

CONNECTICUT DEPARTMENT OF TRANSPORTATION
Bureau of Policy and Planning
Intermodal Planning

**WATERBURY AND NEW CANAAN
BRANCH LINES
NEEDS AND FEASIBILITY STUDY
Project 170-2562**

Phases I and II



Phase I Report

Date: January 2010

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Appendix A: Existing Conditions

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Appendix B: Waterbury Branch Long List Alternative Drawings

- Double Track Alternative Drawings
- Passing Siding Alternative Drawings
- Light Rail Transit Alternative Drawings
- Bus Rapid Transit Alternative Drawings
- Express Bus Alternative Drawings

Appendix C: New Canaan Branch Long List Alternative Drawings – Full Double Track Alternative

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1.0 PROJECT DESCRIPTION

The Connecticut Department of Transportation (CTDOT) in cooperation with the South West Regional Planning Agency (SWRPA), Greater Bridgeport Regional Planning Agency (GBRPA), Council of Governments of the Central Naugatuck Valley (COGCNV), and the Valley Council of Governments (VCOG), is preparing this needs and feasibility study for improvements to transit service along the New Canaan and Waterbury Branch corridors of the New Haven Line. The results of this study will identify potential service and infrastructure improvements for the 27-mile rail corridor between Milford and Waterbury, and the 7.9-mile rail corridor between Stamford and New Canaan. It will also provide decision-makers with the information necessary to determine how the CTDOT-owned New Canaan and Waterbury Branches fit into an overall statewide transportation strategy that balances needs and funding ability.

Metro-North Railroad operates service between New Haven and Grand Central Terminal (GCT) on the New Haven Line, Connecticut's busiest commuter rail line. Three branch lines feed into the New Haven Line: the New Canaan Branch, the Danbury Branch, and the Waterbury Branch (Figure 1-1). While this study is focused on the Waterbury and New Canaan Branches, a separate feasibility study of the Danbury Branch is also underway.

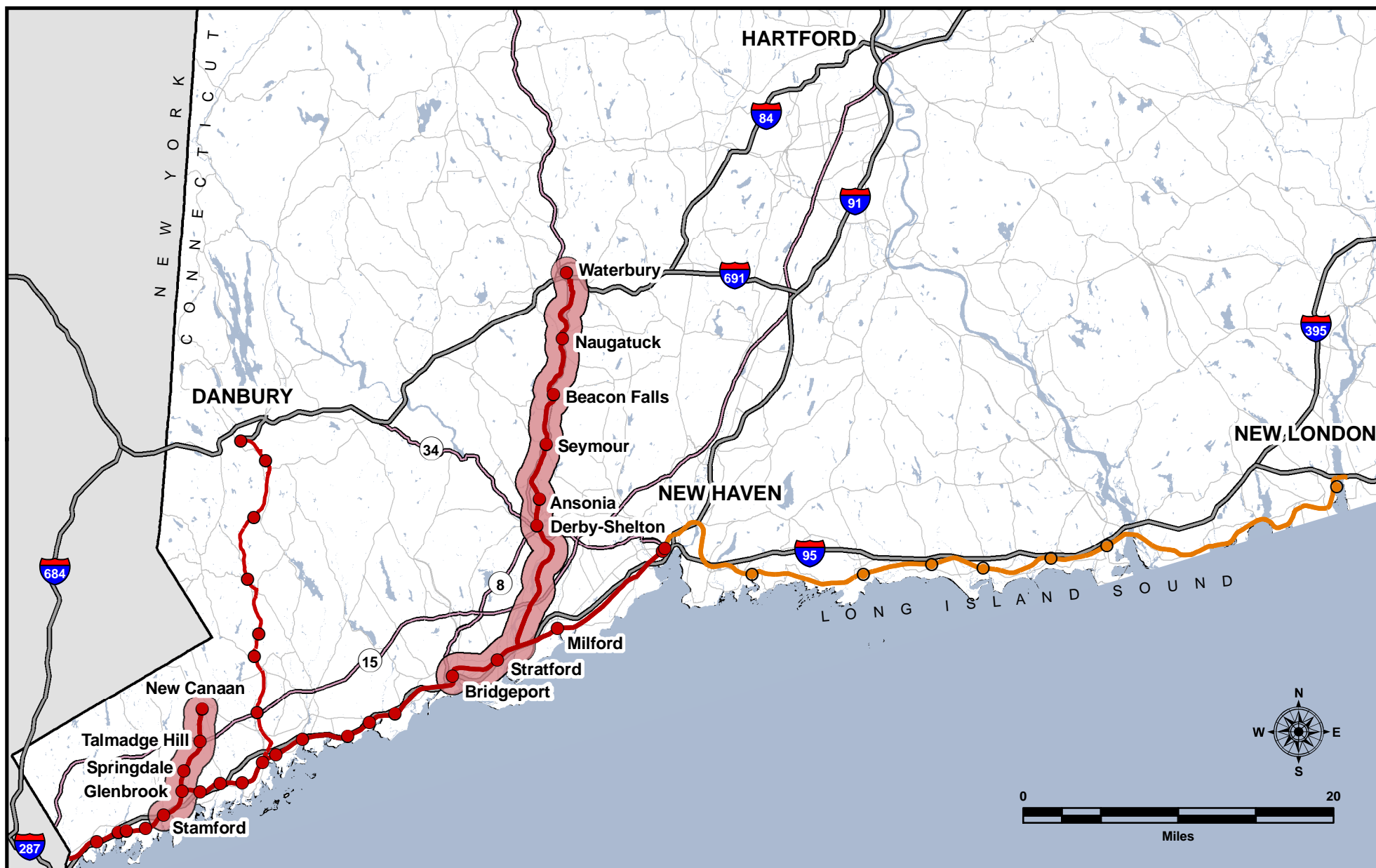
The Waterbury Branch is the longest of the three branch lines, operating passenger service between Waterbury and Bridgeport with stops at Naugatuck, Beacon Falls, Seymour, Ansonia, and Derby-Shelton (Figure 1-2). The branch consists of an unsignalized single track with no passing sidings, making it impossible for northbound and southbound trains to pass one another along the branch and limiting the amount of service that can be provided. Freight trains also operate on the line.

The Waterbury Branch runs parallel to Connecticut CT-8, which is frequently congested during rush hour periods, especially in the vicinity of the CT-8/Interstate 95 (I-95) interchange. Improved transit service in the corridor could attract new ridership, which in turn might reduce vehicle trips and congestion on local roadways.

The New Canaan Branch is the shortest of the three branches and the only one that is electrified. Metro-North provides frequent peak-period passenger service from New Canaan to Stamford and GCT, with stops at Talmadge Hill, Springdale, and Glenbrook (Figure 1-3). Like the Waterbury Branch, the New Canaan line consists of a single track without any passing sidings. The signalization on the branch ends just before New Canaan Station, which limits the operations of trains on the northern end of the branch. Greater frequency of service and faster running times could potentially make the branch more attractive to commuters. Freight trains are also allowed, though they do not currently operate on the line.

This Phase I Report is a compilation of the data collection and alternatives development tasks completed during Phase I of the Waterbury and New Canaan Branch Lines Needs and Feasibility Study, including previous reports that described the study area, project goals and

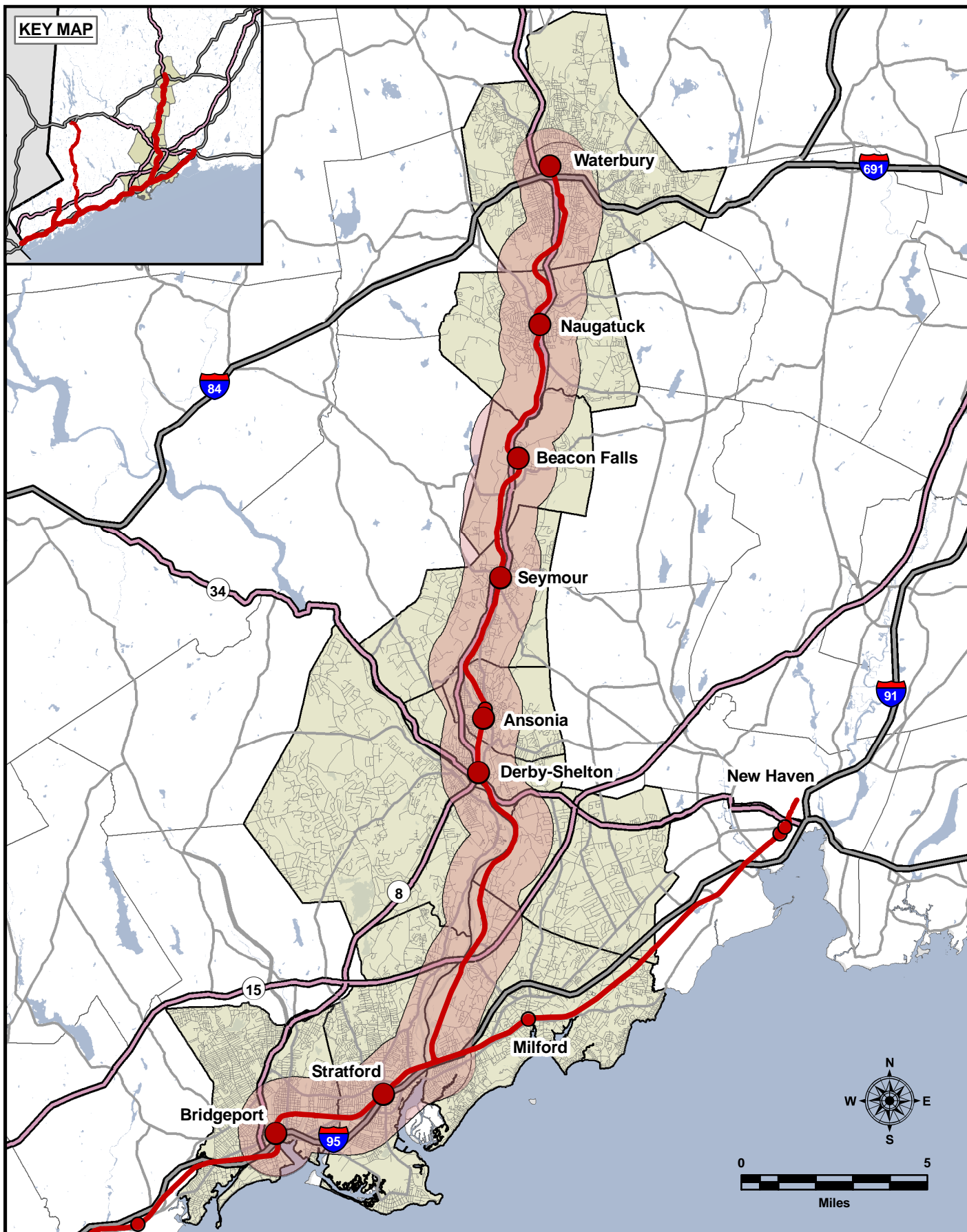
objectives, existing transportation facilities and services, existing environmental conditions, future no build conditions, and the Long List of Alternatives developed for each corridor. A future Phase II Report will detail the two-step alternatives screening process now underway, as well as provide a list of improvements recommended for implementation.

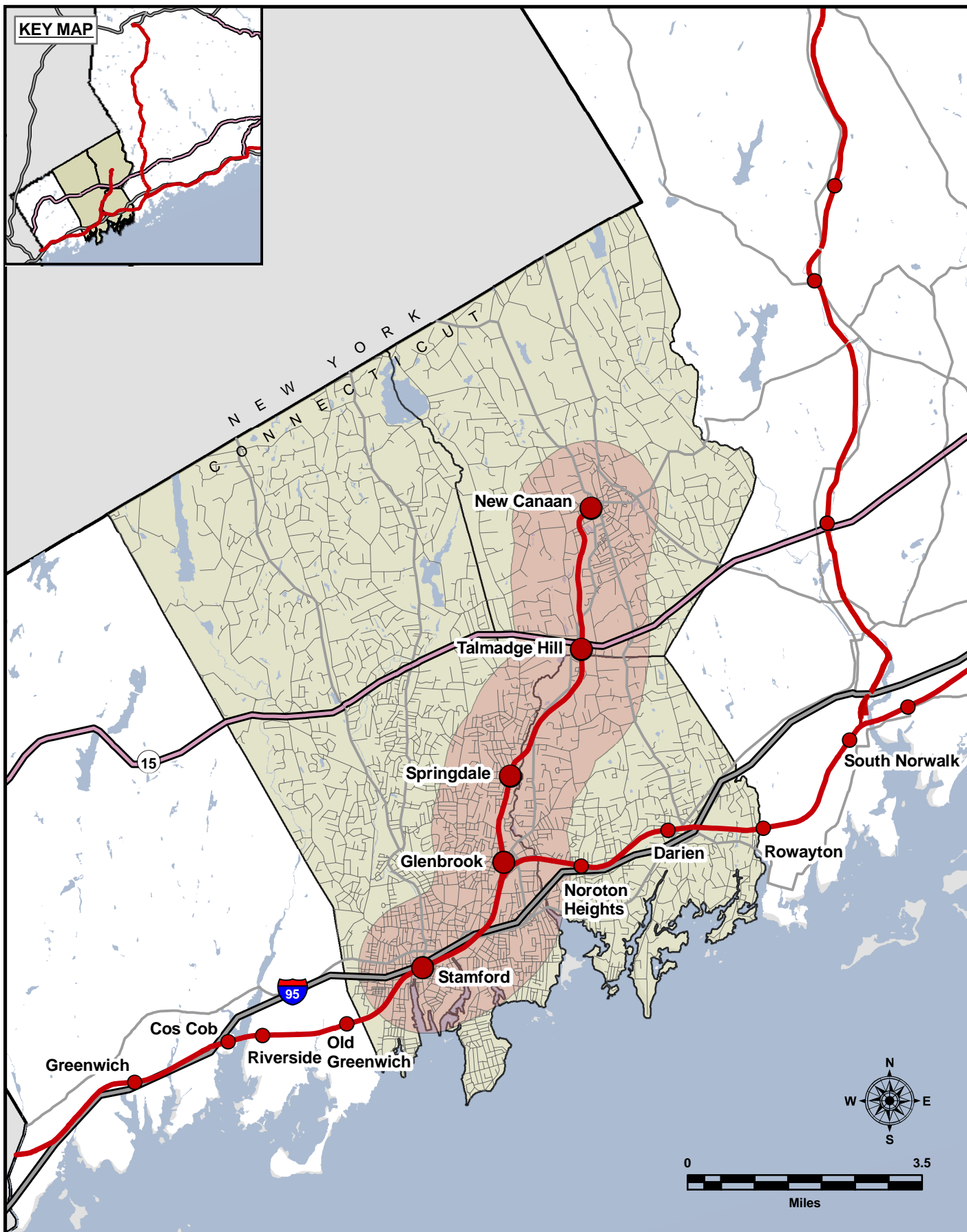


- | | |
|-----------------------------------|-------------------------------|
| Study Area | State Routes |
| New Haven Line and Danbury Branch | Study Area Stations |
| Shore Line East | Other New Haven Line Stations |
| Interstate Routes | Shore Line East Stations |

Figure 1-1
Study Area







Study Area

New Haven Line
and Danbury Branch

Interstate Routes

State Routes

Study Area Stations

Other New Haven Line
Stations

Figure 1-3
New Canaan Branch



2.0 RELATED STUDIES

This chapter reviews related studies, surveys, and reports that have been conducted or prepared by various agencies to identify and address transportation needs within the Waterbury and New Canaan Branch study areas and throughout Connecticut. The following sections provide a summary of these reports in reverse chronological order of publication, highlighting their relationship to the current needs and feasibility study.

South Western Region Long Range Transportation Plan 2007-2035

South Western Regional Planning Agency

The Long Range Transportation Plan was prepared by the South Western Regional Planning Agency (SWRPA) and endorsed by the South Western Metropolitan Planning Organization (SWMPO) in May 2007. Preparation of the Plan is mandated by the federal government before federal transportation monies can be allotted to the region. It builds upon the framework of the earlier 2004-2030 plan.

The SWRPA region comprises eight municipalities – Greenwich, Stamford, New Canaan, Norwalk, Westport, Wilton and Weston. Representation consists of the chief elected official of each town, and representatives from the Norwalk, Stamford, and Westport Transit Districts. In developing the Plan, staff members worked and interfaced with other government agencies including CTDOT and the Transportation Strategy Board.

The Plan establishes overall goals for the region and identifies specific projects that can enhance these objectives. Eleven objectives are cited as follows:

- Invest in the transportation system to maintain the economic health of the region
- Maintain the infrastructure – roads, bridges, transit systems
- Maintain and increase accessibility – people and goods
- Improve safety
- Increase security
- Mitigate or avoid environmental impacts from transportation projects – including maintaining or improving air quality
- Support land use strategies that promote public transportation usage
- Enhance the connection between transportation modes
- Optimize the efficiency of existing systems and the use of new technologies
- Develop and monitor system performance

- Provide funding sources to address future transportation needs

Throughout the document both short- and long-term projects are described, for areas including rail and bus transit, highways, safety enhancements, and traffic signal systems.

2007 Master Transportation Plan: 2008-2017

Connecticut Department of Transportation

The Master Transportation Plan (MTP) is issued by CTDOT on a biennial basis in accordance with state statutes. Its purpose is to provide elected officials and the general public with an understanding of the projects and programs that CTDOT will be trying to implement. The report defines CTDOT's mission, principals, and values. It identifies those actions which the Department plans to undertake to fulfill its overall goal of providing a "safe, efficient and cost-effective transportation system that meets the needs of its users." The Plan discusses major issues and challenges facing the State of Connecticut and explains how the existing and future transportation network will be maintained and expanded in the 2008-2017 time period based on both federal and state funding sources.

In formulating its current proposed and planned future actions, CTDOT takes into account a number of other inputs. In addition to its own mission, needs expressed in the Long-Range Transportation Plan 2004-2030 (issued in 2004), strategies developed by the Transportation Strategy Board (see below), and goals of the Conservation and Development Policies Plan for Connecticut also factored into the MTP document.

As the MTP encompasses all modes of transportation, the Plan addressed a wide range of specific projects. These include rail and bus movements, ridesharing, highways and local roadways, ports and terminals, airports, safety enhancements, and the needs of the elderly and the handicapped. Provided in the document is a summary index of all planned projects.

The Waterbury and New Canaan Branch Lines Needs and Feasibility Study is listed as one of CTDOT's major transit capital studies in "Section 1 – CTDOT Bus & Rail Planning Studies" of the MTP. The Plan advocates transportation corridor planning in general in its "Major Planning Studies" section, stating that "the strategic development of the state's transportation program requires evaluation of the travel corridors to identify future needs and establish priorities for implementing improvements," and that these "studies will be the basis for developing a coordinated, integrated plan of transportation improvements for each corridor, including the scheduling of projects over a 20-year period" (CTDOT, 2007).

Moving Forward: Connecticut's Transportation Strategy – Report and Recommendations of the Transportation Strategy Board

Transportation Strategy Board

This report, submitted to the Governor and General Assembly in January 2007, presents the Connecticut Transportation Strategy Board's (TSB) recommendations for strengthening and expanding the state's transportation system, including a prioritized list of projects that the TSB sees as necessary for the effective implementation of these recommendations. The strategies that the TSB outlines in the report focus on the need to address congestion; to expand transit options; to improve safety; to strengthen airport and water ports; to establish multi-modal transit

centers; to link land use planning with transportation planning; to preserve open space; and to examine and create new means of funding a transportation system that links jobs, housing, and tourism activities.

The report includes sections on the state's commuter and freight rail network, including a discussion of the Waterbury and New Canaan Branch lines. The completion of needs and feasibility studies of the Waterbury, Danbury, and New Canaan Branches and implementation of any initiatives that come out of these studies is cited as one of the TSB's recommendations.

South Western Region Long Range Transportation Plan 2004-2030

South Western Regional Planning Agency

Undertaken by SWRPA and endorsed by SWMPO in October 2004, this master plan lays out goals and identifies specific projects area communities believe should be implemented. The document is intended to serve as a guide in developing various transportation systems to provide a safe, reliable, and accessible means of travel within the region. Ten basic objectives of a transportation system are defined including maintenance of the economic health of the area, maintenance of the existing transit and road network, increased accessibility, increased safety and land use policies that support public transit.

Provided within the report are listings of near-term and long-term projects that achieve stated objectives. These projects covered rail and bus transit upgrades, rail freight, ferry service to lower Manhattan, Long Island and LaGuardia Airport, Interstate 95 (I-95), and other regional highways and streets.

The Waterbury and New Canaan Branch Lines Needs and Feasibility Study is identified in the Plan under the heading "Participate in key project and program initiatives." The Plan notes that the Waterbury and New Canaan study is one of the key specific recommendations relating to the South Western Region included in the TSB's second plan, *Moving Forward: Connecticut's Transportation Strategy – Report and Recommendations of the Transportation Strategy Board* (see above).

Bus Passenger Destination Survey (Final Report)

Council of Governments of the Central Naugatuck Valley

Prepared by the COGCNV in May 2003, this report presents the results of a bus passenger survey. Among a number of questions asked, the primary inquiry related to opinions regarding relocating an existing downtown Waterbury bus transfer point. Other questions asked in this survey were:

- What town do you live in?
- How often did you use the bus in the past month?
- What route did you start your trip with?
- Where are you going?
- Do you transfer to another bus?

- How often have you travelled on the train from the Waterbury train station in the last year?

The survey was conducted for three days in October 2002. A total of 1,800 surveys were returned (of an estimated 2,500 sample size).

Relative to bus usage, about 64 percent said they use the transit system daily and about 20 percent indicated a 3-4 day per week usage. The question pertaining to the use of the train from the Waterbury train station yielded 59 percent of respondents saying they hadn't used the train in the past year, 14 percent saying they had used the train less than once a month, and 7 percent saying they had used the train 1 to 3 times per month.

Congestion Mitigation Systems Plans "Vision 2020"

South Western Regional Planning Agency

Dated February 2003, this study was undertaken by a consultant team of Wilbur Smith Associates, in association with KKO Associates, Fitzgerald And Halliday, Inc., Buckhurst, Fish and Jacquemart, Geomatrix, and the Center for Research and Public Policy. It was sponsored by SWRPA.

The document focuses on how to mitigate congestion in southwestern Connecticut, recognizing that it will ultimately limit economic growth unless remediated. Unfortunately, as stated, solutions to congestion problems are difficult, often costly and controversial. This "Vision 2020" presents a series of measures to reduce congestion, improve air quality, and promote economic growth. The suggestions outlined in the report offer transportation users and customers a choice of modes.

Recommendations cited in the report are outlined below:

Immediate Actions –

- Public education to inform decision makers and the public of the benefits and costs of transportation strategies
- Land use review of master plans and plans of conservation and development to identify how transportation is supported by local zoning regulations
- Expanded travel demand management programs such as staggered work hours, flexible work weeks, organized van pools and telecommunicating

Short Term Actions –

- Transit operational improvements including more parking at train stations, Intelligent Transportation System (ITS) approaches specifically aimed at bus operations, and reducing fares for intra-state rail users
- Introduction of a universal commuter pass
- Establishment of intermodal hubs
- I-95 operational improvements including consolidated interchanges, safety enhancements, operational lanes, etc.

- Traffic systems management options – signal timing and coordination, access management, turn lanes, and geometric modifications
- Truck parking at I-95 rest areas
- Local zoning changes to reduce parking requirements, increase density, and encourage a mixing of land uses

Long Term Actions –

- Transit capacity expansion – rail and bus services
- I-95 expansion to include two additional lanes, managed through pricing
- Interstate rail upgrades – passenger and freight
- Ferry services to New York airports and Manhattan
- Highway improvements, including widening along CT-7 and Interstate 84

Technical Memorandum – Parking Inventory and Utilization (Final Report)

Connecticut Department of Transportation

Submitted to the CDOT in January 2003 by the consultant firm Urbitran, this study focused on updating previous inventories and utilization of parking spaces along the New Haven, New Canaan, Danbury, and Waterbury rail lines within Connecticut.

In undertaking these surveys, the consultant recorded data during mid-week periods of the fall and spring of 2002. Parking counts spanned the time frame between 10 AM and 4 PM which was presumed to be the period of highest demand. In addition to parking data, parking fee information was collected. Also requested was information about any waiting list for parking spaces.

Overall, the study found that the New Haven Line and its three branch lines provided approximately 17,265 station parking spaces. Of these, almost 60 percent are owned by the state. The survey indicated about 81 percent of the total parking supply was utilized. For the New Canaan and Waterbury branches, parking utilization was about 82 and 81 percent, respectively. The report also noted that many stations have a waiting list for permit parking. Individual wait times varied from 2 months to 6 years.

Railroad Freight Transportation Inventory

Connecticut Department of Transportation

This report was published in January 2003 by CTDOT, Office of Intermodal Planning. It discusses the history of railroad operations in the state, changes that have occurred, and current freight/passenger services. The document also indicates what types of goods are moved, where they come from, and what their destinations are. A summary of information relevant to the Waterbury and New Canaan Branches is highlighted below.

Although no through freight service is provided on the Waterbury Branch, local freight shipments are offered by the P&W Railroad (from Milford to Derby) and by the Springfield Terminal

Railroad (from Derby to Waterbury). The P&W Railroad is a regional freight carrier serving Connecticut, Massachusetts, Rhode Island and as far south as New York City via the New Haven Line. The Springfield Terminal Railroad is a subsidiary of Pan Am Railways, a regional carrier serving the New England states, New York, and Atlantic Canada.

There is no freight service on the New Canaan Branch. However, CSX Railroad has the right to provide service. CSX is the largest freight railroad serving the state, with 53.9 miles of track rights. It operates in 23 states along the eastern United States. In addition to the New Canaan Branch, the company also has track rights over the New Haven Line and the Springfield Line as far north as North Haven where it has a freight yard.

Transportation: A Strategic Investment

Connecticut Transportation Strategy Board

Issued by the TSB in January 2003, this report was intended as an action plan for the state for the twenty year period of 2003-2023. It set out a long-term vision to keep Connecticut a dynamic and attractive area, to foster its economy, to form strong economic linkages both regionally and globally, to protect its shoreline and rural areas, to stimulate its urban environment, to value its educational institutions, and to encourage growth of new businesses focused on technology and bioscience. General strategies included the following:

- Increase the number of trips using alternative modes of transportation
- Study best practices in managing public transportation
- Develop cost-effective, efficient alternatives to trucks for the movement of goods
- Integrate land use and transportation planning
- Identify new, stable sources of funding

The top five recommendations offered by the TSB were:

- Mitigate congestion on I-95 by increasing the number of rail trips by ordering new rail cars, developing additional storage and maintenance facilities, and improving rail access
- Mitigate congestion on I-95 by providing alternatives to trucks for the movement of goods with container barge feeder port(s) and service
- Mitigate congestion on I-95 by providing alternatives to trucks for the movement of goods with the support of a new rail freight connection across the Hudson River at New York City
- Mitigate congestion on CT-7 by implementing the recommendations of the Route 7 Travel Options Study, including improved commuter rail service
- Mitigate congestion on major arterial highways by increasing the use of travel demand and management strategies with the marketing of alternative modes and the provision of employee/employer benefits

Regional Transit Card Implementation Study

South Western Regional Planning Agency

The study, dated December 2001, was initiated by SWRPA and conducted by the firm MultiSystems, Inc. with the assistance of Howard/Stein-Hudson Associates. The aim of the work was to explore implementation requirements for an intrastate fare card for use on all transit and para-transit services in the southwest region of the state. The intention was to simplify the use of public transit.

As part of the work process, the consultants looked at various card technology options, organized focus groups to obtain reactions from both transit and non-transit users, and developed conceptual transit card options and costs. Establishment of a regional fare card program was deemed feasible.

New Haven Line/Shore Line East Rail Passenger Survey

Connecticut Department of Transportation

CTDOT conducted a rail passenger survey in September 2000. The survey results were published in March 2001. This effort was intended to obtain information about patterns and characteristics of Connecticut transit riders. Along with the CTDOT effort, a similar survey was conducted by Metro-North personnel focusing on the New York stations of the New Haven Line. All peak-hour westbound trains arriving at GCT by 10:00 AM were surveyed. All eastbound trains leaving GCT between 5:30 AM and 10:14 AM were also surveyed. In Connecticut, around 13,000 questionnaires were distributed, or about 55 percent of total morning peak ridership. Around 6,000 questionnaires were returned.

The survey form had twenty questions for respondents to answer, including:

- Where do you live?
- What time is your train scheduled to leave?
- Do you transfer to another train – if so, where?
- How do you get to the station?
- Do you currently have a parking permit for your station?
- Would you use a shuttle bus to get to the station if a more remote parking location were available?

Of all Connecticut riders, about 68 percent drove to the station alone. Drop-offs constituted 11 percent, walkers 13 percent, car poolers 3.5 percent, and connecting bus passengers 3 percent. The vast majority of peak-hour passengers used rail service at least five days a week (83 percent). Most passengers indicated they would not use a shuttle service to get from a remote parking location to the train station.

Waterbury Survey – Final Results

Metro-North Railroad

In January 2001, the results of a survey on the Waterbury Branch were published. It was conducted on two PM peak-hour trains heading towards Waterbury from Bridgeport. The purpose of this effort was to evaluate potential schedule changes.

The survey results indicated that most patrons were satisfied with the then current schedule. For most respondents, PM departure times were acceptable. On the earlier departing train (#1946), many respondents requested an earlier departure between 4:30-5:30 PM.

Other Study Reports

Several other reports were reviewed. Summaries of these documents, however, are not provided due to the elapsed time since their publication or because they were determined to be only marginally relevant to the Waterbury and New Canaan Branch Lines Needs and Feasibility Study. Studies not summarized include the following:

- Route 7 Corridor Travel Options Implementation Plan, South Western Regional Planning Agency/Housatonic Valley Council of Elected Officials, June 2000
- State of Connecticut Rail Plan Update, CTDOT, August 1996
- Action Plan for Restoring Passenger Rail Service to New Milford, Housatonic Valley Council of Elected Officials, March 1996
- Feasibility of Implementing Waterbury-Hartford Commuter Rail Service, CTDOT, April 1992
- New Canaan Branch Line Parking and Capacity Report, CTDOT, December 1991
- Waterbury Branch Improvements, CTDOT, October 1991
- Waterbury Branch Survey, CTDOT, April 1991
- Statewide Transit System Plan, CTDOT, March 1991
- Connecticut Statewide Transit System Plan (1990-2010), CTDOT, March 1991
- New Haven Line Rail Passenger Survey-Summary Report 1987, CTDOT, June 1988 (Staff Paper 88-1)
- Hartford-Waterbury Rail Passenger Study, DeLeuw, Cather and Company for CTDOT, January 1982

Rail Passenger Optimization – Waterbury Line, various participating agencies, April 1979

3.0 GOALS AND OBJECTIVES

At the outset of the project, a set of goals and objectives were developed to address the needs identified in the Waterbury and New Canaan Branch Lines Needs and Feasibility Study. These goals and objectives were used to develop the screening criteria that will be used to narrow the Long List of Alternatives developed during Phase I of the study to a set of recommended improvements for each corridor, ensuring that local and statewide transportation priorities are met.

