Draft Plan Released February 8, 2023

WESTCOG

2023-2050

METROPOLITAN TRANSPORTATION PLAN

HOUSATONIC VALLEY & SOUTH WESTERN REGION

Bethel Bridgewater Brookfield Danbury Darien Greenwich New Canaan
New Fairfield New Milford Newtown Norwalk Redding Ridgefield Sherman
Stamford Weston Westport Wilton

Disclaimer:

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 or the policies of the Western Connecticut Council of Governments, Connecticut Department of Transportation or the United States Department of Transportation.

Prepared by:

Western Connecticut Council of Governments

1 Riverside Road

Sandy Hook, CT 06482

475-323-2060

http://www.westcog.org

For language assistance or other accommodations, contact Western Connecticut Council of Governments at help@westcog.org. Para asistencia con el idioma y otras adaptaciones, por favor póngase en contacto con WestCOG al help@westcog.org. Para obter assistência língua ou outras acomodações, entre em contato com WestCOG em help@westcog.org. Pour obtenir de l'aide linguistique ou d'autres mesures d'adaptation, contactez WestCOG à help@westcog.org. Aby uzyskać pomoc językową lub inne zakwaterowanie, skontaktuj się z firmą WestCOG pod adresem help@westcog.org.

Acknowledgements

Housatonic Valley Metropolitan Planning Organization

Chairman:
Rudy Marconi, First Selectman
Town of Ridgefield

Vice Chairman:
Julia Pemberton, First Selectman
Town of Redding

Richard Straiton, Acting First Selectman
Town of Bethel

Curtis Read, First Selectman
Town of Bridgewater

Tara Carr, First Selectman
Town of Brookfield

Dean Esposito, Mayor
City of Danbury

Patricia Del Monaco, First Selectman
Town of New Fairfield

Pete Bass, Mayor
Town of New Milford

Daniel Rosenthal, First Selectman
Town of Newtown

Don Lowe, First Selectman
Town of Sherman

South Western Region Metropolitan Planning Organization

Chairman:
Lynne Vanderslice, First Selectwoman
Town of Wilton

Vice Chairman:
Kevin Moynihan, First Selectman
Town of New Canaan

Monica McNally, First Selectman
Town of Darien

Fred Camillo, First Selectman
Town of Greenwich

Harry Rilling, Mayor
City of Norwalk

Caroline Simmons, Mayor
City of Stamford

Samantha Nestor, First Selectman
Town of Weston

Jennifer Tooker, First Selectman
Town of Westport

WestCOG Staff

Francis Pickering,
Executive Director

Michael Towle,
Deputy Director

Victoria Ricks,
Financial Director

Cricket Carpenter,
Office Manager

Kristin Hadjstylianos,
Transportation Director

Todd Fontanella,
Senior Planner

Kristin Floberg,
Senior Planner

Mike Wilson,
Senior Planner

Nicole Sullivan,
Planner

Kevin Mahoney,
Senior Project Manager

Charles Vidich,
Senior Project Manager

Betsy Paynter,
Project Manger

Nicholas Trabka,
Senior Data Scientist

Tucker Beckett,
Data Scientist

Table of Contents

Table of Figures

Table of Tables

Chapter 1: Introduction

The Metropolitan Transportation Plan (the Plan) for the Housatonic Valley Metropolitan Planning Organization (HVMPO) and the South Western Region Metropolitan Planning Organization (SWRMPO) is for the 2023 – 2050 timeframe.

This document is the "blueprint" for transportation in the ten municipalities that comprise HVMPO and eight municipalities that comprise SWRMPO. HVMPO includes the municipalities of Bethel, Bridgewater, Brookfield, Danbury, New Fairfield, New Milford, Newtown, Redding, Ridgefield, and Sherman. SWRMPO includes the municipalities of Darien Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport and Wilton. Both HVMPO and SWRMPO are hosted by the Western Connecticut Council of Governments (WestCOG). When the Plan is only referring to one MPO, it is stated as such.

The Plan serves as a guide for developing a transportation system that is not only accessible, safe, and reliable, but also contributes to the economy and to a high quality of life for residents. The Plan reflects the region's current conditions, identifies future transportation needs, and recommends projects to meet those needs.

This Plan supersedes all previous Long-Range Transportation Plans for HVMPO (Housatonic Valley Metropolitan Planning Organization 2019-2045 Long-Range Transportation Plan) and SWRMPO (South Western Region Metropolitan Planning Organization 2019-2045 Long-Range Transportation Plan).

Many of the issues and recommendations identified in previous plans continue to be top priorities for the region. The Plan was developed through a comprehensive coordination effort to align the goals and policies of the Region's core planning documents: the Metropolitan Transportation Plan, the Comprehensive Economic Development Strategy and the Regional Plan of Conservation and Development. It was developed using the findings and recommendations from plans produced by or in collaboration with the Western Connecticut Council of Governments including the Regional Transportation Safety Plan (2020), Regional Affordable Housing Toolbox (2020), Multi-Jurisdiction Hazard Mitigation Plan Update (2021), along with several focus area transportation studies. State and local plans were also reviewed for consistency with planning objectives laid out in chapters of this Plan.

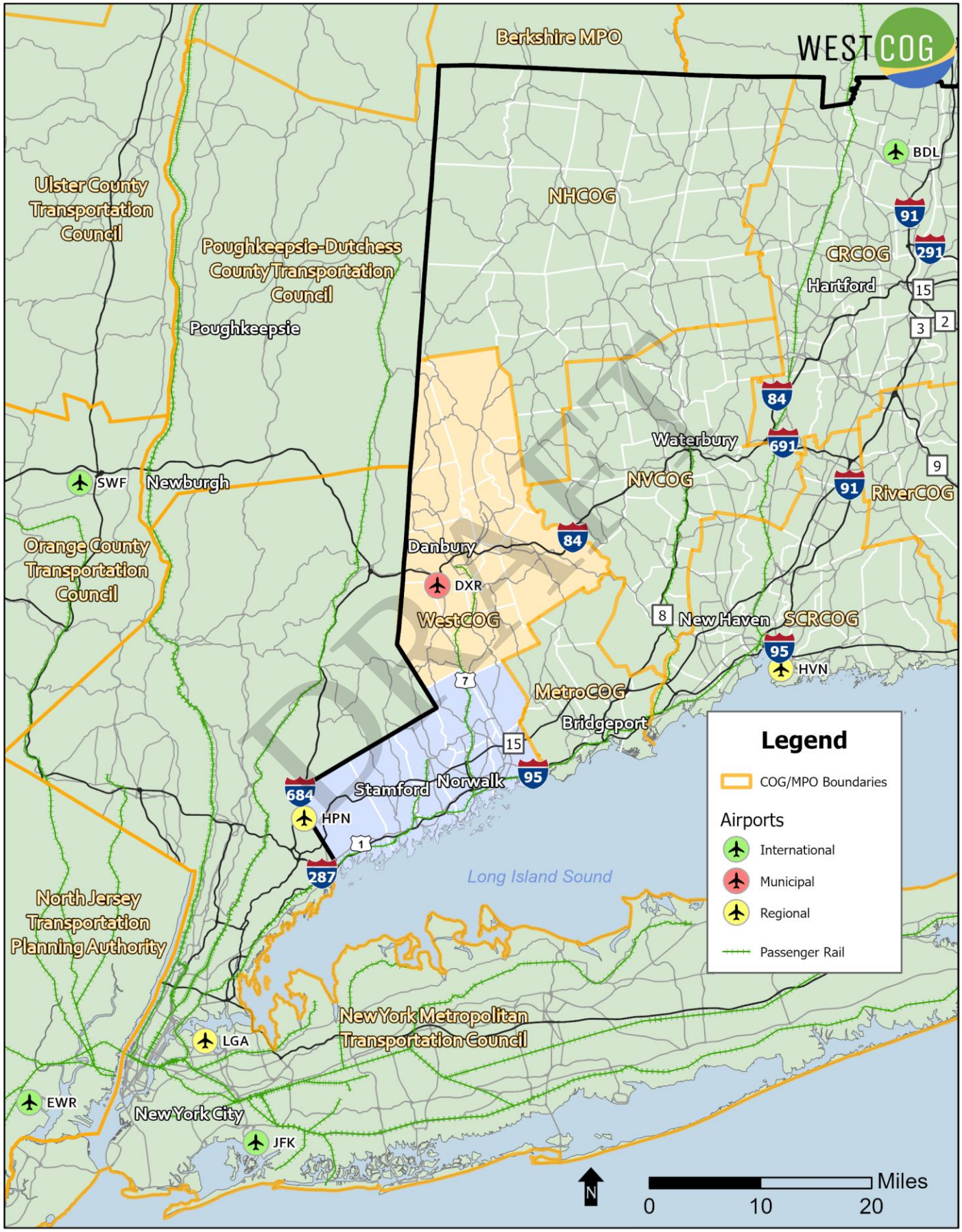
The planning process was designed to increase the public's awareness of transportation matters and incorporate their feedback into the plan. The Plan provides stakeholders with an introduction to transportation investment decision-making. In developing the Plan, WestCOG conducted outreach with members of the public, elected officials, municipal staff, and other stakeholders in the region to better understand the challenges users of the transportation network face and opportunities to improve.

