and 500-year flood zones making flooding possible. Future sea level rise will increase the probability that this location will experience inundation from storm events. Additional analysis would need to be done to better understand future climate impacts and what the vulnerability of this site is to such impacts. The tracks within this location are elevated; therefore, any station and platform would need to be elevated to match grade with the rail line. There is a pedestrian underpass that

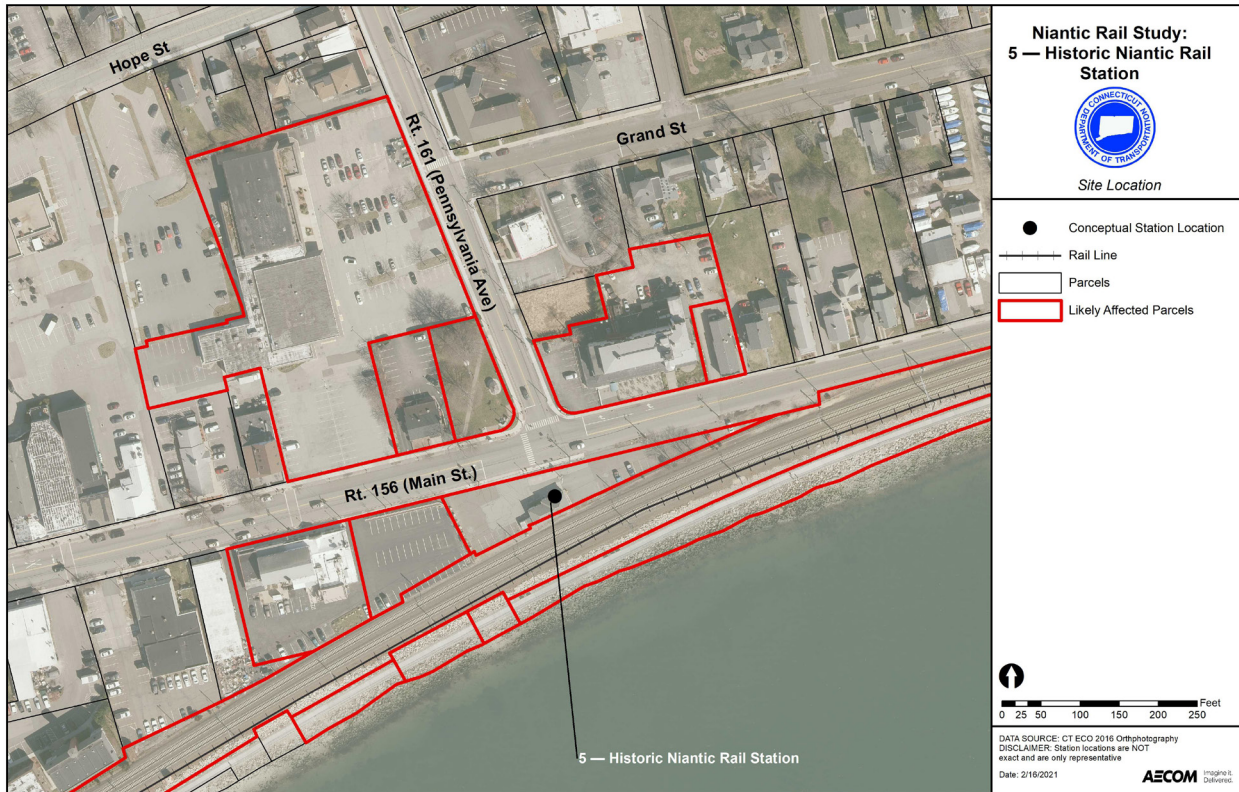
could allow access to the south side of the tracks and may eliminate the need for an up and over structure to reach the platform on the other side. However, this existing access would need to be further evaluated to ensure proper ADA (Americans with Disabilities Act) design to and from station platforms on either side.

This site is close to Main Street, with a connection via Baptist Lane. State Route 156 (Main Street) has primarily commercial land uses, including shops and restaurants. This proximity to the village center could foster some limited mixed-use economic activity in the surrounding area. This site is along -Route 3 of the Southeast Area Transit District (SEAT) bus service. The site has good pedestrian access, with sidewalks into the site and connecting to main street, and through the Niantic Bay Boardwalk which runs parallel to the tracks and Long Island Sound. There is currently no bicycle infrastructure near this site, bicycles are not allowed on the boardwalk, and connecting streets do not have painted shoulders. However, some of the existing roadway lane width near the site is wide enough to accommodate bicyclists. Station viability at this location is considered less than fair (Figure 27).



**Figure 27 - Hole-in-the-Wall Conceptual Site Favorability**

# Historic Niantic Station



**Figure 28 - Historic Niantic Station Conceptual Site**

This site is located at the junction of State Routes 156, 161 and Long Island Sound (Figure 28). It is within the core of the village center with decent bicycle, pedestrian and transit access, and is the site of Niantic’s historic rail station. The parcel is privately owned, and the historic station building is no longer standing. While it is conceivable that a few parking spaces could be established on the site itself, significantly more parking spaces would need to be built off site to meet the CTDOT’s target of 200 dedicated spaces for new rail stations.

Further, given the small footprint of the site itself and the physical constraints surrounding this site, with Route 156 to the north, and the Niantic Boardwalk and Long Island Sound to the south, these constraints would make it very difficult (if not impossible) to construct the necessary platforms and cross platform

access required for new rail station service. Although this site is not vulnerable to inundation from storm surges, it is on the edge of the 100-year and 500-year flood zones, and as a result has the potential for flooding.

This site is served by Route 3 of the Southeastern Area Transit District (SEAT) bus service. Additionally, of the village center sites, this site is closest to commercial activity nearby. However, this site is heavily constrained by existing development and natural features nearby making additional or new development unlikely or not feasible, resulting in a low potential for TOD. Station viability at this location is considered less than fair (Figure 29).



**Figure 29 - Historic Niantic Station Conceptual Site Favorability**

# Cini Park



**Figure 30 - Cini Park Conceptual Site**

Cini Park was included in the 2012 CTDOT Niantic station report and thus included in this feasibility study for review. This conceptual site is within a town-owned park about ¾ mile east of the village center along Long Island Sound at the Niantic River bridge and would therefore have 4(f) implications (Figure 30). Given the lack of buildable space on the south side of the tracks at this location, it would be very difficult (if not impossible) to build platforms on both sides of the tracks, which is a CTDOT requirement for new rail stations. In addition, due to the physical constraints of the site and lack of proximal parking options there is room for only a small fraction of the 200-space target for new rail stations in Connecticut. This means parking spaces would likely be limited to those already on-site.

Further, much of the available parking area for this location would be within the 100-year flood zone and

portions of the platform structure and the elevated tracks would likely be at risk from a 500-year flood event as well. Similarly, the parking area would be vulnerable to inundation from hurricane surge events, category 1 through 4, and portions of the inbound platform and structure and elevated tracks would likely be at risk from hurricane inundation categories 2 through 4.

This site suffers from limited potential for broader development and it has no proximal commercial, residential, or mixed used development. Additionally, while the site is about ¾ mile from Route 3 of the Southeastern Areas Transit District (SEAT) bus service, a new bus stop at or near the site would be required. Station viability at this location is considered poor (Figure 31).



**Figure 31 - Cini Park Conceptual Site Favorability**

# 8 - Traffic Analysis





## Background Information

Evaluation of the transportation impacts associated with the study sites requires a thorough understanding of the existing transportation system within the study area. The existing conditions analysis is based on the existing roadway network, roadway and intersection geometry, traffic control, existing daily and peak hour traffic volumes, and traffic safety conditions. The future condition was developed to determine and evaluate the effects within the study area from regional growth and traffic generated by two potential station site locations Columbus Avenue and Hole-in-the-Wall.

Due to the physical and operational constraints summarized by the favorability index presented with the individual site analysis it was determined that Columbus Avenue and Hole-in-the-Wall sites would be included in the detailed traffic impact assessment presented in this section. These sites are located within the village center or in proximity of the village center, therefore would have similar traffic characteristics at a macro-scale but site-specific arrival and departure patterns on local roadways. This was considered as part of the traffic impact assessment.

The future condition analysis included reviews of regional demographics to determine traffic

volume growth within the study area, and potential station site boarding and alighting projections to determine the site generated trips. To determine future roadway operations, traffic volume in the study area were projected from 2017 existing condition to 2025 and 2045, to reflect both the station opening year and the design year. A detailed intersection capacity analyses was conducted, for the existing and future conditions, as part of the traffic impact assessment.