Goal 1: Encourage Integrated Transportation Improvements That Foster Safety, Efficiency, and Mobility in the Study Corridors

Objectives:

- Reduce vehicle trips and congestion on major travel routes
- Reduce accidents and improve safety on major travel routes
- Expand transit options
- Create an efficient transportation system that links jobs, housing, and leisure (tourism) activities
- Improve connection to New Haven Line service to provide better access to employment centers such as New Haven, Bridgeport, Norwalk, Stamford, and New York
- Enhance the movement of goods

Goal 2: Enhance Transit Opportunities along the Waterbury Branch

Objectives:

- Reduce vehicle trips, accidents and improve safety on I-95, CT-8 and local roads in the corridor
- Attract new transit ridership through effective transit service
- Improve passenger station access and facilities, and promote multi-modal transit connections

Goal 3: Improve Service on the New Canaan Branch

Objectives:

- Reduce vehicle trips, reduce accidents and improve safety on I-95, CT-106 and local roads in the corridor

- Attract new transit ridership through effective transit service
- Increase capacity, including both train capacity and station access capacity
- Improve operational efficiency
- Improve and/or increase direct service to New York
- Improve passenger station access and facilities and promote multi-modal transit connections

Goal 4: Improve Environmental Quality and Land Use Planning in Connecticut

Objectives:

- Improve air quality by encouraging modes of travel other than single occupancy vehicles and reducing VMT
- Align and integrate transportation planning with land use planning, economic development, and environmental requirements
- Foster opportunities for transit-oriented development (TOD)

4.0 EXISTING TRANSPORTATION FACILITIES AND SERVICES

This chapter describes existing passenger rail, freight rail, bus transit, and roadway facilities and services within the Waterbury and New Canaan Branch study areas.

4.1 PASSENGER RAIL SERVICE AND RIDERSHIP IN CONNECTICUT

Beginning in the middle of the nineteenth century and continuing today, passenger rail service has played a major role in shaping the land use and development patterns of southwestern Connecticut. Towns grew along the railroad before Interstate 95 (I-95) and the Merritt Parkway (CT-15) were constructed.

Today, the New Haven Line, with its New Canaan, Danbury, and Waterbury Branches, is one of the busiest commuter lines in North America, carrying over 36 million passengers in 2007. They provide an alternative to the automobile for people travelling between points in Connecticut, as well as to New York City. With the Shore Line East, connecting bus service, and parking facilities at stations, the New Haven Line is the backbone of transit service in southwestern Connecticut. Metro-North Railroad recently marked its 25th anniversary of operating the rail line.

4.1.1 Existing Catchment Area Population

Demographic characteristics of the travel area were analyzed. Special attention was paid to towns located directly along the New Haven Line, and the Waterbury, Danbury, and New Canaan Branches. A list of these selected towns and their estimated population are shown in Tables 4-1 through 4-4. All municipalities and their populations are grouped in the tables by closely located stations. Populations residing within reasonable commuting distance from the stations on the Waterbury and New Canaan Branches generate potential travel demand for rail service. The grouping in these tables is approximate.

TABLE 4-1: 2007 POPULATION IN STUDY AREA – WATERBURY BRANCH

Station	Towns	Population	Total Population/ Station
Waterbury	Watertown	22,053	174,264
	Wolcott	15,537	
	Waterbury	107,340	
	Cheshire	29,334	
Naugatuck	Prospect	8,941	48,896
	Middlebury	7,593	
	Naugatuck	32,362	

TABLE 4-1: 2007 POPULATION IN STUDY AREA – WATERBURY BRANCH

Station	Towns	Population	Total Population/ Station
Beacon Falls	Beacon Falls	5,977	5,977
Seymour	Seymour	15,726	31,804
	Bethany	5,111	
	Oxford	10,967	
Ansonia	Ansonia	18,742	18,742
Derby/Shelton	Derby	12,405	85,860
	Shelton	38,821	
	Trumbull	34,634	
Total		365,543	365,543

Source: U.S. Census, 2000

TABLE 4-2: 2007 POPULATION IN STUDY AREA – DANBURY BRANCH

Station	Towns	Population	Total Population/ Station
Danbury	Danbury	77,732	77,732
Bethel	Bethel	18,538	18,538
Redding	Redding	8,840	8,840
Branchville	Ridgefield	24,210	24,210
Cannondale	Wilton	17,960	17,960
Wilton			
	Weston	10,558	10,558
Merritt 7	Norwalk	85,300	85,300
Total		243,138	243,138

Source: U.S. Census, 2000

TABLE 4-3: 2007 POPULATION IN STUDY AREA – NEW CANAAN BRANCH

Station	Towns	Population	Total Population/ Station
New Canaan	New Canaan	19,359	19,359
Talmadge Hill			
Springdale	Darien	19,607	19,607
Glenbrook	Stamford	121,991	121,991
Total		160,957	160,957

Source: U.S. Census, 2000

TABLE 4-4: 2007 POPULATION IN STUDY AREA – NEW HAVEN MAIN LINE

Connecting Line	Station	Towns	Population	Total Population/ Station
	New Haven	North Haven	23,039	262,322
		Hamden	58,237	
		New Haven	127,959	
		West Haven	53,087	
	Milford	Orange	13,238	65,941
		Milford	52,703	
Waterbury Branch	Stratford	Stratford	50,268	50,268
	Bridgeport	Bridgeport	140,950	140,950
	Fairfield	Fairfield	57,475	57,475
	Southport			
	Green's Farm	Westport	26,653	26,653
	Westport			
	East Norwalk	Norwalk	85,300	85,300
Danbury Branch	South Norwalk			
	Rowayton	Darien	19,974	19,974
	Darien			
	Noroton Heights			
New Canaan Branch	Stamford	Stamford	121,991	121,991
	Old Greenwich	Greenwich	61,783	61,783
	Riverside			
	Cos Cob			
	Greenwich			
Total			892,657	892,657

Source: U.S. Census, 2000

The population data indicate that the Waterbury Branch is accessible for about 360,000 people. The New Canaan Branch is accessible for about 160,000 people.

4.1.2 Existing Ridership

An analysis of ridership data for the New Haven Line, and the Waterbury, Danbury, and New Canaan Branches was conducted. Data came from CDOT historical boarding counts for 1996, 2001, and 2007.

The weekday AM peak (toward GCT) represents the heaviest ridership period. Average 2007 ridership for this period is shown on Tables 4-5 through 4-8. Chart 4-1 illustrates passenger load on the main line and all branches in the study area.

TABLE 4-5: WATERBURY BRANCH – 2007 AM PEAK RAIL RIDERSHIP

Weekday Inbound – Station	2007 AM Peak		
	On	Off	Load
Waterbury	65	0	65
Naugatuck	44	1	108
Beacon Falls	5	2	111
Seymour	10	2	119
Ansonia	10	4	125
Derby/Shelton	10	4	131
TOTAL Waterbury Branch	144	13	

Source: Connecticut Department of Transportation

TABLE 4-6: DANBURY BRANCH – 2007 AM PEAK RAIL RIDERSHIP

Weekday Inbound – Station	2007 AM Peak		
	On	Off	Load
Danbury	204	0	204
Bethel	253	0	457
Redding	55	0	512
Branchville	140	2	650
Cannondale	150	0	800
Wilton	168	4	964
Merritt-7	122	91	995
TOTAL Danbury Branch	1,092	97	

Source: Connecticut Department of Transportation

TABLE 4-7: NEW CANAAN BRANCH – 2007 AM PEAK RAIL RIDERSHIP

Weekday Inbound – Station	2007 AM Peak		
	On	Off	Load
New Canaan	779	0	779
Talmadge Hill	324	2	1,101
Springdale	346	2	1,445
Glenbrook	243	1	1,687
TOTAL New Canaan Branch	1,692	5	

Source: Connecticut Department of Transportation

TABLE 4-8: NEW HAVEN LINE MAINLINE – 2007 AM PEAK RAIL RIDERSHIP

Transfer From	Weekday Inbound – Station	2007 AM Peak			Load From Branch
		On	Off	Load*	
Shore Line East		[2007 Shore Line East data not available]			
	NH-State Street*	[2007 NH-State Street data not available]			
	New Haven	1,697	0	1,697	
	Milford	1,239	19	2,917	
Waterbury Branch	Stratford*	1,128	29	4,147	131
	Bridgeport*	1,915	265	5,797	
	Fairfield	2,151	107	7,841	
	Southport	242	8	8,075	
	Green's Farms	511	8	8,578	
	Westport	1,559	129	10,008	
	East Norwalk	460	73	10,395	
Danbury Branch	South Norwalk*	1,299	755	11,934	995
	Rowayton	401	13	12,322	
	Darien	927	78	13,171	
	Noroton Heights	1,020	19	14,172	
New Canaan Branch	Stamford*	3,467	2,454	16,872	1,687
	Old Greenwich	609	35	17,446	
	Riverside	494	20	17,920	
	Cos Cob	578	24	18,474	
	Greenwich	1,458	616	19,316	
	NEW HAVEN LINE CONNECTICUT TOTAL	21,155	4,652		
	Port Chester	1,261	68	20,509	
	Rye	1,303	59	21,753	
	Harrison	1,469	75	23,147	
	Mamaroneck	1,206	31	24,322	
	Larchmont	2,331	28	26,625	
	New Rochelle	2,191	116	28,700	
	Pelham	1,577	24	30,253	
	Mount Vernon East	923	122	31,054	
Harlem Line	Fordham	5	440	30,619	
Hudson Line	Harlem-125th Street	27	932	29,714	
	Grand Central Terminal	0	29,714	0	
	NEW HAVEN LINE NON-CONNECTICUT TOTAL	12,293	31,609		

TABLE 4-8: NEW HAVEN LINE MAINLINE – 2007 AM PEAK RAIL RIDERSHIP

Transfer From	Weekday Inbound – Station	2007 AM Peak			Load From Branch
		On	Off	Load*	
	NEW HAVEN LINE TOTAL (CT + NON-CT)	33,448	36,261		
	CONNECTICUT TOTAL* (CT NEW HAVEN LINE + BRANCHES)	24,083	4,767	19,316	
			19.8%	80.2%	

Source: Connecticut Department of Transportation

* Note: Includes load from branches.

As shown in Tables 4-5 and 4-7, total ridership on the Waterbury Branch is 144 passengers for the average weekday AM peak period, 131 of which transfer to the New Haven Line for a continued commute. The New Canaan Branch serves 1,692 passengers during the average weekday AM peak period. Almost all passengers from the New Canaan Branch continue their commute onto the New Haven Line.

During the average weekday AM peak, total New Haven Line ridership in Connecticut (including riders on the three branches) is 24,083, with 4,767 (19.8 percent) of those passengers making intrastate trips (Table 4-8). The other 19,316 passengers (80.2 percent) who begin their trip in Connecticut have destinations outside of Connecticut. Almost all of those interstate trips go to GCT.

Chart 4-1: 2007 WEEKDAY AM PEAK RAIL PASSENGER LOAD

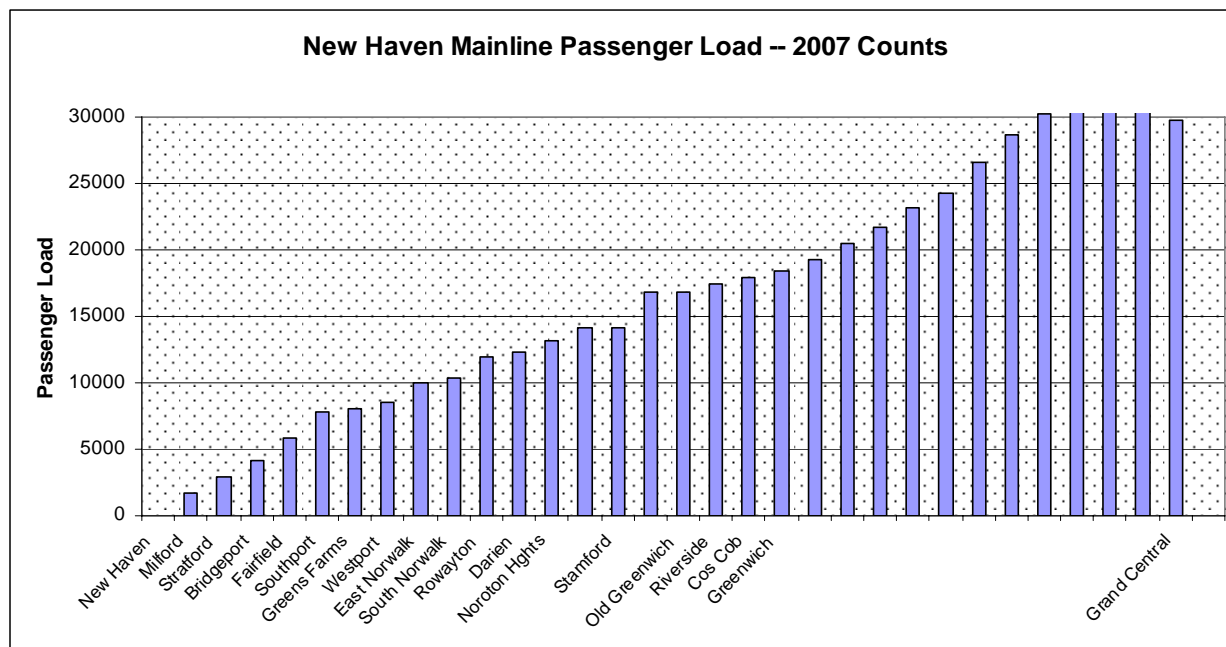
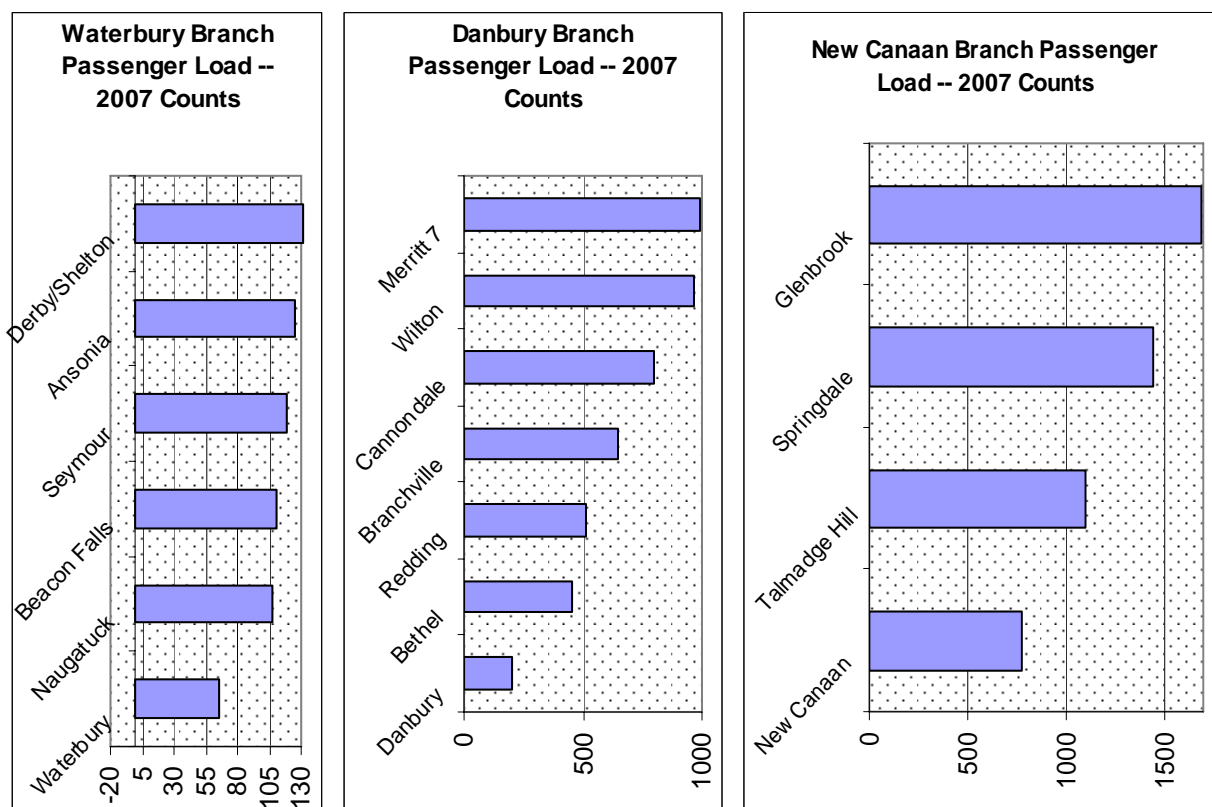


Chart 4-1 (continued): 2007 WEEKDAY AM PEAK RAIL PASSENGER LOAD



The destination with the greatest percentage of trips in the study area is Stamford, with 2,454 (53 percent) of all intrastate Connecticut trips. Other important destinations that should be highlighted are South Norwalk (755 trips or 16.2 percent) and Greenwich (616 trips or 13.2 percent), as well as Bridgeport (265 trips or 5.7 percent).

Historic Trends

Analysis of historic trends was done by comparing available New Haven Line ridership in 1996, 2001, and 2007. Along with historical trends, growth data is presented from the 2008 Connecticut State Governor report entitled *Connecticut Rail Ridership*.

Table 4-9 shows total weekday AM peak ridership in 1996, 2001, and 2007 for the Connecticut portion of the New Haven Line and its branches. The table indicates the average number of boarding (Ons), alightings (Offs), and through trips (Cont. Trip) for each branch as well as the main New Haven Line.

TABLE 4-9: NEW HAVEN LINE – HISTORIC WEEKDAY AM PEAK RAIL RIDERSHIP

Year	2007			2001			1996		
Branch	Ons	Offs	Cont. Trip	Ons	Offs	Cont. Trip	Ons	Offs	Cont. Trip
Waterbury Branch	144	13	131	67	4	63	94	3	91

TABLE 4-9: NEW HAVEN LINE – HISTORIC WEEKDAY AM PEAK RAIL RIDERSHIP

Year	2007			2001			1996		
Branch	Ons	Offs	Cont. Trip	Ons	Offs	Cont. Trip	Ons	Offs	Cont. Trip
Danbury Branch	1,092	97	995	952	18	934	1,002	49	953
New Canaan Branch	1,692	5	1,687	2,056	0	2,056	2,197	3	2,194
New Haven Mainline	21,155	4,652	19,316	19,251	4,181	18,484	17,805	2,535	18,508
TOTAL NEW HAVEN LINE INTRASTATE	24,083	4,767	19,316	22,326	4,203	18,484	21,098	2,590	18,508
	100%	20%	80%	100%	19%	81%	100%	12%	88%
	Change 2001 to 2007			Change 1996 to 2007			Change 1996 to 2001		
Waterbury Branch	115%	225%	108%	53%	333%	44%	-29%	33%	-31%
Danbury Branch	15%	439%	7%	9%	98%	4%	-5%	-63%	-2%
New Canaan Branch	-18%	--	-18%	-23%	--	-23%	-6%	--	-6%
New Haven Mainline	10%	11%	5%	19%	84%	4%	8%	65%	0%
TOTAL NEW HAVEN LINE INTRASTATE	8%	13%	5%	14%	84%	4%	6%	62%	0%
	Annual growth 2001 to 2007			Annual growth 1996 to 2007			Annual growth 1996 to 2001		
Waterbury Branch	13.6%	21.7%	13.0%	4.0%	14.3%	3.4%	-6.5%	5.9%	-7.1%
Danbury Branch	2.3%	32.4%	1.1%	0.8%	6.4%	0.4%	-1.0%	-18.2%	-0.4%
New Canaan Branch	-3.2%	--	-3.2%	-2.3%	--	-2.4%	-1.3%	--	-1.3%
New Haven Mainline	1.6%	18%	0.7%	1.6%	5.7%	0.4%	1.6%	10.5%	0.0%
TOTAL NEW HAVEN LINE INTRASTATE	1.3%	2.1%	0.7%	1.2%	5.7%	0.4%	1.1%	10.2%	0.0%

Source: Connecticut Department of Transportation

Ridership on the main New Haven Line grew steadily from both 1996 to 2001 (8 percent or 1.6 percent annually) and 2001 to 2007 (by 10 percent or 1.6 annually). The drop in ridership in 2001 might be attributed partly to the September 11, 2001 terrorist attacks in Manhattan, which is a major employment destination to Connecticut commuters.

The New Canaan Branch experienced a decline in ridership between 1996 and 2007, from 2,197 to 1,692, a 23 percent decrease overall and a 2.3 percent decrease annually. The Waterbury Branch grew 53 percent (4.0 percent annual growth) in the period from 1996 to 2007, though the absolute number reached only 144 trips.

In 1996, 12 percent of all New Haven Line trips had destinations within Connecticut. Intrastate travel grew between 1996 and 2007. The percent of in-state destination trips grew from 12 to 19 percent between 1996 and 2001, and from 19 to 20 percent between 2001 and 2007.

4.1.3 Fare Information

There are multiple fare structures for Metro-North trains. For trips into or from New York City and Connecticut, 11 different fare categories are applicable. These include:

- Child ticket
- Family ticket
- Monthly commutation ticket
- Monthly school commutation ticket
- Weekly commutation ticket
- 10-trip peak hour ticket
- 10-trip off-peak hour ticket
- 10-trip senior/disabled person ticket
- One-way peak hour ticket
- One-way off-peak hour ticket
- One-way senior/disabled person ticket

For rides between Connecticut stations, nine intermediate fare categories apply:

- Child ticket
- Family ticket
- Monthly commutation ticket
- Monthly school commutation ticket
- Weekly commutation ticket
- 10-trip intermediate ticket
- 10-trip senior/disabled person ticket
- One-way ticket
- One-way senior/disabled person ticket

There are four options for purchasing tickets, including ticket offices and ticket machines, on board trains, WebTicket, and Mail & Ride.

Purchasing tickets on board the train is a cash-only transaction and carries a surcharge between \$4.75 and \$5.50. This surcharge is not applicable on the Waterbury Branch or at other

stations where there is no ticket office or ticket vending machine. WebTicket gives passengers the option of purchasing tickets in advance on the internet using a major credit card, and receiving them by mail. This option gives an additional 2 percent discount on monthly tickets and 5 percent on all other tickets. Mail & Ride is a monthly ticket-by-mail subscription service. This option gives an additional 2 percent discount.

The current fare (as of December 1, 2009) for trips between Bridgeport and Waterbury is \$53.00 monthly and \$2.25 for a one-way ticket. Similarly, the monthly and one-way fares between Stamford and New Canaan are \$50.00 and \$2.25, respectively.

4.2 WATERBURY BRANCH

The Waterbury Branch is a 27-mile single track rail corridor without electrification. It currently hosts both passenger and freight trains. The most significant parallel roadway is Connecticut CT-8.

4.2.1 Passenger Rail

Passenger rail service on the Waterbury Branch is operated by Metro-North with service to Bridgeport. Select peak trains also run to Stamford.

4.2.1.1 Schedule

The current Metro-North Railroad New Haven Line schedule became effective on October 18, 2009 and runs through March 27, 2010.

On the Waterbury Branch, eight southbound and seven northbound trains operate daily Monday through Friday. All of these runs, whether terminating or beginning at Bridgeport, are scheduled for timely connections with mainline trains heading to or from Stamford and New York City. During the weekday morning peak hour, two southbound trains operate, leaving Waterbury at 5:57 AM and at 6:40 AM. (The 5:57 AM train was added beginning with the April 2008 timetable.) Northbound, three peak hour trains are designated leaving Bridgeport at 8:00 AM, 5:55 PM and 8:11 PM. On weekends and holidays, five southbound and northbound runs are made daily. All Waterbury Branch trains stop at Derby-Shelton, Ansonia, Seymour, Beacon Falls, Naugatuck, and Waterbury stations. One weekday peak hour morning train and one weekday afternoon peak hour train also stop at the Stratford station.

Trip time is approximately 50 to 55 minutes between Bridgeport and Waterbury.

4.2.1.2 Operations

Seven round trip shuttles are operated between Bridgeport (making connections with New Haven Line trains) and Waterbury. Shuttles reverse direction at CP-255 west of Bridgeport. In some cases (particularly when a track is out of service west of CP-255), trains must then pull east of CP-255 (opposite the Bridgeport station) on Track 1 or 2 to layover. Equipment for the first southbound shuttle train deadheads west to CP-261 (Devon) from New Haven and then north to Waterbury using the northeast leg of the CP-261 wye. This equipment returns to New Haven after the last northbound shuttle.

In April 2008, a second morning peak train was added, which follows the first deadhead train from New Haven up to Waterbury and then departs Waterbury first (First-in-Last-Out at

Waterbury) as Train 1923. This train proceeds directly to Stamford, where it discharges all passengers and is taken out of revenue service.

The Waterbury Branch is unsignaled, limiting it to 59 mph under Federal Railroad Administration (FRA) rules, and there are no passing sidings. The most frequent service that can be operated under these conditions is every two hours in each direction, allowing 20 minute turns at Waterbury and 10 minutes between southbound and northbound trains at the beginning of the single track branch at CP-261 (Devon). In the peak periods, this frequency is already achieved in the current schedules, with headways of roughly every three hours off peak.

A frequency more often than every two hours would require the installation of a passing siding somewhere on the branch. A frequency of hourly service would require multiple passing sidings on the branch.

4.2.2 Freight Rail

At the beginning of the twentieth century, railroads were the primary movers of freight throughout the region and the country. By the end of that century trucking had become the preferred means of shipping. Over the past several decades, the railroad industry has undergone major changes in order to be cost-competitive with the trucking industry. Since the Staggers Rail Act of 1980 removed many regulatory constraints on the rail industry, railroads have divested themselves of unprofitable spurs, sidings, and operations. Today, with deregulation, new shipping technologies, rising diesel fuel prices, and congestion on the nation's highways, railroads have experienced a resurgence in freight activity.

4.2.2.1 Current Service

Freight movements on the Waterbury Branch are provided by the Providence and Worcester (P&W) Railroad between Milford and Derby and the Pan Am Railway between Derby and Waterbury (Figures 4-1a and 4-1b). Existing Pan Am Railways customers on the Waterbury Branch Line include Albert Brothers, Waterbury Republican, Baer Supply, Prime Source, and Tilcon.

In May 2008 Pan Am Railways and Norfolk Southern announced a newly formed company to create an improved rail route between Albany and Boston called the "Patriot Corridor." This joint venture of Norfolk Southern and Pan Am is to be called "Pan Am Southern." Pan Am Southern includes the Waterbury Branch (Figures 4-1a and 4-1b) and Pan Am Railway's track rights from Waterbury to Derby, where a connection is made with the Maybrook Line to points west. Future demand for freight service is anticipated to increase on the Waterbury Branch.

P&W currently operates an aggregate train on the Waterbury Branch (see Tables 4-10 and 4-11, Train CT2). P&W has an 8:30 PM northbound window every evening, during which they run the aggregate train from the New Haven Line to Derby. The train returns southbound between 2 AM and 4 AM.

4.2.2.2 Current Freight Movements

In June 2007 (Table 4-10) and February 2008 (Table 4-11), a weeklong sampling of freight activity on the New Haven, New Canaan, and Waterbury rail lines was made by Metro-North. For the Waterbury Branch, five train movements were recorded during the week of June 10th and one train movement was found during the week of February 15th.

TABLE 4-10: FREIGHT MOVEMENTS, SUMMER WEEK SAMPLE (6/10/07-6/16/07)

Days Operated / Destinations														
CSX	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Org	Des(s)					
B747				X	X	X		CP274-New Haven	CP271-Trk 5 (Th, Fr) / CP257-Bridgeport Yard (Wed)					
B748		X						CP274-New Haven	CP271-NH Industrial Trk 5 / CP257-Bridgeport Yard					
B750								CP212-Woodlawn	Marvel-Mamaroneck					
P&W	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Org	Des(s)					
FPCH				X				CP216-New Rochelle	CP274-New Haven					
CHFP			X					CP274-New Haven	CP216-New Rochelle					
CT2		X	X	X	X			CP274-New Haven	HAT-Derby (Waterbury Branch)					
B&M	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Org	Des(s)					
PL1					X			WATER-Waterbury (Waterbury Branch)	BEAK- Beacon Falls (Waterbury Branch)					
Note: P&W CT2 operates via the Maybrook from HAT-Derby (Waterbury Branch) to CANAL-Danbury (Danbury Branch)														
Train Consists														
	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
CSX	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars
B747							2	3	2	33	2	32		
B748			2	10										
B750														
P&W	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars
FPCH							2	30						
CHFP					2	22								
CT2			4	31	4	26	4	25	4	26				
B&M	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars
PL1									1	3				
Total Movements											New Haven Line Freights			
											CSX	B747	B748	B750
											P&W	FPCH	CHFP	CT2
											Branch Line Freights			
											P&W	CT2		
New Haven Line				11		B&M				PL1				
New Canaan Branch				0										
Danbury Branch				4										
Waterbury Branch				5										

Source: Metro-North Railroad, 2008.