Although many types of planning are best left at the local level, transportation by its nature has an intermunicipal focus. This Plan prioritizes projects based on regional impact.

WestCOG strongly believes in inter-regional and MPO coordination, particularly between SWRMPO and HVMPO. To that end, information on the transportation systems and projects of both MPOs are included in this Plan. This allows for a comprehensive analysis of both MPO's transportation systems within western Connecticut. Hereafter, references to both HVMPO and SWRMPO combined will be referred to as the "Region". WestCOG also closely coordinates with the neighboring MPOs and their host agencies in Connecticut and New York on matters of greater regional significance including but not limited to freight planning, congestion mitigation efforts, transit, and highway planning. Figure 1 shows the greater regional planning area and the boundaries of the Council of Governments in Connecticut and their counterparts in adjacent states.

Regional Context

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: Passenger Rail - NYS GIS Clearinghouse, 2013

Figure 1: Regional Context of the Region

Transportation Planning Process

The purpose of an MPO is to guide the regional planning process and to incorporate regional thinking and priorities into Connecticut's statewide transportation investment strategy.

The primary goals of each MPO are to ensure that federal and state investments in traffic and transit systems in the metropolitan area are prioritized, cost effective, environmentally sound, conceived with a maximum of local governmental and citizen input, and fully coordinated with other transportation modes and community development policies.

As a part of this effort, federal law requires MPOs to update and maintain a Metropolitan Transportation Plan (23 C.F.R. §450.324), making the adoption of an MTP a condition of eligibility for federal aid in transportation projects.

The Plan is a living document and may be amended as needed. MPOs may revise the MTP at any time using the procedures in 23 C.F.R. §450.324 without a requirement to extend the horizon year. The transportation plan shall be approved by the MPO and submitted for information purposes to the Governor. Copies of any updated or revised transportation plans must be provided to the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), as well as the Connecticut Department of Transportation (CTDOT) and the Connecticut Office of Policy and Management (CT OPM).

Federal Guidance and Requirements

The Bipartisan Infrastructure Law (BIL) (Public Law 117-58, November 15, 2021) reauthorized funding for surface transportation programs for fiscal years 2022 to 2026 and authorized up to $550 billion above current baseline levels to support federal investment in infrastructure. The Law is a generational investment in the nation's transportation network emphasizing fixing highways and bridges, reducing traffic fatalities and serious injuries; replacing fossil fueled transit vehicles with cleaner electric or low emission alternatives; and modernizing and improving transit opportunities.

Federal Planning Factors

23 C.F.R. §450.306 (b) requires MPOs to consider specific factors in the transportation planning process. Each of these factors are addressed in the Plan and were considered in the development of this Region's Metropolitan Transportation Plan goals:

- Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
- Increase the **safety** of the transportation system for motorized and nonmotorized users
- Increase the **security** of the transportation system for motorized and nonmotorized users
- Increase the **accessibility and mobility** of people and for freight
- Protect and enhance the **environment**, promote **energy conservation**, improve the **quality of life**, and promote **consistency** between transportation improvements and State and local planned growth and economic development patterns
- Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight
- Promote **efficient** system management and operation
- Emphasize the **preservation** of the existing transportation system
- Improve the **resiliency and reliability** of the transportation system and reduce or mitigate stormwater impacts of surface transportation
- Enhance **travel and tourism**

National Goals

The Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012 established a performance-based transportation planning and funding program for the nation. Its' purpose is to prioritize infrastructure projects that would make progress toward the achievement of these national goals:

- **Safety**- To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure Condition** - To maintain the highway infrastructure asset system in a state of good repair
- **Congestion Reduction** – To achieve a significant reduction in congestion on the National Highway System
- **System Reliability** – To improve the efficiency of the surface transportation system
- **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.
- **Environmental Sustainability** – To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **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.

Performance-Based Planning and Programming

Metropolitan Planning Organizations are also required to establish performance measures related to the national goals, referenced above, and as described in 23 U.S.C. 150(b). This requires that MPOs establish targets in key national performance areas to document expectations for future performance, and that State Departments of Transportation, MPOs, and operators of public transportation must coordinate the targets that they set for key areas. It further requires that MPOs must reflect those targets in their MTPs and describe the anticipated effect of their transportation improvement programs toward achieving their targets.

