

# Chapter 1: Introduction

This Existing Conditions Report satisfies the requirement of Task 6.1 of the Phase II Scope of Work for the Danbury Branch Improvement Program. Also, this information will be used in the Purpose and Needs and other appropriate sections of the DEIS and FEIS documents.

This report consolidates and updates information that was originally documented in the Purpose and Needs Report in Phase I. Railroad conditions from South Norwalk to New Milford are further described in a separate Rail Infrastructure Existing Conditions Report. Reference is also made to the Scoping Report (October 2008), which is an integral part of the study.

This Report is complemented by a technical memorandum prepared for Task 5 of Phase II (Environmental Data Collection). The sections of this memorandum discuss Topography, Geology, and Soils; Noise and Vibration; Air Quality; Energy; Biological Diversity; Threatened and Endangered Species; Wetlands; Floodplains and Floodways; Historical Resources; Archaeological Resources; Prime Farmland and Active Farmland; Land Use; Hazardous Contamination; Surface and Groundwater Resources; Public Recreational/4(f)/6(f) Lands; Socioeconomics and Environmental Justice; Scenic Roads; and Visual Resources.

## 1.1 Study Area Definition

### Overview

The study corridor (Figure 1) consists of nearly 38 miles of existing rail between Norwalk and New Milford in western Connecticut.

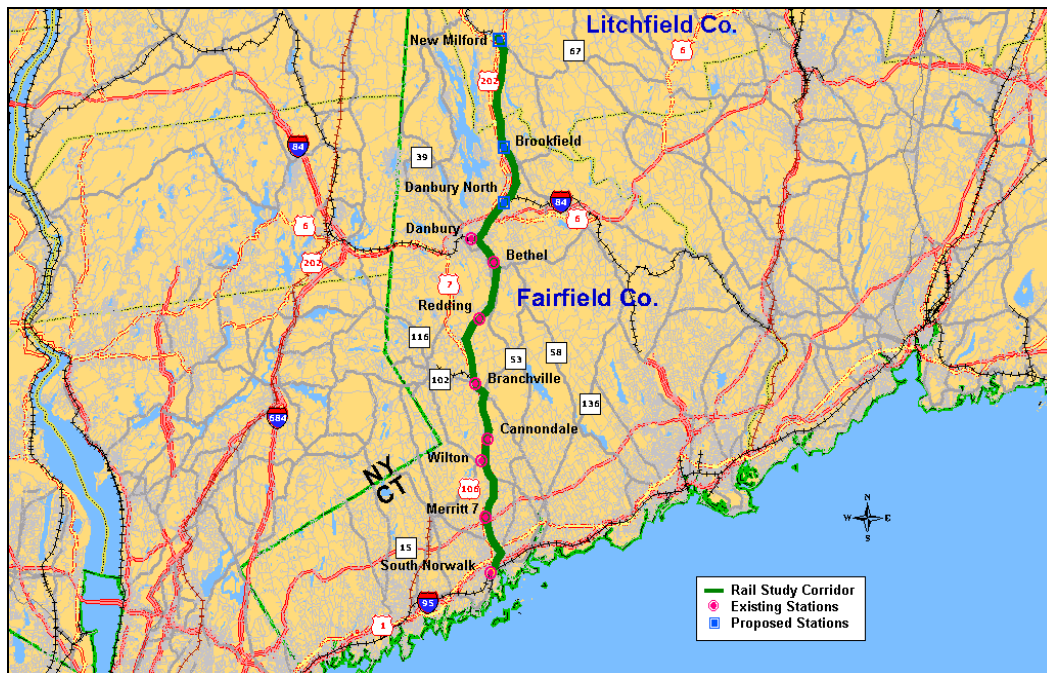


Figure 1: Study Corridor

The 23.6 miles of rail between Norwalk and Danbury is owned by the Connecticut Department of Transportation. This portion of the railroad, the Danbury Branch, is a single track and operates south to north from the Norwalk, into Wilton, Ridgefield, Redding, Bethel, and Danbury. Both passenger service, provided by Metro-North, and freight service, provided on a limited basis by the Providence & Worcester Railroad, operate on this branch.

The 14 miles of rail between Danbury and New Milford is owned by the Housatonic Railroad Company and its subsidiary, the Danbury Terminal Railroad. The three miles between Danbury and Berkshire Junction is part of the Maybrook Branch, which is owned by the Danbury Terminal Railroad. This section is double-tracked and handles only freight traffic. The 11 miles between Berkshire Junction and New Milford is owned by the Housatonic Railroad Company and contains a single track. Again, only freight service operates on this section of the rail line.

Between New Milford (Boardman Bridge Road) and the northern state border, the railroad is owned by the State of Connecticut. The Housatonic Railroad Company provides freight services along this stretch of rail and continues to operate north into Massachusetts.

### Towns

The study corridor includes eight municipalities, which, from south to north, are Norwalk, Wilton, Ridgefield, Redding, Bethel, Danbury, Brookfield, and New Milford. The following is a brief description of each town based on information from municipal websites and Plans for Conservation and Development.

#### Norwalk

Incorporated in 1651, Norwalk is part of Fairfield County and is bounded by New Canaan and Wilton on the north, Long Island Sound on the south, Westport on the east, and Darien on the west. Norwalk, which is the sixth most populous city in Connecticut, is made up of several distinct neighborhoods. These include East Norwalk, South Norwalk, Rowayton, Silvermine, Cranbury, and Norwalk Center, which together offer many opportunities for shopping, dining, and recreation. Norwalk also has an abundance of natural resources, including a harbor, streams, beaches, islands, and marshlands.



Washington Street, South Norwalk

#### Wilton



Wilton Center

Incorporated in 1802 after having originally been a part of Norwalk, Wilton is part of Fairfield County and is bounded by Ridgefield on the north, Norwalk and Westport on the south, Weston and Redding on the east, and New Canaan and New York State on the west. Wilton is largely a residential community, and 58% of the total land in the town is taken up by residential uses. The town has also preserved nearly

1,000 acres of open space for active and passive recreational use, and this gives Wilton an open and rural feeling. As a result, the town has a limited amount of land remaining for development.

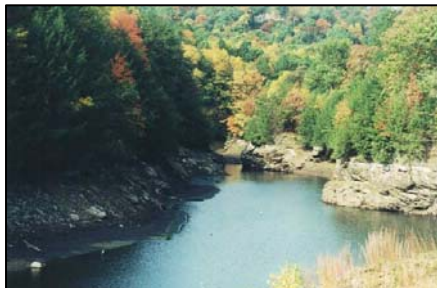
### Ridgefield

Incorporated in 1708, Ridgefield is part of Fairfield County and is bounded by Danbury on the north, Wilton on the south, Redding on the east, and New York State on the west. Ridgefield is largely a residential community, and 75% of the total land in the town is taken up by residential uses. Ridgefield is also home to businesses ranging in size from small, local operations to the American headquarters of Boehringer-Ingelheim Pharmaceuticals. As Ridgefield has developed, the town has remained true to its colonial roots, and Main Street, which is more than a mile long, is lined with stately homes, museums, restaurants, churches, and shops.



Main Street, Ridgefield

### Redding



Saugatuck Reservoir, Redding

Incorporated in 1767, Redding is part of Fairfield County and is bounded by Bethel and Danbury on the north, Easton and Weston on the south, Easton and Newtown on the east, and Ridgefield and Wilton on the west. Residents of Redding pride themselves on the unique character of their town. Policies in Redding have sought to maintain this character by securing more than a third of the town's land for permanent open space, protecting watersheds and sensitive lands, preserving the view from scenic roads, advancing efforts to protect historic buildings and sites, and adopting Smart

Growth policies to create walkable, transit-oriented development.

### Bethel

Incorporated in 1855, Bethel is part of Fairfield County and is bounded by Brookfield on the north, Redding on the south, Newtown on the east, and Danbury on the west. Bethel is a partially rural and partially suburban community that features a mixed-use village center. At only 16.8 square miles in area, Bethel is the smallest town within the study corridor. Nearly half of this land (45%) is comprised of residential uses.



Bethel Center

### Danbury

Incorporated in 1702, Danbury is part of Fairfield County and is bounded by New Fairfield on the north, Redding on the south, Bethel and Brookfield on the east, and Ridgefield and New York State on the west. In 2008, Mayor Mark Boughton appointed the Main Street Renaissance Task Force. This group was tasked with working in conjunction with the city's Department of Planning and Zoning to prepare a Plan for Downtown Danbury. This Plan will focus on creating policy recommendations that will foster business development, promote community activities, and strengthen linkages within the city.



Main Street, Danbury

### Brookfield



Brookfield Commons

Incorporated in 1788, Brookfield is part of Fairfield County and is bounded by Bridgewater and New Milford on the north, Newtown and Bethel on the south, Newtown on the east, and Danbury and New Fairfield on the west. While nearly half (45%) of Brookfield's land is taken up by residential uses, the town is also a significant employment hub. One of the largest employers is the Regional YMCA of Western Connecticut, which has its offices in Brookfield Commons. In 2007, Brookfield had 1.22 jobs for every housing unit, and this was the fourth highest jobs-housing ratio within the study corridor (behind Wilton, Danbury, and Norwalk). This is especially telling about Brookfield's attraction as an employment center considering that at 19.8 square miles in area, Brookfield is the second smallest town in the corridor.