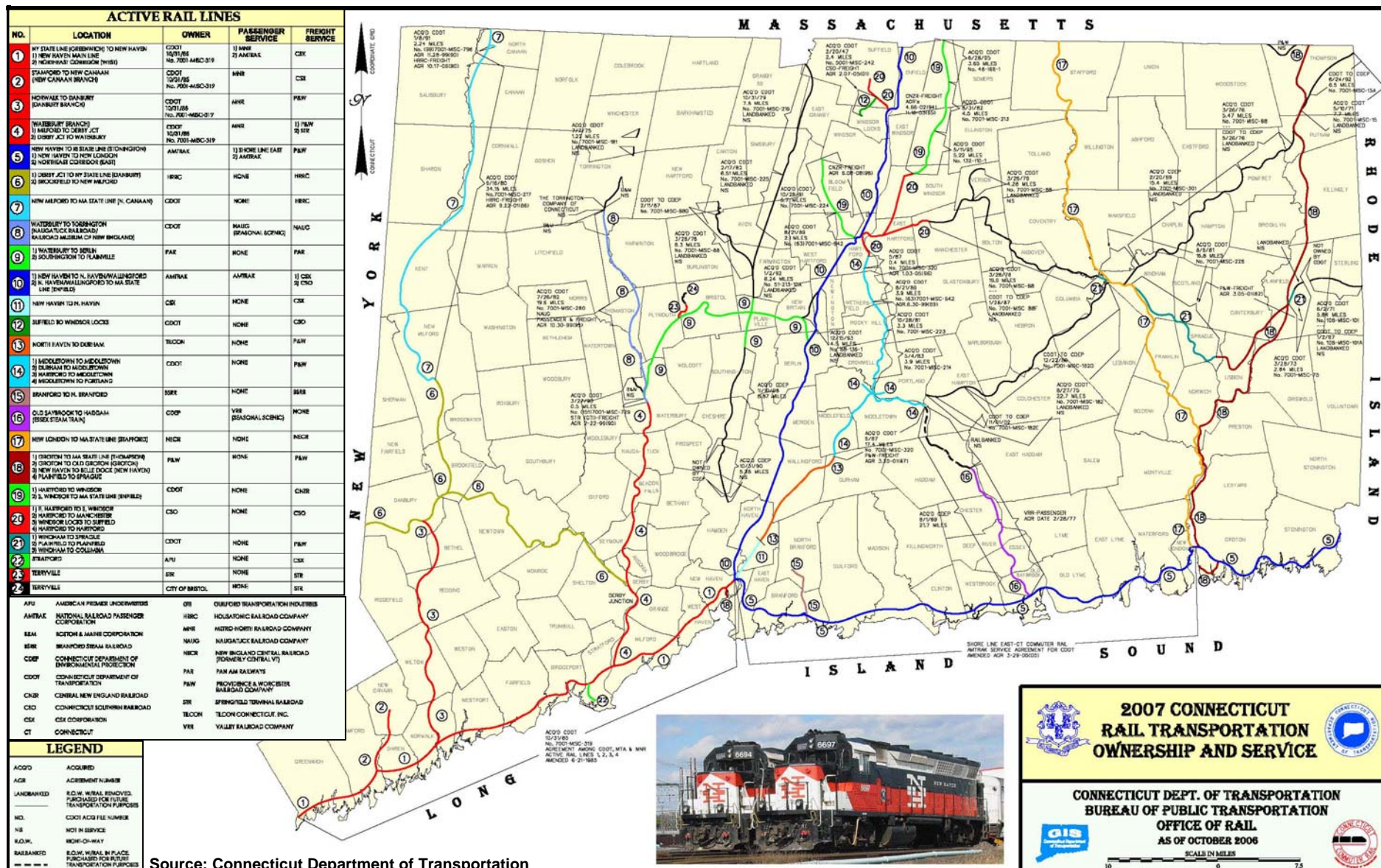


Figure 4-1a
Connecticut Freight Network

ACTIVE RAIL LINES				
NO.	LOCATION	OWNER	PASSENGER SERVICE	FREIGHT SERVICE
1	NY State Line (Greenwich) to New Haven 1) New Haven Mainline 2) Northeast Corridor (west)	CDOT (10/31/86) No. 7001-MISC-319	1) MNR 2) Amtrak	CSX
2	Stamford to New Canaan (New Canaan Branch)	CDOT (10/31/85) No. 7001-MISC-319	MNR	CSX
3	Norwalk to Danbury (Danbury Branch)	CDOT (10/31/85) No. 7001-MISC-319	MNR	P&W
4	Waterbury Branch 1) Milford to Derby Junction 2) Derby Junction to Waterbury	CDOT (10/31/85) No. 7001-MISC-319	MNR	1) P&W 2) STR
5	New Haven to RI State Line (Stonington) 1) New Haven to New London 2) Northeast Corridor (East)	Amtrak	1) Shore Line East 2) Amtrak	P&W
6	1) Derby Junction to NY State Line (Danbury) 2) Brookfield to New Milford	HRRC	None	HRRC
7	New Milford to MA State Line (New Canaan)	CDOT	None	HRRC
8	Waterbury to Torrington (Naugatuck RR/ Railroad Museum of New England)	CDOT	NAUG (Seasonal Scenic)	NAUG
9	1) Waterbury to Berlin 2) Southington to Plainville	PAR	None	PAR
CDOT	Connecticut Dept. of Transportation	NAUG	Naugatuck Railroad Company	
CSX	CSX Corporation	PAR	Pan Am Railways	
HRRC	Housatonic Railroad Company	P&W	Providence & Worcester Railroad Company	
MNR	Metro-North Railroad			
LEGEND				
ACQ'D	ACQUIRED	NIS	NOT IN SERVICE	
AGR	AGREEMENT NUMBER	NO.	CDOT ACQ FILE NUMBER	
LANDBANKED	R.O.W. WITH RAIL REMOVED – PURCHASED FOR FUTURE TRANSPORTATION PURPOSES	RAILBANKED	R.O.W. WITH RAIL IN PLACE – PURCHASED FOR FUTURE TRANSPORTATION PURPOSES	



Source: Connecticut Department of Transportation

Figure 4-1b

Connecticut Freight Network – Waterbury and New Canaan Detail



TABLE 4-11: FREIGHT MOVEMENTS, WINTER WEEK SAMPLE (2/17/08-2/23/08)

Days Operated / Destinations															
CSX	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Org	Des(s)						
B747			X					CP274-New Haven	CP271-New Haven Industrial Trk 5						
B748				X	X			CP274-New Haven	CP271-NH Industrial Trk 5 / CP257-Bridgeport Yard						
B750								CP212-Woodlawn	Marvel-Mamaroneck						
P&W	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Org	Des(s)						
FPCH								CP216-New Rochelle	CP274-New Haven						
CHFP								CP274-New Haven	CP216-New Rochelle						
CT2					X			CP274-New Haven	HAT-Derby (Waterbury Branch)						
B&M	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Org	Des(s)						
PL1								WATER-Waterbury (Waterbury Branch)	BEAK- Beacon Falls (Waterbury Branch)						
Note: P&W CT2 operates via the May Brook from HAT-Derby (Waterbury Branch) to CANAL-Danbury (Danbury Branch)															
Train Consists															
	Sun		Mon		Tue		Wed		Thu		Fri		Sat		
CSX	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	
B747					2	5									
B748							2	17	2	10					
B750															
P&W	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	
FPCH															
CHFP															
CT2									2	1					
B&M	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	#Eng's	#Cars	
PL1															
Total Movements												New Haven Line Freights			
New Haven Line		4	CSX									B747	B748	B750	
New Canaan Branch		0	P&W									FPCH	CHFP	CT2	
Danbury Branch		1	Branch Line Freights												
Waterbury Branch		1	P&W									CT2			
			B&M		PL1										

Source: Metro-North Railroad, 2008.

4.2.3 Passenger Rail Stations and Commuter Parking Facilities

All six stations on the Waterbury Branch have low-level platforms, except for Waterbury Station. All stations include automobile parking lots. The corridor also features commuter parking facilities along CT-8/CT-8 parallel to the Waterbury Branch.

4.2.3.1 Station Parking Inventory and Utilization

In January 2003, a study entitled *Task 2, Technical Memorandum, Parking Inventory and Utilization, Final Report* was issued by CTDOT, and focused on parking inventories and utilization of spaces at each station along the New Haven Line and its branches. A summary of the data for the Waterbury Branch is presented in Table 4-12.

TABLE 4-12: WATERBURY BRANCH PARKING

Station	Ownership	Type of Parking Space	# of Spaces	Vehicle Count	Utilization (%)	Fee
Waterbury	State	Permit	0	0	N/A	No Charge
		Daily	150	24	16	
		Handicap	6	0	0	
		Total	156	24	15	
Naugatuck	Town	Permit	0	0	N/A	No Charge
		Daily	125	13	10	
		Handicap	0	0	N/A	
		Total	125	13	10	
Beacon Falls	State	Permit	0	0	N/A	No Charge
		Daily	25	6	24	
		Handicap	3	0	0	
		Total	28	6	21	
Seymour	Town	Permit	0	0	N/A	No Charge
		Daily	21	16	76	
		Handicap	1	0	0	
		Total	22⁽¹⁾	16	73	
Ansonia	State/Town ⁽²⁾	Permit	0	0	N/A	No Charge
		Daily	48	33	69	
		Handicap	2	1	50	
		Total	50	34	68	
Derby/Shelton	Town	Permit	0	0	N/A	No Charge
		Daily	70	29	41	
		Handicap	5	0	0	
		Total	75	29	39	

Source: "Task 2 Technical Memorandum, Parking Inventory and Utilization, Final Report," 2003.

Table Notes: 1. Mixed use spaces shared with downtown stores (2-hr limit); 2. State – 40 spaces

In all, 456 parking spaces are provided along this rail line.

4.2.3.2 Park and Ride Lots

There are eight park and ride lots along Waterbury Branch corridor roadways. Their locations and utilization, based on a survey by CTDOT in early spring 2007, are shown in Table 4-13.

TABLE 4-13: WATERBURY BRANCH CORRIDOR PARK AND RIDE USAGE

Town	General Location	# of Spaces	Occupied (%)
Waterbury	Rte 8, Exit 29/So. Main St	46	76
Naugatuck	Rte 8, Exit 25/Cotton Hollow Rd	50	64
Seymour	Rte 8, Exits 19-20/Lower Derby Ave	80	16
Shelton	Rte 8, Exit 13/Bridgeport Ave	76	20
Trumbull	Rte 8, at Rte 108/Penny Lane	246	42
Trumbull	Rte 25, Exit 10/Rte 111	100	26
Trumbull	Rte 25, Exit 9/Daniels Farm Rd	89	8
Trumbull	Rte 15, Exit 50/Rte 127	73	32

Source: Connecticut Department of Transportation

A total of 760 parking spaces are provided in park and ride lots along the Waterbury Branch.

4.2.4 Transit

Several transit agencies provide bus service that connects customers on the Waterbury Branch with their destinations. The following agencies are the major providers of scheduled bus service in the study area:

CT Transit Bus Service – Waterbury Region. As of January 2008, CT Transit operates approximately 23 different primary bus routes in the City of Waterbury with extensions into the surrounding towns. Two routes extend south into Naugatuck, one route into the southwestern section of Wolcott, and one route into Watertown. In addition, Route “J” links Waterbury with the City of New Haven. The central hub for transfers between virtually all routes is located at Exchange Place (Waterbury Green). Route 40 links Exchange Place with the railroad station. Figure 4-2 shows existing CT Transit bus service in the Waterbury corridor.

Bus service is provided Monday through Saturday with limited runs on Sunday. On some routes, such as those into Naugatuck, weekend service is not provided. Fares are \$1.25 for a one-way trip (regular cash fare) and \$45.00 for a monthly pass.

Valley Transit Bus Service – Valley Region. The Towns of Shelton, Derby, Ansonia, and Seymour are served by the Valley Transit District. They offer services ranging from contract transport to senior centers and other community agencies, work trips to major employers and door-to-door (dial-a-ride) shuttles for individuals. The District operates specially equipped vehicles for disabled persons.

As of January 2008, there are two regional fixed-route bus lines in the Valley Region. The first, operated by the Greater Bridgeport Transit Authority, links the Bridgeport Bus Terminal to Derby Station via Shelton. The second, provided by CT Transit, links downtown New Haven to Orange (Derby Turnpike), Derby, Shelton, Ansonia, and Seymour, with stops at the Derby, Ansonia, and Seymour train stations.

Greater Bridgeport Transit Authority Bus Service – Bridgeport Region. Bus service in the Bridgeport region is provided by the Greater Bridgeport Transit Authority (GBTA). GBTA buses connect Bridgeport to the surrounding communities of Fairfield, Stratford, Trumbull, and Monroe. Routes also extend north to Shelton and Derby (including the Waterbury Branch station in Derby), and east/west along the coast via U.S. Route 1 to Norwalk, Westport,

Fairfield, Bridgeport, Stratford and Milford. As of January 2008, there are approximately 16 fixed routes (Figure 4-3). Most lines operate through the Bridgeport Bus Terminal, located downtown just north of the train station. Several routes serve area malls (Trumbull Shopping Park, Hawley Lane Mall, Dock Shopping Center, and the Connecticut Post Shopping Center).

Bus services operate Monday through Saturday with limited service on Sunday. A few routes have no weekend service. Base fare is \$1.50 per adult within the Bridgeport area.

Milford Transit District (MTD). MTD provides four fixed-route buses in Milford that operate Monday to Friday 6 am to 6 pm and Saturday 8 am to 5 pm. There is one bus route connecting Milford to Norwalk as part of the Coastal Link, which operates every day.

4.2.4.1 Local Bus Interface

Table 4-14 has a complete list of bus routes by station.

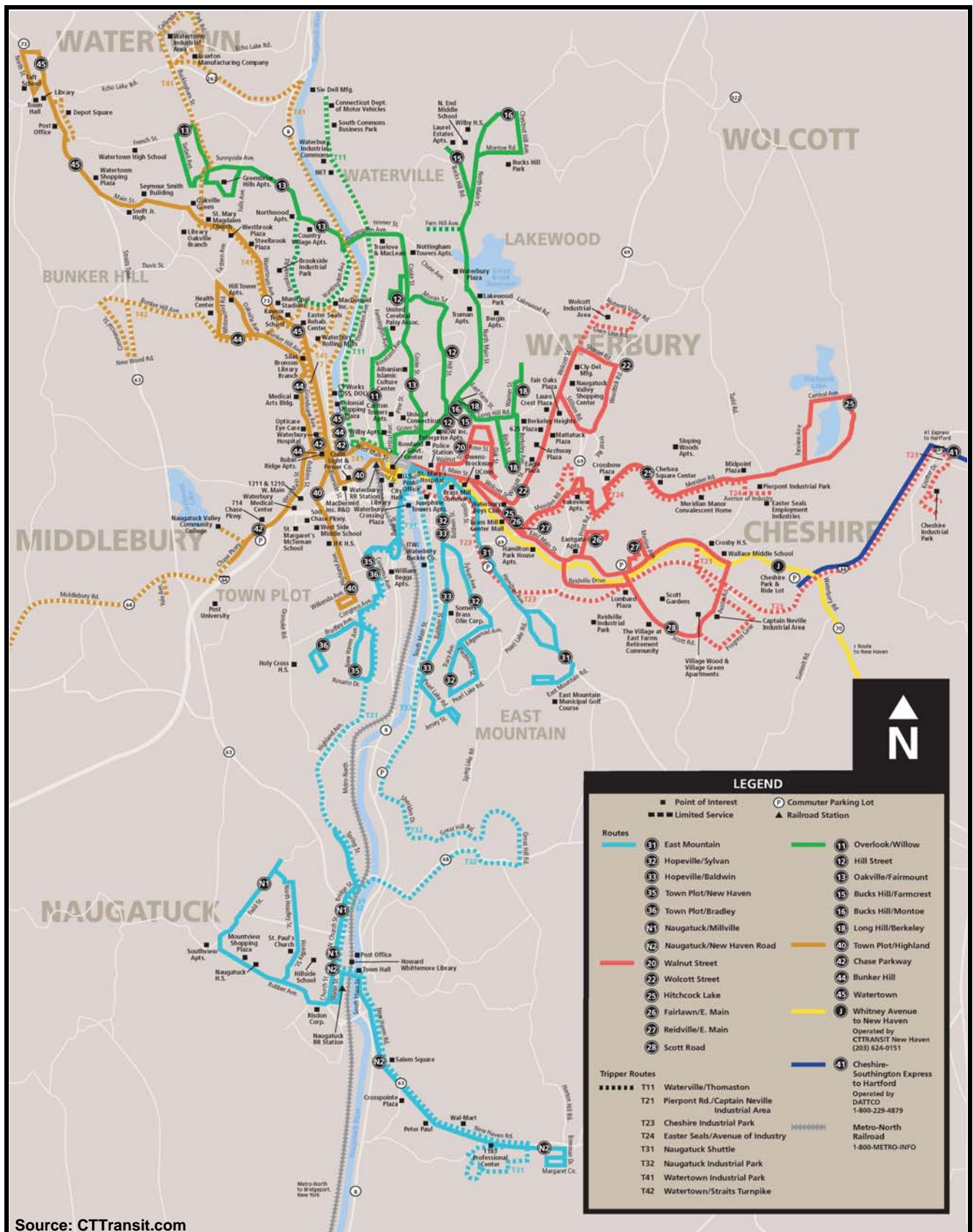
TABLE 4-14: LOCAL BUS ROUTES SERVING WATERBURY BRANCH STATIONS

Metro-North Station	CT Transit Waterbury	CT Transit New Haven	Greater Bridgeport TA
Waterbury	40 (others near)	J4 – near	None
Naugatuck	N1, N2	None	None
Beacon Falls	None	None	None
Seymour	None	F	None
Ansonia	None	F	None
Derby-Shelton	None	F	15, 23
Stratford	None	None	2, 20
Bridgeport	None	None	1, 2, 3, 4, 6, 7, 8, 9, 10, 13, 15, 17, 19X, 22X, 23

Source: cttransit.com, 2008; gbtabus.com, 2008

The most frequent bus service available to Waterbury Branch riders is at **Bridgeport Station**. In September 2007, GBTA began using a new bus station as part of the Bridgeport Intermodal Transit Center, providing access to Metro-North, Amtrak, ferries, intercity bus, and local bus. GBTA routes 1, 2 (Coastal Link), 3, 4, 6, 7, 8, 9, 10, 13, 15, 17, 19X, 22X, and 23 serve the bus station. At that time, most routes were changed to a pulse schedule, departing at 10 minutes before and 20 minutes after the hour. This scheduling facilitates transfers between routes.

Stratford Station is served by GBTA bus routes 2 and 20. Bus route 2, the Coastal Link, operates every 20 minutes in the peak and every 30 minutes in the off peak. It connects the towns of Norwalk, Westport, Fairfield, Bridgeport, Stratford, and Milford along the Route 1 corridor. Bus route 20, Stratford Flexible Service, serves the Stratford railroad station from 6AM to 6 PM at one-hour headways Monday to Saturday. Bus route 10 stops three blocks from Stratford Station at the Stratford Public Library and may later be re-routed to serve the station.



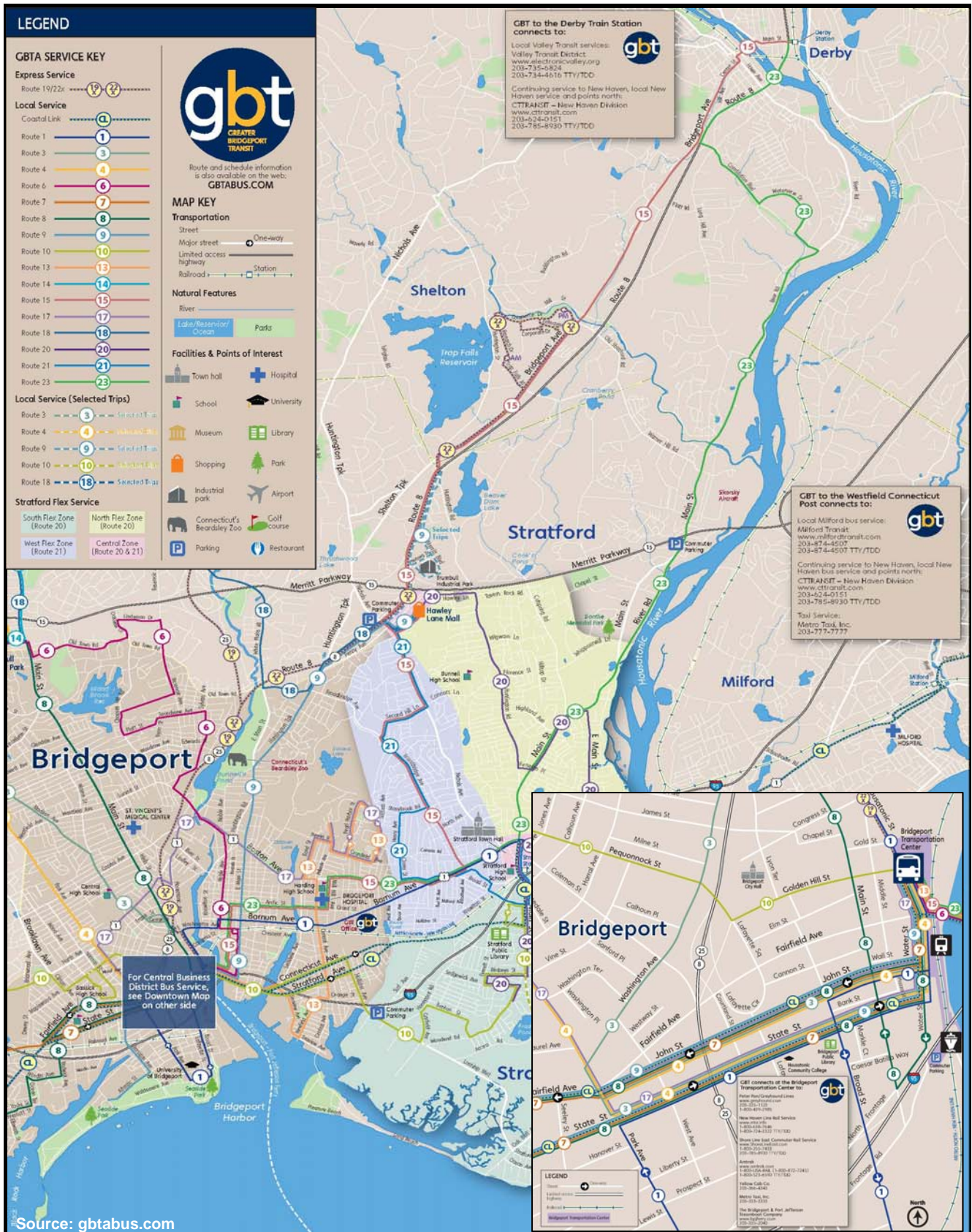


Figure 4-3
Greater Bridgeport Transit Authority
Waterbury Corridor Bus Service



Derby-Shelton Station is served by GBTA routes 15 and 23. Route F-West Chapel St, operated by CT Transit, New Haven Division, serves the Derby-Shelton, **Ansonia**, and **Seymour** stations. Route F-West Chapel St operates approximately hourly, with some additional trips in the peak (17 per day in each direction). However, these local bus services do not coordinate with train arrival or departure times.

Naugatuck Station is served by bus routes N1 and N2, operated by North East Transportation Co., Inc. for CT Transit-Waterbury. These routes have extremely limited service midday (no rush hour service) and very low ridership. **Waterbury** Station is served directly by bus route 40, also operated by North East Transportation Co., Inc. for CT Transit-Waterbury, with limited service. Most Waterbury bus routes terminate about six blocks from the station on the Waterbury Green.

The fare structure for all CT Transit routes, including the New Haven and Waterbury Divisions, is the same. The base fare is \$1.25, but with discount options (10-trip tickets and period passes). GBTA charges a \$1.50 base fare for 90 minutes of use. Passes are available for 1, 7, and 31 days. Both GBTA and CT Transit buses offer reduced fares for seniors, disabled people, and children.

GBTA operates a maintenance facility on Cross Street in Bridgeport for its 60 transit buses (35- and 40-foot long) and for its 12-passenger minibuses.

As of summer 2008, a new bus maintenance and storage facility is planned. The facility will be constructed in the Town of Hamden and will replace an existing garage in New Haven. CT Transit will operate the facility, accommodating approximately 150 buses and 20 support vehicles.

As of June 10, 2008, the design of a Waterbury Bus Maintenance and Storage Facility is underway. The new facility will be located in Watertown, CT and will replace an existing facility in Waterbury. The new facility, to be operated by the North East Transportation Company, will be designed to meet current and future operational and maintenance needs.

4.2.4.2 Paratransit Services

Paratransit services within the study area are offered by several organizations. In addition, all regularly scheduled CT Transit buses are accessible to persons with disabilities. Each vehicle is equipped with a wheelchair lift or ramp, and wheelchair tie-down positions. Vehicles also have the “kneeling down” feature which lowers the height of the first step.

Greater New Haven Transit District (GNHTD). GNHTD provides paratransit service for the elderly and disabled, but not the general public. Membership for the Regional Rides or Dial-A-Ride program is open to any individual currently residing in a member town who is over the age of 60 or who is disabled. Membership for ADA service is open to all persons whose temporary or permanent disability prevents them from using regular fixed-route transportation buses. The service area includes the following towns (those in *italics* are served by the Waterbury Branch): *Ansonia*, *Derby*, East Haven, Guilford, Hamden, Madison, Milford, New Haven, North Branford, North Haven, Orange, *Seymour*, *Shelton*, Wallingford, *Waterbury*, West Haven, and Woodbridge. According to federal guidelines, service is to be provided within 3/4 of a mile of the fixed transit route in these communities.

Milford Transit District. MTD provides door-to-door service for elderly and handicapped people, by subscription. Milford Transit offers ADA van service to Greater New Haven and Greater Bridgeport seven days a week.

Valley Transit District (VTD). VTD provides Dial-a-Ride and paratransit service to the general public for \$4 per trip and to the elderly, disabled, and students for \$2 per trip. VTD's service area includes the towns of Ansonia, Derby, Seymour, and Shelton. Rides are available Monday through Friday between 6 AM and 5 PM, and Saturday from 9 AM to 6 PM.

Norwalk Transit District (NTD). NTD serves the communities of Norwalk, Westport, Wilton, Greenwich, and, via the Coastal Link, Fairfield, Bridgeport, Stratford, and Milford. Fixed route 23 operates Monday through Saturday, and Coastal Link runs on Sunday. NTD provides local and inter-town door-to-door services for the disabled in seven towns, and complementary ADA service in Westport and Norwalk.

Greater Bridgeport Transit Authority. GBTA serves the cities of Bridgeport, Fairfield, Stratford, and Trumbull. In addition to fixed-route bus service, GBTA offers ADA paratransit service provided by a subcontractor Monday to Saturday, with limited service on Sunday.

CT Transit – Waterbury Division. The Waterbury Division operates fixed-route and ADA paratransit services in the Waterbury area through a contract with the Northeast Transportation Company. Fixed-route and paratransit bus service is provided to Waterbury, Watertown, Middlebury, Wolcott, Prospect, and Naugatuck Monday through Saturday.

4.2.4.3 Ridershare Services

Within the Waterbury Branch, two rideshare service providers offer information about carpooling, vanpooling, public transit, walking, bicycling, and private shuttles. They do not operate service.

Rideworks, based in New Haven, serves commuters in New Haven County, including the following towns served by the Waterbury Branch: Waterbury, Naugatuck, Beacon Falls, Seymour, Ansonia, and Derby. Rideworks reports that there are no private or corporate shuttles serving the Metro-North stations in these towns (Rideworks, 2008). MetroPool serves all municipalities in southern Fairfield County as well as the towns of Shelton and Trumbull, and the city of Bridgeport.

4.2.5 Existing Road Network

This section describes the existing roadway network in the Waterbury Branch corridor. In addition to the corridor roadways discussed below, several Interstate highways serve the study area, including I-95, I-84, and I-91. Other major roadways include the Merritt Parkway/Wilbur Cross Parkway (CT-15), CT-8, and CT-34 (see Figure 1-1).

4.2.5.1 Roadways

CT-8 is the major north-south highway in the Waterbury Branch corridor. Linking Bridgeport to Waterbury, this limited access expressway traverses all towns served by the current rail service: Derby/Shelton, Ansonia, Seymour, Beacon Falls, and Naugatuck. It is a four-lane, divided highway providing two travel lanes in each direction. In some locations, additional lanes are provided, either as climbing lanes or auxiliary travel lanes. In the Bridgeport area, the

combined CT-8/CT-25 highway varies from two lanes per direction to five lanes per direction. Generally, the posted speed limit is 55 miles per hour.

The following local roadways are in the vicinity of Waterbury Branch stations.

Waterbury Roadways. Two primary roadways are used as access to and from Waterbury Station and CT-8: Meadow Street and Freight Street. Meadow Street is a two-lane artery with metered parking near the train station on both sides of the roadway. The road has signalized intersections at Grand Street and Freight Street. Freight Street traverses a commercial area. It is a wide roadway although marked for only one travel lane in each direction. The street contains an at-grade rail crossing and passes under a railroad bridge (clearance 13'-7"). The posted speed limit is 25 miles per hour. Only limited on-street parking was observed. Traffic signals on Freight Street are also at the northbound CT-8 Exit 32 off-ramp and at the southbound CT-8 on-ramp.

Another significant roadway near Waterbury Station is South Main Street, just north of the Naugatuck Town Line. This roadway, which is four lanes wide, connects the Waterbury park and ride lot to CT-8 (Exit 29). Adjacent land uses are retail and commercial. A traffic signal is located at or near the Naugatuck-Waterbury town line.

Naugatuck Roadways. Access to and from the CT-8 corridor and Naugatuck Station is primarily via Main Street, Maple Street, and Water Street. Main Street is a two-lane street with no on-street parking (north from northbound CT-8 Exit 26). The overhead clearance of the roadway as it passes under CT-8 is 13'-10". Maple Street crosses the Naugatuck River, goes under the Waterbury Branch, and links Main Street with Water Street. The bridge carrying Maple Street over the river is marked for a 32-40 ton limit. The railroad bridge clearance over Maple Street is posted at 13'-1". Maple Street has two lanes with no parking between the intersecting streets on either side of the river. Water Street, connecting Maple Street to the south with Cedar Street and the train station to the north (along the west side of the Naugatuck River), is also two lanes wide. North of the train station and Cedar Street, Water Street becomes one-way northbound. Traffic signals are found on Main Street (and South Main Street) at the northbound CT-8 Exit 26 off-ramp and at the Maple Street intersection. Stop signs are posted on Water Street at Maple Avenue and at Cedar Street/station driveway.

Beacon Falls Roadways. Access to the Beacon Falls Station is provided via South Main Street northbound from CT-8, and a short portion of North Main Street southbound from CT-8. Depot Street crosses the Naugatuck River from South Main Street and Railroad Avenue.

South Main Street is designated as State Route 42 to its intersection with Bethany Road. Beyond there, this roadway carries no state designation. The artery is a median-divided roadway with two travel lanes in each direction. North Main Street is also a four-lane, median-divided roadway. Adjacent land uses vary between residential, retail, and commercial. On-street parking is generally prohibited except near Depot Street. The posted speed limit is 40 miles per hour south of Bethany Road, and 35 miles per hour to the north. Traffic signals are located at the terminus of the northbound CT-8 off-ramp (Exit 23), at Bethany Road, and at Burton Road. A stop sign controls movement at the terminus of the southbound CT-8 off-ramp (Exit 24). The Depot Street Bridge over the river is two lanes wide with a posted sign indicating "narrow lanes." At the time of the field survey, there appeared to be some on-going bridge work. As such, painted lane lines designated a 7'-9" shoulder on the north side of the roadway, travel lanes of 8'-3" and 11'-9", respectively, and another shoulder area of 2'-0" along the south

curb line. The overall curb to curb width is approximately 29'-9". The bridge posted a 40 ton weight limit and a vertical clearance of 13'-11". Railroad Avenue is a two-lane road, residential in character, with no on-street parking observed. Stop signs are posted on either side of the bridge and on Railroad Avenue at Depot Street.

Seymour Roadways. Access to Seymour Station from CT-8 is via South Main Street, Main Street, North Main Street, and a short segment of New Haven Road. South Main Street and Main Street are both designated CT-115. North Main Street and New Haven Road are CT-67. South Main Street and Main Street are both two-lane roadways. South of Robin Road, South Main Street is posted for 35 miles per hour. North of Robin Road, the posting is for 40 mile per hour. Land uses are primarily residential with some commercial. As South Main Street passes under the Metro-North tracks, sharp horizontal curves and a moderate vertical grade define the roadway alignment. The overpass structure is posted with a vertical clearance of 12'-3" and a flashing beacon is present to warn of the geometric conditions. Main Street, which traverses past the station and the central business district, is also a two-lane roadway. Parking in this retail district is generally found on one side of the street. North Main Street, east from Main Street, and New Haven Road are two-lane roadways with parking not permitted on either side. Additional lanes are provided, however, for turning movements. Traffic signals are found on Main Street at Broad Street (CT-113), at the train station, and at CT-67. Additional signals are located on North Main Street at Washington Avenue and at the terminus of the southbound CT-8 off-ramp (Exit 22).

Ansonia Roadways. Ansonia Station area streets include Pershing Drive, Bridge Street, West Main Street, Kingston Drive, Railroad Avenue, Main Street, and North Main Street. North Main Street and Main Street are two-lane roadways, both designated as CT-115. The former traverses a mix of retail and residential areas, mostly residential north of Fourth Street. The posted speed limit is 30 miles per hour with no on-street parking. The latter traverses the central business district of the town. Land uses are retail and commercial. On-street parking is allowed on both sides of the street.