The following are the transportation performance management areas:

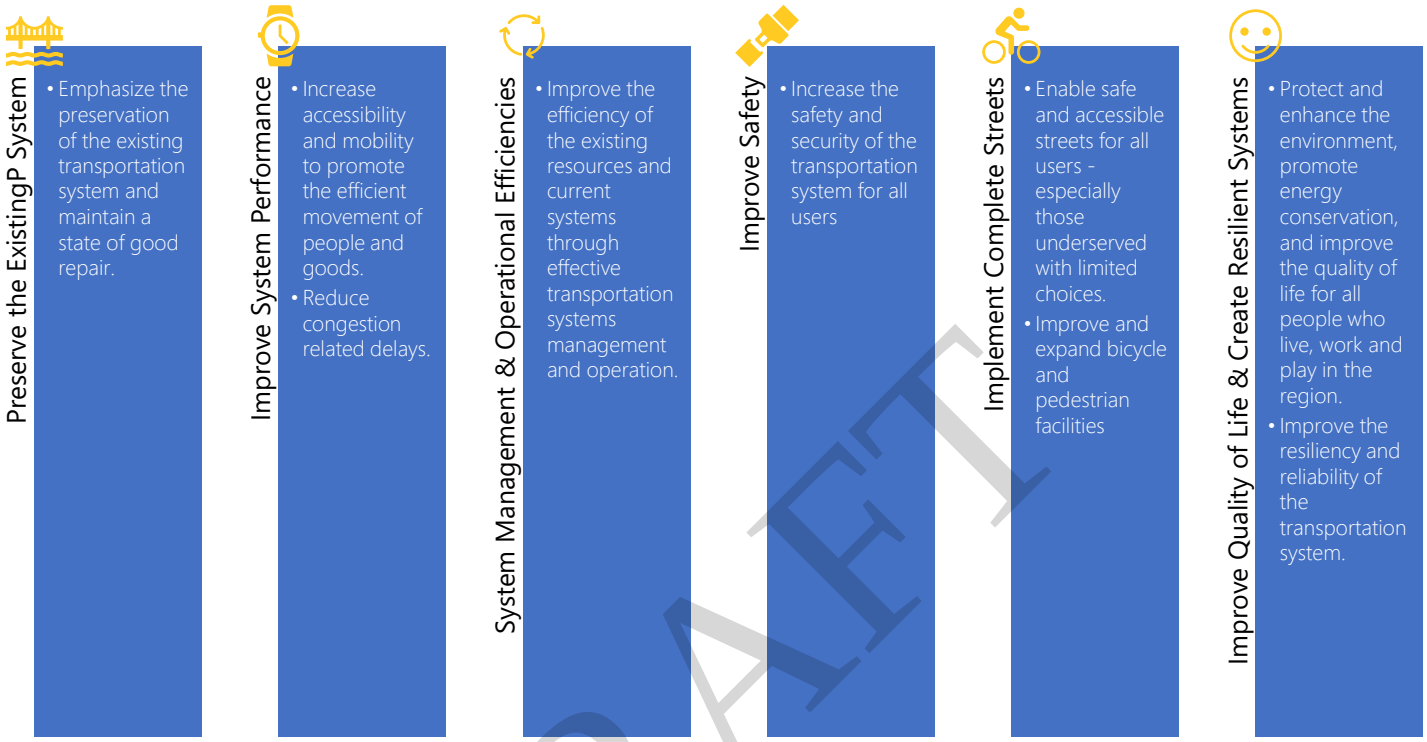
- Highway Safety
- Pavement & Bridge Conditions
- System Performance
- Freight Movement
- On-Road Mobile Source Emissions
- Transit Asset Management
- Transit Safety

Chapter 9 of this plan provides greater detail on the various performance management areas and the targets the HVMPO and SWRMPO have supported.

3C Planning Process

The three C's of the 3C planning process stand for continuing, comprehensive and cooperative performance-based multimodal planning process introduced in the Federal-Aid Highway Act of 1962. The law emphasizes the importance of input from local communities and other planning agencies to create a shared goal and vision for the planning area. In development of this Plan, and in studies informing this Plan, WestCOG engaged members of the public and stakeholders early in the planning process to ensure an inclusive and through understanding of the needs of the region. WestCOG closely coordinates with CTDOT, public transit providers, federal agencies, and environmental stakeholders on an on-going basis and in the development of this Plan. The discussion of the public participation process can be found in Chapter 10.

The Region's Goals



The Region's Key Characteristics

The Region

The WestCOG region is the second most populous and fastest-growing region in Connecticut, with over 600,000 residents. With its location connecting New England to New York, Western Connecticut is an economically dynamic region, with strong cultural, educational, and natural amenities. WestCOG represents some of the most desirable communities in the United States and the region is a major financial contributor to the economy of the New York metro area and the State of Connecticut.

The region includes the three principal cities of Stamford, Norwalk, and Danbury and the 15 surrounding municipalities (Figure 2). It has 53 miles of passenger railroad supporting commuter and long-distance travel; provides over 3.2 million bus trips annually through its three providers; and has 3,193 miles of roads and highways.

Overarching Trends

Since the last Plan was published in 2019, the Region, like the rest of the world, has had to grapple with the ongoing effects of the COVID-19 pandemic. In 2020, public transportation services were diminished to bare bones service levels as most of the region's population was told to stay home. Since then, public transportation has rebounded but not to pre-pandemic levels before the pandemic, as many residents switched to working from home or to a hybrid work schedule. Congestion patterns have also changed from being concentrated to the interstates during morning and evening peak periods to increased congestion levels spread across the day and on to the local road network.

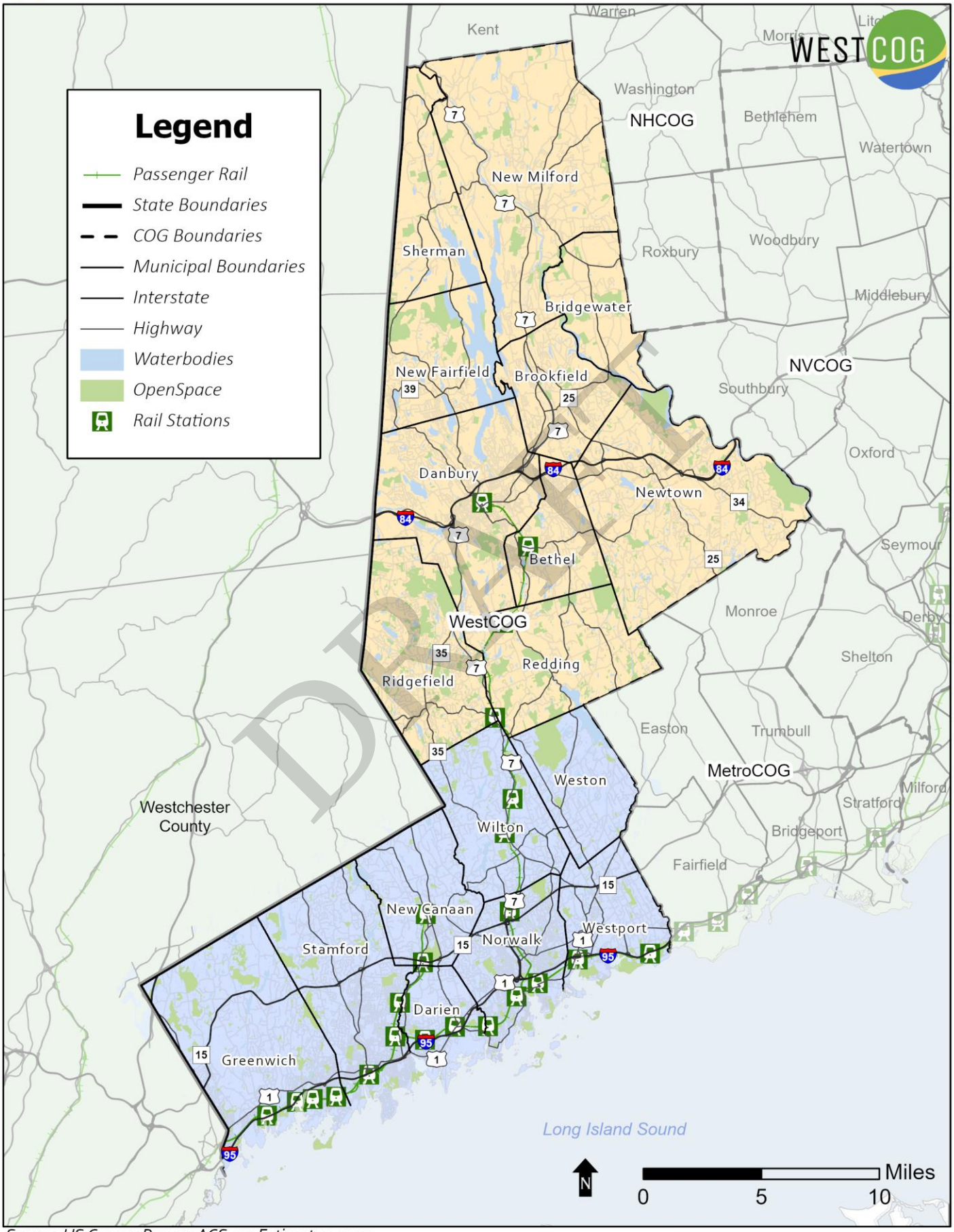
The COVID-19 pandemic highlighted the trend of increased reliance on internet service for daily needs beyond work such as childhood and post-secondary education; telehealth doctors' visits; fitness classes; virtually visiting with friends; grocery shopping; among others. Fast and reliable internet service to the home has become a necessity.