### New Milford

Incorporated in 1712, New Milford is part of Litchfield County and is bounded by Kent on the north, Bridgewater and Brookfield on the south, Washington and Roxbury on the east, and Sherman and New Fairfield on the west. New Milford, at nearly 62 square miles in area, is the physically largest of the towns in the study corridor. The town is generally considered to be the gateway to Litchfield County, and it features considerable commercial development. New Milford also has a historic town center, which includes its town hall, library, and town green, as well as restaurants and retail shops.

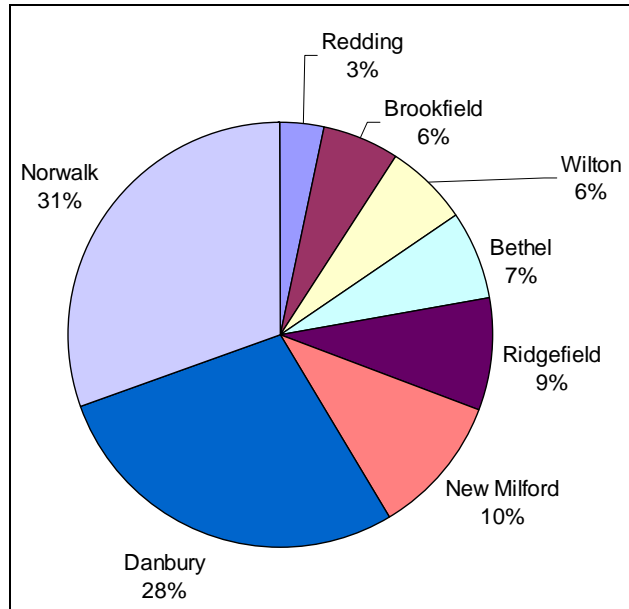


New Milford Town Green

Population and Demographics

The following is a comparative analysis of the populations and demographics of the municipalities within the study corridor. The data is from 2008 and comes from Town Profiles prepared by the Connecticut Economic Resource Center, Inc. (CERC).

Of the 278,853 residents in the study corridor, nearly 164,000 of them live in either Norwalk or Danbury (Table 1). The least populous town is Redding, with 9,365 residents. Figure 2 shows a breakdown of the corridor population by percent of people who live in each municipality.



**Figure 2:** Corridor Population by Municipality

Overall, the study corridor is denser than the state (Table 1). Four municipalities – Brookfield, Bethel, Danbury, and Norwalk – have higher population densities than the state average of 707 people per square mile. Norwalk, with 3,723 residents per square mile, is the densest municipality within the study corridor, and Redding, with only 297 residents per square mile, is the least dense.

**Table 1:** Population and Population Density, Study Corridor

Town	Population	Land Area (Sq. Mi.)	Population Density
Norwalk	84,877	22.8	3,723
Wilton	17,924	26.9	666
Ridgefield	24,031	34.4	699
Redding	9,365	31.5	297
Bethel	18,481	16.8	1,100
Danbury	78,939	42.1	1,875
Brookfield	16,269	19.8	822
New Milford	28,967	61.6	470
<b>Study Corridor</b>	<b>278,853</b>	<b>256</b>	<b>1,090</b>
<b>Connecticut</b>	<b>3,540,846</b>	<b>5,009</b>	<b>707</b>

While Norwalk and Danbury are more racially diverse than the state as a whole, the other six municipalities are more homogeneous. Overall, this makes the corridor slightly less diverse than Connecticut (Figure 3). Norwalk and Danbury are also the only municipalities in the corridor that have a larger Hispanic presence than the state proportion of 11.7%. It is interesting to note that while Norwalk and Danbury, with populations that are approximately 20% Hispanic, have nearly twice the percentage of Hispanics than the state does, the remaining six municipalities – with percentages ranging from 2.5% to 5.2% – each have less than half of the state percentage.

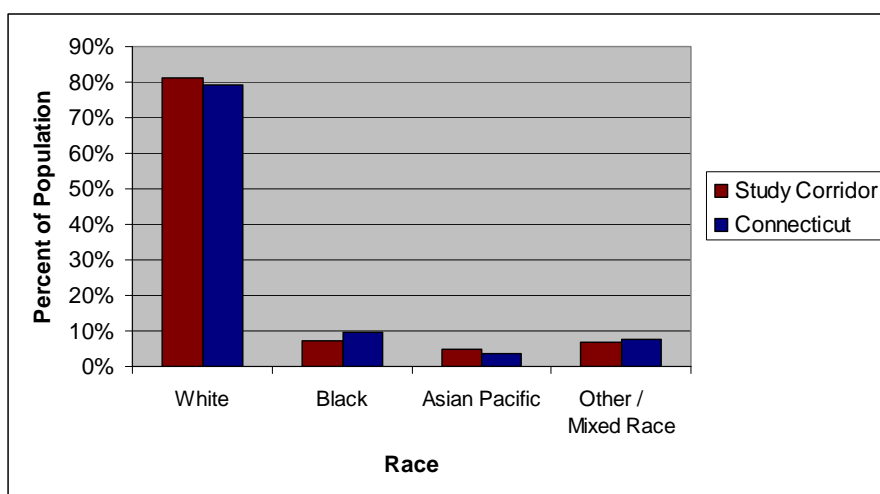


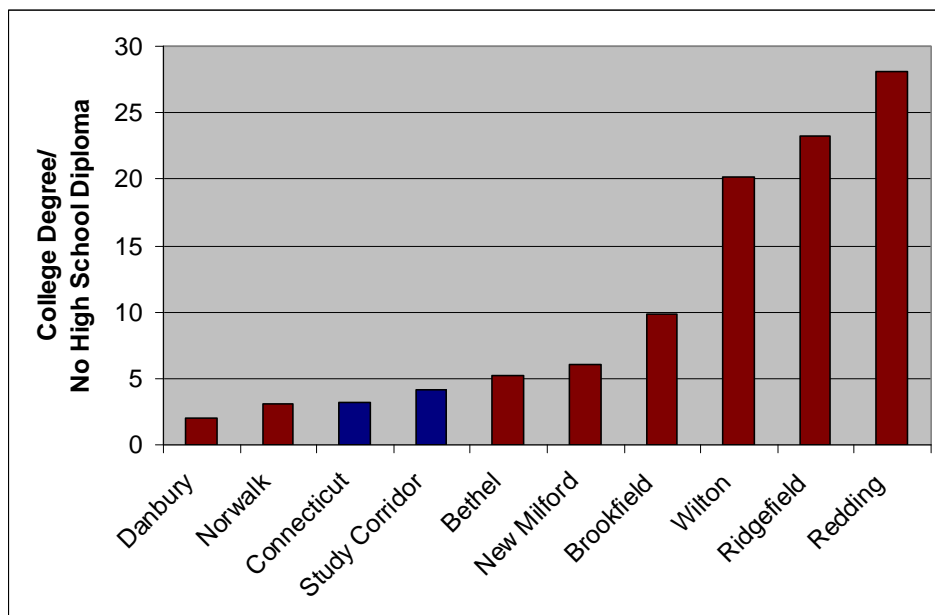
Figure 3: Racial Composition, Study Corridor

Overall, the municipalities in the study corridor have higher educational attainment levels than are generally found in Connecticut (Table 2). In Connecticut, 34.3% of individuals aged twenty-five years or older have completed a Bachelors degree or more, while 10.9% of people in this age bracket have not completed high school. Within the corridor, only Danbury has a lower rate of college completion, and both Danbury and Norwalk have more residents without a high school diploma. With 72%, Wilton has the highest percentage of college graduates, and with 2.3%, Redding has the lowest percentage of residents who have not completed high school.

Table 2: Educational Attainment Levels, Study Corridor

Town	Residents 25-years or older	Less than High School		High School		Some College		Bachelors or Higher	
		#	%	#	%	#	%	#	%
Norwalk	58,768	7,069	12.0%	15,729	26.8%	13,811	23.5%	22,159	37.7%
Wilton	11,967	427	3.6%	1,055	8.8%	1,871	15.6%	8,614	72.0%
Ridgefield	16,083	466	2.9%	1,883	11.7%	2,885	17.9%	10,849	67.5%
Redding	6,411	147	2.3%	898	14.0%	1,235	19.3%	4,131	64.4%
Bethel	12,236	941	7.7%	3,585	29.3%	2,856	23.3%	4,854	39.7%
Danbury	52,651	8,490	16.1%	16,045	30.5%	11,220	21.3%	16,896	32.1%
Brookfield	11,010	511	4.6%	2,646	24.0%	2,804	25.5%	5,029	45.9%
New Milford	19,662	1,162	5.9%	5,981	30.4%	5,466	27.8%	7,053	35.9%
<b>Study Corridor</b>	188,788	19,213	10.2%	47,822	25.3%	42,148	22.3%	79,605	42.2%
<b>Connecticut</b>	2,401,464	261,863	10.9%	723,175	30.1%	592,297	24.7%	824,309	34.3%

A telling way to compare educational attainment levels is the ratio of college graduates versus individuals who did not finish high school (Figure 4). In Connecticut, this ratio is 3.2, which means that for every person who has not finished high school there are approximately three individuals who have completed at least a Bachelors degree. Within the study corridor, the overall ratio is 4.1; Danbury has the lowest ratio (2.0); and Redding has the highest ratio (28.1).