## Existing Conditions

### Traffic Volume

Daily traffic volumes were collected at eight (8) key study area locations over a seven-day period in August 2017 (Sunday through Saturday) using automatic traffic recorders (ATRs). Figure 32 shows the roadway count locations relative to the key study area intersections and preferred potential station locations: Columbus Avenue and Hole-in-the-Wall. Though other potential station site locations, such as Historic Station and Cini Station, reside within the study area. The volumes and 85th-percentile speeds are summarized in Table 7. As shown in the table, approximately 6,000 vehicles travel along the majority of Route 156 on a typical weekday (Monday thru Friday) at speeds ranging from 20-40 miles per hour (mph).

The remaining roadways experience significantly less weekday volume of approximately 600-2,000 vehicle per day, depending on the location.

Concurrent with the ATR counts, turning movement counts (TMCs) were conducted in August 2017 for study area intersections during the weekday morning peak period from 7:00 AM to 9:00 AM and the weekday evening peak period from 4:00 PM to 6:00 PM. Graphs of the existing condition traffic data for the weekday morning, weekday evening, and weekday mid-day are provided in Appendix 1. The raw count data is included in Appendix 1 as well.

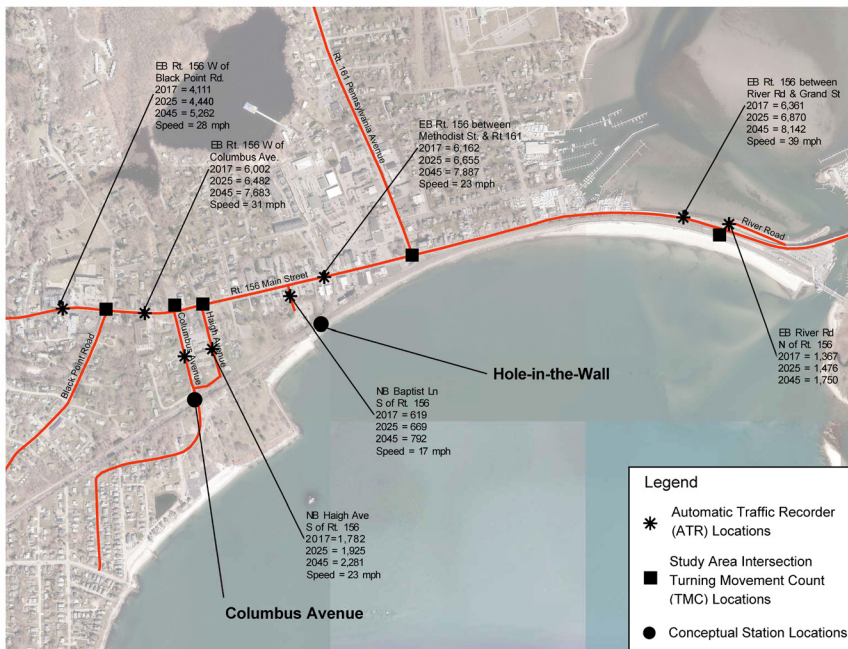


Figure 32 - Study Area Intersections and Roadway Count Locations

Table 7 - ATR Counts

ATR Count Locations	2017 Existing ADT		85th Percentile Speed (mph)	
	NB/EB	SB/WB	NB/EB	SB/WB
Route 156 west of Black Point Road	4,111	5,038	28	33
Route 156 west of Columbus Avenue	6,002	5,666	31	29
Route 156 between Methodist Street and Route 161	6,162	6,253	23	21
Route 156 between River Road and Grand Street	6,361	6,920	39	28
Columbus Avenue south of Route 156		1,943		24
Haigh Avenue south of Route 156	1,782		23	
Baptist Lane south of Route 156	619	599	17	19
River Road north of Route 156	1,367	1,449		

## Future Conditions

### Site Generated Trip Estimation

To convert the passenger ridership projections to vehicle trips it was assumed all passengers would travel to either of the potential station sites by a vehicle and none would travel via bicycle, walk or another mode of transportation. Additionally, it was assumed, for weekday morning and evening peak periods, 80 percent of boarding and alighting passengers would drive to the facility and 20 percent of boarding and alighting passengers would be dropped off and picked up. For the weekend peak period it was assumed 100 percent of passengers would drive. For the weekday morning peak hour, this would result in 100 percent of boarding passengers plus 20 percent of alighting passengers to be converted to an entering trip, and 20 percent of boarding passengers and 100 percent of alighting passengers to be converted to an existing trip. The weekday evening peak hour would be the inverse percentages as the weekday morning peak hour. The proposed station site trip generation estimates are summarized in Table 10.

## Volume Growth

Building off of chapter 6 – Ridership Data Overview, in order to better understand vehicle travel patterns and determine volume growth within the study area, a review of regional demographic data was conducted. As part of this effort, regional population growth projections, household growth projects, vehicle registrations, and vehicle mile travel (VMT) estimates were reviewed and summarized. Based on demographic data review, it was determined a 1.0% growth factor would be applied to the existing August 2017 counts to estimate the future intersection and roadway volumes for a 2025 Opening Year and 2045 Design Year. This growth factor

has been approved by CTDOT Bureau of Policy and Planning. The demographic data review summary is provided in Appendix 1.

### Site Generated Traffic and Trip Distribution

For a transit station, site generated traffic could be estimated using several trip generation methodologies. One common trip generation method utilizes the relationship between number of parking spaces available and the station site area demographics. A second trip generation method utilizes the estimated passenger ridership (boarding and alighting) at the station site. The conceptual sites would be new stations and it is uncertain whether parking demand would be high enough to support the parking method. Therefore, traffic generation was based on the projected passenger ridership for the potential station sites.

### Trip Distribution Methodology

Traffic distribution to the roadway network can be determined by a variety of techniques. For a

**Table 8 - Gravity Model Traffic Allocation**

Area	Population (P)	Distance (D) (miles)	Ratio (P/D)	Percentage
1	1857	5	371.40	3.00%
2	873	4.5	194.00	1.50%
3	1666	2.5	666.40	6.00%
4	2579	2.5	1031.60	8.50%
5	1519	1.5	1012.67	8.00%
6	1781	1.5	1187.33	11.00%
7	1719	0.5	3438.00	28.00%
8	2124	2	1062.00	9.00%
9	984	1	984.00	8.00%
10	1740	2	870.00	7.00%
11	2515	2	1257.50	10.00%
<b>TOTAL</b>			<b>12074.90</b>	<b>100.00%</b>

new station site, such as this, the most common method employs the use of a Gravity model. A Gravity model weighs the attraction to the station in proportion to the population of the potential areas surrounding the station, and in inverse proportion to the distance or travel time from those areas to the station.

Table 8 shows the calculation of the percentage of traffic allocated to each of the eleven areas surrounding the station, as calculated by the gravity model. Table 9 shows the assignment of traffic to each of the primary entry/exit routes surrounding the station sites using the eleven population centers.

The site generated traffic volumes for each station site were distributed to the local roadway network in accordance with the route assignments noted above. The results are presented in Appendix 1 for a 2025 Opening Year

and 2045 Design Year. Combined traffic, which reflects the total traffic on the roadway system after the station is opened, is also presented in Appendix 1 for a 2025 Opening Year and 2045 Design Year.

The 2017 Existing, 2025 Opening Year, and 2045 Design Year conditions traffic volume network are provided in Appendix 1.

**Table 9 - Gravity Model Traffic Assignment**

Route Traveled to get to station	Areas	% of Vehicles	% of Vehicles (rounded)	No. of Vehicles	Number of Vehicles (adjusted)
156 EB	A1+A2+A3/2+A4+A5/2+A6/3	23.667%	24.00%	16.80	17.00
161	A6/3+A7/2+A8/2+A10/3	24.50%	24.50%	17.15	17.00
156 WB	A9+A11+A10/3	20.33%	20.00%	14.00	14.00
BLACKPOINT RD NB	A3/2+A5/2	7.00%	7.00%	4.90	5.00
BLACKPOINT RD SB	A6/3+A7/2+A10/3+A8/2	24.500%	24.50%	17.15	17.00

## Traffic Impact Assessment

A traffic impact assessment measures existing and projected future traffic volume quantities within the study area by assessing the quality of flow on the roadway. As part of this assessment an intersection capacity analyses have been conducted for the 2017 Existing, 2025 Opening Year, and 2045 Design Year traffic conditions for a typically weekday morning and evening peak hours and typically weekend mid-day peak hour at study area intersections. Vehicles trips associated with the summer months (June, July, and August) increased ridership were not evaluated as part of this study.

