GOING FORWARD

THE PLAN TO MAINTAIN & IMPROVE MOBILITY

SOUTH WESTERN REGION LONG RANGE TRANSPORTATION PLAN 2015-2040

SOUTH WESTERN REGION METROPOLITAN PLANNING ORGANIZATION

This document was prepared in cooperation with the United States Department of Transportation, Federal Highway Administration, Federal Transit Administration, and Connecticut Department of Transportation. The opinions, findings, and conclusions expressed in this publication are those of the author and do not necessarily reflect the official views of policies of the Western Connecticut Council of Governments, Connecticut Department of Transportation rf the United States Department of Transportation.

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GOING FORWARD: The Plan to Maintain & Improve Mobility

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FOREWARD

Going Forward: The Plan to Maintain & Improve Mobility (the Plan) is the long range transportation plan for Connecticut's South Western Region for the 2015 – 2040 timeframe. This document is the "blueprint" for transportation in the eight municipalities represented by the South Western Region Metropolitan Planning Organization: Darien, Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport, and Wilton (collectively, the "Region"). The plan serves as a guide for developing a transportation system that is accessible, safe, and reliable, and contributes to a high quality of life for local residents. The Plan reflects the Region's current conditions, identifies future transportation needs, and recommended projects and policies to meet those needs.

This plan supersedes the South Western Region Long-Range Transportation Plan 2011-2040, although many of the issues and recommendations identified in the previous plan continue to be among the top priorities for the Region. The Plan also incorporates many of the priorities that Region's member municipalities identified in their respective Plans of Conservation and Development, along with many of the projects and strategies identified in the plans of the Connecticut Department of Transportation (CT DOT).

In 2014, the South Western Regional Planning Agency (SWRPA) and Housatonic Valley Council of Elected Officials (HVCEO) merged to form the Western Connecticut Council of Governments (WCCOG). SWRPA and HVCEO were Regional Planning Organizations organized under the statutes of the State of Connecticut. Prior to the merger, SWRPA and HVCEO each staffed their own Metropolitan Planning Organization (MPO). The new WCCOG now staffs both the South Western Region Metropolitan Planning Organization (SWRMPO) and the Housatonic Valley Metropolitan Planning Organization (HVMPO), which have not merged. This is the Long Range Transportation Plan for the SWRMPO. A separate plan is being prepared for the HVMPO.

Under federal law, MPOs are required to update and maintain a long range transportation plan (23 C.F.R. §450.322). This makes the adoption of a plan as a condition precedent to eligibility for federal aid for transportation projects. . The 2015 update is based on the requirements of the 2012 *Moving Ahead for Progress in the 21st Century Act* (MAP-21), the authorizing legislation for the federal transportation program.

INTRODUCTION

A region as economically productive as the South Western Region depends on a reliable and well-maintained multimodal transportation system. The transportation system must support a high quality of life for residents, economic productivity for businesses, and connectivity to neighboring regions for intrastate and interstate movement of persons and goods, while maintaining high standards for safety and security.

Featuring an extensive highway network, well developed commuter rail system, two bus transit systems offering variety of services, an expanding bike and pedestrian network, and specialized services for individual with special travel needs, the South Western Region of Connecticut has a

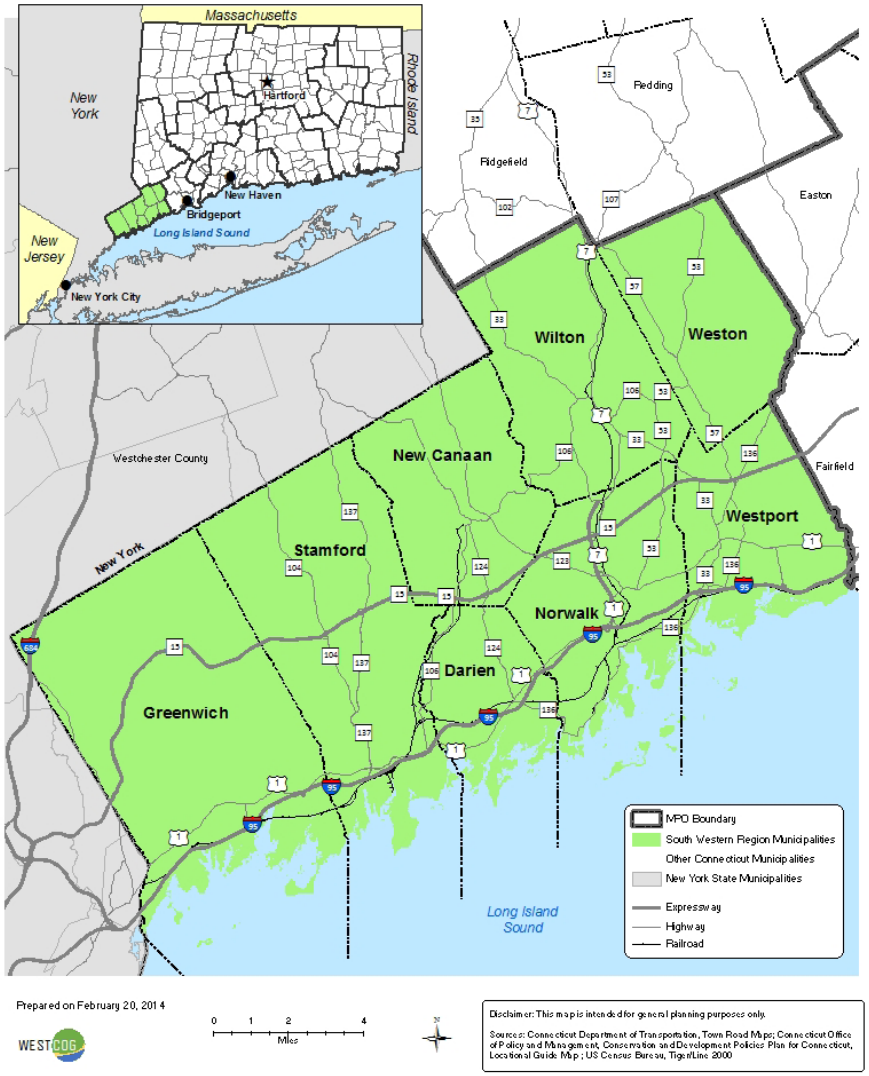


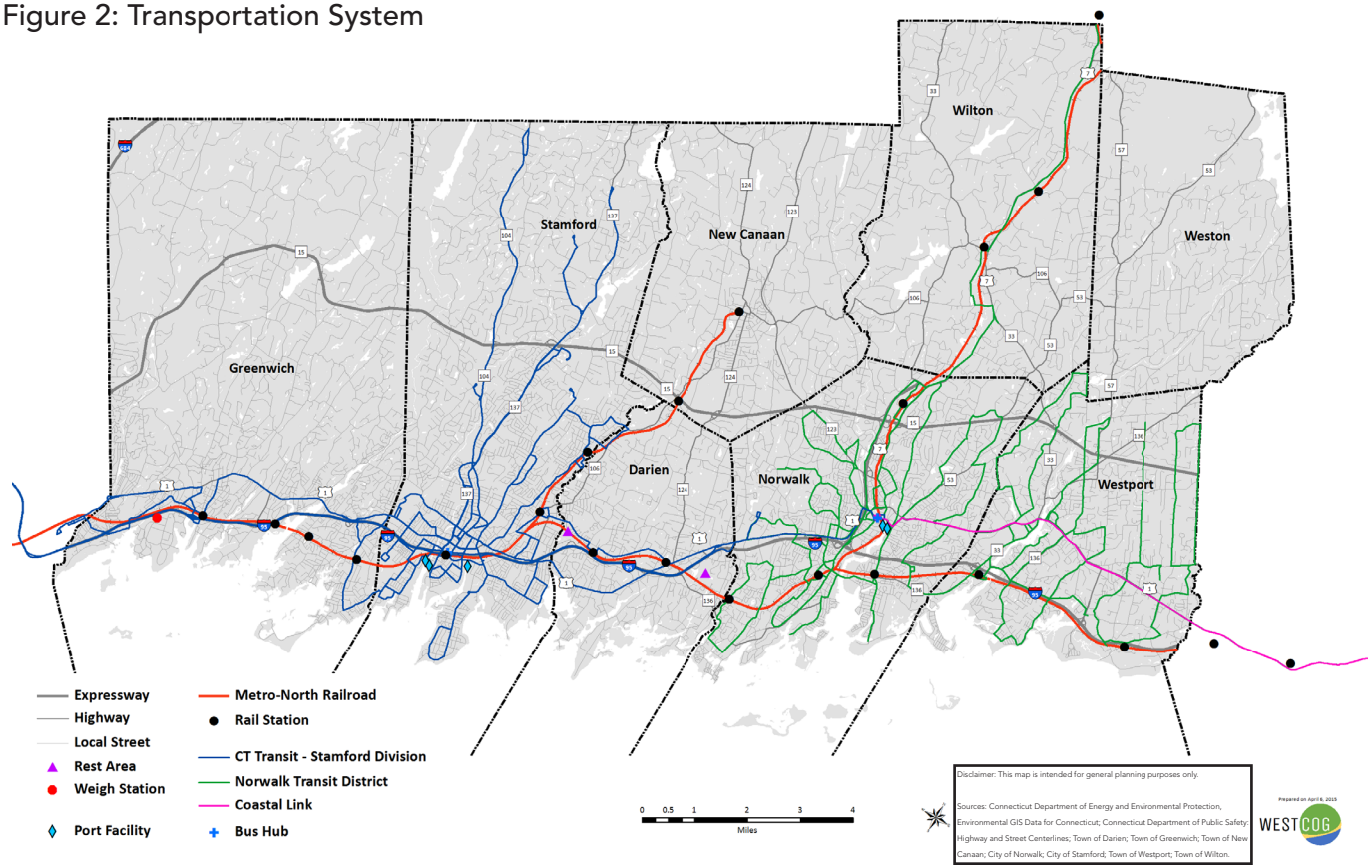
Figure 1: South Western Region Context Map

comprehensive multimodal transportation network that provides an array of mobility options for its residents, businesses, and visitors. However, simply having these facilities and services available does not guarantee efficient operations or reliability. As the second decade of the 21st Century unfolds, the South Western Region's transportation system is at a critical juncture. For all of its attributes, the Region's transportation network is confronted with major challenges, including significant congestion, aging infrastructure, changing use patterns, and limited available funding.

Congestion, on both the highway and transit networks, is ubiquitous in the region. Increasing demand, combined with a lack of capacity, contribute to significant recurring congestion on major highways, which has now spread well beyond the traditional peak travel hours. Highway congestion also delays buses on key bus routes. Seemingly minor incidents can bring a roadway to a standstill for hours if lane closures are required for an investigation. On the railroad, many trains are standing room only, and rail parking lots are bursting at the seams with lengthy waiting lists. Increasingly, reverse peak, midday, and weekend trains have become crowded with travelers. Some of the region's bus routes also operating beyond capacity, and many are in need of service improvements.

Aging infrastructure threatens the ability for the transportation network to function reliably on a daily basis. Many of the region's bridges and highways, built in the early-to-mid twentieth century, are now past their expected lifespan. Sections of the catenary system that powers the New Haven Line are over 100 years old and prone to failure, especially during extreme weather conditions. Movable rail bridges, such as those spanning

Figure 2: Transportation System



Several major incidents on Metro-North in the past few years have shown a light on the need to make significant investment in aging infrastructure in order to provide reliable service. A May 2013 derailment in Bridgeport revealed a need for better maintenance practices on the railroad. A September 2013 power failure in Mount Vernon, New York and subsequent service disruptions showed the lack of redundancy in key railroad systems. And repeated failures of the 119 year old swing bridge over the Norwalk River and resulting service disruptions demonstrated that a failure to renew aging infrastructure may significantly impact the reliability of the transportation system.

the Norwalk and Saugatuck Rivers, are of a similar vintage. An extended failure of one of these bridge would paralyze rail service across the entire northeast corridor for an extended period of time.

These transportation issue manifest themselves in other ways, resulting in higher costs and lost time.

While the national economy rebounds from the great recession, Connecticut's economy remains in a state of flux. While real estate development greatly slowed during the recession, it has now resumed, especially in Norwalk and Stamford, which are experiencing unprecedented growth of new, multi-unit residential and mixed use development. Despite the modest economic recovery in Connecticut,

Photo 1: Construction at Norwalk Transit District's Pulse Point

federal and state investment in the region's transportation system are insufficient to meet the current needs. In order to ensure that aging infrastructure and recurring congestion do not hamper the economic prospects of the Region, significant investment is required.

"Going Forward: The Plan to Maintain & Improve Mobility" aims to address a multitude of issues related to transportation and mobility over the next twenty-five years of all who reside, work and visit Connecticut's South Western Region. The Plan recommends key projects and strategies necessary to maintain the system in a state of good repair and identifies initiatives required over the near-term to meet the projected increases in demand across all transportation modes. The Plan contains a fiscally constrained financial component, including a program of improvement projects while also setting out visionary proposals and innovative approaches to improve in the network for expansion if additional funding were to become available. The plan also addresses Land Use, Economic Development, Livability, the Environment, Safety and Security, all of which are inextricably linked to the transportation system and mobility.

MERGER

In 2014, the South Western Regional Planning Agency (SWRPA) and Housatonic Valley Council of Elected Officials (HVCEO) merged to form the Western Connecticut Council of Governments (WCCOG). SWRPA and HVCEO were Regional Planning Organizations organized under the statutes of the State of Connecticut. Prior to the merger, SWRPA and HVCEO each staffed their own Metropolitan Planning Organization (MPO). The new WCCOG now staffs both the South Western Region Metropolitan Planning Organization (SWRMPO) and the Housatonic Valley Metropolitan Planning Organization (HVMPO), which have not merged. While a merger of the HVMPO and SWRMPO or further consolidation of Connecticut's MPOs may one day occur, this Plan reflects the present boundaries of the SWRMPO and is the Long Range Transportation Plan for the SWRMPO. A separate plan is being prepared for the HVMPO.

GOALS AND OBJECTIVES

The overarching goals of the Plan are to provide safe, efficient, cost effective, reliable, and balanced multimodal transportation systems that promotes mobility, access and choice. In addition, the Plan aims to optimize investment in the transportation system to meet the mobility needs of users and goods, while minimizing adverse impact and promoting responsible land use development that is supported by the transportation network.

The Plan objectives support the Plan's goals and help to organize this Plan and future investments in the Region's transportation system. These objectives, and the components of the Plan that address these objectives, are summarized in the chart below:

THEMES

During the development of the 2011 Plan, SWRPA sought input from the region's Chief Elected Officials, Transportation Technical Advisory Group (TTAG) representatives, and others with an interest and role in the long term success of the region's transportation system. These stakeholders were candid in their assessment of what the Plan should focus on and how to prioritize objectives and topic areas given the financial constraints which are anticipated in the foreseeable future.

Following these discussions, several themes emerged, which shaped this Plan, and are presented below:

Limited Funding is Available: There is major concern that the great recession has exacerbated the problem of insufficient funding to meet the Region's transportation investment needs. The lack of a strong economic recovery means the Region's economic future is uncertain. The state's budget has faced large gaps and several stakeholders noted that it may take a decade to bring the state's fiscal house in order.

On the Federal level, there is an expectation that a focus on deficit reduction will overshadow other national policy objectives including infrastructure investment. With no long term federal transportation bill in place, there is a real concern that the funding levels for transportation will not meet the Region's needs (as expressed in this Plan), and that growing Southern and Western states will take Connecticut and other northeastern states may be allocated a shrinking portion of funding compared to growing Southern and Western states. The Plan recognizes these

Photo 2: Congestion on the region's roadways continues to impact quality of life in the Region.

uncertainties, and has been developed in light of the fiscal realities of the 2010s. Since funding will likely be limited and competition for grants fierce, a disciplined approach to transportation investment must be followed.

Table 1: Goals & Objectives

Category	Objective	Plan Components
Infrastructure	Maintain all transportation infrastructure in a state of good repair.	The Plan identifies the maintenance needs of and resources needed to maintain the Region's transportation systems.
Accessibility and Mobility	Increase accessibility and mobility to promote the movement of people and goods.	The Plan promotes modal choice and demand management, and supports the use of new technology and Intelligent Transportation Systems (ITS) to assist in congestion mitigation and promotion of efficient and reliable operations and management, as well as improved information to enhance users' ability to make smart travel choices.
Environmental and Clean Air Responsibility	Avoid, minimize, or mitigate the environmental impacts of transportation projects and systems whenever possible, and seek initiatives to improve over all air quality in the Region and comply with National Ambient Air Quality Standards.	The Plan identifies measures to minimize environmental impacts and reduce vehicle emissions through the promotion of alternative fuels and energy efficient transportation modes, transportation demand management and transportation systems management, and development and implementation of bicycle and pedestrian plans.
Economic Competitiveness	Invest in the transportation system in a timely manner to maintain a competitive and productive regional economy and to promote quality of life.	The Plan provides the framework to guide investments in transportation to attain economic and quality of life goals.
Safety	Promote the safety of all modes of transportation for all users and operators.t.	The Plan identifies key safety topics such as education programs, bicycle and pedestrian safety, Safe Routes to Schools, enhanced truck safety inspections, and increased public safety enforcement and incident management programs.
Security	Increase security of all modes of transportation for all users and operators.	The Plan provides a summary of current security initiatives and priority action areas.

Table 1: Goals & Objectives (cont.)

Category	Objective	Plan Components
Environmental and Clean Air Responsibility	Avoid, minimize, or mitigate the environmental impacts of transportation projects and systems whenever possible, and seek initiatives to improve over all air quality in the Region and comply with National Ambient Air Quality Standards.	The Plan identifies measures to minimize environmental impacts and reduce vehicle emissions through the promotion of alternative fuels and energy efficient transportation modes, transportation demand management and transportation systems management, and development and implementation of bicycle and pedestrian plans.
Land Use and Transportation	Promote responsible land use by concentrating development in areas that are in close proximity to existing transportation infrastructure; promote bike and pedestrian friendly development that minimizes the carbon footprint of the transportation system.	The Plan identifies and supports strategies that promote transit oriented development, mitigate congestion, encourage sustainable travel, and result in environmental benefits.
Systems Efficiency and Productivity	Improve the efficiency of the existing transportation systems through effective transportation system management and operations.	The Plan identifies projects and studies aimed at extending the useful life of facilities, enhancing management and operations, new technology approaches, and financial and governance strategies to improve the efficiency and productivity of the transportation system.
System Performance	Develop measurement and monitoring tools and strategies to better analyze the performance of the highway and rail systems. Use the performance data to adjust programs and projects.	The Plan and recommend projects and strategies to measure congestion and other system performance metrics that will lead to reduction of recurring and incident related congestion.
Financing	Provide sufficient resources to maintain existing transportation systems and services in a state of good repair and to support improvements and services that meet the needs of system users.	The Plan describes the financial framework for system operation, maintenance and improvement, and identifies available resources. Funded projects within the twenty-five year financial envelope as well as future un-funded needs are noted.

Given the choice to invest in new infrastructure or address the short term needs of the existing system, a "Fix It First" approach should be followed: Focusing on existing systems is absolutely critical to ensure that no single component of the transportation system deteriorates into a state of disrepair. The Region's top transportation objective is to achieve and main a system-wide state of good repair. While there are many worthwhile system expansion projects that would benefit the Region in the future, most of these expansion projects must take a back seat to modernizing the existing system. System expansion projects must not come at the expense of critical short-term needs, such as bridge rehabilitation, regularly highway paving, or New Haven Line infrastructure renewal.

Congestion on the Region's roadways continues to impact the quality of life in the South Western Region. Through economic cycles and undulating fuel prices, the Region's highways remain heavily congested. Interstate 95 often resembles a parking lot during rush hour periods (and increasingly, at other times of the day, too) and the Merritt Parkway is similarly congested. When major incidents on these expressways occur, travelers are forced on to Route 1 and local streets that were not intended to serve as diversion routes. Given the severity of congestion and the limited right of way available for highway capacity expansion, it is clear that the Region cannot simply build its way out of congestion. Municipal officials are rightly concerned about the long term impacts that congestion will have on livability, economic development, and the environment. As a result, WCCOG has focused its transportation planning and investment program on innovative approaches to congestion management.

Transportation policy must be addressed in conjunction with land use policy to promote transit, walking, and bicycling. Residential and commercial development that occurs away from existing transportation corridors increases automobile traffic and leads to urban sprawl. Transit Oriented Development (TOD) along the New Haven Line and its branches, along with improved bus service and complete streets that accommodate bicycling and walking, have the ability to alter the perception that automobiles are required for everyday mobility. While the transportation benefits of TOD are the focus of this plan, TOD may produce other benefits to municipalities, including increased tax revenue, attracting younger worker to take up residence, and serving the needs of seniors that wish to maintain their vitality even if they are unable to drive.

Rail parking, both within the Region and in neighboring communities, must be sufficiently available to allow all those who want to ride the railroad to do so as well as encourage economic development. As the economic engine of Connecticut, the region relies on convenient commuter rail service as a key selling point to perspective businesses and residents. Insufficient parking at the Region's rail stations, combined with lengthy wait lists for parking permits and limited information about parking policies and availability, discourages potential users from riding the train. These issues must be addressed within the Region and further up the New Haven Line to ensure that all users who want to park can do so. At the same time, it is important to consider the highest and best use of the parking facilities that surround the Region's rail stations and whether there are better means to provide parking capacity and efficiently operate the system.

2 | Process

The Plan is shaped by three organizations charged with conducting the federal transportation planning process in Connecticut's South Western Region. The South Western Region Metropolitan Planning Organization (SWRMPO), comprised of the chief elected official of each of the Region's eight municipalities as well as representatives from the Norwalk Transit District, the Stamford Transit District and the Westport Transit District, is the body responsible for the adoption of the Region's long rangetransportation plan and the transportation improvement program (TIP.) The Transportation Technical Advisory Group (TTAG), which includes technical representatives from planning, public works and transportation departments, transit districts, and local, state and federal transportation stakeholders, provides support to the SWRMPO. The TTAG participates in studies and assists in the development of programs and plans prepared for the SWRMPO. The Western Connecticut Council of Governments (WestCOG) serves as staff to the SWRMPO and TTAG and is the Region's designated transportation planning agency.

The Plan was informed by input from local policy makers, transportation practitioners, and other stakeholders. Plan development was shaped by SWRMPO, TTAG, and WestCOG, along with other stakeholders such as the transportation operators, advocacy groups, business and industry representatives, and the general public. The SWRMPO and WestCOG staff participates in local, regional,state and metro- New York transportation studies and committees to ensure that issues of importance to the Region are well represented and duly considered. Public involvement, an important part of the transportation planning process, is encouraged through outreach meetings, technical advisory committees, media releases, and a website. As part of the transportation planning program, WestCOG collects data and conducts studies that identify needs, recommend projects, and evaluate the impacts of transportation improvements. The policies and projects that result from the transportation planning program help shape the long range plan's vision.

The Region's Transportation Improvement Program (TIP) is the five year financial program for implementation of federally-funded projects included in the Plan. The TIP, developed in cooperation with CT DOT, is the responsibility of the SWRMPO. Projects in the TIP must be included in the Plan and each project or project phase included in the TIP shall be consistent with the Plan. The TIP is a subset of State Transportation Improvement Plan (STIP), which must also be consistent with the approved Plan.

MAP-21

The Moving Ahead for Progress in the 21th Century Act (MAP-21) was signed into law in 2012. As the authorization for the federal transportation program, MAP-21 directs the transportation planning process at the federal, state and metropolitan levels. MAP-21 was the first long term transportation authorization since the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was passed in 2005.

MAP-21 requires that metropolitan planning organizations serving areas that do not meet National Ambient Air Quality Standards

(NAAQS) update and adopt a Metropolitan Transportation Plan at least every four years. MAP-21 regulations prescribe the required components of a Metropolitan Transportation Plan and processes that must be followed when developing and implementing a plan. Metropolitan Transportation Plans must span at least a twenty-year timeframe, meet federal air qualityconformity standards, and adhere to the MPO's public participation process so as to provide interestedparties with reasonable opportunities to comment. The Plan must be fiscally constrained, meaning thatits financial plan must demonstrate that the projects it includes can be implemented using committed, available, or reasonably available revenue sources, while assuring that the existing system is being adequately operated and maintained.

In addition to reauthorizing many key provisions of SAFETEA-LU, MAP-21 included several changes to the statewide and metropolitan planning process, including changes to the composition of MPOs, the establishment of a performance-based planning process, and the authorization for MPOs to perform scenario planning.

- MAP-21 mandates that MPOs serving a transportation management area must include public agencies that operate major of transportation, including public transit. Since its inception in 1981, SWRMPO has included the Region's three transit districts, Norwalk, Stamford, and Westport, in the MPO.
- MAP-21 introduces performance-based planning requirements to the statewide and metropolitan transportation planning process. MPOs and states are required to establish performance targets based on national goals and performance measures established by MAP-21 and U.S. DOT. CT DOT and SWRMPO are waiting for U.S. DOT to issue a final rule on this subject before establishing statewide and metropolitan performance measures that address the national goals. SWRMPO will work with CT DOT and U.S. DOT to implement a performance-based planning process once U.S. DOT issues its final rule. The National Goals expressed in 23 U.S.C. § 150 are presented below:

Table 2a: MAP 21 National Performance Goals

National Goal	Description
1) Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
2) Infrastructure condition l	To maintain the highway infrastructure asset system in a state of good repair.
3) Congestion reduction	To achieve a significant reduction in congestion on the National Highway System.
4) System reliability	To improve the efficiency of the surface transportation system.
5) Freight movement and economic vitality	To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.l
6) Environmental sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment.

7) Reduced project delivery delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

- MAP-21 authorized MPOs to create scenario plans as part of the development of their metropolitan transportation plans. The scenarios used in the metropolitan transportation plan may consider potential regional investment strategies, assumed distribution of population and employment, baseline conditions, revenue constraints, and costs and revenues available to support each scenario.

Planning Factors

Like its predecessor -LU, MAP-21 requires MPOs to consider eight specific factors in developing transportation plans and programs. Each of these factors is addressed within the Plan, and is reflected within the goals and objectives that shape the Plan. .

Table 2b: Planning Factors

Planning Factor	Plan Components
Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and, efficiency;	The LRTP was developed to be responsive to business needs and the State's urban development strategies, and provides the framework to guide investments in transportation to attain economic goals. The LRTP recognizes the need to integrate land use planning with transportation, infrastructure and critical facilities, and energy planning to ensure that our communities remain vibrant and sustainable for the future.
Increase the safety of the transportation system for motorized and non-motorized users	The LRTP recognizes many facets of transportation safety, including incident management, truck safety, and bicycle and pedestrian safety. Many of the special studies referenced in this Plan include safety components. The Plan also includes a section devoted entirely to safety.
Increase the security of the transportation system for motorized and non-motorized users;	Security, including initiatives to create safer and more secure environments for transit users, is a core component of the Plan.
Increase the accessibility and mobility of people and for freight;	The Plan promotes choice, alternative modes and demand management, identifies transportation needs and strategies, and supports the use of new technology. Intelligent Transportation Systems (ITS) will support efficient and reliable operations and management, and increase the information available to users to help them make smart travel choices and make the transit system more user-friendly and appealing to occasional users and those looking to reduce their auto dependency.
Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns;	The Plan identifies measures to improve air quality, including promotion of alternative fuels and energy efficient transportation modes, increased public transit service, transportation demand management and transportation systems management, and new bicycle and pedestrian facilities. In its promotion of transit oriented development, the Plan furthers policies that contribute to regional congestion mitigation, encourage sustainable travel options and minimize environmental impacts.
Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;	The Plan describes transportation investments that encourage development of a multimodal transportation system where modes operate in a complementary way to save energy, reduce congestion, strengthen urban centers and meet the needs of all residents. The Plan also proposes continuation and expansion of rail and commuter connections and services, more direct and seamless transit services, and improvements to the freight system that link Connecticut to global trade.

Table 2b: Planning Factors (cont.)

Promote efficient systems management and operation;	The Plan identifies projects and studies aimed at prolonging the effective life of facilities, using new technology to enhance transportation system productivity, and refining operations, management, financing and governance to improve system efficiency.
Emphasize the preservation of the existing transportation system.	A central theme of the South Western Region is maintaining a state of good repair for transportation equipment and facilities, including highways, bridges, and transit systems. The Plan identifies the maintenance needs and resources to maintain the Region's transportation systems.

Livability

Livability is a concept that is at the core of the Region's transportation policy, and incorporates many of the elements of what is often referred to as "smart growth". In 2010, U.S. DOT recognized livability as a point of emphasis for transportation planning, and directed MPOs to incorporate six livability principles into metropolitan transportation plans:

Table 3: Livability Principles

Livability Principle	Plan Components
Provide more transportation choices. Develop safe,reliable, and economical transportation choices to decrease household transportation costs, reduce ournation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.	The Plan highlights many projects and strategies to sustain and enhance the Regional transit network to providebetter connectivity, improved service, more reliable operations, and better facilities for walking and biking.
Promote equitable, affordable housing. Expand location and energy efficient hosing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.	The Plan supports the land use policies of local, state and federal entities that promote a diverse, affordable housing stock, and highlights strategies and initiatives toconcentrate developments along transit routes. .
Enhance economic competiveness. Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers, as well as expanded business access to markets. .	Economic competitiveness is a primary objective of the Plan. In addition to strategies to mitigate congestion, promote transit use and promote transit oriented development, the Plan is supported by the recent endorsement of an inter-regional Comprehensive Economic Development Plan that focuses on integrating transportation policy with economic growth.

Table 3: Livability Principles (cont.)

Livability Principle	Plan Components
Support existing communities. Target federal funding toward existing communities through strategies liketransit-oriented, mixed-use development, and land recycling to increase community revitalization and the efficiency of public works investments and to safeguard rural landscapes.	The plan acknowledges the limited amount of land available for future development, and supports the Regional Plan of Conservation and Development's centrality strategy that highlights smart growth in existing economic centers while promoting preservation of open space and the character of the Region's communities.
Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods – rural, urban, or suburban.	The Plan includes a strong bicycle and pedestrian component, highlighting plans for complete streets and improved facilities to support walkable communities. .
Coordinate and leverage federal policies and investment. Align federal policies and funding to remove barriers to collaboration, leverage funding,and increase the accountability and effectiveness of all levels of government to plan for future growth,including making smart energy choices such as locally generated renewable energy.	The Plan describes a variety of coordination efforts focusing on efficiency in regards to investment andconservation. The Sustainable Communities PlanningGrant Program, Locally Coordinated Human Services Transportation Planning, and Congestion Mitigation Process have each transcended regional boundaries, and promote collaboration and conservation of resources. .

3 | Context / Trends

CURRENT AND PROJECTED POPULATION

Over the past decade, the Region experienced slow, modest population growth. According to 2013 Census figures, the Region's population stands at 368,473 persons. This represents a growth of 14,917persons (4.2%) since 2000. This slow rate of growth over the past thirteen years contrasts with the decade from 1990 to 2000, when the population grew by 23,621 persons (7.2%). Since 2000, population in the Region has grown at a slower pace than it has for the State of Connecticut as a whole (5.2%).

Looking back over the time since the end of World War II, the South Western Region experienced its greatest population growth between 1950 and 1970. During this period, the population increased by more than 130,000 persons (64.9%), from 202,569 to 333,955. Since 1970, the Region's total populationcontinued to grow, albeit at a significantly slower pace. Between 1970 and 2010, the population grew by just 30,564, or 9.2% overall. In fact, two municipalities, Darien and Greenwich, experienced very small (≤ 2%) growth while one municipality, Westport, experienced modest population decline. Since 1970, absolute population growth was strongest in Stamford (+15,197 persons) while percentage population growth was greatest in the South Western Region's least populated municipality, Weston (+38.3%). .

Table 4: Population Count, 1950-2013

Source: US Census Bureau, 2009-13 ACS

Place	1950	1960	1970	1980	1990	2000	2010	2013
Darien	11,767	18,437	20,336	18,892	18,196	19,607	20,732	20,925
Greenwich	40,835	53,793	59,775	59,578	58,441	61,101	61,171	61,733
New Canaan	8,001	13,466	17,451	17,931	17,864	19,395	19,738	19,938
Norwalk	49,460	67,775	79,288	77,767	78,331	82,951	85,603	86,499
Stamford	74,293	92,713	108,798	102,453	108,056	117,083	122,643	123,995
Weston	1,988	4,039	7,417	8,284	8,648	10,037	10,179	10,261
Westport	11,667	20,955	27,318	25,290	24,410	25,749	26,391	26,769
Wilton	4,558	8,026	13,572	15,351	15,989	17,633	18,062	18,353
South Western Region	202,569	279,204	333,955	325,546	329,935	353,556	364,519	368,473
Connecticut	2,007,280	2,535,234	3,032,217	3,107,576	3,287,116	3,405,565	3,574,097	3,583,561

Table 4: Population 10 Year Differences (cont.)

Place	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010
Darien	6,670	1,899	-1,444	-696	1,411	1,125
Greenwich	12,958	5,982	-197	-1,137	2,660	70
New Canaan	5,465	3,985	480	-67	1,531	343
Norwalk	18,315	11,513	-1,521	564	4,620	2,652
Stamford	18,420	16,085	-6,345	5,603	9,027	5,560
Weston	2,051	3,378	867	364	1,389	142
Westport	9,288	6,363	-2,028	-880	1,339	642
Wilton	3,468	5,546	1,779	638	1,644	429
South Western Region	76,635	54,751	-8,409	4,389	23,621	10,963
Connecticut	527,954	496,983	75,359	179,540	118,449	168,532

By 2040, CT DOT projects that the South Western Region's population will grow by approximately 49,000 people, which represents a 13.3% increase over 2010 Census countsi. Though regional growth estimates are anemic overall, Greenwich, Norwalk, and Stamford are projected to experience stronger growth. In fact, these three municipalities represent 82% of the Region's projected population growthover the next thirty years, which is in excess of their current share of total population (74%.) Stamford alone is projected to account for about half of Region's total population growth.

The slow population growth experienced over the past decade and projected in future years' can be attributed to the lack of developable land in the region, which effectively limits new housing production. The Region's small communities have basically achieved build-out conditions. Local planning and zoning officials report seeing no subdivision activity, with few vacant, developable parcels remaining. In many instances, new housing production comes in the form of tear-downs, where older, smaller homes are razed and replaced with new, much larger homes. With that in mind, CTDOT's population projections, presented above, may just be wishful thinking for the Region's small towns.

Greenwich, Norwalk, and Stamford represent 82% of the Region's projected population growth over the next thirty years.

Table 5: Population Projections, 2010-2040

Source: *US Census Bureau, 2000 and 2010 Census
**CT DOT Landuse Series 28, 2010

Place	2000*	2010*		2020**	2030**	2040**	Change 2010-2040	Change 2010-2040, %
Darien	19,607	20,732		20,500	20,880	21,304	572	2.80%
Greenwich	61,101	61,171		65,170	68,300	70,700	9,529	15.60%
New Canaan	19,395	19,738		20,110	20,510	20,882	1,144	5.80%
Norwalk	82,951	85,603		88,270	90,210	92,630	7,027	8.20%
Stamford	117,083	122,643		131,400	138,800	146,039	23,396	19.10%
Weston	10,037	10,179		11,520	12,270	13,014	2,835	27.90%
Westport	25,749	26,391		27,940	28,400	29,284	2,893	11.00%
Wilton	17,633	18,062		18,470	18,830	19,229	1,167	6.50%
South Western Region	353,556	364,519		383,380	398,200	413,082	48,563	13.30%
Connecticut	3,405,565	3,574,097		3,696,560	3,853,000	4,004,272	430,175	12.00%

n communities where more significant population growth is projected to occur, it may come in the formof redevelopment of older areas, such as brownfields and underutilized land in the vicinity of rail stations. The two primary examples of this are the redevelopment of the South End of Stamford (4,000 housing units built, under construction or planned) and the West Avenue corridor in Norwalk (3,400 housing units built, under construction or planned).

HOUSEHOLDS AND HOUSING UNITS

According to the 2009-13 ACS, there are 145,794 households in the South Western Region. The Region averages 2.50 (+/- 0.02) persons per household, which is slightly higher than the State's average of 2.55 (+/- 0.01) persons per household. This figure varies across the Region from a high of 3.21 (+/- 0.10)persons per household in Darien to a low of 2.37 (+/- 0.04) persons per household in Norwalk. Generally, the Region's smaller communities have higher rates and the Region's larger communities have lower rates of persons per household. This is attributable to family households being more common in the smaller, suburban communities

and single-person households being more common in the larger, urban communities.

The South Western Region contains a mix of owner- and renter-occupied housing. Overall, the percentage of owner-occupied housing in the Region, 69.9% (+/- 5.8), is about the same as for Connecticut as a whole, 67.8 (+/- 0.3). Renter-occupied housing is most in abundance in the larger communities, Norwalk and Stamford. More than one-third of the housing stock in those communities is renter occupied. Together, Greenwich, Norwalk, and Stamford contain about 40,000 rental units. This represents 91% of all of the Region's rental housing stock and is greater than the sum of all units inRegion's smaller communities (Darien, New Canaan, Weston, Westport, and Wilton.)

About 80% of the Region's population growth over the next thirty years is projected to occur in the three communities, Greenwich, Norwalk, and Stamford, with lower person-per-household rates and higher rates of renter occupied housing. When coupled with national trends towards single-person households and the statewide trend of continued strong demand for rental unit during a collapse of thehousing market, these figures may indicate future needs for housing types other than traditional owner-occupied single family houses

Table 6: Persons per Household

Source: US Census Bureau, 2009-913 ACS, DP02

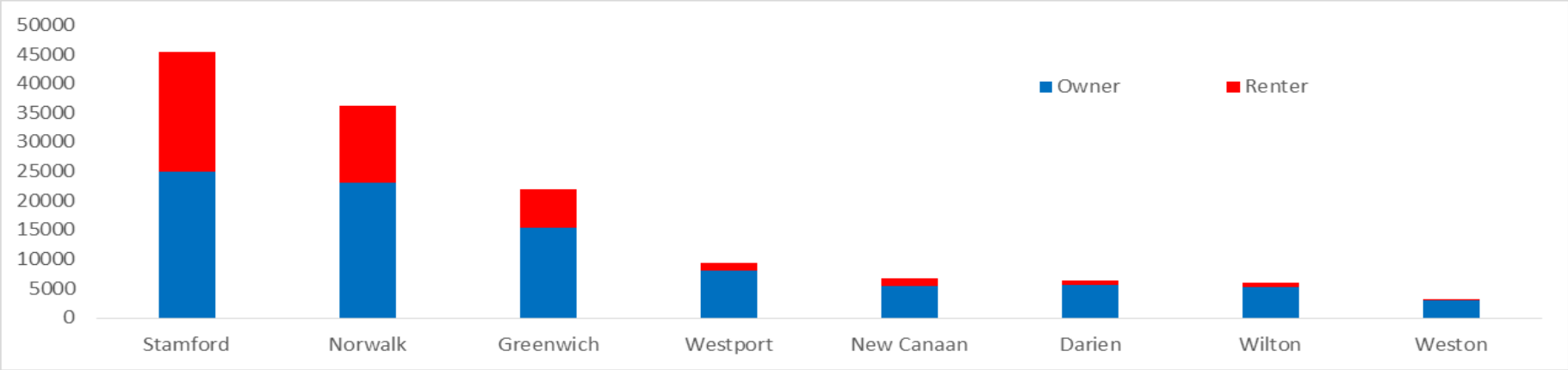
Geography	Population in Households	Persons in Households, MoE (+/-)	Household	Households, MoE (+/-)	Persons per Household	Persons per household, MoE (+/-)
Darien	20,816	75	6,493	203	3.21	0.1
Greenwich	60,994	162	22,068	398	2.76	0.05
New Canaan	19,846	55	6,802	229	2.92	0.1
Norwalk	85,725	249	36,236	668	2.37	0.04
Stamford	122,536	289	45,458	836	2.70	0.05
Weston	10,261	24	3,154	116	3.25	0.12
Westport	26,561	99	9,477	219	2.80	0.07
Wilton	18,079	162	5,955	180	3.04	0.08
South Western Region	364,818	466	135,643	1,371	2.69	0.23
Connecticut	3,464,102	*****	1,355,849	3,506	2.55	0.01

Table 7: Housing Tenure

Source: US Census Bureau, 2009-13 ACS, DP04

Geography	Occupied Housing Units	Occupied housing units, MoE (+/-)	Owner occupied, %	Owner occupied, %, MoE (+/-)	Renter occupied, %	Renter occupied, %, MoE (+/-)
Darien	6,493	203	87.60%	2.20%	12.40%	2.20%
Greenwich	22,068	398	69.70%	1.90%	30.30%	1.90%
New Canaan	6,802	229	81.20%	2.60%	18.80%	2.60%
Norwalk	36,236	668	63.70%	1.50%	36.30%	1.50%
Stamford	45,458	836	54.80%	1.30%	45.20%	1.30%
Weston	3,154	116	95.20%	2.10%	4.80%	2.10%
Westport	9,477	219	86.30%	2.20%	13.70%	2.20%
Wilton	5,955	180	88.40%	2.30%	11.60%	2.30%
South Western Region	135,643	1221	69.90%	5.80%	30.10%	5.80%
Connecticut	1,355,849	3506	67.80%	30.00%	32.20%	30.00%

Figure 3: Housing Units by Tenure



DEMOGRAPHICS

The South Western Region is generally composed of a wealthy, well-educated, and increasingly diverse population. The Region's personal wealth has historically been attributed to the many highly educatedindividuals who work in the high-wage finance and managerial sector in New York City but choose to live in Connecticut. As the Region's economy has grown and firms in these sectors have located in the area, many residents no longer need to commute to New York City for high wage jobs. The historically robusteconomy prior to 2008, along with a substantial number of highly selective jobs and global businesses located in the region have drawn an increasingly diverse population.

While good jobs and quality schools attract many young families and older adult residents, high levels of college enrollment and one of the nation's most expensive rental housing markets produce a deficit of young adults (ages 15-29) residing in the Region. As a result, the Region's population contains higher percentages of middle-aged adults (ages 35 to 44) and children (ages 0 to 14)

Table 8: Race/Ethnicity by Municipality

Source: US Census Bureau, 2009-13 ACS

Geography	Total Population	White, not Hispanic		Black or African-American, not Hispanic		Asian, not Hispanic		Other Race(s), not Hispanic		Hispanic or Latino, any race	
		Count	%	Count	%	Count	%	Count	%	Count	%
Darien	20,925	19,178	91.70%	55	0.30%	672	3.20%	64	0.30%	622	3.00%
Greenwich	61,733	48,153	78.00%	996	1.60%	4,544	7.40%	673	1.10%	6,458	10.50%
New Canaan	19,938	18,171	91.10%	187	0.90%	568	2.80%	43	0.20%	704	3.50%
Norwalk	86,499	51,073	59.00%	11,468	13.30%	4,032	4.70%	448	0.50%	18,164	21.00%
Stamford	123,995	62,319	50.30%	17,274	13.90%	9,379	7.60%	617	0.50%	32,850	26.50%
Weston	10,261	9,274	90.40%	130	1.30%	249	2.40%	0	0.00%	304	3.00%
Westport	26,769	23,718	88.60%	280	1.00%	1,287	4.80%	104	0.40%	901	3.40%
Wilton	18,353	16,446	89.60%	96	0.50%	977	5.30%	42	0.20%	491	2.70%
South Western Region	368,473	248,332	67.39%	30,486	8.27%	21,708	5.89%	1,991	0.54%	60,494	16.42%

According to the 2009-13 ACS, 67.0% of the Region's population identify themselves as White, while 16.4% identified themselves as Hispanic or Latino, 8.3% as Black or African American, 5.9% as Asian, and 0.5% as some other race. The Region's minority population is generally concentrated in its two largest municipalities, Stamford and Norwalk, and to a lesser extent in Greenwich. Between 2000 and 2010, theRegion's Hispanic or Latino population grew by 21,216 persons (56.1%) and the Asian population grew by 7,296 persons (52.4%) while the White population declined by 15,824 persons (-6.0%).

According to the Census' 2009 ACS, approximately 23.5% (+/-0.7) of the Region's population is foreign born. This is about double the figure for Connecticut as a whole. The percentage of foreign-born residents is highest in the Region's larger communities. About 20.6% (+/- 1.4) of the population in both Greenwich and Norwalk are identified as foreign born, along with 36.0% (+/-1.4) of Stamford's population. Roughly half (48.9% +/- 2.1) of the foreign born population was born in Latin America with the remainder originating from Europe (28.0% +/- 1.3) and Asia (18.1% +/- 1.2.)

Within the Region, income measures vary by municipality. According to the 2009-13 ACS, the Region's per capita was $63,842 (+/- 15,796), which is significantly higher than the state figure of 37,892 (+/-212.)

Table 9: Income by Municipality

Source: US Census Bureau, 2009-13 ACS

Geography	Median household income				Per capita income			
	1999	1999 (2013 $*)	2013	MoE +/-	1999	1999 (2013 $*)	2013	MoE +/-
Darien	146,755	205,169	205,688	21,923	77,519	108,375	94,820	5,996
Greenwich	99,086	138,526	132,164	6,701	74,346	103,939	90,629	4,138
New Canaan	141,788	198,225	161,848	16,216	82,049	114,708	97,498	6,459
Norwalk	59,839	83,657	74,728	2,899	31,781	44,431	43,767	1,436
Stamford	60,556	84,660	76,779	2,695	34,987	48,913	43,647	1,601
Weston	146,697	205,088	207,262	20,127	74,817	104,597	90,552	9,629
Westport	119,872	167,586	160,106	14,814	73,664	102,985	91,226	5,697
Wilton	141,428	197,722	167,094	12,798	65,806	91,999	77,526	4,992
South Western Region	76,554	107,025			51,462	71,946	63,842	15,796
Connecticut	53,935	75,403	69,461	37,892	28,766	40,216	37,892	212

*The Census Bureau recommends using CPI-U-RS adjustment factors published annually by the Bureau of Labor Statistics (BLS) to adjust 1999 median, mean, and per capita income dollar amounts shown in Summary File 3 to 2013 dollars by multiplying the 1999 dollar amounts by the CPI-U-RS factor of 1.39804.

Five communities, Darien, Greenwich, New Canaan, Weston, and Westport, had per capita incomes in excess of $90,000. Per capita income was lowest in Norwalk and Stamford. However, "lowest" is a relative term as per capita income in both those communities exceeded that of the State.

Weston had the highest median household income at $207,262 (+/- 21,923), followed closely by Darien, then New Canaan, Wilton, and Westport. In fact, median household income for these four municipalities was more than double the state median household income. Stamford and Norwalk have the lowest median household incomes in the Region, at $76,779 (+/- 1,601) and $74,728 (+/- 2,899), respectively. However, these figures were higher than the state figure.

The Region is characterized by a population with high levels of educational achievement. According to2009-13 ACS, more than half of the Region's residents have a bachelor's degree or higher. This is well above the state average, which is about one out of every three residents. Five municipalities, Darien, New Canaan, Weston, Westport, and Wilton, can boast that at least 70% of their residents hold bachelor's degrees. Educational achievement lags in Norwalk and Stamford, which may partially be attributable to the poverty populations and immigrant communities in these municipalities.

Table 10: Educational Achievement by Municipality

Source: 2009-13 ACS

Geography	Population, 25 Years and Older	High School Graduate or Higher, %	MoE +/-	Bachelor's Degree or Higher, %	MoE +/-	Median Household Income 2013	MoE +/-	Median Home Value	MoE +/-
Darien	12,523	98.10%	0.70%	79.30%	2.20%	205,688	21,923	1,000,000+	***
Greenwich	41,987	95.70%	0.60%	65.80%	1.60%	132,164	6,701	1,000,000+	***
New Canaan	12,660	97.10%	1.10%	74.90%	2.70%	161,848	16,216	1,000,000+	***
Norwalk	63,810	89.30%	0.90%	41.30%	1.60%	74,728	2,899	424,200	9,779
Stamford	86,569	86.40%	1.10%	43.60%	1.30%	76,779	2,695	515,400	13,908
Weston	6,234	98.90%	0.90%	82.20%	2.40%	207,262	20,127	880,800	36,727
Westport	17,897	98.20%	0.70%	75.80%	2.10%	160,106	14,814	1,000,000+	***
Wilton	11,521	97.60%	1.00%	74.90%	2.80%	167,094	12,798	814,200	25,160
South Western Region	253,201	91.44%	2.53%	54.68%	6.08%				
Connecticut	2,443,761	8920.00%	20.00%	36.50%	30.00%	69,461	411	278,900	868

An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.

ENVIRONMENTAL JUSTICE

Environmental Justice (EJ) seeks to ensure that no portion of a community is disproportionately impacted by the environmental consequences resulting from a transportation project, program, or policy.Despite the Region's overall wealth, there are distinct areas that can be identified as EJ communities, or *Communities of Concern*, and merit special attention. SWRMPO defines a *Community of Concern* as any Census tracts that has a greater percentage of minority population, a greater percentage of persons living in poverty, and a lower per capita income than the region as a whole.

Of the Region's eighty-four Census tracts, thirty seven meet all the EJ criteria, and are considered *Communities of Concern*. These tracts are located in Greenwich (2), Norwalk (17), and Stamford (18.) SWRMPO produces an annual EJ report to assess the Region's transportation planning program and its products, such as the Long Range Transportation Plan and the Transportation Improvement Program, for compliance with the guiding principles of EJ. These principles seek to:

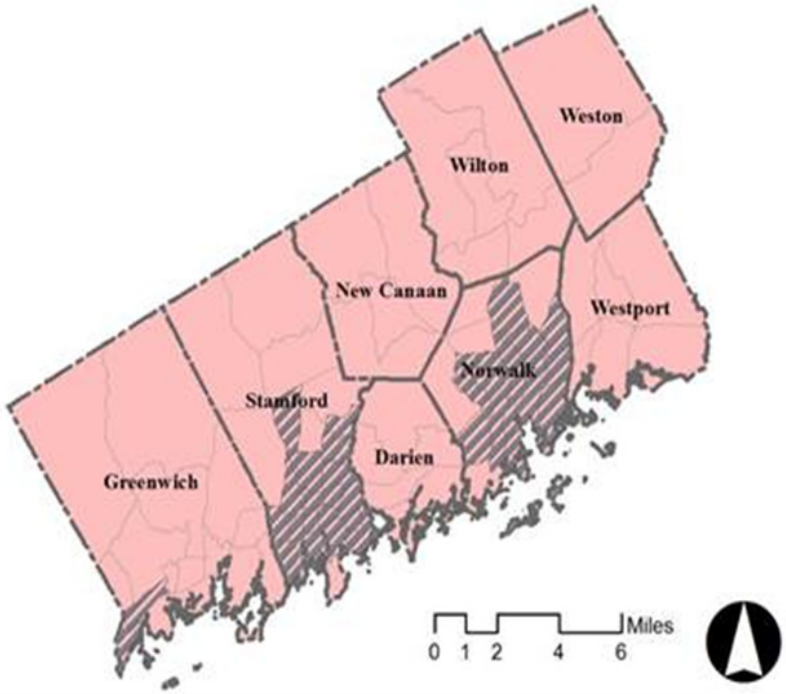
- Assure that transportation plans and programs do not have an adverse impact on communities of concern;
- Ensure full participation in the transportation decision making process;
- Prevent the reduction or denial of benefits for communities of concern.

Table 11: Census Tracts - Communities of Concern

Source: US Census Bureau, 2009-13 ACS

Item	Thresholds	Greenwich	Norwalk	Stamford	Total	Regional Share	Region
Number of Census Tracts		2	17	18	37	44.00%	84
Total Population		8,555	68,470	94450	171475	47.00%	364,519
Minority Population		2,435	18,126	43,982	68,236	58.10%	117,356
Percent Minority	12.50%	28.50%	26.50%	46.60%	38.60%	-	32.20%
Per Capita Income	$61,137	$44,773	$40,359	$35,631	$38,297	62.60%	$61,137
Pop. for whom Poverty Status is Determined		8,555	74,757	93,660	176,972	29.50%	353,580
Pop. Below Poverty Level		734	7,103	12,652	17,345	68.70%	25,247
Percent Pop. Below Poverty Level		8.60%	9.50%	16.30%	13.50%	-	7.20%
Total Households		2,419	9,016	19,112	30,547	22.70%	134,323
Households Receiving Public Assistance		43	397	669	1,109	65.40%	1,697
Percent Households Receiving Public Assistance	1.30%	1.80%	4.40%	3.50%	3.60%	-	1.30%

Figure 4: Communities of Concern - Environmental Justice Communities



EMPLOYMENT

Employment in the South Western Region is concentrated in the Finance, Insurance, and Real Estate (FIRE) and Information sectors of the economy. FIRE and Information sector jobs represented 39% of all jobs in the South Western Region in 2009, roughly double the percentage for Connecticut as a whole. The total number of jobs in the FIRE and Information sector declined over the last decade from a peak of 83,983 in 2000 to 73,676 in 2009. Much of this decline occurred since 2007 during the Great Recession. Despite the loss of FIRE and Information sector jobs, annual wages in this sector, adjusted for inflation, continue to rise, up 25% between 2000 and 2007 and up 11% between 2000 and 2009[ii]. The rate of wage increases is stronger in the South Western Region than it is for Connecticut as a whole.