**Figure 4:** College Graduates versus Residents with no High School Diploma, Study Corridor

Median household income levels within the corridor are also generally higher than the state average (Table 3). In Connecticut, the median household income is \$67,236. Within the corridor, only Danbury, with a median household income of \$66,997, has a lower income level. With a median household income of \$181,187, Wilton has the largest average income within the corridor.

**Table 3:** Median Household Income, Study Corridor

Town	Median Household Income
Norwalk	\$74,475
Wilton	\$181,187
Ridgefield	\$138,006
Redding	\$131,814
Bethel	\$86,273
Danbury	\$66,997
Brookfield	\$102,299
New Milford	\$83,564
<b>Study Corridor</b>	<b>\$108,077</b>
<b>Connecticut</b>	<b>\$67,236</b>

## Activity Centers

**Norwalk:** Activity centers in Norwalk include beaches (Calf Pasture and Shady Beach), Norwalk State Heritage Park, Maritime Aquarium, Norwalk Islands, Sheffield Island Lighthouse, the Norwalk Museum, and Norwalk Concert Hall, which houses the Norwalk Symphony Orchestra.



Sheffield Island  
Lighthouse, Norwalk

**Wilton:** One of the activity centers in Wilton is Merwin Meadows Park. This 17-acre park offers a swimming pond, athletic field, picnic facilities, playground, and basketball court.

**Ridgefield:** Attractions in Ridgefield include the Ridgefield Playhouse, Aldrich Museum of Contemporary Art, Ridgefield Symphony Orchestra, Ridgefield Guild of Artists, and the Ridgefield Theatre Barn. Ridgefield is also known for its quality restaurants along Main Street.



Ridgefield Playhouse

**Redding:** Redding offers several recreational opportunities, including Highstead Arboretum, Devil's Den Preserve, Huntington Park, and Putnam Memorial State Park. Redding is also home to the Mark Twain Library, which was endowed by the town's most famous resident.

**Bethel:** Bethel offers numerous public parks. The town is also home to one of the premier Bicycle Motocross (BMX) tracks in New England



Candlewood Lake,  
Danbury

**Danbury:** For recreation, Danbury offers numerous parks and hiking trails. Among the most popular are Tarrywile Mansion and Park, which is 653 acres, and Candlewood Park, which is 11.1 acres, overlooks Candlewood Lake, and offers swimming, picnicking, and a boat launch. Danbury is also home to several museums and the Danbury Fair Mall, which is one of the largest shopping malls in Connecticut.



Brookfield Craft Center

**Brookfield:** Two of Brookfield's attractions are the Brookfield Center Historic District and the Brookfield Craft Center. The historic district includes 67 properties over 430 acres near the intersection of Route 133 and Route 25. The District represents the town's original settlement. The Craft Center, among other things, offers classes in basketry, beadwork, blacksmithing, ceramics, glass, metalsmithing, weaving, woodturning, and woodworking.

**New Milford:** In addition to multiple parks, New Milford offers several theaters including the Bank Street Theater and TheatreWorks. From April to November, New Milford is home to the Elephant's Trunk flea market. This weekly market with space for 490 dealers routinely fills the majority of its 1,000-space parking lot.



TheatreWorks, New  
Milford



## Major Transportation Features

The study corridor is served by passenger rail and transit services, as well as a network of significant roadways.

Passenger rail service is provided by Metro-North Railroad. Service is available to New York City, and there is also intra-State commuter shuttle service. Existing rail services will be detailed in Chapter 2.

Existing transit services include Housatonic Area Regional Transit District (HART) bus service, Norwalk Transit District (NTD) bus service, and private shuttles. These transit options include service on the local and regional levels, and they are described in detail in Chapter 3.

Major roadways in the study corridor include Route 7, Interstate 84, Route 202, and Route 25. Chapter 4 details these and other roads and their relationships to stations in the study corridor.

## Extension to Massachusetts

In addition to including the study corridor discussed earlier, the Danbury Branch Improvement Program is being considered in the context of extending rail passenger service to Massachusetts in the future.

This extension would run north from New Milford through the towns of Kent, Cornwall, Canaan, Salisbury, and North Canaan in Litchfield County, Connecticut. It would then continue through the towns of Sheffield, Great Barrington, Stockbridge, Lee, Lenox, and Pittsfield in Berkshire County, Massachusetts.

The tracks that would be used for this extension are owned by the State of Connecticut between New Milford and the State border. Freight service is already operated along this corridor by the Housatonic Railroad Company.

## Litchfield County, CT

Litchfield County is a largely rural area located in the northwestern corner of

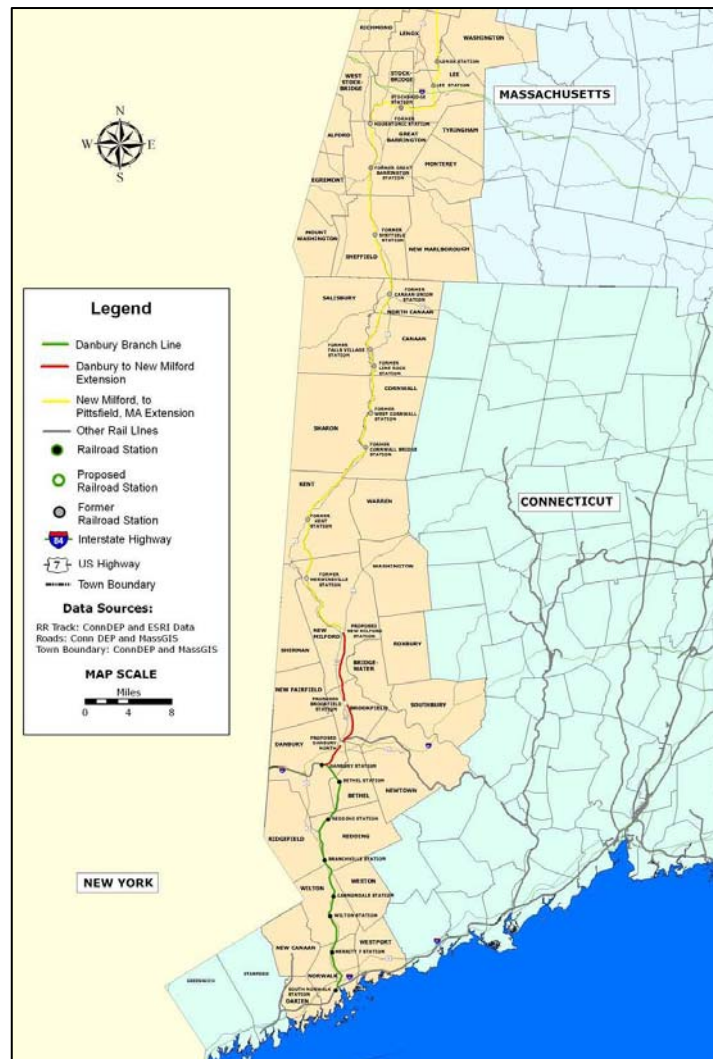


Figure 5: Study Corridor and Extension to Massachusetts

Connecticut. Major attractions include Kent Falls State Park in Kent and Lime Rock Park Racing Track in Salisbury. While there are limited transit services in Litchfield County, along the study corridor there are no existing rail or transit options.



Kent Falls State Park

Berkshire County, MA

Berkshire County comprises the western section of Massachusetts. The southern part of the county boasts numerous attractions. These include Butternut Ski

Lodge in Great Barrington, the Prime Shopping Outlets in Lee, and the Red Lion Inn in Stockbridge. Berkshire County has bus service, which is operated by the Berkshire Regional Transit Authority.



Red Lion Inn, Stockbridge

Population and Demographics

The following is a comparison of the demographics of the study corridor, Litchfield County, and Berkshire County. Data for the State of Connecticut and the Commonwealth of Massachusetts is included for reference. The data for Connecticut is from 2008 and comes from Town Profiles prepared by the Connecticut

Economic Resource Center, Inc. (CERC). The data for Massachusetts is from 2000 and comes from the US Census.

As noted earlier, the Danbury Branch study corridor is denser in terms of population than Connecticut. This is in contrast to the population densities of Litchfield and Berkshire County, which each have less than a quarter of the density of their respective states (Table 4).