**Table 10 - Station Site Generated Vehicle Trip Estimation Summary**

	2017 Estimated Site Generated Trips				2025 Opening Year Condition				2045 Design Year Condition			
	AM Peak Trips	Midday Week-end Trips	AM Peak Trips - Summer	Midday Weekend Trips - Summer	AM Peak Trips	Midday Week-end Trips	AM Peak Trips - Summer	Midday Weekend Trips - Summer	AM Peak Trips	Midday Week-end Trips	AM Peak Trips - Summer	Midday Weekend Trips - Summer
<b>ENTER</b>	25	11	27	17	34	15	37	24	59	26	63	42
<b>EXIT</b>	8	1	8	2	11	2	11	3	18	3	19	5
<b>TOTAL</b>	33	12	35	19	45	17	48	27	77	29	82	47

## Intersection Capacity Analysis

The intersection capacity analysis is based on the methodology presented in the 2010 Highway Capacity Manual (HCM2010)<sup>14</sup> for signalized and non-signalized intersections and was conducted by utilizing Synchro analysis software. The analysis determined any potential deficiencies in intersection operations within the study area and assigns a Level of service (LOS) based average vehicle control delay.

Level of service denotes the different operational characteristics of a signalized and non-signalized intersection by providing an index to the operational qualities of a roadway segment or intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worse operating conditions. Level of service at an intersection is a function of average vehicle control delay with different ranges for signalized and non-signalized intersection. Therefore, a minor increase in vehicle delay may result in a change in LOS if the intersection is operating to the upper range of a particular LOS designation.

The intersection capacity analysis results are summarized in below and the comprehensive result reports are provided in Appendix 1.

## 2025 Opening Year and 2045 Design Year Conditions Intersection Capacity Analysis Summary

### Columbus Avenue Site:

There are no significant changes to the operating LOS for the weekday and weekend peak hours in 2025 Opening Year or 2045 Design Year conditions resulting from the opening of a station at the Columbus Avenue site for the following streets: Black Point Road, Columbus Avenue, Haigh Avenue, McCook Place, Baptist Lane, and River Road. There are minor impacts to the operating LOS for the weekday evening and weekend mid-day peak hours in 2045 Design Year condition at Route 161, which may

require timing adjustments or lane configuration modifications by the 2045 Design Year. There are no other significant changes to the operating LOS for any peak hours in 2025 or 2045 resulting from the opening of the station at the Columbus Avenue site. Should this be selected as the preferred station location, additionally analysis should be conducted to determine the impact of the summer months increased ridership on the study area roadway network.

### Hole-in-the-Wall Site:

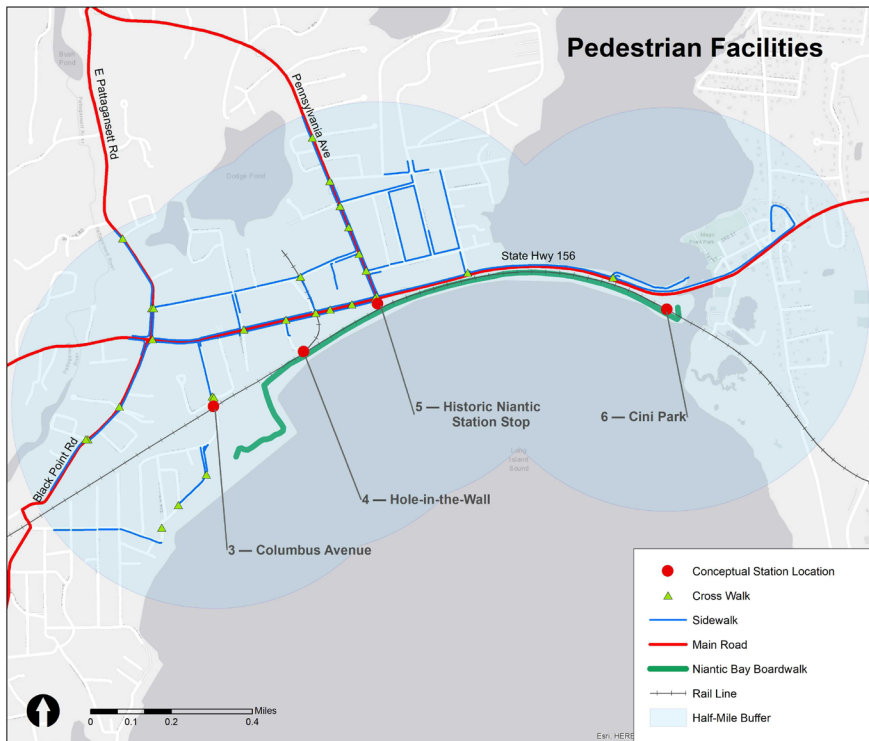
There are no significant changes to the operating Levels of Service for the weekday and weekend peak hours in 2025 Opening Year or 2045 Design Year conditions resulting from the opening of a station at the Hole-in-the-Wall site for the following streets: Black Point Road, Columbus Avenue, Haigh Avenue, Baptist Lane, and River Road. Upon opening the station in 2025, the McCook Place approach would become LOS F during the weekday evening peak hour due to the increase in vehicular traffic generated by the station. It may be necessary to install a traffic signal at this intersection to mitigate operational impacts. There are minor impacts to the operating LOS for the weekday evening and weekend mid-day peak hours in 2045 Design Year condition at Route 161, which may require timing adjustments or lane configuration modifications by the 2045 Design Year. There are no other significant changes to the operating LOS for any peak hours in 2025 or 2045 resulting from the opening of a station at the Hole-in-the-Wall site. Should this be selected as the preferred station location, additionally analysis should be conducted to determine the impact of the summer months increased ridership on the study area roadway network.

## Crash Data Analysis

To identify motor vehicle trends in the study area, the most current crash data was obtained from the Connecticut Crash Data Repository for the three-year period of 2018 through 2020 for the roadways surrounding potential station sites. A map of the crash locations within the

<sup>14</sup> Transportation Research Board, Highway Capacity Manual, Washington, D.C. 2010





**Figure 35 - Pedestrian Facilities in the Study Area**

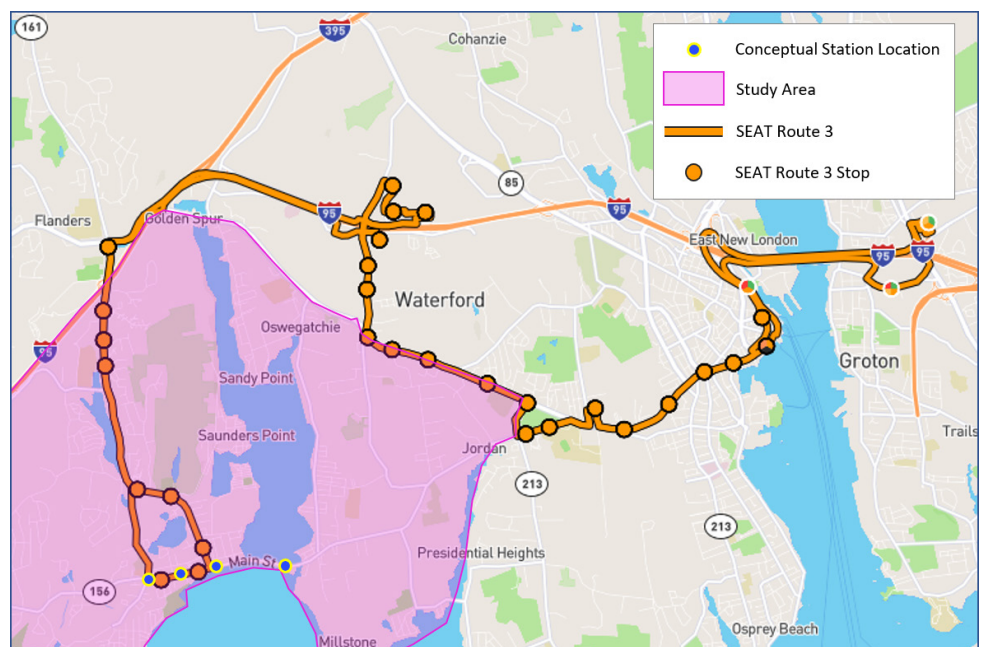
## Transit Access

The Southeast Area Transit District (SEAT) was created by local towns in New London county and offers transit service to its member towns of East Lyme, Griswold, Groton, Lisbon, Montville, New London, Norwich, Stonington and Waterford. Figure 37 shows a system map of SEAT with the study area and conceptual station locations. The SEAT service is most accessible to three conceptual stations in downtown Niantic, Columbus Avenue, Hole-in-the-Wall, and Historic Niantic Station. Route 3, shown on Figure 36, provides weekday transportation between New London Union Station, areas of Groton and Niantic. The schedule for Route 3 in Table 11 is current as of June 1, 2020. There are five buses per weekday that operate from 7AM to 3PM on a two-hour basis.