While the total number of jobs in the South Western Region has declined about 10% since 2000, some sectors are showing employment gains. Employment in the Education/Health Care sectors rose approximately 18% over this period, from 20,669 to 24,373 jobs. This mirrors national trends showing gains in Education/Health Care, which is more immune from swings in the economy than are other sectors. On the other hand, some employment sectors have been in steady decline. The Region has shed about half its Manufacturing sector jobs in the past decade, declining from 14,826 in 2000 to 7,222 in 2009. One way this decline is evident is the fallow Industrial zoned land that is now available for residential and commercial redevelopment.

Although unemployment has increased since the onset of the Great Recession, the Region generally has a lower unemployment rate than does both the State and the Nation.

Table 12: Employment by Sector

Source: CT Dept. of Labor, Covered Employment and Wages by Industry, Local Area Unemployment Statistics

Sector	2005	2006	2007	2008	2009	Change 2005-2009	Change 2005-2009 %
Agriculture	37	56	0	0	52	15	40.5%
Mining/Utilities/Construction	7,130	7,641	7,811	7,306	5,839	-1,291	-18.1%
Manufacturing	9,702	9,116	8,593	8,067	7,222	-2,480	-25.6%
Trade/Transportation	33,556	33,715	33,835	33,572	31,395	-2,161	-6.4%
Information/Finance/Real Estate/Professional	77,687	78,787	80,495	78,719	73,676	-4,011	-5.2%
Education/Health Care Services	22,770	23,214	23,480	24,109	24,373	1,603	7.0%
Arts/Entertainment/Accommodation/Food	16,048	16,056	16,720	17,340	15,574	-474	-3.0%
Other Services	9,247	9,553	9,707	9,676	9,423	176	1.9%
Government	18,065	18,573	18,858	19,252	19,324	1,259	7.0%
Total Employment	**194,242**	**196,711**	**199,499**	**198,041**	**186,878**	**-7,364**	**-3.8%**
Resident Unemployment Rate	**4.0%**	**3.5%**	**3.5%**	**4.6%**	**7.4%**		

TRANSPORTATION AND TRAVEL DATA

Journey to Work

Between 2000 and 2010, the Region's resident workforce increasingly reversed a trend from the previous decade and was more likely to live in the region. The percent of the Region's residents who work locally (within the Region) increased from 69% to 72% (sub-table A of Table 13). By 2010, roughly 7% of the Region's labor force worked in other areas of Connecticut, whereas only 10% did so in 2000. The adjacent Bridgeport region as the top destination followed by the Danbury and New Haven regions. During the same period, the percentage of the Region's residents working in New York stayed stable (+0.1%).

As the total number of persons working in the Region increased between 2000 and 2010, the percentage of them who also resided in the Region stayed stable, reversing the trend of the previous decade. By 2010, approximately 44% of the region's workforce commuted into the region from somewhere else. While the number of commuters from elsewhere in Connecticut slightly decreased over the decade, the number of commuters coming from New York State increased. The notable phenomena of "reverse commuters" from New York City continues to grow.

Table 13: Journey to Work

A. Place of work for persons residing in the South Western Region

Geography	Workers			Percent of Total		
	1990	2000	2010	1990	2000	2010
Darien	6,141	6,248	5,655	3.5%	3.6%	3.3%
Greenwich	22,705	21,104	22,010	12.9%	12.3%	12.8%
New Canaan	5,067	4,947	5,825	2.9%	2.9%	3.4%
Norwalk	29,132	25,227	25,790	16.5%	14.7%	15.0%
Stamford	53,931	47,087	48,370	30.6%	27.5%	28.1%
Weston	1,246	1,374	1,205	0.7%	0.8%	0.7%
Westport	9,072	7,928	7,735	5.1%	4.6%	4.5%
Wilton	4,510	4,831	5,315	2.6%	2.8%	3.1%
South Western Region	131,804	118,746	123,915	74.7%	69.2%	72.1%
Housatonic Valley Region	1,935	4,908	3,420	1.1%	2.9%	2.0%
Greater Bridgeport Region	5,522	8,488	6,904	3.1%	5.0%	4.0%
South Central Region	1,582	2,085	1,775	0.9%	1.2%	1.0%
Connecticut total	142,310	136,628	136,544	80.6%	79.7%	79.4%
New York total	30,958	32,087	32,436	17.5%	18.7%	18.9%
New Jersey total	1,651	1,203	1,205	0.9%	0.7%	0.7%
Elsewhere	1,609	1,540	1,740	0.9%	0.9%	1.0%
Total employed persons residing in the South Western Region	176,528	171,458	171,925	100.0%	100.0%	100.0%

Source: US Census Bureau, Census 1990 and 2000, Summary File 3

B. Place of residence for persons residing in the South Western Region

Geography	Workers			Percent of Total		
	1990	2000	2010	1990	2000	2010
Darien	5,780	4,876	4,480	2.8%	2.3%	2.1%
Greenwich	19,668	16,634	16,510	9.6%	7.8%	7.6%
New Canaan	5,908	4,999	4,880	2.9%	2.4%	2.3%
Norwalk	36,916	33,290	33,405	17.9%	15.7%	15.4%
Stamford	47,135	44,573	48,425	22.9%	21.0%	22.3%
Weston	2,790	2,797	2,430	1.4%	1.3%	1.1%
Westport	8,245	6,590	6,525	4.0%	3.1%	3.0%
Wilton	5,362	4,890	5,250	2.6%	2.3%	2.4%
South Western Region	131,804	118,649	121,905	64.0%	55.9%	56.3%
Housatonic Valley Region	12,752	15,102	13,039	6.2%	7.1%	6.0%
Greater Bridgeport Region	26,149	30,446	32,110	12.7%	14.3%	14.8%
South Central Region	6,178	8,284	8,479	3.0%	3.9%	3.9%
Connecticut total	182,967	181,782	183,956	88.9%	85.6%	84.9%
New York total	20,228	26,748	28,283	9.8%	12.6%	13.1%
New Jersey total	1,294	1,976	2,015	0.6%	0.9%	0.9%
Elsewhere	1,382	1,888	2,426	0.7%	0.9%	1.1%
Total persons working in the South Western Region	205,871	212,394	216,680	100.0%	100.0%	100.0%

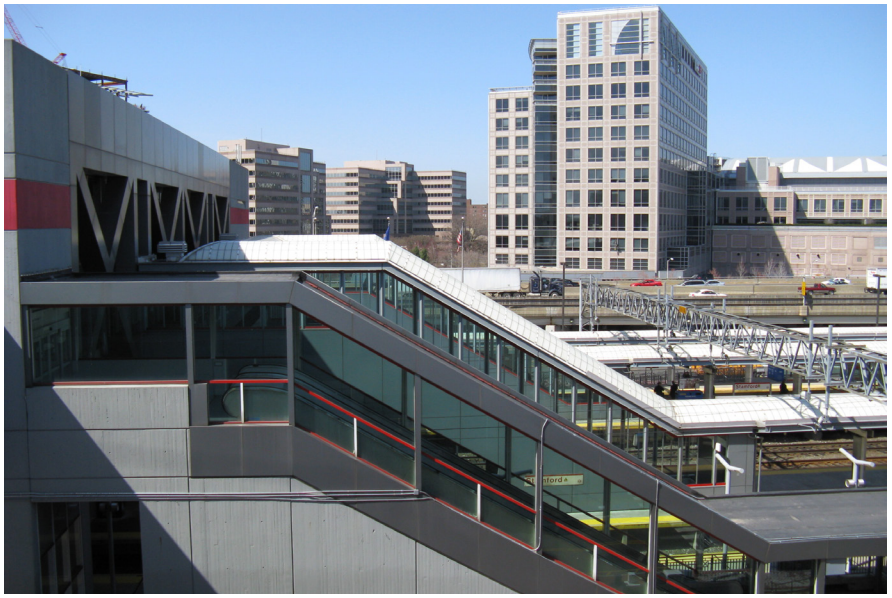


Photo 3: Downtown Stamford as seen from the Stamford Transportation Center

MODE OF TRANSPORTATION

Commuters in the Region are less likely to drive alone to work than residents of any other region in Connecticut. According to the 2009-13 ACS, approximately 67.7% (+/- 0.9) of workers who reside in theRegion drove alone to work. The percentage of commuters who drove alone was greatest in Norwalk (75.1%, +/- 2.2) and lowest in Darien (57.8%, +/- 4.0) and Westport (58.2%, +/-3.2)

Public transit serves a sizeable segment of the Region's commuter. About 13.8% (+/- 0.6) of commutersuse public transit and all communities have public transit mode shares of at least 9%. In contrast to the classical notions about cities, suburbs, and transit use, it is the suburban communities in the South Western Region that have the highest transit mode share. About 26.2% (+/- 2.3) of Darien commuters reported using public transportation followed by 21.6% (+/-2.4) of Westport commuters and about 16% - 19% of Greenwich, New Canaan, and Weston commuters. In these communities, public transit almost always means railii. Bus mode share is highest in Stamford (4.8% +/- 0.6) and Norwalk (3.8% +/- 0.8.) In fact, 97% of bus commuters reside in these two communities.)

Bicycle and pedestrian commuters represent about a 3.8% (+/- 0.4) mode share overall and are concentrated in the Region's downtowns and town centers. Stamford has the highest percentage (5.4%, +/- 0.8) walk mode share. Persons who worked at home represent about a 6.4% (+/- 0.4) of all commuters, with higher percentages in the Region's small towns. In fact, 15.1% (+/- 2.6) of Wilton residents and 14.2% (+/- 2.4) of Westport residents report working at home.

> About 13.8% (+/- 0.6) of commuters use public transit and all communities have public transit mode shares of at least 9%.

Table 14: Mode Share to Work

Source: 2009-13 ACS

Geography	Drove alone		Carpool		Transit		Transit: Bus	
	Share	MoE +/-	Share	MoE +/-	Share	MoE +/-	Share	MoE +/-
Darien	57.84%	4.02%	3.74%	1.52%	26.24%	2.33%	0.51%	0.56%
Greenwich	62.28%	2.04%	6.76%	1.06%	17.82%	1.60%	0.67%	0.29%
New Canaan	61.42%	3.17%	3.95%	1.35%	19.13%	2.94%	0.00%	0.29%
Norwalk	75.12%	2.22%	9.10%	1.14%	9.21%	1.08%	3.78%	0.78%
Stamford	67.10%	1.51%	10.79%	1.28%	11.87%	1.00%	4.81%	0.66%
Weston	64.80%	4.03%	2.06%	1.12%	16.33%	3.35%	0.17%	0.27%
Westport	58.22%	3.17%	2.87%	0.91%	21.56%	2.36%	0.10%	0.14%
Wilton	68.74%	2.96%	3.99%	1.38%	12.83%	1.79%	0.31%	0.34%
South Western Region	67.27%	0.92%	8.08%	0.59%	13.81%	0.58%	2.89%	0.32%
Connecticut	78.68%	0.24%	8.37%	0.20%	4.66%	0.13%	2.59%	0.10%

Geography	Transit: Rail		Bike + Walk		Other		Work at Home	
	Share	MoE +/-	Share	MoE +/-	Share	MoE +/-	Share	MoE +/-
Darien	25.29%	2.30%	2.60%	1.08%	0.76%	0.50%	8.83%	1.78%
Greenwich	16.21%	1.53%	4.67%	0.94%	0.54%	0.25%	7.58%	1.03%
New Canaan	18.69%	2.91%	3.36%	1.75%	0.51%	0.47%	11.62%	2.14%
Norwalk	5.18%	0.70%	2.27%	0.55%	0.26%	0.19%	3.75%	0.67%
Stamford	6.63%	0.83%	5.38%	0.83%	0.47%	0.21%	4.02%	0.57%
Weston	15.76%	3.36%	1.18%	1.70%	0.51%	0.56%	15.13%	2.55%
Westport	20.29%	2.32%	2.25%	1.02%	0.80%	0.47%	14.24%	2.39%
Wilton	12.24%	1.77%	1.38%	0.88%	0.25%	0.28%	12.81%	2.30%
South Western Region	10.42%	0.49%	3.75%	0.38%	0.45%	0.11%	6.36%	0.39%
Connecticut	1.89%	0.08%	3.30%	0.10%	0.71%	0.05%	4.11%	0.10%

Table 15: Travel Time to Work

Source: 2005-2009 ACS

Geography	< 15 minutes		15 - 30 minutes		30 - 45 minutes		45 to 60 minutes		60 - 89 minutes		> 90 minutes	
	Estimate	MoE +/-	Estimate	MoE +/-	Estimate	MoE +/-	Estimate	MoE +/-	Estimate	MoE +/-	Estimate	MoE +/-
Darien	28.92%	3.26%	28.07%	3.29%	8.70%	2.11%	4.48%	1.32%	21.49%	2.51%	8.34%	1.42%
Greenwich	33.44%	2.21%	31.60%	2.07%	9.37%	1.24%	5.04%	0.86%	15.09%	1.42%	5.45%	1.09%
New Canaan	23.30%	3.56%	32.67%	4.33%	13.18%	2.97%	2.58%	1.23%	16.02%	2.76%	12.25%	2.27%
Norwalk	28.08%	1.75%	41.28%	2.01%	18.06%	1.19%	4.57%	0.66%	4.06%	0.54%	3.95%	0.74%
Stamford	33.10%	1.72%	38.54%	1.83%	13.27%	1.11%	3.74%	0.60%	6.94%	0.79%	4.40%	0.70%
Weston	14.02%	3.37%	33.40%	5.11%	17.91%	3.84%	6.23%	2.13%	11.68%	3.56%	16.76%	4.08%
Westport	25.12%	2.51%	23.10%	2.86%	15.20%	2.51%	5.42%	1.41%	14.82%	2.10%	16.34%	2.28%
Wilton	24.40%	3.08%	26.38%	3.09%	22.78%	3.04%	6.27%	1.69%	7.83%	1.57%	12.34%	2.10%
South Western Region	29.94%	0.91%	36.01%	0.98%	14.40%	0.61%	4.41%	0.34%	8.99%	0.45%	6.24%	0.43%
Connecticut	28.89%	0.27%	38.12%	0.29%	18.83%	0.23%	6.43%	0.12%	5.01%	0.12%	2.72%	0.08%

TRAVEL TIME TO WORK

Residents of the South Western Region spend more time commuting and have more extreme commutes than do their counterparts elsewhere in Connecticut. This is due in large part to New York City-commuters. About two-thirds of the Region's commuters reported commute times under thirty minutes according to the 2009-13 ACS, which is roughly comparable to the rate for all Connecticut commuters. Stamford had the greatest percentage (71.6%) of commuters who trip to work takes less than thirty minutes. About 15% of the Region's commuters reported commute times of greater than sixty minutes compared to 8% of all Connecticut commuters. Commuters of greater than sixty minutes were most prevalent in communities with high percentage of railroad commuters. About 30% of Darien and Westport commuters traveled more than sixty minutes to work.

RELATIONSHIP TO OTHER PLANS

The eight municipalities in the South Western Region, despite having widely varying populations and densities, share many common planning themes and goals for the future. These are interrelated, and include 1) promotion of efficient development patterns to reduce congestion, 2) support for increased transit use, and 3) support for bicycle and pedestrian initiatives.

Municipalities realize that by planning and promoting better land use patterns, overall vehicle trips can be reduced and shortened, thereby reducing congestion, time lost in traffic, and pollution. Efforts to promote nodal development patterns in the Region are prominent, especially in the plans of the three largest communities of Stamford, Norwalk, and Greenwich. In Stamford's 20014 Master Plan, strategies include projects that "allow higher-density residential development in close proximity to transit", and "encouraging neighborhood-scale commercial and mixed-use development at transit-served locations."

The importance of transit to the Region cannot be understated. Many of the Region's employment centers are located within walking distance of a commuter rail station, giving commuters options besides driving. Norwalk's 2008 Plan of Conservation and Development states "the dependence on the automobile can only be reduced by a combination of improved public transit and pedestrian friendly redevelopment based on transportation hubs." All municipalities located on the rail corridors are actively emphasizing the need to take full advantage of transit service; furthermore, there is much advocacy for expansion of rail parking at adjacent lots to ease access to transit. Bus transit is also being actively promoted as another key modal alternative. Stamford's 2014 Master Plan captures this multi-modal approach, seeking to "improve intra-city mobility for all modes – vehicles, mass transit, pedestrians and bicyclists."

The Region's municipalities recognize walking and bicycling as means to reduce congestion and pollution as well as to promote public health. Key themes in New Canaan's 2014 Plan of Conservation and Development are to enhance bicycle circulation in town and orient development activities towards pedestrians. To achieve these benefits, the necessary infrastructure must be in place to accommodate walkers and bikers, especially in areas with heavy traffic volumes or insufficient shoulder and sidewalk widths. For example, Westport's 2007 Plan of Conservation and Development proposes "giving zoning incentives to commercial establishments in return for providing bike racks and other accommodations for bicyclists."

The Region is sensitive to historic preservation, and consults with state and local entities responsible for such matters, including Connecticut's State Historic Preservation Office.

A commitment to the preservation of existing infrastructure and long-term sustainability has also beenchampioned within the region and echoed by its municipalities. WCCOG's 2016-2021 Natural Hazard Mitigation Plan (HMP) and Emergency Evacuation Planning and Needs Assessment both analyze critical transportation assets relative to natural hazards, including storm surge and sea level rise.

CT DOT Long Range Transportation Plan

CT DOT's long-range transportation plan outlines the State's transportation policy. This intermodal plan, which is updated every three to five years, addresses the eight federally mandated planning factors required under MAP-21. It serves as a framework for more project-specific transportation planssuch as CT DOT's Master Transportation Plan and the State Transportation Improvement Program. The ultimate objective of the 20014 Long Range Transportation Plan is to provide the most efficient, safe and secure transportation network for Connecticut residents, visitors and businesses. Significant emphasis was placed on public outreach and is embodied by the states *Transform CT* initiative. The process utilized stakeholder and public input to help define a broad vision for transportation, assisting with the development of policy direction and investment strategy moving forward. Specific goals are provided below:

- **Quality of Life:** providing safe and secure travel; equity through mobility and accessibility, including aging populations; and increasing travel options by integrating transportation with land use.
- **Livability and Resilience:** providing access to affordable and "green" transportation; expanding the definition of mobility to account for bicycling and pedestrian activities, while supporting sustainable communities; and maintaining a resilient transportation system.
- **Economic:** support and foster economic growth by providing connectivity to national/global markets and revitalizing regional centers; improve the flow of goods by maintaining sound infrastructure, reducing business and user costs.
- **Deliverability:** effective and timely transportation solutions delivered in part by more efficient collaboration (local, state, and federal levels) and developing viable transportation revenue sources.

A scenario-based approach to Long Range planning provides to the means to the end of achieving the aforementioned goals, systematically examining the state's future needs and performance against a set of alternative future scenarios.

The 2014 plan is consistent with the Connecticut Office of Policy and Management's Conservation and Development Policies Plan for 2013-2018. It also reflects the transportation vision of the Governor, known as Let's Go CT.

Let's Go CT builds off of *TransformCT,* clearly outlining and articulating the state's vision over the next 30 years, serving as the formal Long Range Transportation Plan (LRP) and referred to hereafter as such. This plan also outlines CT DOT's strategic five point action plan for prioritizing investments in the state's transportation system. This plan overlaps with US DOT's eight mandates for transportation planning. The components of this action plan, as well as the corresponding federal mandates, are as follows:

1. **Preservation - Maintain Existing Transportation System in a State of Good Repair**
   - Preserve and maintain the existing transportation system
   - Ensure safety on the transportation system
   - Promote economic vitality with the aid of the transportation system

2. **System Modifications - Safety and Modernization**
    - Manage and operate the transportation system
    - Ensure safety on the transportation system
    - Improve accessibility and mobility within the transportation system
    - Integrate and connect the transportation system
3. **System Productivity – Efficiency**
    - Manage and operate the transportation system
    - Reduce energy use and negative impacts to quality of life & the environment from the transportation system
    - Promote economic vitality with the aid of the transportation system
4. **Economic & Environmental Impact – Quality of Life**
    - Promote economic vitality with the aid of the transportation system
    - Reduce energy use and negative impacts to quality of life & the environment from the transportation system
    - Ensure safety on the transportation system
    - Secure the transportation system
5. **Strategic Capacity Improvements**
    - Manage and operate the transportation system
    - Improve accessibility and mobility within the transportation system
    - Integrate and connect the transportation system

As with previous iterations, the long range plan underscores the importance of multi-modal transportation systems which increase connectivity and enhance mobility. Innovation and efficiency arealso hallmarks of the plan, which is broken into two stages. The 5-year Ramp-Up Plan serves as the first stage, consisting of immediate, short-term investments, whereas the second stage embodies the longer-term version.

The plan divides the state into four State overlapping transportation corridors: New York to New Haven; New York to Hartford; New Haven-Hartford-Springfield; and Eastern Connecticut. Investment highlights within the region, part of the New York to New Haven corridor, are presented below:

Highway:
- Widen I-95 from NY to New Haven
- Complete the Route 7 and Merritt Parkway/Route 15 interchange

Rail:
- Restore rail infrastructure, including bridges, track, catenary
- Improve safety and reliability of service
- Expand and enhance service for more frequent and more express service Upgrade all 4 tracks to support high-frequency local and express service Add and modernize stations
- Improve station access (through parking expansion, bus connections and shuttles, bicycle and pedestrian access)
- Upgrade branch lines to provide full commuter service on all lines

Bus:
- Expand service 25% to enable better access in urban areas

CT DOT Master Transportation Plan

The 2011-2015 CT DOT *Master Transportation Plan* represents the transportation planning priorities of the State of Connecticut. The document also reinforces the five-step action plan identified in the LRP, emphasizing the need for governmental entities to coordinate transportation and land use planning. The economic realities of the 2005-2010 timeframe are also acknowledged.

The *Master Transportation Plan* incorporates all projects included in the State's Transportation Improvement Program, including those incorporated into the Region's TIP. This includes highway projects (I-95 operational lanes, Route 15 shoulder and bridge state-of-good-repair, and Routes 1 and 7 improvements) transit projects (New Haven Line rail car replacement, Norwalk and Saugatuck Rail Bridge Rehabilitation, Catenary Replacement, and Danbury and New Canaan Branchline Improvements) and bicycle and pedestrian initiatives.

4 | Land Use, Economic Development and the Environment

LAND USE

Research has demonstrated that land use factors can influence traveler behavior. Factors such as population density, land use mix, street connectivity, parking supply, job concentration, and regionalaccessibility each impact what mode a traveler uses as well as the number and length of trips. Land use policy choices are therefore seen as one way to impact traveler behavior and work towards desirable planning outcomes. In the South Western Region, responsible land use policies are one of the tools available to municipalities to address the problem of recurring congestion.

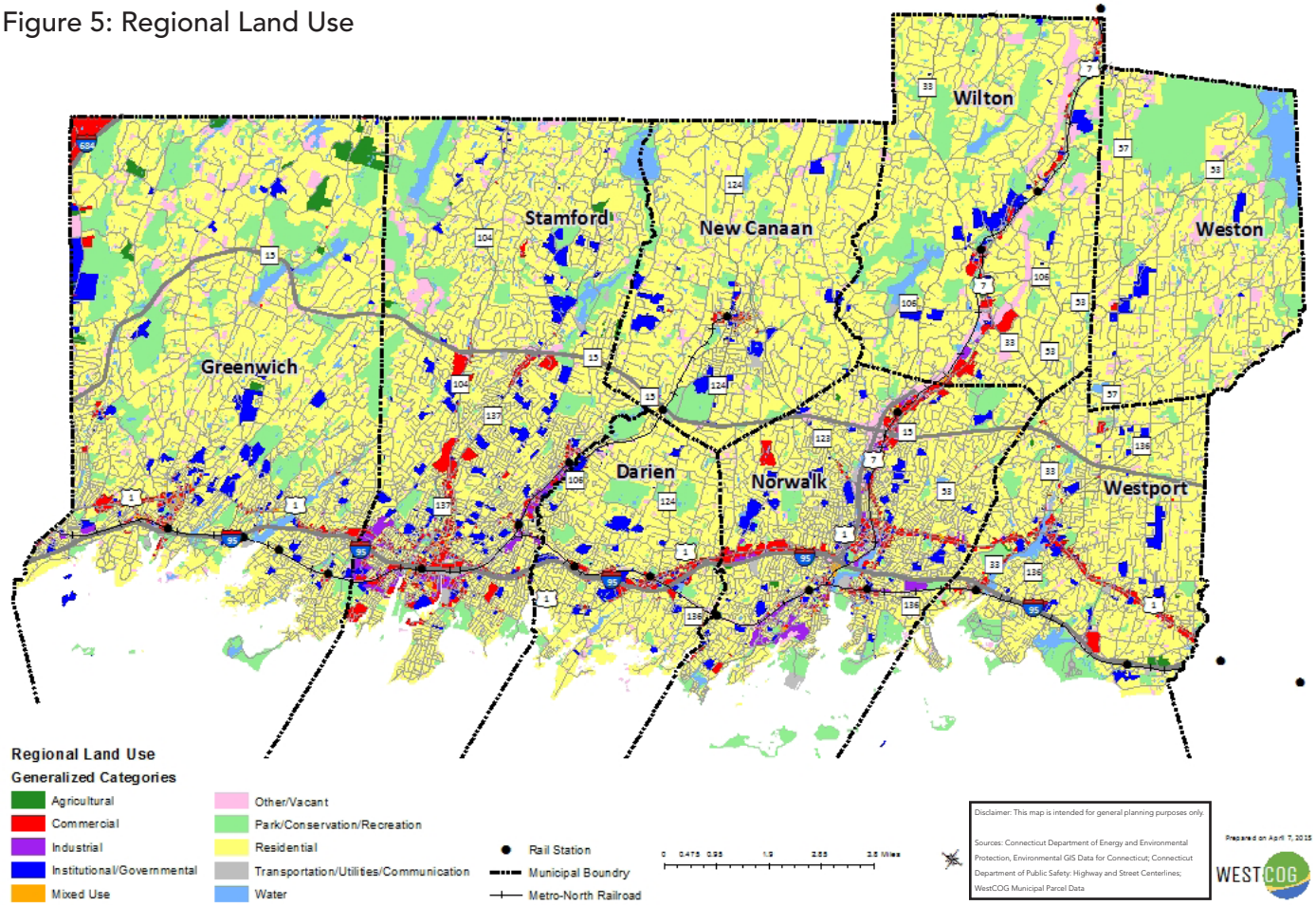
In recent years, there has been a trend towards land use policy that supports and is supported by existing transportation infrastructure. This is often referred to as Transit Oriented Development (TOD), which is an important smart growth strategy. Executive Order 15, issued in 2006 by Governor M. Jodi Rell, created of an Office of Responsible Growth to advance smart growth policy. This office is tasked with coordinating state efforts to promote livability and economic development, protect natural resources, revitalize cities, and strengthen communities. The Executive Order required a review of "transportation policies and projects toincrease opportunities to promote mass transit and roadway design that support state and local economic development while preserving and enhancing the character, as well as the 'walkability,' of our communities." CT DOT's *Master Transportation Plan 2011-2015* and *Long Range Transportation Plan 2009-2035* incorporate themes such as increased density in downtown areas and locations served by transit as well as TOD along the New Haven Line and other major transit corridors.

Photo 4: Main Street in Norwalk

The South Western Region exhibits diverse land use patterns that range from urban to suburban. This heterogeneity challenges the transportation system, which must accommodate the different needs of the urban core and lower density outlying areas.

A *Regional Land Use and Zoning inventory,* describing the general land uses and zoning patterns throughout the Region, is presented in the figures and tables below. As part of the inventory, ten categories of land uses were identified by examining parcel and assessor data provided by the Region'smunicipalities1. Table 16 below provides the total acreage of each land use type by municipality along with percentages of the municipalities' total land area.

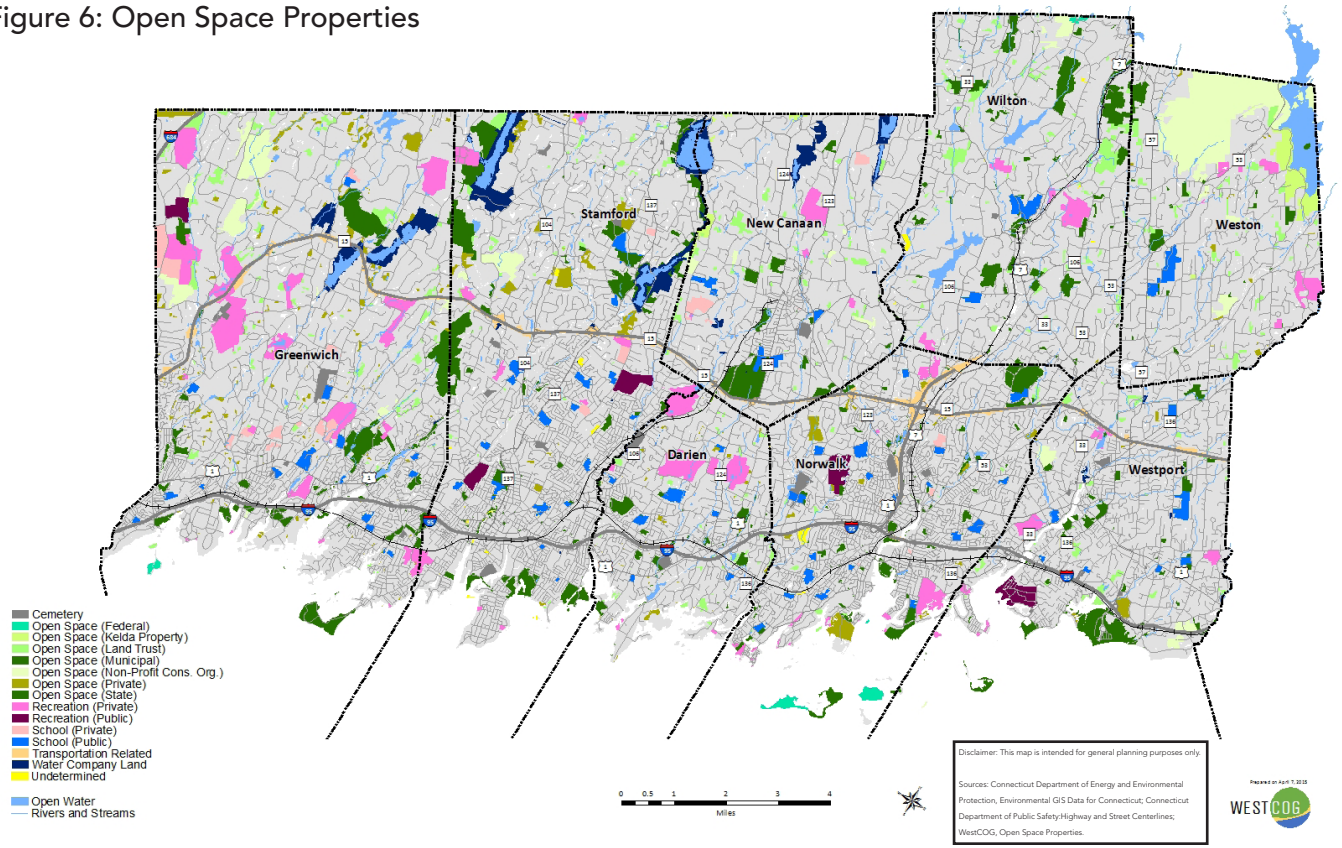
Figure 5: Regional Land Use



By far the most prevalent land use throughout the Region is Residential, which accounts for a total of 85,079 acres, representing 62.2% of the Region's land area. Greenwich has the most residential land ofany municipality (18,582 acres) while New Canaan has the highest percentage of residential land (73.6%). Although the residential land use category does not distinguish between lower density single-family and higher density multi-family housing, most of the residential land contains low-density single family housing. Multi-family and small lot single-family housing tends to be found in the urban cores of Greenwich, Norwalk, and Stamford, as well as along the US 1 corridor.

Commercial land uses, which total 3,314 acres or 2.4% of the Region's land area, are mostly linear in geography. Commercial land uses are located along the US 1 and US 7 corridors and to a lesser extent north of Downtown Stamford along CT 104 (Long Ridge Road), CT 137 (High Ridge Road), and Summer Street. There are also concentrations of commercial land uses in the downtowns of Darien, Greenwich, New Canaan, Norwalk, Stamford, and in South Norwalk. Though no distinction is made between different types of commercial land uses, commercial office space tends can be concentrated in Downtown Stamford and the Merritt-7

Figure 6: Open Space Properties



Land devoted to parks, recreation, and conservation is the second most prevalent land use throughout the Region, totaling 19,501 acres, which represents 14.3% of the Region's total land area. Greenwich has the highest total acreage of these land uses, at 5,286 acres, while Weston has the highest percentage at 23.9%. Though a significant amount of this land in this category is municipal parks, the majority of parcels in this category are country clubs and private land trust properties.

Land used for transportation, infrastructure, and communication purposes are the third most prevalent type of land use in the Region, totaling 11,846 acres or 8.7% of the Region's land area.

office park in Norwalk as well as downtown Greenwich while more "Main Street" style businesses are situated in the downtown areas of Darien, Greenwich, New Canaan, Norwalk, Stamford, and Westport, as well as South Norwalk. Suburban strip type uses are found between the Region's urban cores, mostly along the US 1 and US 7 corridors.

The majority of land in this category is devoted to streets, highways, and railroads, while lesser amounts represent land used for infrastructure related to energy, communications, and water resources. More developed municipalities have both a higher absolute and percentage of land in this category, as they contain more streets and other infrastructure.

Table 16: Land Use by Municipality, Acres and Percent

Source: SWRPA Regional Land Use and Zoning Inventory, 2011

Geography	Agriculture	Commercial	Industrial	Institutional/ Governmental	Mixed Use	Other/ Vacant
Darien	0 / 0.0%	217 / 2.6%	0 / 0.0%	405 / 5.0%	0 / 0.0%	309 / 3.8%
Greenwich	513 / 1.7%	579 / 1.9%	41 / 0.1%	1,149 / 3.7%	103 / 0.3%	1,461 / 4.7%
New Canaan	0 / 0.0%	52 / 0.4%	2 / 0.0%	466 / 3.2%	12 / 0.1%	436 / 3.0%
Norwalk	21 / 0.1%	704 / 4.8%	351 / 2.4%	767 / 5.2%	107 / 0.7%	765 / 5.2%
Stamford	98 / 0.4%	1,001 / 4.1%	418 / 1.7%	1,115 / 4.5%	32 / 0.1%	945 / 3.8%
Weston	0 / 0.0%	10 / 0.1%	0 / 0.0%	214 / 1.6%	0 / 0.0%	668 / 5.1%
Westport	56 / 0.4%	422 / 3.2%	1 / 0.0%	450 / 3.5%	10 / 0.1%	464 / 3.6%
Wilton	5 / 0.0%	330 / 1.9%	28 / 0.2%	521 / 3.0%	10 / 0.1%	975 / 5.6%
South Western Region	**694 / 0.5%**	**3,314 / 2.4%**	**840 / 0.6%**	**5,086 / 3.7%**	**273 / 0.2%**	**6,022 / 4.4%**

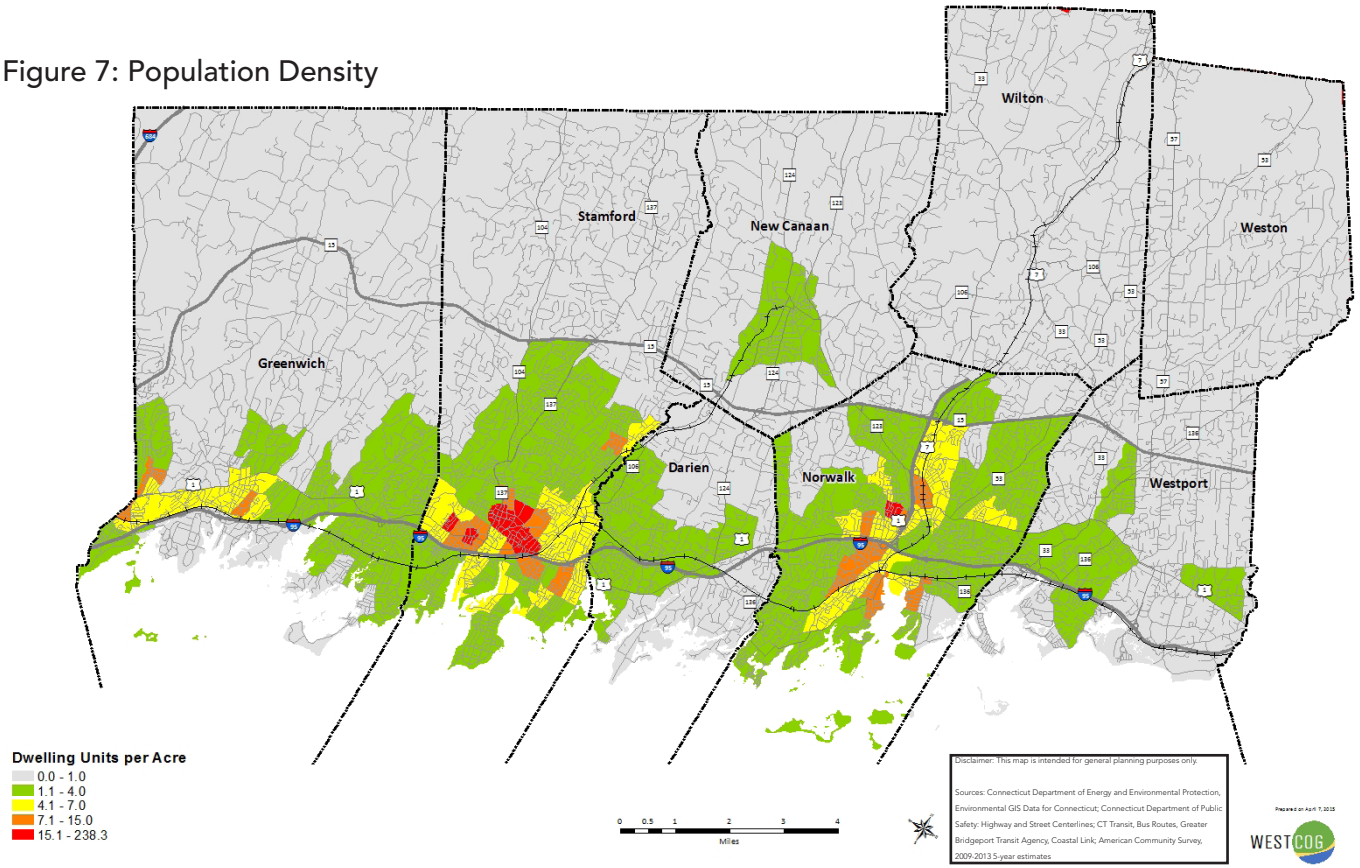
Geography	Park/Conservation/ Recreation	Residential	Transportation/Utilities/ Communication	Water	Total (Acres)
Darien	902 / 11.0%	5,650 / 69.0%	568 / 6.9%	133 / 1.6%	8,185 / 100.0%
Greenwich	5,286 / 17.0%	18,582 / 59.8%	2,384 / 7.7%	984 / 3.2%	31,082 / 100.0%
New Canaan	1,397 / 9.7%	10,617 / 73.6%	1,052 / 7.3%	393 / 2.7%	14,424 / 100.0%
Norwalk	1,434 / 9.7%	8,254 / 55.7%	2,175 / 14.7%	239 / 1.6%	14,817 / 100.0%
Stamford	3,315 / 13.5%	14,155 / 57.6%	2,688 / 10.9%	807 / 3.3%	24,574 / 100.0%
Weston	3,166 / 23.9%	7,952 / 60.1%	478 / 3.6%	735 / 5.6%	13,224 / 100.0%
Westport	1,223 / 9.4%	8,589 / 66.0%	1,425 / 10.9%	378 / 2.9%	13,018 / 100.0%
Wilton	2,778 / 15.9%	11,279 / 64.5%	1,076 / 6.1%	497 / 2.8%	17,498 / 100.0%
South Western Region	**19,501 / 14.3%**	**85,079 / 62.2%**	**11,846 / 8.7%**	**4,166 / 3.0%**	**136,821 / 100.0%**

Vacant land is the fourth most prevalent category of land use throughout the Region, totaling 6,022 acres or 4.4% of the Region's land area. This category contains land that has no identified use according to the assessor's records. However, the majority of the land in this category represents the large right-of-ways associated with I-95, CT-15, and US-7 expressways and Metro-North railroad. Wilton has a relative abundance of vacant land in the Route 7 expressway right-of-way. The remaining land in this category may be available for development or, because of lot geometry or building codes, be unbuildable.

Land devoted to institutional and governmental uses is the fifth most prevalent land use type in the Region, totaling 5,086 acres or 3.7% of the Region's land area. This category, which includes government facilities, schools, healthcare facilities, houses of worship, and non-profit organizations, has a less well-defined geography, but is concentrated in the urban cores of the Region as well as along its major transportation arteries. Greenwich and Stamford have the highest total acreage of land in this category, at 1,149 and 1,115 acres, respectively, while Norwalk has the highest percentage of such lands, representing 5.2% of its total land area.

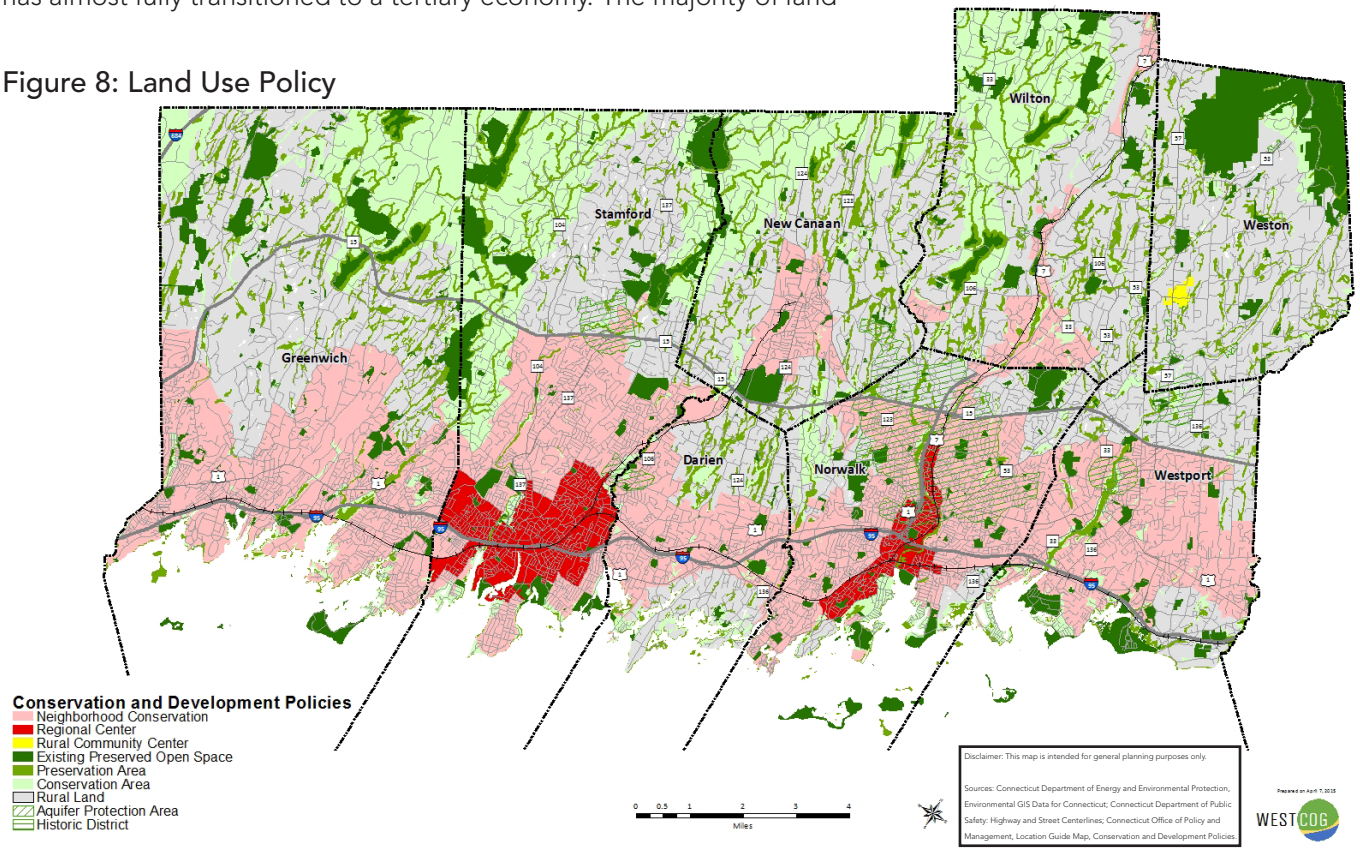
Uses categorized as Mixed Use, Industrial and Agricultural represent a relatively small amount of land throughout the Region, totaling 1,808 acres, or 1.3% of the Region's total land area. This reflects the

Figure 7: Population Density



fact that single-use development patterns predominate throughout the Region, with the only appreciable amounts of "Mixed Use" land located in the dense urban areas of Greenwich, New Canaan, Norwalk, and Stamford. The relative lack of land classified as either Industrial or Agricultural reflects the fact that, despite historic development patterns, these types of use are practically non-existent today in a Region's that has almost fully transitioned to a tertiary economy. The majority of land classified as Industrial represents storage, warehouse, and shipping uses, while the majority of land classified as Agricultural represents greenhouses and nurseries.

Figure 8: Land Use Policy



LAND USE POLICY

Given the physical and fiscal constraints that limit major expansion of the transportation network, this Plan promotes higher density, mixed use development that supports and is supported by the transportation investment recommended in this plan.

SWRPA's *Regional Plan of Conservation and Development, 2006-2015*, under the guiding principles of centrality and promoting development along corridors, recommends more compact and mixed use development targeting transportation hubs and other areas where supporting infrastructure exists. To support this development, the plan promotes access

Photo 5: Top left, the Harbor Point Development under construction in Stamford's South End. Photo 6: Top right, Atlantic Street will be rebuilt as part of the redevelopment of the South End of Stamford. Photo 7: Bottom left, new development in South Norwalk. Photo 8: Bottom right, a new street will increase connectivity through the Reed-Putnam site in South Norwalk.

management strategies, improved pedestrian circulation and bicycle encouragement, and transit enhancements. Rehabilitation of abandoned or underused properties as well as adoption of village district and traditional neighborhood development ordinances are land use practices that promote sustainability.

The State of Connecticut requires municipalities to update their Local Plans of Conservation and Development (PoCD) once every ten years. The PoCD sets forth local policies on land use, conservation, housing, sewers, and transportation along with other issues that impact development. The Region's municipalities take a proactive stance towards land use as it relates to transportation that focuses on preserving community character and discouraging incompatible development.

Efforts to plan for TOD go hand-in-hand with the goal of increasing the availability of affordable housing. SWRPA's Housing Needs and Supply Assessment (2007) placed an emphasis on responsible growth andestablishing higher density housing and mixed-use development within walking distance of rail stations, town centers and corridors with frequent bus service. Other strategies recommended in the report include:

- Creation of overlay districts in local zoning regulations which permit housing at densities appropriate for the available infrastructure;
- Modified parking requirements within overlay districts that reflect the availability of transit.

Public Act 07-4, signed into law in 2007, contains a provision that encourages local zoning commissions to create Incentive Housing Zones (IHZ) in locations near transit facilities, areas of concentrated development, or areas where supporting infrastructure is already in place or planned. An IHZ designation creates minimum density requirements that exceed the underlying zone's existing characteristics, allows for mixed-use development, and requires a 20% affordable housing set aside. Darien, New Canaan and Norwalk received grants from OPM to

create IHZs.

According to Connecticut General Statutes, TOD is formally defined as "development within one-half mile of public transportation facilities, including rail and bus rapid transit services, which meets supportive standards for land uses, built environment densities and walkable environments, in order tofacilitate and encourage the use of those services." In 2007, the State of Connecticut authorized initial grant funding to encourage development and implementation of TOD. . In February 2011, the State Bond Commission authorized funding for the program. In April of 2011, the United States Department of Housing and Urban Development (HUD), in partnership with local elected officials, MPOs and COGs, launched the *New York & Connecticut Sustainable Consortium* to further enhance TOD efforts, particularly along the Metro-North New Haven corridor and its branchlines.

In 2013 SWRPA teamed with Parsons Brinckerhoff to develop a transit node feasibility study and action plan for East Main Street in Stamford. The effort investigated opportunities to generate TOD and enhance livability, including the construction of an intermodal transit facility at the future intersection of East Main Street and the Stamford Urban Transitway. The City of Stamford recently completed a TOD study of the Glenbrook and Springdale stations on the New Canaan branch. The City of Norwalk has continued their efforts to plan for TOD in the area around the South Norwalk rail station. Wilton recently secured funding to fund the Wilton Station Walkway project, a pedestrian bridge over the Norwalk River to connect the Wilton Center area and the Wilton rail station.

ECONOMIC DEVELOPMENT

The economic vitality of the South Western Region is dependent a well-functioning transportation system. From commuting to commerce, the means by which people and goods are moved impact the Region's ability to support existing industry, attract new growth, and position itself prominently in the global marketplace. Continued and sustained investment in the Region's roads, bridges, public transportation system, and rail freight capacity is critical to the long term success of the Region.

The Region's economy is notable for its highly skilled workforce and concentration of finance and information sector firms and workers.

Photo 9: Left, Site preparation at Gateway Site. Stamford Transportation Center is visible in the background.
Photo 10: right, New, affordable housing near Stamford Transportation Center. More construction is visible in background.

> In recent years, several large real estate developments have begun to fundamentally transform the Region's communities and the demands on the transportation system

However, the severe and persistent congestion on the Region's highway and railroad is an economic deterrent. The role played by transportation in facilitating the movement of people and goods, and thus in promoting economic development, cannot be underestimated.

In recent years, several large real estate developments have begun to fundamentally transform the Region's communities and the demands on the transportation system. These include Harbor Point in Stamford's South End, West Avenue development in Norwalk, redevelopment of the South Norwalk rail station into an intermodal hub, and the Georgetown Development near the Weston and Wilton town borders with Redding. Stamford's Harbor Point is comprised of five distinct areas incorporating mixed-use and TOD principles, including over 2,100 new residential apartments, commercial office space, and retail uses. Free shuttle service connects the development with the nearby Transportation Center, with a water taxi available during warmer months. In Norwalk, West Avenue has experienced dramatic transformation, with the construction of multiple mixed-use developments in close proximity to the I-95 and US-7 interchange. Similar to Harbor Point, the Waypointe District in South Norwalk embodies principals of TOD, with 444 residential apartments and ground floor retail establishments, while offering shuttle service to the South Norwalk rail station, bike storage, and pedestrian friendly sidewalks. As of February 2015, a committee comprised of the Norwalk Common Council Planning Committee, Redevelopment Agency, and the Planning Commission chairman were reviewing plans for a proposed shopping mall. The proposed mall and mixed-use development is also situated along West Avenue in the vicinity of Waypointe, and could include office, retail, hotel, and educational space. Continued consultation and cooperation between partners inside and outside the Region will be required ensure these developments achieve the responsible growth goals of reducing sprawl, mitigating traffic congestion, and increasing travel options.

In order to promote a unified approach to regional economic development goals, the South Western Region collaborated with the Greater Bridgeport Region to create the One Coast, One Future Comprehensive Economic Development Strategy(CEDS). The CEDS was reviewed and approved by the United States Economic Development Administration (EDA) in May 2010. The CEDS is intended to bring together the public and private sectors in the creation of an economic roadmap to diversify and strengthen the regional economy. The CEDS provides the EDA and other potential funders with a list of prioritized capital projects that, if implemented, would promote economic development.