**Table 4:** Population and Population Density, Extension to Massachusetts

Area	Population	Land Area (Sq. Mi.)	Population Density
Study Corridor	278,853	256	1,090
Litchfield County	192,262	920	209
Berkshire County	134,953	931	145
<b>Connecticut</b>	<b>3,540,846</b>	<b>5,009</b>	<b>707</b>
<b>Massachusetts</b>	<b>6,349,097</b>	<b>7,840</b>	<b>810</b>

Litchfield and Berkshire County are also more racially homogeneous than the study corridor (Table 5). While the study corridor reflects the racial composition of Connecticut, the two counties involved in the extension to Massachusetts have larger percentages of white residents. The populations of Litchfield and Berkshire County are 3.8% and 1.7% Hispanic, respectively. While the populations of most towns in the study corridor are between 2.5% and 5.2% Hispanic, Norwalk (20%) and Danbury (19.6%) have a larger Hispanic presence than the Connecticut average of 11.7%. Hispanic residents make up 6.8% of the population in Massachusetts.

**Table 5: Racial Composition, Extension to Massachusetts**

Area	Population	White		Black		Asian		Other/Mixed	
		#	%	#	%	#	%	#	%
Study Corridor	278,853	226,841	81.3%	19,985	7.2%	13,220	4.7%	18,807	6.7%
Litchfield County	192,262	181,459	94.3%	1,920	1.0%	3,545	1.8%	5,439	2.8%
Berkshire County	134,953	128,235	95.0%	2,679	2.0%	1,333	1.0%	2,706	2.0%
<b>Connecticut</b>	3,540,846	2,807,439	79.3%	340,407	9.6%	128,690	3.6%	264,310	7.5%
<b>Massachusetts</b>	6,349,097	5,367,286	84.5%	343,454	5.4%	238,124	3.8%	400,233	6.3%

The study corridor has higher levels of educational attainment than the other areas (Table 6). With 42.2%, the study corridor has the largest percentage of individuals aged 25-years or older who have completed a Bachelors Degree or more. Berkshire County, with 26.0%, has the lowest percentage of residents in this age bracket to have achieved this level of education. Litchfield County has the smallest percentage of residents (8.5%) who have not received a high school diploma or equivalent, while Massachusetts has the largest percentage, with 15.2% of its population aged 25-years or older having not completed high school.

**Table 6: Educational Attainment Levels, Extension to Massachusetts**

Area	Residents 25-years or older	Less than High School		High School		Some College		Bachelors or Higher	
		#	%	#	%	#	%	#	%
Study Corridor	188,788	19,213	10.2%	47,822	25.3%	42,148	22.3%	79,605	42.2%
Litchfield County	136,271	11,632	8.5%	42,527	31.2%	36,804	27.0%	45,308	33.2%
Berkshire County	93,339	13,951	14.9%	31,855	34.1%	23,307	25.0%	24,226	26.0%
<b>CT</b>	2,401,464	261,863	10.9%	723,175	30.1%	592,297	24.7%	824,309	34.3%
<b>MA</b>	4,273,275	651,093	15.2%	1,165,489	27.3%	1,038,398	24.3%	1,418,295	33.2%

As discussed earlier, a telling way to compare levels of educational attainment is to look at the ratio of college graduates versus individuals who did not finish high school. In Connecticut, this ratio is 3.2, which means that for every person who has not finished high school there are approximately three individuals who have completed a Bachelors degree or higher. The study corridor has the highest ratio at 4.1, and Berkshire County has the lowest ratio at 1.7. Litchfield County and Massachusetts have ratios of 3.9 and 2.2, respectively.

The median household income for the study corridor is higher than income levels in the other areas (Table 7). The median household income in Litchfield County (\$70,291) is also above the Connecticut average. With \$39,047, Berkshire County has a median household income that is lower than the Massachusetts average.

**Table 7: Median Household Income, Extension to Massachusetts**

Area	Median Household Income
Study Corridor	\$108,077
Litchfield County	\$70,291
Berkshire County	\$39,047
<b>Connecticut</b>	<b>\$67,236</b>
<b>Massachusetts</b>	<b>\$50,502</b>

## 1.2 Review of Previous Studies

A review of previous studies pertaining to the study corridor and relating to current efforts was presented in the Purpose and Needs Report in Phase I. These studies range in age and scope, and they have been reviewed for their applicability to the current study process. Each of the following reports is summarized separately in the following pages:

- Route 7 Corridor Travel Options Implementation Plan
- Danbury Branch Line Shuttle Feasibility Study
- Rail Transit Development Program
- U.S. Census Journey-to-Work
- Danbury Branch Line Service Study
- The Untapped Market for Rail Passenger Service
- Action Plan for Restoring Passenger Rail Service to New Milford
- Congestion Mitigation Systems Plan “Vision 2020”
- Danbury Branch Electrification Feasibility Study
- Connecticut Department of Transportation Rail Governance Study

### Route 7 Corridor Travel Options Implementation Plan

This study, completed in 2000 for the South Western Regional Planning Agency (SWRPA) and the Housatonic Valley Council of Elected Officials (HVECO), was performed by Vanasse Hangen Brustlin, Inc. and KKO and Associates, Inc. The study recommended changes to current transportation systems along Route 7. The study aimed to reduce traffic congestion, increase mobility, and provide travel options for residents of the Housatonic Valley.

The study area was the Route 7 corridor between Norwalk and New Milford. Job growth was concentrated at the southern end of the corridor in Stamford, Greenwich, and Norwalk, and residential growth was concentrated in the northern end of the corridor in Bethel, Brookfield, and New Milford. Strong job growth in New York City and along I-95 was projected and acted as an impetus for the study. In anticipation of this future growth, the result of this project was a list of commuter rail service improvements and bus and shuttle service enhancements, as well as Travel Demand Management and Transit Oriented Service Support strategies.

### Commuter Rail Service Improvements

The study recommended two packages of commuter rail service improvements. The first package dealt with enhancing the existing Danbury Line and the second aimed to extend the Danbury Line to New Milford.

The Danbury line enhancement package recommended increasing the maximum speed on the Line to 60 mph by adding a new signal and communication system. The two phases of service improvements would increase service by 55% and by an additional 23%, respectively. The first phase of service improvements was projected to reduce passenger travel time by 18%. The final recommended service product would add the following trips:

- Early morning shuttle (2) Wilton/Danbury – South Norwalk – New York City
- Midday shuttle (3) Danbury – South Norwalk
- Evening reverse (1) Danbury – South Norwalk
- Morning reverse (3) South Norwalk – Danbury
- Midday reverse (5) South Norwalk – Danbury
- Late evening (1) Danbury – South Norwalk
- Early evening (1) New York City – Danbury

The extension to New Milford package would provide commuter service along 14.2 miles of new or refurbished track between Danbury and New Milford. The phased capital improvement program and operating plan was designed to allow for an incremental extension. The new signal and communication system discussed in the enhancement package would also be extended to New Milford. The extension package included track and bridge improvements and service to three new stations: The following additional or extended trips would be added:

- Extended existing AM and PM peak through trains to New Milford (3)
- Additional morning shuttles (2)
- Additional evening peak shuttle (2)
- Additional evening shuttles (2)
- Extended midday roundtrips to New Milford (3)
- Extended morning reverse (3: 2 to New Milford, 1 to Danbury North)
- Extended evening reverse (2: 1 to New Milford, 1 to Danbury North)
- Extended evening shuttles (2)
- Additional evening through (1) New York City – New Milford
- Extended midday roundtrips to Danbury North (3)

### Bus/Shuttle Service Enhancements

The study recommended bus/shuttle enhancements to accompany the modifications to rail service. Bus service was recommended between Norwalk's Wheels Hub and Housatonic Area Regional Transit's (HART) Pulse Point in Danbury. The study also recommended adding HART service between the Pulse Point and the Danbury Rail Station and encouraged a commuter connections study to analyze the need for train station connections to major employers.

### Travel Demand Management Strategies

The Travel Demand Management (TDM) strategies portion provided several recommendations to increase ridership and provide additional mobility options for current riders. Suggestions were made on a station-by-station basis. Generally, the TDM strategies include:

- Enhance stations (improved security, commuter information kiosks, etc.)
- Evaluate feasibility of new rail stations in Norwalk and Redding/Georgetown
- Conduct an Intelligent Transportation Systems (ITS) Study
- Create linkages within the transit system (shuttle/bus, pedestrian, bicycle)
- Investigate feasibility of Universal Transit Card

- Conduct a Transit Oriented Development Feasibility Study
- Enhance marketing of public transportation resources
- Consider transit fare reduction to further stimulate increased transit ridership

### Transit Oriented Service Support Strategies

Several recommendations were made relating to Transit-Oriented Service Support Strategies:

- Establish a “Route 7 Travel Options Coalition”
- Support ridesharing initiatives
- Evaluate costs and cost structure through a service evaluation and governance study
- Pursue extending Danbury Branch to Stamford
- Evaluate feasibility of electrifying branch to Wilton
- Consider formation of Transportation Management Agencies (TMA)

The study included a survey. The most important travel improvements noted by respondents were available and free parking at stations, transit fare reductions and simplified fare collection, additional morning peak hour trains, and extension of service to New Milford. A station-by-station analysis indicated that most survey respondents rated security as the most important station enhancement needed. The survey indicated strong support for express bus service along Route 7 between Danbury and Norwalk. Shuttle services received a high level of support.