MPO business has also changed to reflect this by shifting stakeholder and public involvement to fully virtual during heightened virus transmission periods while transitioning to hybrid opportunities as the population became widely vaccinated. Public involvement participation has increased overall likely due to the convenience of joining from any location and not having to arrange childcare or shift working hours to join a public meeting.

While we haven't determined the long-term impacts of the COVID-19 pandemic on the transportation system, we do know that increasing fuel costs, the electrification of vehicles and increased freight delivery to the home will continue to impact residents in the region and how they travel.

WestCOG Thematic Map

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: US Census Bureau ACS 5yr Estimates, 2020

Figure 2: WestCOG Thematic Map

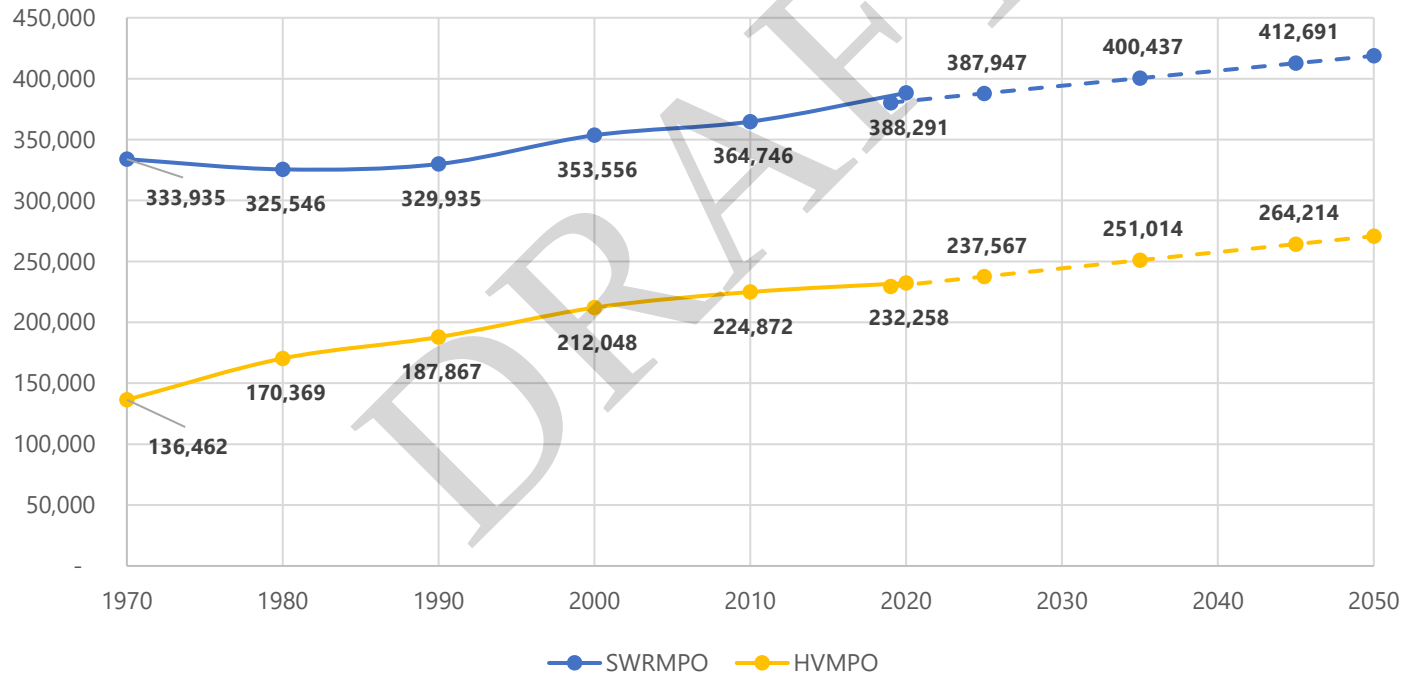
Demographics

The Housatonic Valley and South Western Regions are currently experiencing growth in population, the 2020 Decennial Census revealed that the region has 620,549 residents and the SWRMPO is growing faster than decades past but HVMPO is growing at a slower rate (Figure 3).Between 2010 and 2020, growth in municipalities in the Region averages around 5 percent, with higher percent increases of individuals in Bethel, Danbury, and Stamford, but population decline in less populated municipalities such as Bridgewater and Redding. That overall regional growth is projected to continue.

Population projections are provided by the Connecticut Department of Transportation. These estimates are developed based on administrative and survey datasets from the Connecticut Department of Health. Projections may vary from actual population changes. The Region may wish to complete an interim update to the Plan when new, or more detailed, population data or projections become available.