Looking at the “Employment Market” and “Commuting Patterns” sections in Chapter “3 - Existing Conditions of Study Area”, most individuals traveling into and out of the study area for work are traveling within the SEAT service area, which raises the question of whether study area residents would be better served by increased SEAT service levels rather than a new Niantic station stop. The 2015 SEAT Bus Study<sup>15</sup> provided three recommendations for the SEAT service. The first, Cost Neutral Plan A, recommends discontinuing Niantic SEAT runs due to low ridership at the time of the study. In the Cost Neutral Plan B, the study recommends leaving Niantic runs at their

current 2-hour frequency. In System Expansion Plan C, which assumes there is additional operating resources for SEAT and therefore more funding for additional service, 2-hour

15 [SEAT Bus Study: Final Report; SCCOG, 2015](#)

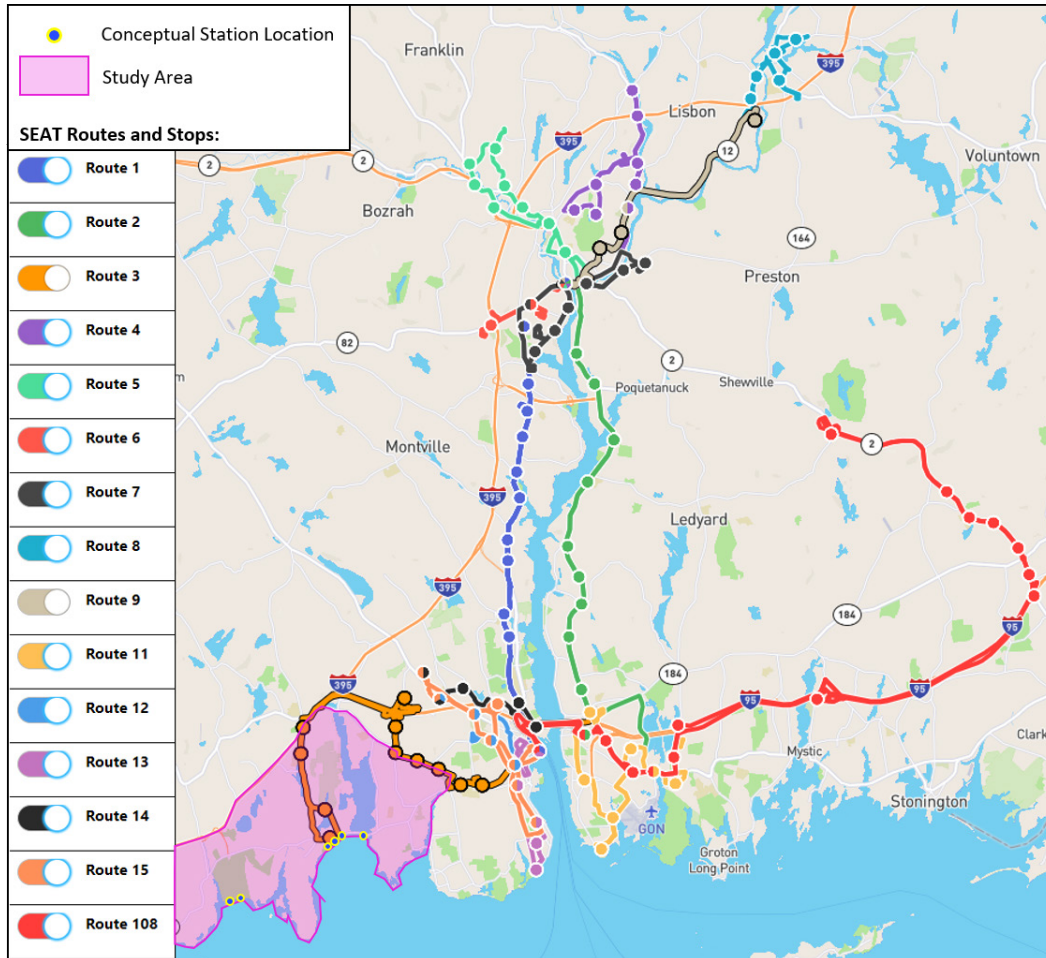


**Figure 36 - SEAT Route 3**

**Table 11 - SEAT Route 3 Weekday Schedule**

Weekdays									
Wesbound									
Depart New London Union Station	Groton Square	Eugene O'Neill Dr & State St (Southbound)	Stop & Shop Market	Crossroads Wal-Mart	Arrive Niantic/Main St	Depart Niantic/Main St	Crossroads-Walmart	Stop & Shop Market	Arrive New London Union Station
7:00 AM	7:15 AM	7:20 AM	7:30 AM	7:45 AM	8:05 AM	8:05 AM	8:25 AM	8:35 AM	8:55 AM
9:00 AM	9:15 AM	9:20 AM	9:30 AM	9:45 AM	10:05 AM	10:05 AM	10:25 AM	10:35 AM	10:55 AM
11:00 AM	11:15 AM	11:20 AM	11:30 AM	11:45 AM	12:05 PM	12:05 PM	12:25 PM	12:35 PM	12:55 PM
1:00 PM	1:15 PM	1:20 PM	1:30 PM	1:45 PM	2:05 PM	2:05 PM	2:25 PM	2:35 PM	2:55 PM
3:00 PM	3:15 PM	3:20 PM	3:30 PM	3:45 PM	4:05 PM	4:05 PM	4:25 PM	4:35 PM	4:55 PM

Waterford AHEPA and Cross Roads Professional Building served by request only - call SEAT one hour before for pickups, or advise operator for drop-offs.



**Figure 37 - SEAT Routes and Stops**

frequency is still recommended for the Niantic run. Although individuals in the study area are generally moving in the same direction as the SEAT service based on employment destination mapping, ridership on Route 3 remains low, with no recommendations to increase its frequency.

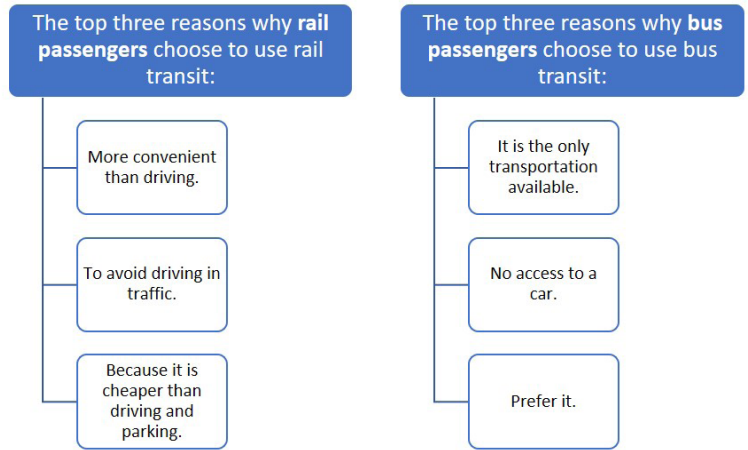
**Bus and Rail Travel Characteristics**

A passenger report released by APTA which analyzed passenger demographics and travel data collected from respondents representing 163 transit systems looked at how individuals

would have made their trip if they had not taken transit. Bus riders are more likely to not have made the trip, while rail passengers would have driven (Figure 38). This corresponds to the reasons that individuals use different modes of transit. The reason for choosing transit for rail passengers combined with how the trip would have been made otherwise indicates that rail passengers are typically higher income with access to a vehicle and are considered ‘choice riders’ as opposed to need-based riders.

## Key Findings

- The highest weekday daily traffic volume occurs on Rt 156 and Rt 161, while the adjacent streets experience significantly less weekday daily volume
- This region of Connecticut is not anticipated to see significant population growth through either the estimated 2025 Opening Year or the 2045 Design Year conditions.
- The two potential station sites evaluated within and/or closest to the village center are well connected through existing pedestrian facilities, however vehicular access to some of these sites may be difficult given one-way street designs and lack of adequate parking on site.
- The village center study area intersections should adequately handle the slight increase in traffic volumes from the Columbus Avenue and Hole-in-the-Wall station site trips associated with the passenger ridership projections and may only require minor mitigation measures to maintain an acceptable operational LOS, as indicated by the intersection capacity analysis results
- Since the Historic Niantic Station and Cini Park sites are located in proximity of the village center, traffic characteristics



**Figure 38 - Reasons for Transit Usage**

at a macro-scale would be similar to the Columbus Avenue and the Hole-in-the-Wall sites. Additionally, the ridership patterns are also likely to be similar for some of these sites. Therefore, it could be inferred that a traffic impact assessment would result in similar intersection capacity analysis results as Columbus Avenue and Hole-in-the-Wall Stations. This would need to be confirmed through additional analysis.