The rail service enhancements were projected to increase daily ridership by 649, and the service expansions were projected to net an additional 559 daily riders. The proposed Route 7 bus service was projected to create 208 new daily bus trips. The benefits of the implementation plan would be reduction of traffic volume, improvement of air quality, and maximization of public infrastructure investments. These changes and benefits are important because of the projected growth in population and highway congestion in the near future. The Danbury Line is expected to see a 70% increase in riders between 1999 and 2025 even without any improvements.

Traffic volume was projected to decrease by 2,000 cars per day with 1,600 of those cars removed from the vicinity of the I-95 intersection. These volume reductions were also anticipated to improve east-west corridor traffic along I-95, Route 15, and Route 1.

After the study was completed and the recommendations were made, the final suggestion was to create a Route 7 Travel Options Action Coalition. The purpose of the coalition would be to oversee the implementation of the study recommendations, prioritize projects, identify who will implement the changes, identify sources of funding, and lobby for implementation.

### Danbury Branch Line Shuttle Feasibility Study

This study was a continuation of the Route 7 Corridor Travel Options Implementation Plan. The study was completed in 2001 for HVCEO by HART. This study looked at the potential for shuttles to stations and employer vanpools/shuttles between stations and worksites. Traditional bus shuttle services were not recommended due to the low density of passengers in the region.

Alternatively, subscription shuttle services were recommended for curb-to-curb service. The study also looked at the feasibility of electric station cars. The overall goals of the study were to:

- Evaluate each station for bus feeder service feasibility;
- Develop tentative service structures; and
- Identify potential for employer-based van/shuttle services.

### Rider Survey

A survey of morning peak period rail riders was completed in September 2000. The survey found that most people walk to their place of employment after disembarking. The percentage of respondents interested in shuttle services varied greatly by station: from 2% in favor of Branchville to 30% in favor of Danbury. In a telephone survey of corridor residents, 22% of respondents were in favor of shuttle service. The rider survey also quantified the preference of Harlem Line stations over Danbury Line stations. The highest percentage of respondents (32%) prefer the Harlem Line Stations, 22% use the Branchville Station, 20% prefer each the Danbury Station and the Bethel Station, and 6% use the West Redding Station.

### Recommended Enhancements by Station

Bus shuttle services are generally not recommended, based on low passenger density and lack of potential ridership. Thus, subscription bus shuttle services are recommended. The subscription service would be operated like Dial-A-Ride service and would take passengers from home curb to train station curb. If demand became high enough, passengers could meet at a central location to board the shuttle. Passengers would pay a monthly subscription fare.

The other station connectivity option is an electric station car program. Electric cars would not be owned by users, but would be provided or leased to them. Station cars would be driven to the train station from a user's home, and then the car would be parked and charged at the station. Next, the car would be picked up by a different user, driven to a worksite, and used during the day for work-related travel. While the electric cars have zero emissions and allow for more compact parking, they can only fit two passengers.

*Branchville:* The Branchville Station is a good candidate for subscription shuttle services because of parking shortages and interest in shuttles. The subscription shuttle should also have a designated stop near Routes 33 and 35 in Ridgefield. Major employers with potential vanpools are ASML and Norco.

*West Redding:* West Redding riders are supportive of shuttle service, but the numbers do not support fixed-route service. Parking is under capacity, so there is a less active demand. Electric station cars are recommended to be tested at the station and could preclude the need to expand parking. Employers with potential for vanpools are Lee Far Corporate Park, Barden Corporation, BF Goodrich, and Apple Ridge Road Office Park. The Danbury Fair Mall is also located in the area, but its types of jobs and variability of shifts do not make it a good vanpool candidate.

*Bethel:* A subscription shuttle to the Bethel Station with stops in Newton could be warranted because projections show future parking shortages. Electric cars should anticipate of increased parking demand. Clusters of potential employers for vanpools are located on the Danbury/Bethel line, including the Shelter Rock/Great Pasture Road and the Francis Clarke Industrial areas. Other employers include Eaton Corporation and Fuel Cell Energy.

*Danbury:* The rider survey showed strong support for a rail shuttle. A HART Pulse Point Connector could fulfill that need. The Pulse Point and the station are less than a mile apart, so the shuttle could be operated on a subscription/fixed-route basis. Electric station cars should only be considered if parking were to become in short supply. Commerce Park, Sealed Aire, and Branson Ultrasonics are potential employers for vanpool services.

*Danbury North (Proposed):* Ridership at Danbury North is not expected to warrant a feeder shuttle. The station has easy access from I-84, so it is possible that it will attract more Newton and Southbury passengers. Potentially, a shuttle from park-and-ride lots would be useful if the ridership base grew. Electric station cars could also become important because parking space is somewhat constrained. The Berkshire Corporate Park has the potential for an employer vanpool.

*Brookfield (Proposed):* The potential Brookfield Station already has HART bus service, so no shuttle services are warranted. Electric station cars could be used to enhance parking capacity. UPS, Dade Behring, and businesses in industrial parks on Silvermine and Pocono Roads could be potential vanpool employers.

*New Milford (Proposed):* The proposed New Milford Station already has HART bus service, so electric station cars are recommended. Kimberly Clark is the largest employer in the area, but it already has HART service, so it is unlikely that vanpool service would be necessary.

### Rail Transit Development Program

In 1992, HART completed the Rail Transit Development Study for HVCEO. The study identified the need for long-range planning to promote and advance the use of public transportation. It was also reported that the public expected expanded and augmented public rail service and that ConnDOT was preparing the Danbury Line for future demand.

The study recommended the following capital improvements:

1993	New Danbury Station
1993	New Bethel Station
1994	New stations – northern extension
1994	Centralized train control and grade crossing signals
1996	Engineering/design for maintenance and car storage facilities
1997	Maintenance facility
1998	Car storage facility
1998	Passing sidings
1998-1999	12 new locomotives

The long-range service plan also called for an additional morning and evening peak through train to Grand Central Station, selected main line station stops between South Norwalk and



Greenwich, continued operation of the two peak morning and evening reverse commute trips, and improved off-peak and weekend service frequencies from two hours to one.

### Competing Rail Transit Service

The study investigated the competition between Connecticut and New York rail stations that occurs due to the close proximity of the lines and the time savings that can be gained by using one over the other. Stations on the Harlem Line were surveyed to discern the origin of rail riders. More than 15% of the cars parked at the surveyed Harlem Line Stations had Connecticut license plates. The largest percentage of Connecticut plates were found at Dover Plains, Harlem Valley/Wingdale, Brewster, Purdy's, and Brewster North. At least two Harlem stations had significant overflow parking along adjacent highways and roads. The overflow problem was the greatest at Croton Falls, Purdy's, and Goldens Bridge where more than 20% of the overflow cars had Connecticut license plates. According to car counts, more Connecticut residents used Harlem Line stations than used Danbury Branch stations.

A Westchester County report found that 10.9% of the cars parked at Goldens Bridge and 17.2% of the cars parked at Katonah had Connecticut license plates. This report also found that 82.9% of the cars along Route 35 between Ridgefield and Westchester County were from Connecticut. Finally, the Westchester County report included a rail commuter survey that identified significant percentages of Connecticut residents who would use convenient bus service along the Route 35 corridor to the Katonah and Goldens Bridge Stations.

Annual parking fees at Harlem Line Stations ranged from \$200 to \$500 for nonresidents in 1992. Despite the higher parking fees, Connecticut residents chose to use these stations anyway, likely because the travel times were faster on the Harlem Line.

### U.S. Census Journey-to-Work

The following analysis of U.S. Census Journey-to-Work Data from 2000 looks at 11 residence towns (Bethel, Bridgewater, Brookfield, Danbury, New Fairfield, New Milford, Newtown, Redding, Ridgefield, Sherman, and Wilton) and six destination/employment locations (Darien, Greenwich, Norwalk, Stamford, Wilton, and Manhattan).

Table 8 shows the number of people from each origin town who worked in each destination in 2000. Each of the 11 residence towns is on or near the Danbury Branch Line. The six work destinations are all stops along the New Haven line except for Wilton, which is a stop on the Danbury Branch Line. Of the workers who commute between these residences and destinations, approximately 17% of them work in Manhattan. This shows that there are a significant number of workers who do or potentially could use Metro-North service to travel to work.