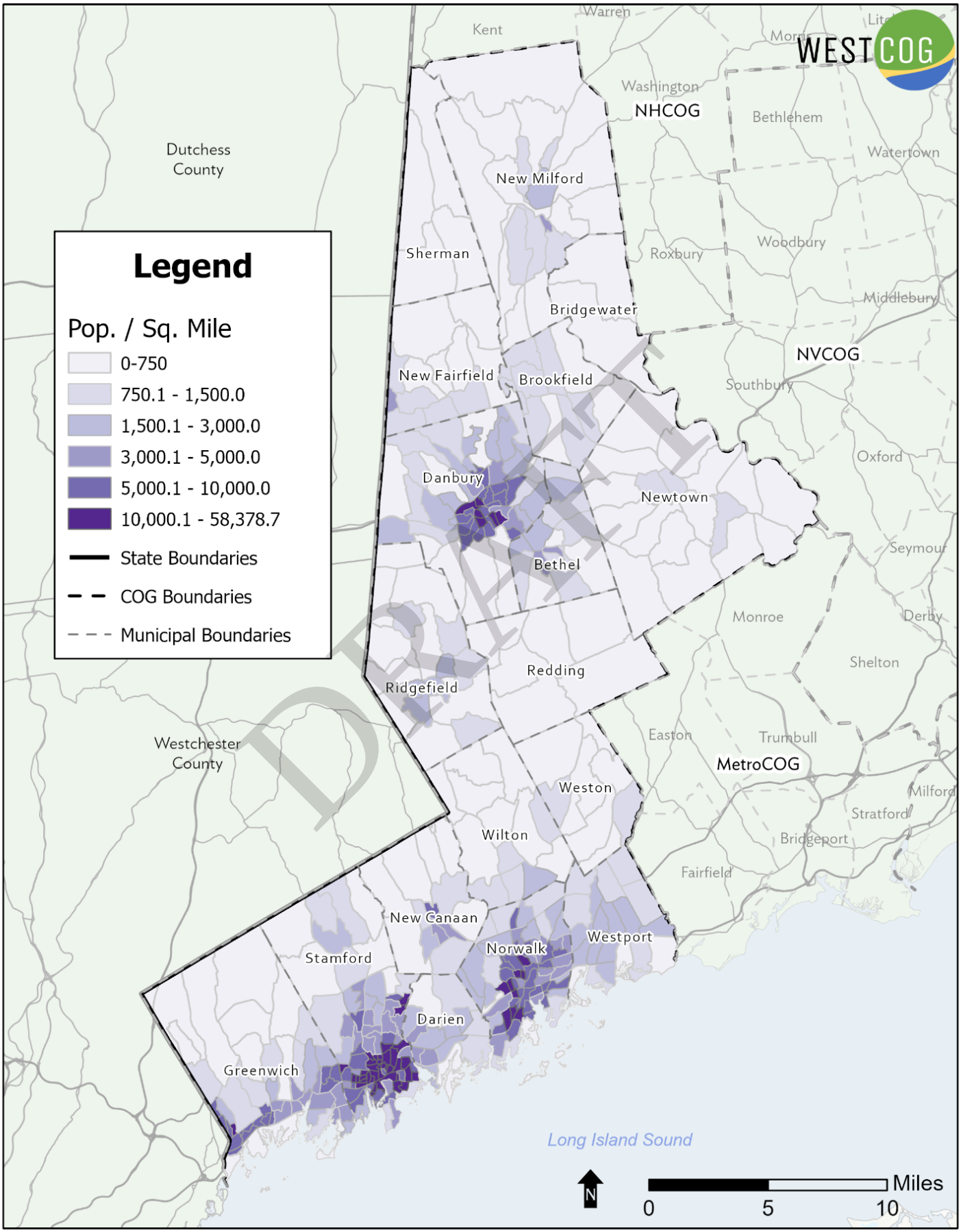
Figure 4 shows population density within the Region. As expected, the major population concentrations are in urban areas and downtowns, as well as clustered around transportation infrastructure – particularly around I-95 and the New Haven Line in the South Western Region.

Figure 3: Regional Population Trends and Projections



Population Density by Block

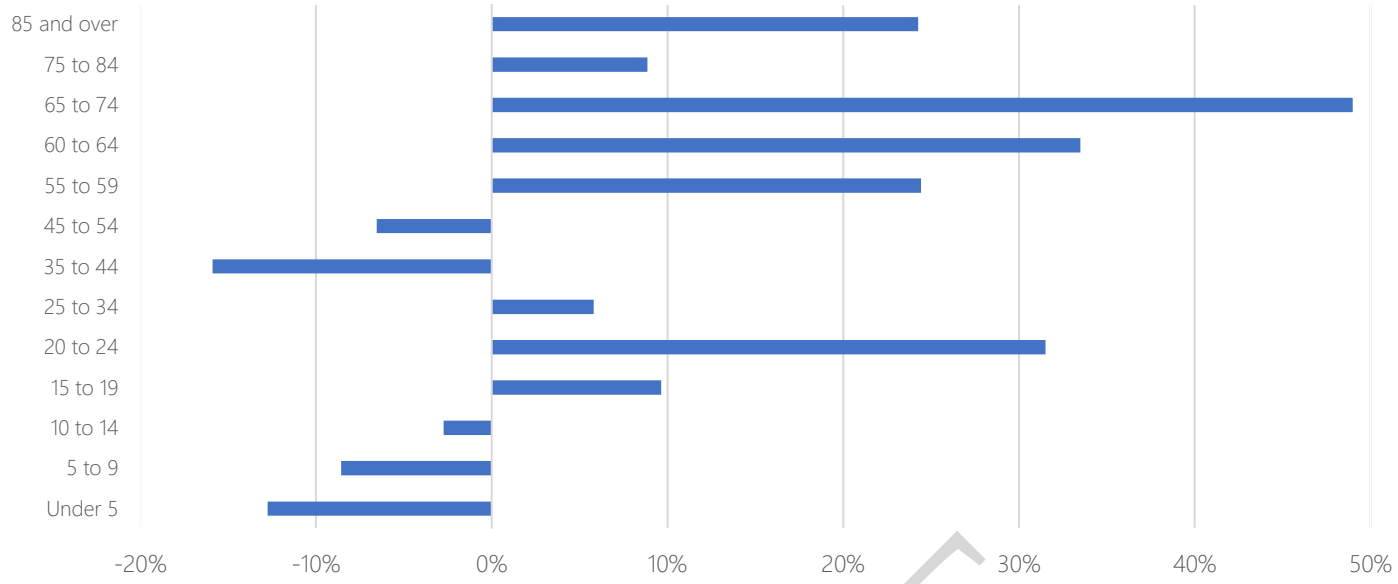
Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: US Census Bureau ACS 5yr Estimates, 2020

Figure 4: Population Density by Census Block

Figure 5: Change in Population by Age Cohort in the Western Connecticut Planning Area from 2010 to 2020



According to Figure 5 the Region has notably larger increase in persons in the 15 to 34 age cohort between 2010 and 2020. These age group categories typically consist of individuals are in high school, college or are in the formative years of their career.

The Region has seen the highest percentage change of older individuals, especially in the 55 and over age cohort due to the national trend of the aging 'baby boomer' population.

In contrast, the Region has decreased the share of persons in the 35 to 54 age cohort who typically include parents of school aged children and are established in their career. For age categories under 14 years, the Region also saw a decrease in population, in line with the age cohorts who are typically parents discussed above.

Like population projections, employment is also projected to slowly rise in the Plan time horizon (Table 1). Projections may vary from actual employment changes. The Region may wish to complete an interim update to the Plan when new, or more detailed, employment data or projections become available.

Table 1: Total Regional Employment & Projections

	2000	2010	2020	2019	2023	2025	2035	2045	2050
SWRMPO	208,347	187,241	176,408	197,236	201,823	204,117	215,965	228,575	235,080
HVMPO	86,288	83,325	80,438	89,341	91,296	92,276	97,315	102,677	105,442

Traveling

How residents travel to work depends on many factors including convenience to public transportation, if they already own a personal vehicle, ability to work from home and proximity to their workplace. Figure 6 shows how residents travel to work by municipality and for WestCOG as a whole for the longest portion of their trip. On average 68 percent of workers drove by themselves to work in 2020; 8 percent carpooled; 10 percent took public transportation; 3 percent walked; 1 percent biked; and 10 percent worked from home.