- Vehicle ownership is high and bus transit usage is low



# 9 - Transit Oriented Development Assessment



## Background Information

Existing development patterns and the potential for transit-oriented development (TOD) are important considerations in the siting of a passenger rail station. Areas with existing concentrations of residential units benefit from the siting of new rail stations, which in turn spurs demand for more housing. Having a critical mass of housing units near stations generates the potential for additional ridership resulting in mutually beneficial outcomes for the service and the local economy. While development patterns do change over time to reflect the demand created by new access and service, the existing market conditions, density, zoning and public utilities to support higher density in developments, e.g. public water and sewers, are the best indicators of future development potential.

Of the six Niantic station site alternatives considered in this feasibility study, three sites (Columbus Avenue, Hole-in-the-Wall and the Historic Station) located within or in close proximity to the village center were further evaluated (below) to assess their near-term TOD potential. TOD is not feasible at either of the two Rocky Neck State Park sites due to their location within a state park and lack of proximity to developable land. Additionally, the Cini Park site is geographically isolated and provides for limited to no proximal developable land. As a result, both Rocky Neck State Park sites and the Cini Park site were not further evaluated for their TOD potential.

## Existing Market Conditions

There are 71 parcels classified as commercial within a quarter mile of the Columbus Avenue, Hole-in-the-Wall and Historic Station sites. Within these zones commercial activity is centered around restaurants and smaller shops. A Google Street View analysis indicates that there are over 89 businesses whose parcels intersect the quarter mile distance for the three alternative sites further evaluated for TOD. The

highest commercial density occurs along Route 156 (Main Street) on either side of Methodist Street. Figure 39 and Figure 40 show Google Street Views of Rt 156 in two different locations.

Vacant land is currently not available within a quarter mile buffer of the three alternatives being further evaluated. Zoning changes would be needed to allow for more flexibility in Niantic's village center. With the additional development spurred by a new rail station, there would be a need for properties to be expanded upon or rebuilt to add height in order to accommodate density. This would not be possible in this area without changes to the zoning code to allow for existing properties to expand.

## Existing Density

As stated in Section 3 of this feasibility study – areas with higher density often have higher levels of transit ridership and thus are likely to have greater demand for development. Furthermore, higher density is typically necessary to make new development financially feasible.

Also stated in Section 3 of this study, housing density (measured by number of dwelling units per acre) is another means of measuring viability of a rail station in communities. According to FTA, to support ridership, areas surrounding potential rail stations should have a density of about 25-35 housing units per acre<sup>16</sup>. According to the ACS 2015-2019 five-year estimate, housing unit data for the study area has a maximum of only two housing units per acre within the block group containing Columbus Avenue, Hole-in-the-Wall, and Historic Niantic Station. The block groups containing the remaining conceptual station locations have even lower housing unit densities, at less than one housing unit per acre.

<sup>16</sup> [Planning for Transit-Supportive Development: A Practitioner's Guide, FTA, June 2014](#)



**Figure 39 - Google Street View Capture of Rt 156 Looking West**



**Figure 40 - Google Street View Capture of Rt 156 at the intersection of Methodist St and Looking East**

## Existing Zoning

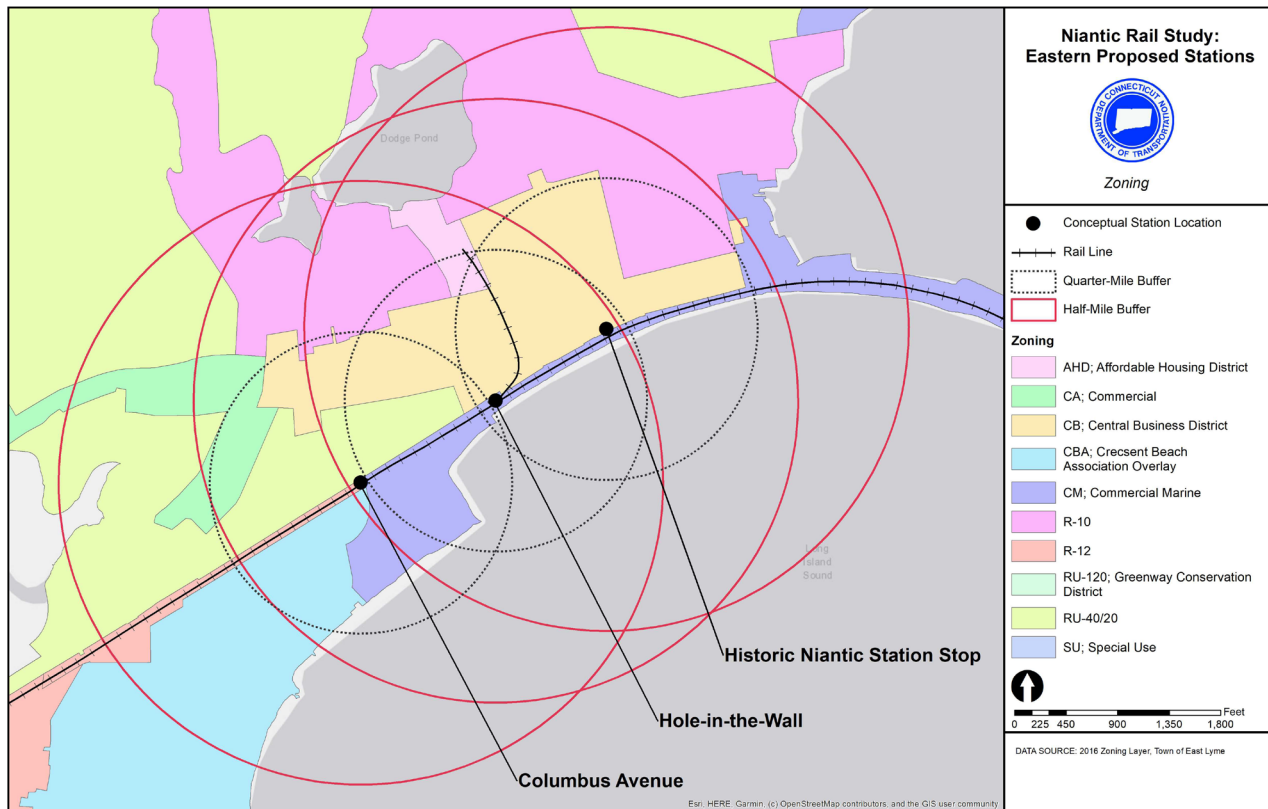
Current zoning regulations are intended to maintain the character and heritage of the Niantic Village and restrict undesirable development. The primary zoning districts surrounding the main site alternatives within or near the village center – Central Business District (CB), Commercial Marine (CM), and Rural District (RU-40) - all have various factors that limit TOD, such as use or dimensional requirements.

These districts, particularly those east of Columbus Avenue, are critical because they make up Niantic’s village center and would be the likely location for TOD. Higher-density residential development is currently only allowed on parcels immediately surrounding Hole-in-the-Wall and Historic Niantic Station Stop. Overall, residential development surrounding the conceptual station locations is primarily low-density, single-family housing. A zoning map is depicted in Figure 41.

## Potentially Limiting Regulations

Based on the most recent Town of East Lyme Zoning Regulations (January 2020) <sup>17</sup>, there are several factors that inhibit TOD in the conceptual station areas. For example, RU-40 limits dwellings to single family houses on lots greater than 40,000 square feet, while the R-12 zone is limited to two family dwellings or less on a minimum 18,000 square foot lot. In the commercial zone (CM), dwelling units are limited to 50% of a mixed-use commercial building. In addition, the affected zones have minimum lot sizes, minimum frontages, and maximum building heights intended for low density housing. These types of requirements can inhibit TOD, as adjacent higher density housing is critical for TOD feasibility. Below are high level observations for the three sites further evaluated.