**Table 8: Journey-to-Work: Origins and Destinations**

Work Residence	Darien	Greenwich	Norwalk	Stamford	Wilton	Manhattan	Total
<b>Bethel</b>	89	114	490	484	295	151	1,623
<b>Bridgewater</b>	2	0	15	16	4	37	74
<b>Brookfield</b>	24	156	142	183	172	158	835
<b>Danbury</b>	101	776	873	1,274	740	542	4,306
<b>New Fairfield</b>	29	94	123	270	68	243	827
<b>New Milford</b>	22	113	283	337	130	164	1,049
<b>Newton</b>	116	229	463	449	199	203	1,659
<b>Redding</b>	74	122	270	389	224	237	1,316
<b>Ridgefield</b>	100	418	522	1,246	442	573	3,301
<b>Sherman</b>	11	21	17	33	4	154	240
<b>Wilton</b>	96	344	833	959	2,212	1,110	5,554
<b>Total</b>	664	2,387	4,031	5,640	4,490	3,572	20,784

Source: 2000 Census Journey-to-Work Data

### Danbury Branch Line Service Study

Prior to the 1995 Metro-North Danbury Branch Line service addition, there was a two-hour service gap that covered the scheduled ending time of 80% of commuters from the 11 origin towns and employers in the five destination towns. Other problems noted in the report were:

- Limited parking;
- Inconvenient and inadequate service (especially lack of north-bound peak train);
- Need for transfers between trains;
- Inadequate marketing of new train service; and
- Lack of connecting transit.

The study concluded that a large market existed for expanded intrastate service on the Danbury Line. The existing service was sufficient for New York-bound employees but was not optimal for the majority of Connecticut residents. The following recommendations were made:

- Examine rail service enhancements in Wilton and a potential link with commuter connection shuttles and bus service.
- Change the schedule or add a new morning peak train to Danbury from South Norwalk with an emphasis on the Merritt 7 and Wilton Stations.
- Add stops in Stamford and Greenwich on peak Danbury Branch through trains. These are valuable time slots and stop locations for intrastate commuters.
- Continue track and parking improvements.

### The Untapped Market for Rail Passenger Service

This report was prepared in August 1983 for HVCEO by SG Associates. The report described the passenger rail service conditions in order to justify improvements to the service.

In 1979, there were 927 daily round trips taken on the Danbury Line, and nearly all riders traveled to New York City. There is a significant untapped market of persons living in the Housatonic Region and working in southwestern Connecticut. Approximately 39% of these potential riders worked within walking distance of a rail station or had access to employer-based shuttle service. Other potential Danbury Line commuters used the Harlem Line to commute.

This study recommended several service improvement options to reach the potential rail commuter markets. The strongest recommendation was electrification. Other evaluated service strategies were express service on the Danbury Line and shuttle service at destination stations.

Electrification was expected to generate savings in energy consumption, reduce maintenance costs, and generate new ridership, but it would require major capital improvements. Electrification was projected to increase ridership from 27 to 300. Ridership of 590 was projected if maximum shuttle service was implemented. Reverse commute options were expected to produce ridership between 36 and 169 depending on if local or express service was chosen. It was also estimated that electrification would sway 70% of the Housatonic Valley residents currently using the Harlem Line to switch to the Danbury Line. Employment growth at Merritt 7 was also noted as a potential area for rail passenger service. If a Merritt 7 Station were created, between 56 and 73 daily rail trips were estimated to be added. Increased ridership would create new parking demands. The worst parking shortfall was anticipated at Danbury, and Bethel also was predicted to have parking shortfalls.

Given the ridership and cost projections, the study listed the following recommendations:

- Electrify service from Danbury with three express and three local peak runs.
- Do not extend service to New Milford.
- Construct the Danbury Transportation Terminal with the maximum number of parking spaces.
- If the local service alternative is implemented, a new station should be constructed between Bethel and Danbury.
- Serve the Merritt 7 Complex only if the Danbury Line is electrified.

#### Action Plan for Restoring Passenger Rail Service to New Milford

Two 1995 reports, *Extension of Commuter Rail Service* and *Feasibility Report for Extending Rail Passenger Service Beyond Downtown Danbury*, were combined in the *Action Plan* of 1996. The report was prepared for HVCEO by Vanasse Hangen Brustlin, Inc. The report was completed on a recommendation from the 1992 Rail Transit Development Program.

#### Extension of Commuter Rail Service: Danbury to New Milford and Danbury to Newton

At first, the initial portion of the study was geared to looking at extending passenger rail service to New Milford. Later, however, the town of Newton requested that extension to Newton also be evaluated. The results of this phase were:

- Extension of passenger rail service to Danbury North in conjunction with the implementation of scheduled service enhancements was projected to generate an 80% increase in overall ridership on the Danbury Branch in 1999 and an additional 70% increase in ridership by 2015.
- Extension to New Milford would attract additional boardings and would reduce congestion and pollution along the Route 7 corridor.

Based on these findings, it was recommended that the engineering evaluation create a phased implementation plan for the three-mile extension to Danbury North and the 11-mile extension to New Milford. The Newton alternative was dropped. The Danbury North Extension, the New Milford Extension, and the recommended next steps following the study are discussed below.

### Danbury North Extension

Service extension to Danbury North was projected to result in 191 daily boardings in 1999 and 390 boardings in 2015. Three sites were evaluated for the location of the Danbury North Station. The site at the junction of Route 7 and I-84 was chosen because of its vehicular access, the existence of an underutilized parking lot, its lack of impact on freight operations, its potential as a safe, convenient station that is operationally easy to serve, and the availability of land.

The Operations Plan for the Danbury North extension recommended extending the current service from downtown Danbury to the new station with no additional trains. The service recommendation assumed that ConnDOT's programmed improvements to the Danbury Branch Line would be completed before the new station opened. Peak service headways were proposed at 30 minutes. The recommended changes provided little impact on existing service.

Infrastructure improvements necessary for an extension to Danbury North included track reconfiguration near the current Danbury Station, the construction of a station building at Danbury North, the construction of a pedestrian overpass, the installation of a signal and communications system, and the purchase of two additional coaches. Estimated capital and maintenance costs ranged from \$9.1 to \$9.9 million. The estimated operating cost was \$1.3 million. The estimated increase in revenue was approximately \$1.5 million per year.

### New Milford Extension

Service extension to New Milford would cover 14 miles beyond the proposed Danbury North Station. A new station in Brookfield was also recommended. A ridership projection was not made. The service recommendations made for the Danbury North Extension were also made for the New Milford Extension. The exception would be that one of the 10 trains would not be able to serve New Milford in order to avoid conflict with existing freight traffic.

Infrastructure improvements recommended for the New Milford Extension included track rehabilitation, track reconfiguration, construction of a high-level platform, parking lot rehabilitation, and implementation of a signal and communication system. The cost for capital and maintenance improvements ranged from \$5.8 million to \$10.7 million. Operating costs were estimated to be \$2.9 million annually. Increased revenue was not estimated.

### Next Steps

After the study was completed, the New Milford Rail Service Restoration Society completed a survey of Route 7 motorists in New Milford and Brookfield to account for potential riders living in Litchfield County and missed by ridership projections. The survey results showed a significant level of local support for an extension to New Milford. Using the results from the study and the corresponding survey, the following steps were recommended:

- Implement a 24-month Commuter Rail Demonstration Project to determine the actual ridership demand in the region.
- Evaluate intrastate, reverse commute, and midday demand on the Danbury Line.
- Involve Housatonic Railroad Company, HVCEO, representatives from New Milford, Brookfield, and Danbury, and elected officials from the region extensively in further planning efforts.

### Congestion Mitigation Systems Plan “Vision 2020”

The Congestion Mitigation Systems Plan “Vision 2020” prepared by Wilbur Smith Associates for the SWRPA in February 2003 developed a vision for southwestern Connecticut (focusing on the I-95 corridor) that sought to reduce congestion, improve air quality, and promote economic growth. The vision built upon existing transportation assets and tried to improve system efficiency by adding transportation choices. In particular, the vision looked to promote transit options and reduce reliance on the automobile.

To generate a set of strategies for mitigating traffic congestion, the plan utilized an intensive public involvement/outreach program, market research, focused goals and objectives, and performance metrics to compare the impacts of transportation improvements and identify constraints on each strategy.

After a thorough analysis of the existing transportation system, transportation strategies were developed. These strategies were evaluated in terms of costs and benefits. Based on the process and criteria defined above, strategies were advanced as recommendations. A brief summary of the recommendations is detailed below:

### Immediate Actions (Foundation)

- Public Education – Education must be an ongoing process to inform the public and decision makers of the benefits and costs of transportation strategies. In addition, the importance of the transportation and land use connection needs to be emphasized to local and state officials. Implementation needs to be consensus-driven, and broad-based support must be attained. SWRPA should continue to engage media outlets to keep awareness of transportation issues on the forefront and should continue to work with state and local officials to gain additional support and funding.
- Land Use Review – Local land use boards should review master plans and plans of conservation and development to identify how transportation is supported by local regulations. Municipalities should coordinate with regional planning organizations to

draft local policy that supports the vision. SWRPA should conduct a land use study to evaluate potential for more transportation corridors and transit-oriented development.