The communities with the largest portion of workers taking public transportation were Darien, Greenwich, New Canaan, and Westport. This is likely due to their proximity to the Metro North New Haven and New Canaan Branch Line, in addition to their work destination having easy access from the train. Surprisingly the three principal cities had comparatively much smaller shares of their working residents who use public transportation.

In the 10-year period between 2010 and 2020, as seen in Table 2, there has been a significant decline in driving alone to work which has been replaced by working from home due to technological advances and the expediting effects of the COVID-19 pandemic. Staff are observing that the nature of trip making is changing. In the past, transportation planning focused upon journey to work as a key trip making activity. With the rise in work-from-home activity, trip purposes are increasingly varied. This shift, coupled with changes in work habits including more flexible daily schedules and split worksite/remote work schedules, will present a challenge to planners as they seek to measure and design for future transportation needs. Metro-North Railroad, for its part, has already modified its planning emphasis to follow increased ridership in traditional off-peak and weekend periods – and to plan for service upgrades to meet that demand.

Figure 7 shows the commute destinations of the region's residents. The three major work destinations are the principal cities in the region – Danbury, Norwalk, and Stamford. Residents of the region commute to locations in all over Connecticut – with a concentration of jobs along the I-95 and I-91 corridors; to New York City; and into the Hudson Valley and parts of Long Island. Some commuting

Figure 6: Mode Split by Municipality - Journey to Work 2020

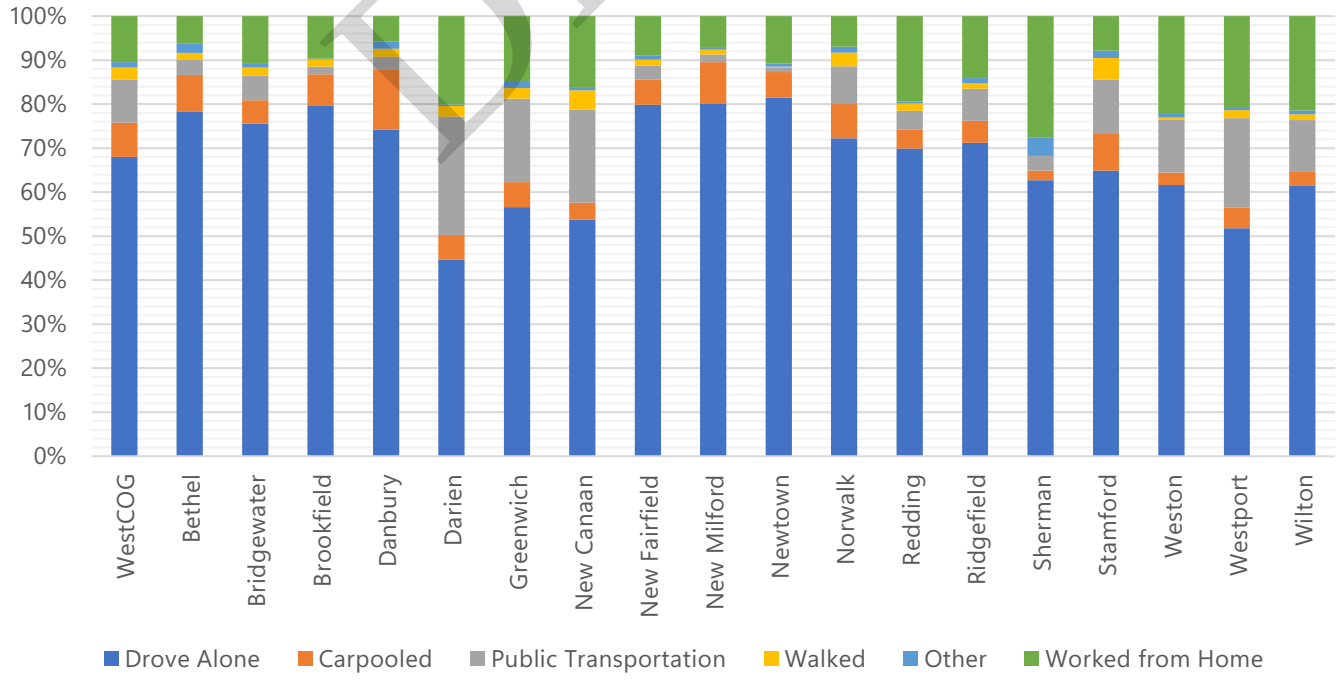


Table 2: Change in Percent of Work Trips by Mode from 2010 to 2020

Municipality	Drove Alone	Carpooled	Public Transportation	Walked	Bike, Motorcycle, Taxi, other	Worked from Home
Bethel	-6%	2%	0%	-1%	2%	2%
Bridgewater	-7%	3%	4%	1%	-1%	0%
Brookfield	-5%	2%	-2%	1%	-1%	4%
Danbury	-2%	4%	0%	-2%	-1%	1%
Darien	-14%	3%	1%	0%	0%	11%
Greenwich	-8%	0%	2%	-2%	1%	7%
New Canaan	-11%	1%	3%	1%	0%	5%
New Fairfield	-5%	0%	1%	1%	1%	3%
New Milford	-4%	1%	0%	0%	0%	3%
Newtown	-4%	1%	-1%	-1%	0%	4%
Norwalk	-4%	0%	-1%	1%	0%	3%
Redding	-7%	0%	-2%	-2%	-1%	12%
Ridgefield	-6%	0%	1%	-1%	1%	5%
Sherman	-16%	-3%	0%	-4%	4%	19%
Stamford	-1%	-3%	0%	-1%	1%	4%
Weston	-4%	1%	-7%	-1%	0%	10%
Westport	-9%	2%	-2%	0%	-1%	9%
Wilton	-11%	0%	2%	0%	0%	8%
WestCOG	**-5%**	**0%**	**0%**	**0%**	**0%**	**5%**