17 East Lyme Zoning Regulations: Adopted May 4, 1954 – As amended through January 24, 2020



### **Columbus Avenue Site**

Surrounding this site north of the tracks is the RU-40 rural zoned district, which is primarily meant for single-family dwellings, and forestry and agricultural uses. Mixed-use development is not permitted in the RU-40 district. Surrounding this site southeast of the tracks is the CM Commercial District. This district is primarily zoned for repair and maintenance facilities for marine purposes, as well as for the sale, rental and accessories related to boating. Mixed-use dwelling units are permitted in the CM District only as a special use. In the CM district, 30 feet is the maximum height; there are exceptions that allow for a maximum building height of 50 feet (see section 10.3.5 of East Lyme zoning regulations for details on building heights). However, one of the main criteria to achieve 50 feet in height is not obstructing views from surrounding parcels, which would likely happen if TOD is desired around a potential station at this location.

### **Hole-in-the-Wall Beach Site**

Surrounding this site northwest of the tracks is the RU-40 rural district, which is zoned primarily for single-family dwellings, forestry and agricultural uses. Surrounding this site northeast of the tracks is the CB Commercial District, which is zoned primarily for single-family and 2-family dwellings, retail stores less than 20,000 square feet, business or professional offices, standard restaurants, and hotels, inns, and bed and breakfasts. Mixed-use developments are special permitted uses in the CB District. A limiting factor for this district is that it has a height restriction of 30 feet. Much of the area surrounding the site south of the tracks is zoned as CM Commercial District. The CM Commercial District's primary uses are for repair and maintenance facilities for marine purposes, as well as for the sale, rental and accessories related to boating. Mixed-use dwelling units are permitted only as a special use. In the CM district, 30 feet is the maximum height; there are exceptions that allow for a maximum building height of 50 feet. However, similar to the Columbus Avenue site, one of the

main criteria to achieve 50 feet in height is not obstructing views from surrounding parcels, which would be likely if development is desired around a potential station at this location.

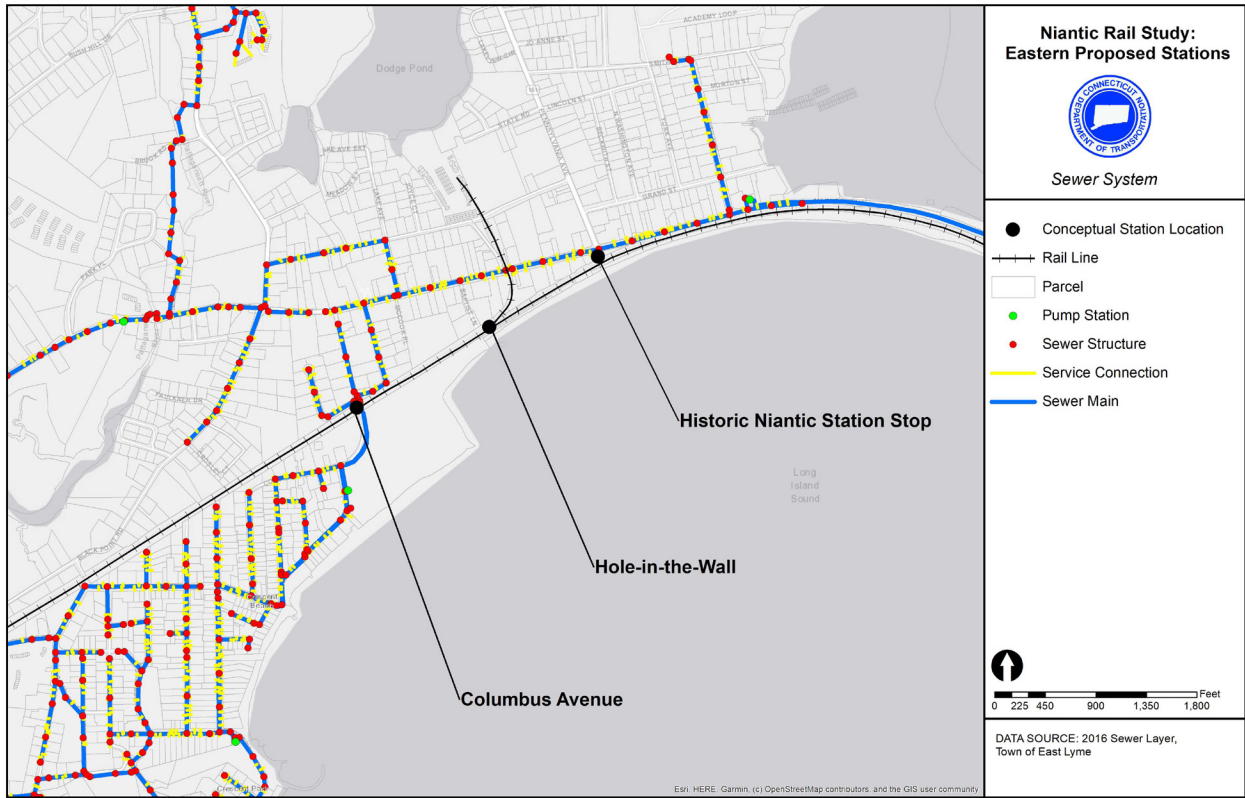
### **Historic Niantic Station Site**

Surrounding the Historic Niantic Station site to the west, north and northeast of the tracks is the CB Commercial District, which is zoned primarily for single-family and 2-family dwellings, retail stores less than 20,000 square feet, business or professional offices, standard restaurants, and hotels, inns, and bed and breakfasts. Mixed-use developments are special permitted uses in CB Commercial District. A limiting factor for this district is it has a height restriction of 30 feet. Surrounding this site to the southwest and east is the CM Commercial District. The CM Commercial District is primarily zoned for repair and maintenance facilities for marine purposes, as well as for the sale, rental and accessories related to boating. Mixed-use dwelling units are permitted only as a special use. In the CM Commercial District, 30 feet is the maximum height; there are exceptions that allow for a maximum building height of 50 feet. However, similar to the Columbus Avenue site, one of the main criteria to achieve 50 feet height is not obstructing views from surrounding parcels, which would be likely if development is desired around a potential station at this location.

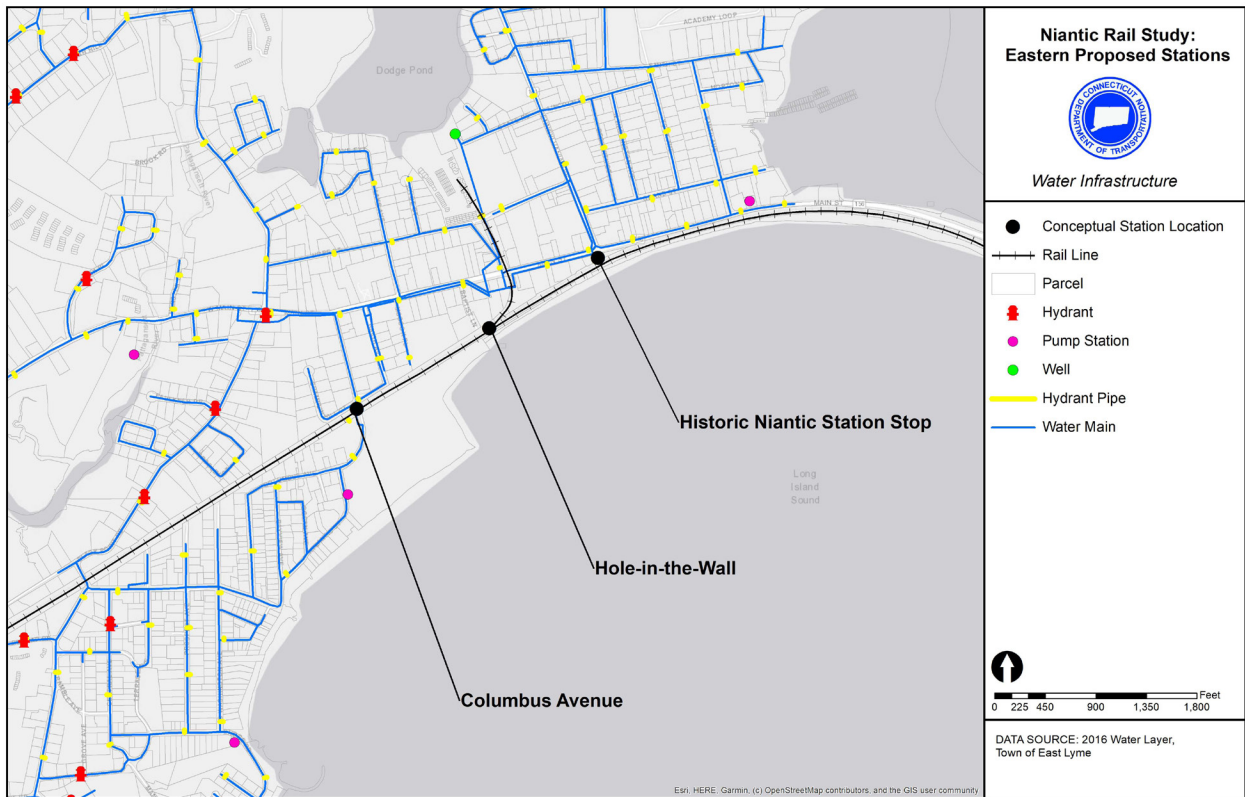
## **Existing Public Utilities**

Figure 42 and Figure 43 depict existing public Sewer and Water infrastructure, respectively. The sites generally have access to sewer connections except for the Hole-in-the-Wall site. Access could be provided to Hole-in-the-Wall through Baptist Lane in the future, however, extending sewer lines may be prohibitively expensive.