One of the goals of the CEDS is to take a "holistic approach to transportation and infrastructure investment planning" through the

following objectives:

- Facilitate greater communication with New York and New Jersey regarding common interests and cross-state planning and collaborate with various regional entities.
- Improve the capacity of traveling options for the efficient movement of commuters.
- Create incentives for freight to move through the Region during off peak hours, thereby increasing capacity for commuters.
- Enhance connections to New Haven and Meriden, and northern connections to Danbury and Waterbury so that people can move more easily between home and work.
- Utilize ports and waterways to ease a percentage of the goods and people moving through the Region on highways and trains.

The CEDS also describes the steps necessary to begin to achieve these objectives, including implementation of locally-identified TOD and transportation demand management opportunities and creation of a range of housing options to reduce the affordability gap. These measures will allow young professionals and middle class families to work and live in the same area and ensure that older residents can continue to enjoy their established quality of life.

As a US EDA approved CEDS, Coastal Connecticut is eligible for funding for the following programs:

1. Global Climate Change Mitigation Fund
2. Partnership Planning Fund
3. Local Technical Assistance Fund

ENVIRONMENT

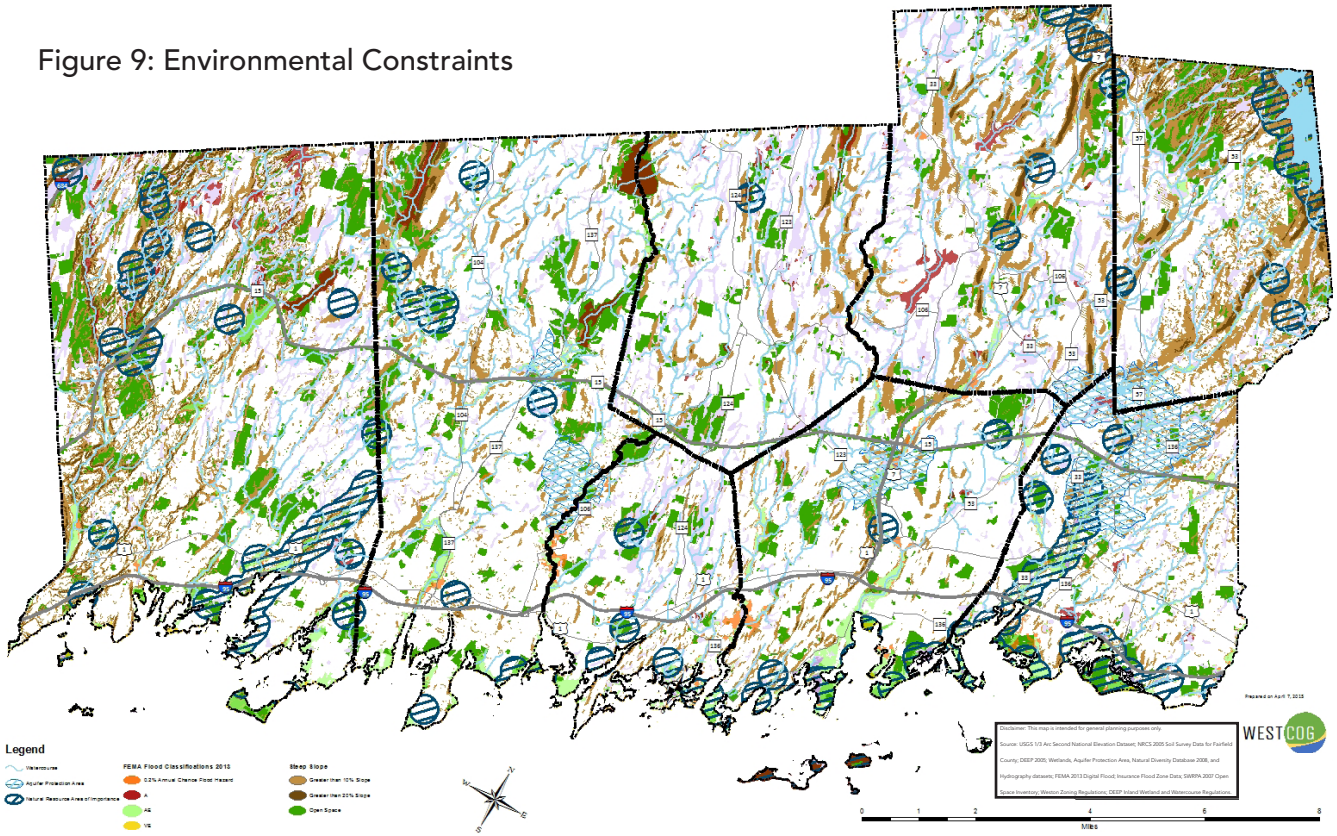
Connecticut's South Western Region is host to abundant natural resources that have influenced its development, transportation patterns and land use policies. The region's proximity to Long Island Sound, and the numerous rivers and streams that feed into it have been critical in shaping the Region and defining its character. There are also fresh and tidal wetlands, expansive flood plains, acres of parks, open space and protected land, as well as sensitive natural communities that may host threatened, endangered or species of special concern. Each of these natural areas impacts growth, development, and conservation in the Region.

Photo 11: Route 1 crosses the Saugatuck River in Westport.

Environmental conservation, mitigation, land use, and historic preservation are all important considerations that affect the transportation planning process. Wherever possible, transportation improvement projects should be designed to minimize their negative impacts to natural systems. Improving the connection between land use and transportation planning as well as steering new construction into development on already developed areas, along with improvements to the transit system will help to mitigate congestion, increase mobility, improve air quality and minimize disturbances to natural resources. Linking communities to recreational areas and the natural environment also plays a vital role in protecting natural resources and promoting environmental awareness. To that end, a number of greenway projects are being pursued by the Region's municipalities. These include a Norwalk River Valley Trail, Merritt Parkway Trail (part of the East Coast Greenway), and Mill River Greenway. Environmental impacts need to be considered as modifications are made to the transportation network. Various federal, state, and developed areas helps to reduce the strain that both development and transportation needs have on the natural environment, and aids in the preservation of open space.

Centrality, a principal theme of the South Western Region Plan of Conservation and Development 2006-2015, which focuses new

Figure 9: Environmental Constraints



local regulations are in place to protect natural resources, which may influence the transportation planning process. The Connecticut Coastal Management Act, Inland Wetland and Water Courses Act, Clean Water Act, Clean Air Act, in addition to state and local flood plain regulations all provide guidance that must be adhered to as transportationprojects are developed.

Impervious surfaces and stormwater have the potential to significantly affect natural resources. Much of the Region has been developed, with more than 20% of the total land area covered by impervious surfaces. Streets, parking lots and rooftops account for a majority of impervious land cover in the Region. However, compacted soils from playing fields, yards and patios also add to impervious cover. As the transportation network grows, development increases, and parking expands, impervious surface cover will continue to increase.

Impervious surfaces have been shown to increase the volume and rate of stormwater, and may exacerbate flooding in urbanized areas. Water quality may also be affected by impervious surfaces, which have been identified as a leading contributor of non-point source contamination.

Proper stormwater management can diminish the effects of impervious surfaces and reduce the amount of water conveyed to rivers and streams during a storm event. Stormwater management focuses on directing water off of roadways and controlling the amount and direction of rainfall and melting snow,which helps reduce the potential for damage to infrastructure. Enhancements to stormwater systems can often be incorporated into transportation projects, as highlighted in SWRPA's 2011 and 2012 Watershed Based Plans (WBP). For instance, the use of pervious pavement, reduced street widths, increased roadside vegetation, grass-lined swales, and bioretention practices have all been shown to be effective techniques and best management practices (BMPs) for treating and reducing runoff from roadways.

CLIMATE CHANGE

There is a general scientific consensus that the Earth has seen an increase in average atmospheric and surface temperatures over the last 50 years. Changes in global and regional climates may be attributed to natural factors as well as to human activities contributing to an increase of greenhouse gases in the atmosphere. Burning of diesel and gasoline by motor vehicles and other equipment accounts for approximately forty percent of Connecticut's greenhouse gas emissions and contributes to degraded air quality in the Region[v]. Emissions from mobile sources account for the greatest percentage of green house gases in the Region[vi]. One goal of transportation planning is to improve air quality and reduce greenhouse gas emissions from transportation sources. This can be achieved through a reduction of vehicle miles traveled (VMT), as well as by converting trips from single occupant vehicles to other modes. The State of Connecticut has begun working to address climate change through the passage of legislation[vii], development of a Climate Change Action Plan[viii], and formation of Climate Change Steering Committee and Adaptation Subcommittee[v]. Together, these efforts attempt to establish goals and strategies to reduce greenhouse gases and set bench marks to monitor progress[ix]. The Region will continue to work with the state to achieve the

goals established by the above initiatives.

In June 2011, US DOT developed policy to integrate consideration of climate change impacts and adaption into the planning, operations, policies, and programs of the agency. The policy originated from Executive Order (E.O.) 13514 – *Federal Leadership in Environmental, Energy, and Economic Performance*, and includes direction to address climate adaption planning. In 2014, US DOT published its *Climate Adaptation Plan: Ensuring Transportation Infrastructure and System Resilience*, expanding on the objectives of E.O. 13514, as well as E.0. 13653, which also addresses climate change impacts. As of December 2014, FHWA published *Order 5520: Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events*. The purpose of this directive is to establish an FHWApolicy on the subject matter, as well as to implement the provisions discussed above. FHWA also instituted climate change pilot programs in 2010-2011 and again in 2013-2014 to address vulnerability and resilience. No pilot projects were chosen for the region.

Emissions from mobile sources account for the greatest percentage of green house gases in the Region.

Changes in climate influence global temperatures; the quantity, rate, and spatial distribution of precipitation; cloud cover and evapotranspiration, in addition to other factors. The results increase the potential likelihood for the region to experience increases in the frequency and severity of storms, drought, extreme head and cold, as well as sea level rise (SLR) and storm surge for coastal areas. Infrastructure in the region is vulnerable to the impacts of climate change, although specific vulnerability by hazard varies by geography. The recently completed WCCOG Natural Hazard Mitigation Plan (HMP) for the region reveals both coastal and riverine flooding to be of significant concern and a threat to area infrastructure. Wind damage from storms (nor'easters, thunderstorms, tornados, etc.) and subsequent downed trees/utility lines also present inherent risk to infrastructure, including the mobility of thetransportation network.
As part of HMP efforts in the region, an impact assessment was conducted using SLR data from The Nature Conservancy (TNC) for years 2020, 2050, and 2080. WCCOG also conducted a second GIS model using variables such as elevation, soil type, impervious area and other hydrologic components to determine susceptibility to Extreme Precipitation Events (EPE).

The SLR impact assessment found potential impacts in all five coastal town with over 7,000 parcels and7% of the regions assets impacted in the most severe 2080 SLR scenario, impacts are also anticipated to occur well inland for some of the major rivers—up to four miles in Westport. The EPE model indicates that hundreds of location on major arterials and highway, and potentially, thousands of locations on local streets and roads are vulnerable for all eight towns in the SWR.

HMP Sea Level Rise (SLR) Vulnerability

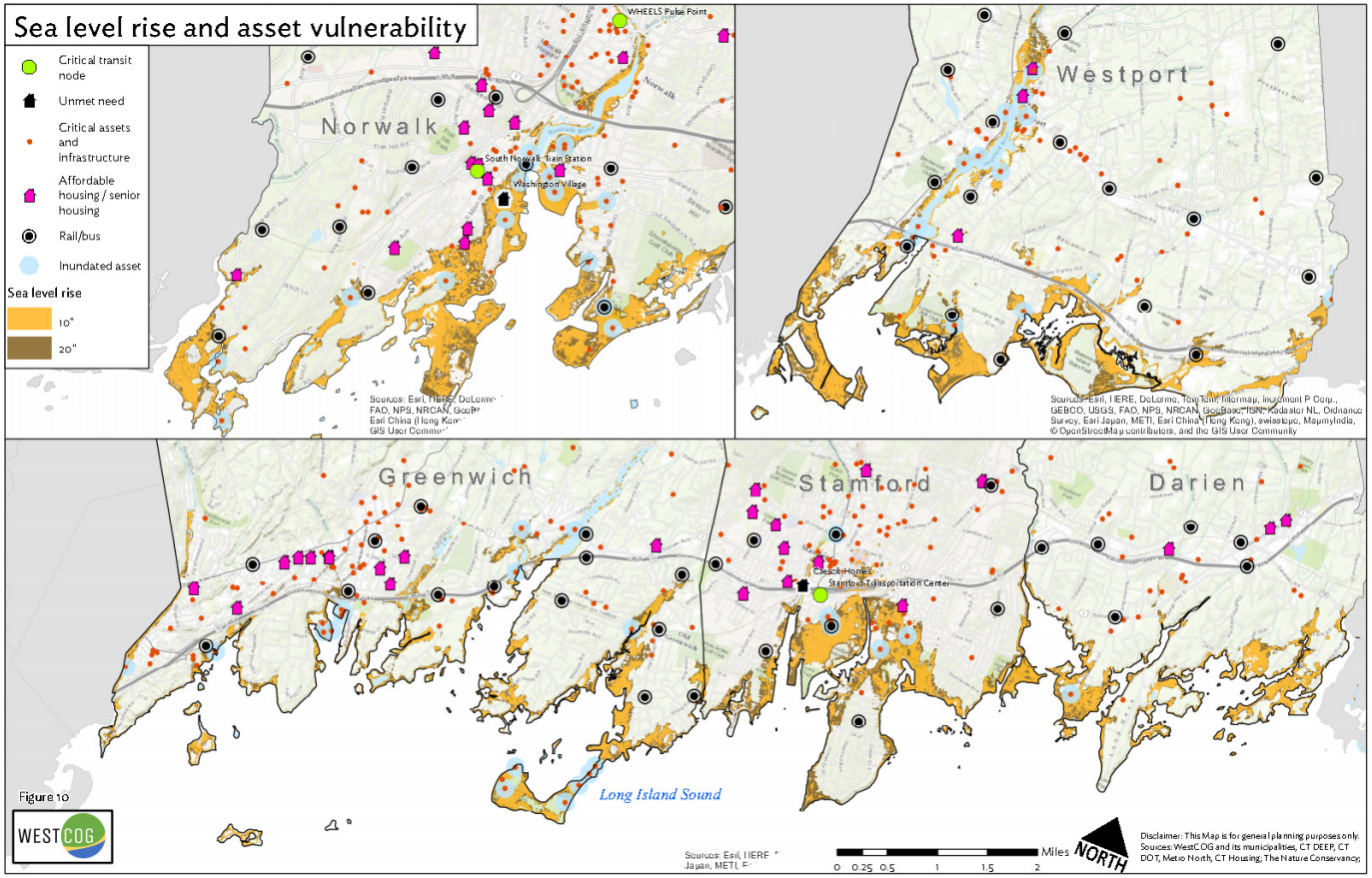
This modeling effort found that that all five coastal towns have vulnerable assets, transportation infrastructure, and parcels; and that the impacts are

not strictly along the coast of Long Island Sound. Impacts can occur well inland (i.e. north of I-95) and along areas adjacent to the Mianus, Norwalk, and Saugatuck Rivers, which are major estuaries running inland from Long Island Sound.

Transportation vulnerability is potentially significant, particularly in the 2080 scenario (Figure 10). For that scenario approximately 5.1 miles of highways, 81.5 miles of roads appear vulnerable to inundation, including 24 separate locations along the rail system (Table 17). Five major clusters of impacts occur. One is on the eastern coast of Greenwich Cove. Another occurs in parts of downtown Stamford. A third is along the east bank of the mouth of Five Mile River. The final two are scattered along the estuaries of the Norwalk and Saugatuck Rivers respectively.

Please note that this modeling effort is highly dependent on the accuracy of the predicted elevation change brought about by SLR. The actual date of inundation for any one location is influenced by a wide variety of local, regional, and global factors. These results are intended for planning purposes only.Vulnerability should be further assessed by site assessment, and individual site or parcels impacts areinfluenced by local topography, infrastructure, and engineering methods.

Figure 10: Predicted 2080 Sea Level Rise (SLR) and Vulnerable Areas



HMP Extreme Precipitation Event (EPE) Vulnerability

The intent of this model is to identify inland locations in the region that are vulnerable to the hydrologic impacts of climate change, specifically extreme precipitation events. Urban areas, areas with little drainage, and locations in and around streams, rivers, and ponds will tend to elevated risk while forested areas with well drained soils should have the lowest vulnerability to EPE.

Roughly 70% of the region has reduced risk and 30% of the region has elevated risk, 20% of which lies in the most vulnerable EPE category. As depicted in Figure 11, locations with the green colors are typically much drier locations in the landscape, and these areas will have very little flooding risk while the red colors are areas more prone to impacts during EPE. Please note that all medium and higher density urban areas are assumed to be most vulnerable to EPE because of the inherent flashiness of runoff in urban land use areas.

The least vulnerable and drier areas are primarily to the north of the Merritt Parkway corridor in theuplands areas away from the valley floors, including the hilly areas west of Route 7 in Wilton and themunicipal boundary between Greenwich and Stamford. The more vulnerable areas are typically in areas with urban development, topography that concentrates water flow, and soils that drain slowly such as downtown Stamford and Norwalk.

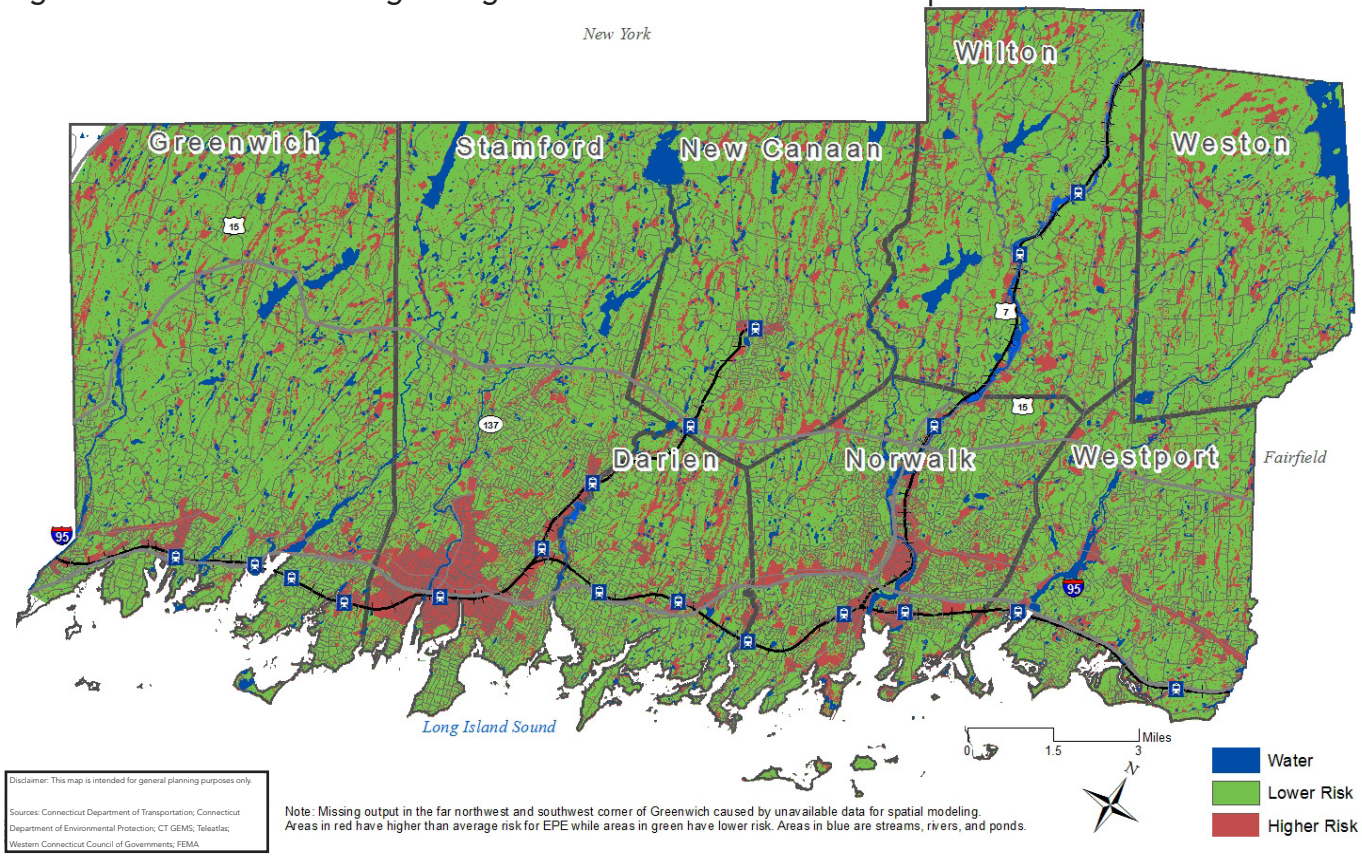
The impacts to infrastructure, land, and property inland from the coastal areas are potential significant from EPE. The vulnerability of transportation infrastructure is a particularly important planning consideration because of its role in providing evacuation routes for citizens for a variety of potential threats. This modeling effort suggests that Highways and Arterial-type roads are vulnerable to extreme precipitation events and that further evaluation of the potential impacts are warranted. For instance, about 700 locations along these roads intersected the 500-year FEMA floodplain and about 7,000 different stretches of road crossed areas with the higher or highest vulnerability class. Finally about 2,800 locations along major roads crossed non-perennial drainages that will concentrate water in EPE. Afar greater number of potential impacts would be included in this analysis if local roads were included.

While the model utilized very high resolution data, it is intended for planning purposes only. An assessment of the vulnerability of roads and other assets to drainage and runoff changes depends on the type and quality of site engineering, local land use, year of design, and other factors. The modeling should be interpreted within local regions and that values are for relative interpretation only. Impacts noted in this analysis effort should be evaluated by trained professionals such as civil engineers or landscape architects.

Table 17: Transportation Impacts from Sea Level Rise (SLR)

Impacts from SLR	Assets (count)	Rail Roads (# locations)	Vul. Roads (miles)	Vul. Arterial Roads / Highways (miles)	SLR Inundation Area (sq mi)
2020 SLR	11	17	46.4	1.7	2.7
2050 SLR	20	17	49.2	2.6	3.3
2080 SLR	45	24	81.5	5.1	48

Figure 11: South Western Region Higher Risk Areas for Extreme Precipitation Events



5 | Regional Transportation System

The South Western Region's multimodal transportation system is as complex as the planning challenges it faces over the next thirty years. Forward thinking decision making is necessary to address current and future needs, whether those needs are maintenance, system redundancy, technological innovation, or capacity expansion to meet rising demand. Meeting these needs also means overcoming constrains, including decreasing federal funding, physical limitations to widening highways, or community opposition to controversial proposals.

WestCOG and SWRMPO have advanced a planning program that aim to serve the region's needs while being mindful of constraints. This planning program serves as the basis for the policies, strategies, and recommended projects in this document. Most noteworthy among these studies is the seminal *Congestion Mitigation Systems "Vision 2020" Plan* (2003), which comprehensively studied the sources of and solutions to recurring congestion in the corridor between Greenwich and Branford. The plan determined that there was no magic bullet for mitigating congestion in the corridor. Instead, the plan recommended transportation and land use strategies, including:

- Improving the efficiency, operation and safety of existing transportation systems;
- Better managing the travel demand;
- Increasing the supply of transport services;
- Establishing policies that focus on centers rather than sprawl to enhance overall system performance.

Photo 12A: I-95 and the New Haven Line through Downtown Stamford.

Although more than a decade has passed since Vision 2020 was adopted, its strategies and recommendations continue to ring true. Demonstrating that fact, many of recommendations contained in Vision 2020 are currently being implemented. Strong advocacy from stakeholders will be required to realize the full breadth of plan's recommendations.

This chapter will address each of the major components of the South Western Region's transportation system, and lay the groundwork for continued progress towards the vision of a system that maximizes the efficiency of each mode and meets the needs of all system users.

HIGHWAYS and STREETS

The South Western Region contains a well-developed street network measuring about 1,530 miles. About 176 miles of the road network are state highways, including two high capacity expressways. The remainder of the street network is owned and maintained by the Region's municipalities. The street network faces distinct challenges: to make the system operationally sufficient and bring it into a state of good repair, to maintain functionality, and to enhance and diversify the system to meet demand and development trends in a context sensitive manner.

Maintenance is of paramount importance to the street network While maintenance and repair programs are focused on limited access highways, local needs, derived from pavement management systems, should also be considered when developing maintenance and paving programs to maximize pavement condition and longevity. Municipalities, which are responsible for the maintenance of nearly90% of the Region's centerline miles, are able to tap into state programs, such as Town Aid for Roads and the Local Capital Investment Program, to fund their paving programs.CT DOT strives to repave 10% of state highways each year through federal transportation funding available for collectors, minor arterials, and principal arterials.

Continued evolution of pavement management systems will improve pavement condition and longevity. Overcoming the financial challenges associated with local road maintenance will be complicated, given that the needs of the network exceed available funding. The uncertainty surrounding the federal surface transportation program as well as State and local budget constraints also add to the challenge.

Over 500 signals control traffic at the intersections throughout the region. Most of these signals, even those on state highways, are operated and maintained by municipalities. When properly timed, traffic signals increase vehicle and pedestrian capacity of an intersection and improve safety and operations for all users.However, intersection conflicts due to congestion, turning movements, lane conflicts or inadequate signage can affect traffic circulation and safety. New development, increased traffic volume or safety concerns can warrant traffic signals. Local officials have identified many intersections where upgraded signals would improve operations. Recommended projects that include new, upgraded, or retimed signals, lane restriping, new or additional turning lanes, or pedestrian facilities, are included in the project listing provided in Chapter 6.

Bridges, culverts, and other structures require constant monitoring and

Photo 12B: Stamford Urban Transitway, featuring travel lane, HOV lane and bicycle lane.

maintenance. There are 273 locally owned or maintained bridges in the Region, including 127 under twenty feet in length. Ever since the collapse of the I-95 bridge over the Mianus River in 1983, bridge maintenance has been a major concern for the Region. Most bridges under twenty feet in length have not been inspected since 1992. The State of Connecticut legislatively created a local bridge program to provide state grants and loans to municipalities for bridge construction projects. As of 2010, twenty-one bridges are eligible for funding through the local bridge program. In order to ensure state of good repair and the safety of the traveling public, funding for this program should be increased. Functionally obsolete rail bridges in the region continue to pose safety and operational hazards, as they are narrow, low, and create bottlenecks in the highway network. In Stamford, five rail overpasses (Atlantic Street, Elm Street, East Main Street, Canal Street and Greenwich Avenue) are particularly problematic, and require widening and increased clearance. The bridge carrying Metro-North Railroad over Atlantic Street is the first of these bridges scheduled to be repaired.

CRITICAL CORRIDORS

Stamford Urban Transitway

The Stamford Urban Transitway is a significant project for the City of Stamford. The Transitway is a new street that will provide a direct link between US 1 (East Main Street) and the Stamford TransportationCenter in the South End neighborhood. One travel lane is designed for general purpose traffic while the other is dedicated to buses, taxis, private shuttle vehicles, and high occupancy vehicles. New facilities for pedestrians and, bicyclists are also provided.

Phase I of the Transitway, between the Stamford Transportation Center and Elm Street, was completed in 2010. Phase II, which will link Elm Street to East Main Street, is currently under construction with an expected completion date of 2016

Though local streets make up the bulk of the Region's centerline miles, principal arterials account for the majority of the Region's vehicle miles traveled. Therefore, they deserve the most attention. These four "Critical Corridors" Interstate 95, Route 15 (Merritt Parkway), Route 1, and Route 7, are the most important elements of the regional transportation

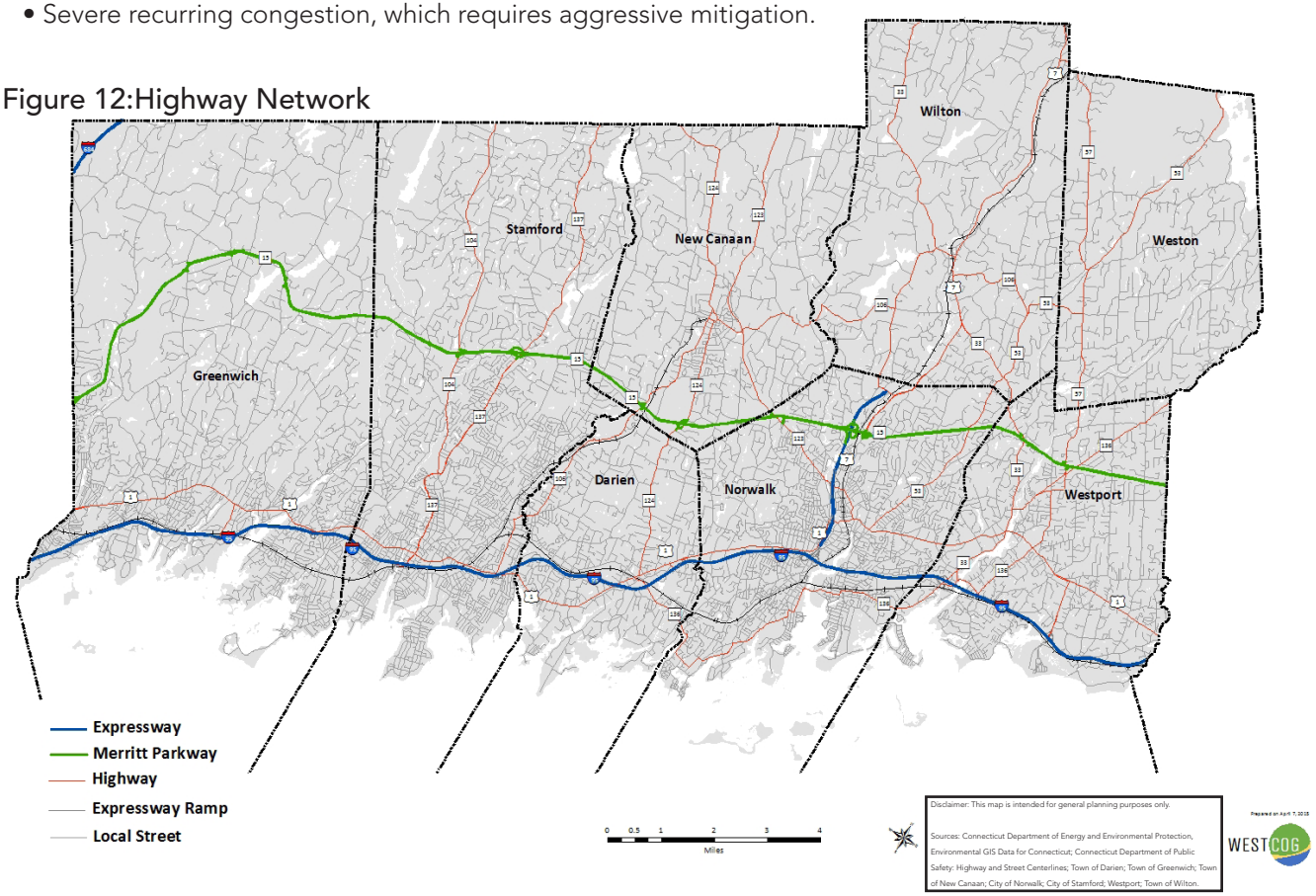
Photo 13: Congestion building along I-95 northbound near Exit 9 in Stamford.

network and therefore key to the local economy. These Critical Corridors also present the greatest planning challenges:

- Constrained right of way inhibits the ability to add major new capacity;
- Aging infrastructure requires more frequent and urgent maintenance;
- Severe recurring congestion, which requires aggressive mitigation.

These Critical Corridors must also be viewed in the context of the multimodal network, as transit willneed to be part of any effort to address capacity and congestion.

Figure 12:Highway Network



Interstate 95

Interstate 95, also known as the Connecticut Turnpike or Governor John Davis Lodge Turnpike, is the South Western Region's busiest highway. Traversing the Region from the state line in Greenwich to Westport, I-95 serves as the spine of the highway network, carrying upwards of 150,000 vehicles per day in certain segments and providing access to employment centers and residential areas alike. In addition to providing the main highway connection to Connecticut and the New York City Metropolitan Area, I-95 must also be viewed from a national and global perspective as a link in the superhighway that stretches 1,925 miles from Canada and Maine south to Florida, making it a critical route for passenger travel and goods movement.

Constructed during the 1950s as a toll highway, I-95 was a catalyst for the surge in population within the Region after its construction, as was typical of many new expressways during the infancy of the interstate highway program. The influx of new residents and the growth of employment in Norwalk, Greenwich, and Stamford resulted in a tremendous growth in traffic volumes, with average daily trafficnearly quadrupling between 1960 and the mid-1980s. An additional spike in traffic volume occured the elimination of tolls and removal of barriers in 1985,. There are now no tolls on any highway in Connecticut, which is rare among northeastern states.

Today, rush hour congestion on I-95 often stretches out well beyond the traditional rush hour, leadingto calls to add capacity. At present, there are generally three travel lanes in each direction. Within the last decade, speed-change lanes have been added where weaving movements were causing operational problems. Although there generally exists sufficient right-of-way to add capacity, the number of structures that would need to be altered make any initiative to add significantly to capacity cost prohibitive. Instead, currently planned upgrades to I-95 consist of targeted improvements that add capacity at specific locations, such as the nearly completed project to add speed change lanes at congested interchange with Route 7 in Norwalk. Funding constraints have resulted in delayed projectsthat are otherwise ready to move forward, including speed change lanes northbound between exits 8 and 10 (Project 135-309), and median and curb improvements between Exits 16 and 17 (Project 102-295).

In 2013, CT DOT began a major study under the Federal Highway Administration value pricing program to analyze whether pricing some or all of the capacity on I-95 could mitigate the nationally significant and long-standing recurring congestion in the corridor. The study involves a significant data collection effort travel demand modeling and microsimulation, and targeted outreach to key stakeholders. As of the publication of this plan, the final report and recommendations were forthcoming. More informationon this study and congestion pricing is provided in the *Congestion Pricing* section at the end of this chapter. Looking forward, a series of studies are advised to determine additional improvements needed along I-95, including:

- A safety and operational engineering study of the entire I-95 corridor within South Western Connecticut; and
- A corridor improvement program between exits 6 and 10 to address safety, operations and projected growth, including an evaluation of speed change lanes between exits 8 and 10

Commercial vehicles make up a greater percentage of I-95 traffic than they do on any other highway in the Region. Although congestion is overall the most critical issue on I-95, trucks have their own unique set of issues with which to contend. Connecticut has a deficit of truck parking at service plazas andprivate facilities, which results in drivers using the shoulders to reach their Federal Motor Carrier Safety Administration (FMCSA) mandated rest. Recent renovations to the I-95 service plazas added to the supply of commercial vehicle parking but has not solved the problem. Although commercial vehicles are involved in proportionally fewer crashes than their share of all vehicles on I-95, commercial vehicle crashes tend to cause more damage and therefore require a more significant incident

management response. Due to budget constraints, the weigh station located along the northbound lanes in Greenwich is open on a limited basis which means many trucks enter the state without ever being inspected. A weigh-in-motion system, similar to the one in Union on I-84 east, has long been proposed for the Greenwich weigh station. As WCCOG and CT DOT consider ways to improve I-95, consideration of the needs of commercial vehicles should be a priority.

Merritt Parkway (Route 15)

Route 15, also known as the Merritt Parkway, is nationally recognized for its historic beauty and unique design. The entirety of the Parkway is designated as a national scenic byway and a state scenic highway, and is included on the National Register of Historic Places. In 2010, it also was named to the National Trust for Historic Preservation's 11 Most Endangered Historic Places.

Just as important, and similar to I-95, The Merritt Parkway is a critical link in the South Western Region's highway network. The Merritt has interchanges with key arterials that connect the Region's downtowns and town centers, and serves as an alternate route for passenger vehicles when an incident disrupts Interstate 95. East of the Housatonic River, Route 15 continues as the Wilbur Cross Parkway and the Berlin Turnpike, providing access to central Connecticut and the I-91 corridor. Beyond the New York State border, the Merritt Parkway becomes the Hutchinson River Parkway, connecting the Region with Westchester County and New York City.

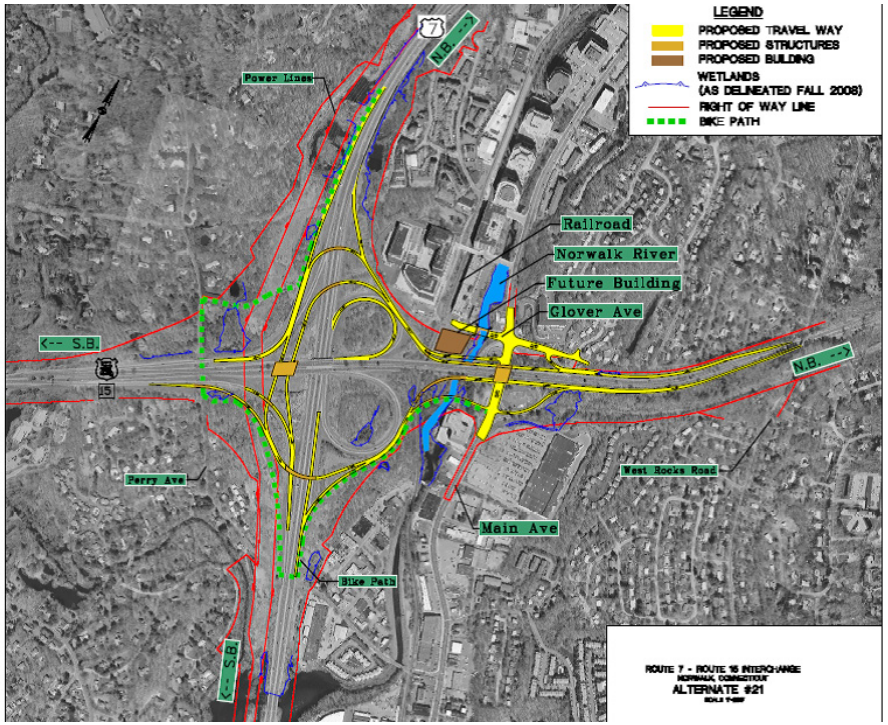
Unlike Interstate 95, the Merritt Parkway has two travel lanes in each direction, numerous interchanges with short acceleration and deceleration lanes, and functionally obsolete bridges built with clearances that are well below interstate standards. Because of these characteristics, commercial vehicles and oversized vehicles are entirely excluded from the Merritt. Tight curves and limited sightlines present a challenging driving environment, with speed limits set to 50 MPH within the Town of Greenwich.

There exists a tension between the Merritt Parkway's role as an integral part of the Region's transportation system and as an aesthetic monument worthy of historic preservation. This tension limits CTDOT's ability to modify, expand, or upgrade the Merritt to meet modern safety and design standards. The challenge therefore is to create a context sensitive and balanced approach to planning for the Merritt Parkway that addresses operational needs of the 21st century while maintaining the design integrity and character of a roadway constructed during the 1930s.

Construction of a context sensitive, fully directional Route 15 and Route 7 interchange is the South Western Region's top highway priority.

The interchanges in the area around the Merritt 7 office park, one of the largest employment centers in the Region and the most heavily developed area along the Merritt Parkway corridor, presents a unique set of planning challenges. At present, the Merritt Parkway has a closely spaced partial

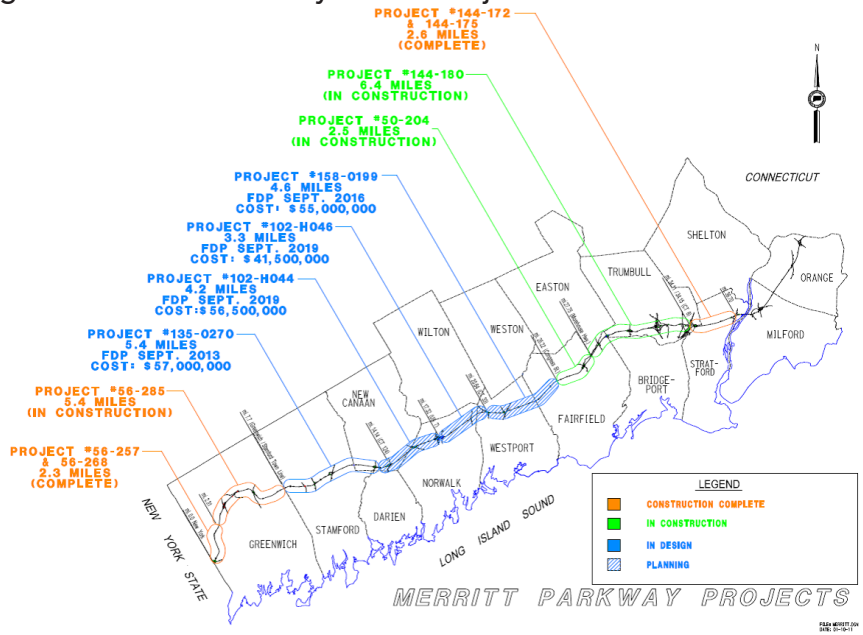
Figure 13: Merritt Parkway – Alternative 21C



interchange with both Route 7 and Main Avenue. The partial interchange only allows access from the northbound Merritt to Route 7 and from Route 7 to the southbound Merritt. Construction of a context sensitive, fully directional Route 15 and Route 7 interchange is the South Western Region's top highway priority.

Plans previously developed to reconstruct these interchanges have been delayed by legal actions broughtby groups concerned about impacts to the aesthetics and character of the Merritt Parkway, along with the destruction of some of its original structures. In 2009, a new design, Alternate 21c, was presented and favorably received by stakeholders. Alternate 21c would provide the connections required to make the interchanges fully directional, employing engineering that would minimize visual and environmental impacts, and preserve the road's historic character. The project, currently on hold due to lack of funding, and identified as a TIP illustrative project, has been recommended by the Transportation Strategy Board for funding and implementation within a 10-year timeframe.In 2014, CT DOT restarted engineering design work on the interchange.

Figure 14: Merritt Parkway – State Projects



In the event that reconstruction of the Route 7/15 interchange does not move forward, a "Plan B" should be devised. Such an improvement program would ideally include the following elements: landscaping, correction of any ramp and intersection deficiencies that exist, Main Avenue upgrades replacement of the Glover Avenue Bridge over the Norwalk River, and improvements to neighboring roadways in the vicinity of the 7/15 interchange and the Merritt 7 office park.

Recent years have seen other upgrades to the Merritt Parkway. A program of safety and operational improvements to pavement, shoulders and bridges along nearly the full extent of the Merritt is under construction or in design. Funding is required to complete engineering work on a series of resurfacing, safety and bridge improvements for the segments from Route 124 in New Canaan to Route 7 (Project 102-296), and from Route 7 to Route 33 in Westport (Project 102-298). Construction funding for these projects along with the segments between the Greenwich/Stamford town line and Route 124 (Project 35-270) and from Route 33 in Westport to Congress St. in Fairfield (Project 158-009) is also needed. Additionally, the bridge over the Silvermine River in Norwalk is in poor condition, and requires rehabilitation (Project 102-317).

Additional planning is needed to ensure that all facets of the Merritt Parkway's infrastructure are addressed. A plan focusing on highway and bridge maintenance and improvements is necessary, and should include treatment of deteriorating bridge facades and a comprehensive context sensitive landscape master plan. The Merritt's safety and operational shortcomings would greatly benefit from improved emergency access and ITS deployment. Consideration should be given to relaxing some of the use restrictions on vans and shuttles operated by public and non-profit entities for public transit purposes. These vehicles, which have commercial license plates, are unable to use the Merritt Parkway, regardless of the fact that they cansafely operate within the roadway's existing geometry without threatening safety or low-clearance bridges.

Route 1

Route 1 is the South Western Region's most important surface arterial as well as a Main Street for many neighborhoods and communities. From the state line in Greenwich through Westport, Route 1 serves as the region's primary retail and service corridor, is home to many of the region's largest

Photo 14: Route 1 Northbound approaching Route 123 – site of Project 102-325

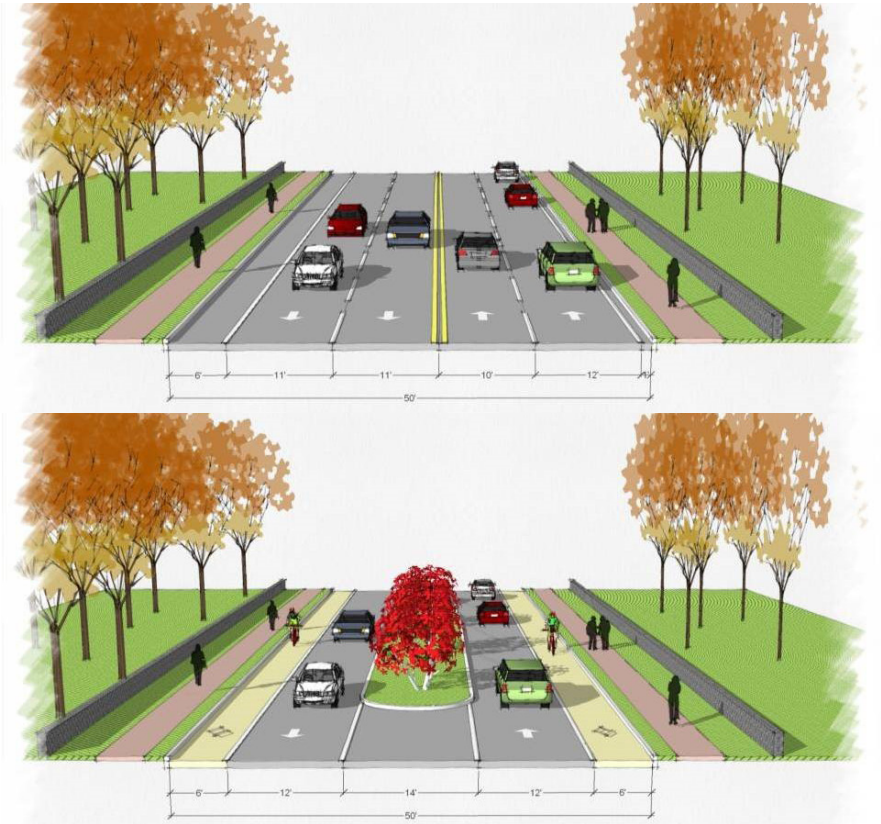
employers, has the highest bus ridership, and functions as an alternate route for I-95 during major incidents.

The cross-section of Route 1 varies according to its context. Through the highway commercial areas ofGreenwich, Norwalk, and Westport, Route 1 has two-to-three travel lanes in each direction and many curb cubs. Through town and neighborhood centers in Stamford, Darien, Norwalk, and Westport, Route 1 is narrowed to one lane in each direction, with turn lanes at some intersections. Pedestrian activity is highest in town and neighborhood centers. Nearly all the signals on Route 1 are owned and maintained by municipalities. Route 1 has six expressway interchanges, meaning it also functions as a link between local streets and the expressway system. Maintaining efficient traffic operations and safety in such a complex corridor is quite challenging.

The South Western Region is ready to move forward with a series of Route 1 projects, pending funding availability. Project 135-287 would make operational improvements at its intersection with Route 106 in Stamford. Other upgrades in Norwalk include widening the section between Hoyt Street and Park Street in Norwalk (Project 102-325), and operations and intersection improvements in Westport at Grand Union Drive and Roseville Road (Project 158-193)

In addition to these construction projects, Route 1 was the subject of two WCCOG corridor plans. One plan studied the segment between Greenwich and Stamford and the other plan studied the section through Darien. Both plans focused on improving traffic operations, mobility, accessibility and safety for all road users. Because Route 1 is the Main

Figure 15: Road Diet: Cross Section of a Roadway Before and After a Road Diet



Street for numerous towns and neighborhoods, both plans took a Complete Streets approach, the elements of which include "road diets" (modifying the cross section from four lanes to three to improve turning movements and safety), on-street facilities, reduced crossing distance for pedestrian, and roundabouts.

US 1 Greenwich-Stamford Study

SWRPA's study of Route 1 in Greenwich and Stamford coverEd the corridor from the New York state line to Route 137 (Washington Boulevard) in downtown Stamford. The plan was produced in cooperation with the Town of Greenwich, City of Stamford, and CT DOT. The planning process included two significant public involvement events: a Visioning Workshop held in June 2010 and a Design Workshop held in October 2010. At the Visioning Workshop, the study team, aided by the public, identified numerous deficiencies in the corridor, including congestion and queuing, a large number of vehicle crashes (over 1,800 in three years), drivers who slalom between lanes to avoid vehicles making turns, and pedestrian unfriendliness in certain locations. At the Design Workshop, the study team developed a series of improvement concepts, including:

Photo 15: Route 1 passes through busy downtown Greenwich.

- Using a road diet to modify the four-lane (two travel lanes in each direction) cross section to three lanes (one travel lane in each direction and one turn lane). This has reduced crashes associated with left turns in other communities. It may also allow bicycle lanes or on-street parking to be added;
- Replacing signalized intersections with roundabouts to improve traffic flow and pedestrian safety;
- Major changes to Byram Circle and the I-95 exit 5 interchange to improve traffic flow and safety;
- Narrowing the roadway to reduce the distance a pedestrian has to cross. Such a change would result in less time being devoted to the pedestrian phase, which would increase green time for motorists; and
- Improvement to pedestrian crossings, such as bulb outs, in neighborhood centers.

US 1 Darien Study

SWRPA's study of the Route 1 Corridor (Boston Post Road) in Darien was performed in cooperation with the Town of Darien and CT DOT. The study area encompassed a 2.3 mile section of Route 1 beginning at Nearwater Lane, traveling through the Downtown, and ending on Old Kings Highway North. The purpose of the study was to develop a comprehensive transportation plan that will:

- Provide for improved mobility, accessibility, and safety for all travelers, business owners, and residents along the corridor;
- Incorporate land use and development strategies that will support the transportation system recommendations, and vice versa;
- Integrate access management, parking, and pedestrian needs within a

context sensitive framework; and

- Benefit the overall quality-of-life in the corridor.

Similar corridor studies are recommended for other sectionsof Route 1 in Westport, Norwalk, as well asthe section of Stamford not covered in the Greenwich-Stamford Study. Studies that focus on Route 1's interchanges with I-95 are also needed, as many of the interchanges have antiquated designs dating to I-95's original construction in the 1950s.

Route 7

Route 7 is the second busiest arterial serving the South Western Region. It provides an essential north-south link between the coastal corridor's business and economic centers and the residential communities of northern Fairfield County, and is the primary connection from the South Western Region to I-84 and Danbury. As such, the highway serves diverse trip purposes, including local trips, trips originating in the Route 7 corridor and travelling outside of it, and through travel of trips originating and terminating outside the Route 7 corridor. When considering these disparate trip purposes in conjunction with a unique set of topographical, environmental , and land use contexts, it is not surprising that competing visions of Route 7's future existence have emerged and have been debated vigorously.

Route 7 begins as an expressway that connects South Norwalk to the Merritt Parkway and Merritt 7 office park. Approximately one mile north of the Merritt Parkway interchange, the Route 7 expressway abruptly ends as it transitions into a 4-lane primary arterial northward into Wilton, where suburban-type commercial development lining the highway. Further north, approaching Wilton Center, the intensity ofdevelopment dissipates, as the highway begins to exhibit more rural characteristics. North of Olmstead Hill Road, Route 7 narrows to two lanes, and traverses a more densely vegetated environment but still developed environment before reaching the Georgetown section of Redding.

In early 2010, major reconstruction of Route 7 in Wilton between Wolfpit Road and Olmstead Hill Road was completed, which widened the road from two to four lanes. The construction also included intersection upgrades at nine locations. As a result of these capacity improvements, traffic flow has improved to the extent that excessive speed is more of a concern than congestion. However, Route 7 continues to exhibit severe operational deficiencies and safety hazards in some locations:

Photo 16: Route 7 looking northbound between Grumman Hill Rd. and Route 33/Westport Rd, where widening southbound is proposed as part of Project 102-305 and recommended by the Route 7 Transportation & Land Use Study.

• The terminus of the expressway section at Grist Mill Road is a location that experiences congestion during peak periods as vehicles encounter the signalized intersection where drivers must make a turning movement. This intersection has a long history of crashes resulting in severe or even fatal injuries;

• The segment of Route 7 between Grist Mill Road and Route 33 suffers from congestion and a lack of turning lanes at certain key intersections.Approximately one-half mile or Route 7 southbound between Westport Road/Route 33 and Grumman Hill Road intersections only has one lane, which results in slow speed and delays;

• The interchange between the Route 7 expressway and the Merritt Parkway (Route 15) does not allow users to make all connections between roadways seamlessly. Proposals to make this a full intersection have floundered despite a consensus about the need for improvements at this location.