Kingston Drive is a two-lane street with parking permitted on one side only. Railroad Avenue is designated for one-way westbound flow. West Main Street and Bridge Street (CT-727) are two-lane and four-lane streets, respectively. On-street parking is allowed along West Main Street, but parking is prohibited on Bridge Street between Pershing Drive and West Main Street. Bridge Street, which crosses the Naugatuck River and the Waterbury Branch, has a 30 mile per hour posted speed limit. The Ansonia portion of Pershing Drive provides one travel lane in each direction. Land uses adjacent to this street are mainly commercial.

Numerous traffic signals are located in the vicinity of the station, including:

- Pershing Drive at Derby Town line (Division Street)
- Pershing Drive at Clifton Avenue
- Pershing Drive at Bridge Street
- Bridge Street at West Main Street
- Kingston Drive at Main Street
- Main Street at Maple Avenue (CT-334)

- Main Street at East Main Street/State Street
- North Main Street at Fourth Street
- North Main Street at Colony Street (flashing beacon)

Derby Roadways. Derby-Shelton Station is located in the northeast quadrant of the CT-8 Exit 15 interchange, just north of CT-34. Access to the station from the town of Derby is via CT-34 and Pershing Drive. This segment of CT-34 provides two eastbound lanes and five westbound lanes (two exclusive left turns, two through lanes, and one exclusive right turn lane). Pershing Drive is a four-lane roadway to Division Street. Commercial/retail buildings line this street. Traffic signals on CT-34 are located at each of the two sets of ramps of CT-8. Traffic signals on Pershing Drive are located at a shopping center driveway and at Division Street.

Shelton Roadways. Access to Derby-Shelton Station from Shelton is via CT-34 and CT-115 (Derby Avenue). The segment of CT-34 within the city of Shelton provides two eastbound lanes and three westbound lanes (two exclusive left-turn lanes and one through lane). Three lanes in each direction are carried over the Naugatuck River. Derby Avenue is primarily a two-lane roadway, with a second exclusive right-turn lane for southbound traffic at its intersection with CT-34.

Bridgeport Roadways. The Bridgeport Station is located on Water Street. Other significant station area roadways providing access to and from CT-8 include Housatonic Avenue, Courtland Street, Lafayette Boulevard, and State Street.

North of the station, Water Street is initially a median-divided two-lane northbound and three-lane southbound artery. Later, there are two lanes of travel in each direction. A similar cross-section is found on Housatonic Avenue. On-street parking is not permitted on these two streets. Traffic signals are located on Water Street at John Street, at Fairfield Avenue/Stratford Avenue, and at Congress Street. A traffic signal on Housatonic Avenue is located at the East Washington Avenue intersection, just prior to the northbound CT-8 on-ramp.

Southbound Courtland Street serves as a two-lane one-way extension of the CT-8 exit ramp to the traffic circle at the north end of Lafayette Boulevard. Lafayette Boulevard is a median-divided artery providing two travel lanes in each direction. State Street is two lanes wide, one-way eastbound towards Water Street. On-street parking is permitted on both sides of Lafayette Boulevard and on State Street. On Water Street, short duration pick-up and drop-off parking is allowed adjacent to the train station. There are also waiting areas for taxis. Traffic signals are found at the terminus of the CT-8 exit ramp at Fairfield Avenue/Courtland Street, on Lafayette Boulevard at John Street and State Street, and on State Street at Broad Street, Main Street, the Transportation Center garage exit, and Water Street. Land use within this central business district is primarily commercial.

4.2.5.2 Traffic Volumes

Traffic volumes on the highways and local streets likely to be used by any bus service alternative are shown in Tables 4-15 and 4-16 for existing and projected 2035 time periods. CT-8 carries the heaviest traffic activity, given that this is the only expressway within the Bridgeport-Waterbury Valley region. For this artery, current daily volumes range from 45,000 to over 80,000 vehicles (two-directional) depending on location. Local municipal streets and state designated

roadways exhibit substantially less vehicular activity, ranging from 5,000 to about 20,000 vehicles (two-directional) per day.

TABLE 4-15: WATERBURY BRANCH – PARALLEL EXPRESSWAY EXISTING AND FUTURE VOLUMES

Town	Roadway Location	Existing ADT ⁽¹⁾	Future ADT ⁽¹⁾ (2035)
Bridgeport	CT-8 & 25, North of Interchange 5	83,500	112,400
Shelton	CT-8, South of Interchange 14	58,800	74,100
Derby	CT-8, North of Interchange 15	78,900	86,400
Ansonia	CT-8, South of Interchange 19	52,100	64,900
Seymour	CT-8, South of Interchange 22	48,400	61,700
Beacon Falls	CT-8, South of Interchange 23	46,400	62,900
Naugatuck	CT-8, South of Interchange 26	45,700	63,000
Waterbury	CT-8, South of Interchange 30	50,300	72,100

Source: Connecticut Department of Transportation

Table Notes: 1. All projections are approximate

TABLE 4-16: WATERBURY BRANCH – PARALLEL LOCAL ROADWAY EXISTING AND FUTURE VOLUMES

Town	Roadway Location	Existing ADT ⁽¹⁾	Future ADT ^{(1) (2)} (2035)
Bridgeport	Lafayette Boulevard, South of John Street	8,800	9,900
Bridgeport	State Street, East of Lafayette Boulevard	7,800	8,800
Bridgeport	Housatonic Avenue, North of Congress Street	10,700	12,000
Derby	Pershing Drive, South of Division Street	20,000	21,800
Derby	Pershing Drive, South of Bridge Street	14,800	16,200
Derby	Bridge Street, Over Naugatuck River	8,800	9,600
Derby	Main Street, South of Maple Street	6,700	7,300
Seymour	South Main Street, North of Ansonia Town Line	5,100	5,600
Seymour	Main Street, North of Broad Street	5,900	6,500
Beacon Falls	South Main Street, South of Bethany Road	10,200	11,200
Naugatuck	Maple Avenue, East of Water Street	16,000	17,600
Waterbury	Freight Street, East of Riverside Street	9,900	10,900
Waterbury	Meadow Street, South of Freight Street	15,100	16,900

Source: Connecticut Department of Transportation

Table Notes: 1. All projections are approximate; 2. Existing Town/City volumes and an applied growth factor were utilized to derive the 2035 time period based on slightly lower growth rates than that used by CTDOT for Routes 8 and 25, respectively.

4.2.6 Grade Crossings and Bridges

The Waterbury Branch officially begins at its tie-in to the New Haven mainline tracks in Milford. The branch has numerous crossings with features including culverts, streams/rivers, roadways, power lines, and pedestrian paths.

4.2.6.1 Grade Crossings

Table 4-17 lists the various at-grade public street crossings along the Waterbury Branch. As noted, five of the seven public crossings are found in the town of Milford.

TABLE 4-17: AT-GRADE PUBLIC STREET CROSSINGS – WATERBURY BRANCH

Town	Street
Milford	Caswell Street
	Plains Road
	Oronoque Road
	Wheeler Farm Road
	Great River Road
Derby-Ansonia	Division Street
Waterbury	Eagle Street

Source: Metro-North Railroad Track Charts, 2008

4.2.6.2 Overhead Structure Load Ratings

There are 18 highway/roadway bridges which cross over the Waterbury Branch passenger service track. Most bridges were constructed in the 1950's through the 1990's. The South Leonard Street overpass in Waterbury is the oldest, having been constructed in 1929. The newest bridge, CT-15 (Merritt/Wilbur Cross Parkway) over the Housatonic River and the Waterbury Branch in Stratford/Milford, was built in 2004. All structures are inspected every two years.

Inspection data are summarized in accordance with the Federal Highway Administration (FHWA) publication "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," revised in December 1995. In addition to ratings for design loads, other bridge data is tabulated including location, number of spans, structure widths, structural conditions, vertical clearances, structural evaluation, etc.

All of the Waterbury Branch bridges, except one, carry a design load ranking of "HS 20." The CT-8 northbound structure in Waterbury (Br. No. 03179), located south of South Leonard Street, is rated at an "H 20" loading. The definitions of these two load categories are as follows:

- HS 20 – represents the design loading for a 3-axle, 36 ton truck
- H 20 – represents the design loading for a 2-axle, 20 ton truck

Table 4-18 presents selected summaries of the condition ratings for Waterbury Branch structures.

TABLE 4-18: SELECTED SUMMARY OF STRUCTURAL RATINGS – HIGHWAY/ROADWAY BRIDGES OVER WATERBURY BRANCH

Bridge No.	Town	Roadway Carried	Year Built	Design Load ⁽¹⁾	Main Mat'l ⁽²⁾	Main Design ⁽³⁾	Deck Condition ⁽⁴⁾	Super-structure Condition ⁽⁴⁾	Sub-structure Condition ⁽⁴⁾	Inspection Date
00761	Milford	CT-15	2004	HS 20	4	2	7	7	8	12/11/06

TABLE 4-18: SELECTED SUMMARY OF STRUCTURAL RATINGS – HIGHWAY/ROADWAY BRIDGES OVER WATERBURY BRANCH

Bridge No.	Town	Roadway Carried	Year Built	Design Load ⁽¹⁾	Main Mat'l ⁽²⁾	Main Design ⁽³⁾	Deck Condition ⁽⁴⁾	Super-structure Condition ⁽⁴⁾	Sub-structure Condition ⁽⁴⁾	Inspection Date
00946	Derby	CT-34	1951	HS 20	3	2	6	7	7	9/20/07
00573B	Derby	CT-8 NB Ramp	1996	HS 20	4	2	7	7	7	1/19/06
01661	Ansonia	Bridge St.	1960	HS 20	3	2	7	7	6	2/13/07
01592	Ansonia	CT-334	1958	HS 20	3	2	3	4	5	2/28/08
00588	Seymour	CT-8	1962	HS 20	3	2	6	6	6	2/18/08
03432	Beacon Falls	CT-42	1966	HS 20	3	2	6	5	6	11/30/06
04384	Beacon Falls	CT-8	1981	HS 20	5	2	7	6	6	4/13/07
06018	Beacon Falls	Lopus Road	1991	HS 20	5	5	7	7	8	9/20/07
04386	Beacon Falls	CT-8 SB	1981	HS 20	4	6	7	7	6	8/21/06
04387	Beacon Falls	CT-8 NB	1981	HS 20	4	6	6	6	6	8/22/06
01034	Naugatuck	CT-63	1961	HS 20	3	2	4	5	4	11/16/06
00596	Naugatuck	CT-68	1960	HS 20	5	2	7	4	6	11/6/06
03178	Waterbury	CT-8 SB	1966	HS 20	4	2	6	5	6	4/5/06
03179	Waterbury	CT-8 NB	1966	H 20	4	2	6	5	6	4/10/06
04002	Waterbury	South Leonard Street	1929	HS 20	5	5	7	8	7	8/11/06
03191A	Waterbury	I-84 EB	1967	HS 20	4	3	4	4	5	10/2/06
03191B	Waterbury	I-84 WB	1967	HS 20	4	3	4	5	5	9/25/06

Source: CTDOT as summarized in conformance with the Federal publication "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," FHWA, December 1995.

Table Notes: 1. See text for definitions.

2. Item B43A – Main Material: 3 – Steel, 4 – Steel Continuous, 5 – Pre-stressed Concrete.

3. Item B43B – Main Design: 2 – Stringer/Multi-beam or Girder, 3 – Girder and Floor Beam System, 5 – Box Beam or Girders – Multiple, 6 – Box beam or Girders – Single or Spread.

4. Item B58 – Deck Condition/Item B59 – Superstructure Condition/Item B60 – Substructure Condition: 3 – Serious Condition, 4 – Poor Condition, 5 – Fair Condition, 6 – Satisfactory Condition, 7 – Good Condition, 8 – Very Good Condition.

In addition to highway/roadway bridges, there is also one overhead pedestrian footbridge crossing of the Waterbury Branch. It is designated as Bridge No. 08270R and is located at

Seymour Station. The current rating of this wood structure is a “6,” which denotes a satisfactory structural condition.

4.2.6.3 Undergrade Structure Load Ratings

As with overhead bridges, periodic inspections are made for those structures which lie below the tracks. This information is also summarized and coded for structural integrity according to guidelines in the FHWA publication “Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges,” revised in December 1995. Data provided by CTDOT’s Office of Rail (as of May 2008) indicates that there are approximately 45 below-grade structures on the Waterbury Branch. Table 4-19 presents selected summaries of the condition ratings for Waterbury Branch structures.

TABLE 4-19: SELECTED SUMMARY OF STRUCTURAL RATINGS – UNDERGRADE BRIDGES ALONG THE WATERBURY BRANCH

Bridge No.	Town	Type of Crossing	Cooper Rating ⁽¹⁾		Overall Condition Rating ⁽²⁾		Latest Inspection ⁽³⁾
			Normal	Max.	Previous	Current	
08252R	Milford	Stream – concrete & rail deck	--	--	5	--	2/11/08
08255R	Milford	Farmway crossing	75	125	5	5	3/5/07
08257R	Milford	Golf crossing – reinforced concrete slab	60	101	6	6	3/5/07
08260R	Orange	Two Mile Brook – concrete culvert	--	--	4	--	4/8/08
08262R	Derby	Naugatuck River - steel truss	67	98	6	6	9/12/07
08264R	Derby	Naugatuck River - steel truss	110	146	5	5	6/7/07
08266R	Ansonia	Farrel Co. - masonry arch	--	--	5	5	4/20/07
08267R	Ansonia	Spillway	70	104	4	4	2/9/07
08268R	Seymour	Canal - steel girder	85	126	2	4	3/29/07
01063R	Seymour	CT-67	80	101	7	--	3/21/08
08274R	Beacon Falls	Old Pine's Bridge Rd.	98	125	4	4	3/6/06
08276R	Naugatuck	Spruce Brook – multibeam deck	78	119	5	4	4/2/07
08279R	Naugatuck	UniRoyal Co. - private road	58	85	4	4	4/3/07
08284R	Naugatuck	Bridge Street	68	99	4	4	4/5/07
08285R	Waterbury	Stream - stone/concrete culvert	--	--	5	--	4/8/08
08286R	Waterbury	Naugatuck River - steel girder	65	85	6	6	7/12/07

Source: “Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges,” FHWA, December 1995.

Table Notes: 1. Cooper Rating is the structure’s capacity in tons. The normal rating is the day-to-day loading that the structure can withstand. The maximum rating is the “Infrequent” load that can be withstood.

2. Overall Rating (Previous and Current): 2 – Critical Condition, 4 – Poor Condition, 5 – Fair Condition, 6 – Satisfactory Condition, 7 – Good Condition, 8 – Very good condition.

3. Date inspection began.

4.2.7 Individual Station Inspections/Condition Findings

CTDOT's January 2003 *Technical Memorandum–Parking Inventory and Utilization (Final Report)* also described the condition status for stations on the Waterbury Branch. These reports, based partly on field inspections, detailed a number of features about each rail station including physical condition, operations review, financial review, lease narrative, and synopsis. This information is summarized below in Table 4-20.

TABLE 4-20: OVERALL STATION CONDITION – WATERBURY BRANCH

Station	Overall Condition Summary
Waterbury	Minor deterioration, but functioning as originally designed
Naugatuck	Serious deterioration/or not functioning as originally designed
Beacon Falls	Minor deterioration, but functioning as originally designed
Seymour	Same as above
Ansonia	Same as above
Derby/Shelton	Same as above

Source: "Individual Station Reports", Connecticut Department of Transportation, 2003

4.3 NEW CANAAN BRANCH

The New Canaan Branch is a 7.9-mile single-track electrified rail corridor. It currently hosts only passenger trains. CT-106 runs parallel to the branch. It also intersects significant roadways like the Merritt Parkway/CT-15 and I-95.

4.3.1 Passenger Rail

Passenger rail service on the New Canaan Branch is operated by Metro-North with service to Stamford. Select peak trains also run to GCT.

4.3.1.1 Schedule

The current Metro-North New Haven Line schedule (effective October 18, 2009 through March 27, 2010) includes 20 daily runs in the southbound direction and 21 daily runs in the northbound direction. All of the five southbound peak hour runs are "through trains" to New York City – not requiring a connection via a mainline train at Stamford. In the late afternoon and evening, six of the seven northbound peak hour runs are also "through trains" from New York City. Weekend and holiday service includes 21 trains leaving New Canaan and 19 trains running northbound from Stamford. All New Canaan Branch trains stop at Glenbrook, Springdale and Talmadge Hill stations.

Trip time between Stamford and New Canaan is about 16-18 minutes.

4.3.1.2 Operations

Metro-North currently operates eight weekday southbound trains from New Canaan through to GCT – six in the AM and two in the PM reverse peak. Seven trains operate northbound to New Canaan from GCT – one in the morning and six in the PM peak period. The branch is served by

Stamford shuttles for the remainder of the day, with 12 southbound and 14 northbound shuttles scheduled.

The branch has no sidings, so southbound trains need to arrive in Stamford before the next northbound train can be sent to New Canaan.

The only storage on the branch is at New Canaan Station, which has a ten-car main track, a ten-car middle track, and a four-car bulk track. CTDOT is currently pursuing a New Canaan Track Extension Project to rebuild the station's third "bulk" track, raising it several feet to be level with the other two station tracks, and extending its track and catenary approximately 170 feet to accommodate two additional cars. The project is currently under design, with construction expected to last from August to November 2010. The signal system ends south of New Canaan Station, so all movements between the three tracks at New Canaan are by manually operated switches.

The evening peak period is the most constrained, and Metro-North is unable to serve a recognized demand for evening reverse peak service. Under the current schedule, the trains arriving in New Canaan at 5:53 PM and 6:11 PM pull onto the middle and bulk tracks and wait until the train leaving Stamford at 6:11 PM arrives on the main track at 6:29 PM. By 6:29 PM there are then three trains in New Canaan that must be cleared before the next northbound train can enter the branch. At 6:31 PM, the trains that arrived at 5:53 PM and 6:11 PM both dead-head (operate without passengers) back to Stamford, and at 6:35 PM, the train that arrived at New Canaan at 6:29 PM also dead-heads to Stamford.

The need to clear trains out of New Canaan results in a 41-minute gap in northbound service from GCT that is the subject of many customer complaints, according to Metro-North. Without adding a passing siding somewhere along the branch, there is no way to mitigate this gap, although it could be reduced to 30 to 35 minutes if the New Canaan Station lead switch were reversed and the middle track extended south to just above the CP-307 holding ("head block") signal, which would allow Metro-North to pull trains out of the station and onto the branch.

There are currently no platforms on the middle or bulk tracks at New Canaan, so passengers cannot be loaded or unloaded from these tracks. Adding platforms on one or both of these tracks would improve operations.

With the exception of the five-car platform at New Canaan, station platforms along the branch are four car lengths each. Although most train consists are five or six cars long, platform length is not considered a major problem.

Metro-North has considered running midday New Canaan trains as an extension of Stamford local service. However, it doesn't provide the necessary time to clean cars at New Canaan Station. Additionally, it would potentially downgrade existing New Canaan Branch service quality; while it would save passengers a transfer at Stamford, it would add approximately 20 minutes to their travel time. Metro-North has observed that in general, it matters little to passengers whether midday trains from New Canaan run directly to New York or operate as a shuttle to Stamford, as long as travel time is maintained.

4.3.2 Freight Rail

Freight service is allowed but not currently operated on the New Canaan Branch (Figures 4-1a and 4-1b).

4.3.2.1 Current Service

The CSX Corporation reserves the right to move freight on the branch; however, because of land use patterns along the corridor, freight customers are not anticipated in the future.

4.3.2.2 Current Freight Movements

In June 2007 (Table 4-10) and February 2008 (Table 4-11), a weeklong sampling of freight activity on the New Haven, New Canaan, and Waterbury rail lines was made by Metro-North. No train movements were recorded on the New Canaan Branch in either of the sampling weeks.

4.3.3 Passenger Rail Stations and Commuter Parking Facilities

All four stations on the New Canaan Branch have high-level platforms. All stations include automobile parking lots. The corridor does not have any parallel highway facilities with park and ride lots.

4.3.3.1 Station Parking Inventory and Utilization

The January 2003 CTDOT study entitled *Task 2, Technical Memorandum, Parking Inventory and Utilization, Final Report* had parking inventories and utilization of spaces at Connecticut rail stations. A summary of the data for the New Canaan Branch is presented in Table 4-21.

TABLE 4-21: NEW CANAAN BRANCH PARKING

Station	Ownership	Type of Parking	# of Spaces	Vehicle Count	Utilization (%)	Fee
New Canaan	State/Town ⁽¹⁾	Permit	682	531	78	See note (2)
		Daily	241	197	82	
		Handicap	6	6	100	
		Total	929	734	79	
Talmadge Hill	State/Town ⁽³⁾	Permit	218	194	89	See note (2)
		Daily	91	80	88	
		Handicap	2	0	0	
		Total	311	274	88	
Springdale	State/City ⁽⁴⁾	Permit	146	129	88	See note (5)
		Daily	56	54	96	
		Handicap	6	0	0	
		Total	208	183	88	
Glenbrook	State/City ⁽⁶⁾	Permit	63	41	65	See note (5)
		Daily	90	90	100	
		Handicap	3	1	33	
		Total	156	132	85	

Source: "Task 2 Technical Memorandum, Parking Inventory and Utilization, Final Report," 2003.

Table Notes: 1. State – 164 spaces; 2. Daily fee - \$3.00, Annual fee - \$324.00; 3. State – 18 spaces; 4. State – 91 spaces; 5. Monthly (Resident) - \$42.00; monthly (Non-Resident) - \$84.00; Daily fee - \$3.00; 6. State – 23 spaces

Although daily utilization of monthly permit parking is not 100 percent, parking permits are sold out and there are waiting lists for new permits at all stations. In all, 1,604 parking spaces are provided along this rail line.

4.3.3.2 Park and Ride Lots

There are no park and ride lots along New Canaan Branch corridor roadways.

4.3.4 Transit

CT Transit is the primary bus service provider for the New Canaan corridor and the surrounding area. CT Transit operates approximately 21 bus routes in the Greater Stamford area. The central hub point is the Stamford Transportation Center, which combines train station and bus depot, just south of the city's central business district. Several routes are specifically oriented to serve major employers in the region. Bus service via Stamford is also provided to the communities along the coastline, such as Darien and Norwalk to the east, and Greenwich and Port Chester in New York State to the west. Another route links Stamford to White Plains, New York, via I-95 and the Cross Westchester Expressway. Most routes, except those to major employers, operate seven days a week but with limited service on weekends.

Train stations that are served by CT Transit buses include Glenbrook and Springdale on the New Canaan Branch, and Port Chester, Greenwich, Old Greenwich, Stamford, Noroton Heights, and Darien on the New Haven Line.

4.3.4.1 Local Bus Interface

Except for Stamford, there are only two local bus connections to stations along the New Canaan Branch. All local bus routes serving these stations are operated by CT Transit, Stamford Division (Figures 4-4 and 4-5). Table 4-22 lists bus routes by Metro-North station. The **New Canaan** and **Talmadge Hill** stations have no local bus service.

TABLE 4-22: LOCAL BUS ROUTES SERVING NEW CANAAN BRANCH STATIONS

Station	CT Transit Stamford Bus Routes	Commuter Connection Shuttle
New Canaan	None	None
Talmadge Hill	None	None
Springdale	34	None
Glenbrook	42	None
Stamford	11, 13, 14, 21, 22, 24, 31, 32, 33, 34, 41, 42, 43, 44, I-Bus	Bulls Head, Central, East

Source: cttransit.com, 2008

Note: Private shuttles are listed in Table 4-23.

Springdale Station is served by route 34 on Hope Street, operating on a 30-minute headway from 6 AM to 11:30 PM weekdays and from 7 AM to 7 PM Saturdays. A map of the route is shown on Figure 4-4. On Sundays the service is hourly from 8 AM to 6 PM. Bus arrivals are not timed to meet train departures.

Glenbrook Station is served by bus route 42, operating on a 30-minute headway during the peak, and hourly off-peak and on Saturdays. The span of service is from 6 AM to 10:30 PM weekdays and from 7 AM to 7 PM Saturdays, with no service on Sundays. Bus arrivals are not timed to meet train departures. A map of the route is shown on Figure 4-4.

Stamford Station is part of the Stamford Transportation Center, which is served by all Stamford local bus routes (11, 13, 14, 21, 22, 24, 31, 32, 33, 34, 41, 42, 43, and 44). These routes generally offer headways of 30 minutes or less in the peak period, and 30 minutes or 1 hour in the off-peak period, with limited service on weekends.

The Stamford Transportation Center is also a terminus for I-Bus express service on I-95 and I-287 between Stamford and White Plains. This service is operated by CT Transit and sponsored jointly by the New York and Connecticut Departments of Transportation. CT Transit also operates three “Commuter Connection” shuttles from Stamford Station. These shuttle buses operate in peak periods only, and are timed to serve arriving trains in the morning and departing trains in the evening. The three routes are East, Central, and Bulls Head (Figure 4-5). A fourth route, North, was discontinued on April 20, 2008 due to low ridership.

Standard fare on CT Transit bus routes is \$1.25, free transfer included. The I-Bus fare is \$2.50. Various discount passes are available, including a \$45 monthly pass.

4.3.4.2 Paratransit Services

The NTD provides local and inter-town door-to-door services for the disabled in seven towns, complementary ADA service in Westport and Norwalk, and under contract to CTDOT, complementary ADA service in Stamford, Darien, and Greenwich. In addition, all regularly scheduled CT Transit buses are accessible to persons with disabilities. Each vehicle is equipped with a wheelchair lift or ramp and wheelchair tie-down positions. Additionally, each vehicle has the “kneeling down” feature which lowers the height of the first step.

4.3.4.3 Rideshare Services

MetroPool, based in Stamford, provides information on private shuttles and other transit options in Fairfield County and adjoining counties of New York State. MetroPool reports that as of March 2008 there were 29 private shuttles serving Stamford Station. A few other stations (such as South Norwalk and Darien) also have shuttle connections, but no stations on the New Canaan Branch have such service (MetroPool, 2008).

Table 4-23 shows the 29 shuttles that serve Stamford. These minibuses or vans are operated by large employers or by office parks and are only open to employees. Costs are paid for by employers, and they receive no public subsidies. Employees are not charged for the service (although they do generally pay train fare). They are timed to meet trains arriving in the morning and trains departing in the evening. One exception is the University of Connecticut shuttle, which offers students service operating every 15 minutes. The total ridership of the Stamford shuttles in March 2008 was 2,016 riders per day.

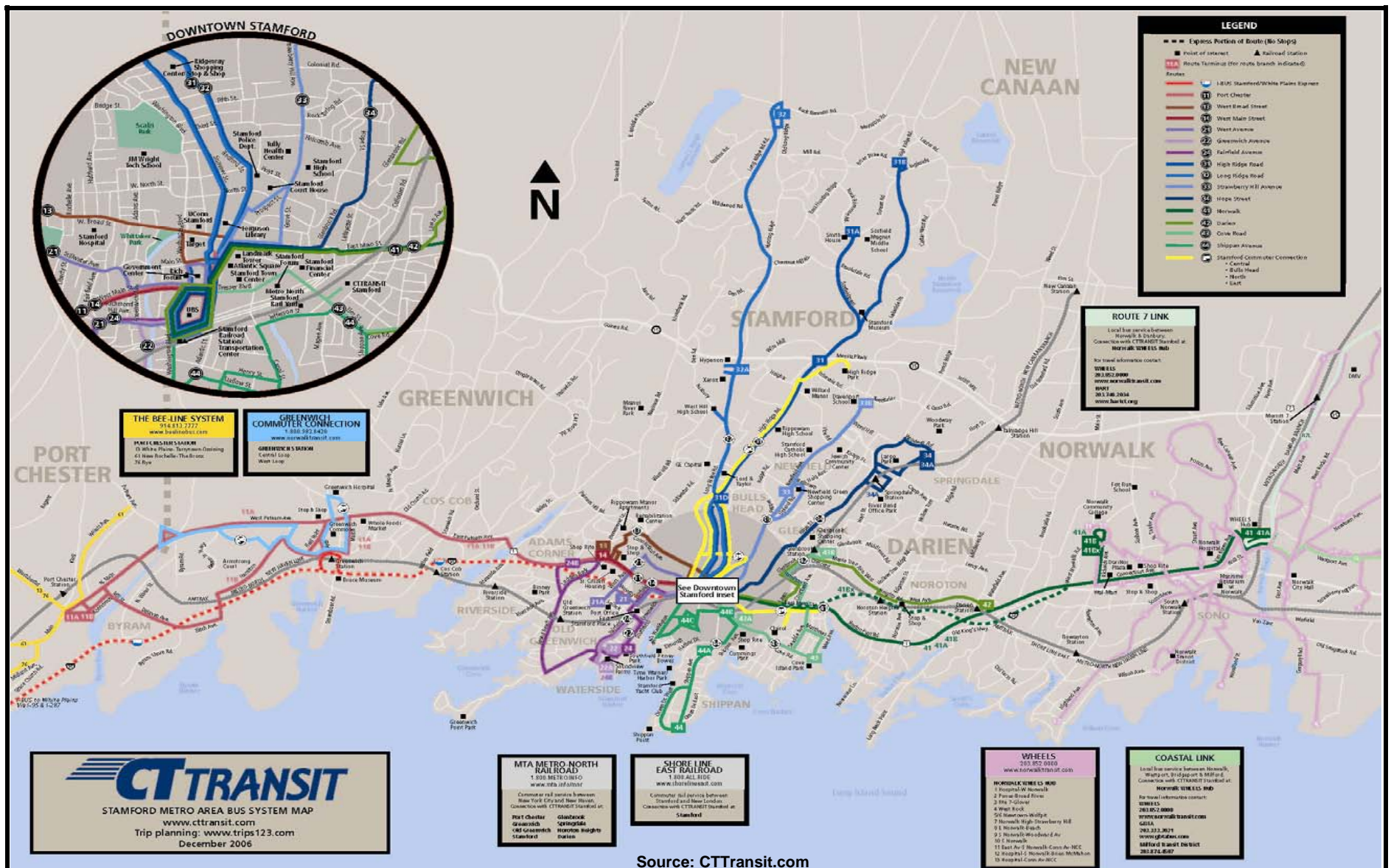


Figure 4-4
CT Transit New Canaan Corridor Bus Service





COMMUTER CONNECTION

Central ———
Bulls Head ———
East ———

Effective: April 20, 2008

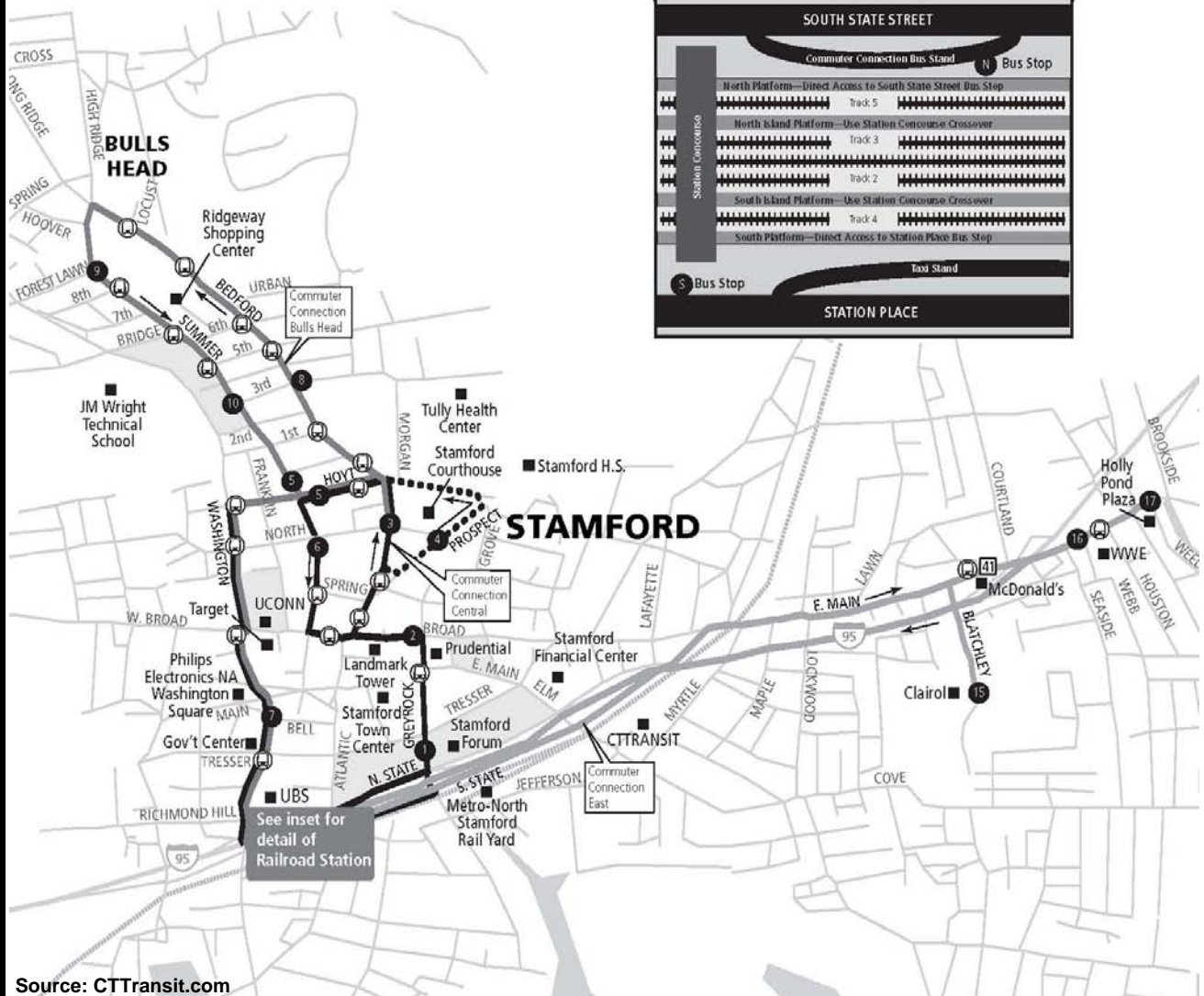
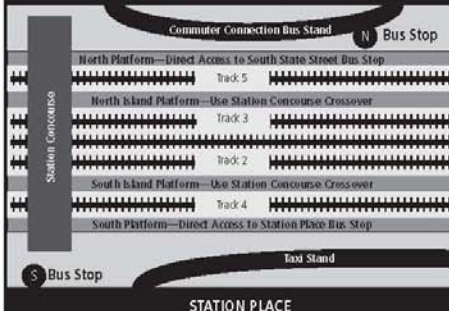
WHAT THE SYMBOLS ON THE MAP MEAN

- 1 Timepoints are places the bus is scheduled to reach at a specific time (listed on the schedule). The timepoints are not the only places the bus will stop along the route.
- 21 Transfer Points show connections with other bus routes. The connecting route number is in the box. This is an example of where to transfer to the "21" route.
- Part-time routing is shown for areas where the bus does not always travel. Refer to the schedule for trips that take the part-time route.
- Bus stop.