Similarly, the sites generally have access to water main connections except for the Hole-in-the-Wall site. Parcels surrounding this site seem to have closer access to water mains according to Figure 47. While the Columbus Avenue site is within closest proximity to a hydrant, the other two sites lack access to a nearby fire hydrant.



**Figure 42 - Existing Public Sewer Infrastructure**



**Figure 43 - Existing Public Water Infrastructure**

## Key Findings

The analysis of TOD opportunities around each of the three sites further evaluated in this study resulted in unfavorable outcomes. Although two of the three sites and the parcels surrounding all three sites generally have access to sewer connections and other public utilities, the overall TOD assessment in this community is still unfavorable primarily due to low density, limited availability of vacant land and restrictive zoning regulations that suppress larger scale mixed use developments. The surrounding area of these three locations consist of a mix of land uses but generally comprises residential and commercial uses and the range in building height is less than 3 stories with the vast majority being 2 story and under. Zoning regulations limit the height of structures and the use. These regulations help maintain the character of Niantic and protect scenic views, but ultimately this limits the potential for TOD growth under current regulations.

# 10 - Scoring of Conceptual Station Alternatives





## Background Information

Site alternatives were evaluated using a process designed to assess how well each alternative site performed against market and development, as well as physical and environmental conditions assessed across several specific indicators. Performance measures for each assessment indicator were developed and qualitatively evaluated, using a scale that ranged from high-performing (A) to low-performing (F). The evaluation of criteria for each site resulted in individual scores added together and weighted for an overall evaluation score and letter grade per each major condition category and site. Although the individual scores and letter grades were assessed based on a numeric scoring of up to 40 points for market and development indicators and up to 20 points for physical and

environmental indicators, the evaluation of both market and development and physical and environmental conditions were weighted equally as part of the overall assessment of each site. For each condition, the more points an indicator received the higher its overall score and letter grade.

### Market and Development Indicators

The market and development indicators work to ascertain the viability of the station being able to attract a sufficient commuter base, work within its surrounding context and promote TOD. The specific indicators are presented below (Table 12 and Table 13). The total possible score for the market and development indicators is 240 points.

**Table 12 - Definition of Scoring Criteria for Market and Development Indicators**

<b>Scoring Criteria</b>	<b>Definition</b>
<b>Commuter Potential</b>	This criteria provides an indication of the location's viability as a commuter rail station, that accounts for both the general commuter market as well as the individual favorability of each alternative.
<b>Residential and Employment Density</b>	This criteria is an assessment of proximal residential and employment density to determine whether there is sufficient density and public infrastructure to support a station alternative.
<b>Proximal Supportive Land Use and Zoning</b>	Land use and zoning are important criteria to assess because they reveal whether existing regulations would make it easier or more difficult to build a new station, and further, whether regulations would support or stifle development in the area surrounding the station alternative.
<b>Developable Land</b>	This criteria is an assessment of underdeveloped and vacant land in close proximity to the station alternative, where more developable land is equivalent to a more favorable station alternative.
<b>Proximity to Town Center</b>	The town center contains the highest population and employment density, as well as closer proximity to goods and services, therefore a station alternative that is closer to the town center would prove more favorable.
<b>Existing Multimodal Access</b>	Ease of first and last mile connections is critical to establishing a viable rail service and supports development. This criteria assesses the proximity of a given alternative regarding transit connections, as well as pedestrian and bicycle networks.

**Table 13 - Definition of Market and Development Indicators**

	Poor		Fair		Good
Score Value	0	10	20	30	40
<b>Commuter Potential</b>	No commuter potential	Less than suitable commuter potential	Suitable commuter potential	More than suitable commuter potential	Substantial commuter potential
<b>Residential and Employment Density</b>	No employment and/or residential density with supporting public infrastructure surrounding site	Less than suitable employment and/or residential density with supporting public infrastructure surrounding site	Suitable employment and/or residential density with supporting public infrastructure surrounding site	More than suitable employment and/or residential density with supporting public infrastructure surrounding site	Substantial employment and/or residential density with supporting public infrastructure surrounding site
<b>Proximate Supportive Land Use and Zoning</b>	Existing land use and zoning is not conducive to station or TOD	Major modifications required to existing land use and/or zoning to support station and TOD	Moderate modifications required to existing land use and/or zoning to support station and TOD	Minor modifications required to existing land use and/or zoning to support station and TOD	Existing land use and zoning strongly supports station and TOD without the need for any modifications
<b>Developable Land</b>	No developable land within 1/2 mile of site	Less than suitable amount of undeveloped or underdeveloped land within 1/2 mile of site	Suitable amount of undeveloped or underdeveloped land within 1/2 mile of site	More than suitable amount of undeveloped or underdeveloped land within 1/2 mile of site	Substantial amount of undeveloped or underdeveloped land within 1/2 mile of site
<b>Proximity to Town Center</b>	Site is more than 1 mile from town center	Site is 3/4 mile to 1 mile from town center	Site is 1/4 mile to 3/4 mile from town center	Site is less than 1/4 mile from town center	Site is located in town center
<b>Existing Multimodal Access</b>	No multimodal access in area	Less than suitable multimodal access in area	Suitable multimodal access in area	More than suitable multimodal access in area	Substantial multimodal access in area

## Physical and Environmental Conditions

The indicators under physical and environmental conditions look at the ability to site a rail station at a given location considering the characteristics of the site and the requirements for siting a station (e.g. platform size, cross platform access, parking, passing sidings, etc.). The specific indicators are presented below (Table 14 and Table 15). The total possible score for the physical and environmental indicators is 240 points.

**Table 14 - Definition of Scoring Criteria for Physical and Environmental Indicators**

<b>Scoring Criteria</b>	<b>Definition</b>
<b>Cross Platform Accessibility</b>	This criteria assesses the ease of gaining ADA compliant access to both the in-bound and outbound tracks.
<b>Site Ownership</b>	Sites where all or most of the area needed for the station alternative are owned by the state or town would make it easier to build a station, as opposed to having to pay for or potentially being denied access to land that is owned privately. This criteria assesses whether each station alternative area is public or private.
<b>Parking Potential</b>	CTDOT has a target of 200 dedicated spaces for any new station, the feasibility and level of effort for constructing these spaces will vary.
<b>Level of Effort to Construct Station</b>	This criteria refers to how much work would need to go into constructing the station, such as engineering, design, and removal or relocation of items such as tress, hydrants, etc. within the site location.
<b>Roadway Impact</b>	Traffic impact to surrounding roadways is a serious concern; this criteria is an assessment to the extent that a station at a given location would negatively impact the flow and/or require mitigation measures to accommodate station demand.
<b>Ease of Access</b>	This criteria assesses how readily members of the public can get in and out of the site area.
<b>Flooding and Storm Surge Inundation</b>	As a coastal rail system, it is important to consider the potential impacts from coastal storms and flooding. This criteria assesses each station alternative to determine to what degree it may be threatened by flooding and storm surge inundation.
<b>Impact to Drinking Water Resources</b>	Municipal water is a protected resource and therefore any impact that a station alternative may have on drinking water resources may render it unfavorable.
<b>Impact to Wetlands</b>	Wetlands play a critical role in protecting coastal communities and habitat for wildlife, a station location which impacts a wetland harms these functions and place the alternative at a greater risk of flooding.
<b>Impact to Protected Species</b>	Both state and National ESAs require that listed species and the critical habitat of species are taken into consideration. Depending on the species, its listing status, and the nature of the impact, a station cannot be constructed without mitigating its impacts to such species and their habitats.
<b>Impact to Historical Resources</b>	This criteria is a measure of the proposed site's impact on properties or structures which are defined by either local, state or national databases to have historic value.
<b>Impact to Parks</b>	This criteria assesses the impact or intrusion (physical or other) of each station alternative on private or publicly conserved land (State Parks, Local Parks, land trusts, etc.).