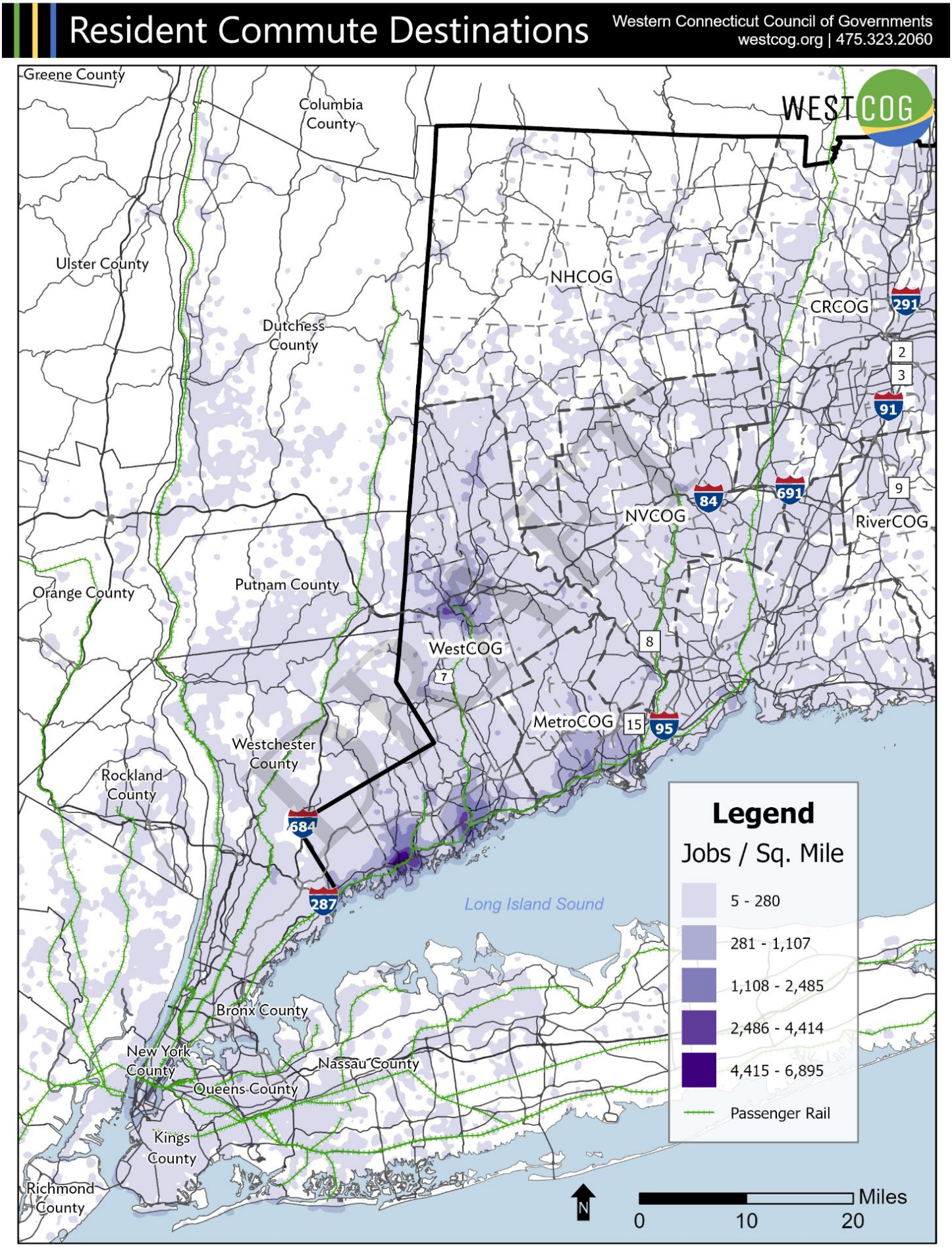
Source: Decennial Census, 2010 & ACS 5-year Estimates, 2020.

into the region originates from points outside the region, chiefly in CT and NY. The advent of new rail stations in The Bronx and other rail upgrades (i.e. Penn Station Access) may lead to increased commuting to the WestCOG region in the future.

The most common direction of travel is in the south and southwestern direction from home for less than 10 miles or for 25 to 50 miles (Figure 8). These kinds of trips generally follow the I-95 corridor or New Haven Line, CT-7, or CT-15 going in the southbound direction for work.

The demand for transportation of goods and people is projected to rise by 12 percent in the SWRMPO and by 20 percent in HVMPO over the 25-year planning period (Table 3). Further emphasizing the need to preserve the existing transportation systems and employ new techniques for improving the system performance and operations.

Figure 7: Resident Commute Destinations



Source: Commute Destinations - US Census Bureau LEHD, 2019; Passenger Rail - NYS GIS Clearinghouse, 2013

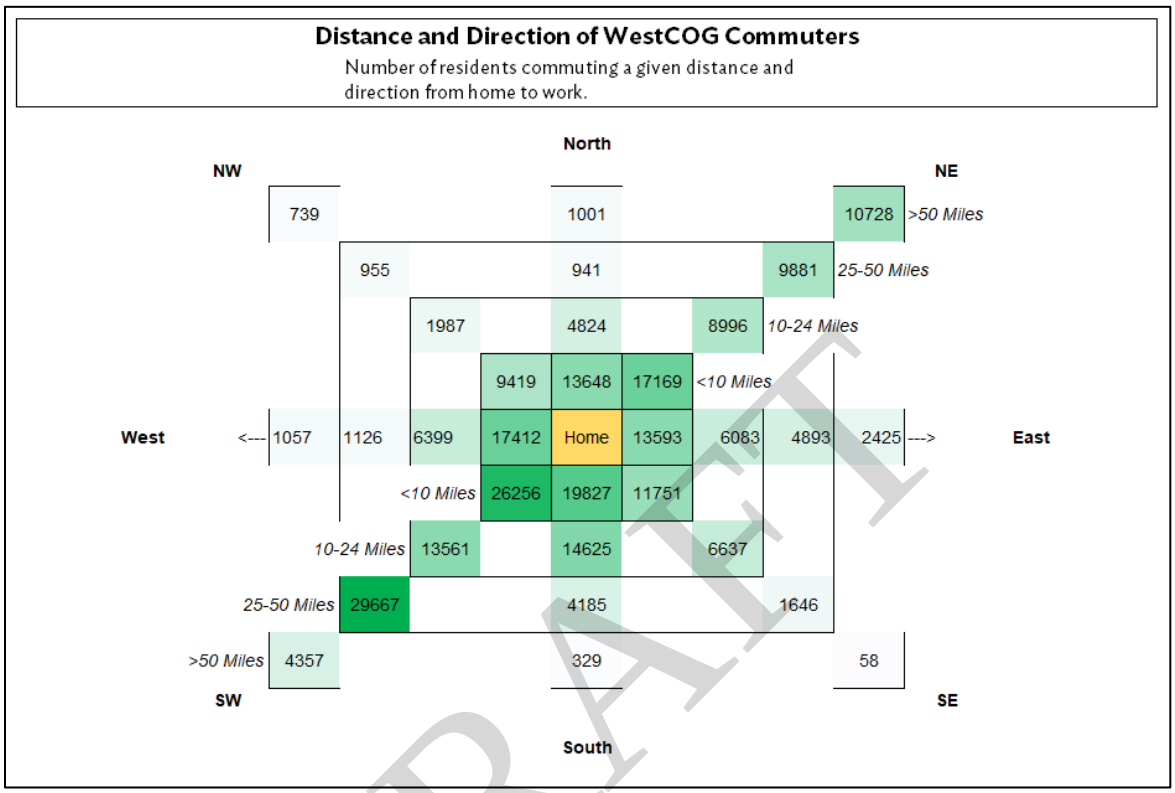


Figure 8: Distance and Direction of WestCOG Commuters

Table 3: Projected Transportation Demand of Goods and People in the Region

		2019	2023	2025	2035	2045	2050
Vehicle Miles Traveled	SWRMPO	8,692,347	8,824,624	8,892,610	9,182,831	9,565,164	9,742,483
	HVMPO	5,402,512	5,529,924	5,595,162	5,990,423	6,329,380	6,476,338
Vehicle Hours Traveled	SWRMPO	200,262	204,254	207,044	215,685	228,778	235,521
	HVMPO	138,143	142,366	144,303	153,150	164,458	169,367

Land Use and Transportation Planning

Factors such as density, land use mix, and job concentration effect the available modes and reliability of the transportation system. Likewise, the existing transportation system has broad impacts on where residential, commercial, and industrial developments are located. Coordinating land use and transportation intends to preserve and enhance valued natural and cultural resources and facilitate healthy, sustainable communities and neighborhoods. This coordination can also encourage a mix of uses, such as residential, commercial, and open space in close proximity. Integrating land use and transportation planning is a core goal of this Plan. Currently, commercial, industrial, residential, and agricultural land uses are separated in much of western Connecticut. This separation of uses can encourage development of auto-oriented, lightly populated residential areas. This Plan seeks to encourage compact, mixed-use, developments. Walkable, mixed-use, and transit-oriented communities can decrease greenhouse gas emissions, save residents money, and increase public health.