STAMFORD RAILROAD STATION

SOUTH STATE STREET



Source: CTTransit.com

Figure 4-5

CT Transit
Stamford Commuter Connection Bus Service



TABLE 4-23: PRIVATE SHUTTLE BUSES AND VANS SERVING STAMFORD RAIL STATION

Company	Company Address	Average Daily Riders	One-way Trip Distance (mi)	One-way trips per day
Avalon Corporation Property	200 Broad St, Stamford, CT	12	1	3
Cytec Industries	1937 West Main Street, Stamford, CT	20	1.5	3
Dymo Corp	44 Commerce Rd., Stamford, CT	25	1.25	6
Edgehill	122 Palmers Hill Rd, Stamford, CT	5	2	2
Equity Office Park	Two Stamford Plaza, 281 Tresser Blvd.	90	0.5	6
Gartner Group	56 Top Gallant Road, Stamford, CT	60	2	4
G.E. Capital	260/292 Long Ridge Road, Stamford, CT	40	2.5	4
GECC	777 Long Ridge Road, Stamford, CT	45	3.75	4
G.E. Capital	201 High Ridge Road, Stamford, CT	20	2.5	4
G.E. Asset Mgmt	3001/3003 Summer Street, Stamford, CT	30	2	4
GECC	1600 Summer Street, Stamford, CT	40	1.25	4
General Re Financial Center (20 tenants)	695 East Main Street, Stamford, CT	130	0.75	4
Goodway Technologies Corp.	420 West Avenue, Stamford, CT	10	1.5	1
Harbor Plaza (20 tenants)	290 Harbor Drive, Stamford, CT	375	2.5	6
Harbor Park - (1100 employees/12 tenants)	333 Ludlow Street, Stamford, CT	100	1.25	8
Harbor Square - (30-40 tenants)	700 Canal Street, Stamford, CT	30	1	3
High Ridge Park	5 High Ridge Park, Stamford, CT	32	2.5	4
Mack-Cali Property	1266 E. Main Street, Stamford, CT	20	1.5	6
Pitney Bowes WHQ	One Elmcroft Road, Stamford, CT	350	0.75	4
Pitney Bowes/Barry Place	23 Barry Place, Stamford, CT	65	1.5	3
Purdue Pharma	201 Tresser Blvd., Stamford, CT	150	0.5	4
Reckson Associates (100 tenants in 6 Bldgs.)	One Landmark Square, Stamford, CT	40	0.75	6
Reckson Associates (US Trust/Phillip Morris/Stat Oil)	225 High Ridge Road, Stamford, CT	75	2.5	8
Sempra Energy	50 Commerce Road, Stamford, CT	12	1.25	1
Stamford Health	Shelburne Road, Stamford, CT	45	1.25	3
University of Connecticut	One University Place, Stamford, CT	65	0.75	every 15 minutes
W&M Properties	100/300 First Stamford Pl., Stamford, CT	100	0.75	4.5
XL America	70 Seaview Avenue, Stamford, CT	30	2	3

Source: MetroPool, 2008.

4.3.5 Existing Road Network

This section describes the existing roadway network in the New Canaan Branch corridor. In addition to the corridor roadways discussed below, several major highways serve the study area, including I-95 and the Merritt Parkway/CT-15 (Figure 1-3).

4.3.5.1 Roadways

The roadway network parallel to the New Canaan Branch corridor consists primarily of two-lane streets. Only in the downtown area of Stamford do multi-lane streets exist. A brief description of the street network is provided below.

Park Street (New Canaan). This street intersects Old Stamford Road to the south and the New Canaan Station area to the north. It is a one lane per direction residential thoroughfare with low-rise, multi-unit apartment/condominium buildings. There is no on-street parking. The posted speed limit is 25 miles per hour. Traffic signals are located on Park Street at Cherry Street/Pine Street and at Elm Street. A stop sign on the southbound approach of Park Street at Old Stamford Road regulates access to the CT-106 roadway.

Old Stamford Road (New Canaan). Old Stamford Road is a one lane per direction roadway designated as CT-106. Just north of the Merritt Parkway, Old Stamford Road passes under the New Canaan Branch. The vertical clearance of this underpass is posted at 11'-3". Old Stamford Road passes under the Merritt Parkway at Exit 36, and then passes near Talmadge Hill Station. Access to Talmadge Hill Station is via Talmadge Hill Road, which intersects CT-106 a very short distance south of the Parkway.

Land uses along Old Stamford Road are mainly single-family residences and park land. The speed limit is 30 miles per hour. Traffic signals along CT-106 in New Canaan are found at Talmadge Hill Road, the Merritt Parkway exit ramps, Jelliff Mill Road, and Farm Road. On-street parking is not found along CT-106 in either New Canaan or in Darien.

Hoyt Street (Darien). Continuing south, Old Stamford Road becomes Hoyt Street, which is also designated as CT-106. Hoyt Street runs in a north-south direction, generally paralleling the Stamford-Darien border. Surrounding land uses along this one lane per direction roadway are generally single-family homes. The posted speed limit is 30 miles per hour. A signalized intersection controls vehicular movements at the Hoyt Street/Camp Avenue intersection.

Camp Avenue (Darien). This east-west roadway connects Hoyt and Hope Streets, intersecting Hoyt Street just west of an at-grade crossing of the New Canaan Branch. Camp Avenue has one lane in each direction and a posted speed limit of 25 miles per hour.

Hope Street (Stamford). Paralleling the New Canaan Branch and providing access to Springdale Station, Hope Street traverses an area of mixed land uses including residential, commercial, retail, office parks, a school campus, and a neighborhood shopping center. Hope Street has one lane in each direction with on-street parking permitted. A posted sign limits speeds to 30 miles per hour near the train station. Signalized intersections are at Church Street, Glenbrook Shopping Center exit, Toms Road, Viaduct Road, Largo Drive, Cushing Street, Camp Avenue and with a flasher at the school campus north of Edgewood Avenue.

Church Street (Stamford). Running in an east-west direction, Church Street links Hope Street and Glenbrook Road. Church Street is a one-lane-per-direction street serving commercial properties. Parking is allowed on one-side of the road.

Glenbrook Road (Stamford). Glenbrook Road is a major local street with one lane in each direction. Glenbrook Road just north of East Main Street contains high rise residential housing. On-street parking is allowed on one side of the roadway. The posted speed limit is 25 miles per hour. Continuing north, Glenbrook Road intersects with and then diverges from Hope Street, another important north-south city artery. For this one block segment, the combined roadway is four lanes wide. The area of Glenbrook Road north of Hope Street remains residential in character with single-family homes and low-rise apartments/condominium buildings. In the vicinity of Glenbrook Station, Glenbrook Road is still a two-lane street. Land around the station area mixes residential, commercial, and retail uses. On-street parking is permitted on both sides of the road. The posted speed limit is 25 miles per hour. Traffic signals along Glenbrook Road are found at Daskam Place, Hope Street, Hope Street, Crescent Street, and Church Street.

Tresser Boulevard (Stamford). Tresser Boulevard, running east-west, is designated as CT-1. It has three travel lanes per direction between Canal Street and Elm Street, and two travel lanes per direction between Elm Street and Broad Street. A median divider separates opposing traffic flows. Adjacent land primarily hosts office buildings. Signalized intersections are found at Elm Street and at Broad Street.

East Main Street (Stamford). East Main Street functions as a continuation of Tresser Boulevard and Broad Street to and from the heart of Stamford's downtown business district. For the one block section between Tresser Boulevard/Broad Street and Glenbrook Road, there are three travel lanes in each direction divided by a median. East Main Street is designated as CT-1. On-street parking is prohibited. A signalized intersection is located at the Glenbrook Road intersection.

Canal Street (Stamford). Canal Street is one of several major north-south city streets that pass under the Metro-North tracks and I-95. The two-block section of this roadway linking South State Street to Tresser Boulevard has two travel lanes in each direction. The northern block, between the North Frontage Road and Tresser Boulevard is median divided. On-street parking is prohibited. Adjacent land primarily hosts office buildings. Traffic signals are located at the North State Street and Tresser Boulevard intersections.

South State Street/North State Street (Stamford). State Street functions as a frontage road for I-95 near the downtown area of Stamford. South State Street is designated one way eastbound. It has two travel lanes from Stamford Train Station to Atlantic Street. From Atlantic Street to Canal Street, it has four lanes. South State Street is wedged between I-95 and the New Haven Line tracks. On-street parking is prohibited. Traffic signals are located at Washington Boulevard, Atlantic Street, and Canal Street.

North State Street is designated one way westbound. It has four lanes between Canal Street and Atlantic Street, and three lanes between Atlantic Street and Washington Boulevard. Along the north side of North State Street are office buildings and their associated parking garages. Traffic signals are located at Canal Street, Atlantic Street, the Stamford Transportation Center bus depot and Washington Boulevard.

4.3.5.2 Traffic Volumes

Table 4-24 highlights existing and projected 2035 traffic activity on major roadways linking the Stamford train station with the other four stations on the New Canaan Branch. As noted, existing flows vary from about 4,000 vehicles per day (two-directional) to about 30,000 vehicles per day

near the central business district of Stamford. Future volumes are anticipated to increase up to 35,000 vehicles per day near the downtown area of the city.

TABLE 4-24: ROADWAY TRAFFIC VOLUMES – NEW CANAAN BRANCH

Town	Roadway Location	Existing ADT	Future ADT (2035) ⁽¹⁾
Stamford	CT-1 (Tresser Blvd.), east of Canal Street	25,800	29,700
Stamford	CT-1 (East Main Street), west of Glenbrook Road	30,500	35,000
Darien	CT-106 (Hoyt St), north of Camp Ave	11,300	13,000
New Canaan	CT-106 (Old Stamford Rd.), south of Talmadge Hill Road	15,200	17,500
New Canaan	CT-106 (Old Stamford Rd.), south of Park Street	8,500	10,700
New Canaan	Park Street, near Mead Street	3,800	

Source: CTDOT; Town of New Canaan; City of Stamford.

Table Notes: 1. Consultant has taken existing town/city volumes, including those on Route 1 and applied a growth factor to derive the 2035 time period based on similar growth rates by CTDOT for CT-106

4.3.6 Grade Crossings and Bridges

The New Canaan Branch officially begins just north of Hamilton Avenue in Stamford where the track diverges from the New Haven Line. The branch has numerous crossings with features including culverts, streams/rivers, roadways, power lines, and pedestrian paths.

4.3.6.1 Grade Crossings

Table 4-25 lists the various at-grade public street crossings along the New Canaan Branch.

TABLE 4-25: AT-GRADE PUBLIC STREET CROSSINGS – NEW CANAAN BRANCH

Town	Street
Stamford	Crescent Street
	Glenbrook Road
Darien	Camp Avenue
	Hoyt Street (CT-106)
New Canaan	Talmadge Hill Road
	Richmond Hill Road
	Grove Street

Source: Metro-North Railroad Track Charts, 2008

4.3.6.2 Overhead Structure Load Ratings

There are no overhead highway/roadway bridges along the New Canaan Branch.

4.3.6.3 Undergrade Structure Load Ratings

Data provided by CTDOT's Office of Rail in May 2008 indicates that there are five undergrade structures on the New Canaan Branch. Inspection information for these structures is presented in Table 4-26, summarized and coded for structural integrity according to guidelines in the FHWA publication "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," revised in December 1995.

TABLE 4-26: SELECTED SUMMARY OF STRUCTURAL RATINGS – UNDERGRADE BRIDGES ALONG THE NEW CANAAN BRANCH

Bridge No.	Town	Type of Crossing	Cooper Rating ⁽¹⁾		Overall Condition Rating ⁽²⁾		Latest Inspection ⁽³⁾
			Normal	Max.	Previous	Current	
08150R	Stamford	Viaduct Road	80	94	7	--	3/27/08
08151R	Stamford	Noroton River – Multibeam deck	91	126	5	5	11/1/06
00710R	New Canaan	Merritt Parkway (CT-15)	79	131	4	--	3/20/08
01302R	New Canaan	Old Stamford Road (CT-106)	90	117	5	--	3/25/08
08154R	New Canaan	Waterway – masonry culvert	--	--	4	--	3/18/08

Sources: "CTDOT Highway Bridge Database," April 2008.

"Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," FHWA, December 1995.

Table Notes: 1. Cooper Rating is the structure's capacity in tons. The normal rating is the day-to-day loading that the structure can withstand. The maximum rating is the "Infrequent" load that can be withstood.

2. Overall Rating (Previous and Current): 2 – Critical Condition, 4 – Poor Condition, 5 – Fair Condition, 6 – Satisfactory Condition, 7 – Good Condition, 8 – Very good condition.

3. Date inspection began.

4.3.7 Individual Station Inspections/Condition Findings

CTDOT's January 2003 *Technical Memorandum–Parking Inventory and Utilization (Final Report)* also described the condition status for stations on the New Canaan Branch. These reports, based partly on field inspections, detailed a number of features about each rail station including physical condition, operations review, financial review, lease narrative, and synopsis. This information is summarized below in Table 4-27.

TABLE 4-27: OVERALL STATION CONDITION – NEW CANAAN BRANCH

Station	Overall Condition Summary
New Canaan	Serious deterioration/or not functioning as originally designed
Talmadge Hill	Same as above
Springdale	Minor deterioration, but functioning as originally designed
Glenbrook	Serious deterioration/or not functioning as originally designed

Source: "Individual Station Reports", Connecticut Department of Transportation, 2003

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5.0 EXISTING ENVIRONMENTAL CONDITIONS

This chapter provides an overview of existing environmental conditions within the study areas of the Waterbury and New Canaan Branches, based on a preliminary search of various state and federal databases, including Connecticut Department of Environmental Protection (CTDEP) GIS data, as well as agency coordination and field observations. The study corridor has been established at a width of ½ mile (¼ mile from each side of the rail line), plus a ½-mile radius around stations.

5.1 WATERBURY BRANCH

The Waterbury Branch is the longest of the three Metro-North branch lines in Connecticut, passing through the towns/cities of Bridgeport, Stratford, Milford, Shelton, Orange, Derby, Ansonia, Seymour, Beacon Falls, Naugatuck, and Waterbury.

5.1.1 Existing Land Use and Visual Settings

The Housatonic and Naugatuck River valleys through which the Waterbury Branch passes are locations of early settlement and later industrial development. The corridor reflects this history and contains major areas of dense urban development, mixed land uses, and transportation infrastructure. The corridor contains large portions of the downtown cores of Seymour, Ansonia, Derby, Naugatuck, and Waterbury. The commercial, industrial, and business centers are surrounded by and mixed with medium and high density residential neighborhoods and supporting infrastructure.

In contrast to the more densely developed areas, the corridor also contains suburban residential areas within forested backdrops, as well as undeveloped lands set aside for environmental protection and/or recreation. Notable examples are the extensive wetlands along the lower Housatonic River in Stratford and Milford and the nearly 5,000-acre Naugatuck State Forest in Naugatuck and Beacon Falls. These features, along with other municipal, state, and federal properties and community resources, are shown in Figures 5-1a through 5-1f in Appendix A. The names of the resources identified on these maps can be found in the Resource Identification Table on the pages immediately preceding the map set.

Beginning at the south end of the corridor in Milford, the Waterbury Branch travels north with low-lying undeveloped lands to the west, and medium and high density residential neighborhoods to the east. North of CT-15, the corridor transitions to a lower density residential settlement pattern mixed with open areas, until it reaches CT-34. Just north of CT-34, the corridor enters the high density residential, commercial, and industrial areas associated with the confluence of the Housatonic and Naugatuck Rivers in the towns of Shelton and Derby. This higher-density mixed use character continues along the Naugatuck River until just north of the Seymour Station in the town of Seymour. North of the Seymour Station, the corridor has a mix of low density residential neighborhoods and industrial land uses until it reaches the suburban

center of Beacon Falls. North of Beacon Falls, the corridor crosses through the undeveloped Naugatuck State Forest and emerges into downtown Naugatuck. North of the Naugatuck Station, the corridor traverses a medium density residential area before entering the city of Waterbury, where the line terminates in the urban core of Waterbury.

The visual setting provided by these land uses is a mosaic of built and natural environments. The quaint and densely developed downtown cores contrast with adjacent forested hills, and in places active agricultural fields and wetlands can be seen along the corridor. Views of the rivers are available in many locations, offering visual interest and scenic quality.

5.1.2 Cultural Resources

Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to take into account the effect of an undertaking on historic properties listed or eligible for listing on the National Register of Historic Places (NRHP). The Act requires that a proposed undertaking's impact on such properties be studied to determine if the project would have no effect, no adverse effect, or an adverse effect on historic resources (36 CFR 800.3). The Connecticut Environmental Policy Act (CEPA) [CGS 22a-1 through 22a-1h] requires that state projects be carried out to preserve historic and cultural resources important to the state's heritage. Important cultural resources at both the federal and state levels include significant archaeological sites. Due to the sensitive nature of such sites, the location of archaeological sites in the study corridor will not be reported here but will be obtained in the future through coordination with the Connecticut State Archaeologist, after the impact locations from proposed project activities are better known.

The NRHP database and the Connecticut State Register of Historic Places were consulted as part of the initial effort to identify potential historic resources along the Waterbury Branch corridor. Although there are numerous historic structures and historic districts located within the corridor, only a few structures are very close or actually adjacent to the rail line. In addition, there are cemeteries along the rail corridor in every town. These may or may not be considered historic, depending on their age. They are, however, important cultural resources regardless of their NRHP or Connecticut State Register status.

Historic resources and cemeteries in the corridor are listed in the Resource Identification Table and shown on Figures 4-1a through 4-1f in Appendix A.

5.1.3 Section 4(f) Resources and Section 6(f) Lands

Section 4(f) Resources

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303) applies to federally funded transportation projects that impact or require use of a publicly owned park, recreation area, wildlife or waterfowl refuge, or historic site (23 CFR 771.135). This act requires that special efforts be made to protect such lands.

Within the Waterbury Branch corridor there are numerous parcels that potentially qualify as Section 4(f) resources, based on their land use type (CTDEP 2008 GIS data). These include existing preserved open space, general recreational lands, public schools (which may have significant public recreational facilities), state forests, state parks, state park scenic reserves, state park trails, public water access areas, wildlife areas, public-access federal property, and historic resources listed on the National Register. In the case of historic resources that are part

of an eligible historic district, such resources must be “contributing” features to the district in order to qualify as Section 4(f) resources. In some cases, Section 4(f) may not apply while Section 106 does apply, depending on the results of coordination among the State Historic Preservation Office (SHPO), FTA, and CTDOT.

These properties are listed below in Table 5-1 and shown on Figures 4-1a through 4-1f in Appendix A. As the project advances in planning and design, potentially impacted properties will be investigated further to determine their Section 4(f) status.

TABLE 5-1: POTENTIAL SECTION 4(F) RESOURCES – WATERBURY BRANCH

Town	Resource Name	Reason for Identification as Potential 4(f) Resource
Stratford	Popes Island Wildlife Area	Public recreational park
Milford	Housatonic River Water Access	Public recreational park
Milford	New Lebanon School	Potential outdoor recreational facilities open to public
Milford	Charles E. Wheeler Wildlife Area	Public recreational park
Shelton	Lafayette School	Potential outdoor recreational facilities open to public
Shelton	Sunnyside Park	Public recreational park
Orange	Town Open Space	Public recreational park
Derby	John I. Howe House	Historic property on National Register of Historic Places
Derby	Sterling Opera House	Historic property on National Register of Historic Places
Derby	Kraus Corset Factory	Historic property on National Register of Historic Places
Derby	Derby Canal	Historic property on National Register of Historic Places
Derby	Saint Mary's School	Potential outdoor recreational facilities open to public
Derby	Irving School	Potential outdoor recreational facilities open to public
Derby	Town Green	Public recreational park
Ansonia	US Post Office - Ansonia Main	Historic property on National Register of Historic Places
Ansonia	Ansonia Library	Historic property on National Register of Historic Places
Ansonia	Pine Trade School	Potential outdoor recreational facilities open to public
Ansonia	Mead School	Potential outdoor recreational facilities open to public
Ansonia	Ansonia High School	Potential outdoor recreational facilities open to public
Ansonia	Minnie E. Willis School	Potential outdoor recreational facilities open to public
Ansonia	Ansonia Middle School	Potential outdoor recreational facilities open to public
Ansonia	Old High School	Potential outdoor recreational facilities open to public
Ansonia	Lincoln School	Potential outdoor recreational facilities open to public
Ansonia	Assumption School	Potential outdoor recreational facilities open to public
Ansonia	Nolan School	Potential outdoor recreational facilities open to public
Ansonia	Linnett Park	Public recreational park
Ansonia	Nolan Field	Public recreational park
Ansonia	Naugatuck River Water Access	Public recreational park
Seymour	Seymour Junior High School	Potential outdoor recreational facilities open to public
Seymour	Anna L. Lopresti School	Potential outdoor recreational facilities open to public
Seymour	French Memorial Park	Public recreational park

TABLE 5-1: POTENTIAL SECTION 4(F) RESOURCES – WATERBURY BRANCH

Town	Resource Name	Reason for Identification as Potential 4(f) Resource
Seymour	Sochrin's Pond	Public recreational park
Seymour	Naugatuck River Water Access	Public recreational park
Beacon Falls	Laurel Ledge School	Potential outdoor recreational facilities open to public
Beacon Falls	Pent Road Recreation Field	Public recreational park
Beacon Falls	Naugatuck State Forest	Public recreational park
Beacon Falls	Naugatuck River Water Access	Public recreational park
Naugatuck	Central Avenue School	Potential outdoor recreational facilities open to public
Naugatuck	Salem School	Potential outdoor recreational facilities open to public
Naugatuck	Hillside School	Potential outdoor recreational facilities open to public
Naugatuck	St. Francis School	Potential outdoor recreational facilities open to public
Naugatuck	Hop Brook School	Potential outdoor recreational facilities open to public
Naugatuck	Prospect Street School	Potential outdoor recreational facilities open to public
Naugatuck	Saint Hedwigs School	Potential outdoor recreational facilities open to public
Naugatuck	Lewis Park	Public recreational park
Naugatuck	Town Green	Public recreational park
Naugatuck	Tuttle House	Public recreational park
Naugatuck	Boro Park (3 Parcels)	Public recreational park
Naugatuck	Hop Brook Golf Course II	Public recreational park
Naugatuck	Naugatuck River Water Access	Public recreational park
Naugatuck	Naugatuck State Forest	Public recreational park
Waterbury	Bank Street Historic District	Historic property on National Register of Historic Places
Waterbury	Waterbury Municipal Center Complex	Historic property on National Register of Historic Places
Waterbury	Waterbury Union Station	Historic property on National Register of Historic Places
Waterbury	Duggan School	Potential outdoor recreational facilities open to public
Waterbury	Brooklyn Elementary School	Potential outdoor recreational facilities open to public
Waterbury	University of Connecticut	Potential outdoor recreational facilities open to public
Waterbury	Notre Dame Academy	Potential outdoor recreational facilities open to public
Waterbury	Wilby High School	Potential outdoor recreational facilities open to public
Waterbury	Russell School (note: no longer operating as a school)	Potential outdoor recreational facilities open to public
Waterbury	Croft School	Potential outdoor recreational facilities open to public
Waterbury	Rolling Mill Playground	Public recreational park
Waterbury	West Dover Street Playground	Public recreational park
Waterbury	Library Park	Public recreational park
Waterbury	Larkin State Park Trail	Public recreational park
Waterbury	Hayden Municipal Park	Public recreational park
Waterbury	The Green	Public recreational park
Waterbury	Chase Park	Public recreational park

Source: CT DEP GIS Dataset, 2008.

Section 6(f) Lands

Section 6(f) of the Land and Water Conservation Fund Act protects outdoor recreation property that has been either acquired or developed with financial assistance from the Land and Water Conservation Fund. Based on the National Park Service's 2008 list of Land and Water Conservation Fund properties, there is one 6(f) land within the Waterbury Branch corridor – the Hop Brook Golf Course II in Naugatuck.

5.1.4 Surface Water Resources, Floodplains, and Wetlands

Surface Waters

Surface waters are permanent or intermittent waters which, during the growing season, are visible at or above the surface of the surrounding land. Surface waters generally include streams, rivers, ponds, and lakes.

The Waterbury Branch runs through the valleys of the Housatonic and Naugatuck Rivers, so these rivers and their tributary streams dominate the surface waters in the study corridor. The Housatonic River is tidally influenced for most of its length within the corridor, with the state-designated coastal boundary extending up river all the way into Orange (see Figures 4-2a through 4-2f in Appendix A). Almost all of the corridor towns have one or more small ponds within the study corridor, but there are no major ponds or lakes in the corridor. The branch's location relative to the surface waters in the towns along the study corridor is described in more detail below, from south to north, and can be viewed on Figures 4-2a through 4-2f in Appendix A.

In Milford, the Waterbury Branch runs parallel to the Housatonic River and crosses a major tributary to the river, Turkey Hill Brook. In Orange, the branch continues parallel to the Housatonic River, crosses several small tributaries to the river, and then crosses a large tributary, Two Mile Brook, at the Orange-Derby town line. In Derby, the branch continues north along the Housatonic until it meets the Naugatuck River. It crosses the Naugatuck River and continues north along the west bank of the river, before crossing back to the east side just south of Ansonia Station.

North of Ansonia Station, the branch runs on a narrow 100-year floodplain strip between the river and a large slough in the vicinity of the Colony Pond Brook tributary, before crossing back to the east bank of the river in Seymour. Just north of Seymour Station, the branch again crosses to the west side of the Naugatuck River, paralleling the river along its west bank until it crosses again just south of I-84 in the city of Waterbury.

In Beacon Falls, the branch crosses several major Naugatuck River tributaries, including Pines Brook and Spruce Brook at the Beacon Falls-Naugatuck town line. In Naugatuck, the branch crosses several major tributaries, including Long Meadow Pond Brook and Hop Brook. Finally, the branch crosses a tributary at the south end of the city of Waterbury before crossing back to the east side of the Naugatuck River and approaching Waterbury Station.

Floodplains

Floodplains are lands subject to periodic flooding. In Connecticut, floodplains are defined and mapped by the Federal Emergency Management Agency (FEMA). The features that are included in FEMA's dataset include 100-year floodplains, 500-year floodplains, wave action floodplains, and floodways. CTDEP regulates activities that affect floodplains, as well as

activities within the state-designated stream channel encroachment lines (SCELS). SCELS generally outline riverine floodplain areas and may include floodplains and floodways.

Given the location of the Waterbury Branch in the valleys of two large rivers with numerous tributaries, there are many floodplains in the study corridor (see Appendix A, Figures 4-2a through 4-2f). Near the more densely developed areas along the rivers, retention walls have been constructed to provide flood protection. The 100-year floodplains within the coastal boundary in Milford, Orange, and Shelton are designated as coastal flood hazard areas. These floodplains are prone to minor flood events on a more regular basis and are driven by tidal fluctuations and wave action more so than rainfall events. SCELS have been designated along the Naugatuck River from its confluence with the Housatonic River in Derby/Ansonia to Waterbury.

Despite the abundance of floodplains in the corridor, the Waterbury Branch crosses floodplains only periodically, as described below and shown on Figures 4-2a through 4-2f in Appendix A.