The Town of Wilton, along with the Region, considers improvements proposed as part of the delayed project 102-305 to be among its top transportation priorities. This project would create a consistentcross-section by widening the unimproved section between Westport Road/ Route 33 and Grumman Hill Road to two lanes southbound (there are already two lanes northbound), resulting in a uniform four lane cross section from the expressway terminus through most of Wilton. This project would also enhance safety and operations by providing new turn lanes at numerous intersections.

The South Western Region continues to support its position devised in 2007 that recommends a comprehensive multimodal investment study for the Route 7 corridor between I-95 and I-84.

The Route 7 Transportation and Land Use Study was initiated to further assess the transportation needsof the existing Route 7 in the corridor between the expressway stubs in Norwalk and Danbury. The study also recommended various development techniques centered around a transect form pattern, which concentrates development in 'nodes' separated by transitions in land use intensity. In light of the travel patterns observed, the impact of travel improvements resulting from recent widening projects, the environmental constraints, and the projected increase in average daily traffic over the next twenty years, the Study recommended no further roadway expansion north of Olmstead Hill Road. However, the Study did strongly reiterate the need for the proposed improvements between Westport Road/Route 33 and Grist Mill Road (project 102-305). Other transportation improvements recommended by the study include enhanced access management policies and uniform five foot shoulders wherever the right-of-way and environmental constrains permit. These enhancements would improve sightlines, increase capacity, and enhance bicycle accommodations.

Since the 1960s, there has been a long and tumultuous debate regarding proposals to build a Route 7 expressway parallel to the existing highway. The so-called "Super 7" would link the existing expressway stubs in

Norwalk and Danbury, providing an access controlled connection between I-95 and I-84. An environmental assessment, completed in the 1990s and approved by USDOT in 2000, found no significant impact. However, constructions plans were put on hold in 1999 by Governor Rowland, who instead supported the widening project between Grist Mill Road and Olmstead Hill Road.

Even with the completion of the widening project, the proposed Route 7 expressway continues to be passionately debated by state and local officials and the community. Supporters of Super 7 believe that an expressway would be a critical link in the regional transportation system and provide opportunitiesfor future growth within the Norwalk to Danbury corridor. Opponents believe that Super 7 would be a threat to the environment and the existing residential character of the corridor as a result of increased congestion brought upon by a limited access highway and suburban land use development. Efforts were made in 2007 to legislatively mandate a timeframe for construction completion, but the bill was defeated. In 2009, the Connecticut General Assembly eliminated previous restrictions that prohibited the Commissioner of CT DOT from selling land along the Super 7 corridor or using it in any manner thatwas not transportation compatible. Since this legislation passed, portions of the Norwalk River Valley Trail have been built in the right-of-way.

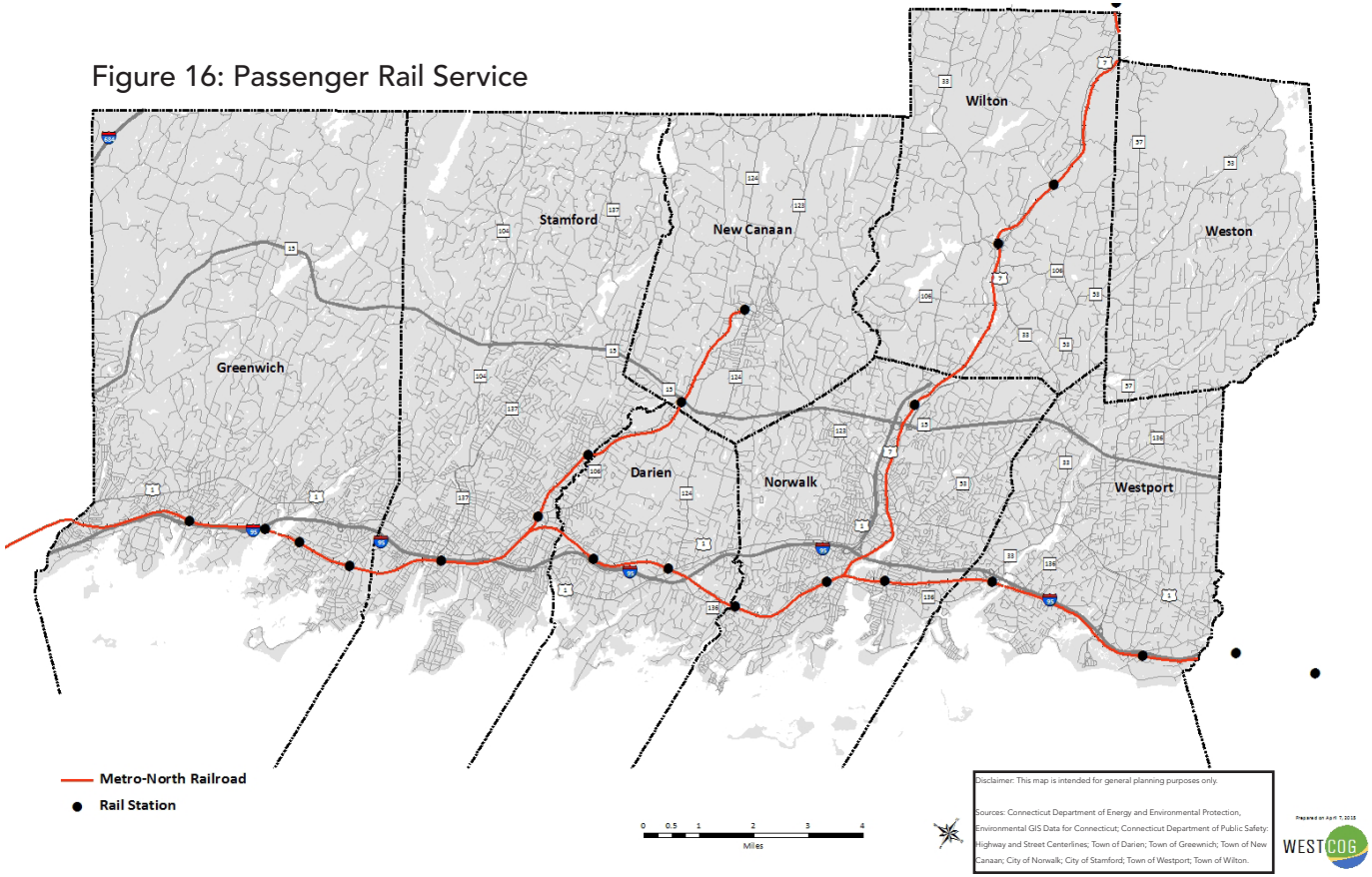
The South Western Region Metropolitan Planning Organization continues to support its position devised in 2007 that recommends a comprehensive multi-modal investment study for the Route 7 corridor between I-95 and I-84 be conducted and result in an implementation action plan with timelines for feasible operational, management and construction projects. Such a study would examine how future transportation system investments will accommodate people and goods movement in the context of anticipated residential, employment and development changes. A thorough environmental analysis combined with extensive public involvement will ensure this effort is meaningful and will lead to a variety of transportation choices in a seamless integrated system.

RAIL NETWORK

The South Western Region is situated prominently on the New Haven Line, the nation's most patronized commuter rail line. Tens of thousands of local residents rely on the railroad on a daily basis. The New Haven Line, running from New Haven to New York City, is owned by the State of Connecticut (between New Haven and the New York state line) and operated by Metro-North under an agreement between the State of Connecticut and the Metropolitan Transportation Authority. The Danbury and New Canaan branchlines provide service to communities north of the New Haven Line. Well over 200 trains a day provide frequent service to and from the South Western Region. There are twelve New Haven Line stations in the Region as well as seven stations along the two branchlines. Shore Line East, which primarily serves commuters between New London and New Haven, also operates some peak hour trains as far west as Stamford. Amtrak also operates along the New Haven Line, connecting Stamford with major cities between Boston and Washington, DC as well as central Connecticut, western Massachusetts, Vermont, and Virginia.

The importance of the commuter rail system to the South Western Region cannot be understated, as it has been and continues to be the primary mode of transportation for daily commuters traveling from the South Western Region to Manhattan. In recent years, the so-called reverse (New York residents commuting to the Region) and intermediate (Bridgeport and New Haven area residents commuting to the Region) commute markets have grown at a faster rate than the traditional (New York City-bound) commute. In fact, the Stamford Transportation Center (STC) is Metro-North's busiest rail station after Grand Central Terminal. During the AM peak, more commuters alight at Stamford than board. Similarly, more reverse commuters from New York State alight at Greenwich than do Manhattan-bound riders board.

Figure 16: Passenger Rail Service



Recent growth in rail ridership can also be attributed to several factors, notably transit oriented development in the vicinity of key stations and proximity of the downtown cores of Darien, Greenwich, Norwalk, and Stamford to their respective rail stations. In the last fifteen, new office buildings have been constructed within walking distance of the STC. Metro Green and Harbor Point, a large scale mixed-use project under construction, market their proximity to the STC. Recent realtor data suggest that office space in close proximity to Metro-North stations commands a premium over the same class of office space in suburban locations.

The success of the rail system in

the Region is predicated on several factors. Frequent, reliable, and affordable service is required to attract would-be users and retain current customers. Station amenities, including adequate parking, a safe and secure waiting environment that provides shelter from the elements, and accurate, reliable information and signage are also critical for users. Connecting services at stations, including commuter shuttles, local buses and taxis, also factor into the success of Metro-North

Photo 17, 18: Harbor Point (Left), and Metro Green (right), two examples of transit oriented development near the Stamford Transportation Center .

Although the rail system has greatly improved since the days of Penn Central and Conrail, a number of recent incidents have brought attention to the significant maintenance needs on the New Haven Line and the branchlines. These incidents include two derailments attributed to insufficient attention to safety and poor maintenance, a power failure attributabed to a lack of redundancy, and multiple failures of a functionally obsolete, century-old moveable bridge. Although the State of Connecticut and Metro-North have begun addressing these deficiencies, significant challenges remain. For instance, Metro-North's renewed attention to safety has resulted in longer travel times, drawing the ire of commuters.Unless the New Haven Line's maintenance and safety needs are more aggressively addressed, they threaten to undermine the decade long growth in ridership. Additional funding must be identified to fully address these needs and achieve a state of good repair.

South Norwalk Rail Station: Photo 19: Northbound Waiting Area (Left), Photo 20: Southbound Passenger Drop-Off Area (right)

Rail Stations

The State of Connecticut owns seventeen of the nineteen rail stations in the South Western Region. South Norwalk's station is owned by the City of Norwalk and the Greenwich station is privately owned. Rail stations in the South Western Region range from large intermodal complexes to simple facilities that lack amenities.

Photo 21: Top, Platform overcrowding, poor passenger circulation and inferior wayfinding are among the most serious issues at the Stamford Transportation Center. Photo 22: Bottom, Automobile congestion around the Stamford Transportation Center is likely to worsen as Metro-North ridership grows and nearby neighborhoods undergo redevelopment.

Funding is programmed annually in CT DOT's capital plan to ensure that all state-owned stations are maintained to adequate standards. The leases between CT DOT and the municipalities require that stations be maintained in a state of good repair. *CT DOT's Train Station Visual Inspection Reportrecommended* a series of repairs and upgrades to improve appearance, safety, and functionality of each station. The South Western Region MPO believes that CT DOT should develop administrative standards and performance benchmarks for the rail system, including rail stations.

Only six of the Region's rail stations, Darien, Greenwich, New Canaan, Stamford, South Norwalk, and Westport are compliant with the Americans with Disabilities Act (ADA). Wheelchair access is available at another five stations: Cannondale, Glenbrook, Springdale, Talmadge Hill, and Wilton. Adequate platform length is also an issue. Some stations have platforms that can accommodate the longest Metro-North and Amtrak trains currently in operation while other stations have short platforms at which passengers can only exit from a limited number of cars. Short platforms slow down service, as it takes longer to board and alight a train when only a limited number of doors can open. With the delivery of the M8s having increased Metro-North's fleet, lengthened platform are recommended at Cos Cob, East Norwalk, Greens Farms, Old Greenwich, Riverside, and Rowayton as well as at stations on the Danbury and New Canaan Branches. Lengthened platforms are also recommended at Darien, where they would allow safer pedestrian access over Route 1.

As the busiest rail station in the Region and the second busiest transportation terminal in Connecticut, the Stamford Transportation

Center (STC) is the Region's most important multimodal asset, serving approximately 13,000 rail passengers each day. Besides Metro-North and Amtrak, the STC is the hub of CT Transit's Stamford bus operations, a Greyhound stop, and a staging area for commuter shuttles and and taxis. Because of its intense use and physical location adjacent to the I-95 viaduct, the STC presents a broad range of planning challenges, including crowded conditions on platforms, poor pedestrian circulation and emergency access/egress, poor traffic circulation, inadequate parking, and inferior wayfinding and real-time information. The 2010 Stamford Transportation Center Master Plan includes a comprehensive listing of recommendations to improve all facets of the station in five-, ten- and twenty-five-year timeframes, including replacement of the original parking structure, improved signage and wayfinding, new access/egress points for train platforms and interior passenger corridors, improvements to the bus depot area, among others. A recently completed pedestrian bridge over Washington Boulevard provides access to a new private parking structure. A major planned public-private partnership would replace the older state-owned parking garage with a large transit-oriented development.

Photo 23: Stamford Transportation Center: Original Parking Structure in need of replacement in foreground, along with the newer garage in the background.

Rail Station Parking

Rail station parking is considered one of the Region's most critical transportation issues. While there is a supply of over 9,000 spaces at the Region's nineteen rail stations, demand outstrips supply both in the South Western Region and along the entirety of the New Haven Line. With wait lists for parking permits often measured in years, some have raised concerns that the parking deficit is adversely affecting economic growth. Municipal officials have indicated that prospective employers are hesitant to settle in the vicinity of Metro-North rail stations unless the parking situation.

Parking supply and demand varies by station. Many parking lots frequently reach capacity prior to theconclusion of the morning peak. This leaves users arriving at or after the tail end of the morning rush in a bind, as they are left with the options of parking illegally and risking a fine or traveling to another station without knowing whether a space will be available. Obtaining information about parking at other stations is difficult, given the lack of real-time data about parking availability. This deters would-be rail riders from utilizing the rail system.

Table 18: Rail Parking Permit and Wait List Data

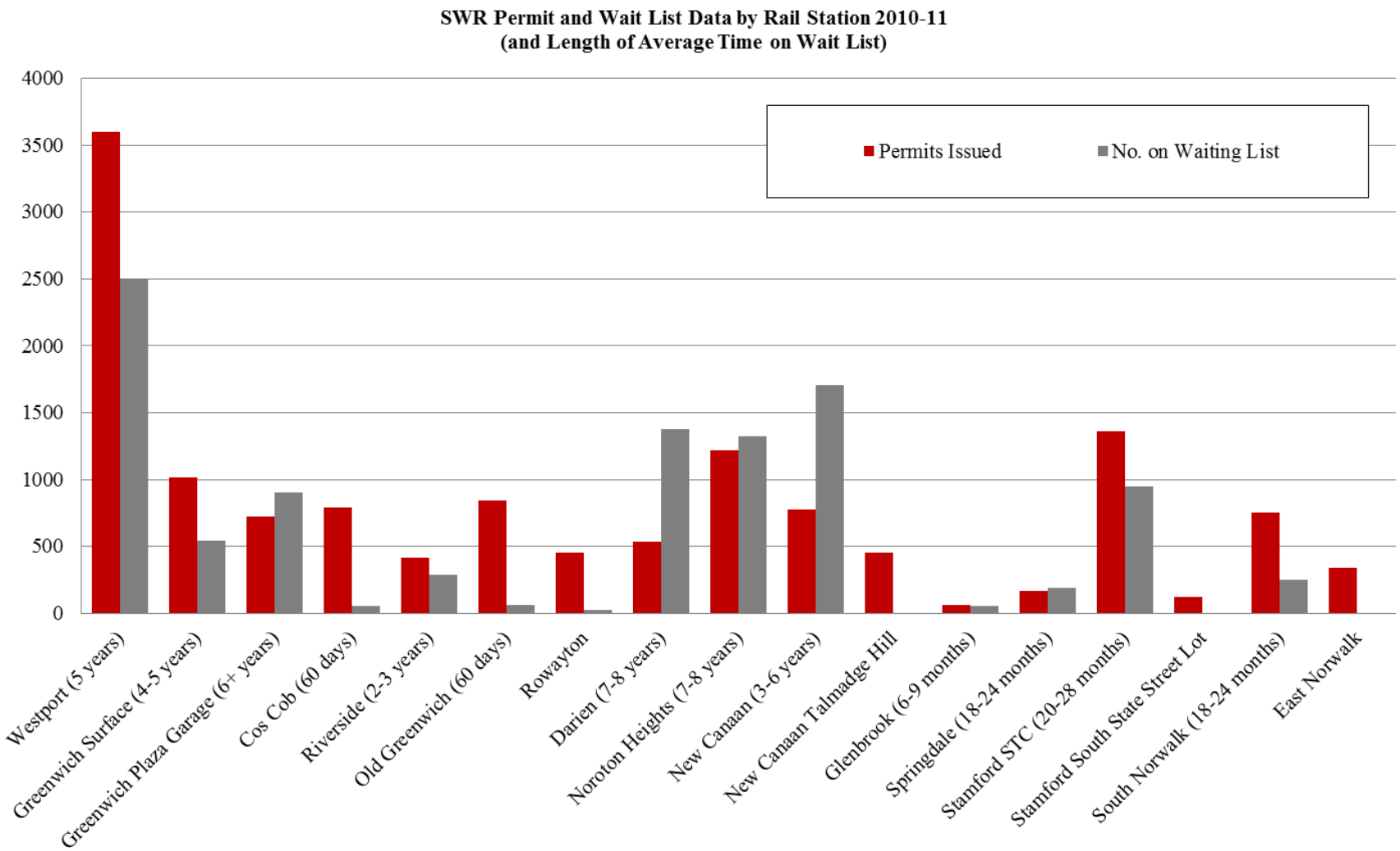


Photo 24: Left, a surface lot at the Westport Rail Station. Photo 25: Right, Rendering of a mixed-use tiered parking structure at Wilton Station developed for the Route 7 Transportation & Land Use Study.

In 2009, SWRPA performed an analysis of the Region's rail parking, which highlights the many challenges faced managing what we have now and planning for additional parking. Although parking facilities at most rail stations are owned by CT DOT, they are leased to and operated by municipalities, or in someinstances, privately operated (the parking structure in Greenwich is privately owned and operated, andthe South Norwalk Parking Structure is city owned and operated). Municipalities are responsible for doling out parking permits and determining parking fees and policies, which do not necessarily reflectfactors such the availability of parking, the frequency of rail service available at the station, the distance from the parking lots to the station platforms, or market prices. Every parking facility has its own demand characteristics, based on factors such as geography, level of service, and cost considerations.

Each municipality uses a different approach to determining the number of permits it distributes and manage its wait list. The policy of each parking operator is to assign more permits than there are permit spaces available

Photo 26: An electric vehicle charging station at the South Norwalk Rail Station.

to account for the significant number of permit holders that do not park on any givenday. While each lot reserves a portion of spaces for the non-permit holders at a daily rate, this allocation is not always able to meet the demand of those who wish to park on a specific day.

The *South Western Region Rail Parking Study* reviewed these issues in depth and recommended numerous means to better manage rail

station parking. The study called for municipalities to create parking divisions that would explore opportunities to increase capacity, better manage existing parking supply through implementation of best management practices, better coordinate with other parking operators to create more uniform policies and processes, and provide better information over the internet. SWRPA's 2004 *Darien and Norwalk Railroad Parking Study* recommended regional strategies for disseminating parking information, wayfinding, signage, and demand management, along with improved bicycle and pedestrian access, systems management, and integration of rail parking into area development plans.

Where local support exists, WCCOG has encouraged efforts to replace surface parking with structured parking in order to make land available around rail stations for transit oriented development. For instance, the *Route 7 Transportation and Land Use Study* and *Westport/Greens Farms Rail Parking Study* recommended new parking structures. Unfortunately, despite the high demand for parking, many communities are as yet unwilling to consider parking structures.

With the continuing evolution and growing popularity of hybrid and electric automobiles, municipalities have begun to address the need for electric vehicle charging stations at rail stations. South Norwalk has been at the forefront of such innovation, with a pilot program that introduced a charging station for use by certain electric vehicles. Such programs should be expanded elsewhere to meet the anticipated growing demand of this segment of the automobile market.

Infrastructure

As owner of the New Haven Line, CT DOT owns the tracks within the State of Connecticut, which must be maintained in accordance with Federal Railroad Administration standards. CT DOT also owns maintenance facilities, storage yards, numerous bridges, the railroad power system, and the majority of rail cars used on the New Haven Line. As indicated in the operating agreement with the Metropolitan Transportation Authority, Metro-North is responsible for maintenance of the right-of-way, yards, maintenance facilities, and equipment.

The CT DOT *2010 Connecticut State Rail Plan* had a goal of doubling total rail ridership by 2030, as well as maintaining the existing system and expanding the system to support ridership growth. In order to achieve this goal, the Region will continue to work with CT DOT and elected officials to support stateinitiatives to upgrade rail infrastructure that are integral

Photo 27, 28: Rehabilitation of the Walk (Left) and Saga bridges are two of the region's top transportation priorities.

to the operations of the New Haven Line, including:

- Power System: Power Supply Substations need upgrading throughout the rail system, including the Cos Cob West Substation in Greenwich. The overhead catenary has been replaced from the New York State Line to Norwalk and from Westport to New Haven. The rehabilitation of the section from Norwalk to Westport should be completed by 2017.
- Rail Bridges. The century-old moveable bridges over the Norwalk (Walk) and Saugatuck (Saga) Rivers are in need of replacement. Both bridges have deteriorated noticeably in recent years and are increasingly prone to failure. If the Walk Bridge were to fail while open, it would interrupt Metro-North and Amtrak service indefinitely. The East Avenue bridge in East Norwalk is also in poor condition, requiring rehabilitation. Addressing these bridges, along with other high priority bridges across the rail network, are among the Region's top transportation priorities.
- Rolling Stock: Successful modernization of the rail car fleet will be a major step towards improving the quality of rail service in Connecticut. Metro-North has nearly completed delivery of the new M8 multiple unit (MU) rail cars, which replaced the M2, M4, and M6 series cars, which had exceeded their design lives. However, because of growing ridership and service expansions, the older series cars are still in regular use. Additional rolling stock will be needed to increase frequencies on the New Haven Line and to expand service to Penn Station.

Photo 29: New M8 rail cars have begun to be introduced into service along the New Haven Line as of March 2011.

New Canaan Branchline Improvements, estimated at a modest $34 million, are among the top priorities for the region.

- Maintenance Facilities – Improvements to the Stamford Rail Yard are due, and are part of the program of projects required to maintain a state of good repair for the state's fleet of rail cars. Construction of a new maintenance facility for new M8 rail cars at New Haven Rail Yard and additional storage at the East Bridgeport Rail Yard are underway.

- Rail Tracks: It is imperative that Metro-North maintains its tracks to meet or exceed Federal Railroad Administration standards. A 2013 derailment and collision in Fairfield and subsequent "deep dive" analysis by the Federal Railroad Administration has led Metro-North to devote more attention to its maintenance practices.
- Signal System: Upgrading of signals on the New Canaan Branch and normal replacement of signal system components systemwide are recommended. Installation of positive train control across the Metro-North service area is required by 2015 federal deadline.
- Communications: Radio equipment should be upgraded to digital format.

In 2010, CT DOT recommended as part of its Waterbury and New Canaan Branchline Feasibility Studya series of improvements that would modernize the New Canaan Branch. Currently, the signalsystemand single-track configuration limit the ability to operate trains concurrently in both directionsover the branch.A package of improvements, include signal system improvements at the New Canaan station and construction of a siding and additional platform at Springdale would allow bi-directional serviceand increased frequencies. These improvements, estimated at a modest $34 million, are among the toppriorities for the region.

CT DOT continues to work on the Danbury Branch Study. Phase II of the STudy will develop an Alternatives Analysis/Environmental Impact Statement, which is a necessary step before major investment in the line. Phase I evaluated a variety of engineering projects to improve the performance of the branch and grow ridership. These alternatives included:

- Track geometry improvements, such as changes to existing alignments, elevation of track, or new alignments to reduce curvature. These improvements could reduce total running time by five to fifteen minutes.
- Double tracking some or all of the line to decrease headways, increase frequencies, and allow for bi-directional service.
- Extending the branch north from Danbury to New Milford to serve growing residential communities.

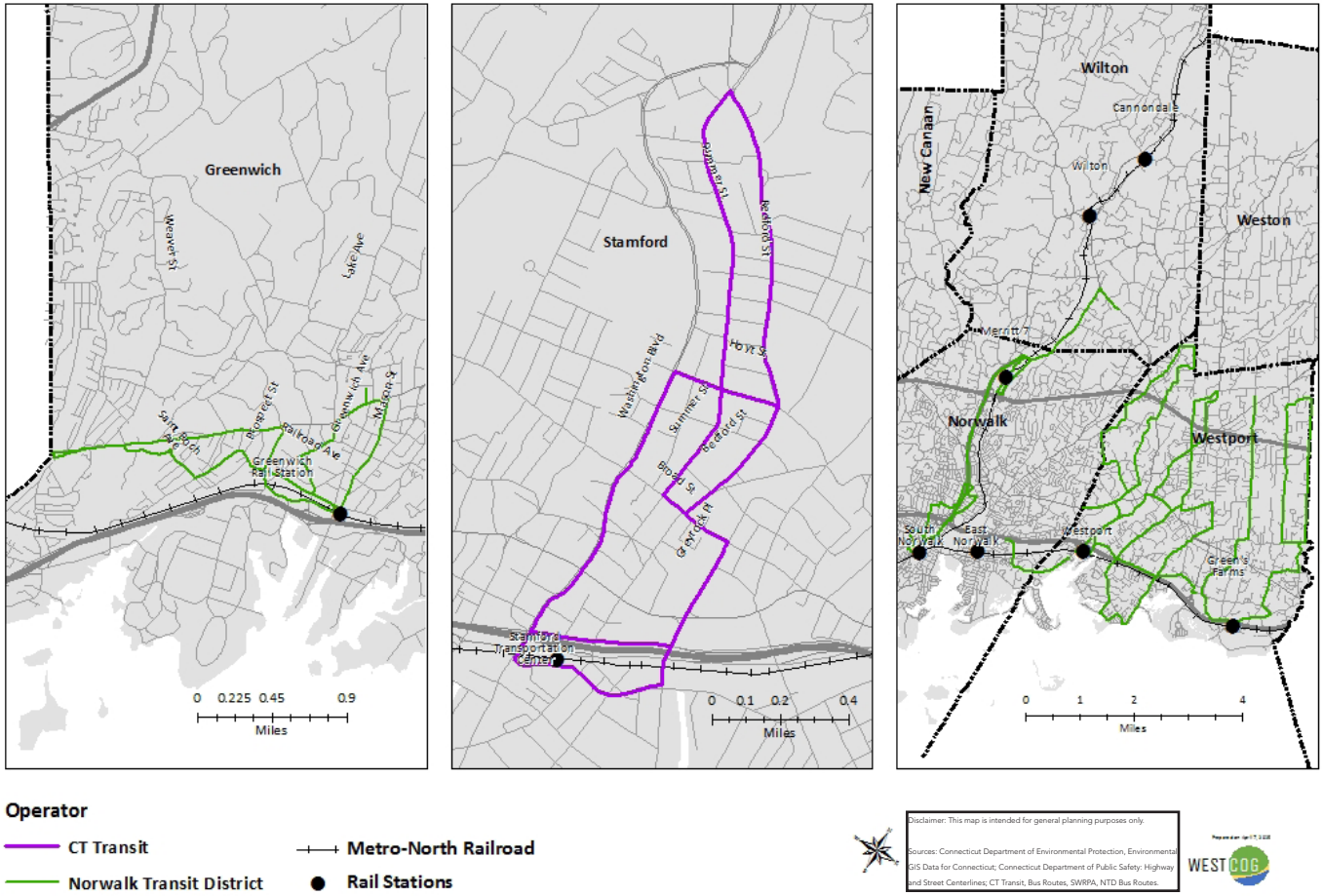
When completed in 2012, the same modernized signal system that is in operation along the New Haven Line will extend throughout the Danbury Branch, allowing for safer, more reliable, and eventually more frequent service on Danbury Branch.

Five alternatives are now being evaluated as part of phase II:

- Alternative A: No build
- Alternative B: Transportation system management (service improvements without new construction)
- Alternative C: South Norwalk to Danbury improvements (Electrification, addition of passing sidings, improvements to curve alignment)

- Alternative D: Extension of service to New Milford
- Alternative E: TSB option for partial electrification from South Norwalk to Route 15

Figure 17: Commuter Shuttle Service



Once completed, phase II will recommend which alternative to pursue, satisfy NEPA requirements, and support future efforts to obtain funds from federal programs such as FTA New Starts/Small Starts.

In 2013, a new signal system went into operation on the Danbury Branch. The long-awaited Centralized Train Control (CTC) project was awarded funding through the American Reinvestment and Recovery Act (ARRA.) The construction was not without hiccups, including numerous problems with the warning systems at grade crossings. Completion of the signal system has allowed Metro-North to expand serviceby adding three roundtrips to the schedule.

Connectivity

Rail passengers in the South Western Region are fortunate to have various modal alternatives to driving alone to access rail stations. To promote intra-regional and reverse commuting and to ensure that commuters can access their workplaces in a convenient and reliable fashion, the Region needs to ensurethat passengers continue

Photo 30: Morning commuter shuttles wait at the South Norwalk rail station.

to have convenient access to rail stations, whether it be by bus, commuter shuttles, bike, taxi, or on foot.

Bus and shuttle services are available at twelve of the Region's nineteen rail stations. Regular service is available at the South Norwalk and Stamford rail stations as well as at the Darien, East Norwalk, Greenwich, Glenbrook, Noroton Heights, Springdale, and Westport stations. Commuter shuttles operated by CT Transit and Norwalk Transit District serve some of the larger employers located beyond walking distance of stations in Greenwich, South Norwalk, Stamford, and Westport during peak hours. Shuttle schedules are aligned with train arrival and departure times for convenience. Norwalk TransitDistrict also

Photo 31: Bicycle parking at Noroton Heights Rail Station.

offers commuter shuttle routes that serve the Westport and Greens Farms stations during the morning and evening peaks. In addition, numerous privately operated shuttles serve commuters and businesses, primarily at the Stamford and South Norwalk stations.

Opportunities to expand and improve bus connections to rail stations are contingent on funding availability. In 2008, a series of service enhancements for commuter shuttles and local buses were proposed by the Region's transit operators as part of a statewide service initiative. These enhancements included more frequent commuter shuttle service in Greenwich, Norwalk and Westport, and introduction of a new shuttle serving Stamford's West Side. Although funding was ultimately rescinded due to state cutbacks, these proposals are still supported by

WCCOG if funds were to be madeavailable. Shuttle operators have also indicated that they are amenable to targeted future expansion to emerging employment destinations if funding were provided to support operations. Improved wayfinding at rail stations and integration of real-time traveler information could the increase visibility of these services, and possibly help to attract new users. In 2015, WCCOG will begin a study of bus and shuttle services at the Stamford Transportation Center and surrounding neighborhoods. This is an important effort, which would complement the proposed public-private development of the STC.

As the Region aims to improve conditions for bicyclists, an opportunity exists to promote bicycle access to and parking at rail stations. A comprehensive inventory of bike facilities was completed as part of the 2009 *South Western Region Rail Parking Study,* which found that bike parking availability and conditions varied greatly from station to station. While the study counted 383 available spaces throughout the region, five branchline stations do not have any bicycle parking storage facilities. Where there is bicycle parking, signage directing bicyclists to bike parking is non-existent. Some stations have bicycle racks that are difficult to find, lacking cover, in poorly lit locations, or generally insecure, further discouraging bicyclists from parking at stations.

A regional strategy to improve bicycle facilities should include safer, more secure, and protected parking that is better integrated into rail station design. Safety around stations, which are often in busy, heavily trafficked locations, is another important consideration. This topic is addressed in more depth in the bicycle and pedestrian section. Upgraded facilities, such as a secure, covered facilities (like that at New Haven Union Station) or bicycle lockers (like those available at the Fairfield and Southport stations,) should be provided at South Western Region's rail stations. .

A limited number of full size bicycles are allowed on off-peak Metro-North trains, as well as some reverse peak trains. Full size bicycles are fully excluded from peak direction, peak hour trains. Folding bicycles are always allowed on Metro-North. Numerous other commuter railroads, including MBTA(Boston) and Caltrain (San Francisco), have made provisions to carry bicycles on peak hour, peak direction trains Metro-North recently began a pilot program to equip its the new M8 cars with customdesigned bicycle hooks. Approximately fifty of the new M8 cars have been equipped with bicycle hooks.

Further analysis of the feasibility and impacts of new stations on Metro-North operations are needed.

Long-Term System Expansion

While maintaining the rail system in a state of good repair is of paramount importance, growing ridership will eventually require significant capacity improvements. Over the twenty fiveyear period covered by this plan, these visionary projects have the potential to provide faster and more frequent service to the region's rail travelers.

With the Danbury Branch signal system project now complete, it

is not time to consider other improvements studies in the *Danbury Branch Phase II Alternatives Analysis EIS*. These include electrification of part or all of the line and an extension of the branch from Danbury north to New Milford. Electrification would allow the New Haven Line MU fleet to serve the Danbury Branch, which could shorten trip times. Such a change could have a significant impact on transportation and land use throughout the Route 7 Corridor in the long-term.

New stations could relieve congestion at existing stations and help promote transit oriented development. Outside the region, new stations were recently completed in Fairfield and West Haven. Additional stations are proposed in Bridgeport, Orange, and Georgetown. In 2010, SWRPA and the City of Stamford completed a Sustainable Communities Initiative grant funded study of a new station at EastMain Street at the eastern terminus of Stamford Urban Transitway. The station, to be located either along the main line or the New Canaan Branch, could help relieve congestion at the Stamford Transportation Center and support the redevelopment of the East Side of Stamford. Similarly, the City of Norwalk envisions a new station along the Danbury Branch at Wall Street to support major redevelopment plans in uptown Norwalk. This station would connect with the Wheels Pulse Point. Further analysis of the feasibility and impacts of new stations on Metro-North operations are needed. The analysis must show that the additional stops will not adversely affect operations or trip times in a substantial manner.

The City of Stamford has conducted a study to assess the feasibility of operating a streetcar connecting the Stamford Transportation Center with Stamford's South End and Bulls Head neighborhoods. Based on experiences in other communities across the nation, the study suggested that a new streetcar could produce wide ranging economic benefits, including increased property values and redevelopment along the proposed route. Stamford is seeking funds to conduct a second phase of the study that would further assess the economic impact of a streetcar and perform a full environmental analysis.

Implementation of Metro-North service to Penn Station offers a range of benefits for New Haven Line riders, including better access to employers on Manhattan's West Side as well as connections to other services at Penn Station, the nation's busiest transportation facility.

Over the long-term, especially with the introduction of new rail cars that will effectively increase the size of the Metro-North fleet, an operational assessment should be undertaken as part of a broader regionaltransit strategies plan to develop approaches to increasing rail service using existing infrastructure and resources. One of the goals of such a study should be a determination of the feasibility of potentially providing more frequent service along the New Haven line. In 2014, additional midday and weekend were added, resulting in half hour headways on the

New Haven Line through most of the day. Additional service should be added were ridership demands.

Additional proposed rail system improvements beyond the South Western Region could affect rail service and increase mobility and accessibility, if completed:

- The anticipated completion of the MTA's East Side Access Project to the Long Island Railroad (LIRR) toGrand Central Terminal has the potential to shift regional travel patterns. The net result of this project should be to open up slots for Metro-North at New York's Penn Station, which is currently at capacity.

In concert with the East Side Access Project, the MTA has proposed to extend New Haven Line service to Penn Station. The MTA proposes to build four new rail stations in the Bronx as well as make operational improvements to Amtrak's Hell Gate line. This project offers a range of benefits for New Haven Line riders, including better access to employers on Manhattan's West Side as well as connections to other services at Penn Station, the nation's busiest transportation facility. Amtrak's present service between Stamford and Penn Station has only limited frequencies, especially during the peak period, and is oriented towards intercity trips.

The Region awaits further discussion and involvement in addressing the future of high speed rail through Connecticut.

Metro-North access to Penn Station is also dependent on resolving the severe congestion issues in the Hudson River tunnels for Amtrak and New Jersey Transit. To relieve this congestion, there have been several proposals to construct new rail tunnels beneath the Hudson River. A New Jersey-sponsored project known as Access to the Region's Core (ARC) was cancelled in 2010 due to concerns about cost as well as the usefulness of a new stub-end station separate from Penn Station. In its place, Amtrak has proposed another tunnel using a similar alignment to ARC and an expansion of the existing Penn Station. Regardless of which alignment is finally chosen, without completion of a new tunnel and a new or enlarged passenger station, capacity issues will continue to be a significant obstacle to Metro-North access to Penn Station.

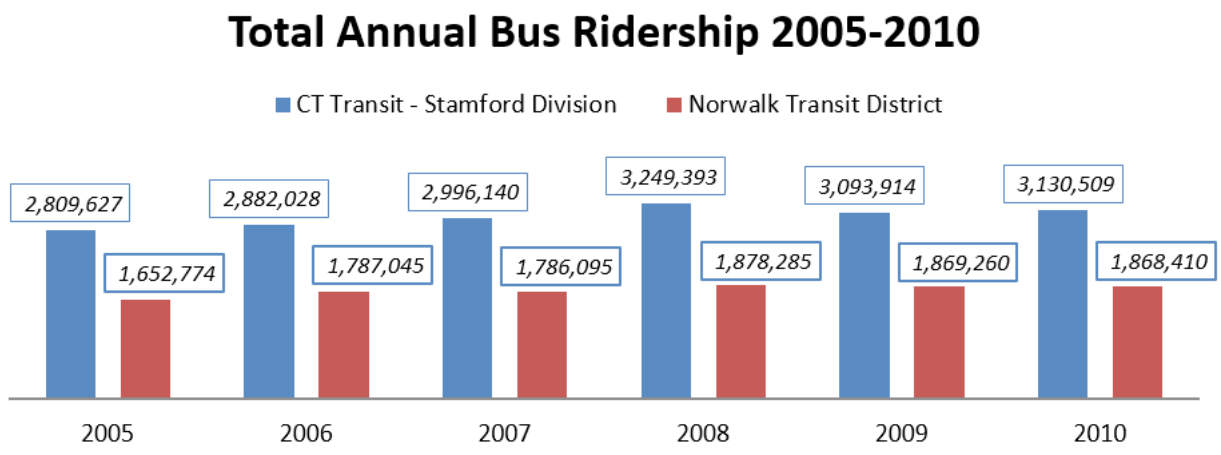
- Amtrak has put forward an ambitious $117 billion 30-year vision to upgrade its Northeast Corridor that would, if realized, create a high speed rail service between Boston and Washington, DC akin to those that already exist in Europe and Asia. The Amtrak vision, released in October 2010, includes new dedicated rail right-of-way that would potentially allow for speeds exceeding 200 MPH and reduce travel times between 40% and 60% compared to current Acela service. The initial vision describes a new routing for their highest speed service that would bypass the South Western Region by heading inland through Danbury and Hartford rather than using the current Northeast Corridor alignment along the shoreline. The plan envisions incremental improvements to increase speeds along the existing Northeast Corridor. Given the long-term nature of the nation's high speed rail program and uncertainty of funding over the span of

this vision, the Region awaits further discussion and involvement in addressing the future of high speed rail through Connecticut.

BUS SYSTEM

Buses play a vital role in the South Western Region's transit network, providing an affordable and dependable mobility option for transit-dependent residents, daily commuters and "choice" riders who choose transit over driving. With ridership growth projected to continue, and buses increasingly becoming a central component of development plans in the Region, the bus system must be made ready to handle more riders and be maintained in a manner that assures continued reliable and efficient service.

Figure 18: Total Annual Bus Ridership 2005-2010



Since 2005, bus ridership has grown substantially. Ridership peaked in 2008, as fuel prices reached record high levels that shifted some automobile users to mass transit. While lower fuel prices and a poor economy led to ridership declines in 2009 and 2010, the bus system did manage to retain some of its earlier growth. Further contributing the strong performance of the bus system over the past decade was increased investment in vehicles, maintenance and storage facilities, infrastructure, technology and operations.

Buses continue to be viewed generally as an option that caters primarily to transit dependent and lower-income users. Improving the perception of buses is a long term goal of the Region's bus service providers. Norwalk Transit District has indicated that upwards of 90% of its local and inter-regional passengers are considered poor or very poor. Conversely, the rail network is seen as a premium service that offers faster travel times and amenities that buses are traditionally not known for, along with much faster travel times for comparable trips. According to the 2000 Census, more than half of railcommuters had incomes greater than $100,000.

As the Region's bus system evolves, opportunities exist to substantially change the image of bus transit. Such a change would alter the perception of buses and elevate them to a desirable mode of transit for all classes of people and for a wider variety of trip purposes.

For this to occur, the bus system must be treated as a core component of the Region's and State's transportation system, and be funded in a manner that does not result in constant threats of service reductions.

> The bus network must be treated as a core component of the Region and State's transportation system, and be funded in a manner that does not produce constant threats of service reductions.

Current Services and Opperational Needs

There are two primary bus operators within the South Western Region: Connecticut Transit (CT Transit)and Norwalk Transit District. CT Transit, the contracted bus operator for CT DOT, primarily serves Stamford and the Route 1 corridor between Greenwich and Norwalk. Its operating deficit is entirely state funded. Norwalk Transit District provides service across Norwalk and Westport, and is supportedby a combination of state funds and local funds from the municipalities located within the Norwalk Transit District and Westport Transit District. Bus services within the Region can be divided into three categories:

Local Buses: These are the routes that operate across Norwalk and Stamford, as well as parts of Darien and Greenwich, offering regular weekday service at a minimum, with most routes operating in some form on weekends as well. In Stamford, all local routes meet at the Stamford Transportation Center, where riders can transfer buses or connect to intercity buses, trains, taxis, and commuter shuttles. In Norwalk, all services converge at the Pulse Point on Burnell Boulevard. Fares for all local services are $1.50.

Inter-Regional Buses: Theses routes, crossing two or more towns, are some of the busiest in the Region.

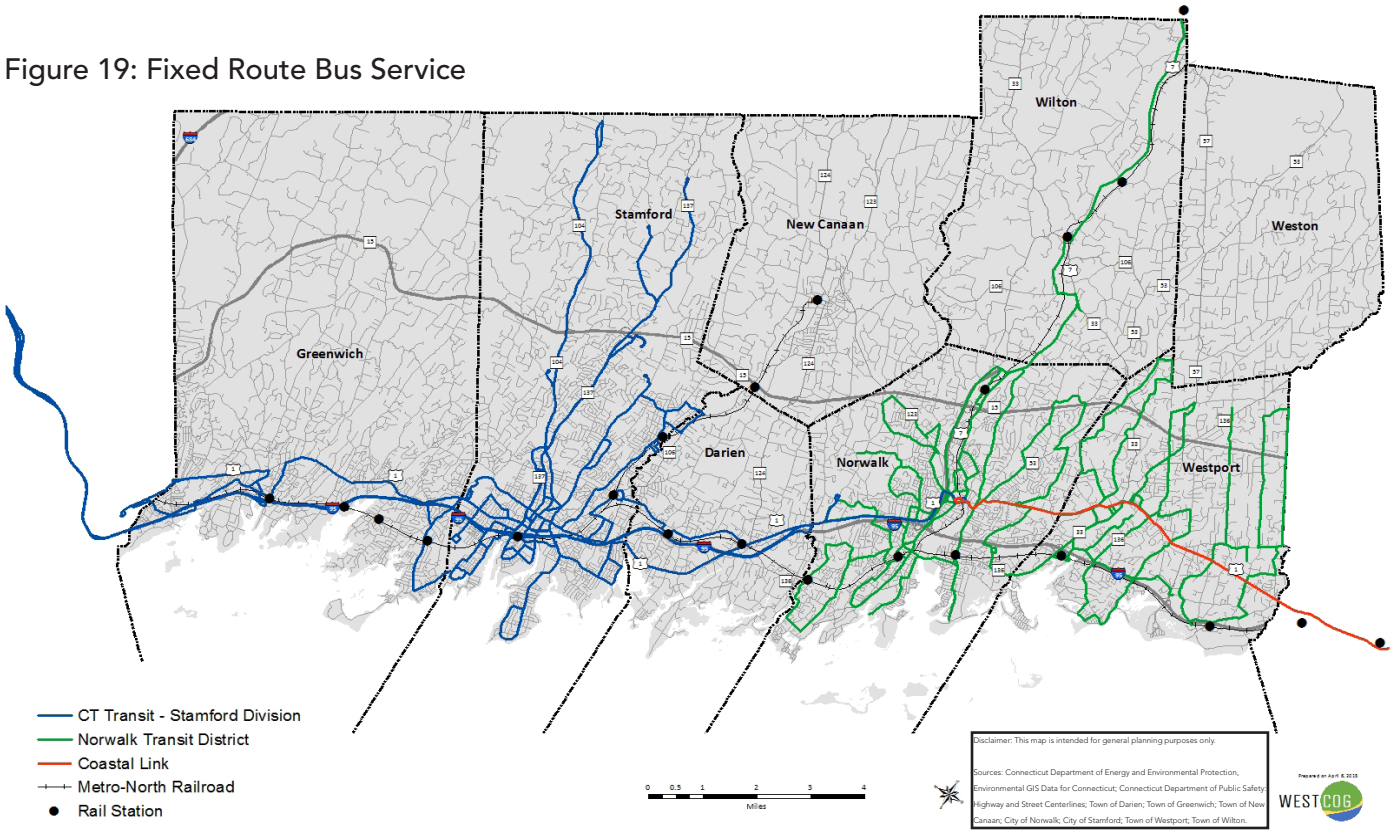
- The Coastal Link, jointly operated by Norwalk Transit District, Greater Bridgeport Transit, and Milford Transit District, provides a single-fare, one seat ride along the Route 1 corridor between the Norwalk pulse point and Connecticut Post Mall in Milford, passing through Westport, Fairfield, Bridgeport and Stratford. For a fare of $1.50 within the South Western Region and $1.75 for inter-regional trips, the Coastal Link provides free transfers to Route 1 services operated by CT Transit inStamford and New Haven (Milford), along with local services in Norwalk, Bridgeport, and Milford. The Coastal Link is the busiest bus route in the Region.
- CT Transit's Route 11 operates between Stamford and Greenwich, terminating in Port Chester, New York. CT Transit Route 41 serves the Route 1 corridor between Norwalk and Stamford, and is the busiest route within Stamford's CT Transit network. These routes are often paired to make Route 1 travel more convenient. A limited number of express buses run between Stamford and Norwalk Community College on school days as CT Transit Route 45.
- I-Bus is an express coach service between Stamford and White Plains, New York, with limited service to Greenwich. I-Bus service is provided through a joint partnership of CT DOT and New York's Department of Transportation, with service provided by CT Transit and

operated seven days a week for a fare of $2.50.

- 7 Link, jointly operated by Norwalk Transit District and Housatonic Area Rapid Transit (HART), provides eight trips daily between Norwalk and Danbury. Aside from the Danbury Branch of Metro-North, 7 Link is the sole transit service operating along the Route 7 corridor in Wilton.

Commuter Connections: Both CT Transit and Norwalk Transit District offer commuter connections between several rail stations and large employment destinations within the Region. Schedules for these services are aligned with train schedules during the peak periods on weekdays. Additional information on these services can be found in the rail system section of this chapter.

Figure 19: Fixed Route Bus Service



Each of the services described above contribute to a regional bus system that is effective at providing mobility for persons traveling within the urban cores and along major street corridors of the Region. Services are operated at frequencies that generally accommodate the needs of riders; some of the busiest routes operate at twenty minute intervals during both peak and off-peak periods. However, onroutes where demand is lower, headways are more sporadic; some Norwalk Transit District routes operate at three-hour intervals during the midday period, while service gaps on other routes exist during midday periods. Roadway congestion

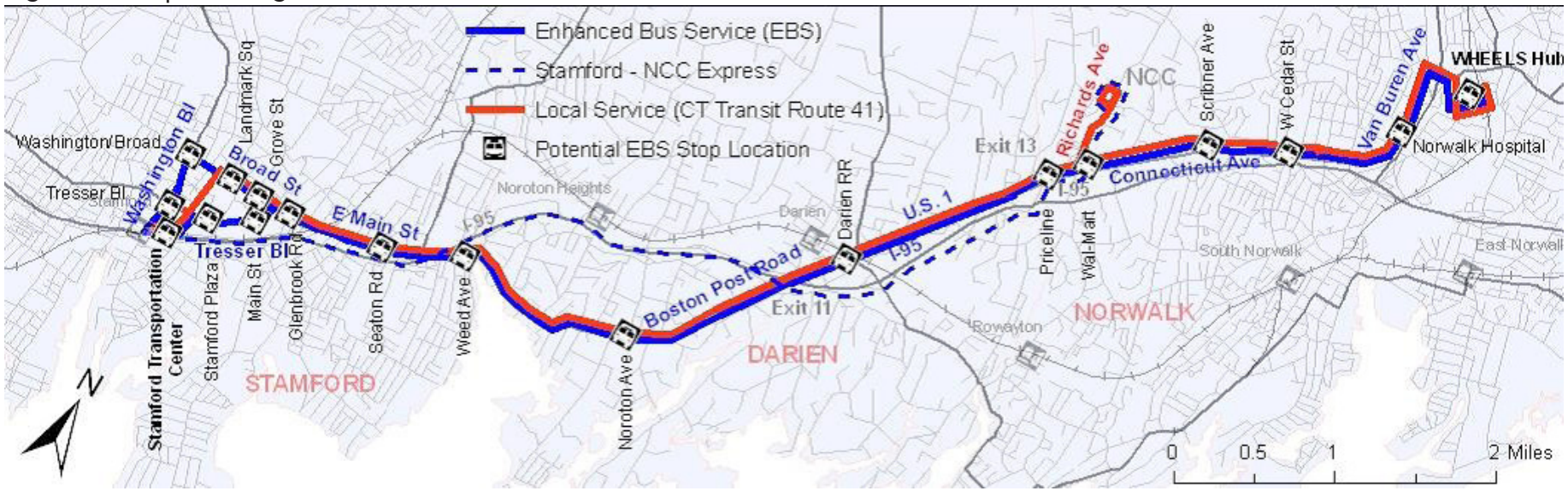
effects on-time performance and results in missed connections, especially for services operating along Route 1. In certain instances, passengers would benefit from additional service and enhancements to alleviate perpetual overcrowding. Improved integration of schedules would allow more seamless transfers between systems and improve trip times.

In recent years, the Governor has put forward initiatives to improve bus service in Connecticut, with significant funding infusions proposed to initiate such improvements. The 2007 service initiative resulted in the purchase of thirty-six buses statewide, including seven vehicles for Norwalk Transit District and six for CT Transit's Stamford Division.

A second service initiative in 2008 was to have provided funding to support operations but was not implemented due to lack of funding. Nevertheless, the Region compiled a priority list of service enhancements that would reduce headways and extend hours of operations if funding were to become available. This list is still considered a high priority for the Region and includes improvements such as:

- Extension of service hours on the busiest routes of Norwalk Transit District on weekdays, and conversion of evening and weekend shuttles to regular service routes;
- More frequent service on the Coastal Link;
- Increased service on CT Transit's Route 41;
- Expanded hours of operation for commuter shuttles; and

Figure 20: Proposed Alignment of Enhanced Bus Service



- Introduction of a new commuter connection to serve the West Side of Stamford.

Emanating from the SWRPA-sponsored 2009 *Greenwich/Norwalk Bus Rapid Transit Study*, a recommendation to develop enhanced bus service between Stamford and Norwalk could have a profound impact on bus transit if successfully implemented. The study analyzed the feasibility of introducing bus rapid transit to the Region, which would provide a faster, more reliable, and more comfortable trip. The study concluded that the segment between Stamford and Norwalk exhibited the ridership demand and street characteristics required to support enhanced bus service as a complement to existing bus operations along Route 1. To provide faster service and reduce dwell time, only key stops with high ridership would be served. Transit signal priority would be deployed at selected intersections to reduce the impact of delays. Attractive, low-floor buses would be utilized, which would be branded in an effort

Photo 32, 33: Under construction, the new Norwalk Transit District Pulse Point (left), which will provide amenities including canopies and information kiosks lacking at its current (temporary) location (right).

providethis level of service, as well as for new rolling stock, enhanced stops, and ITS deployment, are required before service is introduced.