- Expand Travel Demand Management Programs (TDM) – TDM programs should be expanded to help reduce the number of single occupant automobile trips in the study area. Examples of programs that can have an impact on peak period trips include:
  - Telecommuting
  - Flexible work weeks
  - Staggered work hours
  - Organized vanpools
  - Voluntary distance-based pricing

#### Short-Term Actions (Incremental)

- Transit Operational Improvements
  - Provide additional parking at Metro-North Stations in South Norwalk, Noroton Heights, Stamford, and Greenwich.
  - Utilize Intelligent Transportation Systems (ITS) to improve bus service.
  - Reduce rail fares and parking costs for intrastate customers.
  - Implement a universal commuter pass to make transit trips more convenient.
  - Establish intermodal hubs with strong bicycle and pedestrian connectivity.
- I-95 Operational Improvements (focusing on Interchange 6 to Interchange 16)
  - Safety and operational improvements
  - Additional operational lanes
  - Geometric modifications to entrance and exit ramps
  - Consolidation of interchanges
  - Horizontal and vertical alignment modifications
  - Ramp metering or peak period ramp closures
  - Increased ramp spacing
  - Deployment of additional ITS technology
- Traffic Systems Management (TSM) Improvements to major arterial roads
  - Signal timing and coordination
  - Access Management
  - Operational improvements (i.e. turn lanes, shoulders, geometric modification)
- Truck Parking at Rest Area – Expand truck parking at rest areas.
- Changes to Zoning Regulations – SWRPA should work with municipalities to structure zoning regulations to embrace transit-friendly development, walkable communities, increased density, mixed land uses, reduced parking, and access management along transportation corridors and in town centers.

#### Long-Term Actions (Vision)

- Transit Capacity Expansion
  - Improve Metro-North service for intrastate customers.

- BRT opportunities should be explored, specifically along the Route 1 corridor.
  - Danbury Branch service should be further evaluated to determine the feasibility of enhanced rail service along the corridor.
  - Inland BRT services should be evaluated once Route 1 service is realized.
- I-95 Capacity Expansion – Two additional lanes should be considered a strategy to help alleviate congestion along the corridor.

#### Support for Other Strategies

- Interstate Rail – Improvements should be made to fleet configuration, infrastructure, and service to obtain optimum system performance.
- Freight – Opportunities for improved freight service are tied to the following needs:
  - Another Hudson River crossing to access New York City and Connecticut;
  - A rail capacity study to determine actual track capacity compared to existing passenger and freight rail services and schedules; and
  - A market analysis of the viability of Feeder Barge Service from intermodal ports in New Jersey to a deep water port in Connecticut.
- Ferry – SWRPA should continue to monitor the Long Island Sound Waterborne Transportation Plan and other studies of potential passenger ferry services.
- Airport Connections – Opportunities for improving transit connections between southwestern Connecticut and regional airports should be examined.
- Route 7 – Plans to widen Route 7 to a four-lane arterial with full roadside access from Wilton to Danbury should be supported.
- Interstate 84 – Plans to widen I-84 from Danbury to Southington should be supported.
- Merritt Parkway – SWRPA should evaluate the Merritt Parkway and its interchanges for safety and operational deficiencies.

#### Danbury Branch Electrification Project Feasibility Study, Phase I

ConnDOT undertook this study to identify potential improvements to Metro-North commuter rail branch line service between Norwalk and Danbury. Phase I identified, reviewed, and evaluated preliminary improvement alternatives, including electrification, addition of passing sidings, extension of service to New Milford, and track alignment modifications.

#### Task 1: Public Outreach and Purpose and Needs Report

##### *Public Outreach Plan*

A Public Outreach Plan was developed to underline the importance of public involvement and establish a plan for communication throughout the study. The goals of this Plan were to:

- Establish effective communication with the public;
- Encourage early and continuing public participation;
- Present complete information to the public; and
- Determine public sentiment.

A Study Advisory Committee was formed to participate as a steering committee throughout the study. Study Advisory Committee members consist of representatives of the two regional planning agencies in the corridor – SWRPA and HVCEO. In addition, the first elected official or a designated representative from each community in the study corridor was invited to participate, along with representatives of Metro-North Railroad, HART, and local rail freight operators. Five Study Advisory Committee meetings and four public meetings were held during Phase I. A project website (<http://www.danburybranchstudy.com>), also was established.

#### *Data Collection and Review*

As a first step, a review of previous studies in the Route 7 Corridor and an update of rail maps were performed. Data collection focused on schedules, maintenance, crew requirements, and equipment storage. Input also was received from Metro-North Railroad, the Housatonic Railroad, Providence & Worcester Railroad, and ConnDOT's real estate and rail operations divisions.

#### *Purpose and Need*

The purpose of Phase I was to develop and evaluate a range of infrastructure and service improvements for the Danbury Branch to determine their potential to enhance the Branch's attraction as an alternative to driving. In addition, Phase I sought to determine whether service improvements on the Branch could attract riders who currently commute on the Harlem Line.

The results of this study will be incorporated into a comprehensive statewide commuter rail and transit plan, which will establish priorities for transit improvements. The plan will identify funding needs and opportunities, as well as potential economic benefits. The future statewide transit plan will include the Connecticut Transportation Strategy Board's study of the Waterbury and New Canaan Branches, the Danbury Branch, and the New Haven-Hartford-Springfield line.

#### *Task 2: Evaluation of Engineering Alternatives*

Task 2 developed and examined possible infrastructure and service alternatives that would achieve two objectives: reduce travel times along the Danbury Branch and increase frequency. The three major infrastructure improvements evaluated were track geometry improvements, addition of double tracking, and passing siding improvements. These improvements were evaluated in terms of impacts to existing service between Danbury and South Norwalk, as well as to help determine whether a service extension to New Milford would be sustainable.

#### *Track Geometry Improvements*

A review of the current alignment between South Norwalk and Danbury identified three conceptual realignment options, referred to as the Red, Blue and Green alignments, that would



enable a reduction in current running time of approximately 5, 10, and 15 minutes, respectively. The reductions in running time would be accomplished by enhancing superelevation on the existing alignment and constructing new alignments to reduce track curvature. These improvements would allow an increase in maximum allowable speeds.

The study also considered extending commuter rail service northward approximately 14 miles from Danbury to New Milford. The study reviewed the current freight-only railroad alignment between Danbury and New Milford and identified conceptual track improvements that would enable a reduction in current running time. Maximum passenger train track speed limits on the existing freight-only alignment would be 30 miles per hour if no track improvements were made.

#### *Feasibility of Double Tracking*

This effort identified engineering and construction issues associated with double tracking from South Norwalk to Danbury and from Danbury to New Milford. The analysis evaluated the construction of a second mainline track adjacent to the existing alignment as well as the conceptual alignments identified with proposed 5, 10, and 15-minute running time reductions.

#### *Feasibility of Passing Sidings as an Alternative to Double Tracking*

This effort identified engineering and construction issues associated with locating passing sidings from South Norwalk to Danbury and from Danbury to New Milford. The addition of passing sidings would allow for increased frequency of service and bidirectional service. The analysis evaluated the issues of locating both short or long passing sidings on the conceptual alignments identified with the proposed 5, 10, and 15-minute running time reductions.

#### *Findings of the Task 2 Engineering Evaluation*

Preliminary cost estimates were developed for each of the 32 conceptual improvements. The cost estimates included construction, engineering, and third party construction phase services, property acquisition, and contingency. The contingency factor covers items such as demolition, roadway reconstruction, and environmental mitigation. Due to the conceptual nature of the study, the estimates are regarded as order of magnitude rather than detailed engineering estimates.

The number of closely spaced, consecutive curves within the existing alignment between South Norwalk and Danbury precludes the opportunity to achieve any significant reduction in running time; major alignment changes would be required to increase maximum operating speed. The estimates for reducing running time by 10 or 15 minutes are in the hundreds of million dollars. However, upgrading the existing track and increasing the superelevation on most curves could substantially improve the running time between Danbury and New Milford; major alignment changes would not be required.

#### *Environmental Review*

The Study Team conducted a field survey and reviewed existing environmental documentation to determine what potential environmental impacts would need to be addressed if various

infrastructure and service improvements were implemented. Potential impacts resulting from construction, operational impacts of service improvements, and impacts to wetlands and other resources were identified. The categories that would be most impacted include: land use, especially in urban and developed areas, and water resources/wetlands.

### *Improvement Options*

The information derived from the Task 2 engineering evaluation should be reviewed in the context of whether the expense to reduce running times by 5, 10, or 15 minutes is justified. This is defined in terms of a cost-benefit relationship, where benefit is defined in terms of how many potential new riders will be attracted to the Branch for each improvement option or combination implemented, with costs allocated to each option.

Task 2 also evaluated the potential of several innovative technology and service modification strategies to reduce train travel times. These include the use of state-of-the-art Diesel Multiple Units (DMU), the use of tilt train equipment to reduce the need for alignment changes, the installation of four quadrant gates to increase train speeds through grade crossings, and the institution of skip-stop and express service to reduce travel times along the Branch.