In Milford, the Waterbury Branch crosses no mapped floodplains. In Orange and Derby, the branch encroaches on the 100-year floodplain of the Housatonic River near the Orange-Derby town line, in the vicinity of Two Mile Brook. Farther north in Derby, the branch crosses the 100-year floodplain of the Naugatuck River when it crosses that river just south of Derby-Shelton Station. In Ansonia, the branch crosses narrow strips of 100-year floodplain at its crossing of the Naugatuck River south of Ansonia Station. Also in Ansonia, the branch runs on a long linear strip of 100-year floodplain between the river and a large slough, which extends approximately from Ansonia Station into southern Seymour.

At the crossing of the Naugatuck River in Seymour, north of Seymour Station, the Waterbury Branch crosses a narrow strip of floodplain associated with the river. In Beacon Falls, Naugatuck, and southern Waterbury, the Waterbury Branch is situated very close to the Naugatuck River and falls within 500-year and 100-year floodplains much of the time. Farther north in Waterbury, the branch is farther from the river and farther from floodplains, except where it crosses a large 500-year floodplain in the vicinity of the Hopeville Pond Brook tributary and at its final crossing of the Naugatuck River south of I-84 as it approaches Waterbury Station.

Wetlands

There are three different wetland categories found within the Waterbury Branch corridor: inland wetlands defined by federal regulations; inland wetlands defined by state regulations; and tidal wetlands. Federal wetlands, as defined by the *Corps of Engineers Wetland Delineation Manual* (U.S. Army Corps of Engineers, Waterways Experiment Station, 1987), are identified by a three parameter approach including hydric soils, hydrophytic vegetation, and the presence of hydrology. Connecticut state inland wetlands, as defined by the Connecticut Wetlands and Watercourse Act, are identified by the presence of poorly drained, very poorly drained, alluvial, or floodplain soil types. Tidal wetlands, also defined by the Connecticut Wetlands and Watercourse Act, are identified by the presence of tidal action and salt tolerant vegetation.

As a result of historical development, there are relatively few wetlands within the Waterbury Branch corridor and even fewer close to the line. Most of the wetlands that do occur are classified as both federal and state wetlands and are associated with the Naugatuck River, the Housatonic River, or one of the tributaries to these rivers (see Appendix A, Figures 4-3a through

4-3f). Field inspections in August 2008 confirmed that there are no wetlands at or close to the stations along the Waterbury Branch corridor. Based on other visual observations along the corridor, CTDEP wetlands mapping for the corridor appears to be essentially correct.

Near the coast in the towns of Milford and Stratford, there are pockets of tidal wetlands along the Housatonic River. The Waterbury Branch crosses a small state wetland associated with a minor tributary to the Housatonic River, and comes close to a federal-state wetland near the Milford-Orange town line. The only other locations where the branch comes close to wetlands is north of Seymour Station, where the track abuts a state wetland along the Naugatuck River, and just north of the Naugatuck-Waterbury town line, where the track passes a small federal-state wetland.

Other wetlands are located at some distance from the Waterbury Branch. Small pockets of state wetlands lie along the Housatonic River in Milford, Orange, and Shelton, and along the Naugatuck River in Seymour. Beyond the river corridors, scattered state inland wetlands occur in the towns of Milford, Orange, Ansonia, Seymour, Beacon Falls, Naugatuck, and Waterbury. These tend to be located toward the outer edges of the corridor.

5.1.5 Water Quality and Groundwater Resources

CTDEP has adopted standards of water quality consistent with the federal Clean Water Act. The standards for surface waters establish a goal of restoring and maintaining the chemical, physical, and biological integrity of Connecticut surface waters, and wherever attainable, provide for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water. The standards for groundwater establish a goal of restoring and maintaining the chemical, physical, and biological integrity of Connecticut groundwater and to restore those waters to well-water status fit for human consumption. To support its standards, CTDEP has created water quality classifications and assigned classifications to the surface and groundwater resources of the state. Classifications are indicative of the real (measured) or presumed levels of pollution affecting the water resource.

According to the CTDEP's 2002 *State of Connecticut Water Quality Standards (Water Quality Standards)*, surface waters within the Waterbury Branch study corridor are significantly below drinking water standards (see Appendix A, Figures 4-4a through 4-4f). Within the corridor, the Housatonic River is class SC/SB (coastal waters at classification C with a goal of B) and the Naugatuck River is class C/B (inland waters currently at classification C with a goal of B). Some of the minor streams in the corridor do meet higher standards but most are not suitable for drinking water. There are currently no approved surface water drinking water supplies in this corridor, with the exception of the Lower Derby Hill Reservoir approximately ½-mile from Derby-Shelton Station (Appendix A, Figure 4-4b).

The quality of the groundwater is significantly higher than that of the surface waters within this corridor. Most of the groundwater is classified as GA (groundwater at classification A), which is suitable for private and public water supply. The groundwater areas closer to the main rivers are classified as GB (needs treatment before human consumption). This lower classification is most likely a reflection of surface water influence, as nearby lower-quality surface waters may be hydrologically connected to the groundwater. There are currently no approved public groundwater aquifers for drinking water supplies in this corridor.

5.1.6 Public Water Supply Reservoirs

Public water supply reservoirs are critical public resources which collect and store surface waters from within a watershed for human consumption. The Connecticut Department of Public Health (CTDPH) is primarily responsible for administration of all state and federal drinking water regulations in Connecticut.

There is a public water supply reservoir that falls partially within the Waterbury Branch study corridor – the Lower Derby Hill Reservoir located approximately ½-mile from Derby-Shelton Station (see Figure 4-4b in Appendix A).

5.1.7 Coastal Resources

Coastal resources in Connecticut are managed under the Coastal Area Management Program, a comprehensive, cooperative program that functions at all levels of government. Connecticut's Coastal Management Program is administered by CTDEP and is approved by the National Oceanic and Atmospheric Administration (NOAA) under the federal Coastal Zone Management Act. Under the statutory umbrella of the Connecticut Coastal Management Act (CCMA) enacted in 1980, the Program ensures balanced growth along the coast; restores coastal habitat; improves public access; protects water-dependent uses, public trust waters, and submerged lands; promotes harbor management; and facilitates research. The Program also regulates work in tidal, coastal, and navigable waters and tidal wetlands under the CCMA (Section 22a-90 through 22a-112 of the Connecticut General Statutes), the Structures Dredging and Fill statutes (Section 22a-359 through 22a-363f), and the Tidal Wetlands Act (Section 22a-28 through 22a-35).

In 1979, the CCMA established a coastal boundary for the state of Connecticut in order to help define regulatory jurisdiction for coastal resources. Any regulated activity conducted within the coastal boundary by a municipal agency must be conducted in a manner consistent with the requirements of the Connecticut Coastal Management Act (CMA; C.G.S. 22a-90 to 22a-113). Regulated municipal activities include development plans, zoning regulations, municipal coastal programs, and coastal site plan review (i.e., site plans submitted to a zoning commission, subdivision or resubdivision plans submitted to a planning commission, applications for special permits or exceptions to the zoning or planning commission or zoning board of appeals, variances submitted to a zoning board of appeals, or a referral of a municipal project).

Within the Waterbury Branch corridor, the coastal boundary extends up the Housatonic River to just south of the confluence of the Naugatuck and Housatonic Rivers. Within the coastal boundary, the following coastal resources occur: coastal flood hazard areas (100-year floodplains and floodways); mud flats; and tidal wetlands (see Figures 4-2a to 4-2b and Figures 4-3a to 4-3b in Appendix A). Due to the water quality concerns discussed in Section 4.1.5, shellfishing in this coastal area is prohibited.

In the event that the recommended alternative selected for the corridor affects coastal resources, the project's consistency with the state's coastal management policies will need to be demonstrated.

5.1.8 Farmland Soils

The Farmland Protection Policy Act (FPPA) of 1981 (7 CFR 658, as amended at 59 Federal Register 31117) was enacted by the U.S. Department of Agriculture (USDA) in order to protect farmlands and to prevent disturbance to soils important to agricultural production.

Important farmland soils in Connecticut are divided into two basic groups: Prime Farmland and Additional Farmland of Statewide Importance. Prime Farmland has soils with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. In general, prime farmlands have an adequate and dependable moisture supply, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. Additional Farmland of Statewide Importance includes soils that are not as high quality as Prime Farmland but are still important for the economical production of high yield crops. Some may produce as high a yield as Prime Farmlands if conditions are favorable.

Prime Farmland and Statewide Important Farmland soils are thinly distributed throughout the entire Waterbury Branch corridor, primarily bordering streams and rivers. The largest concentration of these soils is located in northern Milford and southern Orange, just north of CT-15. Very few of the farmland clusters are located close to the rail line or station sites. There are Prime Farmland soils in close proximity to the Beacon Falls Station to the west, and Statewide Important Farmland soils to the east. There is a long swath of Statewide Important Farmland soils to the east of and across the river from Naugatuck Station (see Appendix A, Figures 4-5a through 4-5f).

5.1.9 Fish and Wildlife/Endangered Species

CTDEP conducts a variety of research and management programs to protect and restore endangered, threatened and special concern species in Connecticut, and serves as the primary source of information on the status of rare plant and animal species in the state. The Connecticut Endangered Species Act (C.G.S. Sec. 26-303 to Sec. 26-315) and the Federal Endangered Species Act (16 U.S.C. 1531-1543) provide protection of these resources.

Information on state and federal listed species and natural communities is compiled and made available through CTDEP's Natural Diversity Data Base (NDDDB). Established in 1983, the NDDDB contains data from biological inventories conducted over the past 100 years. The NDDDB currently contains information on the status of nearly 2,000 species of plants and animals, including invertebrates and 45 natural community types.

The CTDEP NDDDB GIS data layer (CTDEP, December 2007) was consulted to determine if there were any records of concern in the Waterbury Branch corridor. Based on the proximity of NDDDB records to the corridor, coordination letters were sent to CTDEP and the U.S. Fish and Wildlife Service (USFWS) requesting their review of the study area for possible threatened and endangered species. Since the date of the request, the study area has been reduced in size. The results of the correspondence as they apply to the current corridor are described below.

Correspondence received from USFWS dated July 22, 2008 revealed that there are no federally-listed or proposed, threatened or endangered species or critical habitats known to occur within the project area. Correspondence received from CTDEP dated August 18, 2008 revealed that there are several potential suitable habitats for threatened or endangered species within the corridor, specifically in the vicinity of the confluence of the Naugatuck and Housatonic

Rivers in Derby and within the Naugatuck State Forest in Naugatuck. Once a recommended alternative is selected for the corridor, further correspondence with CTDEP will be required regarding potential project impacts to habitats of concern.

5.1.10 Air Quality

The Clean Air Act of 1970 and subsequent Clean Air Act Amendments established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to ensure the protection of human health and public welfare. NAAQS were established for carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), ozone (O₃), and particulate matter (PM). The Clean Air Act also required states to monitor air quality and report the air quality conditions to the U.S. Environmental Protection Agency (EPA). If any region of the state shows exceedances of any of the NAAQS, that part of the state is classified as non-attainment for that pollutant and the state must develop an air quality plan, called a State Implementation Plan (SIP), to bring that area into compliance. If a region does not exceed any of the NAAQS thresholds, it is classified as “in attainment.”

For transportation projects, the criteria pollutants of greatest concern are CO and ozone. The NAAQS for CO are a 1-hour average concentration of 35 parts per million (ppm) and an 8-hour average concentration of 9 ppm. The NAAQS for ozone are a 1-hour average of 0.12 ppm and an 8-hour average concentration of 0.75 ppm (effective May 27, 2008).

As of August 2008, EPA identifies the current air quality attainment designations for the six criteria pollutants in Connecticut, as reported below:

- **CO:** The entire state of Connecticut is currently designated as in attainment for CO.
- **Ozone:** In April of 2004, EPA determined the entire state of Connecticut to be in moderate non-attainment for the newer eight-hour ozone NAAQS. The maximum attainment date is projected to be June 2010.
- **PM:** EPA has established NAAQS for two size ranges of PM: PM_{2.5} and PM₁₀. The entire state of Connecticut is currently in attainment for PM₁₀ (particulate matter with a diameter of 10 microns or less). Fairfield and New Haven Counties are both part of the New York-Northern New Jersey-Long Island area designated as non-attainment for PM_{2.5} (particulate matter with a diameter of 2.5 microns or less).
- **NO₂:** The entire state of Connecticut is in attainment for NO₂.
- **Pb:** The entire state of Connecticut is in attainment for Pb.
- **SO₂:** The entire state of Connecticut is in attainment for SO₂.

5.1.11 Noise Sensitive Areas

Noise-sensitive land uses include: a) residences, hotels, and other buildings where people sleep; b) institutional uses such as churches, schools, hospitals, and libraries; and c) uses where quiet is an essential element of the land’s intended purpose, such as a National Historic Landmark where outdoor interpretation routinely takes place.

There are many noise-sensitive receptor locations along the Waterbury Branch. The highest concentrations are located in the urban areas of Waterbury, Naugatuck, Ansonia, and Derby. These resources are identified in Table 5-2 and Figures 4-1a through 4-1f in Appendix A. In

addition to these special properties, there are broad areas of residential uses which will be considered noise sensitive for the purposes of future noise impact studies.

TABLE 5-2: NOISE SENSITIVE RECEPTOR LOCATIONS – WATERBURY BRANCH

Town	Resource Name	Receptor Type
Milford	New Lebanon School	School
Shelton	Lafayette School	School
Derby	Derby United Methodist Church	Religious Institution
Derby	St Michael's School	School
Derby	Saint Mary's School	School
Derby	Irving School	School
Ansonia	St. Bathlehm Church	Religious Institution
Ansonia	Evangel Temple Church of God	Religious Institution
Ansonia	First United Methodist Church	Religious Institution
Ansonia	Assumption Church	Religious Institution
Ansonia	St. Anthony's Church	Religious Institution
Ansonia	Pine Trade School	School
Ansonia	Mead School	School
Ansonia	Ansonia High School	School
Ansonia	Minnie E. Willis School	School
Ansonia	Ansonia Middle School	School
Ansonia	Old High School	School
Ansonia	Lincoln School	School
Ansonia	Assumption School	School
Ansonia	Nolan School	School
Seymour	Seymour Junior High School	School
Seymour	Anna L. Lopresti School	School
Beacon Falls	Laurel Ledge School	School
Naugatuck	Central Avenue School	School
Naugatuck	Salem School	School
Naugatuck	Hillside School	School
Naugatuck	St. Francis School	School
Naugatuck	Hop Brook School	School
Naugatuck	Prospect Street School	School
Naugatuck	Philadelphia Church	Religious Institution
Naugatuck	Immanuel Lutheran Church ELCA	Religious Institution
Naugatuck	Salem Lutheran Church	Religious Institution
Waterbury	Duggan School	School
Waterbury	Brooklyn Elementary School	School
Waterbury	University of Connecticut	School
Waterbury	Notre Dame Academy	School

TABLE 5-2: NOISE SENSITIVE RECEPTOR LOCATIONS – WATERBURY BRANCH

Town	Resource Name	Receptor Type
Waterbury	Wilby High School	School
Waterbury	Croft School	School
Waterbury	Our Lady of Fatima Church	Religious Institution
Waterbury	St. Patrick's Church	Religious Institution
Waterbury	Waterbury Church of God	Religious Institution
Waterbury	Riverbank Christian Worship, CT	Religious Institution
Waterbury	St. Ann's Church	Religious Institution
Waterbury	Our Lady of Lourdes Church	Religious Institution
Waterbury	Immaculate Conception Church	Religious Institution
Waterbury	Smirna Misionera	Religious Institution
Waterbury	Living Faith Christian Church	Religious Institution
Waterbury	New Life of Waterbury	Religious Institution
Waterbury	United Muslim Mosque	Religious Institution
Waterbury	Salvation Army Youth Emergency	Religious Institution
Waterbury	First Church Return – Pentecost	Religious Institution
Waterbury	Saint Mary's Hospital	Hospital

Source: CT DEP GIS Dataset, 2008.

5.1.12 Environmental Justice and Title VI

The U.S. Department of Transportation has a policy to ensure nondiscrimination under Title VI of the Civil Rights Act of 1964. Title VI states that “no person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued in 1998 states that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

U.S. Census Bureau data from the 2000 Census were used to map the occurrence of environmental justice (minority and low-income) populations in the census tracts within the Waterbury Branch study corridor. A minority person as defined by the Census is anyone who is non-white. The definition of low-income used for evaluating environmental justice populations is what the Census identifies as below the poverty level.

Based on interpretation and mapping of the 2000 Census data, there are no census tracts with greater than 50 percent of residents below the poverty level (see Appendix A, Figures 4-6a through 4-6f). Almost the entire corridor has 1 to 25 percent of the population below poverty level. Two census tracts have 25 to 50 percent of the population below poverty level; these are in the Waterbury portion of the corridor, north and east of Waterbury Station.

There are three census tracts within the Waterbury Corridor with 25 to 50 percent of residents in the minority population and two census tracts with 50 to 75 percent of the residents in the minority population, all of which are located in the urban area around the Waterbury Station (see Appendix A, Figures 4-7a through 4-7f). There are no census tracts with greater than 75 percent of residents in the minority population.

5.1.13 Environmental Risk Sites

The presence of hazardous materials within the project corridor would affect those areas directly impacted by construction. Because no recommended alternative has been selected at this time, potential environmental risk sites have not yet been investigated.

5.1.14 Unique Features

Based on the sources consulted for this report, no unique features other than those reported in other sections were identified within the Waterbury Branch corridor.

5.2 NEW CANAAN BRANCH

The New Canaan Branch is the shortest of the three Metro-North branch lines in Connecticut, passing through the towns of Stamford, Darien, and New Canaan.

5.2.1 Existing Land Use and Visual Settings

The towns within the New Canaan Branch corridor consist primarily of densely developed residential neighborhoods. The areas in the vicinity of the existing rail stations are among the most densely settled communities in the region. The New Canaan Branch connects the small urban center of New Canaan with the larger urban areas of the city of Stamford. Land uses within the corridor, like those of the Waterbury Branch, include commercial, industrial, and business centers surrounded by and mixed with medium and high density residential neighborhoods and supporting infrastructure.

Although this corridor is largely developed, it also includes a few smaller pockets of undeveloped land. These lands are primarily in the northern end of the corridor and consist of mixed deciduous and coniferous forests, open lands, agricultural fields, and wetlands, interspersed among more urban land uses.

Beginning in Stamford at the south end of the study corridor, the New Canaan Branch is surrounded by high density residential, commercial, and industrial land uses. As the branch crosses the Noroton River into Darien, land uses transition to medium and low density mixed use. As the branch continues north and crosses the Merritt Parkway/CT-15, it passes Waveny Park, a large preserved open space in the town of New Canaan. After passing the park, land uses in the corridor are predominantly medium and low density residential neighborhoods, finally transitioning to the medium to high density town center of New Canaan at the branch's northern terminus.

The visual setting in the corridor provides a contrast of neat urban development and mixed suburban-rural appearance. The character tends to transition from urban to rural from south to north.

The municipal, state, and federal properties and community resources within the corridor are shown on Figures 4-8a and 4-8b in Appendix A. The names of the resources identified on these

maps can be found in the Resource Identification Table on the pages immediately preceding the map set.

5.2.2 Cultural Resources

As described in Section 4.1.2, Section 106 of the National Historic Preservation Act of 1966, as amended, and the Connecticut Environmental Policy Act require that projects' impacts on historic resources of national and state importance be taken into account. The National Register of Historic Places and the Connecticut State Register of Historic Places were consulted to identify potential historic resources within the New Canaan Branch corridor. Of the numerous historic structures and historic districts within the corridor, only a few properties lie directly adjacent to the rail line. In addition, there are cemeteries along the rail corridor in every town. These may or may not be considered historic, depending on their age. They are, however, important cultural resources regardless of their NRHP or Connecticut State Register status.

Historic resources and cemeteries in the corridor are listed in the Resource Identification Table and shown on Figures 4-8a and 4-8b in Appendix A.

5.2.3 Section 4(f) and Section 6(f) Lands

Section 4(f) Resources

Within the New Canaan Branch corridor are several parcels that potentially qualify as Section 4(f) properties based on their land use type (CTDEP 2008 GIS data), including existing preserved open space, general recreational lands, public schools (which may have significant recreational facilities), and historic resources listed on the National Register. In the case of historic resources that are part of an eligible historic district, it should be noted that such resources must be contributing features to the district in order to qualify as potential Section 4(f) resources. In some cases, Section 4(f) may not apply while Section 106 does apply, depending on the results of coordination among the SHPO, FTA and CTDOT.

Potential Section 4(f) resources within the New Canaan Branch corridor are listed below in Table 5-3 and shown on Figures 4-8a and 4-8b in Appendix A. As the project advances in planning and design, these properties will be investigated further to determine their Section 4(f) status.

TABLE 5-3: POTENTIAL SECTION 4(F) RESOURCES – NEW CANAAN BRANCH

Town	Resource Name	Reason for Identification as Potential 4(f) Resource
Stamford	Church of the Holy Name	Historic property on National Register of Historic Places
Stamford	Rogers School	Potential outdoor recreational facilities open to public
Stamford	Stark School	Potential outdoor recreational facilities open to public
Stamford	Dolan Middle School	Potential outdoor recreational facilities open to public
Stamford	Toquam School	Potential outdoor recreational facilities open to public
Stamford	South End Neighborhood Center	Public recreational park
Stamford	Tresser Boulevard Playgrounds	Public recreational park
Stamford	Northrop Field	Public recreational park
Stamford	Glenbrook Neighborhood Center	Public recreational park
Stamford	Sleepy Hollow Park	Public recreational park

TABLE 5-3: POTENTIAL SECTION 4(F) RESOURCES – NEW CANAAN BRANCH

Town	Resource Name	Reason for Identification as Potential 4(f) Resource
Stamford	Woodway Road Park	Public recreational park
New Canaan	John Rogers Studio	Historic property on National Register of Historic Places
New Canaan	United Methodist Church School	Potential outdoor recreational facilities open to public
New Canaan	Kumon Math / Reading Center	Potential outdoor recreational facilities open to public
New Canaan	St. Aloysius School	Potential outdoor recreational facilities open to public
New Canaan	Waveny Park	Public recreational park
New Canaan	Old Stamford Road Bird Sanctuary	Public recreational park
New Canaan	Mead Memorial Park	Public recreational park
New Canaan	God's Acre	Public recreational park
New Canaan	Town Open Space (Valley Street)	Public recreational park

Source: CT DEP GIS Dataset, 2008.

Section 6(f) Lands

Section 6(f) of the Land and Water Conservation Fund Act protects outdoor recreation property that has been either acquired or developed with financial assistance from the Land and Water Conservation Fund. Based on the National Park Service's 2008 list of Land and Water Conservation Fund properties, there are no Section 6(f) properties within the New Canaan Branch corridor.

5.2.4 Surface Water Resources, Floodplains, and Wetlands

Surface Waters

Surface waters in the New Canaan Branch corridor are shown on Figures 4-9a and 4-9b in Appendix A. The New Canaan Branch originates in a coastal area near the Rippowam River in Stamford and arcs east-northeasterly toward the Noroton River, which it parallels briefly in Stamford. Tidal waters within the study corridor include the Rippowam River and a long inlet from Long Island Sound, both in Stamford. The portions of the corridor around these waters are within the state-designated coastal boundary.

From Stamford, the branch crosses the Noroton River into Darien and again parallels the river northerly through Darien into New Canaan. In Darien, the branch crosses several small tributaries to river. In New Canaan, the branch crosses several more tributaries, including Potts Pond Brook just south of its terminus at the New Canaan Station.

Two ponds are located within the New Canaan corridor. Raymonds Pond spans the Darien-New Canaan town line along the Noroton River just west of Talmadge Hill Station, while Potts Pond is located at the headwaters of Potts Pond Brook just south of New Canaan Station. There are no major ponds outside of these riverine systems and no lakes in the corridor.

Floodplains

Floodplains in the New Canaan Branch corridor are shown on Figures 4-9a and 4-9b in Appendix A. At the southern terminus of the study corridor, there are relatively narrow 100-year and 500-year floodplains along the Rippowam River west of Stamford Station. The 100-year floodplains here are designated as coastal flood hazard areas. These floodplains are prone to

minor flood events on a more regular basis and are driven by tidal fluctuations and wave action more so than rainfall events.

As the New Canaan Branch heads east and north in Stamford, it touches upon 500-year and 100-year floodplains of the Noroton River just south of Springdale Station. The branch then passes through a broad 100-year floodplain of the Noroton River as it crosses the river into Darien. In addition to the floodplains at the river crossing, located slightly north of the crossing, the branch in Darien crosses a 500-year floodplain associated with a small tributary to the river. In New Canaan, the branch does not cross or approach any mapped floodplains, although there are floodplains in the study area along the Noroton River to the west.

SCELS have been designated along the lower reaches of the Noroton River and the Rippowam River in the towns of Stamford and Darien.

Wetlands

There are two wetland categories found within the New Canaan Branch corridor: inland wetlands defined by federal regulations, and inland wetlands defined by state regulations. There are no tidal wetlands within the New Canaan corridor. Wetlands in the New Canaan Branch study area are shown on Figures 4-10a and 4-10b in Appendix A. There are very few wetlands in Stamford and none occur in the southern end of the corridor in the Stamford Station area. A few small scattered wetlands, classified as both federal and state wetlands, are located within the general vicinity of the Glenbrook and Springdale Stations in Stamford. There are federal-state wetlands and state-only wetlands along the Noroton River between Stamford and Darien in the corridor.

As the branch heads north in Darien, the concentration of wetlands increases. Several long linear federal-state wetland systems occur within the corridor in both Darien and New Canaan, associated with the Noroton River and its tributaries. There is a federal-state wetland approximately 300 feet south of Talmadge Hill Station in the town of New Canaan, extending south into Darien along the rail corridor for approximately ¼ mile. The branch also passes close to wetlands north of CT-15 in New Canaan, and in the Potts Pond Brook area of New Canaan.

Based on visual observations along the branch in August 2008, the CTDEP wetlands mapping for the corridor appears to be essentially correct.

5.2.5 Water Quality and Groundwater Resources

As described in Section 4.1.5, CTDEP has adopted standards of water quality consistent with the federal Clean Water Act. To support its standards, CTDEP has created water quality classifications and assigned classifications to the surface and groundwater resources of the state based on the real (measured) or presumed levels of pollution affecting the water resource.

According to CTDEP's *Water Quality Standards*, the Rippowam River, west of Stamford Station, is class SC/SB (coastal waters at classification C with a goal of B). The Noroton River in the town of Darien is class B (suitable for fish and wildlife habitat). The Noroton River in New Canaan and most of its minor tributaries are class A, which indicates potential drinking water supply (see Appendix A, Figures 4-11a and 4-11b). However, there are currently no approved surface water drinking water supplies in this corridor.

The quality of the groundwater in the corridor follows a similar trend of higher quality in the north and slightly lower in the southern portion of the corridor. The groundwater areas in the southern

portions of the corridor are class GB (needs treatment before human consumption). This lower classification is, most likely, associated with a hydrological connection to the lower quality surface waters. Most of the groundwater in the northern portion of the corridor is class GA (suitable for private and public water supply). There is currently one approved public groundwater aquifer for drinking water supplies in this corridor. This aquifer is owned by the Aquarion Water Company of Connecticut, is part of the Noroton System, and is located below and surrounding the Sprindale Station, extending $\frac{1}{2}$ mile south of the station and $\frac{3}{4}$ mile north of the station in the towns of Stamford and Darien. This aquifer is accessed through the Rewak Well at the southern end of the aquifer, within the corridor, in the town of Darien.

5.2.6 Public Water Supply Reservoirs

There are no public water supply reservoirs within the New Canaan Branch corridor.

5.2.7 Coastal Resources

As discussed in Section 4.1.7, coastal resources in Connecticut are managed under the Coastal Area Management Program, a comprehensive, cooperative program that functions at all levels of government. Under the statutory umbrella of the Connecticut Coastal Management Act (CCMA), enacted in 1980, the Program ensures balanced growth along the coast; restores coastal habitat; improves public access; protects water-dependent uses, public trust waters and submerged lands; promotes harbor management; and facilitates research. In 1979, the CCMA established a coastal boundary for the state of Connecticut in order to help define regulatory jurisdiction for coastal resources.

Within the New Canaan Branch corridor, the coastal boundary established by the CCMA extends approximately 1.5 miles up the Noroton and Rippowam Rivers (see Figures 4-9a and 4-10a in Appendix A). There are no coastal resources within the coastal boundary of this corridor. Due to the water quality concerns discussed in Section 4.2.5, shellfishing in this area is prohibited.

In the event that corridor improvements affect coastal resources, the project and its effects will need to be shown consistent with the state's coastal management policies.

5.2.8 Farmland Soils

The Farmland Protection Policy Act (FPPA) of 1981 (7 CFR 658, as amended at 59 Federal Register 31117) was enacted by the U.S. Department of Agriculture (USDA) in order to protect farmlands and to prevent disturbance to soils important to agricultural production. As described in Section 4.1.8, important farmland soils in Connecticut are divided into two basic groups: Prime Farmland, and Additional Farmland of Statewide Importance.

Native soils are less disturbed along the New Canaan Branch than along the Waterbury Branch. There are widespread areas of prime farmland and additional important soils, increasing from south to north. The highest concentrations of these soils are located in the town of Darien and in the southern part of New Canaan, in the vicinity of CT-15 (see Appendix A, Figures 4-12a and 4-12b).

In Stamford, there are a few small clusters of Prime Farmland soils located north and east of Glenbrook Station and south and east of Springdale Station, associated with the Rippowam River. Farther north along the Rippowam and the Noroton River valleys, farmland soils occur frequently over large undeveloped areas. Talmadge Hill Station is closely surrounded by a

mixture of both Prime Farmland soils and Statewide Important soils. Although the New Canaan Station area has been developed such that there are no important farmland soils in close proximity, Statewide Important soils lie to the west of the station, near the edge of the corridor.

5.2.9 Fish and Wildlife/Endangered Species

CTDEP conducts a variety of research and management programs to protect and restore endangered, threatened and special concern species in Connecticut and serves as the primary source of information on the status of rare plant and animal species throughout the state. Information on state and federal listed species and natural communities is compiled and made available through CTDEP's Natural Diversity Data Base, which contains information on the status of nearly 2,000 species of plants and animals, including invertebrates and 45 natural community types.

The CTDEP NDDB GIS data layer (CTDEP, December 2007) was consulted to determine if there were any records of concern in the New Canaan corridor. Based on the proximity of NDDB records to the corridor, coordination letters were sent to CTDEP and USFWS requesting their review of the study area for possible threatened and endangered species.

Correspondence received from the USFWS dated July 22, 2008 revealed that there are no federally-listed or proposed threatened or endangered species or critical habitats known to occur within the project area. Correspondence received from the CTDEP dated August 18, 2008 revealed that there is one potential suitable habitat for a state endangered species within the corridor in the downtown Stamford area, northeast of Stamford Station. Once a recommended alternative is selected for the corridor, further correspondence with CTDEP will be required regarding potential project impacts to this habitat.

5.2.10 Air Quality

As described in Section 4.1.10, the Clean Air Act of 1970 and subsequent Clean Air Act Amendments established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), ozone (O₃), and particulate matter (PM). If any region of the state shows exceedances of any of the NAAQS, that part of the state is classified as non-attainment for that pollutant and the state must develop a State Implementation Plan to bring that area into compliance. If a region does not exceed any of the NAAQS thresholds, it is classified as "in attainment."