**Table 15 - Definition of Physical and Environmental Indicators**

	Poor		Fair		Good
Score Value	0	5	10	15	20
<b>Cross Platform Accessibility</b>	Cross platform accessibility is not possible on site	Major construction required for cross platform accessibility	Moderate construction required for cross platform accessibility	Minor construction required for cross platform accessibility	Existing overpass or underpass is already at or near platform locations
<b>Site Ownership</b>	Site is restricted	Entire site footprint for station owned by private or other entity	Less than half of the site footprint needed for owned by town or state	Majority of site footprint needed for station owned by town or state	Entire site footprint needed for station owned by town or state
<b>Parking Potential</b>	200 dedicated Parking spaces cannot be accommodated on site or within 1/4 mile of site	Major amount of construction, property acquisition(s), and/or special arrangements required for 200 dedicated parking spaces to be accommodated on site or within 1/4 mile from site	Moderate amount of construction, property acquisition(s), and/or special arrangements required for 200 dedicated parking spaces to be accommodated on site or within 1/4 mile from site	Minor amount of construction, property acquisition(s), and/or special arrangements required for 200 dedicated parking spaces to be accommodated on site or within 1/4 mile from site	200 dedicated parking spaces can easily be accommodated on site or nearby without the need for any construction, property acquisition(s) or special arrangements
<b>Level of Effort to Construct Station</b>	Construction is not feasible	Major construction required	Moderate construction required	Moderate to minor construction required	Minor construction required
<b>Roadway Impact</b>	Major roadway and/or operational improvements required	Moderate to major roadway and/or operational improvements required	Moderate roadway and/or operational improvements likely required	Minor to moderate roadway and/or operational improvements likely required	No to minor roadway and/or operational improvements required
<b>Ease of Access</b>	Site is not accessible	Site is accessible, but with major barriers	Site is accessible, but with moderate barriers	Site is accessible, but with minor barriers	Site is easily accessible, no barriers
<b>Flooding and Storm Surge Inundation</b>	Majority of site is located within 100-year FEMA flood zone	Portion of site is within or adjacent to 100-year FEMA flood zone	Site is within 500-year FEMA flood zone and/or within 1/4 mile of 100-year flood zone	Site is within 1/4 mile of 500-year FEMA flood zone	FEMA flood zones are more than 1/4 mile away from site
<b>Impact to Drinking Water Resources</b>	Adverse affect on drinking water resources likely		No likely adverse affect on drinking water resources		No affect on drinking water resources
<b>Impact to Wetlands</b>	Likely adverse affect on wetlands		No likely adverse affect on wetlands		No likely impact on wetlands
<b>Impact to Protected Species</b>	Likely adverse affect on protected species		No likely adverse affect on protected species		No likely affect on protected species
<b>Impact to Historical Resources</b>	Likely adverse affect on historical resources		No likely adverse affect on historical resources		No affect on historic resources
<b>Impact to Parks</b>	Site is a 4f and/or 6f land and any impacts will likely require mitigation		Site is adjacent to 4f and/or 6f land(s), thus any impacts may require at least some mitigation		Site is not a 4f and/or 6f land, nor adjacent to any 4f or 6f land

# 11 - Conclusion



## Results

The results are presented below (Table 16, Table 17, Table 18) and portray the scoring for the six alternatives investigated. The highest average score possible for the Market & Development Indicators is 40, while the highest average score possible for the Physical & Environmental Indicators is 20. This is based on the scoring system presented in Chapter 10 – Scoring of Conceptual Station Alternatives, as well as the data from the individual site analyses presented above, GIS mapping, and site visits. The numerical scores presented below were further converted to letter grades, a score of 312 is needed to be considered passing and an A requires a cumulative score of 446 or more.

**Table 16 - Market & Development Indicator Scoring**

<b>Individual Criteria Assessed</b>	<b>Rocky Neck Pavilion</b>	<b>Rocky Neck Main Beach</b>	<b>Columbus Avenue</b>	<b>Hole-in-the-Wall</b>	<b>Historic Station</b>	<b>Cini Park</b>
<b>Commuter Potential</b>	0	0	10	10	10	10
<b>Residential and Employment Density</b>	0	0	10	10	10	10
<b>Proximal Supportive Land Use and Zoning</b>	0	0	10	10	10	10
<b>Developable Land</b>	0	0	10	10	10	0
<b>Proximity to Town Center</b>	0	0	30	40	40	30
<b>Existing Multimodal Access in Area</b>	0	0	10	10	10	0
<b>Average Score (rounded to the nearest whole number)</b>	0	0	13	15	15	10

Table 17 - Physical & Environmental Indicator Scoring

Individual Criteria Assessed	Rocky Neck Pavilion	Rocky Neck Main Beach	Columbus Avenue	Hole-in-the-Wall	Historic Station	Cini Park
Cross Platform Accessibility	5	5	5	10	0	0
Site Ownership	20	20	10	15	5	20
Parking Potential	10	15	5	5	5	0
Level of Effort to Construct Station	5	5	5	5	5	5
Roadway Impact	10	10	5	5	10	5
Ease of Access	5	5	10	10	15	10
Flooding and Storm Surge Inundation	20	10	15	5	5	0
Impact to Drinking Water Resources	10	10	20	20	20	20
Impact to Wetlands	10	0	20	20	20	20
Impact to Protected Species	20	20	20	20	20	20
Impact to Historical Resources	10	10	20	10	10	20
Impact to Parks	0	0	0	0	0	0
Average Score (rounded to the nearest whole number)	10	9	11	10	10	10

Table 18 - Scoring Summary Table by Conceptual Station Alternative

	Max Score	Rocky Neck Pavilion	Rocky Neck Main Beach	Columbus Avenue	Hole-in-the-Wall	Historic Station	Cini Park
Market & Development	40	0	0	13	15	15	10
Physical & Environmental	20	10	9	11	10	10	10
Subtotal	60	10	9	24	25	25	20
Overall Site Grade	A	F	F	F	F	F	F

## Conclusion

The results of the analysis, summarized in Table 18, show that due to a combination of physical, operational, environmental, and developmental limitations, none of the station alternatives are considered viable at this time. In addition, with Amtrak likely not providing service to a potential station in Niantic, this station becomes less desirable and would force transfers for riders heading west to link up with the New Haven and Hartford lines. The travel patterns in the corridor further suggest that the majority of trips are more local in nature, with trips to the New London/Groton area representing more than half of all trips. Additionally, the boarding & alighting forecasts show very low ridership, to warrant the installation and operation of a Niantic Station Stop.

The results of this study, summarized in Figure 2, identify several key findings, listed below, that point to poor or limited viability for siting a station in Niantic:

- **Low Projected Ridership** - The most significant finding is the low projected ridership a new Niantic station would likely generate. This key finding is based on existing demographics, journey to work travel patterns, and ridership forecasts for a projected startup year of 2025, which estimates only about 100 - 110 daily weekday riders and only about 40 - 50 daily weekend riders. These ridership projections are substantially lower than other existing SLE stations. Going out to the 2045 design year, additional riders are projected but still well below projections for other existing SLE stations. These low ridership estimates significantly diminish the merits of constructing a new station in Niantic.
- **Commuters Travel Short Distances** - While Niantic is a net exporter of workers, most trips are auto-centric and short in nature, with more than 50% of commuters traveling to New London or Groton, less than six miles away. Typical rail commute patterns demonstrate passengers use SLE for distances greater than approximately 17 miles. For shorter trip distances, a combination of personal auto, shared auto, bus transit service, biking and walking are proven to be more convenient and effective.
- **Limited Rail Service and Connections** - While a corridor capacity analysis conducted as part of this study shows there could be capacity for a new Niantic station, the frequency of service and connections to other services would likely be limited under current Northeast Corridor rail traffic conditions. Amtrak is not likely to provide service to a potential station in Niantic. Thus, a station in this community becomes less desirable and would force transfers for riders heading east and west to link up with other services.
- **Limited Development Potential** - A transit-oriented development (TOD) assessment conducted within the study area revealed limited potential for transit-supportive development within the half-mile radius of a potential station. This is primarily due to lack of adequate population, housing, and employment densities, limited available land-use surrounding sites, inhibitive zoning regulations, and the seasonal nature of retail and commercial activity.
- **Significant Site Constraints** - All sites would be complex and expensive to build. Most sites would not be feasible based on numerous physical site constraints as well as not meeting CTDOT and Amtrak standards for parking, platform size, cross-platform access and passing sidings without costly engineering solutions and likely property takings. In addition, many sites would involve mitigation of numerous environmental impacts and re-zoning or re-building the surrounding areas to support a station.