It was determined that while DMU equipment could successfully operate along the Branch, DMU equipment has implications in terms of its compatibility with existing and planned equipment purchases for the New Haven Line. Similarly, tilt train equipment is generally not efficient or compatible with rail service under 100 miles per hour and therefore is not appropriate. The use of quad gate equipment is generally applied for higher speed train service, but this option could be reconsidered if speeds and service frequency on the Branch were improved. Finally, it was determined that skip stop and express service is generally most effective when frequencies of trains and ridership levels are higher than existing Branch service. Increasing the frequency of service on the Danbury Branch would require additional equipment and crews. Without an overall increase in service frequency, passengers would see skip stop or express service as a reduction in service quality, which could adversely impact ridership levels.

### *Task 3 Ridership Impacts*

Preliminary ridership projections were developed for each of the improvement options identified in Phase I, using ConnDOT's statewide Travel Demand Model. Table 9 shows the potential morning passenger counts of persons boarding trains toward New York on the Danbury Branch. These increases between the years 2000 and 2020 are preliminary examples of the benefits that could be realized if rail electrification and other improvement options were implemented.

**Table 9:** Morning Passenger Counts, 2000 and 2020

Alternative	Morning Passenger Counts			
	2000	2020	Increase	% Increase
No Build	1133	1591	458	40%
Build – S. Norwalk-Danbury	1223	1691	558	49%
N. Milford Extension	1665	2391	1258	111%

Task 4 Evaluate the Impact of Electrification

Task 4 focused on the costs and impacts of electrifying the Danbury Branch and how electrification impacts other improvement options. This would establish a basis for a cost/benefit analysis that would enable decision makers to determine the most viable options for improving service. This task involved numerous discussions with regional and local planning agencies as well as public officials, commuters, the public, and the state’s Transportation Strategy Board.

*Findings of Task 4*

Preliminary cost estimates were developed for each of the 32 conceptual scenarios that were identified in Task 2. These cost estimates were developed from estimated quantities multiplied by current (4<sup>th</sup> Quarter 2005) unit costs. Due to the conceptual nature of the study, the estimates should be regarded as order of magnitude estimates rather than detailed engineering estimates.

Table 10 summarizes the estimated costs for the existing running times as well as the various scenarios for reduction in running times, the estimated cost to construct a second main track adjacent to the existing single track, and short and long passing sidings.

**Table 10: Electrification Costs**

<b>South Norwalk – Danbury Improvements</b>				
<b>Characteristics</b>	<b>Alignment</b>			
	<b>Existing</b>	<b>5-Min. (Red)</b>	<b>10-Min. (Blue)</b>	<b>15-Min. (Green)</b>
Trip Time	45 min	41 min	35 min	32 min
Maximum Speed	50 mph	60 mph	60 mph	70 mph
Cost (millions)				
Single Track	\$37	\$37	\$71	\$71
Double Track	\$94	\$94	\$117	\$117
Passing Siding-Short	\$37	\$37	\$81	\$71
Passing Siding-Long	\$40	\$40	\$84	\$74
<b>Danbury – New Milford Improvements</b>				
<b>Characteristics</b>	<b>Alignment</b>			
	<b>Existing</b>	<b>5-Min. (Red)</b>	<b>10-Min. (Blue)</b>	<b>15-Min. (Green)</b>
Trip Time	39 Min	33 Min	30 Min	23 Min
Maximum Speed	30 MPH	40 MPH	50 MPH	60 MPH
Cost (millions)				
Single Track	\$40	\$40	\$40	\$40
Double Track	\$68	\$68	\$68	\$68
Passing Siding-Short	\$43	\$43	\$42	\$41
Passing Siding-Long	\$51	\$51	\$48	\$44

*\*Costs are in 2005 dollars and include design, Construction Management, Force Account Protective Services, and Construction Contingencies*

These costs assume that there is one construction effort for each scenario; all planned track improvements have been implemented; and catenary is being constructed using the poles that will be installed in ConnDOT's Danbury Branch Signalization Project (#302-0007).

### *Alternatives Summary Evaluation Report*

The primary objective of the Alternatives Summary Evaluation report was to screen the extensive list of improvement options identified in Phase I and reduce the list to include only the most viable alternatives warranting further consideration in Phase II.

### *The Alternatives Screening Process*

A first tier evaluation provided an assessment of the options that were presented in Task 2 and Task 4. The options considered for the Branch were screened against six factors to determine whether or not they should be given further consideration. These evaluation criteria included:

- Operational Impact
- Environmental Impact
- Fleet Equipment Impact
- Travel Demand
- Time Savings
- Capital Cost

A number of options were eliminated from further review based on the effect they would have regarding the above factors. A second tier evaluation was then initiated with the objective of establishing a final list of preferred alternatives for further study in Phase II. The first step in this process was to consolidate the improvement options into viable alternatives resulting from the initial screening using the same assessment factors identified above.

Eight alternatives were identified for further evaluation by the Study Advisory Committee. These alternatives, which are not ranked in any order of preference, were:

- Alternative One
  - No Build/TSM.
- Alternative Two:
  - Extend Diesel Service to New Milford Using Existing Track and Equipment.
- Alternative Three
  - Electrify Danbury Branch From South Norwalk to Danbury.
- Alternative Four
  - Enhance Passing Sidings From South Norwalk to Danbury.
- Alternative Five
  - Electrify and Enhance Passing Sidings From South Norwalk to Danbury.

- Alternative Six
  - Extend Diesel Service to New Milford With Alignment Improvements between Danbury and New Milford.
- Alternative Seven
  - Transportation Strategy Board (TSB) Option to Electrify the South End of the Branch and Establish Feeder Bus/Rail Service.
- Alternative Eight
  - Full Build.

### *Preferred Phase II Alternatives*

Further screening of these eight alternatives was undertaken by Study Advisory Committee members, representatives of ConnDOT, and the Study Team. The consensus was that five preferred alternatives would be further evaluated in Phase II. These preferred alternatives were presented to the public for their input and comment at two public meetings and an open comment period. The five preferred alternatives (listed in no order of preference) are:

- Alternative A
  - No Build
- Alternative B
  - Transportation System Management (TSM)
- Alternative C
  - South Norwalk to Danbury Improvements
- Alternative D
  - Extension of Service to New Milford
- Alternative E
  - Partial Electrification from South Norwalk to Route 15 (TSB Option)

### Connecticut Department of Transportation Rail Governance Study

The Connecticut Department of Transportation (ConnDOT) initiated the *Connecticut Rail Station Governance Study* in 2001 to evaluate the condition and operations of stations and parking facilities on the New Haven Line and its three branches. The evaluation included an inventory of existing facilities, a review of current governance practices, a review of governance practices at other commuter rail operations, and a review of operating revenues and expenses.

The purpose of this study was to gather information that could guide ConnDOT in determining whether a change should be made in how stations and parking facilities are governed. Any changes to governance policy would seek to improve serviceability, financial effectiveness, and service quality. The primary goal of this study was to develop a Governance Policy and

Financial Policy that would improve quality of service for riders. The study ultimately identified three options of governance. The study also developed evaluation criteria covering a range of qualitative and quantitative considerations to assist ConnDOT in their selection process.

### **1.3 Related Projects**

#### Danbury Branch CTC

A Centralized Train Control (CTC) system is a signal system with central control of switches and train movements. For the Danbury Branch there will be Cab Signals and Go-NoGo Signals at switches as is now in use on the New Haven Mainline. Installation of the CTC is expected to begin late in 2009 with completion by the end of 2011.

#### Danbury Branch Tie Replacements

This project is to replace worn ties on the branch. Work began in Fall 2008 and will be completed in 2009. Minor curve modifications are being incorporated where feasible.

#### Rt. 7 & 33 Reconstruction in Wilton

This project, which is now under construction, will widen Route 7 and reconstruct the Route 33 intersection at Wilton Station. This project will allow Route 7 to accommodate two travel lanes, both northbound and southbound, for a length of approximately three miles from Wolfpit Road to Olmstead Hill Road. The project is scheduled for completion in April 2010.



Construction on Route 7 in Wilton  
(August 6, 2009)

#### Rt. 7 Bypass in Brookfield

This project, now under construction, will extend the Route 7 expressway to bypass Brookfield Center. It will connect to the recently reconstructed four-lane Route 7 just north of the ConnDOT Maintenance Facility in Brookfield.

#### Rt. 15 & Rt. 7 Interchange Reconstruction

This project consists of the construction of a full-directional interchange between Route 7 and Route 15 (Merritt Parkway) in Norwalk. The reconstruction will not inhibit access for Main Avenue to and from Route 15.

#### Wilton Station Parking

As mentioned above, the Route 7/Route 33 Reconstruction Project will alter the pattern of the roads around Wilton Station. This creates space for additional rail commuter parking at the station. This project is currently in the PE/EA Phase. With details including the number of parking spaces yet to be determined.