The transit operators across the Coastal Corridor between Greenwich and New Haven have long expressed the need to better understand ridership patterns among the different services. The operators are especially interested in the transfer habits of riders and the origins and destinations of Coastal Link users. The *Coastal Corridor Bus Study* collect ridership and transfer data, developed approaches to improve service, and reviewed governance issues, with a goal of increasing bus ridership and operational efficiency. The final report recommended overlaying the existing bus services with new, limited stop services between Port Chester, New York and Stamford, between Stamford and Bridgeport, and between Bridgeport and New Haven.

Other studies that are envisioned in the short- to medium- term include an assessment of the 7 link service between Norwalk and Danbury and a comprehensive review of Norwalk Transit District's service. Additional inter-regional services and potential express services should continue to be explored and reviewed for feasibility over the longer term to address the need for improved connectivity as new development and ridership trends warrant.

Connectivity

The two primary passenger bus facilities in the Region are the Norwalk Pulse Point and the Stamford Transportation Center. Both locations offer connections to the respective local services within Norwalk and Stamford,

and at the Pulse Point, to Coastal Link, 7 Link and CT Transit's Route 41. A long awaited project to improve safety and security at the Norwalk Pulse Point was completed in 2011. This projectadded amenities such as bus shelters, canopies, bicycle racks, improved lighting, and information kiosks.

Improved passenger amenities are needed at the Stamford Transportation Center. The facility's location beneath the I-95 viaduct creates a loud, dark and unattractive environment that does not appear well maintained. The *Stamford Transportation Center Comprehensive Master Plan*, completed in 2010, recommended improvements to the facility's functionality, safety, and wayfinding. Such improvements would enhance rider experience and improve the perception of buses in general.

Photo 34: CT Transit's new articulated buses are adding capacity to CT Transit's busiest routes.

A City of Norwalk plan recommends redeveloping the eastbound side of the South Norwalk rail station into a multimodal facility. Funding is needed to further the engineering design and initiate a NEPAenvironmental review process.

With additional high-density development along the West Avenue Corridor between South Norwalk and the Pulse Point a centerpiece of Norwalk's economic development plan, Norwalk Redevelopment Agency sponsored the Connectivity study to determine how to improve buses, walking, and bicycling along West Avenue between Norwalk's two busiest transit facilities. Among the recommendations of the study was the initiation of a circulator service on West Avenue connecting the new developments to the Pulse Point and South Norwalk rail station. The Enhanced Bus Service implementation plan includesa provision to divert service to a portion of West Avenue once development in this corridor is realized. The proposal to site a major new shopping center in the West Avenue corridor may add urgency to the idea of a West Avenue circulator service.

Capital Needs

Both CT Transit and Norwalk Transit District are guided by FTA directives maintain their fleet and facilities in a state of good repair. Each operator normally replaces buses at the end of their useful lives, which is typically twelve years; both Norwalk Transit District and CT Transit intend on replacing a portion of their vehicles in the near term. Norwalk Transit District has identified the parts of their facility most in need of improvement, including the roof, HVAC system, concrete blacktop in the

Photo 35: Passenger amenities such as bus shelters provide improvements that enhance the passenger experience on buses.

area between their buildings, and security in their offices.

Both CT Transit and Norwalk Transit District have been proactive in their utilization of reduced emissions vehicles and ultra-low sulfur diesel. CT Transit has been a pioneer in using zero emissions vehicles,having piloted a program that introduced a hybrid vehicle with a hydrogen powered hybrid fuel cell busin its Hartford Division. Over the long term, CT Transit could move towards a zero-emission fleet.

Deployment of ITS technology on buses can benefit operators and passengers in a variety of ways. Automatic Vehicle Location (AVL) systems provide real time information on the location of buses to the operator. The operator can use this information to broadcast dynamic next bus information at bus stops, computers, and mobile devices as well as monitor the location of the bus for operational or planning purposes. Norwalk Transit District is close to rolling out phase one of its new ITS system. Additional funding may be necessary to complete the project. CT Transit's AVL efforts are being developed in concert with the communications upgrades that are part of the Stamford Urban Transitway project. Other ITS elements are being deployed fleetwide concomitant with the CTfastrak project in Hartford.

Signal priority is an ITS component that has proven effective at increasing operating efficiency of buses. These systems function by either giving buses at an intersection an advance green light to jump the queue or by extending the green phase of a traffic signal to provide them additional time to clear the intersection. Signal priority is a central element of the Stamford/Norwalk Enhanced Bus Service. It could potentially be deployed at intersections throughout the Region where buses are regularly subjectto delay. Depending on the location, signal priority may result in the loss of on-street parking. Coordination and buy in from local residents and businesses should be obtained prior to implementationof signal priority.

The Region's bus operators envision fare media that is universally compatible across their service areas on the coastal corridor as well as with Metro-North. Smart cards could reduce the amount of cash transactions

over the long term, thereby accelerating the boarding process and improving travel times for buses. In its next farebox procurement, Norwalk Transit District may consider purchasing fareboxes that are compatible with those now being purchased by CTDOT for CTfastrak.

With the exception of the key bus facilities, passenger amenities, such as bus shelters, are relatively scarce throughout the Region, and many bus stops do not contain schedules or route maps. FTA Section 5307 Enhancement funds have been used effectively by the Region to provide amenities for bus users, including shelters, benches, and bus bicycle racks. These funds should continue to be programmed to provide amenities that enhance rider experience. Norwalk Transit District has identified West Avenue and Route 1 in Westport as locations in need of bus shelters.

HUMAN SERVICES TRANSPORTATION

Human services transportation is a vital component of the Regional transportation system. Human services transportation generally refers to the services, programs and resources available to assist persons that otherwise would have limited transportation options and personal mobility. Human services transportation providers aid residents that are otherwise unable to drive or independently travel by transit by offering transportation access to family and friends, doctors, pharmacies, supermarkets, places of employment, houses of worship, recreation facilities and other social servicesand personal needs, which can improve their quality of life.

The human services transportation network provides widespread but generally uncoordinated geographic coverage throughout the South Western Region. The network is comprised of public, private and non-profit organizations that operate services or otherwise support eligible users that rely on traditional public transportation, paratransit/ dial-a-ride services, and volunteer services. Improving coordination between these programs has been a primary objective of the Region. Better understanding the hodgepodge of services available to eligible users could ultimately lead to more efficient operations and improved mobility.

The Americans with Disabilities Act (ADA) delineates specific actions that public entities must take to avoid discrimination, and has been a major force in the evolution of human services transportation. The law requires that fixed route services be wheelchair accessible, that comparable paratransit services be provided to points within three-quarters mile of fixed route corridors for persons otherwise unable touse fixed route services, and that personnel be trained to accommodate individuals with disabilities. Standards must also be met for new transit facilities and those undergoing major alterations. Within the Region, Stamford, Norwalk, Westport, and the Route 1 and 7 corridors in Greenwich and Darien are served by mandated ADA service.

Town-to-Town service is also available for residents traveling between New Canaan, Westport, Norwalk, and Wilton. New Canaan provides rides for its residents traveling to Stamford, and plans on serving Darien and Wilton in the same manner. However, service outside the Region, or between areas not included within the operating agreements of town-to-

Photo 36: An example of a wheelchair accessible paratransit vehicle, a cornerstone of human services transportation.

town service, is more limited and presents seriouschallenges to would-be passengers with disabilities. Westport recently began to provide rides to Bridgeport and Fairfield.

Other recently introduced inter-regional services have struggled to get off the ground or are not attracting many users. A service to provide rides for Veterans in Norwalk and Westport to the VAHospital in West Haven has struggled due to logistical and scheduling issues. The Merritt Parkway's commercial vehicle restrictions and low bridge heights make east-west travel in the northern half of the Region more difficult, which presents an operational barrier for certain providers. Crossing state lines into New York has been difficult for Connecticut paratransit entities due to legal roadblocks, presenting issues for residents in the western portion of the region who may be closer to services across the state border.

Darien, Greenwich, New Canaan, Weston, and Wilton all offer a municipally-operated dial-a-ride system for seniors and persons with disabilities, each with varying eligibility requirements and hours of operation. Since 2006, Connecticut has sponsored a formula-based municipal dial-a-ride grant program,which has helped to enhance locally operated dial-a-ride services. Through the municipal dial-a-ride grant program, New Canaan has begun to provide rides for residents to Stamford and plans to serve Darien and Wilton; Norwalk, Westport and Stamford offer programs in conjunction with their respective senior centers; Stamford and Darien have successfully initiated taxi voucher programs that effectivelyreduce the fares by half for participants.

With Connecticut's senior population projected to increase by 60%i over the next thirty years, it is likely that demand for such services will grow significantly. Continued funding of this program on the statelevel will ease the burden on transit operators struggling to serve the growing numbers of eligible recipients who otherwise rely upon ADA mandated services. It will also allow for opportunities to expand the taxi voucher program to new areas and promote wheelchair accessible taxis if they become available.

Three grant programs sponsored by the FTA provide a significant amount of assistance to organizations and programs involved in human services transportation:

- FTA Section 5310 - *Elderly Individuals and Individuals with Disabilities Program* provides up to 80% of capital funding for wheelchair accessible vehicles for public and certain non-profit organizations, and has resulted in 35 vehicles awarded to eligible entities in the Region since 2000;
- FTA Section 5316 - *Job Access and Reverse Commute (JARC)* provides operating funds to support transit services that cater to lower income populations, and has been integral in the success of the Coastal Link and fixed route services operating during evenings and weekends;
- FTA Section 5317 - *New Freedom Program* provides capital and operational funding for programs and services that go beyond the minimum requirements mandated by the ADA.

One of the provisions in SAFETEA-LU is the requirement that organizations and programs eligible for these federal programs be derived from a locally developed, coordinated public transit-human services transportation plan (LOCHSTP). The Bridgeport-Stamford Urbanized Area and CT DOT each prepared their initial LOCHSTP in 2007 (and updated in 2009), which forms the foundation for the Region's humanservices transportation vision. The LOCHSTP identified gaps in services, resources, coordination, andother limitations within the human services transportation network. Many of the deficiencies and unfilled needs identified are a function of a shortage of available funding and the underlying nature of disparate services operating within the Region. Such services were generally developed to serve specific client populations or to fulfill specific trip purposes, but were designed without regard to regional travel patterns or jurisdictional boundaries. Other gaps in the system are the result of a relative lack of demand for travel during certain times of the day or between certain geographies, even though they have been identified as trips or services from which some individuals would benefit. The LOCHSTP included a series of strategies intended to address these gaps and direct funds made available through the three federal programs.

Photo 37: Coastal Link is largely supported by JARC Funds, and is critical for transit dependent workers in the region.

Section 5310 is coordinated locally, but is administered by CT DOT, where annual prioritization of applications is determined on a statewide basis. The selection criteria used to prioritize applications was developed by CT DOT and favors the replacement of vehicles already used as part

of a coordinated system of transportation. In the South Western Region, organizations that partner with Norwalk Transit District to provide vehicles and drivers to assist with dial-a-ride operations have been awarded the vast majority of grant awards, as the coordination creates efficiencies by allowing vehicles and drivers to be used at times when they otherwise would be idled due to low demand.

The People to Jobs Regional Transportation Task Force is comprised of a diverse set of stakeholder groups and transit operators. It is charged with programming JARC funding within the Bridgeport-Stamford Urbanized Area as well as funding from other sources to support commuter transportation for low-income individuals. The taskforce also assists with the development and dissemination of marketing materials and other media outreach. Within the Region, the Task Force has played a key rolein the success of Coastal Link and has strategically programmed funds to allow CT Transit and Norwalk Transit District to extend hours of service on certain routes and shuttles on weeknights, Saturday evenings and Sundays. To improve flexibility for operators and to reduce the burden faced when reporting for the various funding programs, operators have indicated that they would benefit from the disparate funding streams being integrated into a single line item by CT DOT.

The New Freedom Program has provided a challenge for LOCHSTP stakeholders, as the various projects typically eligible under Section 5317 either already exist inside the Region or are lacking demand and not considered viable. Whereas expansion of ADA Dial-A-Ride Services beyond the existing federally mandated three-quarters mile radius is permissible, most of the Region is already served by such services. Proposals to expand service hours in areas where operations are limited are mostly viewed as unsustainable due to the high costs of providing such services.

Stakeholders within the Region have consistently identified a lack of easily accessible, centralized information on services as a major shortcoming, along with a lack of a basic understanding of how to use the public transportation system.

A particular focus area of the LOCHSTP effort in the Bridgeport-Stamford Urbanized area is mobility management, which is defined by SAFETEA-LU as "short-range planning and management activities and projects for improving coordination among public transportation and other transportation service providers". Mobility management also includes personnel support and technology activities. LOCHSTP stakeholders within the Region have consistently identified a lack of easily accessible, centralized information on services as a major shortcoming, along with a lack of a basic understanding about how to use the public transportation system. This is especially true among persons who have physical disabilities, and is the basis for a regional initiative that resulted in the hiring of a dedicated mobility manager. The job of the mobility manager is to provide outreach, identify barriers preventing

people with disabilities from using existing services, and assist with development and planning of new services. This mobility manager position is funded through FTA Section 5317 – New Freedom, and will be staffed through at least 2013 at the Kennedy Center, a non-profit organization that specializes in the needs of persons with disabilities.

Other eligible projects that could be viable in the Region include wheelchair accessible vehicles with features that exceed the ADA minimum requirements, wheelchair accessible taxi vehicles, marketing and promotional projects intended to reach targeted audiences, and personnel to provide support to users.

A central issue of human services transportation is the cost of operating paratransit services, which are inherently expensive due to their demand responsive nature. Passenger destinations do not necessarily fit nicely into a efficient sequence, resulting in drivers logging more miles than would ideally be necessary if trips could be better scheduled or coordinated. Ridership varies substantially throughout any given day or timeframe, and the universe of riders is limited due to strict eligibility requirements. Paratransit operators generally utilize vans or minibuses whose already limited capacity is further reduced in order to accommodate wheelchairs. Drivers of paratransit vehicles will assist passengers with boarding and alighting and deliver passengers to the curbside of their destinations.

> Constraints on adding highway capacity and anticipated growth in traffic volumes in future years suggest that waterways could play a more important role in passenger and goods movement in the future.

One particular issue faced in the Region is the approach taken by the State in funding of ADA services. For state-operated servicessuch as CT Transit, CT DOT provides full funding. For transit district operated services such as in Norwalk, local funds are required to operate ADA mandated services. This disparity in funding should be rectified by CT DOT in order to ensure that all ADA services are funded in a similar manner.

WATERBORNE TRANSPORTATION

The coastline of the South Western Region and the open waters of Long Island Sound are resources that have the potential to be better utilized for transportation. Historically, waterborne transportation was the most important mode in the Region. Although waterborne transportation currently plays a minor role in the transportation system, constraints on adding highway capacity and anticipated growth in traffic volumes in future years suggest that waterways could play a more important role in passenger and goods movement in the future.

Some elements of a passenger waterborne transportation network are already in place in the South Western Region and its surrounding areas. Perhaps most well known is the year-round passenger and vehicle ferry

between Bridgeport and Port Jefferson on Long Island. The Town of Greenwich operates ferries to local off-shore island beaches and tourist ferries operate out of Norwalk to Sheffield Island.

More ambitious plans for ferry service between Stamford and New York have been floated in recent years. The City of Stamford's *Ferry Feasibility Study* (2008) outlined a service plan for ferries to Lower Manhattan and proposed a terminal location in Stamford's South End. This service would be easily accessible from the Harbor Point development area and provide an alternative to congested I-95 and Metro-North. A few years prior, The Bridgeport Port Authority's *Market Feasibility of a Bridgeport-Based High Speed Ferry Service* (2006) and NYMTC's *Long Island Sound Waterborne Transportation Plan* (2005) (LISWTP) supported ferry service between Bridgeport, Stamford, and Midtown Manhattan. To date, a ferry operator has not stepped forward to initiate service to New York.

Another proposal on the table is the possibility of establishing water taxi service connecting Norwalk and Stamford with coastal communities in Westchester County. This service was suggested in the LISWTP. Additional study is needed to better understand the economic and operational feasibility of such a service. Although long discussed, plans to connect the South Western Region to LaGuardia Airport and Glen Cove on Long Island have not gained much momentum. Additional exploration of longer-distance intra- and interstate services may be worthwhile, especially seasonal services to places like Martha's Vineyard, Nantucket, and Eastern Long Island.

Ferries have the opportunity to provide a high-level of service and amenities for passengers. Regularcommuters are often willing to pay premium fares to ride on the open waters and avoid crowded highways and trains, assuming that travel times are competitive with other modes and despite infrequent departures. On the other hand, extreme weather and extended cold spells can produce ice build-up in harbors and waterways, and threaten service for weeks at a time. Unlike the road and rail networks, passenger ferries are run by private operators. However, public capital funds may be available to build or improve ferries or develop terminals.

On the freight side, petroleum, sand and gravel products travel by barge into Norwalk and Stamford harbors. Dredging is a perpetual issue for the Region, as continued maintenance of harbor channels for commercial and recreational vessels is needed to ensure safe operations and access to ports. Maintenance dredging was performed in the Norwalk River channel between the Stroffolino Bridge and Manresa Island in 2013. Dredging along the Mianus River at Captain's Harbor in Greenwich and the Saugatuck River in Westport are overdue. The Region also supports infrastructure improvements to neighboring ports, such as in Bridgeport, New Haven and New London, to encourage additional waterborne freight movement that might altogether bypass the Region.

FREIGHT TRANSPORTATION

A safe and efficient freight system is important not only to the transportation system but also to the Region's economic prosperity. The Region's businesses and households depend on the freight system to move the goods they produce and consume. Unfortunately, the Region's

Table 19: Commodity Flow by Direction and Mode for Fairfield, Litchfield, and New Haven Counties, Combined

Note: KT = Thousand short tons
Source: USDOT, Freight Analysis Framework, 2002

Mode	Inbound		Outbound		Internal		All Movements	
	2002	2035	2002	2035	2002	2035	2002	2035
Air & Truck	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.02%
Other Intermodal	0.44%	0.58%	0.48%	0.84%	0.09%	0.12%	0.57%	0.87%
Pipeline & Unknown	22.72%	18.74%	17.07%	16.70%	9.54%	17.11%	23.14%	17.96%
Rail	1.41%	1.44%	0.93%	0.16%	0.00%	0.00%	1.53%	1.06%
Truck	71.49%	77.37%	81.52%	82.29%	90.37%	82.77%	72.07%	78.85%
Truck & Rail	0.13%	0.12%	0.00%	0.00%	0.00%	0.00%	0.09%	0.08%
Water	3.80%	1.73%	0.00%	0.00%	0.00%	0.00%	2.60%	1.16%
KT - Total	47,104.5	86,023.7	42,112.4	77,018.9	20,247.5	35,141.2	68,969.4	127,901.4

Mode	Total (KT)			
	2002	2,035	Change	Change, %
Air & Truck	8.6	19.8	11.3	131.87%
Other Intermodal	391.2	1,107.6	716.4	183.13%
Pipeline & Unknown	15,959.1	22,969.7	7,010.6	43.93%
Rail	1,054.0	1,361.3	307.2	29.15%
Truck	49,705.4	100,849.0	51,143.7	102.89%
Truck & Rail	60.8	106.8	46.0	75.75%
Water	1,790.4	1,487.1	-303.3	-16.94%
KT - Total	68,969.4	127,901.4	58,932.0	85.45%

freight system is subject to thesame constraints (recurring congestion and delay) which impede the passenger system. WCCOG supports investment in the freight system that improves safety and operations and supports the Region's connection to the global economy.

Transportation infrastructure, such as highways, railroads, ports, and airports, are the backbone of the freight system. In the South Western Region, the most important elements of the freight system are the expressways and highways that carry commercial vehicles. In fact, nearly 85% of the Region's commercial truck miles traveled occur on I-95, making it the most important element of the Region's freight system. Beyond I-95, the Region's freight system includes two small but important maritime ports as well as limited freight rail service. Nearly all of the

Photo 38: A barge on the Norwalk River.

freight facilities that serve the Region's residents and businesses, the major seaports and airports, warehouses and distribution centers, are located outside the Region.

Generally, the Region mirrors Connecticut in terms of commodity flow. Imports are skewed towards low-value, high-weight goods while exports tend towards high-value, low-weight goods. This fits withthe South Western Region's economy, with its specialization in finance, service, and other tertiary industries. Trucks are the primary movers of freight into, out of, and within the Region. Freight flow through the Region supports transportation and warehousing employment, which represent about 2% of the total workforce.

Highways and Trucks

The South Western Region has a well developed expressway and highway network. I-95 links the Region with the New York Metropolitan Area, New England, and the rest of the continental highway network. However, I-95 is characterized by high traffic volumes and recurring congestion, especially during thepeak period.

In 2009, I-95 accounted for 60.4% of the total vehicle miles traveled (VMT) and 85.0% of the truck VMTon the Region's highway system. Trucks make up a larger proportion of the traffic on I-95 than they do on any other highway in the Region (save for the small section of I-684 that passes through Greenwich). Not surprisingly, truck delays on I-95 represent the majority of truck delay hours in the Region (50.7%).

Commercial vehicles are totally excluded from the Merritt Parkway. This exclusion is in place due to the low clearance height of bridges and deficient roadway geometrics, including limited or non-existent acceleration and deceleration lanes at interchanges. Despite this restriction, oversized trucks stilloccasionally find their way onto the Merritt Parkway, resulting in damage and delays. CT DOT accidentdata reveals numerous commercial vehicle accidents on the Merritt Parkway attributed to "insufficient vertical clearance", essentially an oversized truck hitting a low bridge.

Truck Parking

In the Region, truck parking is available at I-95 service plazas (both northbound and southbound) in Darien. . Inadequate truck parking is a concern statewide and throughout the greater New York metropolitan area. On any given night, the demand for truck parking exceeds the available supply of 375 public spaces statewide. A 2001 CT DOT study determined that on an average night, there is a shortage of 1,200 truck parking spaces throughout Connecticut. That figure is expected to rise to 1,600 spaces by 2020. The recent reconstruction of the Darien service plazas increased the available truck parking spots but not nearly enough to satisfy demand. Truck drivers who reach their FMCSA limit on hours are forced to park along the entrance and exit ramps and shoulders of I-95 or adjacent to the fuel pumps and in the car parking area of highway service plazas. This parking arrangement creates a hazard for all highway users. Fully addressing this problem will require a concerted effort from both the public and private sector in Connecticut, New Jersey, and New York.

Safety

Commercial vehicle safety is an important concern for all highway users. Given the size and operational characteristics of the large trucks used for goods movements, commercial vehicle crashes can result ingreater property damage and physical injury, require more incident response resources, and have a significant impact on delay and congestion.

In the South Western Region, I-95 is the primary highway of concern for safety. I-95 accounted for the majority of commercial vehicle crashes in the

Photo 39: A disabled truck stuck under the Atlantic Street rail bridge in Stamford, one of many bridges with low clearances in the Region.

Region, 64.4%, between 2003 and 2007.

Of special concern to the Region are crashes involving a commercial vehicle striking a low bridge. There are numerous railroad bridges with low vertical clearances in the Region, many of which, owing to historical circumstances, are located in or near commercial and industrial areas. In addition, commercial vehicles do, from time to time, find their way onto the Merritt Parkway. Though these wayward trucks do not always strike bridges, they do cause congestion and delays as the State Police escort them off the Parkway. For more information on this sort of accident, see the incident management section.

The Region contains one weigh station on I-95 north in Greenwich. The weigh station is operated by the Connecticut Department of Public Safety (DPS) Traffic Services Unit in cooperation with the Connecticut Department of Motor Vehicles. Between January 1, 2008 and June 30, 2008, the Greenwich weigh station inspected (weighed) over 29,000 vehicles. This represents nearly 40% of all weigh station inspections performed by DPS for the entire state. A total of 5,236 citations were issued at the Greenwich weigh station, representing potential fines of $1,247,141.

Multimodal

The Region is home to two small but important commercial harbors in Norwalk and Stamford. Both harbors handle similar commodities: fuel oil, sand and gravel. The fuel oil consists primarily of heating oil, which is brought in by barge from larger ports in New Haven and New York / New Jersey. Trucks distribute the heating oil to customers in the Region and beyond. The sand and gravel handled at the ports is used in the production of concrete and asphalt, which is distributed locally by truck. Sand and gravel shipments come by barge from larger ports in New Haven, Bridgeport, and New York / New Jersey. Similar to other Connecticut harbors, scrap metal is the largest export commodity. The Region is also served by larger commercial ports in Bridgeport and New Haven and the globally significant Port of New York and New Jersey.

Although the Region's railroads are almost entirely devoted to passenger service, freight railroads retain the rights to travel overhead and serve customers. CSX Transportation, a Class I railroad, provides freight service on the New Haven Line and the New Canaan Branch. Providence

Photo 40: A barge sits at O&G Facility on the West Branch of Stamford Harbor. Sprague Energy's terminal is visible in the foreground.

and Worcester Railroad, a class II railroad, provides freight service on the Danbury Branch and has rights to move through trains over the New Haven line between New Haven and New York City. Due to the density of passenger service along the New Haven Line, freight service is limited to a narrow time period, usually at night. Although local service is available, there is only one on-rail customer in the Region, a lumber yard in Darien, that receives less than fifty carloads annually.

Table 20: Waterborne Freight Traffic, 2007

Commodity	Receipts		Shipments		Grand Total	
	Norwalk	Stamford	Norwalk	Stamford	Norwalk	Stamford
Distillate Fuel Oil		169		2*		171
Residual Fuel Oil	90				90	
Building Stone		1				1
Sand & Gravel	201	796		3	201	799
Iron & Steel Scrap				102		102
Total	**291**	**966**		**105**	**291**	**1,073**

* Distillate fuel oil shipments from Stamford were internal.
Note: All figures are thousand short tons.
Source: Waterborne Commerce of the United States, 2007

Future Needs

Freight traffic is expected to grow significantly over the next thirty years. The Federal Highway Administration's (FHWA) Freight Analysis Framework (FAF) projects the volume of freight moving into, out of, or within western Connecticut (Fairfield, Litchfield, and New Haven Countiesii) to increase 31% by 2020 and 85% by 2035, based on 2002 flows. Along I-95, truck vehicle miles traveled were projected to increase at an even faster rate, 115.1%, between 2002 and 2035. This figure is well in excess of the projected growth, 55.2%, for all vehicles on I-95.

Photo 41: A Providence & Worcester freight train crosses the Walk Bridge. Photo by David T Horree©.

The steep and disproportionate growth in freight traffic cannot solely be attributed to a growing population and economy. The rise of globalization coupled with innovations in production methods and an evolution from traditional "push" to "pull" logistics means the Region, like other metropolitan areas, is reliant upon an ever increasing freight flow to supply businesses and consumers and power the regional economy.

Increased freight traffic threatens to further strain the Region's transportation system, which in many cases is already at or exceeding capacity. By and large, trucks should continue to be the dominant mode moving freight into, out of and within the Region. In fact, slow growth in freight movement by other modes will mean that the Region's reliance on trucks for goods movement will only further increase. Growing truck traffic will have to compete with higher forecast passenger vehicle volumes. Greater congestion may have a ripple effect on the freight transportation system, making it slower and less reliable, which could drive up shipping costs.

Table 21: Projected VMT Growth, Truck vs. All Vehicles, I-95 in the South Western Region, 2002 - 2035

	2002	2035	Change	% Change
VMT	3,015,311	4,681,040	1,665,729	55.2%
FAF VMT	170,156	365,975.2	195,819	115.1%

Source: USDOT, Freight Analysis Framework, 2002

BICYCLE AND PEDESTRIAN TRANSPORTATION

Bicycling and walking are important parts of Region's multimodal transportation system. Through bicycle and pedestrian commuters are relatively small in number, increased attention towards mass transit and redevelopment of properties near the Region's largest rail stations mean a greater emphasis on livability, walking, and bicycling in the future. WCCOG has long supported and spearheaded effortsto make the transportation system more accommodating to bicyclists and walkers.

According to the 2010 Census, about 3.9% of workers residing in the Region, or more than 6,000 commuters, walk or bicycle to work. The number and percentage of walk and bicycle commuters is greatest in the Region's largest communities, Greenwich, Norwalk, and Stamford. Within these communities, bike and walk commuters are concentrated in and around central business districts, which are characterized by a relatively dense mix of residential and commercial uses as well as sidewalks and transit service.

This count of walk and bike commuters may omit those workers who rely on walking or bicycling for a portion of their commute, such as transit commuters who walk or bike to the station or bus stop. According to the 2005-9 ACS, about 2.7% of workers in the Region, or more than 4,600 commuters, use the bus to commute to work. Most if not all of these commuters have a walk trip at the beginning or end (or at both ends) of their bus trip. Similarly, about 3,500, or 14%, of the Region's weekday

riders on Metro-North report walking to the station according to a recent survey. Riders may choose to walk forsimple convenience or because of a lack of parking at rail stations.

As part of its bicycle and pedestrian planning activities, WCCOG reviewed CT DOT crash data and identified seven SafetyCorridors. These *Safety Corridors* merit greater attention due to their higher rates of bicycle- and pedestrian-involved crashes. The location of these SafetyCorridors generally conforms to what Census data reveal about the location of bike and walk trips. Six of the seven *Safety Corridors* are located in Greenwich, Norwalk and Stamford, the three communities with the highest number of bike, walk and bus commuters and households with no vehicles available in the Region. Similarly, six of the seven *Safety Corridors* are located in downtowns, town centers or neighborhood main streets, which are areas more likely to generate bike and walk trips. Five of the *Safety Corridors* are located on Route 1 while the other two *Safety Corridors* intersect Route 1, the highway with the highest number of bicycle- and pedestrian-involved crashes in the Region. In total, the seven *Safety Corridors* represent about 45% of all bicycle and pedestrian involved crashes in the Region while only encompassing about 4% of the non-expressway highway miles.

For each *Safety Corridors*, SWRPA located the most accident-prone segments, analyzed crash conditions and contributing factors, and recommended countermeasures. Appropriate countermeasures

Table 22: Demographic Data Indicating Bicycle and Pedestrian Activity

	Bike & Walk Commuters				Bus Commuters				Household with No Vehicles Available			
Geography	Total	(MoE)	%	(MoE)	Total	(MoE)	%	(MoE)	Total	(MoE)	%	(MoE)
Darien	248	155	3.3%	2.1%	13	21	0.2%	0.3%	197	74	3.0%	1.1%
Greenwich	970	241	3.7%	0.9%	98	79	0.4%	0.3%	943	177	4.1%	0.8%
New Canaan	318	173	4.0%	2.2%	0	123	0.0%	1.6%	184	93	2.7%	1.4%
Norwalk	1,002	237	2.3%	0.5%	2,113	441	4.9%	1.0%	2,268	305	6.9%	0.9%
Stamford	3,569	577	5.8%	0.9%	2,423	409	3.9%	0.7%	5,167	568	11.2%	1.2%
Weston	93	135	2.2%	3.2%	8	13	0.2%	0.3%	22	23	0.7%	0.7%
Westport	326	110	2.9%	1.0%	9	16	0.1%	0.1%	227	113	2.4%	1.2%
Wilton	88	53	1.2%	0.7%	13	19	0.2%	0.3%	133	64	2.3%	1.1%
South Western Region	**6,614**	**731**	**3.9%**	**0.4%**	**4,677**	**620**	**2.7%**	**0.4%**	**9,141**	**692**	**6.8%**	**0.5%**
Connecticut	**53,935**	**1,890**	**3.2%**	**0.1%**	**38,784**	**1,459**	**2.3%**	**0.1%**	**110,668**	**2,055**	**8.3%**	**0.2%**

were identified using two FHWA documents: *BIKESAFE: Bicycle Countermeasure Section System* and *PEDSAFE:Pedestrian Safety Guide and Countermeasure Selection System*. Recommended countermeasures ranged from better street lighting and repainting crosswalks to sidewalk bulb-outs and median refuge islands. In 2012, SWRPA performed a more detailed analysis of the *Safety Corridors*, including developing conceptual improvements for key locations in each corridor. In 2013, SWRPA updated the *South Western Region Bicycle and Pedestrian Plan*. The Plan presents an overview of bicycle and pedestrian travel in southwestern Connecticut and describes the major initiatives to build new bicycleand pedestrian facilities. The Plan update added information about new Federal and State policies, summaries of recent plans, new Census data (where available), improved graphics, revised multi-use trail routings and descriptions, and references to complete streets recommendations in recent corridor studies.

Multi-Use Trails

There are plans for four major multi-use trails through the Region. These trails are in various stages of development, from plans to construction to completion. As can be observed elsewhere in Connecticut and across the nation, multi-use trails provide an alternative travel option, are considered an amenity by local residents, and can help share a region.

- Forming an east-west axis across the Region, the *Merritt Parkway Trail* is the largest and most ambitious trail proposal. The portion of the trail in the Region is part of a still larger proposal for a multi-use trail along the entire length of Merritt Parkway, which is a vital and missing link on the East Coast Greenway between Maine and Florida. CT DOT is currently performing a detailed study of the Merritt Parkway Trail.
- The *Norwalk River Valley Trail* would form a north-south axis along its namesake Norwalk River from Norwalk to Wilton and Danbury. This trail would parallel US 7, connecting numerous neighborhood centers, office parks and rail stations. Portions of the trail are open in Norwalk and Wilton. Support for the trail as grown substantially in

Table 23: Safety Corridors

Corridor Name	Municipality	Route	From Street	To Street	Length (mile)	Speed Limit (mph)	Avg. ADT	Accidents			Accidents/ Mile
								Bike	Ped.	Total	
Greenwich	Greenwich	1	Benedict Place	Indian Field Road	1.39	30	21,316	7	10	17	12.2
Tresser Blvd.	Stamford	1	Rose Park Ave	Greyrock Place	0.65	25-30	21,400	7	12	19	29.2
Washington Blvd.	Stamford	137/493	Station Place	Broad Street	0.66	25	22,733	7	7	14	21.2
East Main Street	Stamford	1	Broad Street	Standish Road	0.89	30	21,002	5	26	31	34.8
Connecticut Avenue	Norwalk	1	Shop-Rite	1-95 S exit 14	0.37	35	25,300	2	5	7	18.9
Main Street	Norwalk	123	Cross Street	Ohio Ave	0.55	30	14,100	3	4	7	12.7
Westport	Westport	33/1	Riverside Ave	Powers Court	0.55	25-30	20,049	2	7	9	16.4

recent years thanks to the efforts of the volunteer Norwalk River Valley Trail Regional Steering Committee.

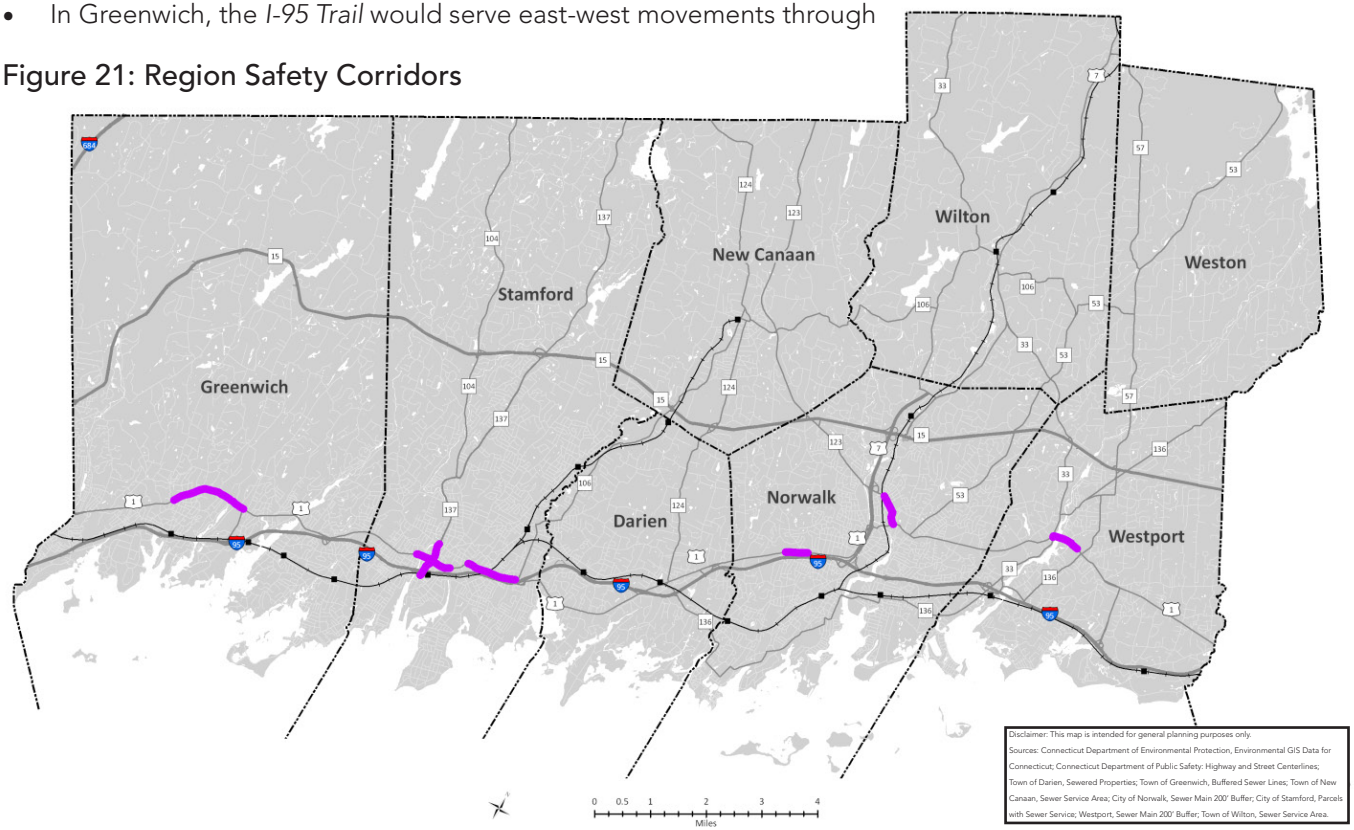
- In Stamford, the *Mill River Greenway* will improve bicycle and pedestrian movement through the downtown and surrounding neighborhoods while also providing a significant recreational and aesthetic amenity. The park through which this trail passes is currently under construction.
- In Greenwich, the *I-95 Trail* would serve east-west movements through the southern portion of the town, where the only option now is busy Route 1 (Putnam Avenue).

The multi-use trail system would, if completed as envisioned, comprise a network of almost fifty-six miles. The majority of these trails would use a stone dust surface, the rest being a combination of hard pavement and compact earth as well as some on-road segments. Currently, the system is about 9% complete with another 6% in design. The remainder of the system is still in the planning stage.

Complementing the multi-use trail system, a network of on-street routes would improve the safety and mobility of bicyclists. Presently, there are only a few short, unconnected segments of stripped bicycle lanes in the South Western Region. SWRPA and CT DOT are exploring ways to accommodate bicycle facilities on the highway network and create complete streets.

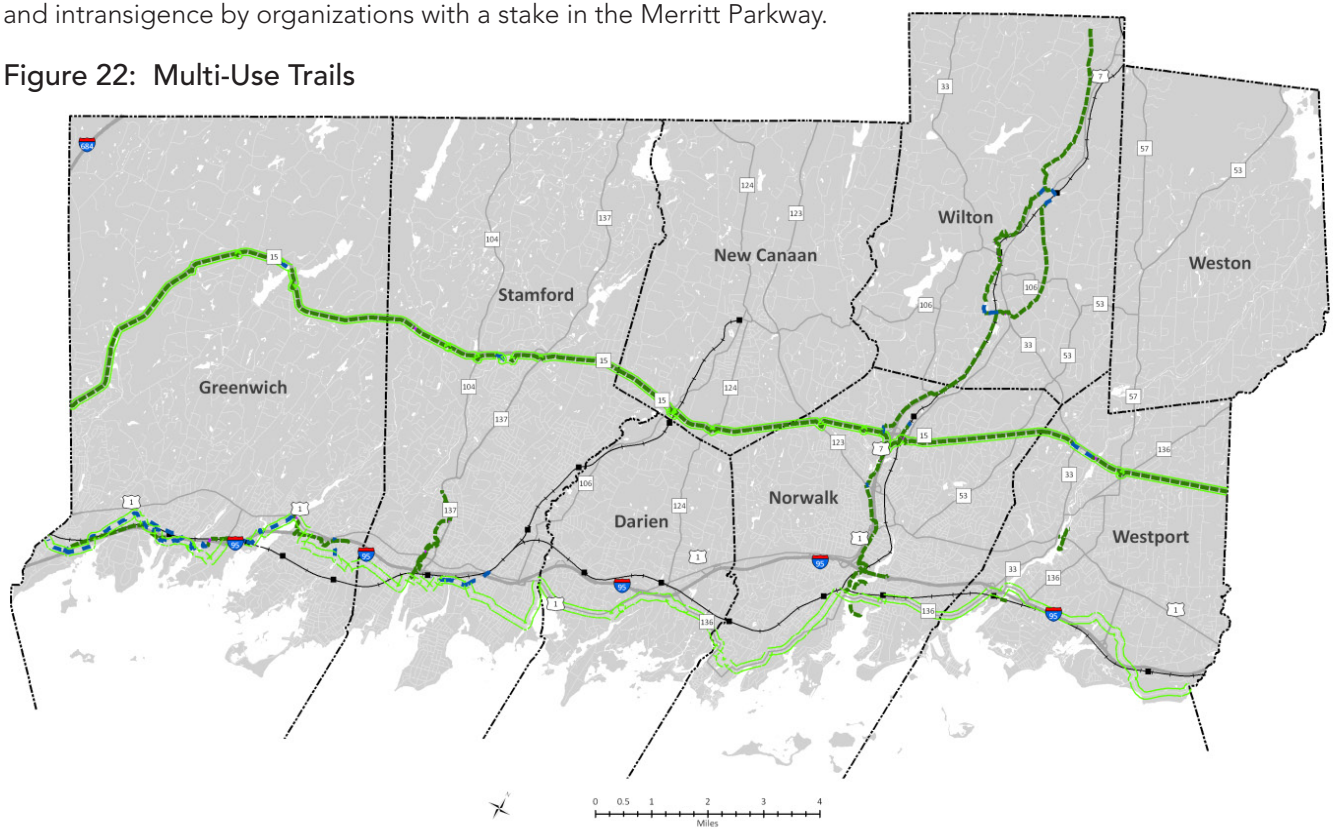
The East Coast Greenway is a planned multi-use trail running from Maine to Florida. The trail, which is 2,500 miles in length, now stands about one-quarter complete. Large sections of

Figure 21: Region Safety Corridors



the trail have been completed in Connecticut, including the Farmington Canal Greenway, Hop River Trail, and Airline Trail. The largest unfinished segment in Connecticut is in southwestern Connecticut from the New York State line to West Haven. In fact, this may be the longest section without a viable off-streetrouting along the entire length of the East Coast Greenway. The proposed off-street route through the Region via the Merritt Parkway trail has until recently been met with obfuscation and intransigence by organizations with a stake in the Merritt Parkway.

Figure 22: Multi-Use Trails



Currently, CT DOT recently is performing a detailed study of thetrail to assess its feasibility. The Merritt Parkway Trail is really the only possible off-street routing for the East Coast Greenway through the Region.

Future Needs

The 2010 Census data, which indicatedan increase in the number and percentage of bicycle and pedestrian commuters since 2000, may portend a greater emphasis on walking and bicycling. This increase was concomitant with with a policy focus on mass transit and livability as well as significant redevelopment activity in Norwalk and Stamford. About eight-thousand new residential units were recently completed or are under construction in Norwalk and Stamford within a reasonable walking distance of a rail station and bus routes. All three of WCCOG's recently completed corridor studies have considered the needs of bicyclists and pedestrians and recommended significant improvement to bicycle and pedestrian facilities. Nationally, bicycle commuting has experienced something of a renaissance in over

Photo 42: The Norwalk River Valley Trail at Union Park, its current northern terminus in Norwalk. There are plans to extend the trail north in Norwalk. New sections of trail opened in Wilton in 2014.

the last decade, with 40% growth in the United States and 50% growth in Connecticut in the number of people riding their bicycle to work. Nearby New Haven and New York Cityare prime examples of this trend. CT DOT, often maligned as a "highway-only" agency, has in recent years come around to give more attention to the needs of bicyclists and pedestrians. Policy changes recently adopted by CT DOT would make it easier to include bicycle and pedestrian elements in all transportation projects.

SAFETY

In this Plan, the many aspects of safety are recognized, including bicycle, pedestrian, older driver, driving under the influence of alcohol, and truck safety as well as transit operations. This section draws upon CTDOT's *Strategic Highway Safety Plan, 2008 Highway Safety Plan, and Master Transportation Plan*. WCCOG and the South Western Region Incident Management Team are active in transportation safety planning, training and response.

Background

In the *Congestion Mitigation Study Vision 2020*, approximately 60% of all commuters surveyed statedtheir belief that highway safety was decreasing. Federal and state programs recognize the importance of planning and implementing capital and operating projects to enhance safety through such programs as incident management, highway assistance patrols, pedestrian and older driver safety programs, and targeted enforcement programs.

The process to identify unsafe highway locations begins with data collection. The State of Connecticutcollects and tabulates crash data using uniform traffic crash reporting by local and state police. The data helps planners and engineers identify locations on state highways with potential for crash reduction, to conduct before and after analyses of road improvements, and to assist in setting priorities for the allocation of resources for capital projects or for enforcement purposes. Below is

a summary of the number of traffic accidents that occurred on public roadways in the Region and the State of Connecticut in 2008.

As seen in this table, the Region's share of fatal crashes is much lower than the Region's share of injury accidents and all crashes. Fatal crashesoccurred at a rate of 0.14% (or 1.4 out of 1,000 crashes) in the Region, whereas fatal crashesoccurred at a rate of 0.27% (or 2.7 out of 1,000 crashes) for Connecticut as a whole. Of the 13,007 total crashesin the Region in 2008, about 60% were located between intersections and 40% were located at intersections. The month with the greatest number of crasheswas December, representing 9.92% of all accidents in the Region. The month with the least number of crasheswas March, representing 6.93% of all crashesin the Region. There was a fairly uniform distribution of crashesduring each day of the week, except for Friday, which had a high of 18.64% of crashes, and Sunday which had a low of 9.13% of all crashes.

Table 24: Traffic Accidents: South Western Region, 2008

Municipality	Accidents	Injury Accidents	Fatal Accidents
Darien	838	N/A	N/A
Greenwich	2,142	N/A	N/A
New Canaan	433	N/A	N/A
Norwalk	3,566	N/A	N/A
Stamford	4,027	N/A	N/A
Weston	155	N/A	N/A
Westport	1,381	N/A	N/A
Wilton	465	N/A	N/A
SWR Total	13,007	2,758	18
CT Total	104,187	26,066	280
SWR %	12.5%	10.6%	6.4%

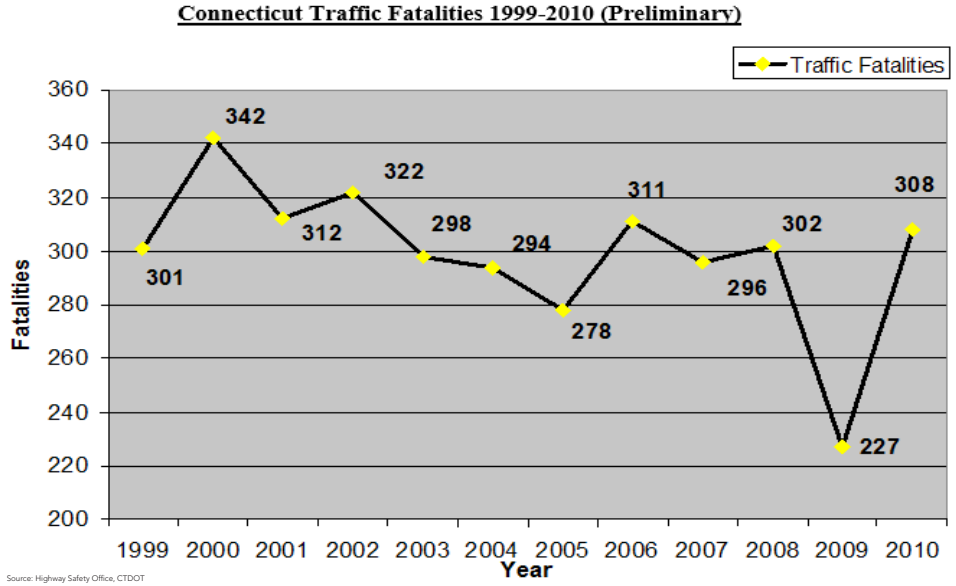
Source: Motor Vehicle Traffic Accident Data, CTDOT

Throughout the state of Connecticut, there has been an average of 284 fatalities per year between 2004and 2009. A record low of 227 total fatalities were recorded in 2009 followed by a large increase to 308 total fatalities in 2010.iiiAs this large increase is not easily explained, the Highway Safety Office at CT DOT has begun to review efforts and asses what can be done to mitigate this apparent rise in fatalities. WCCOG remains committed to working with CT DOT to assess, identify, and reduce the various hazards that may perpetuate traffic crash fatalities.

Highway Safety Plan

Each year, CT DOT prepares a Safety Plan that identifies all the safety programs that it supports and how federal safety funding is used. The general goal of the Safety Plan is to reduce crashes and fatalities on roadways in regards to motorists, motorcyclists, pedestrians and cyclists. A recent Safety Plan compares crash data from 2005 and 2004, and its main findings show that overall, Connecticut has a lower rate of crashes, injuries, and fatalities as compared to the national average.

Figure 23: Connecticut Traffic Fatalities 1999-2010



Specifically, the number of police reported crashes in the State decreased by 2.7% from 2004. Decreases were observed in fatal crashes (-6.8%), property damage only crashes (-1.5%), and injury crashes (-4.6%). In 2005, there were 261 fatal crashes in which 274 persons were killed. The fatality total was 6.8% less than in the previous year. Serious "A" injuries decreased by 5.9% in 2005, while "B" and "C" level injuries declined by 0.4% and 7.5%, respectively. Over the 5-year period of 2001 to 2005, the number of fatalities in Connecticut declined by almost 14%, compared to a decrease of 7% in the National HighwayTraffic Safety Administration's (NHTSA) New England Region and a 3% increase for the entire nation.

Connecticut's fatality rate was 0.9 fatalities per 100 million miles of travel compared with the national figure of 1.5 fatalities per 100 million miles of travel.v

Strategic Highway Safety Plan

The purpose of the *Strategic Highway Safety Plan* (SHSP) is to clearly identify the State's critical safety needs and direct allocated resources to achieve significant reductions in fatalities and serious injuries on highways and all other public roads. The SHSP provides the comprehensive framework which coordinates statewide safety initiatives and provides specific goals and objectives to reduce highway fatalities and serious injuries on all public roads. The SHSP is prepared in collaboration with publicagencies and private stakeholders, including SWRPA. To achieve the objective of the SHSP, strategies are defined for each of the following emphasis areas:

- Traffic Records and Information Systems
- Roadway Departure
- Pedestrians and Bicycles
- Work Zones
- Driver Behavior (Alcohol, Occupant Protection and Speeding)
- Motorcycle Safety
- Commercial Vehicles
- Incident Management

Master Transportation Plan

The Transportation Safety Section of CT DOT's *Master Transportation Plan* addresses a set of identified and defined highway and traffic safety problems. This problem identification process begins early in the calendar year with an examination of a variety of traffic and roadway-related data. The analysis of this data identifies both general and specific patterns of concern, and from a review of historical patterns, projects future data trends. Other problems and deficiencies are identified through programmatic review.