As of August 2008, U.S EPA identifies the current air quality attainment designations for the six criteria pollutants in Connecticut, as reported below:

- **CO:** The entire state of Connecticut is currently designated as in attainment for CO.
- **Ozone:** In April of 2004, EPA determined the entire state of Connecticut to be in moderate non-attainment for the newer eight-hour ozone NAAQS. The maximum attainment date is projected to be June 2010.
- **PM:** EPA has established NAAQS for two size ranges of PM: PM_{2.5} and PM₁₀. The entire state of Connecticut is currently in attainment for PM₁₀ (particulate matter with a diameter of 10 microns or less). Fairfield County is part of the New York-Northern New Jersey-Long Island area designated as non-attainment for PM_{2.5} (particulate matter with a diameter of 2.5 microns or less).

- **NO₂**: The entire state of Connecticut is in attainment for NO₂.
- **Pb**: The entire state of Connecticut is in attainment for Pb.
- **SO₂**: The entire state of Connecticut is in attainment for SO₂.

5.2.11 Noise Sensitive Areas

There are many noise-sensitive receptor locations along the New Canaan Branch. The highest concentrations are located in the urban areas of New Canaan and Stamford. These resources are identified in Table 5-4 and Figures 4-8a and 4-8b in Appendix A. In addition to these special properties, there are broad areas of residential uses which will be considered noise sensitive for the purposes of future noise impact studies.

TABLE 5-4: NOISE SENSITIVE RECEPTOR LOCATIONS – NEW CANAAN BRANCH

Town	Resource Name	Receptor Type
Stamford	Rogers School	School
Stamford	Stark School	School
Stamford	Dolan Middle School	School
Stamford	Toquam School	School
Stamford	Dolan High School	School
Stamford	Glenbrook School	School
Stamford	Saint Mary's School	School
Stamford	Saint John's School	School
Stamford	Rice School	School
Stamford	Holy Name School	School
Stamford	Cloonan Junior High School	School
Stamford	South End Neighborhood Center	Public recreational park
Stamford	Glenbrook Neighborhood Center	Public recreational park
Stamford	Holy Name of Jesus Church	Religious Institution
Stamford	Holy Trinity Church	Religious Institution
Stamford	Hart of God Ministry	Religious Institution
Stamford	St. Vladimir's Cathedral	Religious Institution
Stamford	St. Maurice Catholic Church	Religious Institution
Stamford	Grace Evangelical Free Church	Religious Institution
Stamford	Union Memorial Church	Religious Institution
Stamford	Sherman Congregational Church	Religious Institution
Stamford	Emmanuel Church	Religious Institution
Darien	Talmadge Hill Community Church	Religious Institution
New Canaan	United Methodist Church School	School
New Canaan	Kumon Math / Reading Center	School
New Canaan	St. Aloysius School	School
New Canaan	Old Stamford Road Bird Sanctuary	Animal Sanctuary
New Canaan	St. Aloysius Church	Religious Institution

TABLE 5-4: NOISE SENSITIVE RECEPTOR LOCATIONS – NEW CANAAN BRANCH

Town	Resource Name	Receptor Type
New Canaan	Krog Lars Church	Religious Institution
New Canaan	New Canaan Home Veterinary Services	Religious Institution
New Canaan	Grace Community Church	Religious Institution

Source: CT DEP GIS Dataset, 2008.

5.2.12 Environmental Justice and Title VI

As discussed in Section 4.1.12, the U.S. Department of Transportation has a policy to ensure nondiscrimination under Title VI of the Civil Rights Act of 1964. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued in 1998, states that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

U.S. Census Bureau data from the 2000 Census were used to determine the presence or concentration of environmental justice (minority and low-income) populations in the census tracts which surround the New Canaan Branch study corridor. A minority person as defined by the Census is anyone who is non-white. The definition of low-income used for evaluating environmental justice populations is what the Census identifies as below the poverty level.

According to interpretation and mapping of the 2000 Census data, there are no census tracts with more than 50 percent of residents below the poverty level in the New Canaan corridor (see Appendix A, Figures 4-13a and 4-13b). Almost the entire corridor shows 1 to 25 percent of the population below poverty level. One census tract in Stamford has 25 to 50 percent of the population below poverty level, on the south side of the branch in the vicinity of Stamford Station.

Within the corridor, urban areas of Stamford contain concentrations of minority populations. There are five census tracts with 25 to 50 percent of the residents in the minority population; these are located between Stamford Station and Glenbrook Station. Three census tracts have 50 to 75 percent of residents in the minority population, located in the vicinity of Stamford Station. Within the entire corridor, no census tracts have greater than 75 percent of the residents in the minority population (see Appendix A, Figures 4-14a and 4-14b).

5.2.13 Environmental Risk Sites

The presence of hazardous materials within the project corridor would affect those areas directly impacted by construction. Because no recommended alternative has been selected at this time, potential environmental risk sites have not yet been investigated.

5.2.14 Unique Features

Based on the sources consulted for this report, no unique features other than those reported in other sections were identified within the New Canaan Branch corridor.

6.0 FUTURE NO BUILD CONDITIONS

This chapter presents future conditions anticipated for the Waterbury and New Canaan Branch study areas if no improvements to rail facilities are made.

6.1 FUTURE DEMOGRAPHIC CONDITIONS

In transportation studies, a no build alternative is typically developed to establish a base case condition if improvements proposed are not implemented. The impacts of various build alternatives are then compared against this no build alternative. This process helps to define the anticipated benefits of selecting the recommended alternative.

The no build scenario for this study reflects population and employment changes that are anticipated to occur independently of any transportation improvements. It also assumes that other planned projects with committed funds will be implemented.

Future no build conditions are analyzed for two periods, 2015 and 2030. These analyses are based on the population and employment forecasts used in CTDOT's *Connecticut Statewide Travel Model* and the model's outputs for 2015 and 2030 projections of rail ridership. The model reflects Metro-North's 2030 operating plan.

The future land use assumptions were analyzed and compared with the current land use characteristics. The year 2030 was selected as the horizon year for the future transportation model. Population and employment data from the years 2015 and 2030 were compiled and compared with the year 2007 to illustrate of future growth assumptions.

The model used population and employment data by traffic analysis zones (TAZ), which were mapped and combined by municipalities on a town level.

Three maps showing 2007 socioeconomic data, 2030 socioeconomic data, and growth of population and employment in the study area are presented in Figures 6-1, 6-2, and 6-3, respectively. In addition to population and employment numbers at the municipal level, the maps are color-coded based on population data and growth.

As these figures indicate, the most populous jurisdictions in the study area (those with a 2030 population of 120,000 and above) are located along New Haven mainline. These towns include New Haven with a population of 144,310, Bridgeport with a population of 145,600, and Stamford with a population of 138,800.

The next most populous municipalities (those with a 2030 population greater than 80,000) are Waterbury with 107,350 residents, Norwalk with a population of 90,210, and Danbury with a population of 87,290.

The biggest growth in population between 2007 and 2030 is projected to occur in Stamford, which will increase by 16,809 residents, followed by New Haven with a 16,351 population

increase, and Danbury with a 9,558 population increase.

Cities with the highest employment in 2030 within the study area will be in Stamford with 103,400 jobs, New Haven 88,260 jobs, and Bridgeport with 65,690 jobs. Employment in Waterbury will be 45,890 jobs in 2030.

The growth of employment from 2007 to 2030 will be most significant in Bridgeport with 10,958 new jobs, Stamford with 13,711 new jobs, and Danbury with 13,124 new jobs. Along the Waterbury Branch, Stratford and Shelton will also have a significant increase in employment, adding 7,938 and 3,715 jobs, respectively. Within the New Canaan Branch study area, the largest increase in jobs will be in Stamford.

Tables 6-1 through 6-6 show 2007, 2015, and 2030 population and employment. All towns along the New Haven mainline and the Waterbury and New Canaan Branches were separately selected and grouped by proximity to the rail stations. This demonstrates a useful, though approximate, relationship between population and employment, and the potential impact on ridership by station.

As shown in Table 6-1, population along the Waterbury Branch is high (372,967 in 2015 and 385,280 in 2030), but shows only 0.23 percent annual growth from 2007 to 2030. The near term growth between 2007 and 2015 is slightly faster and averages 0.25 percent per year. The most populated area along the Waterbury Branch is in and around the city of Waterbury. However, this area will be growing slowest, with an annual growth rate of 0.10 and 0.09 percent, respectively, for the 2007 to 2015 and 2007 to 2030 periods. The town of Beacon Falls is the least populated but fastest growing area, with a 2030 population of 7,350 residents and an annual growth rate of 0.90 percent. Its annual growth rate from 2007 to 2015 is 1.16 percent.

In 2030, the New Canaan Branch will have an overall population of 159,310 (147,664 in 2015) in close proximity to the rail line (Table 6-2). Starting in 2007, this population was expected to experience 0.51 percent annual growth up to 2030 and 0.53 percent annual growth through 2015. Most of the 2030 population along the New Canaan corridor will be in Stamford (138,800). The most rapid population growth will be in Stamford (0.65 percent annual growth), while New Canaan's population will grow by only 0.20 percent annually. Similar relationships can be observed in 2007 and in the near future in 2015 (Table 6-2). Near term (2007 to 2015) annual growth along the New Canaan Branch will surpass the later growth everywhere except in New Canaan.

Waterbury Branch ridership is affected by employment not only along the branch itself, but also along the entire New Haven mainline, as many Waterbury Branch commuters are destined for jobs in mainline jurisdictions. The fact that the highest 2015 and 2030 employment will be found in Stamford (94,885 and 103,400, respectively), New Haven (83,695 and 88,260), and Bridgeport (58,552 and 65,690) could have implications for future Waterbury Branch ridership (Tables 6-4 and 6-6).

Aside from GCT in New York, the station areas with the highest employment in 2015 and 2030 are New Haven Station with employment of 150,855 and 161,110, respectively; Stamford Station with employment of 94,885 and 103,400, respectively; and the three Norwalk stations (East Norwalk, South Norwalk, and Noroton Heights) with total combined employment of 54,488 and 56,550 jobs (Table 6-6).

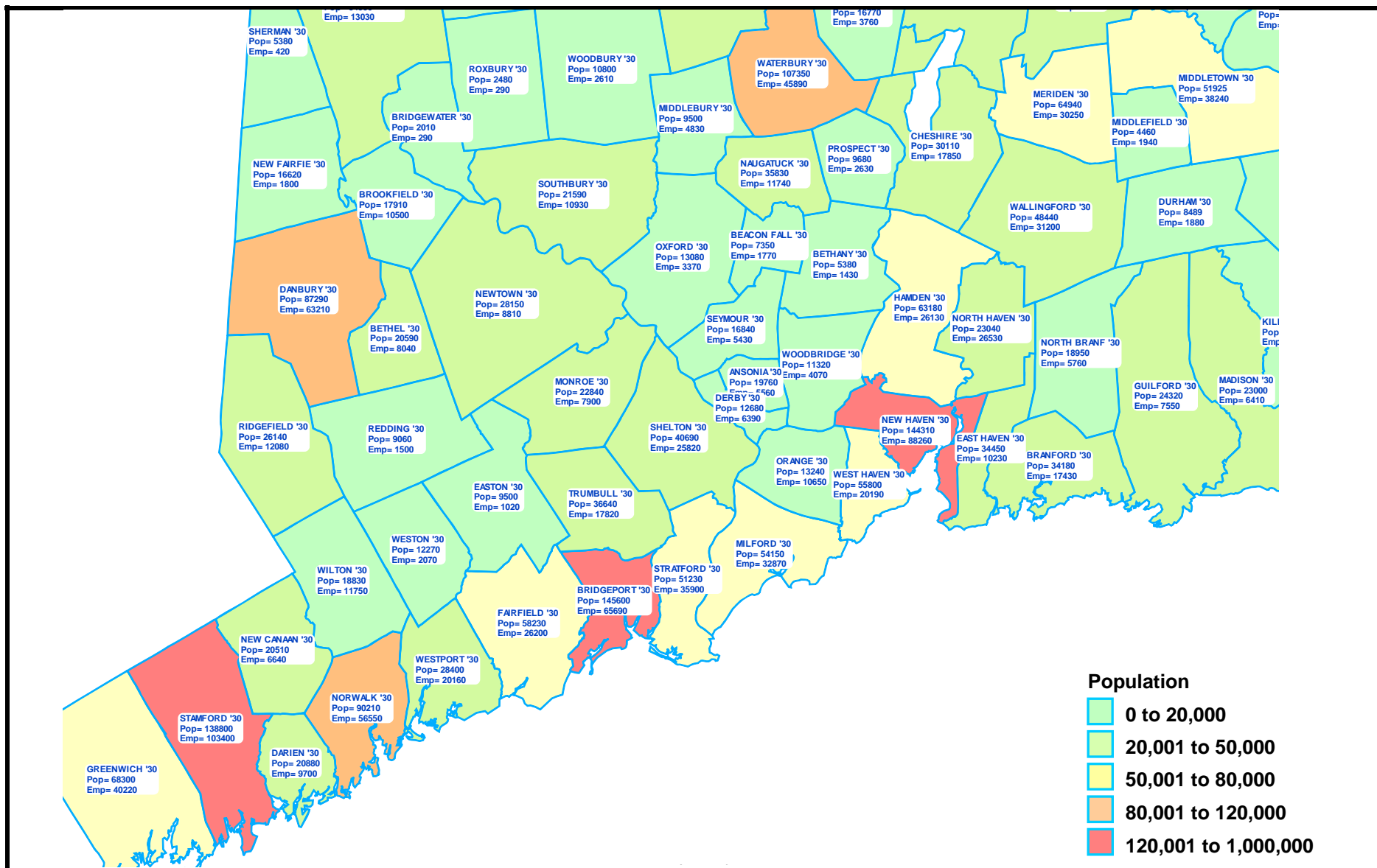


Figure 6-2

2030 Socioeconomic Data: Population/Employment



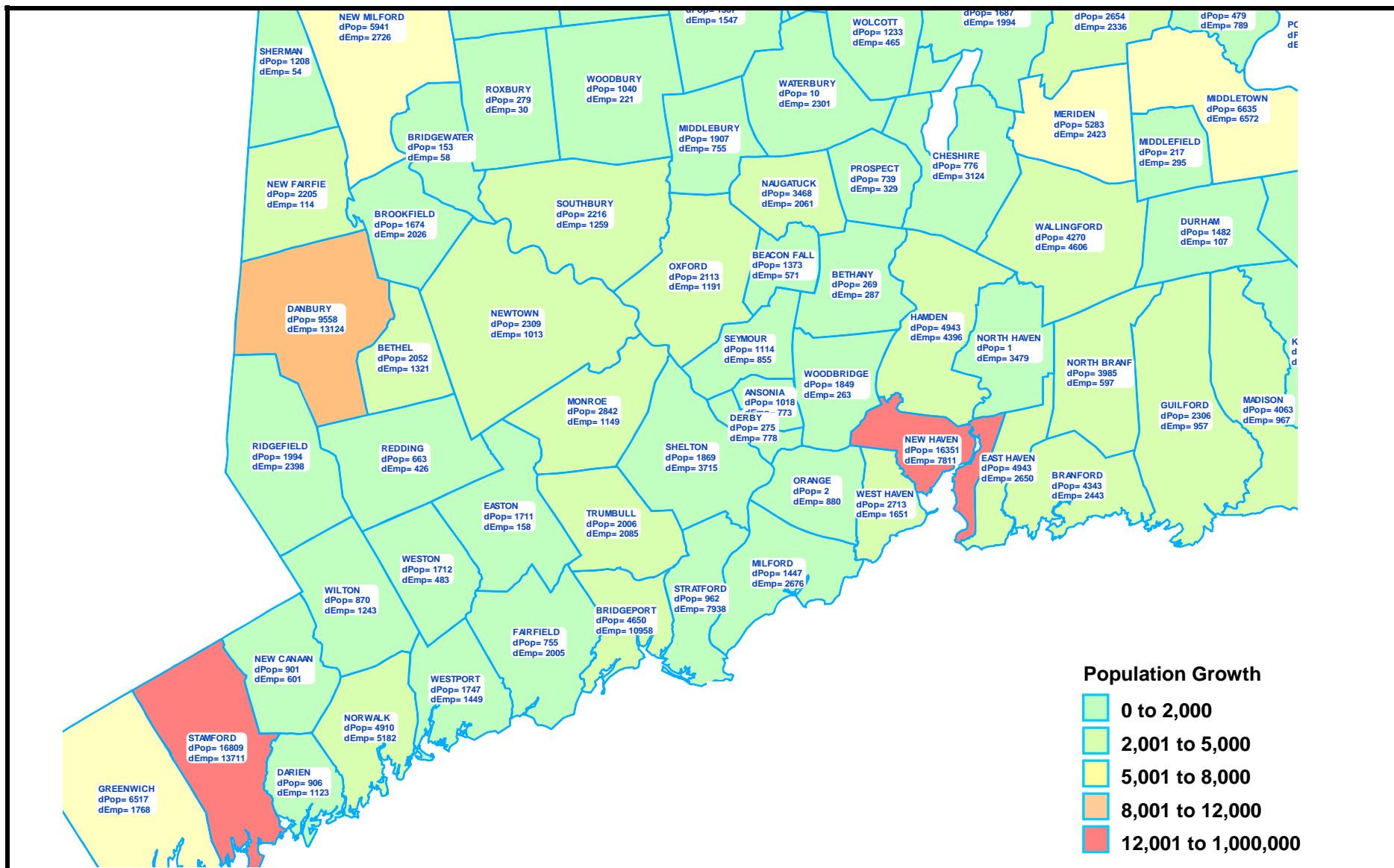


Figure 6-3
Population and Employment Growth – 2007 to 2030



TABLE 6-1: WATERBURY BRANCH POPULATION – 2007, 2015, 2030, AND ANNUAL GROWTH

Stations	Towns	2007 Population		2015 Population		2030 Population		Annual Growth from 2007	
		per Town	per Station	per Town	per Station	per Town	per Station	to 2015	to 2030
Waterbury	Watertown	22,053	174,264	22,552	175,659	23,620	177,850	0.10%	0.09%
	Wolcott	15,537		15,952		16,770			
	Waterbury	107,340		107,370		107,350			
	Cheshire	29,334		29,785		30,110			
Naugatuck	Prospect	8,941	48,896	9,192	51,296	9,680	55,010	0.60%	0.51%
	Middlebury	7,593		8,437		9,500			
	Naugatuck	32,362		33,667		35,830			
Beacon Falls	Beacon Falls	5,977	5,977	6,556	6,556	7,350	7,350	1.16%	0.90%
Seymour	Seymour	15,726	31,804	16,093	33,131	16,840	35,300	0.51%	0.45%
	Bethany	5,111		5,202		5,380			
	Oxford	10,967		11,836		13,080			
Ansonia	Ansonia	18,742	18,742	19,062	19,062	19,760	19,760	0.21%	0.23%
Derby-Shelton	Derby	12,405	85,860	12,466	87,263	12,680	90,010	0.20%	0.21%
	Shelton	38,821		39,525		40,690			
	Trumbull	34,634		35,272		36,640			
TOTAL		365,543	365,543	372,967	372,967	385,280	385,280	0.25%	0.23%

Source: Connecticut Department of Transportation, Census/Modeling Unit, land use projections, Series 27C

TABLE 6-2: NEW CANAAN BRANCH, POPULATION – 2007, 2015, 2030, AND ANNUAL GROWTH

Branch Stations	Towns	2007 Population		2015 Population		2030 Population		Annual Growth from 2007	
		per Town	per Station	per Town	per Station	per Town	per Station	to 2015	to 2030
New Canaan Talmadge Hill	New Canaan	19,609	19,609	19,907	19,907	20,510	20,510	0.19%	0.20%
Springdale Glenbrook	Stamford	121,991	121,991	127,757	127,757	138,800	138,800	0.58%	0.56%
TOTAL		141,600	141,600	147,664	147,664	159,310	159,310	0.53%	0.51%

Source: Connecticut Department of Transportation, Census/Modeling Unit, land use projections, Series 27C

TABLE 6-3: NEW HAVEN MAINLINE POPULATION – 2007, 2015, 2030, AND ANNUAL GROWTH

Stations	Towns	2007 Population		2015 Population		2030 Population		Annual Growth from 2007	
		per Town	per Station	per Town	per Station	per Town	per Station	to 2015	to 2030
New Haven	North Haven	23,039	262,322	23,043	270,356	23,040	286,330	0.38%	0.38%
	Hamden	58,237		59,889		63,180			
	New Haven	127,959		133,422		144,310			
	West Haven	53,087		54,002		55,800			
Milford	Orange	13,238	65,941	13,240	66,435	13,240	67,390	0.09%	0.09%
	Milford	52,703		53,195		54,150			
Stratford	Stratford	50,268	50,268	50,605	50,605	51,230	51,230	0.08%	0.08%
Bridgeport	Bridgeport	140,950	140,950	142,586	142,586	145,600	145,600	0.14%	0.14%
Fairfield Southport	Fairfield	57,475	57,475	57,638	57,638	58,230	58,230	0.04%	0.06%
Green's Farms Westport	Westport	26,653	26,653	27,494	27,494	28,400	28,400	0.39%	0.28%
East Norwalk South Norwalk Rowayton	Norwalk	85,300	85,300	87,300	87,300	90,210	90,210	0.29%	0.24%
Darien Noroton Heights	Darien	19,974	19,974	20,317	20,317	20,880	20,880	0.21%	0.19%
Stamford	Stamford	121,991	121,991	127,757	127,757	138,800	138,800	0.58%	0.56%
Old Greenwich Riverside Cos Cob Greenwich	Greenwich	61,783	61,783	63,627	63,627	68,300	68,300	0.37%	0.44%
TOTAL		892,657	892,657	914,115	914,115	955,370	955,370	0.30%	0.30%

Source: Connecticut Department of Transportation, Census/Modeling Unit, land use projections, Series 27C

TABLE 6-4: WATERBURY BRANCH EMPLOYMENT – 2007, 2015, 2030, AND ANNUAL GROWTH

Stations	Towns	2007 Employment		2015 Employment		2030 Employment		Annual Growth from 2007	
		per Town	per Station	per Town	per Station	per Town	per Station	to 2015	to 2030
Waterbury	Waterbury	10,933		11,423		12,480			
	Wolcott	3,295	72,543	3,466	75,138	3,760	79,980	0.44%	0.43%
	Waterbury	43,589		44,533		45,890			
	Cheshire	14,726		15,716		17,850			
Naugatuck	Prospect	2,301	16,055	2,417	17,363	2,630	19,200	0.98%	0.78%
	Middlebury	4,075		4,407		4,830			
	Naugatuck	9,679		10,539		11,740			
Beacon Falls	Beacon Falls	1,199	1,199	1,422	1,422	1,770	1,770	2.16%	1.71%
Seymour	Seymour	4,575	7,897	4,824	8,652	5,430	10,230	1.15%	1.13%
	Bethany	1,143		1,253		1,430			
	Oxford	2,179		2,575		3,370			
Ansonia	Ansonia	4,787	4,787	5,104	5,104	5,560	5,560	0.80%	0.65%
Derby Shelton	Derby	5,612	43,452	5,979	46,086	6,390	50,030	0.74%	0.61%
	Shelton	22,105		23,360		25,820			
	Trumbull	15,735		16,747		17,820			
TOTAL		145,933	145,933	153,765	153,765	166,770	166,770	0.66%	0.58%

Source: Connecticut Department of Transportation, Census/Modeling Unit, land use projections, Series 27C

TABLE 6-5: NEW CANAAN BRANCH EMPLOYMENT – 2007, 2015, 2030 AND ANNUAL GROWTH

Stations	Towns	2007 Employment		2015 Employment		2030 Employment		Annual Growth from 2007	
		per Town	per Station	per Town	per Station	per Town	per Station	to 2015	to 2030
New Canaan Talmadge Hill	New Canaan	6,039	6,039	6,257	6,257	6,640	6,640	0.44%	0.41%
Springdale	Stamford	89,689	89,689	94,885	94,885	103,400	103,400	0.71%	0.62%
Glenbrook									
TOTAL		95,728	95,728	101,142	101,142	110,040	110,040	0.69%	0.61%

Source: Connecticut Department of Transportation, Census/Modeling Unit, land use projections, Series 27C

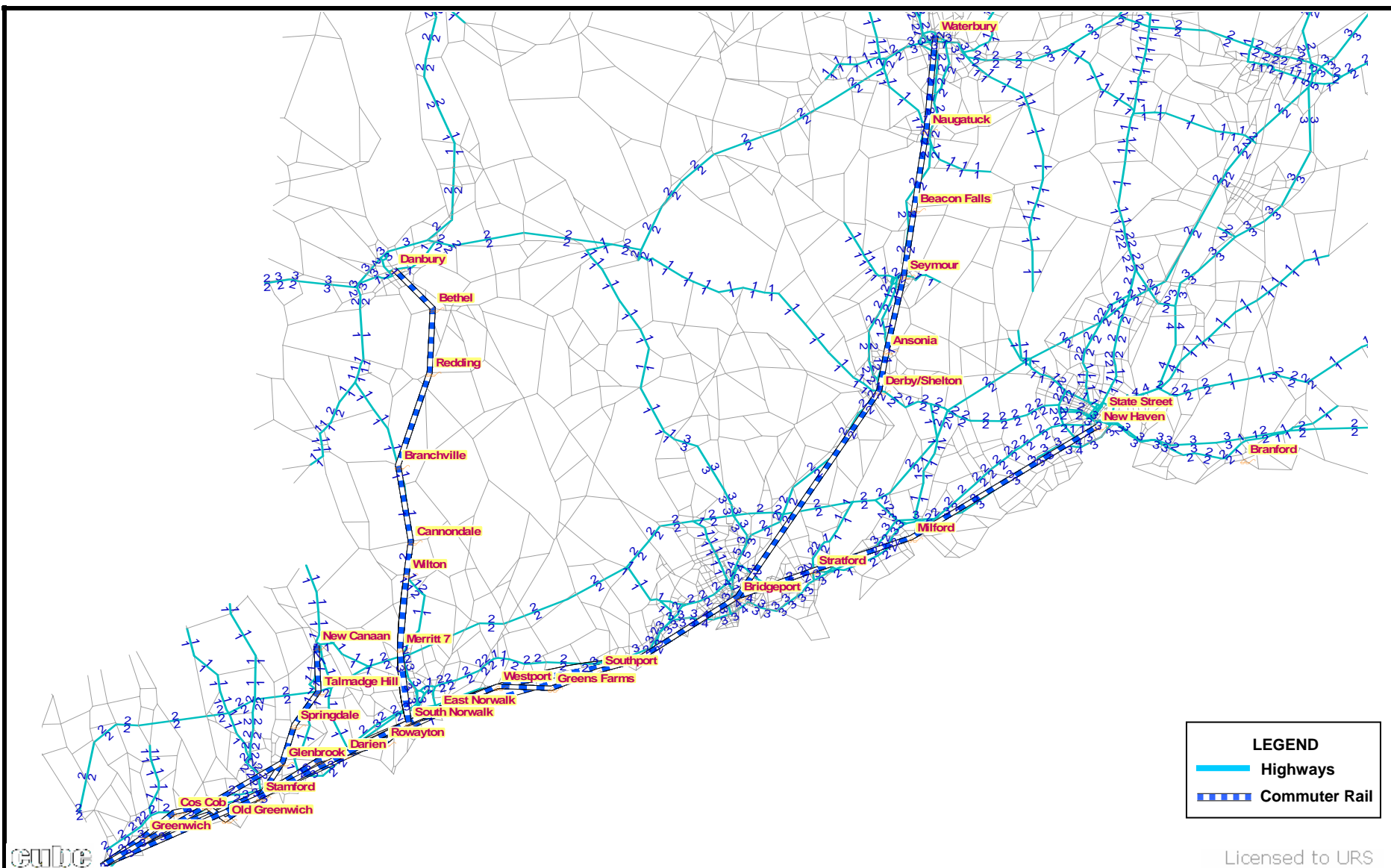
TABLE 6-6: NEW HAVEN MAINLINE EMPLOYMENT – 2007, 2015, 2030 AND ANNUAL GROWTH

Stations	Towns	2007 Employment		2015 Employment		2030 Employment		Annual Growth from 2007	
		per Town	per Station	per Town	per Station	per Town	per Station	to 2015	to 2030
New Haven	North Haven	23,051		24,431		26,530			
	Hamden	21,734	143,773	23,503	150,855	26,130	161,110	0.60%	0.50%
	New Haven	80,449		83,695		88,260			
	West Haven	18,539		19,226		20,190			
Milford	Orange	9,770		10,136		10,650			
	Milford	30,194	39,964	31,268	41,404	32,870	43,520	0.44%	0.37%
Stratford	Stratford	27,962	27,962	30,368	30,368	35,900	35,900	1.04%	1.09%
Bridgeport	Bridgeport	54,732	54,732	58,552	58,552	65,690	65,690	0.85%	0.80%
Fairfield Southport	Fairfield	24,195	24,195	24,806	24,806	26,200	26,200	0.31%	0.35%
Green's Farms Westport	Westport	18,711	18,711	19,274	19,274	20,160	20,160	0.37%	0.32%
East Norwalk South Norwalk Rowayton	Norwalk	51,368	51,368	54,488	54,488	56,550	56,550	0.74%	0.42%
Darien Noroton Heights	Darien	8,577	8,577	9,105	9,105	9,700	9,700	0.75%	0.54%
Stamford	Stamford	89,689	89,689	94,885	94,885	103,400	103,400	0.71%	0.62%
Old Greenwich Riverside Cos Cob Greenwich	Greenwich	38,452	38,452	39,414	39,414	40,220	40,220	0.31%	0.20%
TOTAL		497,423	497,423	523,151	523,151	562,450	562,450	0.63%	0.54%

Source: Connecticut Department of Transportation, Census/Modeling Unit, land use projections, Series 27C

6.2 FUTURE TRANSPORTATION CONDITIONS

The year 2030 was used as the horizon year for this analysis of future transportation conditions in the study area. Future transportation conditions were analyzed in three distinct but closely related components: 1) characteristics of the future highway network; 2) projected traffic conditions; and 3) projected transit ridership. Two major data sources from CDOT were used for this analysis, the Connecticut State Highway Network file for 2030 Traffic Forecasts, and the Connecticut Statewide Travel Demand Model for 2030 Transit Ridership projections.



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Figure 6-4

2030 Highway Network – Number of Lanes



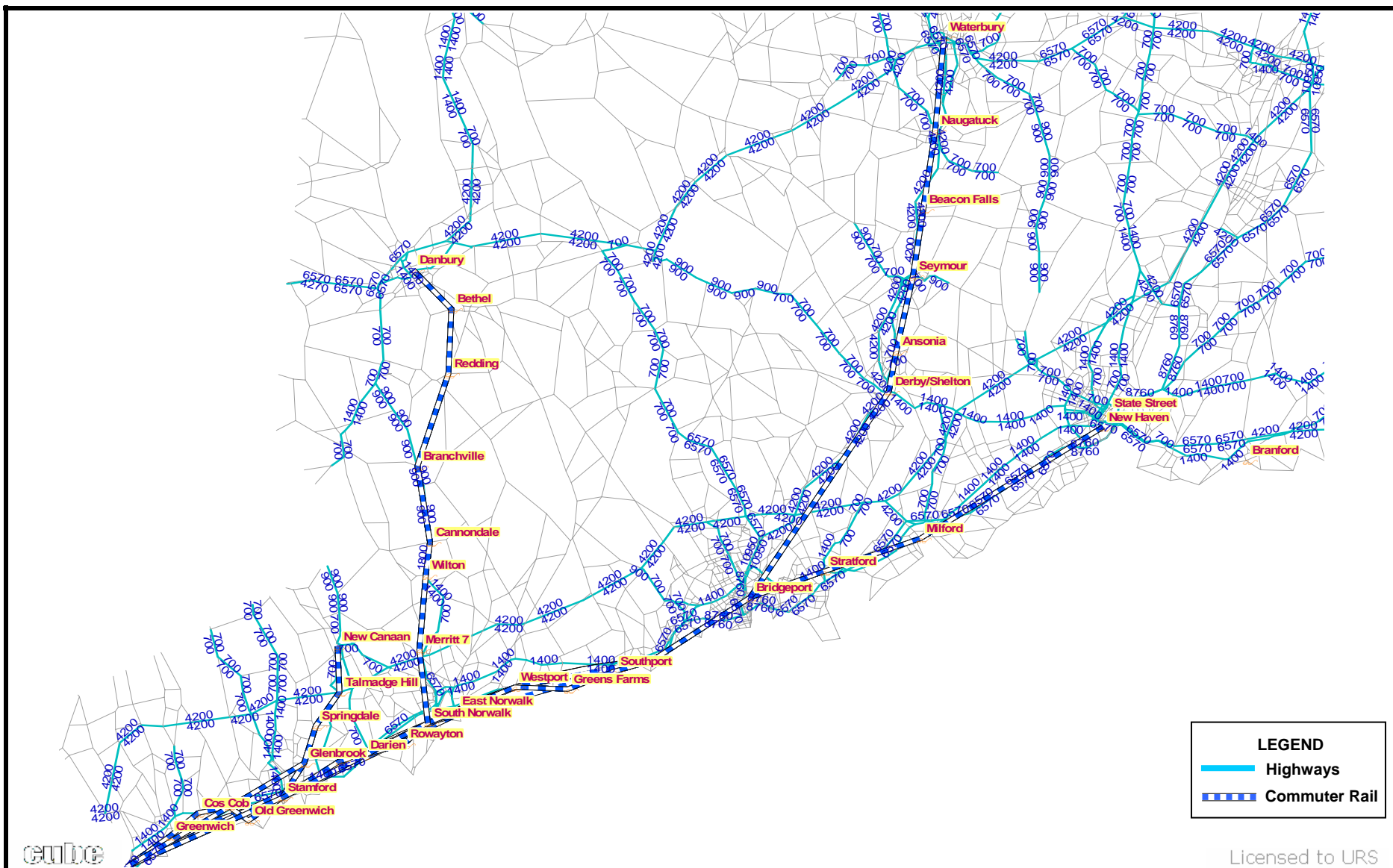


Figure 6-5
2030 Highway Network – Capacity per Lane



Expressways, freeways, and other principal arterials were analyzed in the highway network. Roadways of these functional classes carry most traffic and are almost exclusively used by travelers driving mid-range or long distance. These roads are the major competitors to usage of railroad transportation.

Figure 6-4 shows the number of lanes on major arterials in the study area, while Figure 6-5 shows capacity per lane. As these two figures demonstrate, I-95 and I-84 are two of the highest capacity routes in the area. Both have three lanes in each direction, with 2,190 vehicles per hour capacity per lane. These two interstates carry the majority of the east-west mid-range and long distance traffic in the study area.

CT-15 and CT-8 are the second highest capacity roadways in the study area, with two lanes in each direction and a capacity per lane of 2,100 vehicles per hour. CT-8 parallels the Waterbury Branch and provides Waterbury residents with a direct, fast way to Bridgeport and other major places of employment in southern Connecticut. Route 15 parallels a portion of I-95 and is a convenient alternative to the congested interstate.

6.2.1 Projected/Future Transit Ridership

Table 6-7 shows the weekday AM peak rail ridership by station and by branch projected by the CTDOT Travel Model Series 28F and compares the ridership data for 2007 and 2030. Table 6-8 summarizes total AM peak ridership by branch (as predicted by the CT Travel Model) and its growth from 2007 to 2030. Boardings at Norwalk and Stamford include transfers from other trains, resulting in higher boarding counts.

As indicated in Table 6-7, Stamford Station will remain the most highly utilized origin and destination point on New Haven Line within Connecticut. Stamford Station is projected to nearly double its AM peak passenger flow between 2007 and 2030, reaching 6,530 boardings and 5,115 alightings in 2030.

Besides Stamford, the most utilized AM peak destinations in Connecticut in 2030 will be South Norwalk (1,143), Fairfield (936), Greenwich (751), Black Rock (636), and Bridgeport (402).

New Canaan Branch ridership is projected to increase 44 percent, from 2,241 passengers in 2007 to 3,232 in 2030. This increase corresponds with an annual growth of 1.6 percent in ridership. Almost all transit passengers from this branch (3,180) will continue their trips on the New Haven mainline. The Waterbury Branch will have 160 boardings during the AM peak period in 2030.

In 2030, the New Haven mainline is projected to serve 33,102 residents, including those who transfer from other branches. This represents a 32 percent increase from 2007, or 1.2 percent annual growth.

Intrastate trips will reach 10,404 by 2030, representing 31.4 percent of all Connecticut New Haven Line inbound ridership during the weekday AM peak period. This is a 99 percent increase over the 5,218 intrastate trips made in 2007.

TABLE 6-7: PROJECTED TRANSIT RIDERSHIP

WEEKDAY INBOUND	2007 AM PEAK MODEL			2030 AM PEAK MODEL		
LINE / STATION	ON	OFF	LOAD	ON	OFF	LOAD
WATERBURY BRANCH						
Waterbury	25	0	25	42	20	22
Naugatuck	14	2	37	14	7	29
Beacon Falls	9	1	45	19	0	48
Seymour	13	1	57	24	4	68
Ansonia	10	4	63	13	8	73
Derby Shelton	24	2	85	48	18	103
TOTAL Waterbury Branch	95	10		160	57	
NEW CANAAN BRANCH						
New Canaan	1,075	0	1,075	1,416	0	1,416
Talmadge Hill	343	0	1,418	383	0	1,799
Springdale	417	4	1,831	600	13	2,386
Glenbrook	406	11	2,226	833	39	3,180
TOTAL New Canaan Branch	2,241	15		3,232	52	
NEW HAVEN MAINLINE – CT						
NH-State Street*			220			750
New Haven	1,004	0	1,224	1,012	105	1,657
West Haven	--	--	--	393	5	2,045
Milford	837	35	2,026	1,177	37	3,185
Stratford*	863	38	2,936	1,392	44	4,807
Bridgeport*	1,836	263	4,509	1,946	402	6,351
Black Rock	--	--		1,157	636	6,872
Fairfield	2,025	145	6,389	1,163	936	7,099
Southport	269	40	6,618	1,128	215	8,012
Green's Farms	376	14	6,980	222	55	8,179
Westport	1,736	149	8,567	1,953	153	9,979
East Norwalk	468	48	8,987	437	49	10,367
South Norwalk*	1,111	618	10,652	1,730	1,143	12,430
Rowayton	421	4	11,069	247	9	12,668
Darien	1,113	100	12,082	961	161	13,468
Noroton Heights	920	14	12,988	731	8	14,191
Stamford*	3,502	3,278	15,438	6,530	5,115	18,786

TABLE 6-7: PROJECTED TRANSIT RIDERSHIP

WEEKDAY INBOUND	2007 AM PEAK MODEL			2030 AM PEAK MODEL		
LINE / STATION	ON	OFF	LOAD	ON	OFF	LOAD
Old Greenwich	858	140	16,156	1,242	187	19,841
Riverside	727	80	16,803	828	87	20,582
Cos Cob	622	101	17,324	709	136	21,155
Greenwich	2,665	91	19,898	3,044	751	23,448
NEW HAVEN MAINLINE – CT TOTAL	21,353	5,158		28,002	10,234	
Grand Central Terminal	0	19,898	0	0	22,927	521
TOTAL New Haven Mainline	21,353	25,056		28,002	33,161	
TOTAL Danbury Branch	1,207	35		1,537	61	
TOTAL NEW HAVEN LINE WITHIN CONNECTICUT (New Haven Mainline plus all branches)	24,896	5,218 21.0%	19,898 79.9%	32,931	10,404 31.4%	23,448 70.8%
TOTAL New Haven Line without SLE	24,896	25,116		32,931	33,331	

Note: *Passengers from Shore Line East, Waterbury, Danbury, and New Canaan branches.

Source: Connecticut Department of Transportation, Census/Modeling Unit, Travel Model Series 28F, Years 2007 and 2030

TABLE 6-8: TOTAL AM PEAK RIDERSHIP

BRANCH	2007	2030	Change 2007-2030	Annual growth 2007-2030
Waterbury Branch	95	160	68%	2.3%
New Canaan Branch	2,241	3,232	44%	1.6%
Danbury Branch	1,207	1,537	27%	1.1%
New Haven Mainline	21,353	28,002	31%	1.2%
TOTAL NEW HAVEN LINE CONNECTICUT BOARDINGS	24,896	32,931	32%	1.2%

Source: Connecticut Department of Transportation, Census/Modeling Unit, Travel Model Series 28F, Years 2007 and 2030

6.2.2 Projected/Future Traffic Conditions

Figure 6-6 shows the study area's future highway network with projected 2030 assigned daily traffic. I-95 is expected to carry 130,000 to 140,000 vehicles daily, and CT-15 is expected to carry 60,000 to 70,000 vehicles daily in 2030. This traffic flow is, by far, the heaviest in the study area and connects the biggest residential and employment centers.

CT-8, which connects the Waterbury area with the shore area, is projected to carry more than 40,000 vehicles per day in 2030, which may indicate a demand from Waterbury to other destinations along the shore.

Figure 6-7 illustrates projected highway congestion in the study area, indicating the ratio of volume over capacity (V/C) on all major arterials. Road segments with V/C of more than 100 percent are widened and highlighted in red. Roads with V/C between 100 percent and 70 percent are colored orange. It should be noted that this analysis is done based on the daily V/C. During morning or evening peak periods, V/C may be significantly different from the daily averages.

Figure 6-7 shows that I-95 will be highly congested in 2030, with many red segments and the rest in orange. The most congested locations will be in the vicinities of Stamford, Norwalk, Bridgeport, and New Haven. In the same locations, connections between I-95 and CT- 15 will also be highly congested, with V/C around or above 100 percent.

CT-15 will experience a moderate level of congestion, with V/C ranging between 70 percent and 85 percent. Only a few segments on CT-15 in the study area will reach 90 percent to 95 percent. CT-8, which connects Waterbury with major routes and destinations along the shore, will have V/C mostly about 60 percent.

6.3 ANALYSIS OF FUTURE OPERATIONS

This analysis is based on the Metro-North operating plan and the 2008 weekday schedules for the New Haven Line and its branches, with a particular focus on comparing operations of inbound trains (toward GCT) during the weekday AM peak period.

Tables 6-9 through 6-11 show the number of trains, and departure and arrival times during the weekday AM period in 2008 and 2030, according to the Metro-North plan. From New Haven to GCT, there will be an additional three trains departing in the period from 4:12 AM to 8:20 AM. The total number of trains will be 17, compared to 14 in 2008.

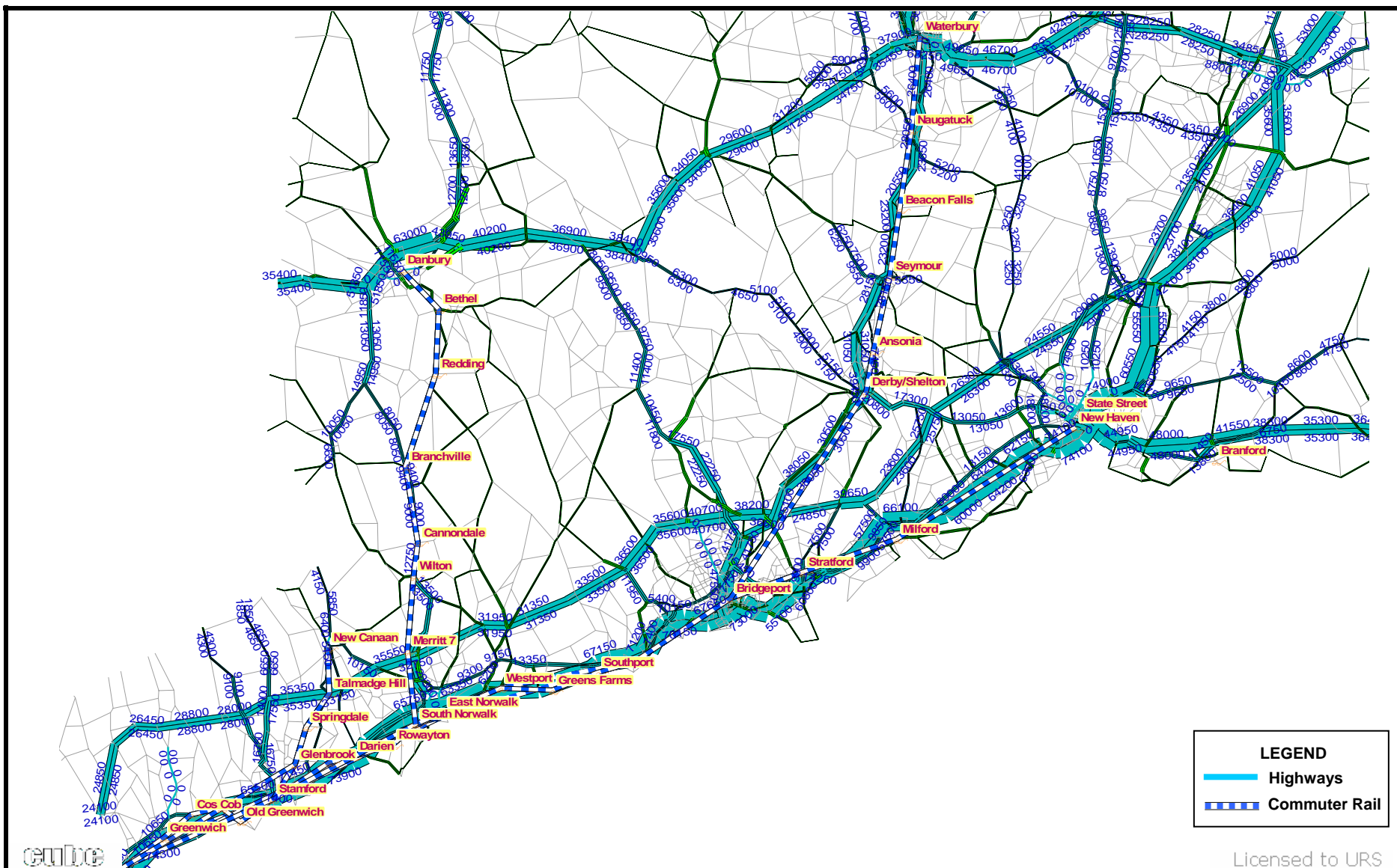


Figure 6-6
2030 Traffic Forecast – Traffic Volumes



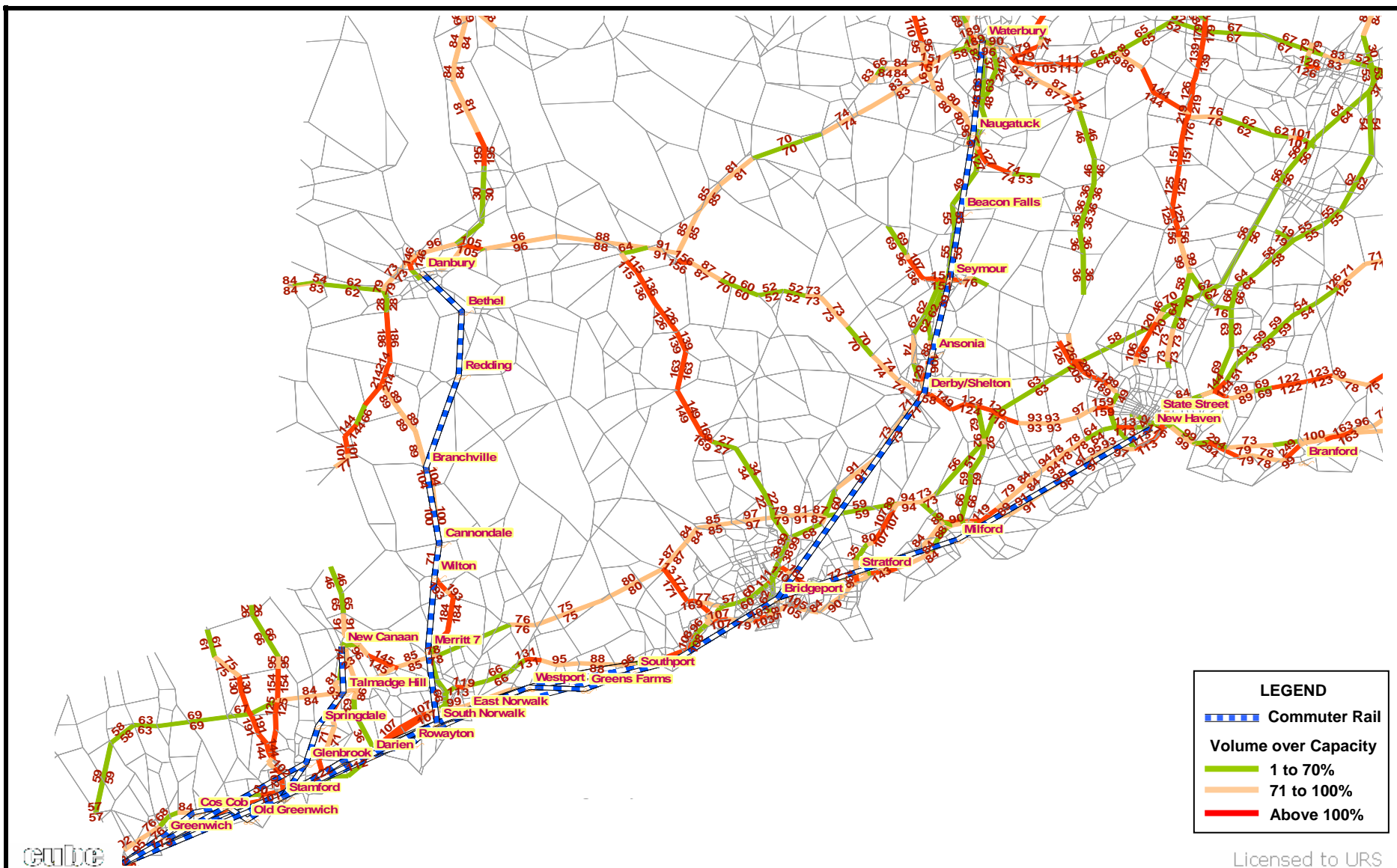


Figure 6-7
2030 Traffic Forecast – Volume/Capacity (%)



TABLE 6-9: WEEKDAY AM PEAK INBOUND SERVICE – NEW HAVEN LINE

	New Haven Line (New Haven → Grand Central, New York)			
	2008 Base Year		2030 MNR Operating Plan	
	Departure	Arrival	Departure	Arrival
1	4:12 AM	5:47 AM	4:12 AM	5:54 AM
2	4:42 AM	6:23 AM	4:42 AM	6:31 AM
3	5:12 AM	6:37 AM	5:12 AM	6:54 AM
4	5:40 AM	7:16 AM	5:33 AM	7:13 AM
5	5:58 AM	7:42 AM	5:43 AM	7:21 AM
6	6:23 AM	8:05 AM	5:52 AM	7:39 AM
7	6:40 AM	8:18 AM	6:02 AM	7:42 AM
8	6:53 AM	8:35 AM	6:11 AM	7:47 AM
9	6:47 AM	8:45 AM	6:29 AM	8:07 AM
10	7:29 AM	9:08 AM	6:38 AM	8:14 AM
11	7:22 AM	9:17 AM	6:44 AM	8:37 AM
12	7:51 AM	9:26 AM	7:03 AM	8:39 AM
13	7:59 AM	9:47 AM	7:29 AM	9:05 AM
14	8:14 AM	9:57 AM	7:10 AM	9:09 AM
15			7:53 AM	9:30 AM
16			7:47 AM	9:44 AM
17			8:20 AM	9:56 AM

Source: Metro-North Railroad, 2008.

TABLE 6-10: WEEKDAY AM PEAK INBOUND SERVICE – WATERBURY BRANCH LINE

	Waterbury Branch (Waterbury → Grand Central, New York)			
	2008 Base Year		2030 MNR Operating Plan	
	Departure	Arrival	Departure	Arrival
1	5:57 AM	8:18 AM	5:52 AM	7:07 AM
2	6:40 AM	9:17 AM	6:51 AM	8:58 AM

Source: Metro-North Railroad, 2008.

TABLE 6-11: WEEKDAY AM PEAK INBOUND SERVICE – NEW CANAAN BRANCH LINE

	New Canaan Branch (New Canaan → Grand Central, New York)			
	2008 Base Year		2030 MNR Operating Plan	
	Departure	Arrival	Departure	Arrival
1	5:31 AM	6:40 AM	5:31 AM	6:43 AM
2	6:21 AM	7:23 AM	6:21 AM	7:24 AM

3	7:09 AM	8:18 AM	7:12 AM	8:18 AM
4	7:36 AM	8:42 AM	7:38 AM	8:43 AM
5	8:03 AM	9:09 AM	7:56 AM	9:02 AM

Source: Metro-North Railroad, 2008.

On both the Waterbury and New Canaan Branches, the number of AM peak trains in 2030 will be the same as it was in 2008 – five trains on the New Canaan Branch and two trains on the Waterbury Branch. Travel time on all trains will be similar to 2008, with minor fluctuations of several minutes or less.

6.4 FUTURE DEFICIENCIES AND NEEDS

This section summarizes existing transportation deficiencies and needs expected to persist in the future, as well as additional deficiencies and needs expected to develop if no improvements are made.

6.4.1 Future Rail Service Deficiencies and Needs

Table 6-8 shows that ridership in 2030 is projected to increase by 68 percent on the Waterbury Branch and by 44 percent on the New Canaan Branch. However, as shown in Tables 6-10 and 6-11, the number of AM peak period trains on both branches is the same in Metro-North's 2030 operating plan as it was in the 2008 operating plan: five trains on the New Canaan Branch and two trains on the Waterbury Branch. Due to infrastructural and operational constraints, the Waterbury and New Canaan Branches do not currently have the capacity to meet projected demand without making improvements.

The 2030 Metro-North operating plan includes an additional three New Haven Line trains departing in the AM peak period from New Haven to GCT. The operating plan assumes one hourly Acela train and one hourly regional train in each direction throughout the day. It also assumes that Metro-North will operate at 3-minute headways on the New Haven Line between New Haven and CP 112, and at 2 ½-minute headways from CP 112 to GCT. The plan includes new stations on the New Haven Line at West Haven, Orange, Georgetown, and Fairfield-Metro.

Because the New Haven Line between Stamford and New York has planned Amtrak and Metro-North service that exceeds its capacity by 2030, any additional service on the New Canaan or Waterbury Branches would need to be consolidated with or to replace planned Metro-North service on the New Haven Line. Potential Shore Line East and Danbury Branch service expansions would also compete for available slots on the New Haven Line. A proposal for Metro-North access to Penn Station, if advanced, would require existing New Haven Line peak trips to be split between two New York terminals, GCT and Penn Station, further limiting opportunities for additional service from the branch lines. In addition, the track and signal configuration at Stamford limits the ability to “turn” westbound terminating trains at the station for eastbound service.

6.4.1.1 Waterbury Branch

As an unsignalized single track with no passing sidings, the Waterbury Branch is significantly constrained in the level of passenger service it can offer.

Passing Sidings. Because of the length of the line and the distance between stations, the major need on the Waterbury Branch is for passing sidings which would allow northbound and southbound trains to pass one another, increasing potential train frequency. There are several possible locations between Derby and Devon, in the vicinity of Beacon Falls, and just south of Waterbury. New sidings would be a minimum of 3,000 feet long in order to support entering speeds of 45 mph, in the event signalization and interlocking control is installed in conjunction or at a later date.

Signalization. Signalization is also a priority on the Waterbury Branch to improve operations and safety, as well as to satisfy Metro-North's goal to eliminate manual blocking throughout its system. Without improvements to the existing infrastructure and signal system, no additional service can be added to the Waterbury Branch.

Yard and Storage Capacity. Any future increase in service on the Waterbury Branch would be further enhanced with additional storage capacity and maintenance facilities. There are three potential scenarios for additional yard facilities:

- 1) If New Haven Line capacity does not increase substantially in the future, there would likely be room at the existing New Haven Yard.
- 2) If New Haven Line capacity does increase and there is no excess capacity at New Haven Yard, Waterbury trains could potentially be handled at the Bridgeport Yard.
- 3) If there is no additional capacity at either New Haven or Bridgeport, then a new Waterbury yard would be desirable.

Regardless of its location, a Waterbury Branch yard facility would need to accommodate daily inspections, car cleaning, and toilet servicing. If diesel equipment continues to be used into the future, the yard would also require locomotive sanding. Fueling facilities are optional, as locomotives move between the branches and the mainline, and could be fueled elsewhere. Periodic inspections can also be performed elsewhere.

Electrification. Electrification of part or all of the Waterbury Branch is also being considered as part of this study but is unlikely to provide a substantial benefit given the required investment in new infrastructure and rolling stock since the same level of service can be accomplished by running existing diesel and/or dual-mode trains. The issue of electrification is independent of other issues such as signalization and passing sidings, which are needed regardless of the train technology used.

Multimodal Stations. Three multimodal transit center sites along the Waterbury Branch are currently being studied, including the existing Waterbury and Derby-Shelton Stations and a proposed Merritt Parkway Station in Milford. Multimodal transit centers would allow passengers to transfer efficiently between bus, rail, and auto, improving operations across the entire transportation network.

High Level Platforms. To accommodate required clearances for freight trains, all existing Waterbury Branch stations except Waterbury Station have low platforms that provide ground level boarding and mini-high blocks that provide boarding level with the train floor for those that are mobility impaired. To comply with the Americans with Disabilities Act, future station improvements should include high level platforms.

Freight Operations. Freight movements on the Waterbury Branch are provided by the Providence and Worcester (P&W) Railroad between Milford and Derby, and by the Pan Am Railway (Springfield Terminal Railway/Guilford/Boston & Maine) between Derby and Waterbury. If high platforms are added or expanded at any Waterbury Branch stations, clearance requirements for freight trains will need to be satisfied.

6.4.1.2 New Canaan Branch

As another single track line without any passing sidings, the New Canaan Branch is also constrained in the level of passenger service it can offer. However, because of other differences in corridor characteristics, several of its needs and deficiencies vary from those of the Waterbury Branch.

Single Track Operation. The one-way trip from Stamford to New Canaan takes 18 minutes and southbound trains must arrive in Stamford before the next northbound train can be sent to New Canaan. This still presents a major obstacle in increasing the frequency of service in peak hours.

Limited Overnight Train Storage. The only train storage on the branch is at New Canaan Station, which has a ten-car main track, a ten-car middle track, and a four-car bulk track that is in process of being extended to accommodate two additional cars. Track improvements that would increase storage capacity and improve operating flexibility on the branch will be analyzed.

Signalization. The signal system ends south of New Canaan Station, so all movements between the three tracks at New Canaan are by manually operated switches. The potential to reduce the time required to enter and leave the station, and to increase service frequency by extending the signal system and providing automatic switches will be analyzed.

Service Deficiencies. The evening peak period is the most constrained, and Metro-North is unable to serve a recognized demand for evening peak reverse commute service. Under the current schedule, the following northbound trains provide service during this period:

Depart Stamford	Arrive New Canaan
4:46 PM	5:04 PM
5:32 PM	5:53 PM
5:53 PM	6:11 PM
6:11 PM	6:29 PM
--	6:31 PM
--	6:35 PM
6:53 PM	7:11 PM

The trains arriving in New Canaan at 5:53 PM and 6:11 PM pull onto the middle and bulk tracks and wait until the train leaving Stamford at 6:11 PM arrives on the main track at 6:29 PM, so that by 6:29 PM there are three trains in New Canaan that must be cleared before the next northbound train can be sent up the branch. At 6:31 PM, the trains that arrived at 5:53 PM and

6:11 PM both dead-head back to Stamford, and at 6:35 PM, the train that arrived at New Canaan at 6:29 PM also dead-heads to Stamford.

The need to clear trains out of New Canaan during this period results in a 41-minute gap in northbound service from GCT that is the subject of many customer complaints. Without either adding a passing siding somewhere along the branch or modifying New Canaan Station tracks, there is no way to eliminate this gap, although it could be reduced to 30 to 35 minutes if the New Canaan Station lead switch were reversed and the middle track extended south to just above the CP-307 holding (“head block”) signal, which would allow trains to be pulled out of the station and onto the branch. The feasibility of this improvement will be studied.

Station Platforms. There are currently no platforms on the middle or bulk tracks at New Canaan Station, preventing passengers from being loaded or unloaded from these tracks. An additional platform at New Canaan Station that could improve flexibility at the station by allowing revenue trains to use more than one track will be studied.

With the exception of the five-car platform at New Canaan, station platforms along the branch are four car lengths. Most trains operating today are five or six cars long, and Metro-North plans to operate four standard train lengths—six, eight, ten, and twelve M8 cars—on the New Haven Line in the future. Increasing platform lengths at New Canaan Branch stations to better accommodate these longer trains will be studied.

Parking Facilities. There is currently a waiting list for parking permits at all New Canaan Branch stations. Parking is limited by the station footprints and the lack of available land adjacent to the station areas. Talmadge Hill Station presents the best opportunity for parking expansion.

6.4.2 Future Highway Network Deficiencies and Needs

As shown in Figure 6-7, the 2030 traffic forecast for interstate highways and other major roadways is over capacity. In certain key sections, volumes are projected to be at or above 100 percent over capacity. Given the highly developed nature of the land surrounding these roadways, there is no potential for substantially increasing highway capacity in the corridors.

6.4.2.1 Waterbury Corridor

The 2030 traffic forecasts for CT-8 indicate many sections where the volume of traffic is projected to be 71 percent to 100 percent over capacity. With many trips traveling to the major employment centers in Stamford, Bridgeport, and New Haven, capacity improvements on CT-8 would require that improvements to major bottlenecks on I-95 and CT-34 be done at the same time in order to provide any travel time reduction. Improvements in these sections are not feasible to implement given surrounding development and property taking requirements. The only major highway improvement planned in the corridor is a new CT-8/I-84 interchange.

6.4.2.2 New Canaan Corridor

The 2030 traffic forecasts in the New Canaan corridor indicate many sections where the volume of traffic is projected to be more than 100 percent over capacity. With many trips traveling to the major employment centers in Stamford, Bridgeport, and New York, capacity improvements would be required along I-95 and the Merritt Parkway/CT-15 as well as on roadways in the corridor. Improvements in these sections are not feasible to implement given surrounding development and property taking requirements.

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