National figures released in August 2004 indicate that in 2003, Connecticut was one of five states experiencing a significant decrease in the total number of traffic fatalities (-10%.) There were 294 fatalities, a reduction from a total of 325 in 2002. The national fatality rates per 100 million vehicle miles traveled (VMT) and per 100,000 persons were lower in 2004 than in 2000; these rates also decreased for Connecticut. Additionally, the U.S. fatality rate per 100,000 licensed drivers decreased from 2000 to 2004, as did Connecticut's rate. As discussed in The *Connecticut Highway Safety Strategic Plan for Fiscal Year 2007*, the greatest number of fatalities occurred in the most populous counties of Fairfield, Hartford and New Haven.vi

Process

Safety is a fundamental concern to all transportation officials and users of the transportation system. Crash data and safety analyses are used by towns, the Region, and the State to identify safety problemlocations. Additional locations are identified by staff, elected officials, and citizens. Site inspections are made, studies conducted, recommendations for corrective actions developed, and improvements programmed. Priority is given to cost effective activities that identify and correct safety problems, both functionally and operationally.

SECURITY

Transportation systems security programs have focused on passenger and asset safety and security for decades. This approach was broadened to address terrorism after international public transportation systems experienced terrorist attacks in the 1990s. Following the 9/11 attacks in 2001, the United States' initiatives for emergency management and homeland security intensified and transportation systems security programs expanded. The Transportation Security Administration (TSA) was initially created within the US Department of Transportation (USDOT) but later transferred to the US Department of Homeland Security. TSA's legal mandate is to manage security programs and provide oversight for security of the transit industry. Over this same two decade time period, metropolitan transportation planning agency involvement in emergency management and homeland security as well as transit security has increased, and is now a required activity. The Region's emergency management and homeland security programs as well as security initiatives of the region, state, and transit providers are described in the following sections.

Emergency Management Homeland Security Planning and Security Overview

Region 1 of the Connecticut Department of Emergency Management and Homeland Security (DEMHS) encompasses both the former South Western Region and current Greater Bridgeport Region. Within Region 1, there are numerous federal, state and local agencies involved in emergency management, homeland security and transit security. On the next page, Table 19 provides a matrix of organizations involved in emergency management and transportation security in the DEMHS Region 1 area. WCCOG is involved in all sectors of concern through Emergency Service Function 1.

SWRPA's Involvement in Emergency Management and Security

SWRPA involvement in security preceded the 9/11 attacks. Through the South Western Region Incident Management Team (IMT), SWRPA and a network of emergency responders have worked together on traffic incident management since 1991, building relationships, skills, and mutual aid compacts, training, and conducting tabletop and field exercise drills. The exercises very often involved terrorism scenarios. Since the formation of the DEMHS and designation of five DEMHS regions, the IMT has evolved into Region 1 Emergency Support Function 1 (ESF1). More information on traffic incident management is found in the section titled *Traffic Incident Management.*

WCCOG's (as its predecessor SWRPA)involvement with DEMHS and its predecessor agencies the CT Department of Emergency Management and the CT Department of Homeland Security began in 2002, with administration of the CERT (Community Emergency Response Team) program. SWRPA's involvement has continued with administration of federal FY2004 and FY2005 Homeland Security Grants to municipalities; participation in development of regional evacuation plans (2005), and the Region 1 Tactical Interoperable Communications (TIC) plan (2007). Beginning in 2007, SWRPA and South Western Region MPO were active voting members of the Region 1 Emergency Planning Team (R1EPT); SWRPAwas the chair of DEMHS Region 1 ESF1 (Transportation); and, SWRPA routinely participated in various exercises, drills and training. WCCOG's involvement in DEMHS, CT DOT and Traffic Incident Management Programs will continue.

In 2014, WCCOG updated the *South Western Region Pre-Disaster Mitigation Plan*. The *Pre-Disaster Mitigation Plan* evaluates the Region's vulnerability to a number of natural hazards and qualifies the region's municipalities for certain FEMA funds in the event of a natural disaster. Funding for the updated plan was provided by the Federal Emergency Management Agency (FEMA). The *2016-2021 Natural Hazard Mitigation Plan* was submitted to FEMA for approval in early 2015.

To assist DEMHS Region 1 with evacuation planning for mass care and sheltering, SWRPA worked on a 2009-2010 pilot project with the City of Norwalk. This effort looked at shelter-evacuation routes, andshowed a need to identify sufficient resources and routes to both move evacuees to sheltering locations in and out of the Region, simultaneously. In cooperation with DEMHS, an upcoming project will expand the pilot project to develop preliminary evacuation routes and GIS maps for

Table 25: Emergency Planning and Transportation Security: DEMHS Region 1 – South Western and Greater Bridgeport Regions 2011

AGENCY	SECTOR OF CONCERN					
	Roads	Transit	Water	Air	Cargo Facilities and Commodity Movements	Transportation Security Planning
US DEPARTMENT OF TRANSPORTATION	●	●	●	●	●	●
Federal Highway Administration	●					●
Federal Transit Administration		●				●
Federal Railroad Administration		●				●
Federal Motor Carrier Safety Administration					●	●
MARAD			●			
US DEPARTMENT OF HOMELAND SECURITY	●	●	●	●	●	●
US Coast Guard			●			●
Federal Emergency Management Agency						●
US Department of Justice						
Federal Bureau of Investigation						
Transportation Security Administration				●		
STATE OF CONNECTICUT						
CT Department of Public Safety	●					●
CT Department of Environmental Protection			●			●
CT Department of Motor Vehicles	●					
CT Department of Transportation	●	●	●		●	●
CT Department of Homeland Security and Emergency Management	●	●	●		●	●
CT Department of Public Health- Emergency Medical Services Administration						
CT Military Department						
CT National Guard						

Table 25: Emergency Planning and Transportation Security: . (cont.)

AGENCY	SECTOR OF CONCERN					
	Roads	Transit	Water	Air	Cargo Facilities and Commodity Movements	Transportation Security Planning
REGIONAL EFFORTS						
South Western Regional Planning Agency	●	●	●		●	●
Greater Bridgeport Regional Planning Agency						●
Norwalk Transit District		●				●
Greater Bridgeport Transit		●				●
CT Transit		●				●
OTHER						
MTA- MetroNorth Railroad		●				●
Amtrak		●				
Greyhound		●				
UConn Engineering - Accorsi, Michael						●
Iroquois					●	

Soure: SWRPA, February 2011 after consultation with DEMHS, CTDOT and transit operators

the three Urban Area Security Initiative (UASI) municipalities in DEMHS Region 1 (Bridgeport, Norwalk, and Stamford) and refine the Norwalk evacuation plan.

This project will focus on identifying preliminary sheltering and evacuation routes for the cities of Bridgeport, Norwalk, and Stamford in the event of a low intensity (Category 1 on the Saffir-Simpson Scale) or a higher intensity (Category 3) hurricane making land fall in or near the Region. The project will also evaluate asset needs and availability within each municipality as well as identify additional factors that would improve the evacuation plans and routes for each municipality. The project will develop a template for shelter-evacuation route models to be used to guide the development of operational evacuation plans for DEMHS region 1 municipalities with the possibility of future use as a model for the state.

Bus Transit Security Initiatives

As required by the Federal Transit Administration (FTA), each transit operator in the Region has developed a Security Emergency

Preparedness Plan. In addition to its own plan developed in 2010, the Norwalk Transit District is included in annexes to the municipal emergency management plans of Norwalk (2009) and Westport (2010.) Norwalk Transit District also participates in Norwalk's and Westport's emergency management team meetings. CT Transit, the contracted bus operator for CT DOT in Stamford and surrounding communities, has extensive security programs in place.

Both CT Transit and Norwalk Transit District enable use of bus fleets for: emergency responders respite from inclement weather and fatigue and temporary shelter for displaced citizens (heat/air condition, water/food transport, etc.). As CT Transit's emergency management director points outvii, transit vehicles can also function as a Mobile Incident Command Center or a Mobile Triage Unit for injured citizens during disaster or attack; assistance in mass evacuation (bus seating capacity ranges from thirty-five to fifty-seven passengers, and can exceed sixty passengers for standing/seating combined); and assist in street and block detours as a bus of twenty-five to forty feet in length can block off streets and intersections to free up emergency vehicles for other assignments.

Funding from the TSA Transit Security Grant Program supported the "See Something, Say Something" public awareness campaigns for bus operations. TSA BASE reviews in 2008 and 2010, which evaluated all aspects of safety and security preparedness, led to recommended improvements. Another TSA Transit Security Grant upgraded surveillance equipment on CT Transit buses. Representatives of the Norwalk Transit District and CT Transit participate in Region 1 ESF1.

Going forward it is important to develop multimodal, municipal, regional, and state evacuation and sheltering plans along with plans for vulnerable and functional needs populations with broader-based participation. The goal is to identify and involve all organizations with transportation assets in emergency planning efforts. The organizations include private and non-profit organizations with buses or paratransit vehicles, the business community, health care facilities, and educational institutions.

Rail Transit Security

As noted in the CT DOT's 2010 *State Rail Plan*, CT DOT is "committed to providing a safe and secureenvironment on Connecticut's rail transportation system." Safety and security on the rail system is addressed through a combination of federal and state laws and regulations in coordination with federal, state, and local partners. When safety measures overlap with security and emergency management, they are described in this section. Other rail safety measures are described in the safety section of the Plan.

CT DOT maintains and updates a number of emergency and security plans, including: Rail Emergency Response Plan; Security and Emergency Preparedness Plans (SEPP); and, the Safety and Security Management Plan (SSMP). Consistent with nationwide best practices in both transportation and emergency management, CT DOT takes an all-hazards approach to domestic incident response to assure the security of the state's transportation systems and users.

CT DOT has a Homeland Security Task Force that identifies, reviews,

It is important to develop multimodal, municipal, regional, and state evacuation and sheltering plans along with plans for vulnerable and functional needs populations with broader-based participation.

and addresses any needs for increased coordination within CT DOT to enable them to respond effectively and efficiently to any natural or homeland security events. CT DOT complies with the *2005 State Executive Order No. 10* to implement the National Incident Management System (NIMS) and the National Response Framework (NRF). Other rail strategies in place relate to ongoing security planning, monitoring, and coordination with other state departments (e.g. DEMHS, Department of Public Safety) and federal agencies, and grantsmanship to secure funding to assure capability and readiness.

CT DOT participates in the tri-state *New York, New Jersey and CTTransit Security Grant Program* (TGSP), which is targeted at high threat urban areas to enhance security measures for critical transit infrastructure (bus, rail and ferry). Consistent with national priorities, activities undertaken include security training for frontline employees, operational deterrence initiatives, drills, exercises, projects for interoperable interagency communications and linkages to primary service answering points (PSAPs), and developing security plans and public awareness programs, including "See Something, Say Something.

The TSGP also funds anti-terrorism measures that harden transit assets, including underwater and underground infrastructure, high density elevated operations, multi-user high-density stations and terminals, interoperable communications, evacuation plans, and Supervisory Control and Data Acquisition (SCADA) systems. To be eligible for DHS Transit Security Grant Program funding, the tri-state Regional Transit Security Working Group (RTSWG) was created. RTSWG, composed of transit agencies and their security providers in the tri-state region, develops plans and priorities for transit security enhancement. In concert with the *DEMHS Critical Infrastructure Protection Unit,* a comprehensive assessment of physical security and vulnerability of rail operations and a risk mitigation plan were developed. A DHS FY 2008 Buffer Zone Protection Program (BZPP) grant helped build security and risk management capability for protection of critical infrastructure including rail facilities as well as chemical plants, power plants, dams, stadiums, and financial institutions. Through the TSA, the Visible Intermodal Prevention and Response (VIPR) program created teams of public safety officers from the MTA, CT DPS, Amtrak, and municipal police departments to establish working relationships and to have special anti-terrorism capabilities such as radiological and nuclear detection. VIPR teams have been deployed to each Connecticut rail station to conduct inspections.

MTA and Amtrak police provide traditional law enforcement and emergency and security services including random bag screening, K-9

units, on-board security checks and identification checks. The MTAand Amtrak police also participate in the FBI's New Haven's Joint Terrorism Task Force. Beginning in 2010, the Connecticut State Police established a Mass Transit Security Unit – a K-9 explosive detection team – to detect explosives at rail and bus facilities and to develop terrorism prevention strategies. This unit coordinates with existing transit programs, operators, policing and security efforts.

Port Security

The US Department of Homeland Security (DHS) FFY2010 Port Security grant program has approved the acquisition of marine security vessels for Greenwich and Norwalk as well as Bridgeport and Fairfield. These assets provide enhanced safety and security program support as well as back up and mutual aid for DEMHS Region 1, the US Coast Guard Sector Long Island Sound (USCG) and New York City. Future Port Security grants will support maintenance of the assets, and will be sought for additional resources by the City of Stamford and others. Through other DHS grants, the USCG is evaluating the security provisions of fifty-five key ports for compliance with mandatory requirements.viii

TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS

Transportation Systems Management and Operations (TSMO) refers to a broad set of transportation management techniques that utilize current and emerging technologies to more efficiently and safely

Photo 43: CT DOT & DEMHS partner on awareness campaigns related to the security of the transportation system. Credit: CT.gov

operate the transportation system. The Federal Highway Administration defines TSMO as a means to "encourage and promote the safe and efficient management and operation of integrated, intermodal surface transportation systems to serve the mobility needs of people and freight and foster economic growth and development."ix This section will outline the most common elements of TSMO, as well as provide the most pertinent findings and recommendations from relevant studies produced by WCCOG and its predecessor SWRPA, or that focus on the South Western Region.

Congestion Management Process

The Region was designated a Transportation Management Area (TMA) as a result of population growth measured by the 2000 Census.

Consequently, the Region is required to develop and implement a Congestion Management Process (CMP) as part of its Long Range Transportation Plan.

The CMP presents a systematic effort to evaluate and monitor traffic congestion and provide information on transportation systems performance. The CMP includes: measuring multi-modal transportation system performance; identifying the cause of congestion; assessing alternative actions;implementing cost-effective actions; and evaluating the effectiveness of implemented actions.

As part of its CMP, WCCOG has created a Travel Time Monitoring Program, the objective of which is to obtain quantitative data measuring the efficiency of the Region's three major highways, I-95, CT-15 and US 7. Data generated from this program is used to identify choke points, where a planning response might be warranted. The main findings from the *2009 Travel Time Monitoring Programx* show that highway congestion is not omnipresent, but instead localized to certain segments, including: I-95 through Stamford's central business district (exits 6 – 7), the approaches to the US 7 interchanges onboth I-95 (exits 14 - 16) and CT 15 (exits 39 - 40), , and various stretches of US 7, including from the northern end of the expressway alignment at Grist Mill Road in Norwalk. Congestion recorded in 2009 along the stretch of US 7 between CT 33 and Olmstead Hill Road was exacerbated by a widening project that expanded the highway by a lane in each direction, which has since resulted in dramatically improved traffic conditions.

Travel time data collection has rapidly advanced in the years since the Travel Time Monitoring Programbegun. In 2008, SWRPA relied on the floating car method, which used small, consumer grade GPS devices in employee cars, to collect data. While this was a relatively simple undertaking, it yielded few samples for relatively high cost. In the last few years, SWRPA and later WCCOG have begun to use "big data" resources made available by I-95 Corridor Coalition and U.S. Department of Transportation. These big data resources provide nearly ubiquitous coverage of major highways, allowing WCCOG to analyze travel speed and time data for nearly any day or time for discrete sections of highway without having to the leave the office. These big data resources will likely be instrumental in helping WCCOG meet its performance management requirements under MAP-21 and successor federal transportation programs.

In February 2003, SWRPA released its seminal *Congestion Mitigation Systems Plan – Vision 2020*xi, a strategic plan to reduce traffic congestion in Connecticut's southwestern corridor and improve mobility and access within the corridor and to adjacent regions in the New York Metropolitan Area. Strategies recommended in this report received the support of both the traveling public and local officials, and some have since been advanced. The recommended strategies include:

- Implementation of systems management techniques and demand management programs that optimize use of existing infrastructure and investment prior to making new investments.
- Improving the safety of the traveling public through a program of engineering upgrades and enhanced use of technology;
- Coordination of land use and transportation planning to create

communities that support transit and to provide new opportunities for mixed use village-type development;

- Evaluate opportunities for use of congestion pricing on roadways and for transit services, recognizing that computer modeling performed as part of the study point to pricing as the most effective way to encourage mode shift among travelers;
- Implement non-highway opportunities for movement of freight through the Region and Connecticut;
- Optimize use of the Region's rail system for passenger and freight movement; and
- Encourage policymakers to implement balanced solutions for congestion relief: the Region's transportation challenges can only be effectively addressed on a multi-modal basis.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) encompass a broad range of electronic and communications technologies that relieve congestion and improve safety and efficiency. *The South Western Region ITS Strategic Plan*xii, completed in 2009, conducted a strategic assessment of new and enhanced opportunities for the implementation of ITS applications in the South Western Region, with a focus on improving the safety and efficiency of the regional transportation network.

Following the study's needs assessment and preliminary screening, eight proposed ITS strategies were identified by a Technical Advisory Committee for further study. Planning budget estimates were generated for each strategy, including capital costs as well as annual operating and maintenance costs. Using ITS Deployment Analysis System (IDAS), a sketch planning model that acts as a post-processor to a travel demand model, six of these eight strategies were determined to have benefits in excess of theircost. The plan recommends pursuing these six strategies to meet identified needs and enhance safety and efficiency of the regional transportation systems. Three of these six strategies focus on the Region's highway system and three focus on the transit system.

ICM-1: Merritt Parkway ITS Instrumentation: The Merritt Parkway (Route 15) currently has three changeable message signs (CMS) that can alert drivers of approaching congestion or an incident. This package would strategically place five new CMS along the Merritt Parkway and also add eight new surveillance cameras; there are currently none. Deployment of twenty traffic flow detectors is also recommended. Potential technologies include loop detection, microwave sensors, infrared or video detection. Monitoring and control of this equipment would be handled by CT DOT's Highway Operations Center in Bridgeport. Among all the packages studied, this package has the potential to benefit the greatest number of travelers.

AM-1: Stamford Real-Time Traveler Information System: To assist in its arterial management efforts, this package would provide the City of Stamford with a system to detect and broadcast real-time traveler information on its major arterials. The information would be disseminated via a public website and would include incident and construction locations, a description of traffic levels, and camera snapshots of roadway conditions. Real-time data collection would involve coordination of public safety incident reports and the City's traveler information website. Some

incidents and construction activities will be detected using the city's traffic surveillance cameras. The traveler information website will feature a map-based display that will depict the location of incidents and construction activities, congestion levels, and show the location of and still images from the City's traffic cameras.

IM-1: Norwalk Incident Management System: The City of Norwalk has several key arterials and interchanges. This package would aid Norwalk in the implementation of CT DOT's diversion plans when incidents on the limited-access network cause large volumes of traffic to divert onto local arterials. This package would include roughly fifty electronic blankout signs at strategic locations that would transmit timely travel information in the event of an incident. These signs would be integrated with Norwalk's larger incident management systems, which include central traffic signal control, traffic surveillance cameras, the City's PSAP (public-safety answering point) computer-aided dispatch system, GIS, and AVL system. The project would also establish an interface with Connecticut's future 511 traveler information system.

Photo 44: Changeable message signs, as seen on I-95, alert drivers about traffic conditions.

AVL-1: Norwalk Transit District: Automated Vehicle Location (AVL) is a fleet management system by which vehicles locations are monitored in real-time via GPS or other means. With this proposed package, the Norwalk Transit District would implement an AVL system on all of its vehicles. This would enable more efficient dispatching and

Photo 45: The City of Stamford's Traffic Management Center.

improve reliability and timeliness. Additionally, this package would support future next bus arrival and departure information. Norwalk Transit District recently upgraded its on-board and dispatching technology. The AVL system would likely be integrated with this existing two-way digital radio system. However, some reconfiguration or upgrade may be necessary.

In 2014, Norwalk Transit District began deployment of an AVL system on its bus fleet.

TSP-2: Stamford Transit Signal Priority: The City of Stamford is in the process of deploying transit ITS components as part of the Stamford Urban Transitway project. This package would build on those efforts by installing Transit Signal Priority (TSP) equipment at signalized intersections throughout the city. TSP would allow buses extra "green time" to pass through intersections in order to stay on schedule. Deploying TSP throughout the city should reduce travel times and improve the schedule adherence of CT Transit vehicles on city streets.

The City of Stamford has already invested in a Computerized Central Traffic Control System. This central system allows the city's traffic engineers to monitor and control signals throughout the city. Emergency vehicle preemption has been deployed on a majority of these traffic signals. It is likely that there would not be need for significant upgrades to the City of Stamford's signal systems in order to implement TSP.

AVL-2: Connecticut Transit – Stamford Division: Automated Vehicle Location: Similar to the Norwalk AVL proposal, this package would

Table 26: Summary of Benefit-Cost Analysis for South West Region - ITS Plan

	Total Benefits	Annualized Cost	Benefit-Cost Ratio	Net Benefits	Capital Cost	Annual O&M
ICM-1 Merritt ITS	$3,818,000	$833,000	4.58	$2,985,000	$2,470,000	$500,000
ICM-2 US 1 ITS	$369,000	$842,000	0.44	-$473,000	$2,120,000	$590,000
AM-1 Stamford Info	$3,040,000	$308,000	9.87	$2,732,000	$945,000	$200,000
IM-1 Norwalk IM	$2,909,000	$460,000	6.32	$2,449,000	$2,310,000	$245,000
AVL-1 Norwalk	$1,177,000	$295,000	3.99	$882,000	$1,370,000	$130,000
AVL-2 Stamford	$1,162,000	$263,000	4.42	$899,000	$1,210,000	$110,000
TSP-1 US 1	$705,000	$850,000	0.83	-$145,000	$4,355,000	$355,000
TSP-2 Stamford	$618,000	$179,000	3.45	$439,000	$660,000	$95,000
Total Program	**$13,798,000**	**$4,030,000**	**3.42**	**$9,768,000**	**$15,440,000**	**$2,225,000**

enhance CT Transit service in Stamford with an AVL system to improve dispatch efficiency. It would be coordinated with current procurement efforts for AVL through the Stamford Urban Transitway project. CT Transit would likely utilize its existing scheduling and dispatching software so no additional CAD functionality should be necessary. However, it is likely that the AVL system will require additional radio frequency communications to transmit data from vehicles back to a central location. Alternatively, CT Transit could pursue commercial communications services.

Congestion Pricing

Congestion Pricing is a concept that broadly refers to the using market forces to affect travel behavior with the intent of reducing congestion. Charging a higher price to use a highway when it is in high demand may lead motorists to use a different route, travel at a different time of the day, use transit, carpool, or not make the trip at all. Congestion pricing also has the potential to generate significant revenue, which can be invested into additional capacity or other improvements in the corridor being priced. Advances in tolling technologies allow for motorists to pay a congestion pricing charge without stopping or even slowing down, thus avoiding the delay and safety issues associated with antiquated toll booths. Pricing may be static, meaning the price charged to use the highway at a certain time is published in advance. Pricing may also be be dynamic, meaning that the price charged to use the highway at a certain time varies by the traffic volume and congestion so as to ensure a minimum level of service.

Many different forms of Congestion Pricing exist. Cordon or area pricing, refers to charging motorists a fee to enter a specific downtown area. Such a system is used in London and Stockholm and is proposed for Manhattan's central business district. Variable lane tolling charges motorists for the use of a specific lane or section of highway. There are now numerous examples across the country of managed toll lanes, including high occupancy toll or HOT lanes which are free to carpools but charge a fee to single occupant vehicles. Some variable lane tolling facilities use dynamic pricing, meaning the price changes based on the time of day and congestion level. Some cities, such as San Francisco, are also now experimenting with a third form of congestion pricing that uses variable pricing to maximize the efficiency of street parking.

Though often lumped together with other emerging pricing technologies, charging motorists by Vehicle Miles Traveled (VMT) is not necessarily a form of congestion pricing. As vehicles become more energy efficient and move away from reliance on petroleum-based fuels, VMT charges may eventually replace Federal and State excise taxes on gas and diesel. Related to a VMT charges are efforts to introduce pay-by-mile or pay-by-minute auto insurance.

The application of Congestion Pricing to the Region's highways must be carefully evaluated as there are potentially negative consequences, real or perceived, associated with this policy. Foremost among these concerns would be the impacts from motorists who divert to local streets to avoid a toll. Another significant concern would be whether congestion pricing disproportionately burdens low-income motorists.

Photo 46: Toll Booths on the Merritt Parkway in the 1950s. Source: CTDOT

A third major concern would be whether there is adequate rail and bus service as well as rail station parking for travelers who would seek an alternative to the highway. This last concern would be especially importantRegion, where the already well developed commuter rail system is at or exceeding capacity during peak periods.

Connecticut Department of Transportation is now performing a detailed study of value pricing in the I-95 corridor between New Haven and New York state. Dubbed the *I-95 Congestion Relief Study: Express Lanes and Electronic Tolling*, the study is using intensive modeling and microsimulation to understand how pricing might affect traveling behavior and traffic operations as well as the anticipated revenue and expenses. The study is evaluating both managed lanes (two new priced lanes on

Photo 47: Any congestion pricing system deployed in the Region must use open road tolling technology, as shown below in this example from Washington State. Source: Washington Department of Transportation

I-95 in addition to theexisting general purpose lanes) as well as full facility pricing (pricing all lanes on I-95 and potentially also the Merritt Parkway). The study is primarily funded by FHWA, which awarded Connecticut one of fifteen spots in its Value Pricing Pilot Program. A final report is expected to be delivered in 2015.

In April 2009, the Connecticut Transportation Strategy Board and the Connecticut Office of Policy Management completed the *Connecticut Electronic Tolling and Congestion Pricing Study.*xiii Below is a summary of that study's findings and recommendations most pertinent to the South Western Region.

Border Tolling at Major Highways: Charging I-95 and CT 15 motorists a toll when they cross the New York State border into Connecticut would raise significant revenue, but would do little or nothing to improve congestion in the corridor. Also, while overall levels of traffic diversion to alternate routes would be small relative to total volumes on these limited access highways, the impacts would be significant on certain local street. There also are legal restrictions on how revenue generated from the tolling could be used. Federal law dictates that toll revenue on existing Interstates must only be spent on that expressway. There could also be federal constitutional challenges (Commerce Clause) that might or might not have merit, depending on how the tolling program would function.

The use of Congestion Pricing mechanisms must be carefully evaluated.

Toll Trucks On Limited Access Highways: This approach would charge tolls only to large commercial trucks on limited access highway and assess them for the additional damage they cause to the highway. In this concept, all trucks would be tolled at all times of the day at variable rates depending on the size of the truck. Tolls would be set high enough to offset the damage to the highway caused by trucks. However, the diversion of trucks onto local roads raises significant economic, environmental, safety and equity concerns. Also, tolls aimed exclusively at trucks are opposed by the state and national trucking industry.

Toll All Limited Access Highways: Tolling all limited access highways in the Region, such as I-95 and CT-15, could generate significant revenues over the cost of implementing the tolling system. However, diversion of toll shunning motorists onto local roads is likely. Attempts to mitigate these negative impacts with improvements paid for from toll revenue are currently prohibited by Federal law. Also, approval would need to be obtained from USDOT to toll expressways constructed with Federal funds. Tolling state funded highways would only the need approval of the General Assembly. This concept may become more feasible under the next surface transportation reauthorization bill.

Congestion Corridor Tolling: The objective of this approach is two-pronged. First, tolling would be implemented in the most congested corridors in order to change travel behavior so that less valuable trips are diverted to uncongested routes, modes, or time periods. The result would be less congestion and delay. Second, the revenue generated from a congestion pricing plan would support highway improvements, transit services or related projects in the congested corridor. I-95 and CT 15 through Fairfield County were examined in the study, as they are the most congested corridors in the State. Ideally, congestion pricing would eliminate congestion, but given traffic volumes, the study set potential toll rates that could achieve a ten percent reduction in the volume-to-capacity ratio on tolled highways. Significant diversion to local routes as well as to transit would occur under with this approach. Traffic diversion to local roads could raise economic, environmental, equity and safety concerns in the impacted communities. Modeling shows there would be some traffic diversion from CT-15. However, the largest diversion would occur on I-95 southbound in the AM peak period; traffic

would divert to parallel US 1, which already experiences high levels of congestion. It is expected that US 1 would not be able to efficiently handle this diversion. However, the impacts to US 1 and other roadways could potentially be mitigated by using the significant revenue generated by the congestion pricing toward expanded commuter rail parking, new express bus service, expanded park-and-ride facilities, and new or improved local bus service, resulting in an overall beneficial project.

Charge all Vehicle Miles Traveled: This method of tolling is fundamentally different than the other methods discussed, since it proposes to charge all vehicle travel in the State. This charge is proposed to supplement or replace the traditional motor fuel excise tax, as the increasing fuel efficiency of motor vehicles along with the growth of the electric vehicle fleet will reduce the amount of fuel tax that can be collected. Using a VMT charge as either a supplement or replacement to the motor fuel tax, some reduction in total VMT may be possible depending on the charge. No route diversion would be expected, since all vehicular travel would be charge uniformly. Unfortunately, this type of charge would be controversial and would take significant leaps in technology to implement. It would require advanced GPS and communication technology to measure and collect the charge and a Federal policy change to establish standards across the country. Though this type of charge may not be practical in the immediate future, it has the potential of achieving both goals of tolling for revenue generation and system efficiency.

6 | Strategies, Recommendations and Implementation

The intent of the Long Range Transportation Plan is to coherently describe the policies and projects that will be needed to achieve the Region's objectives, and to develop a roadmap leading towards implementation of recommended strategies and projects. Federal guidelines also require that metropolitan transportation plans fit within a constrained financial envelope, meaning that available resources must not exceed the estimated cost of implementing recommended projects.

STRATEGIES

The following list describes the key strategies recommended in the Plan. The list is broken down intobroad categories based on the Plan's overarching goals and objectives (described in Chapter 2). For each overarching strategy indicated, a series of sub-goals is listed. The Plan designates the specific areas of the Plan to which the strategies relate.

Table 27: Strategies

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Accessibility & Mobility: Increase accessibility and mobility to promote the movement of people and goods.													
Work with CTDOT and municipalities to advance recommendations from SWRPA's corridor studies of US 1 and US 7 to project design and construction.				●						●	●		
Develop Route 1 projects that improve traffic operations, safety, and pedestrian friendliness, manage access, minimize congestion, accommodate transit, and enhance the corridor's economic potential, and community character.		●		●						●	●		
Develop access management plans for all major corridors, and utilize access management strategies to improve safety and reduce congestion.	●	●		●									
Conduct studies of all unstudied segments of Route 1 (Westport, Norwalk, portions of Stamford) to develop corridor improvement programs				●									

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Study deficient roadway segments and intersections to develop improvement programs, and implement intersection, turning lane, signal system upgrades or traffic signal timing and coordination imporvement projects in consultation with municipalities and using context sensitive design solutions.				●							●	●	
Improve bike storage at rail station to provide adequate rail station bicycle storage facilities that are convenient, safe, secure, and well-maintained.					●					●			
Improve the facilities of the bus operators to the extent necessary to provide sufficient garage space for the amount of vehicles required to meet service demand.						●					●		
Promote increased mobility for LOCHSTP target populations through improved coordination of services, mobility management, user education and information dissemination and accessibility.					●	●	●			●	●		
Strategically expand hours of operation and geographic coverage of demand responsive transportation services to better serve client populations, and provide better alternative transportation options for mobility restricted populations during timeframes when other transportation services are not operating.						●	●						
Develop strategic operations and capital plans for human services transportation services to improve connectivity on a regional basis to areas not served by transit and during off-peak timeframes.							●						
Develop a Regional Transit Strategies Plan that includes a vision and implementation plan for transit within the region and addresses external transit connections to New York City and the New York metro area, including interstate passenger rail service, passenger ferry and air.	●	●		●	●	●	●	●	●	●			

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Implement service enhancements on transit services to meet ridership demand, improve frequencies where large gaps in service exist during certain timeframes, and where new development warrants increased service.		●		●	●	●							
Implement enhanced transit services to mitigate and alleviate congestion caused by major transportation systems construction projects.		●		●	●	●							
Work with CTDOT, municipalities, and advocates to develop a system of multi-use trails and on-street bicycle routes.	●		●							●			
Infrastructure: Maintain all transportation infrastructure in a state of good repair.													
Preserve the transportation network's structural integrity and operational efficiency, and identify and correct safety, capacity and congestion deficiencies within existing financial, environmental and regulatory constraints.			●	●	●	●			●		●	●	
Establish state of good repair/normal replacement programs for equipment, facilities and infrastructure based upon anticipated life cycle or fundtional obsolescence to meet operational needs and ensure that continuing safety and security best practices are met.				●	●	●	●	●	●	●	●		
Modernize the transportation network by addressing system deficiencies, including structurally deficient bridges, poor road surfaces, and transit fleet operating beyond its useful life.				●	●	●							
Conduct resurfacing, repair and safety programs for state highways, with priority assigned to limited access highways, and implement or improve pavement management systems at local and state levels.				●							●		
Inspect all local bridges and culverts, and address all local bridge deficiencies within 10 years.				●	●								

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Economic Competitiveness: Invest in the transportation system in a timely manner to maintain a healthy and competitive regional economy and to promote quality of life.													
Provide needed improvement to upgrade rail stations to address issues related to capacity, circulation, signage, access, egress, cleanliness, safety, security, and intermodal connectivity.		●			●	●				●	●	●	
Implement strategic improvements to existing infrastructure to increase capacity to the extent required to support anticipated ridership growth on all modes of the highway and transit networks.		●		●	●	●							
Coordinate of land use and transportation planning to create communities that support transit and to provide new opportunities for mixed use "village"-type development.	●	●	●	●	●	●	●						●
Develop future strategies for reintroduction of highway tolling, utilizing boothless technology and allowing for variable pricing.				●									
Utilize ports and waterways to ease a percentage of the goods and people moving through the Region on highways and trains.		●						●	●				
Enhance connections to other regions so that people can move more easily between home and work.	●			●	●	●							
Create incentives for freight to move through the Region during off-peak hours, thereby increasing capacity for commuters.		●							●				
Land Use & Transportation: Promote responsible land use by concentrating development in areas that are in close proximity to existing transportation infrastructure; promote bike, pedestrian and friendly development that minimizes environmental the carbon footprint of the transportation systems.													

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Whereever possaible, utilize context sensitive design solutions to ensure that transportation projects are developed in harmony with host communities and preserve environmental, scenic, aesthetic and historic resources while maintaining safety and mobility.	●	●	●	●	●	●		●		●	●		
Support the goals of the Regional Plan of Conservation and Development, 2006-2015, foremost of which is promoting centrality by directing development to those areas with the infrastructure to best accommodate growth, including TOD.	●	●											
Promote the development of Greenways and Multi Use Trails.			●							●			
Balance the needs of traffic operations, safety, economic development, and community character on streets and highways that pass through the Region's downtown and neighborhood centers.	●	●		●						●	●		
Intermodal Connectivity: Enhance the integration and connectivity of different modes within the transportation systems for people and freight.													
Expand intermodal connections at Netro North rail stations.	●	●			●	●				●			
Promote transit oriented development and related techniques to concentrate new construction along existing transit corridors and within walking distance of train stations.	●	●	●	●	●	●	●			●			
Optimize use of the region's rail system for passenger and freight movement.		●			●				●				●
Recognize the importance of freight to the transportation system by educating stakeholders and raising the profile of freight in SWRPA's work program and planning products.									●				
Implement non-highway opportunities for movement of freight through the region and Connecticut.		●			●			●	●				●

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Preserve waterborne freight facilities from the laudable but competing goal of redevelopment of older industrial areas.	●							●	●				
Improve bicycle and pedestrian infrastructure in the vicinity of rail stations and bus stops as an alternative to over-subscribed parking lots and to support transit oriented development.	●	●		●	●	●				●			
Systems Effeciency and Productivity: Improve efficiency of the existing resources and current systems through effective transportation systems management and operations.													
Develop smart-card technology that can be used universally across all transit modes in the Region and State					●	●	●						
Implement measures to increase rail parking capacity and more effectively utilize existing resources to the extent necessary to meet current and future parkign demand.		●			●								
Improve transit amenities to provide improved signage, wayfinding information, shelter, and more attractive public spaces.					●	●	●				●		
Implementation of systems management techniques and demand management programs that optimize use of existing infrastructure and investment prior to making new investments.				●	●	●	●						●
Work with CTDOT, municipalities, and transit agencies to advance ITS strategies that improve the operations and efficiency of the regional transportation system.				●	●	●			●		●		●
Financing: Provide sufficient resources to maintain existing transportation systems and services in a state of good repair and to support improvements and services that meet the needs of system users.													

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Encourage policymakers to implement balanced multimodal solutions for congestion relief.	●	●	●	●	●	●				●			●
Adequately fund transit services to the extent necessary to maintain and strategically expand existing levels of service to accommodate ridership growth and improve regional connectivity and mobility					●	●	●						
Develop innovative financing techniques to be considered for potentially providing additional funding assistance for transportation projects, including public/private partnerships, transportation impact fees.					●	●	●						
Environmental: Avoid, minimize, or mitigate the environmental impacts of transportation projects and systems whenever possible, and seek initiatives to improve air quality to bring the Region into compliance with the clean air standards.													
Promote clean air initiatives to encourage smart growth and TOD; use of alternative fuels; expand effective travel demand management programs such as telecommuting, flexible work weeks and various forms of ridesharing; support public transit, rail freight, traffic flow improvements, and incident management programs.	●		●	●	●	●				●		●	
Integrate environmentally friendly technology into the region's bus fleet, including the use of hybrid technology, biodiesel fuel/ethanol, and fuel cell technology to reduce emission of greenhouse gases.			●			●							
Reduce greenhouse gas emission from transportation sources and impacts to air quality and the environment through the reduction of Vehicle Miles Traveled (VMT)			●	●									
Work with state and local agencies to incorporate Low Impact Development techniques and improve stormwater management and drainage systems on local and state roads.	●		●	●									

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
As culverts and bridges in the region are repaired and replaced, considerations should be made regarding the type of storm event the structure can handle, particularly in areas where drainage problems currently exist.				●							●		
Continue to work with Federal and State agencies to review inventories of historic, natural, and cultural resources and to determine environmental impacts and mitigation activities that restore and maintain the environmental functions affected by the Region's transportation system.			●										
Balance increased demand for transportation infrastructure and services with the need to preserve quality of life and protect the quality of air, water and other natural resources.	●		●										
Work with the state to meet the goals established in the Climate Change Action Plan, the Climate Steering Committee and Adaptation Subcommittee.			●										
Improve stormwater management through the use of bioretention practices along roadways and the use of catch basin inserts, filters or swirl separators.			●										
Further evaluate how changes in weather patterns and mean sea level may impact the transportation network and explore adaptation techniques that can be incorporated into current and future projects.			●	●	●	●							
Systems Performance: Develop measurement and monitoring tools and strategies to better analyze the highway and rail systems performance and adjust programs and projects.													
Implement continuous counting capabilities at key locations to enable better monitoring and evaluation to determine the extent and severity of congestion, impacts of maintenance, construction, enforcement, or emergency/incident management programs and diversion plans.				●									

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Develop improved measures to maintain reliable rail transit during severe weather or wintry conditions.		●			●								
Implement innovastive measures to improve bus service, including enhanced bus service and integration of intelligent transportation systems components. Install Weigh-in-Motion technology at the Greenwich Weigh Station and integrate CTDOT's commercial vehicle information system (CVISN) into Greenwich weigh station operations.						●							
Install Weigh-in-Motion technology aat the Greenwich Weight Station ad integrate CT DOT's commercial vehicle information system (CVISN) into Greenwich weigh station opperations				●					●				
Expand Travel Demand Management (TDM) programs, including telecommuting and flexible work weeks staggered work hours and organized vanpools to help reduce the number of peak-period single occupant automobile trips.				●									
Further evaluate opportunities for use of congestion pricing on roadways and for transit services, recognizing that computer modeling performed as part of the study point to pricing as the most effective way to encourage mode shift among travelers.				●	●	●	●						●
Expand the CMP into a more comprehensive product that informs project development and selection.				●									●
Safety: Promote the safety of all modes of transportation for all users and operators.													
Install 'pedestrian timing signals' that count down time remaining for pedestrian to cross at mejor pedestrian intersections.				●						●	●		
Implement 'Un-interruptible Power Systems' (UPS) and other fail-safe systems for all major traffic signal locations.				●							●	●	

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Implement traffic signal and system improvements required to adequately maintain, replace/ upgrade as needed to maximize vehicular and pedestrian traffic flow, efficiency and safety.			●								●		
Upgrade high risk at-grade rail crossing locations with quad gates, and install automated warning device systems at all private at-grade crossings.				●	●					●	●		
Focus on improving the safety of the traveling public through a program of engineering upgrades and enhanced use of technology.				●	●	●	●				●	●	●
Improve commercial vehicle safety by enhancing truck inspection capabilities and placing a special emphasis on accidents attributed to insuficient vertical clearance at low bridges.				●					●		●	●	
Develop countermeasures to improve the safety of bicyclists and pedestrians in SWRPA identified Safety Corridors.				●						●	●		
Establish effective programs to monitor and evaluate the hgihway system to make it possible to identify locations where improvements are needed.				●							●		
Conduct necessary studies and improve deficient locations.				●	●	●			●	●	●		
Support CTDOT's efforts to implement the strategies and achieve the goals set forth in the Strategic Highway Safety Plan.				●						●	●		
Support education and training programs and regualtions for truck safety, bicycles and pedestraisn, older drivers, and driving under the influence.				●					●	●	●		
Support expanded truck inspection programs and implement Weight-in-Motion projects for I-95 and I-84 and the New York State Line.				●					●		●	●	●

Table 27: Strategies (cont.)

Strategy	Land Use	Economic Development	Environment	Roadways/ Highways	Rail Network	Bus Network	Human Services Transportation	Waterborne Transportation	Freight Transportation	Bike/Pedestrian	Safety	Security	TSMO
Encourage the state of Connecticut to adopt the federally-mandated alcohol related regualtions for open container. Failure to adopt the legislation results in an annual penalty that diverts 3% fo certain federal transportation programs equivalent to $6.3 million to hazrad elimination projects.				●							●		
Support Safe Routes to School Programs.				●						●	●		
Evaluate the use of cameras for enforcement, and implement proven best practices with changes in state law as necessary.				●							●	●	
Develop real time traveler information programs.				●	●	●					●		●
Upgrade incident management programs in the Southwest corridor.				●					●		●		●
Support CTDOT's participation in FHWA's Local and Rural Road Safety Program.				●							●		
Security: Increase security of all modes of transportation for all users and operators.													
Complete the ConnDOT Diversion Route Signal System so the system is fully optimized and operational.				●							●	●	
Provide access to ConnDOT traffic cameras for qualified emergency responders through appropriate cost-effective technology, and enable Norwalk, Stamford and Greenwich traffic operations programs to access and share state and local traffic camera information.											●	●	
Work with DEHMS and Municipalities to develop evacuation plans and to identify resource and infrastructure needs.				●								●	

RECOMMENDED PROJECTS

The following list describes the key projects recommended by the Plan.

Table 28: Recommended Projects

Town	Map ID	Project	Funding	Year Complete
Darien	1	Intersection Improvements - Noroton Ave/West Ave	State/Federal	
	2	Noroton Heights rail station improvements	State/Federal	
	3	Traffic Flow Improvements - Noroton/Ledge & Norton/Middlesex	State/Federal	2030
	4	Traffic Flow Improvements - Middlesex/High School& Middlesex/Leroy	State/Federal	2030
	5	Traffic Flow Improvements - Corbin Dr & Center St	State/Federal	2030
	6	Intersection Improvements - Hollow Tree Ridge Rd/Heights Rd	State/Federal	2030
	7	Intersection Improvements - Route 124/McLaren Rd	State/Federal	2030
	8	Intersection Improvements - Route 136/Five Mile River Rd	State/Federal	2030
	9	Intersection Improvements - Middlesex Rd/Hanson Rd	State/Federal	2030
	10	Intersection Improvements - Hollow Tree Ridge Rd/Ox Ridge Ln	State/Federal	2030
	11	Local road improvement study	State/Federal	2020
Greenwich	12	West Old Mill Road Bridge Reconstruction	Local	2016
	13	Byram Master Plan - Streetscapes/Sidewalks Improvements	Local	2015
	14	Greenwich Town Center Streetscape Implementation	Local	2015
	15	Shore Road Bridge over Horseneck Brook	Local	2014
	16	Round Hill Road Bridge over Converse Pond Brook	Local	2015
	17	John Street Bridge over East Branch of Byram River (Bridge# 56055)	Local	2016

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
Greenwich	19	Town Wide Traffic Review - Priority Plan	Local	2015
	20	School Zone Speed Limit Signage	Local	2020
	21	New Sidewalk Program throughout Town	Local	2040
	22	Frontage Road and Byram Road Intersection Improvements	Local/State	2017
	23	Lake Ave and Lower Cross Road Intersection Improvements	Local/State	2017
	24	Brookridge Dr Bridge Replacement	Local/State	2016
	25	Dingletown Road Bridge Reconstruction	Local/State	2020
	26	Oneida Road Bridge Replacement	Local/State	2020
	27	Glenville Road/Riversville Road Intersection Improvements	Local/State	2025
	28	Greenwich Avenue Signal System Upgrade	State/Federal	2040
	29	Downtown Shuttle Pilot Program	State/Federal	2025
	30	Traffic Study of Round Hill Rd and Lake Ave	State/Federal	2015
	31	Sound Beach Avenue Bridge over Cider Mill Brook (#03954)	State/Federal	2020
	32	Traffic Signal Upgrade (various locations) (CMAQ)	State/Federal	2015
	33	Route 1 Greenwich Stamford Study Implementation	State/Federal	2040
New Canaan	34	New Canaan Rail Station Parking Study	State/Federal	2020
	35	New Canaan Rail Station Platform Extension	State/Federal	2030
	36	New Canaan Downtown Parking Study	State/Federal	2020
Norwalk	37	West Ave Transit Circulator	State/Federal	2025
	38	TOD at South Norwalk, East Norwalk Rail Stations	PPP	2040
	39	Merritt/Route 7 Area Transportation Study	State/Federal	2020

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
Norwalk	40	East Avenue RR Bridge and Roadway Improvements (0300-T124)	State/Federal	2016
	41	South Norwalk Intermodal Facility Design / Construction	State/Federal	2040
	111	Roton SRTS	State/Federal	2017
	112	Fairfield Avenue Reconstruction	State/Federal	2020
	113	Washington Street Reconstruction	State/Federal	2020
	114	Norwalk Harbor Loop Trail	State/Federal	2040
	115	Wall Street Rail Station Study	State/Federal	2020
	116	Connectivity Study Improvements	State/Federal	2040
	117	Wall Street Rail Station	State/Federal	2040
	118	Bikeway and pedestrian study improvements	State/Federal	2040
	119	I-95 and US 1 study	State/Federal	2025
	120	Sono Parking Guidance System	State/Federal	2015
	121	Traffic management study improvements	State/Federal	2040
	122	US 1 (Connecticut Ave.) signal improvements	State/Federal	2020
	123	Intersection improvements: US 1 at CT 53	State/Federal	2015
	124	Traffic signal upgrades at 10 locations (CMAQ)	State/Federal	2015
	125	West Avenue Crosswalk Upgrades (STP-E)	State/Federal	2017
	126	Ferry to New York	State/Federal	2030

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
Stamford	42	Urban Transitway	Local	2015
	43	STC Parking Garage Replacement	PPP	2025
	44	STC Master Plan	State/Federal	2020
	45	Rail Bridge Priority Program (replace 4 bridges, roadway improvements)	State/Federal	2040
	46	Atlantic Street Railroad Bridge	State/Federal	2015
	47	Ferryboat, Terminal, and Parking Facility	State/Federal	2025
	48	East Main Street railroad station	State/Federal	2035
	49	Atlantic Street Widening and Streetscape	PPP	2016
	50	Greenwich Ave/W Main St Reconstruction	State/Federal	
	51	Hope Street Reconstruction	State/Federal	2015
	52	Oaklawn Avenue Reconstruction	State/Federal	2016
	53	Scofieldtown Road Reconstruction	State/Federal	2020
	54	Route 104/Roxbury/Stillwater Rds Intersection Improvement	State/Federal	2020
	55	Buxton Farm Road Reconstruct Roadway	State/Federal	2018
	56	Cove Road Reconstruct Roadway	State/Federal	2025
	57	Elm Street & Tresser Boulevard Intersection Improvements	State/Federal	2013
	58	Glenbrook Road & Hamilton Avenue Intersection Improvements	State/Federal	2015
	59	Main Street & Summer Street Intersection Improvements	State/Federal	2017
	60	Pepper Ridge Road & Vine Road Intersection Improvements	State/Federal	2016
	61	Stillwater Road Roadway Improvements	State/Federal	2040
	62	Toms Road Roadway Improvements	State/Federal	2025

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
Stamford	63	Turn Of River Roadway Improvements	State/Federal	2015
	64	Hope Street Improvements & Reconstruction	State/Federal	2040
	65	Cold Spring Road Improvements & Reconstruction	State/Federal	2040
	66	Cedar Heights Road Improvements & Reconstruction	State/Federal	2040
	67	Wire Mill Road Improvements & Reconstruction	State/Federal	2040
	68	Vine Road Improvements & Reconstruction	State/Federal	2040
	69	Newfield Avenue Improvements & Reconstruction	State/Federal	2040
	70	Magee Avenue Sidewalk/On-Street Bicycle Route	State/Federal	2020
	71	Mill River Pedestrian/Bicycle Trail	State/Federal	2020
	72	Harbor Area Pedestrian/Bicycle Trail	PPP	2016
	73	Main Street Streetscape	State/Federal	2011
	74	Richmond Hill Avenue Streetscape	State/Federal	2017
	75	STC Bicycle Lockers	State/Federal	2016
	76	Bell Street @ Atlantic Street Area Pedestrian Improvements	State/Federal	2021
	77	Route 493 (Washington Boulevard) Reconstruct Median	PPP	2020
	78	Glenbrook Train Station Enhancements	State/Federal	2015
	79	Springdale Train Station Enhancements	State/Federal	2015
	80	Stamford Streetcar	State/Federal	2040
	81	STC Parking Study	Local	2015
	82	Stamford Transportation Center Improvements	State/Federal	2025
	83	Parking Guidance System	State/Federal	2020

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
Stamford	84	West Main Street Bridge Replacement	State/Federal	2017
	85	Westover Road Intersection Improvements	State/Federal	2015
	86	Pacific Street Roadway Improvements	PPP	2013
	87	Canal Street Roadway Improvements	PPP	2013
	88	Stillwater Road Improvements	State/Federal	2015
	89	Cedar Heights Road Bridge Rehabilitation (Bridge #04067)		2020
	90	Downtown Kiosks		2015
	91	June Road Bridge Rehabilitation		2020
	92	Pulaski street Bridge Replacement	State/Federal	2020
	93	Riverbank Road Bridge Rehabilitation	State/Federal	2020
	94	K.T. Murphy Safe Routes to School	State/Federal	2040
	95	South State Street Bridge Rehabilitation	State/Federal	2020
	96	Stamford Real Time Traveler Info	State/Federal	2030
	97	Stamford Transit Signal Priority	State/Federal	2030
	98	STC Pedestrian Safety Program	State/Federal	2015
	99	Street Sign Program	Local	2011
	100	Traffic Calming	Local	2040
	101	Traffic Park - Educational Facility	Local	2013
	102	Traffic Signal System - Phase G	State/Federal	2020
	103	Traffic Signal System - Phase H	State/Federal	2020
	104	Traffic Signal System - Phase I	State/Federal	2020

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
Stamford	105	Traffic Signal System - Phase J	State/Federal	2020
	106	Traffic Signal System - Phase K	State/Federal	2020
	107	West Glen Road Bridge Rehabilitation (Bridge #05010)	State/Federal	2020
	108	Wire Mill Road Bridge Rehabilitation	State/Federal	2020
	109	ADA Sidewalk ramps along US 1, CT 137 & CT 493	State/Federal	2015
	110	Rehabilitation of US 1 bridge over I-95	State/Federal	2016
Weston	127	School Road - CT 57 - Town Hall Sidewalk	State/Federal	2030
	128	CT-57/School Rd Intersection Improvements	State/Federal	2030
	129	CT 57/Norfield Rd Intersection Improvements	State/Federal	2030
	130	CT 57 (Georgetown Rd) / CT 53 (Newton Tpke) Intersection Study	State/Federal	2020
	131	CT 57 (Weston Rd) / Good Hill Rd Intersection Study	State/Federal	2020
Westport	132	Downtown Parking Study	Local	2020
	133	Enhanced Bike Facilities	Local	2040
	134	North Avenue Bridge Replacement	State/Federal	2020
	135	Rt-136/Bayberry Lane Extension Intersection Improvements	State/Federal	2020
	136	Intersection Improvements - CT-57/CT-33, US-1/CT-33, CT-33/Riverside	State/Federal	2030
	137	Westport Rail Station Improvements	State/Federal	2040
	138	Intersection improvements at CT 136 (Weston Road) & Clinton Ave	State/Federal	2015
Wilton	139	US-7/CT-107 Intersection Improvement	State/Federal	2030
	140	Tiered Parking at Wilton RR station	State/Federal	2020
	141	Intersection Improvements	State/Federal	2030
	142	Pedestrian Bridge at Wilton RR Station	State/Federal	2017

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
CT Transit	143	Bus Replacement	State/Federal	2018
	144	CT Transit AVL	State/Federal	2025
	145	Facility Upgrades	State/Federal	2030
	146	Farebox Replacement	State/Federal	2030
	147	ITS Infrastructure	State/Federal	2030
	148	Radio Communications System Replacement	State/Federal	2030
	149	Statewide smartcard fare system	State/Federal	2030
New Haven Line	150	Cos Cob (Mianus River) Bridge	State	2014
	151	Sound Beach & Tomac Avenue Railroad Bridges	State/Federal	2020
	152	Design, Rehab Walk Bridge	State/Federal	2018
	153	Danbury Branch Improvements	State/Federal	2030
	154	East Avenue & Osbourse Avenue Bridges	State/Federal	2018
	155	New Canaan Branch Improvements (Siding, Signals, Platforms)	State/Federal	2030
	156	Increase MU railcar fleet	State	2030
	157	Catenary Upgrades	State/Federal	2015
	158	Positive Train Control for New Haven Line	State/Federal	2018
	159	Signal system replacement	State/Federal	2018
	160	Design, Rehab Saga Bridge	State/Federal	2018

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
Norwalk Transit	161	7-Link route study	State/Federal	2017
	162	NTD facility state of good repair	State/Federal	2017
	163	ADA Paratransit Replacement/Expansion	State/Federal	2018
	164	AVL system/ITS	State/Federal	2017
	165	Bus Replacement/Expansion	State/Federal	2018
	166	Enhancement Projects (artwork, bike racks, bus shelters, signposts)	State/Federal	2040
	167	Farebox Replacement/Smartcard Fare System	State/Federal	2020
	168	NTD systemwide route study	State/Federal	2020
	169	Small Capital Vehicle Replacement	State/Federal	2040
South West Region	170	I-95 Sound Barrier Replacement	State/Federal	2040
	171	Route 1 Darien Study Improvements	State/Federal	2040
	172	I-95 Bridge over MNRR and Exit 8-10 Operational Lanes	State/Federal	2040
	173	Tidal Wetland Restoration of Holly Pond	State/Federal	2015
	174	Merritt Parkway Projects (Fairfield - Westport)	State/Federal	2018
	175	US 1 Bridge over Greenwich Creek (56-305)	State/Federal	2020
	176	Weight-in-Motion	State/Federal	2040
	177	Continuous Count Stations	State/Federal	2030
	178	US-1 Greenwich-Stamford Study Improvements	State/Federal	2040
	179	Merritt Parkway Projects (New Canaan - Stamford/Greenwich TL)	State/Federal	2017
	180	7-15 Interchange	State/Federal	2040
	181	Exit 16 Improvements	State/Federal	2030
	182	US 1 Widening, 4 lane cross-section	State/Federal	2020

Table 26: Recommended Projects (cont.)

Town	Map ID	Project	Funding	Year Complete
South West Region	183	Rehabilitate CT 15 bridge (00718) over Silvermine River	State/Federal	2015
	184	CT 15 Interchange 40 Reconstruction (breakout of 0102-0269)	State/Federal	2040
	185	Rehab Yankee Doodle Bridge	State/Federal	2016
	186	Port Infrastructure Improvements	Local	2040
	187	Merritt Parkway Projects (Norwalk - New Canaan)	State/Federal	2022
	188	Maintenance Dredging of Harbors	State/Federal	2020
	189	Norwalk River Valley Trail	State/Federal	2040
	190	US 1 improvements operational turning lanes	State/Federal	2025
	191	Exit 16-17 Median Barrier and Safety Improvements	State/Federal	2016
	192	Coastal Corridor Study Implementation	State/Federal	2025
	193	US 1 (East Main Street) Reconstruction	State/Federal	2035
	194	Route 1 (Tresser Boulevard) Reconstruct Median	State/Federal	2020
	195	CT 106 (Courtland Ave.) Reconstruction, US 1 Intersection Improvement	State/Federal	2020
	196	Ramp from CT-137 SB, Turn Lanes, Widen CT-15, Revise Signal	State/Federal	2020
	197	US 1 Bridge over I-95 Rehabilitation	State/Federal	2040
	198	US 1 Enhanced Bus Service	State/Federal	2030
	199	Merritt Parkway Trail	State/Federal	2040
	200	CT-15 ITS	State/Federal	2040
	201	I-95 Median Improvements exits 17 - 19	State/Federal	2040
	202	Merritt Parkway Projects (Westport - Norwalk)	State/Federal	2022
	203	US 7 Reconstruction, Grist Mill Rd to CT 33	State/Federal	2020

Figure 24: Highway Projects

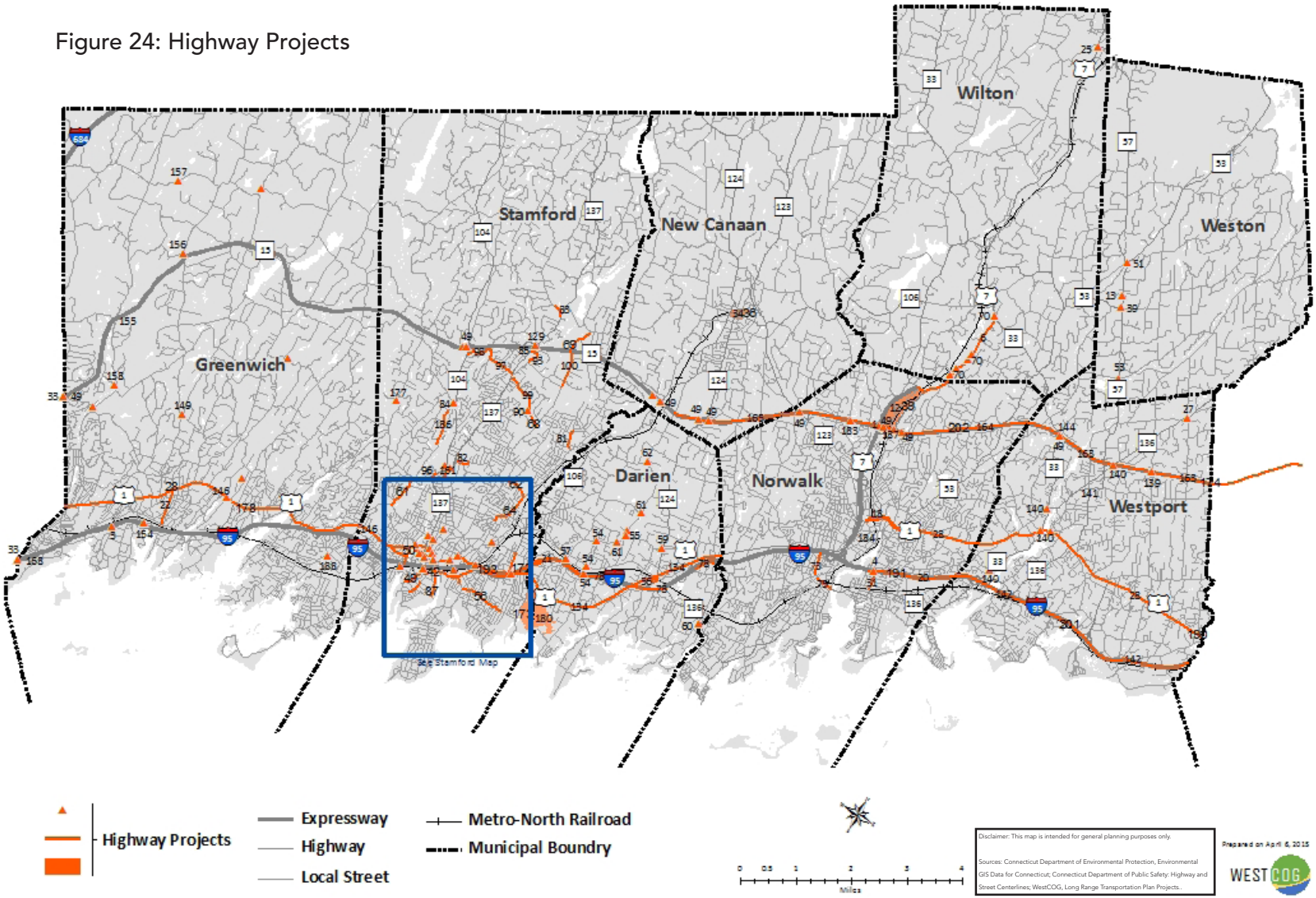


Figure 25: Multimodal Projects

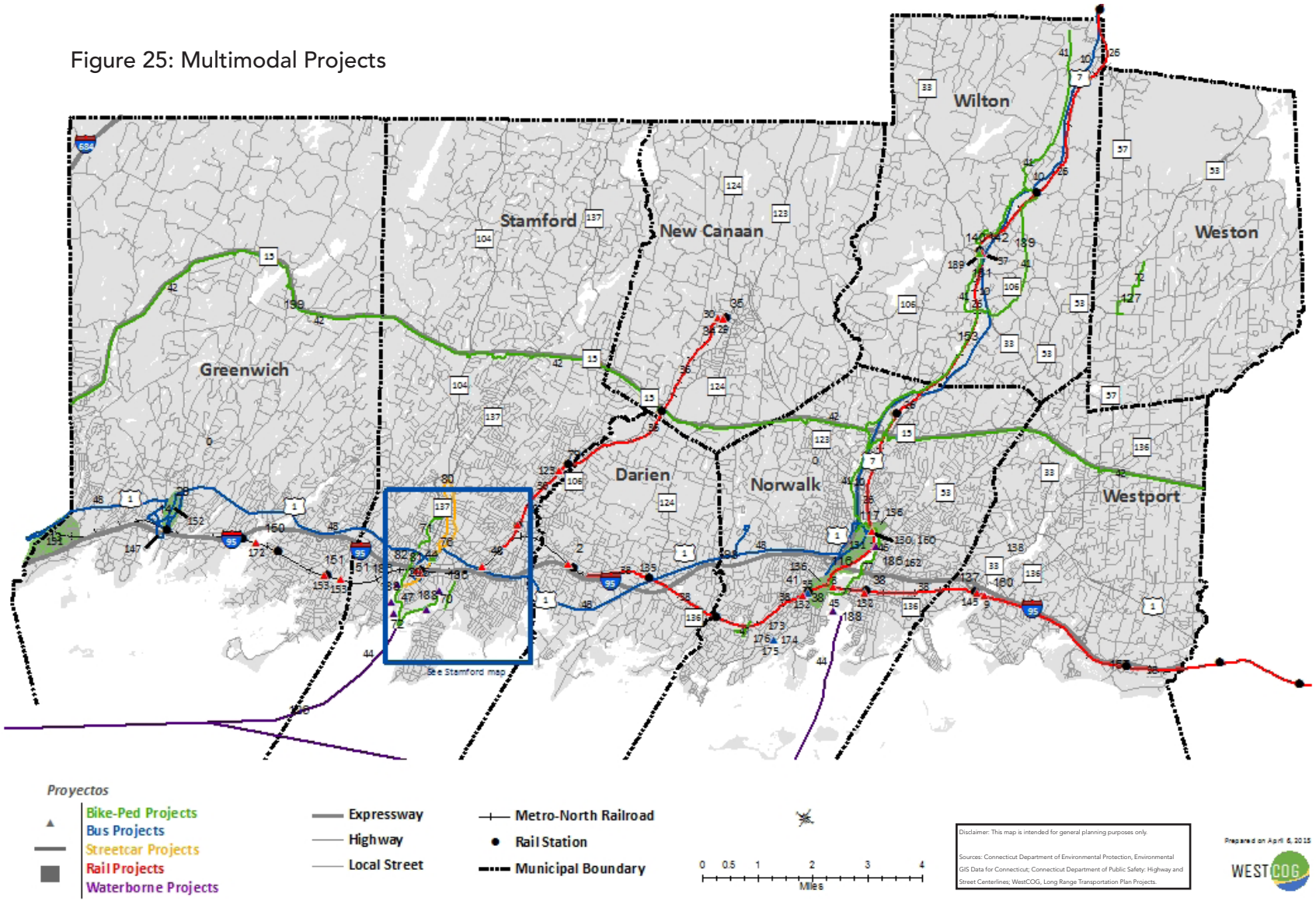


Figure 26: Highway and Multimodal Projects - Downtown Stamford

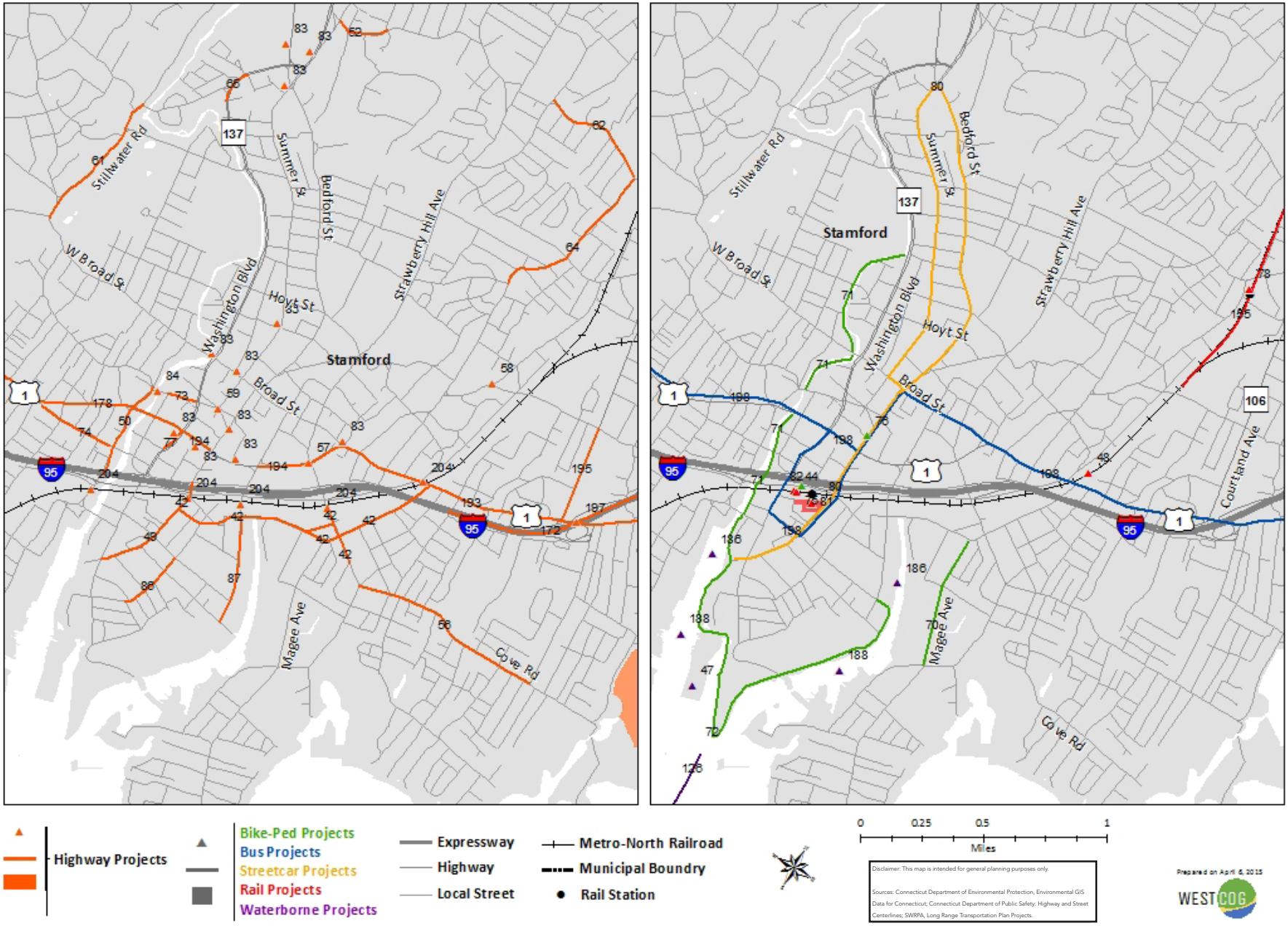


Photo 50: Construction at Norwalk Transit District's Pulse Point

FINANCIAL PLAN

Projecting the funding available to implement the projects recommended in this plan is difficult not only because of uncertainties about long-term funding prospect but also because of uncertainties about near-term funding prospects. For the past several years, the federal transportation program has limped along as a short term funding authorization and series of continuing resolutions. The lack of long-term bill is at least partly attributable to the lack of a sustainable funding steam. The Federal excise tax on fuel, which stands at 18.4 cents for gasoline, has not been raised since 1993, and has therefore declined by 38% percent when counting inflation. Unless a long term and sustainable funding solution is found,this situation will likely get worse as vehicles become fuel efficient and use less gasoline.

Because of the uncertainties about federal funding, many states, including Connecticut, have attemptedto create their own funding mechanisms to invest in transportation. States have relied on borrowing, additional fuel taxes, sales taxes, public private partnerships, and tolling to generate funding. To this point, Connecticut has primarily relied on borrowing and additional fuel taxes to fund its transportation program. Recently, the state for the first time used a public private partnership to redevelop the service plazas on I-95. Tolling has also been under consideration by both CT DOT and the General Assembly. Tolling among all other funding streams deserves attention not only for its ability to raise revenue but for its ability to impact travel behavior if properly deployed.

Because of the funding uncertainties, it is difficult to estimate anticipated resources based on pastpractices, and will primarily rely on other sources to determine the funds available for projects recommended by the Plan. Therefore, the Region will only consider projects funded if they are included in the Statewide Transportation Improvement Program (STIP), the CT DOT Master Transportation Plan, and the CT DOT 5-Year Capital Plan. All other projects will be deemed future unfunded needs. This will ensure that the Plan's financial envelope

is sufficiently covered by State and Federal resources. It will also allow unfunded projects to be eligible for funding if additional resources become available.

The 2011 CT DOT Master Transportation Plan (MTP) provides additional guidance on the assumptions upon which the state relies for estimating anticipated resources available for Connecticut. The MTP indicates that CT DOT believes that a SAFETEA-LU successor will emphasize performance measures as well as maintaining existing infrastructure in a state of good repair, and anticipates that asset management principles and the ability to display measurable results will be a focus of competitive funding programs which will be a centerpiece of any new legislation. The MTP also assumes that the next transportation bill will only slightly increase funding over the baseline levels provided in SAFETEA-LU, and assumes an annual 10% increase in total funding available to Connecticut through 2017. The MTP advises that "additional funding sources should be identified and provided at both the federal andstate levels" in order for the State to be able to "provide a safe and efficient intermodal transportation network."

In February 2015, the Governor released *Let's GO CT!* as a major policy initiative for transportation. *Let's GO CT!* is composed of two reports, one being a five year ramp-up plan and the other being a thirty year plan for major investment. The goals of this initiative are to solve a number of long standing challenges, including upgrading all highways and bridges to be "best-in-class", relieving congestion on I-95 and other interstates, enhancing rail service on the New Haven Line and its branches as well as additional parking and station access, expanded bus service, as well as bicycle, pedestrian, and freight improvements. To realize this ambitious program, *Let's GO CT!* estimates $10 billion will be needed for the five year ramp-up and that $100 billion will be needed for the thirty year plan. However, *Let's GO CT!* does not identify a source sufficient to realize the full investment program outlined.

Financial Plan Details

According to CT DOT estimates provided in October 2014,there is approximately $85 million available annually to invest in the Region's highway system. Therefore, between 2015 and 2040, the amount of available funding is estimated to be $2.1 billion. Over the twenty-five year span of the Plan, CT DOT estimates that approximately $673 million will be available for system preservation projects such as paving, bridge repair or replacement, and other forms of reconstruction in place. This equates to approximate annual available funding of $27 million for system preservation projects. CT DOT also estimates that approximately $1.454 billion would be available for system improvements projects that increase safety, enhance mobility, increase system productivity, and support economic development. This equates to approximate annual available funding of $58 million for system improvement projects.

In the CT DOT allocation of funds, future revenue for projects they classified as "major projects of statewide significance funded by FHWA funds" have been reserved. For projects anticipated within the Region, this allocation was $1.56 billion, and includes notable projects such as replacement of the five rail bridges in downtown Stamford, replacement

of an I-95 bridge over Metro-North and the addition of operational lanes on I-95 between exit 8 and 12, reconstruction of the Route 7 and 15 interchange, andresurfacing and safety improvements to the Merritt Parkway.

When combined with the system improvement and preservation funds anticipated by CT DOT, the South Western Region's allocation for the 2015-2040 time span of the Plan is $3.68 billion.

In the CT DOT allocation of funds, future revenue for projects they classified as "major projects of statewide significance funded by FHWA funds" have been reserved. For projects anticipated within the Region, this allocation was $1.55 billion, and includes notable projects such as replacement of the five rail bridges in downtown Stamford, reconstruction of the Route 7 and 15 interchange, the Route 7 widening and improvement project in Norwalk and Wilton, and various improvements to I-95, Route 1 and the Merritt Parkway.

The CT DOT Capital Plan includes projects listed in the Master Transportation Plan. In addition, a limited amount of Federal and state transportation funding is made available for locally-sponsored projects through the regional transportation planning process. The funding categories that can support these projects include:

Surface Transportation Program for urban areas: STP funding is the only federal or state source of funding that was controlled exclusively by the SWRMPO, in consultation with CT DOT and USDOT. The Region, as part of the Bridgeport-Stamford Urbanized Area, is allocated approximately $5.1 million in flexible funding , which may be used for projects on federal aid highways, bridge projects on public roads, transit capital projects, bus terminals and facilities, and bicycle and pedestrian projects. Aworking group assesses potential projects based on a series of selection criteria.

In 2013, the Connecticut General Assembly created the Local Transportation Capital Improvement Program (LOTCIP). The purpose of creating LOTCIP was to provide municipalities with a source of funding for projects on local streets that had fewer constraints and requirements than does federal funding sources like the Surface Transportation Program. LOTCIP, therefore, has replaced STP as a funding source for locally administered projects on local roads.

Enhancement programs for STP and FTA Section 5307: These programs offer funding to help expand transportation choices and enhance the transportation experience of users. The Enhancement program funded bicycle and pedestrian facilities, safety programs, scenic and historic highway programs, landscaping and scenic beautification, historic preservation, and environmental mitigation. Approximately $250,000 annually has been provided to the Bridgeport-Stamford Urbanized Area through the FTA 5307 Enhancement program. The State's entire STP enhancement program is funded at $4.4 million per year, which is divided among the State's fifteen regions using a formula. With the passage of MAP-21, the new Transportation Alternatives Program (TAP) replaced STP-Enhancements. While TAP and STP-Enhancement have similar categories of eligible projects, TAP is supposed to suballocate more funding and project selection authority to MPOs and local governments.

Recreational Trails Program: This program provides grant funds for construction of new motorized and non-motorized trails, maintenance and restoration of existing recreational trails, access to trails bypersons with disabilities, purchase of equipment to construct or maintain trails, acquisition of land or easements for a trail or rail corridor, and funding for promotion, education, and interpretation. Funding for the program is approximately $500,000 a year.

USDOT Congestion Mitigation Air Quality Program (CMAQ): is program supports surface transportation projects and other related efforts that improve air quality and provide congestion relief. In recent years, $2 million was available for local projects in Connecticut. A solicitation for CMAQ projects was issued in December 2014.

Photo 48: The Metro-North Railroad over Atlantic Street in Stamford is one of five rail bridges to be replaced at a cost of $800 million. CT DOT considers it a project of statewide significance.

Table 29: Obligated Projects 2007-2010

	Obligated ($)							
	2011		2012		2013		2014	
Location	**Total**	**Fed**	**Total**	**Fed**	**Total**	**Fed**	**Total**	**Fed**
South Western	73,585,286	58,975,454	88,645,226	20,250,496	55,684,761	50,599,573	203,754,567	167,246,193
District 3	19,404,660	17,179,848	3,666,400	2,943,120	5,731,100	5,658,300	8,638,120	7,639,540
Statewide	45,722,508	40,346,212	149,790,311	132,559,067	81,128,368	57,195,697	217,263,321	150,014,986
NHL	34,000,000	27,200,000	-	-	152,500,000	122,000,000	50,944,047	40,755,238
CTTransit	6,200,000	4,960,000	-	-	47,750,000	38,200,000	70,221,250	56,177,000
Multi-Regional	1,595,000	1,321,000	42,072,903	34,704,873	90,570,880	87,625,050	132,823,131	109,135,822
Total	**178,912,454**	**148,661,514**	**242,101,937**	**155,752,683**	**433,365,109**	**361,278,620**	**683,644,436**	**530,968,779**
Scheduled on TIP	205,714,685	152,716,214	355,437,650	272,589,116	626,316,648	481,382,765	193,075,892	138,939,363
Difference between Scheduled & Obligated	26,802,231	4,054,700	113,335,713	116,836,433	192,951,539	120,104,145	-490,568,544	-392,029,416

Table 30: CT DOT Projects of Statewide Significance Source: CT DOT Office of Policy – September 2010.

Region	Project	Location	Description	Total Per RPA ($)
1	0102-0324	Norwalk	Rehab Bridge 04046 o/ Metro North (Phase 2)	8,000,000
1	0135-0270	Stamford	Resurf/Safety, Stamford to New Canaan	55,000,000
1	0102-0269	Norwalk	New Interchange (Phase 2)	108,800,000
1	0102-0278	Norwalk	Revise Interchange/Speed change lanes	100,000,000
1	0102-0295	Norwalk	Median Barrier/Resurfacing	36,900,000
1	0102-0305	Norwalk/Wilton	Reconstr., Grist Mill Rd to Rt 33	28,800,000
1	0158-0199	Westport	Resurf/Safety, Rt 33 to Congress St	9,280,000
1	0158-0193	Westport	Int. Impr. @ Grand Union & Turkey Hill	8,480,000
1	0135-0309	Stamford	Bridge 32 over Metro North & Operational Lanes Exit 8 to 12	400,000,000
1	0135-TBD	Stamford	5 Metro North Bridges over Local Roads	800,000,000
				Total - 1,555,260,000

Note: With the exception of Projects 102-324, 135-270 and 102-278, each of these projects are not included in the CT DOT 5-year capital plan.

Human Service Transportation Programs: FTA Section 5310 funds are awarded on a statewide basis, but the region sets funding priorities. Approximately $275,000 of funds emanating from FTA Section 5316, the Job Access/Reverse Commute Program is allocated to the Bridgeport-Stamford Urbanized Area, and is used to support transit services that operate across the Region and throughout the urbanized area. FTA Section 5317 – New Freedom Program provides about $250,000 annually to the Bridgeport-Stamford Urbanized Area. Each of these programs may be consolidated into a single funding stream in aSAFETEA-LU successor bill.

South Western Region Allocation of Funds for Highway System Preservation and Enhancement Highway Projects: The Plan incorporates the CT DOT-sponsored state highway projects on the FY2015-2018 TIP, which totals approximately $1.472 billion. Projects indicated in the FFY2015-2019 five-year Capital Plan, totaling $573 million, are also

considered funded. SWRMPO also lists approximately $105.4 million of illustrative projects, which are transportation projects that may be included in the financial plan of a metropolitan transportation plan, TIP, or STIP if reasonable additional resources were to become available.

Table 31: South Western Region TIP FY 2010-2013: Highway Projects ($000)

FACode	Proj #	Rte-Sys	Town	Description	Phase	Year	Tot$ (000)	Fed$ (000)	State$ (000)	Local$ (000)
STPB	0056-0305	RT 1	GREENWICH	REPLACE BR 01872 OVER GREENWICH CREEK	PD	2015	175	140	35	0
CMAQ	0056-0312	VARIOUS	GREENWICH	TRAFFIC SIGNAL UPGRADE	CON	2015	2,500	2,500	0	0
CMAQ	0056-0312	VARIOUS	GREENWICH	TRAFFIC SIGNAL UPGRADE	FD	2015	75	75	0	0
NHPP	0102-0295	I-95	NORWALK	MEDIAN BARRIER/RESURFACING	CON	2016	41,000	36,900	4,100	0
STPBS	0102-0297	EAST AVE	NORWALK	RECONSTRUCTION OF EAST AVE AT METRO-NORTH RAILROAD BR # 42.14.	CON	2016	5,000	4,000	1,000	0
SRSI	0102-0355	SRTS	NORWALK	PEDESTRIAN SAFETY IMPROVEMENTS IN THE VINCINITY OF THE ROTON MIDDLE SCHOOL	PE	2015	40	40	0	0
SRSI	0102-0355	SRTS	NORWALK	PEDESTRIAN SAFETY IMPROVEMENTS IN THE VINCINITY OF THE ROTON MIDDLE SCHOOL	CON	2016	465	465	0	0
STPB	0102-0356	WEST ROCKS ROAD	NORWALK	REHAB BR 00722 OVER RT 15	PD	2015	200	160	40	0
STPB	0102-0356	WEST ROCKS ROAD	NORWALK	REHAB BR 00722 OVER RT 15	FD	2016	120	96	24	0
BRZ	0102-0319	PERRY AVE	NORWALK	REHAB BR 04154 OVER NORWALK RIVER	CON	2015	5,000	4,000	1,000	0
HPPS	0102-0325	US 1	NORWALK	INTERSECTION IMPROVEMENTS ON US ROUTE 1 AT ROUTE 53	CON	2015	1,100	880	220	0
CMAQ	0102-0347	VARIOUS	NORWALK	TRAFFIC SIGNAL UPGRADE @ 10 LOCATIONS	CON	2015	2,750	2,750	0	0
CMAQ	0102-0347	VARIOUS	NORWALK	TRAFFIC SIGNAL UPGRADE @ 10 LOCATIONS	FD	2015	75	75	0	0
NHPP-BRX	0102-0348	I-95	NORWALK	REHAB BR 00059 - YANKEE DOODLE BRIDGE	CON	2015	0	0	0	0
NHPP-BRX	0102-0348	I-95	NORWALK	REHAB BR 00059 - YANKEE DOODLE BRIDGE	CON	2015	7,500	6,750	750	0
NHPP-BRX	0102-0348	I-95	NORWALK	REHAB BR 00059 - YANKEE DOODLE BRIDGE	FD	2015	1,350	1,080	270	0
NHPP-BRX	0102-0348	I-95	NORWALK	REHAB BR 00059 - YANKEE DOODLE BRIDGE	CON	2016	7,500	6,750	750	0
STPBS	0102-0350	TRAIL	NORWALK	CONSTRUCTION OF THE THIRD SECTION OF THE NORWALK RIVER VALLEY TRAIL	CON	2016	2,933	2,346	0	587
STPBS	0102-0351	WEST AVENUE	NORWALK	CROSSWALK UPGRADES, WALL ST TO NO. MAIN ST.	CON	2015	87	70	0	17
TAPB	0102-0351	WEST AVENUE	NORWALK	CROSSWALK UPGRADES, WALL ST TO NO. MAIN ST.	CON	2015	713	570	0	143
STPB	0135-0327	ROUTE 137	STAMFORD	WASHINGTON BLVD PEDESTRIAN IMPROVEMENTS	CON	2015	650	520	130	0
NHPP	0135-0270	CT 15	STAMFORD	RESURF/SAFETY, STAMFORD TO NEW CANAAN	CON	2015	0	0	0	0
NHPP	0135-0270	CT 15	STAMFORD	RESURF/SAFETY, STAMFORD TO NEW CANAAN	CON	2015	10,660	8,528	2,132	0
HPP	0135-0301	ATLANTIC STREET	STAMFORD	ATLANTIC ST RR BRIDGE OVERPASS	CON	2015	2,000	1,600	400	0
HPPS	0135-0310	WEST MAIN	STAMFORD	REPLACE BR 02212 O/ MILL RV	CON	2017	1,370	1,096	0	274
STPBS	0135-0321	OAKLAWN AVENUE	STAMFORD	RECONSTRUCTION: HALPIN AVE TO CAMORE ST (FD)	FD	2015	225	180	23	23
STPBS	0135-0321	OAKLAWN AVENUE	STAMFORD	RECONSTRUCTION: HALPIN AVE TO CAMORE ST	ROW	2015	1,100	880	110	110
STPBS	0135-0321	OAKLAWN AVENUE	STAMFORD	RECONSTRUCTION: HALPIN AVE TO CAMORE ST	CON	2016	2,950	2,360	295	295

Table 31: South Western Region TIP FY 2010-2013: Highway Projects ($000) (cont.)

FACode	Proj #	Rte-Sys	Town	Description	Phase	Year	Tot$ (000)	Fed$ (000)	State$ (000)	Local$ (000)
STPA	0135-0323	VARIOUS	STAMFORD	ADA SIDEWALK RAMPS ALONG US1, CT137 & SR493	CON	2015	600	480	120	0
STPA	0135-0323	VARIOUS	STAMFORD	ADA SIDEWALK RAMPS ALONG US1, CT137 & SR493	FD	2015	63	50	13	0
STPA-BRX	0135-0325	US 1	STAMFORD	REHAB BR 00037 O/ I-95 (FD)	FD	2015	500	400	100	0
STPA-BRX	0135-0325	US 1	STAMFORD	REHAB BR 00037 O/ I-95	ROW	2015	100	80	20	0
STPA-BRX	0135-0325	US 1	STAMFORD	REHAB BR 00037 O/ I-95	CON	2016	9,000	7,200	1,800	0
STPA	0158-0201	CT 136	WESTPORT	INT. IMPR. @ WESTON RD & CLINTON AVE	CON	2015	2,100	1,680	420	0
NHPP-BRX	0170-3222	VARIOUS	STATEWIDE	SF BRIDGE INSP - NHS ROADS 9/1/13 - 12/31/16 - AC ENTRY	OTH	2015	0	0	0	0
NHPP- BRX	0170-3222	VARIOUS	STATEWIDE	SF BRIDGE INSP - NHS ROADS 9/1/13 - 12/31/16	OTH	2015	4,725	3,780	945	0
STPA-BRX	0170-3223	VARIOUS	STATEWIDE	SF BRIDGE INSP - NON-NHS ROADS 9/1/13 - 12/31/16 - AC ENTRY	OTH	2015	0	0	0	0
STPA- BRX	0170-3223	VARIOUS	STATEWIDE	SF BRIDGE INSP - NON-NHS ROADS 9/1/13 - 12/31/16	OTH	2015	400	320	80	0
NHPP-BRX	0170-3224	VARIOUS	STATEWIDE	CE BRIDGE INSP - NHS ROADS 7/1/13 - 12/31/16 - AC ENTRY	OTH	2015	0	0	0	0
NHPP- BRX	0170-3224	VARIOUS	STATEWIDE	CE BRIDGE INSP - NHS ROADS 7/1/13 - 12/31/16	OTH	2015	8,400	6,720	1,680	0
NHPP	0170-3226	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NHS ROADS 7/1/13 - 12/31/16 - AC ENTRY	OTH	2015	0	0	0	0
NHPP	0170-3226	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NHS ROADS 7/1/13 - 12/31/16	OTH	2015	1,500	1,200	300	0
STPA	0170-3227	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NON-NHS ROADS 7/1/13 - 12/31/16 - AC ENTRY	OTH	2015	0	0	0	0
STPA	0170-3227	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NON-NHS ROADS 7/1/13 - 12/31/16	OTH	2015	123	98	25	0
STPA	0170-3228	VARIOUS	STATEWIDE	CE MAST ARM INSP - STATEWIDE 7/1/13 - 12/31/16 - AC ENTRY	OTH	2015	0	0	0	0
STPA	0170-3228	VARIOUS	STATEWIDE	CE MAST ARM INSP - STATEWIDE 7/1/13 - 12/31/16	OTH	2015	281	225	56	0
NHPP	0170-3258	NHS	STATEWIDE	NHS PAVEMENT MANAGEMENT ANALYSIS (12/2/13-12/1/16) - AC ENTRY	PL	2015	0	0	0	0
NHPP	0170-3258	NHS	STATEWIDE	NHS PAVEMENT MANAGEMENT ANALYSIS (FY14-16)	PL	2015	420	336	84	0
NHPP	0170-3258	NHS	STATEWIDE	NHS PAVEMENT MANAGEMENT ANALYSIS (FY14-16)	PL	2016	560	448	112	0
STPA	0170-3259	NON-NHS	STATEWIDE	NON-NHS PAVEMENT MANAGEMENT ANALYSIS (12/2/13-12/1/16) - AC ENTRY	PL	2015	0	0	0	0
STPA	0170-3259	NON-NHS	STATEWIDE	NON-NHS PAVEMENT MANAGEMENT ANALYSIS (12/2/13-12/1/16)	PL	2015	513	411	103	0
STPA	0170-3259	NON-NHS	STATEWIDE	NON-NHS PAVEMENT MANAGEMENT ANALYSIS (12/2/13-12/1/16)	PL	2016	727	582	145	0
NHPP	0170-3303	VARIOUS	STATEWIDE	REPLACE OVERHEAD SIGN SUPPORTS	CON	2015	4,000	3,200	800	0
NHPP	0170-3303	VARIOUS	STATEWIDE	REPLACE OVERHEAD SIGN SUPPORTS (FD)	FD	2015	10	8	2	0
STPA	0170-3304	VARIOUS	VARIOUS	REPLACE EXISTING LIGHT FIXTURES WITH NEW LED TYPE LIGHT FIXTURES	CON	2015	3,150	2,520	630	0

Table 31: South Western Region TIP FY 2010-2013: Highway Projects ($000) (cont.)

Region	FACode	Proj #	Rte-Sys	Town	Description	Phase	Year	Tot$(000)	Fed$(000)	Sta$(000)	Loc$(000)
70	NHPP-BRX	170C-Enhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - NHS ROADS (FY16)	OTH	2016	0	0	0	0
70	NHPP-BRX	170C-Enhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - NHS ROADS (FY16)	OTH	2016	8,000	6,400	1,600	0
70	NHPP-BRX	170C-Enhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - NHS ROADS (FY17)	OTH	2017	8,000	6,400	1,600	0
70	NHPP-BRX	170C-Enhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - NHS ROADS (FY18)	OTH	2018	8,000	6,400	1,600	0
70	NHPP-BRX	170C-Enhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - NHS ROADS (FYI)	OTH	FYI	8,000	6,400	1,600	0
70	NHPP-BRX	170C-Enon	VARIOUS	STATEWIDE	CE BRIDGE INSP - NON-NHS ROADS (FY16)	OTH	2016	0	0	0	0
70	NHPP-BRX	170C-Enon	VARIOUS	STATEWIDE	CE BRIDGE INSP - NON-NHS ROADS (FY16)	OTH	2016	2,000	1,600	400	0
70	NHPP-BRX	170C-Enon	VARIOUS	STATEWIDE	CE BRIDGE INSP - NON-NHS ROADS (FY17)	OTH	2017	2,000	1,600	400	0
70	NHPP-BRX	170C-Enon	VARIOUS	STATEWIDE	CE BRIDGE INSP - NON-NHS ROADS (FY18)	OTH	2018	2,000	1,600	400	0
70	NHPP-BRX	170C-Enon	VARIOUS	STATEWIDE	CE BRIDGE INSP - NON-NHS ROADS (FYI)	OTH	FYI	2,000	1,600	400	0
70	NHPP-BRX	170S-Fnhs	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NHS ROADS (FY16)	OTH	2016	0	0	0	0
70	NHPP-BRX	170S-Fnhs	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NHS ROADS (FY16)	OTH	2016	5,000	4,000	1,000	0
70	NHPP-BRX	170S-Fnhs	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NHS ROADS (FY17)	OTH	2017	5,000	4,000	1,000	0
70	NHPP-BRX	170S-Fnhs	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NHS ROADS (FY18)	OTH	2018	5,000	4,000	1,000	0
70	NHPP-BRX	170S-Fnhs	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NHS ROADS (FYI)	OTH	FYI	5,000	4,000	1,000	0
70	NHPP-BRX	170S-Fnon	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NON-NHS ROADS (FY16)	OTH	2016	0	0	0	0
70	NHPP-BRX	170S-Fnon	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NON-NHS ROADS (FY16)	OTH	2016	500	400	100	0
70	NHPP-BRX	170S-Fnon	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NON-NHS ROADS (FY17)	OTH	2017	500	400	100	0
70	NHPP-BRX	170S-Fnon	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NON-NHS ROADS (FY18)	OTH	2018	500	400	100	0
70	NHPP-BRX	170S-Fnon	VARIOUS	STATEWIDE	SF BRIDGE INSP - ON/OFF SYSTEM - NON-NHS ROADS (FYI)	OTH	FYI	500	400	100	0
70	NHPP	170S-Snhs	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NHS ROADS (FY16)	OTH	2016	0	0	0	0
70	NHPP	170S-Snhs	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NHS ROADS (FY16)	OTH	2016	1,500	1,200	300	0
70	NHPP	170S-Snhs	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NHS ROADS (FY17)	OTH	2017	1,500	1,200	300	0
70	NHPP	170S-Snhs	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NHS ROADS (FY18)	OTH	2018	1,500	1,200	300	0
70	NHPP	170S-Snhs	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NHS ROADS (FYI)	OTH	FYI	1,500	1,200	300	0
70	NHPP	170S-Snon	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NON-NHS ROADS (FY16)	OTH	2016	0	0	0	0
70	NHPP	170S-Snon	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NON-NHS ROADS (FY16)	OTH	2016	375	300	75	0
70	NHPP	170S-Snon	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NON-NHS ROADS (FY17)	OTH	2017	375	300	75	0
70	NHPP	170S-Snon	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NON-NHS ROADS (FY18)	OTH	2018	375	300	75	0
70	NHPP	170S-Snon	VARIOUS	STATEWIDE	CE SIGN SUPPORT INSP - NON-NHS ROADS (FYI)	OTH	FYI	375	300	75	0

Table 31: South Western Region TIP FY 2010-2013: Highway Projects ($000) (cont.)

FACode	Proj #	Rte-Sys	Town	Description	Phase	Year	Tot$ (000)	Fed$ (000)	State$ (000)	Local$ (000)
NHPP-BRX	170U-Whhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NHS ROADS (FY 15)	OTH	2015	1,000	800	200	0
NHPP-BRX	170U-Whhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NHS ROADS	OTH	2015	0	0	0	0
NHPP-BRX	170U-Whhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NHS ROADS (FY 16)	OTH	2016	1,000	800	200	0
NHPP-BRX	170U-Whhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NHS ROADS (FY 17)	OTH	2017	1,050	800	250	0
NHPP-BRX	170U-Whhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NHS ROADS (FY 18)	OTH	2018	1,050	800	250	0
NHPP-BRX	170U-Whhs	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NHS ROADS (FYI)	OTH	FYI	1,050	800	250	0
NHPP-BRX	170U-Whon	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NON-NHS ROADS	OTH	2015	0	0	0	0
NHPP-BRX	170U-Whon	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NON-NHS ROADS (FY 15)	OTH	2015	300	240	60	0
NHPP-BRX	170U-Whon	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NON-NHS ROADS (FY 16)	OTH	2016	300	240	60	0
NHPP-BRX	170U-Whon	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NON-NHS ROADS (FY 17)	OTH	2017	300	240	60	0
NHPP-BRX	170U-Whon	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NON-NHS ROADS (FY 18)	OTH	2018	300	240	60	0
NHPP-BRX	170U-Whon	VARIOUS	STATEWIDE	CE BRIDGE INSP - UWATER - NON-NHS ROADS (FYI)	OTH	FYI	300	240	60	0
STPA	0173-0436	VARIOUS	DISTRICT 3	INSTALL OSTA TRAFFIC SIGNALS	ROW	2015	100	80	20	0
STPA	0173-0436	VARIOUS	DISTRICT 3	INSTALL OSTA TRAFFIC SIGNALS	CON	2016	1,150	920	180	50
STPA	0173-0437	VARIOUS	DISTRICT 3	TRAFFIC SIGNAL INSTALLATION & REVISIONS	ROW	2015	125	125	0	0
STPA	0173-0437	VARIOUS	DISTRICT 3	TRAFFIC SIGNAL INSTALLATION & REVISIONS	CON	2016	2,400	2,400	0	0
STPA	0173-0451	VARIOUS	DISTRICT 3	DESIGN & INSTALL OSTA TRAFFIC SIGNALS IN DISTRICT 3	PD	2015	385	385	0	0
STPA	0173-0451	VARIOUS	DISTRICT 3	DESIGN & INSTALL OSTA TRAFFIC SIGNALS IN DISTRICT 3	FD	2016	165	165	0	0
STPA	0173-0451	VARIOUS	DISTRICT 3	DESIGN & INSTALL OSTA TRAFFIC SIGNALS IN DISTRICT 3	ROW	2016	100	100	0	0
STPA	0173-0451	VARIOUS	DISTRICT 3	DESIGN & INSTALL OSTA TRAFFIC SIGNALS IN DISTRICT 3	CON	2017	2,500	2,500	0	0
NHPP	0158-0211	CT 15	WESTPORT/FAIRFIELD	RESURF/SAFETY, CT 33 WESTPORT TO MOREHOUSE HWY FAIRFIELD (FD)	FD	2016	1,500	1,200	300	0
NHPP	0158-0211	CT 15	WESTPORT/FAIRFIELD	RESURF/SAFETY, CT 33 WESTPORT TO MOREHOUSE HWY FAIRFIELD- AC ENTRY	CON	2017	0	0	0	0
NHPP	0158-0211	CT 15	WESTPORT/FAIRFIELD	RESURF/SAFETY, CT 33 WESTPORT TO MOREHOUSE HWY FAIRFIELD- AC CONV.	CON	2017	27,500	22,000	5,500	0
NHPP	0158-0211	CT 15	WESTPORT/FAIRFIELD	RESURF/SAFETY, CT 33 WESTPORT TO MOREHOUSE HWY FAIRFIELD- AC CONV.	CON	2018	29,023	22,000	7,023	0

Table 32: CT DOT Capital Plan – Highway Projects Benefitting the South Western Region ($000) Source: CT DOT 5-Year Capital Plan (Dec. 2010)

Project	Route	Town	Description	Total	Year
0102-0319	Perry Ave	NORWALK	Rehab Br 04154 o/ Norwalk Rv	5,000,000	2015
0102-0351	West Ave	NORWALK	Crosswalk Upgrades, Wall St to No. Main St.	800,000	2015
0102-0351	West Ave	NORWALK	Crosswalk Upgrades, Wall St to No. Main St.	800,000	2015
0135-0270	CT 15	STAMFORD	Resurf/Safety, Stamford to New Canaan	67,460,206	2015
0135-0301	Atlantic St	STAMFORD	Atlantic St RR Bridge Overpass (135-301 & 301-163)	93,800,000	2015
0135-0301	Atlantic St	STAMFORD	Atlantic St RR Bridge Overpass (135-301 & 301-163)	93,800,000	2015
0135-0301	Atlantic St	STAMFORD	Atlantic St RR Bridge Overpass (135-301 & 301-163)	93,800,000	2015
0135-0327	Crosswalk	STAMFORD	Pedestrian Crosswalk	650,000	2015
0158-0201	CT 136	WESTPORT	Int. Impr. @ Weston Rd & Clinton Ave	2,100,000	2015
0056-0312	VARIOUS	GREENWICH	Traffic Signal Upgrade	2,500,000	2016
0102-0295	I-95	NORWALK	Median Barrier/Resurfacing	41,000,000	2016
0102-0325	US 1	NORWALK	Int Impr on US Rt 1 at Rt 53	1,100,000	2016
0102-0347	VARIOUS	NORWALK	Traffic Signal Upgrade @ 10 locations	2,750,000	2016
0102-0348	I-95	NORWALK	Rehab Br 00059 - Yankee Doodle Bridge (90/10)	15,000,000	2016
0102-0348	I-95	NORWALK	Rehab Br 00059 - Yankee Doodle Bridge (90/10)	15,000,000	2016
0102-0350	Trail	NORWALK	Construction of the third section of the Norwalk River Valley Trail	2,932,900	2016
0102-0355	SRTS	NORWALK	Ped safety impr, vinc Roton Middle School	465,000	2016
0135-0283		STAMFORD	Stamford Salt Shed	2,500,000	2016
0135-0321	Oaklawn Ave	STAMFORD	Reconstruction: Halpin Ave to Camore St	2,950,000	2016
0173-0436	Various	DISTRICT 3	Install OSTA Traffic Signals (FY15 Program)	1,150,000	2016
0173-0437	Various	DISTRICT 3	Traffic Signal Installation & Revisions	2,400,000	2016
0102-0297	East Ave	NORWALK	Reconstruction @ Metro North Br No. 42.14	5,000,000	2017
0102-0348	I-95	NORWALK	Rehab Br 00059 - Yankee Doodle Bridge (90/10)	15,000,000	2017
0135-0310	West Main	STAMFORD	Replace Br 02212 o/ Mill Rv	1,370,000	2017
0158-0207	CT 15	WESTPORT	Rehab Br 00728 o/ Saugatuck Rv (List 23)	3,500,000	2017
0173-0451	Various	DISTRICT 3	Design & Install OSTA Traffic Signals in District 3 (FY17 Program)	2,500,000	2017

Table 32: CT DOT Capital Plan – Highway Projects Benefitting the South Western Region ($000) (cont.)

Project	Route	Town	Description	Total	Year
0158-0211	CT 15	Westport/Fairfield	Resurf/Safety, CT 33 Westport to Morehouse Hwy Fairfield (4.6 miles)	55,000,000	2018
0035-0195	I-95	Darien/Norwalk	I-95 Pavement Preservation	18,300,000	2015
0056-0299	Bailiwick Rd	GREENWICH	Replace Br 05491 o/ Byram Rv	2,656,700	2015
0089-0121	Jelliff Mill	NEW CANAAN	Replace Br 05574 o/ Noroton Rv	3,500,000	2015
0102-0333	Wall Street	NORWALK	Rehab Br 04048 o/ M-N RR, replace superstructure (List 21)	1,300,000	2015
0102-0354	US 1	NORWALK	Utility Breakout from Project 102-346	700,000	2015
0135-0320	Atlantic & Henry	STAMFORD	Int Impr; Atlantic St @ Henry St	1,425,000	2015
0158-0208	North Ave	WESTPORT	Rehab Br 00732 o/ CT 15-Merritt Pkwy	2,600,000	2015
0161-RT15		WILTON	Wilton Center loop trail	46,000	2015
0170-2876	STPA Culverts	VARIOUS	Rehab 3 culverts, CT 188 in Southbury & CT 57 in Weston	3,500,000	2015
0173-0420	Various	DISTRICT 3	Install STC Traffic Signals	2,549,080	2015
0173-0443		DISTRICT 3	Wrong-Way signing in District 3	2,694,360	2015
0173-0444		DISTRICT 3	Replace roofing on 4 salt sheds in District 3	882,280	2015
0173-0448	Various	DISTRICT 3	FY15 Epoxy Pavement Markings	1,904,800	2015
0035-0194	Old Kings Highway	DARIEN	Br 00047 Deck replacement over I-95	4,020,000	2016
0056-0307	CT 15	GREENWICH	Rehab Br 02138 o/ Horseneck Brk (culvert)	2,200,000	2016
0056-0309	Lake Ave	GREENWICH	Rehab Br 00696 o/ Merritt Pkwy	950,000	2016
0102-0320	James St	NORWALK	Replace Br 04989 o/ Silvermine Rv	1,500,000	2016
0102-0346	US 1	NORWALK	Intersection Impr. @ Stuart Ave	2,600,000	2016
0135-0287	US 1	STAMFORD	Int. Impr. @ CT 106	5,500,000	2016
0158-0206	Beachside Ave	WESTPORT	Rehab Br 00069 o/ I-95	1,400,000	2016
0173-0438	Various	DISTRICT 3	SLOSSS Traffic Signals (100% SIPH)	1,150,000	2016
0173-0442	Various	DISTRICT 3	Guiderail - Non-NHS Routes	1,250,000	2016
0173-0453	Various	DISTRICT 3	Replace Pedestrian Signs in District 3	908,000	2016
0102-0296	CT 15	NORWALK	Resurf/Bridge/Safety Impr, CT 124 to US 7	0	2019

Transit Capital Projects: The Plan considers transit capital projects as funded if they are included in the FFY2015-2018 TIP or the CT DOT Transit Capital Program 2015-2019. Approximately $1.196 billion in transit capital projects are included on the South Western Region FFY2015-2018 TIP. The CT DOT TransitCapital Program 2015-2019 for rail and bus includes all statewide projects that may benefit the South Western Region, but does not attempt to allocate a percentage of funding to the Region for projects that transcend regional boundaries.

Table 33: CT DOT Estimated Public Transportation Capital Projects 2011-2040

ConnDOT Public Transportation Capital Projects for the South Western Region ($000)

Route	Description	Total Project Cost	Total Fed$ (000)	Total State$ (000)	Funding Source	Year
VARIOUS	Section 5310 Program	3157.2	3157.2	0.0	5310	2015
VARIOUS	Section 5311 Program	3048.6	3048.6	0.0	5311	2015
NA	Transit Capital Planning	400.0	320.0	80.0	5307	2015
NHL	NHL - WALK Moveable Bridge Design	42000.0	31500.0	10500.0	Emergency Relief	2015
NHL	S program/Timber Program	8000.0	0.0	8000.0	STATE	2015
NHL	Bridge Design	5600.0	0.0	5600.0	STATE	2015
NHL	Bridge Culvert Replacement Program	14850.0	0.0	14850.0	STATE	2015
NHL	NHL Track Program	30000.0	24000.0	6000.0	5307/5337	2015
NHL	Interlocking & Drainage	4000.0	0.0	4000.0	STATE	2015
NHL	NHL - Positive Train Control	31674.3	17274.3	14400.0	5307/5337	2015
NHL	Network Infrastructure upgrade	4000.0	0.0	4000.0	STATE	2015
NHL	NHL - Signal System Replacement Phase 1	36000.0	30000.0	6000.0	5307 Carry Over	2015
NHL	NHL - Signal System Replacement Phase 1	27500.0	10000.0	17500.0	5307/5337	2015
NHL	Grade Crossing Improvements	7500.0	0.0	7500.0	STATE	2015
NHL	NHL Fleet (Non M8) Camera Installation	1700.0	0.0	1700.0	STATE	2015
NHL	NHL Fleet (M8) Camera Installation (Additional)	5300.0	0.0	5300.0	STATE	2015
NHL	Stamford Yard Switches	1527.1	0.0	1527.1	STATE	2015
NHL	Rail Maintenance Facilities Repairs	5000.0	0.0	5000.0	STATE	2015
VARIOUS	Transit District Bus Replacements	49000.0	39200.0	9800.0	5307/5339	2015
VARIOUS	Transit District Facility Improvements	10000.0	8000.0	2000.0	5307/5339	2015
VARIOUS	Section 5310 Program	3157.2	3157.2	0.0	5310	2016
VARIOUS	Section 5311 Program	2698.4	2698.4	0.0	5311	2016
NA	Transit Capital Planning	450.0	360.0	0.1	5307/5337	2016
NHL	S program/Timber Program	6000.0	0.0	6000.0	STATE	2016
NHL	Bridge Design	5000.0	0.0	5000.0	STATE	2016

Table 33: CT DOT Estimated Public Transportation Capital Projects 2011-2040

ConnDOT Public Transportation Capital Projects for the South Western Region ($000)

Route	Description	Total Project Cost	Total Fed$ (000)	Total State$ (000)	Funding Source	Year
NHL	Bridge Culvert Replacement Program	25000.0	0.0	25000.0	STATE	2016
NHL	New Haven Line Track Program	7910.0	5000.0	2910.0	5307/5337	2016
NHL	Interlocking & Drainage	6000.0	0.0	6000.0	STATE	2016
NHL	Code Compliance Upgrades of Rail Maintenance Facilities	5000.0	0.0	5000.0	STATE	2016
NHL	NHL - Signal System Replacement Phase 2	51584.4	11584.4	40000.0	5307/5337	2016
NHL	NHL Network Infrastructure	18000.0	14400.0	3600.0	5307/5337	2016
NHL	NHL Station Improvement Program	12500.0	0.0	12500.0	STATE	2016
NHL	NHL Station Improvement Program(Norton Heights)	10000.0	8000.0	2000.0	5307/5337	2016
NHL	NHL - WALK Moveable Bridge	172638.7	129479.0	43159.7	Emergency Relief	2016
NHL	NHL - WALK Moveable Bridge	60500.0	48000.0	12500.0	5307/5337	2016
VARIOUS	CT Transit Bus Replacements	28000.0	22400.0	5600.0	5307/5339	2016
VARIOUS	Transit District Bus Replacements	8000.0	6400.0	1600.0	5307/5339	2016
VARIOUS	Transit District Facility Improvements	20000.0	16000.0	4000.0	5307/5339	2016
VARIOUS	CT Transit Facility Improvements	15000.0	12000.0	3000.0	5307/5339	2016
VARIOUS	Section 5310 Program	3157.2	3157.2	0.0	5310	2017
VARIOUS	Section 5311 Program	2698.4	2698.4	0.0	5311	2017
NHL	S program/Timber Program	6563.9	0.0	6563.9	STATE	2017
NHL	Bridge Design	4500.0	0.0	4500.0	STATE	2017
NHL	Bridge Culvert Replacement Program East Main	30000.0	0.0	30000.0	STATE	2017
NHL	New Haven Line Track Program	22180.5	17744.4	4436.1	5307/5337	2017
NHL	Interlocking & Drainage	6000.0	0.0	6000.0	STATE	2017
NHL	Code Compliance Upgrades of Rail Maintenance Facilities	5000.0	0.0	5000.0	STATE	2017
NHL	NHL - Signal System Replacement Phase 2	60000.0	0.0	60000.0	STATE	2017
NHL	NHL Station Improvement/Parking Program	10000.0	0.0	10000.0	STATE	2017
NHL	NHL - WALK Moveable Bridge	60000.0	48000.0	12000.0	5307/5337	2017
NHL	NHL - WALK Moveable Bridge	55000.0	0.0	55000.0	STATE	2017

Table 33: CT DOT Estimated Public Transportation Capital Projects 2011-2040 cont.

ConnDOT Public Transportation Capital Projects for the South Western Region ($000)

Route	Description	Total Project Cost	Total Fed$ (000)	Total State$ (000)	Funding Source	Year
CT Transit	CT Transit Bus Replacements	30000.0	24000.0	6000.0	5307/5339	2017
VARIOUS	Transit District Bus Replacements	22500.0	18000.0	4500.0	5307/5339	2017
VARIOUS	Transit District Facility Improvements	15000.0	12000.0	3000.0	5307/5339	2017
VARIOUS	Section 5310 Program	3157.2	3157.2	0.0	5310	2018
VARIOUS	Section 5311 Program	2698.4	2698.4	0.0	5311	2018
NA	Transit Capital Planning	450.0	360.0	0.1	5307	2018
NHL	S program/Timber Program	7000.0	0.0	7000.0	STATE	2018
NHL	Bridge Design	5910.0	0.0	5910.0	STATE	2018
NHL	Bridge Replacement Program-Elm, Canal, Greenwich	119600.0	39600.0	80000.0	STATE	2018
NHL	New Haven Line Track Program	30000.0	24000.0	6000.0	5307/5337	2018
NHL	Interlocking & Drainage	8000.0	0.0	8000.0	STATE	2018
NHL	Code Compliance Upgrades of Rail Maintenance Facilities	10000.0	0.0	10000.0	STATE	2018
NHL	NHL - Signal System Replacement Phase 3	45184.4	20184.4	25000.0	5307/5337	2018
NHL	Network Infrastructure Upgrade Phase 3/4	10000.0	8000.0	2000.0	5307/5337	2018
CT Transit	CT Transit Bus Replacements	30000.0	24000.0	6000.0	5307/5339	2018
VARIOUS	Transit District Bus Replacements	10000.0	8000.0	2000.0	5307/5339	2018
VARIOUS	Transit District Facility Improvements	25000.0	20000.0	5000.0	5307/5339	2018
VARIOUS	Section 5310 Program	3157.2	3157.2	0.0	5310	2019
VARIOUS	Section 5311 Program	2698.4	2698.4	0.0	5311	2019
NA	Transit Capital Planning	450.0	360.0	0.1	5307	2019
NHL	S program/Timber Program	6000.0	0.0	6000.0	STATE	2019
NHL	Bridge Design	5000.0	0.0	5000.0	STATE	2019
NHL	Bridge Replacement Program-East Main	45000.0	0.0	45000.0	STATE	2019
NHL	Bridge Replacement Program-East, Maple Osborne	55584.4	10584.4	45000.0	STATE	2019
NHL	Bridge Replacement Program-Elm, Canal, Greenwich	42610.0	0.0	42610.0	STATE	2019
NHL	Interlocking & Drainage	8000.0	0.0	8000.0	STATE	2019
NHL	Code Compliance Upgrades of Rail Maintenance Facilities	10000.0	0.0	10000.0	STATE	2019

Table 33: CT DOT Estimated Public Transportation Capital Projects 2011-2040 cont.

ConnDOT Public Transportation Capital Projects for the South Western Region ($000)

Route	Description	Total Project Cost	Total Fed$ (000)	Total State$ (000)	Funding Source	Year
NHL	Network Infrastructure Upgrade Phase 3/4	10000.0	8000.0	2000.0	5307/5337	2019
NHL	NHL - Signal System Replacement Phase 2	52000.0	33600.0	18400.0	5307/5337	2019
NHL	NHL Station Improvement/Parking Program	15000.0	0.0	15000.0	STATE	2019
NHL	NHL - WALK Moveable Bridge	62500.0	50000.0	12500.0	5307/5337	2019
NHL	NHL - WALK Moveable Bridge	13000.0	0.0	13000.0	STATE	2019
CT Transit	CT Transit Bus Replacements	30000.0	24000.0	6000.0	5307/5339	2019
VARIOUS	Transit District Bus Replacements	10000.0	8000.0	2000.0	5307/5339	2019
VARIOUS	Transit District Facility Improvements	12000.0	9600.0	2400.0	5307/5339	2019

Source: CT DOT Capital Project Management Plan 2011-2030
Methodology: 2011-2015 timeframe figures are derived directly from the CT DOT Capital Project Management Plan. For outer years, available figures from the 2016-3020 were provided by CT DOT. Amounts through 2030 were prorated and extended out to 2040.

Table 34: South Western Region TIP 2015-2018: Transit Capital Projects ($000) Source: South Western Region TIP 2010 – 2013

Sort	Project Number	Rte-Sys	Town	Description	Phase	Year	Total$ (000)	Federal$ (000)	State$ (000)	Local$ (000)
35	0300-XXXX	NHL-DB	VARIOUS	REPLACEMENT OF SIXTH WAYSIDE SUBSTATION - NORWALK	CON	2015	10,000	8,000	2,000	0
36	0301-0040	NHL-ML	WESTPORT/STAMFORD	NHL-ML CONSTRUCT WALK, SAGA, EAST AVE, OSBORNE AVE BRIDGES	CON	2017	100,000	80,000	20,000	0
37	0301-0040	NHL-ML	WESTPORT/STAMFORD	NHL-ML CONSTRUCT WALK, SAGA, EAST AVE, OSBORNE AVE BRIDGES	CON	2017	40,000	32,000	8,000	0
38	0301-0040	NHL-ML	WESTPORT/STAMFORD	NHL-ML CONSTRUCT WALK, SAGA, EAST AVE, OSBORNE AVE BRIDGES	CON	2018	104,260	104,000	260	0
39	0301-0040	NHL-ML	WESTPORT/STAMFORD	NHL-ML CONSTRUCT WALK, SAGA, EAST AVE, OSBORNE AVE BRIDGES	CON	2018	120,000	96,000	24,000	0
40	0403-XXXX	CT TRANSIT	STAMFORD	CONNECTICUT TRANSIT - STAMFORD - FY2015	OTH	2015	9,731	0	9,731	0
41	0403-XXXX	CT TRANSIT	STAMFORD	CONNECTICUT TRANSIT - STAMFORD - FY2016	OTH	2016	10,072	0	10,072	0
42	0403-XXXX	CTTRANSIT	STAMFORD	CONNECTICUT TRANSIT - STAMFORD - FY2017	OTH	2017	10,424	0	10,424	0
43	0403-XXXX	CTTRANSIT	STAMFORD	CONNECTICUT TRANSIT - STAMFORD - FY2018	OTH	2018	10,789	0	10,789	0
44	0412-0118	NORWALK TD	NORWALK	NORWALK TD - FIXED ROUTE - FY2015	OTH	2015	5,111	0	5,111	0
45	0412-0118	NORWALK TD	NORWALK	NORWALK TD - FIXED ROUTE - FY2016	OTH	2016	5,265	0	5,265	0
46	0412-0118	NORWALK TD	NORWALK	NORWALK TD - FIXED ROUTE - FY2017	OTH	2017	5,423	0	5,423	0
47	0412-0118	NORWALK TD	NORWALK	NORWALK TD - FIXED ROUTE - FY2018	OTH	2018	5,585	0	5,585	0
48	0412-0119	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT - FIXED ROUTE - FY2015	OTH	2015	588	0	588	0
49	0412-0119	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT - FIXED ROUTE - FY2016	OTH	2016	606	0	606	0
50	0412-0119	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT - FIXED ROUTE - FY2017	OTH	2017	624	0	624	0
51	0412-0119	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT - FIXED ROUTE - FY2018	OTH	2018	642	0	642	0
52	0412-0122	NORWALK TD	NORWALK	NORWALK TD - NORWALK - ADA OPERATING - FY2015	OTH	2015	888	0	888	0
53	0412-0122	NORWALK TD	NORWALK	NORWALK TD - NORWALK - ADA OPERATING - FY2016	OTH	2016	915	0	915	0
54	0412-0122	NORWALK TD	NORWALK	NORWALK TD - NORWALK - ADA OPERATING - FY2017	OTH	2017	942	0	942	0
55	0412-0122	NORWALK TD	NORWALK	NORWALK TD - NORWALK - ADA OPERATING - FY2018	OTH	2018	971	0	971	0
56	0412-0123	NORWALK TD	STAMFORD	NORWALK TD - STAMFORD - ADA OPERATING - FY2015	OTH	2015	2,668	0	2,668	0
57	0412-0123	NORWALK TD	STAMFORD	NORWALK TD - STAMFORD - ADA OPERATING- FY2016	OTH	2016	2,748	0	2,748	0
58	0412-0123	NORWALK TD	STAMFORD	NORWALK TD - STAMFORD - ADA OPERATING - FY2017	OTH	2017	2,831	0	2,831	0
59	0412-0123	NORWALK TD	STAMFORD	NORWALK TD - STAMFORD - ADA OPERATING - FY2018	OTH	2018	2,916	0	2,916	0
60	0412-0124	NORWALK TD	GREENWICH	NORWALK TD - GREENWICH COMMUTER SHUTTLE OPERATING - FY2015	OTH	2015	316	0	316	0
61	0412-0124	NORWALK TD	GREENWICH	NORWALK TD - GREENWICH COMMUTER SHUTTLE OPERATING - FY2016	OTH	2016	325	0	325	0
62	0412-0124	NORWALK TD	GREENWICH	NORWALK TD - GREENWICH COMMUTER SHUTTLE OPERATING - FY2017	OTH	2017	335	0	335	0
63	0412-0124	NORWALK TD	GREENWICH	NORWALK TD - GREENWICH COMMUTER SHUTTLE OPERATING - FY2018	OTH	2018	345	0	345	0

Table 34: South Western Region TIP 2010-2013: Transit Capital Projects ($000) (cont.)

Sort	Project Number	Rte-Sys	Town	Description	Phase	Year	Total$ (000)	Federal$ (000)	State$ (000)	Local$ (000)
64	0412-0124	NORWALK TD	NORWALK	NORWALK TD - NORWALK COMMUTER SHUTTLE OPERATING - FY2015	OTH	2015	695	0	695	0
65	0412-0124	NORWALK TD	NORWALK	NORWALK TD - ROUTE 7 LINK NORWALK-DANBURY OPERATING - FY2015	OTH	2015	220	0	220	0
66	0412-0124	NORWALK TD	NORWALK	NORWALK TD - NORWALK COMMUTER SHUTTLE OPERATING - FY2016	OTH	2016	716	0	716	0
67	0412-0124	NORWALK TD	NORWALK	NORWALK TD - ROUTE 7 LINK NORWALK-DANBURY OPERATING - FY2016	OTH	2016	227	0	227	0
68	0412-0124	NORWALK TD	NORWALK	NORWALK TD - NORWALK COMMUTER SHUTTLE OPERATING - FY2017	OTH	2017	737	0	737	0
69	0412-0124	NORWALK TD	NORWALK	NORWALK TD - ROUTE 7 LINK NORWALK-DANBURY OPERATING - FY2017	OTH	2017	234	0	234	0
70	0412-0124	NORWALK TD	NORWALK	NORWALK TD - NORWALK COMMUTER SHUTTLE OPERATING - FY2018	OTH	2018	760	0	760	0
71	0412-0124	NORWALK TD	NORWALK	NORWALK TD - ROUTE 7 LINK NORWALK-DANBURY OPERATING - FY2018	OTH	2018	241	0	241	0
72	0412-0124	NORWALK TD	VARIOUS	NORWALK TD - COASTAL LINK OPERATING - FY2015	OTH	2015	126	0	126	0
73	0412-0124	NORWALK TD	VARIOUS	NORWALK TD - COASTAL LINK OPERATING - FY2016	OTH	2016	130	0	130	0
74	0412-0124	NORWALK TD	VARIOUS	NORWALK TD - COASTAL LINK OPERATING - FY2017	OTH	2017	134	0	134	0
75	0412-0124	NORWALK TD	VARIOUS	NORWALK TD - COASTAL LINK OPERATING - FY2018	OTH	2018	138	0	138	0
76	0412-0124	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT- ADA OPERATING - FY2015	OTH	2015	178	0	178	0
77	0412-0124	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT- ADA OPERATING - FY2016	OTH	2016	183	0	183	0
78	0412-0124	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT ADA OPERATING - FY2017	OTH	2017	189	0	189	0
79	0412-0124	NORWALK TD	WESTPORT	NORWALK TD - WESTPORT ADA OPERATING - FY2018	OTH	2018	195	0	195	0
80	0412-XXXX	NORWALK	NORWALK	NORWALK TD-REPLACE PARATRANSIT VEHICLES - FY 2015	ACQ	2015	810	648	162	0
81	0412-XXXX	NORWALK	NORWALK	NORWALK TD-REPLACE 19 2003 35-FT & 1 2003 40-FT BUSES FY 15, 3-30' 12 YEAR EXPANSION BUSES	ACQ	2015	10,247	8,197	2,049	0
82	0412-XXXX	NORWALK TD	NORWALK	NORWALK TD- ADMIN CAPITAL/SUPPORT/EQUIP AND SCV PROGRAM FY 15	OTH	2015	1,151	921	230	0
83	0412-XXXX	NORWALK	NORWALK	NORWALK TD - REPLACEMENT BUSES FY 16	ACQ	2016	1,284	1,027	257	0
84	0412-XXXX	NORWALK TD	NORWALK	NORWALK TD- ADMIN CAPITAL/SUPPORT/EQUIP AND SCV PROGRAM FY 16	OTH	2016	500	400	100	0
85	0412-XXXX	NORWALK TD	NORWALK	NORWALK TD-FACILITY IMPROVEMENTS	CON	2017	500	400	100	0

Transit Operating and Replacement Costs

Maintaining existing bus and rail operations is expected to cost approximately $3.8 Billion through 2040. Using information provided by transit operators and current TIP documents, the annual operating deficit (FY2011) for bus transit is estimated to be $21.2 million. The bulk of the deficit, or 96%, is made up by federal and state funding. Approximately 4%, or $4.2 million per year is contributed by local sources.

The annual New Haven Line operating deficit is $94 million. Based on 25% of this deficit allocated to the South Western Region, the resulting annual deficit applied to the South Western Region amounts to approximately $23.5 million. Over the 30 year period of 2011-2040, the cost for Metro North rail operations is approximately $3 billion. Shoreline East Service between New Haven and Stamford is funded through state/TSB accounts, and not included in the South Western Region rail operating costs.

Ridesharing and Transportation Demand Management Program Operations: Based upon the FFY2015-2018 South Western Region TIP, the State of Connecticut will spend approximately $89 million in 2015 on ridesharing and other transportation demand management programs. These services include: ridesharing brokerages; telecommuting; promotion of the pre-tax deduction program, called "Deduct A Ride" in Connecticut; vanpool financing and vanpool promotion and delivery programs; marketing; customer information; ride-matching; and, CT DOT's staff to manage these programs.

Table 35: Estimated Transit Operations: 2011-2040

	FY2011				2011-2015 Estimate			
			Deficits				Deficits	
Program	Operating Expenses	Revenue	Federal/State Subsidies	Local Subsidies	Operating Expenses	Revenue	Federal/State Subsidies	Local Subsidies
CT Transit Stamford	$ 13,900,676	$ 3,507,004	$ 10,393,672	$ -	$ 69,503,380	$ 17,535,020	$ 51,968,360	$ -
Norwalk Transit - Fixed Route	$ 6,053,603	$ 1,160,547	$ 4,500,946	$ 388,984	$ 30,268,015	$ 5,802,735	$ 22,504,730	$ 1,944,920
Westport - Fixed Route	$ 1,023,975	$ 120,414	$ 689,870	$ 213,692	$ 5,119,875	$ 602,070	$ 3,449,350	$ 1,068,460
Norwalk ADA Mandated Services	$ 1,032,144	$ 155,518	$ 791,857	$ 84,758	$ 5,160,720	$ 777,590	$ 3,959,285	$ 423,790
Stamford ADA Mandated Services	$ 2,482,473	$ 161,551	$ 2,245,922	$ 75,000	$ 12,412,365	$ 807,755	$ 11,229,610	$ 375,000
Westport ADA Mandated Services	$ 238,799	$ 18,086	$ 155,965	$ 67,466	$ 1,193,995	$ 90,430	$ 779,825	$ 337,330
Greenwich Shuttle	$ 321,769	$ 45,188	$ 276,581	$ -	$ 1,608,845	$ 225,940	$ 1,382,905	$ -
Norwalk Commuter Shuttles	$ 701,057	$ 165,005	$ 536,052	$ -	$ 3,505,285	$ 825,025	$ 2,680,260	$ -
CT Avenue Evening Shuttle	$ 58,396	$ 16,302	$ 41,994	$ -	$ 291,980	$ 81,510	$ 209,970	$ -
Route 7 Evening Shuttles	$ 55,619	$ 8,366	$ 47,253	$ -	$ 278,095	$ 41,830	$ 236,265	$ -
Sunday Shuttles	$ 53,856	$ 22,093	$ 31,763	$ -	$ 269,280	$ 110,465	$ 158,815	$ -
Coastal Link - Norwalk Transit District	$ 611,261	$ 194,878	$ 416,383	$ -	$ 3,056,305	$ 974,390	$ 2,081,915	$ -
Route 7 Link	$ 218,997	$ 21,089	$ 192,908	$ 5,000	$ 1,094,985	$ 105,445	$ 964,540	$ 25,000
Bus Total	**$ 26,752,625**	**$ 5,596,041**	**$ 20,321,166**	**$ 834,900**	**$ 133,763,125**	**$ 27,980,205**	**$ 101,605,830**	**$ 4,174,500**
Rail Total	**$ 99,590,552**	**$ 67,218,326**	**$ 26,120,953**	**-**	**$ 497,952,758**	**$ 336,091,630**	**$ 130,604,765**	**-**
Transit Total	**$ 126,343,177**	**$ 72,814,367**	**$ 46,442,119**	**$ 834,900**	**$ 631,715,883**	**$ 364,071,835**	**$ 232,210,595**	**$ 4,174,500**

Table 35: Estimated Transit Operations: 2011-2040 (cont.)

	2016-2040 Estimate				2011-2040 Estimate			
			Deficits				Deficits	
Program	Operating Expenses	Revenue	Federal/State Subsidies	Local Subsidies	Operating Expenses	Revenue	Federal/State Subsidies	Local Subsidies
CT Transit Stamford	$ 347,516,900	$ 87,675,100	$ 259,841,800	$ -	$ 417,020,280	$ 105,210,120	$ 311,810,160	$ -
Norwalk Transit - Fixed Route	$ 151,340,075	$ 29,013,675	$ 112,523,650	$ 9,724,600	$ 181,608,090	$ 34,816,410	$ 135,028,380	$ 11,669,520
Westport - Fixed Route	$ 25,599,375	$ 3,010,350	$ 17,246,750	$ 5,342,300	$ 30,719,250	$ 3,612,420	$ 20,696,100	$ 6,410,760
Norwalk ADA Mandated Services	$ 25,803,600	$ 3,887,950	$ 19,796,425	$ 2,118,950	$ 30,964,320	$ 4,665,540	$ 23,755,710	$ 2,542,740
Stamford ADA Mandated Services	$ 62,061,825	$ 4,038,775	$ 56,148,050	$ 1,875,000	$ 74,474,190	$ 4,846,530	$ 67,377,660	$ 2,250,000
Westport ADA Mandated Services	$ 5,969,975	$ 452,150	$ 3,899,125	$ 1,686,650	$ 7,163,970	$ 542,580	$ 4,678,950	$ 2,023,980
Greenwich Shuttle	$ 8,044,225	$ 1,129,700	$ 6,914,525	$ -	$ 9,653,070	$ 1,355,640	$ 8,297,430	$ -
Norwalk Commuter Shuttles	$ 17,526,425	$ 4,125,125	$ 13,401,300	$ -	$ 21,031,710	$ 4,950,150	$ 16,081,560	$ -
CT Avenue Evening Shuttle	$ 1,459,900	$ 407,550	$ 1,049,850	$ -	$ 1,751,880	$ 489,060	$ 1,259,820	$ -
Route 7 Evening Shuttles	$ 1,390,475	$ 209,150	$ 1,181,325	$ -	$ 1,668,570	$ 250,980	$ 1,417,590	$ -
Sunday Shuttles	$ 1,346,400	$ 552,325	$ 794,075	$ -	$ 1,615,680	$ 662,790	$ 952,890	$ -
Coastal Link - NTD	$ 15,281,525	$ 4,871,950	$ 10,409,575	$ -	$ 18,337,830	$ 5,846,340	$ 12,491,490	$ -
Route 7 Link	$ 5,474,925	$ 527,225	$ 4,822,700	$ 125,000	$ 6,569,910	$ 632,670	$ 5,787,240	$ 150,000
Bus Total	**$ 668,815,625**	**$ 139,901,025**	**$ 508,029,150**	**$ 20,872,500**	**$ 802,578,750**	**$ 167,881,230**	**$ 609,634,980**	**$ 25,047,000**
Rail Total	**$ 2,489,763,788**	**$ 1,680,458,150**	**$ 653,023,825**	**-**	**$ 2,987,716,546**	**$ 2,016,549,780**	**$ 783,628,590**	**-**
Transit Total	**$ 3,158,579,413**	**$ 1,820,359,175**	**$ 1,161,052,975**	**$ 20,872,500**	**$ 3,790,295,296**	**$ 2,184,431,010**	**$ 1,393,263,570**	**$ 25,047,000**

Source: Prepared by SWRPA using CT DOT, NTD, and CT Transit Information - March 2011

CT Transit Stamford services include fixed route, commuter connections and I-Bus. Funding is provided through FTA Access to Jobs, Connecticut DSS, and Connecticut's TSB.

25% of total systemwide Rail Operations, revenues and susidies are assigned to the South Western Region as a reasonable assumption pre ConnDOT.

Figures based on FY 2011 CT DOT rail estimates, with 99% of operating expenses and 99% of revenues assigned to the New Haven Line. Shore Line East expenses not included.

Table 36: Ridesharing and Transportation Demand Management Program Operations ($000)

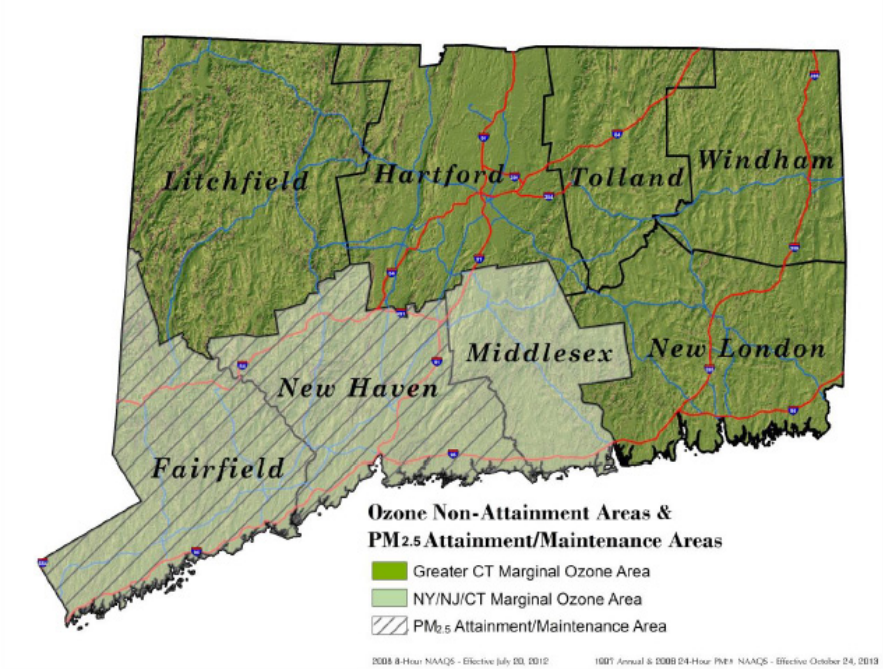
Sort	Proj #	Rte-Sys	Town	Description	Phase	Year	Total$ (000)	Fed$ (000)	State$ (000)	Local$ (000)
90	0170-3120	VARIOUS	STATEWIDE	FY15: STATEWIDE TRANSPORTATION DEMAND MANAGEMENT (NY-NJ-CT)	OTH	2015	3,177	2,542	635	0
91	0170-3122	VARIOUS	STATEWIDE	FY15: TELECOMMUTING PARTNERSHIP (NY-NJ-CT)	OTH	2015	440	352	88	0
92	0170-3124	VARIOUS	STATEWIDE	FY15: STATEWIDE MARKETING (NY-NJ-CT)	OTH	2015	733	586	147	0
179	0170-3106	VARIOUS	STATEWIDE	FY13: STATEWIDE MARKETING (NY-NJ-CT MODERATE) -TRANSFER TO FTA (5307S)	OTH	2015	1,525	1,220	305	0
180	0170-3106	VARIOUS	STATEWIDE	FY13: STATEWIDE MARKETING (NY-NJ-CT MODERATE) -TRANSFER FROM FHWA (CMAQ)	OTH	2015	1,525	1,220	305	0
190	0170-3106	VARIOUS	STATEWIDE	FY13: STATEWIDE MARKETING (NY-NJ-CT MODERATE) -TRANSFER FROM FHWA	OTH	2015	1,525	1,220	305	0

Source: CT Statewide TIP FY 2015-2018

7 | Impacts

The Clean Air Act of 1970, as amended in1990, requires that the U.S. Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) for six common pollutants: carbon monoxide (CO), lead, ozone, nitrogen oxides (NOx), Sulfur Dioxide (SOx), and fine particulate matter less than 10 (PM10) and 2.5 (PM2.5) microns in diameter. Areas where concentrations of certain pollutants exceed the established standards are designated as non-attainment areas by the EPA. Emissions associated with transportation systems have

Figure 27: Connecticut Ozone Non-Attainment Areas and PM2.5



been identified as a major source for many of these pollutants. Connecticut's South Western Region is currently included within the New York-New Jersey-Connecticut non-attainment area for both Ozone and PM2.5.

Ozone is formed as part of a reaction between heat and gas emissions, from motor vehicles or other types of fuel combustion, primarily organic hydrocarbons (VOC) and NOx. Fine Particulate matter is composed of tiny solids suspended in the air, which are smaller than 2.5 micrometers in diameter. These microscopic particles may be released with smoke or vehicle exhaust. High Concentrations of both Ozone and PM2.5 contribute to poor air quality, which may pose a threat to public health. To ensure Transportation planning and projects do not contribute to degraded air quality, projects included in the Long Range Transportation Plan and the TIP are evaluated for conformity with State and Federal air quality standards.

The conformity analysis is used to show that projected emissions for the proposed projects, programs or plans do not contribute to poor air quality, and help non-attainment areas meet NAAQS. Air quality conformity modeling was conducted by CT DOT according to the State Implementation Plan (SIP) for ozone and PM 2.5, effective October 29, 2007. The SIP establishes the vehicle emissions budget used to evaluate the Region's transportation program based on the following tests:

- For VOC and NOx, transportation emissions from the Action Scenarios must be less than the 2009 transportation emission budgets if analysis year is 2009 or later. Action scenario years are: 2009, 2015, 2035, and

2040.

- For PM 2.5, emissions from future Action Scenarios from 2017 on, must be less than the 2017 Motor Vehicle Emission Budgets
- For PM 2.5 Emissions from future Action Scenarios from 2025 on, must be less than the 2025 Motor Vehicle Emission Budgets

CT DOT uses a model that applies emission to factors identified by the EPA. One of the principal factors is vehicle miles traveled data, which is generated using a travel demand model that assigns trips to the highway network. Conformity determinations are based on the expected emissions resulting from vehicles traveling over the existing and future highway network. It is important to note that while some individual projects may increase emissions, these emissions may be offset by transit or congestion mitigation projects that reduce congestion. Overall, the entirety of the transportation program must move the region towards cleaner air.

In March 2015 emissions analyses were completed by CT DOT and included in the Air Quality Conformity Reports for the Connecticut Portion of the New York-New Jersey-Connecticut non-attainment area for both ozone and PM2.5. The emissions analyses demonstrated conformity for the Connecticut portion of the New York-New Jersey-Connecticut non-attainment area for both Ozone and PM2.5. Results indicated that the projects and recommendations included in the plan will assist with improving air quality in the non-attainment area and move the Region and State towards meeting all NAAQS.

Table 37: Air Quality Conformity and Emissions Budgets for the NY-NJ-CT Non-Attainment Areas and Attainment/Mainenance Areas

Year	VMT	Results (tons/year)			Budget (tons/year)			Difference (tons/year)		
		VOC*	NOx	PM2.5	VOC*	NOx	PM2.5	VOC*	NOx	PM2.5
2017	51,342,464	23.15	10,366	450.2	27.4	12,792	575.8	-4.25	-2426.1	-125.6
2025	55,459,560	15.48	6,900	369.3	27.4	9,728	516	-11.92	-2828.1	-146.7
2035	58,307,232	13.32	6,130	369.5	27.4	9,728	516	-14.08	-3598.5	-146.5
2040	59,477,812	13.72	6,266	382.5	27.4	9,728	516	-13.68	-3462.1	-133.5

*In tons/day
Source: CT DOT Air Quality Conformity Analysis (March 2015)

Foot Notes:

Chapter 3

i CTDOT Landuse Series 28, 2010

ii There is no fixed route bus service in either New Canaan or Weston nor any rail stations in Weston.

Chapter 4

i Adaptation Subcommittee to the Governor's steering Committee on Climate Change. (2010) Citation: Adaptation Subcommittee to the Governor's Steering Committee on Climate Change. 2010. The Impacts of Climate Change on Connecticut Agriculture, Infrastructure, Natural Resources and Public Health. April 2010. http://ctclimatechange.com/wp-content/uploads/2010/05/Impacts-of-Climate-Change-on-CT-Ag-Infr-Nat-Res-and-Pub-Health-April-2010.pdf

ii Mid-Atlantic Regional Air Management Association (MARAMA) report: Area and NonEGU Point Source Emission Projections in the Northeast/ Mid-Atlantic Region, November 5, 2010; CTDOT PM 2.5 Air Quality Conformity Determination of the 2011 Regional Transportation Plans and the FY 210-2010 Transportation Improvement Programs for the Connecticut Portion of the New York-New Jersey-Connecticut PM2.5 Non-Attainment Area, March 2011; CTDOT PM Ozone Air Quality Conformity Determination of the 2011 Regional Transportation Plans and the FY 210-2010 Transportation Improvement Programs for the Connecticut Portion of the New York-New Jersey-Connecticut Ozone Non-Attainment Area, March 2011

iii Public Act 06-136, The Roadmap for Connecticut's Economic Future. Effective July 1, 2006

iv The Governor's Steering Committee on Climate Change. (2005) Citation: The Governor's Steering Committee on Climate Change. 2005. Connecticut Climate Change Action Plan. January 2005.

v Connecticut Department of Transportation. (2009) Citation: Connecticut Department of Transportation. 2009. Connecticut on the Move, Strategic Long-Range Transportation Plan 2009-2035. June 2009. http://www.ct.gov/dot/LRP.

Chapter 5

i CT State Data Center, Population Projections, 2007

ii The South Western Region is contained within the Connecticut (New York-Newark-Bridgeport NY-NJ-CT-PA CSA), hereinafter, "CT-NY" FAF region, which includes all of Fairfield, Litchfield, and New Haven Counties

iii Highway Safety Office, CTDOT iv Public Roads, FHWA, January/ February 2011, Vol. 74 – no. 4, http://www.fhwa.dot.gov/publications/

publicroads/11janfeb/02.cfm v 2008 Highway Safety Plan, CTDOT

vi Master Transportation Plan, CTDOT vii James Bradford, CT Transit Emergency Management Director email (February 22, 2011)

viii 33 CFR Part 105 and security measures identified in an approved Facility Security Plan.

ix Fact Sheets on Highway Provisions – TSMO, FHWA, http://www.fhwa.dot.gov/safetealu/factsheets/tsmo.htm

x 2009 Travel Time Monitoring, October 2009, http://www.swrpa.org/Uploads/SWRPA_CMP_2009_travel_time_monitoring_report_final.pdf xi Congestion Mitigation System Plan - Vision 2020, February 2003, http://www.swrpa.org/Default.aspx?Transport=156

xii South Western Region ITS Strategic Plan, July 2009, http://www.swrpa.org/Default.aspx?Transport=232

xiii Connecticut Electronic Tolling and Congestion Pricing Study, April 2009, http://www.swrpa.org/Uploads/SWRPA_CMP_2009_travel_time_monitoring_report_final.pdf

Appendix A: Public Involvement Summary

Going Forward: The Plan to Maintain & Improve Mobility South Western Region's Long Range Transportation Plan 2015 – 2040

Prepared by:
Western Connecticut Council of Governments
888 Washington Boulevard, 3rd Floor
Stamford, CT 06901

Prepared for:
South Western Region Metropolitan Planning Organization

Date:
May 26, 2015

Public Involvement Plan Objectives

The purpose of the report is to summarize the public involvement activities and input received regarding the South Western Region Long Range Transportation Plan 2015-2040 (LRTP). The key objectives of the LRTP public involvement process were to:

- Obtain input on important transportation issues, needs, projects and priorities from key stakeholders during the development of the LRTP;
- Provide the general public with the opportunity to learn about the metropolitan transportation planning process as well as to review and provide input on the plan;
- Provide an opportunity for the TTAG and MPO to review and comment on the draft LRTP and to adopt the LRTP; and
- Comply with federal requirements regarding public participation in the development of the LRTP.

Opportunities for public participation were offered throughout the LRTP update process.A variety of media was used in order to provide maximum opportunity for public input, including (1) a media release to the region's news outlets, (2) two public information sessions, (3) making available a hard copy of the draft LRTP for review at WestCOG's Stamford office, and (4) making available the draft LRTP and associated air quality conformity reports on the WestCOG website. The public outreach and participation activities performed during the update process are described below.

General Public Outreach and SWRPA Technical and Policy Committees Outreach

Efforts to engage the public began in November 2014 when the LRTP Update was introduced as an agenda item at WestCOG's Transportation Technical Advisory Group (TTAG) meeting. The LRTP remained on the TTAG meeting agenda throughout the winter and spring of 2015. In addition, the LRTP update was introduced to the SWRMPO at its November 2014 meeting and subsequently included on the SWRMPO meeting agendas in March and April 2015. The table below presents the TTAG and MPO meetings at which the LRTP was featured as an agenda item. In addition to posting the TTAG and MPO agendas and meeting summaries to the WestCOG website, media releases for the MPO meetings were issued two weeks prior to each meeting date.

An archive of meeting agendas and summaries is available at:
TTAG: https://westcog.org/ttag/
MPO: https://westcog.org/swrmpo/

Dates of Outreach to MPO and TTAG

Meeting	Date	Location
TTAG	November 17, 2014	Darien Town Hall
MPO	November 20, 2014	Wilton Town Hall
TTAG	January 6, 2015	Norwalk Fire Department
TTAG	March 12, 2015	Darien Town Hall
MPO	March 19, 2015	WestCOG Office
TTAG	April 6, 2015	WestCOG Office
MPO	April 16, 2015	Darien Town Hall

LRTP and Air Quality Conformity Finding Public Review

The MPO was appraised of the release of the draft LRTP and Air Quality Conformity Finding for a mandated 30-day public review at their March 19, 2015 meeting. The 30-day public review period began on March 31, 2015 and ended on April 30, 2015. A media release was issued on March 31, 2015 to notify the public of the availability of the draft LRTP, the schedule of public information sessions, and how to comment.

During the 30-day public comment period, two public information sessions (see table below) were held in addition to the regularly scheduled MPO and TTAG meetings. Both of these public information

Date	Time	Location
April 9, 2015	11:30 am - 1:30 pm	WestCOG - 888 Washington Blvd, Stamford
April 9, 2015	6:00 pm - 8:00pm	WestCOG - 888 Washington Blvd, Stamford

sessions were held at the WestCOG office in the Stamford Government Center. One session was held during the day while the other session was held during the evening. WestCOG staff was present at both sessions to present the plan, receive comments, and answer any questions. A hardcopy of the LRTP as well as maps and lists of projects included in the LRTP were provided at both sessions.
In addition, a hard copy of the draft LRTP was made available for review at the WestCOG Stamford office during regular business hours and anytime online at:
https://westcog.org/long-range-transportation-plans/

Public Comments Received and Disposition

During the 30 day public review period, one written comments was received. The commenter, who did not provide their name, suggested that there should be a rail line that made a loop from Stamford through Greenwich, Port Chester, New York, White Plains, New York, Brewster, New York, and Danbury before returning to Stamford. The commenter also suggested that commuter bus service should be permitted on the Merritt Parkway in order to serve nearby employment centers.

Approximately ten-to-fifteen people attended the two public information sessions. WestCOG maintains a list of all those people who chose to give their name and with what, if any, organization they were affiliated. However, several attendees chose not to provide that information.

No comments were received regarding the Air Quality Conformity Finding.

Technical and Chief Elected Official Outreach

In January 2015, WestCOG staff began outreach to the transportation technical staff (town planners and engineers) in each municipality and transit operator represented by SWRMPO. One-on-one meetings and teleconferences were set up with TTAG members other relevant staff to determine their priorities for the LRTP, including what projects they wanted to see included. In order to facilitate these discussions, a list of questions was provided a week in advance of each meeting. A list of the meetings held is provided below:

Date	Municipality/Transit District
January 26, 2015	Town of Wilton
January 29, 2015	Town of New Canaan
January 29, 2015	Town of Greenwich
February 3, 2015	Town of Darien
February 4, 2015	Town of Weston
February 4, 2015	Town of Westport
February 17, 2015	Norwalk Transit District
February 25, 2015	City of Norwalk

Due to scheduling conflicts, no meetings were held with transportation technical staff from City of Stamford or the Westport Transit District.

Internet

WestCOG maintains a webpage for SWRMPO material, including the draft LRTP and air quality conformity documents, on the WestCOG website: https://westcog.org/swrmpo/. The page includes minutes of past MPO and TTAG meetings, agendas for upcoming MPO and TTAG meetings, draft LRTP documents, and a point of contact for comments about the LRTP.

Appendix B: Endorsement Documents

SOUTH WESTERN REGION
METROPOLITAN PLANNING ORGANIZATION
DARIEN • GREENWICH • NEW CANAAN • NORWALK • STAMFORD • WESTON • WESTPORT • WILTON
888 WASHINGTON BOULEVARD • STAMFORD, CT 06901 • (203) 316-5190 • FAX (203) 316-4995

RESOLUTION #2015-004

ANNUAL CERTIFICATION OF METROPOLITAN TRANSPORTATION PLANNING BY THE SOUTH WESTERN REGION METROPOLITAN PLANNING ORGANIZATION – APRIL 2015

WHEREAS:
The Metropolitan Planning Organization of the South Western Region is the designated Metropolitan Planning Organization for the South Western Region (SWRMPO) and is the policy board for metropolitan transportation planning in the South Western Region of Connecticut.

BE IT RESOLVED:
That the SWRMPO certifies that the metropolitan transportation planning process is being carried out in accordance with the terms and provisions of 23 U.S.C. 134, 49 U.S.C. 5303, and the metropolitan planning regulations at 23 CFR 450 (dated February 14, 2007) and that all applicable provisions relative to the involvement of public and private providers of mass transit, Civil Rights, involvement of minority business enterprises, special efforts for elderly and disabled persons, the Clean Air Act, 23 USC and 49 USC, and 23 CFR 450.334(a) have been satisfied.

This resolution is in full force and effect April 16, 2015.

Date: April 16, 2015

Jayne Stevenson
First Selectman, Darien

SOUTH WESTERN REGION
METROPOLITAN PLANNING ORGANIZATION
DARIEN • GREENWICH • NEW CANAAN • NORWALK • STAMFORD • WESTON • WESTPORT • WILTON
888 WASHINGTON BOULEVARD • STAMFORD, CT 06901 • (203) 316-5190 • FAX (203) 316-4995

Resolution #2015-005: Conformity with the Clean Air Act for Ozone

WHEREAS,

The South Western Region Metropolitan Planning Organization (MPO) is required to submit an Air Quality Conformity Statement to the US Federal Highway Administration (FHWA) and to the US Environmental Protection Agency (EPA) in accordance with the final conformity rule promulgated by EPA (40 CFR 51 and 93) when adopting an annual Transportation Improvement Program or when effecting a significant revision of the Region's Transportation Plan; and

WHEREAS,

Title 42, Section 7506 (3) (A) states that conformity of transportation plans and programs will be demonstrated if:

1. the plans and programs are consistent with recent estimates of mobile source emissions;
2. the plans and programs provide for the expeditious implementation of certain transportation control measures;
3. the plans and programs contribute to annual emissions reductions consistent with the Clean Air Act of 1977, as amended; and

WHEREAS,

It is the opinion of the South Western Region MPO that the plans and programs approved today, April 16, 2015, and submitted to FHWA and EPA conform to the requirements of Title 42, Section 7506 (3) (A) as interpreted by EPA (40 CFR 51 and 93); and

WHEREAS,

The State of Connecticut has elected to assess conformity in the Connecticut portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT Ozone Marginal Nonattainment area (Fairfield, New Haven and Middlesex Counties) and the Connecticut Department of Transportation has jointly assessed the impact of all transportation plans and programs in these Nonattainment areas *(Ozone Air Quality Conformity Report - March 2015)*; and

WHEREAS,

The Connecticut Department of Transportation's assessment (above) has found that plans and programs jointly meet mobile source emission's guidelines advanced by EPA pursuant to Section 7506 (3) (A).

NOW, THEREFORE BE IT RESOLVED BY THE SOUTH WESTERN REGION MPO,

That the South Western Region MPO finds that the ***South Western Region Long Range Transportation Plan 2011-2040*** and the ***South Western Region FFY 2015-2018 Transportation Improvement Program (TIP)*** and all Amendments conform to air quality requirements of the U.S. Environmental Protection Administration (40 CFR 51 and 93), related U.S. Department of Transportation guidelines (23 CFR 450) and with Title 42, Section 7506 (3) (A) and hereby approves the existing March 2015 Ozone Air Quality Conformity Determination, contingent upon receipt of no major adverse comments during the public involvement process.

CERTIFICATE
The undersigned duly qualified Chairman of the South Western Region MPO certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the South Western Region MPO on April 16, 2015.

This resolution is effective April 16, 2015.

Date: April 16, 2015.

Jayne Stevenson
First Selectman, Darien

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Resolution #2015-006: Conformity with the Clean Air Act for PM 2.5

WHEREAS,

The South Western Region Metropolitan Planning Organization (MPO) is required to submit an Air Quality Conformity Statement to the US Federal Highway Administration (FHWA) and to the US Environmental Protection Agency (EPA) in accordance with the final conformity rule promulgated by EPA (40 CFR 51 and 93) when adopting an annual Transportation Improvement Program or when effecting a significant revision of the Region's Transportation Plan; and

WHEREAS,

Title 42, Section 7506 (3) (A) states that conformity of transportation plans and programs will be demonstrated if:

1. the plans and programs are consistent with recent estimates of mobile source emissions;
2. the plans and programs provide for the expeditious implementation of certain transportation control measures;
3. the plans and programs contribute to annual emissions reductions consistent with the Clean Air Act of 1977, as amended; and

WHEREAS,

It is the opinion of the South Western Region MPO that the plans and programs approved on April 16, 2015, and submitted to FHWA and EPA conform to the requirements of Title 42, Section 7506 (3) (A) as interpreted by EPA (40 CFR 51 and 93); and

WHEREAS,

The Connecticut portion of the New York – New Jersey – Long Island, NY-NJ-CT area is designated a PM 2.5 attainment/maintenance area; and

WHEREAS,

The State of Connecticut has elected to jointly assess conformity in all PM 2.5 attainment/maintenance areas in Connecticut (Fairfield County and New Haven County); and

WHEREAS,

The results of the required emissions analysis performed by the Connecticut Department of Transportation on the ***South Western Region Long Range Transportation Plan 2011-2040*** and the ***South Western Region FFY 2015-2018 Transportation Improvement Program (TIP)*** and Amendments shows that the implementation of the projects contained therein will result in emissions of PM2.5 in each analysis year that are less that the emissions of the baseline year; and

NOW, THEREFORE BE IT RESOLVED BY THE SOUTH WESTERN REGION MPO,

That the South Western Region MPO finds that the ***South Western Region Long Range Transportation Plan 2015-2040*** and the ***South Western Region FFY 2015-2018 Transportation Improvement Program (TIP)*** conform to air quality requirements of the U.S. Environmental Protection Administration (40 CFR 51 and 93), related U.S. Department of Transportation guidelines (23 CFR 450) and with Title 42, Section 7506 (3) (A) and hereby approves the existing March 2015 PM2.5 Conformity Determination contingent upon receipt of no major adverse comments received during the public comment period.

CERTIFICATE

The undersigned duly qualified Chairman of the South Western Region MPO certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the South Western Region MPO on April 16, 2015.

This resolution is effective April 16, 2015.

Date: April 16, 2015.

Jayne Stevenson
First Selectman, Darien

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Resolution #2015-007:
Approval of South Western Region Long Range Transportation Plan 2015-2040

WHEREAS: The SWRMPO annually certifies that the transportation planning process is addressing the major issues facing the area and is being conducted in accordance with applicable federal requirements and is operating under the certification issued October 2014 and April 2015; and

WHEREAS: The South Western Region Metropolitan Planning Organization (SWRMPO) has developed an update of the South Western Region Long Range Transportation Plan to cover the period of 2015 to 2040; and

WHEREAS: The South Western Region Long Range Transportation Plan 2015-2040 was developed and reviewed in accordance with the MPO's Public Involvement Process (2009) and fulfills the requirements of public involvement of federal regulations (23 and 49 CFR 450.316[b][1]; and

WHEREAS: It is the opinion of the SWRMPO that the South Western Region Long Range Transportation Plan 2015-2040 conforms to the requirements of the applicable federal requirements regarding the metropolitan transportation planning process: transportation plan (23 and 49 CFR 450.322); and,

WHEREAS: The SWRMPO and the Connecticut Department of Transportation have determined that the South Western Region Long Range Transportation Plan 2015-2040 meets air quality conformity requirements and has issued statements to this effect (Resolutions #2015-005 and #2015-006) based upon the CT DOT Conformity Determinations for PM 2.5 and Ozone – March 2015;

NOW THEREFORE BE IT RESOLVED THAT THE SWRMPO:

Adopts the South Western Region Long Range Transportation Plan 2015-2040.

CERTIFICATE

The undersigned duly qualified Chairman of the South Western Region MPO certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the South Western Region MPO on April 16, 2015 contingent upon receipt of no major adverse comments during the public involvement process.

This resolution is effective April 16, 2015.

Date: April 16, 2015.

Jayne Stevenson
First Selectman, Darien