However, future growth must contend with a variety of constraints including a limited amount of affordable housing; journey to work traffic congestion along I-84 and I-95; limited sewer and water services in many of the region's suburban municipalities, inappropriately zoned land for business development in many municipalities and ecological constraints imposed by public water supply watershed lands, wetlands, and steep slopes. None of these constraints should adversely affect the long-term health of the economy as long as local, state, and federal investment decisions properly address these issues during the planning and development process. The region's growth will inevitably be closely linked to its major interstate highway systems, rail lines and cities as shown in the Potential Growth map (Figure 9) depicting regional and local growth centers. However, a key to transit planning is to encourage land use changes near public transit stations that will be supportive of transit use. This concept, known as 'transit-oriented development" focuses housing, commercial and daily activities within walking distance, of public transportation facilities. Zoning that enables transit supporting densities of at least twenty dwelling units per acre and human scaled urban design along transit corridors (i.e., public bus and rail lines) will also play a critical role in facilitating improved public transportation and minimize our inordinate dependence upon the automobile to meet our travel needs. Figure 9 shows the recommendations from the **2020-2030 Western Connecticut Plan of Conservation and Development** on where growth should occur based on our mapping of the infrastructure, environmental factors (or considerations) and social amenities in the region.

Potential Growth Area

Western Connecticut Council of Governments
westcog.org | 475.323.2060

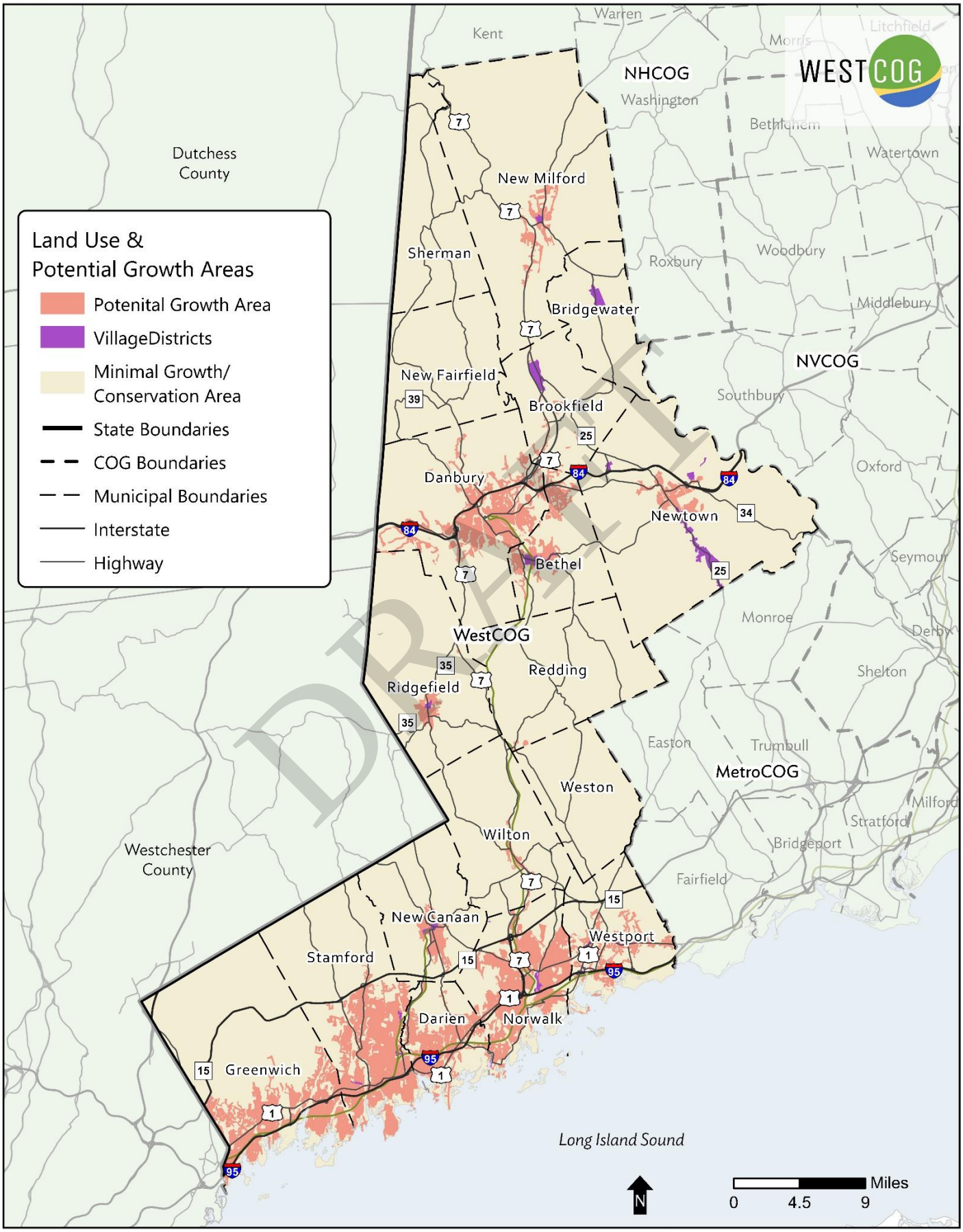


Figure 9: Potential Growth Area

Chapter 2 : Transit Systems

Tens of thousands of local residents rely on the public transit services comprised of intercity rail and bus, commuter rail and local buses. 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 Branch Lines provide service to communities north of the New Haven Line. The region's local bus service radiates in a hub and spoke pattern from the cities of Danbury (HARTransit), Norwalk (Norwalk Transit), and Stamford (CTtransit-Stamford Division) – and also provides service along the US-1 and US-7 corridors.

Figure 10 displays the passenger rail lines and bus service coverage in the Region.

Public transportation is an efficient means of reducing pollution, congestion, and energy consumption. It is also a means to increase mobility – particularly for individuals and households without access to a vehicle. Prior to the pandemic, rail ridership had been strong with traditional peak/off peak patterns. Local transit ridership, however, was experiencing ridership losses that began occurring several years prior to the pandemic – chiefly in 2016 and after. This decline was attributed by some to the rise in Transportation Networking Companies (TNCs) – i.e. Uber/Lyft.

The pandemic accelerated a trend of working at home, which has reduced traditional peak-period commuting over a five-day work week. In the western Connecticut region, this trend has been most observable at the Metro-North Railroad commuter parking lots. With respect to transportation planning, we may not be able to predict accurately where this trend will head and many traditional workplaces remain closed or on altered schedules. Clearly, there is a shrinking peak hour period as more trips occur throughout the day.

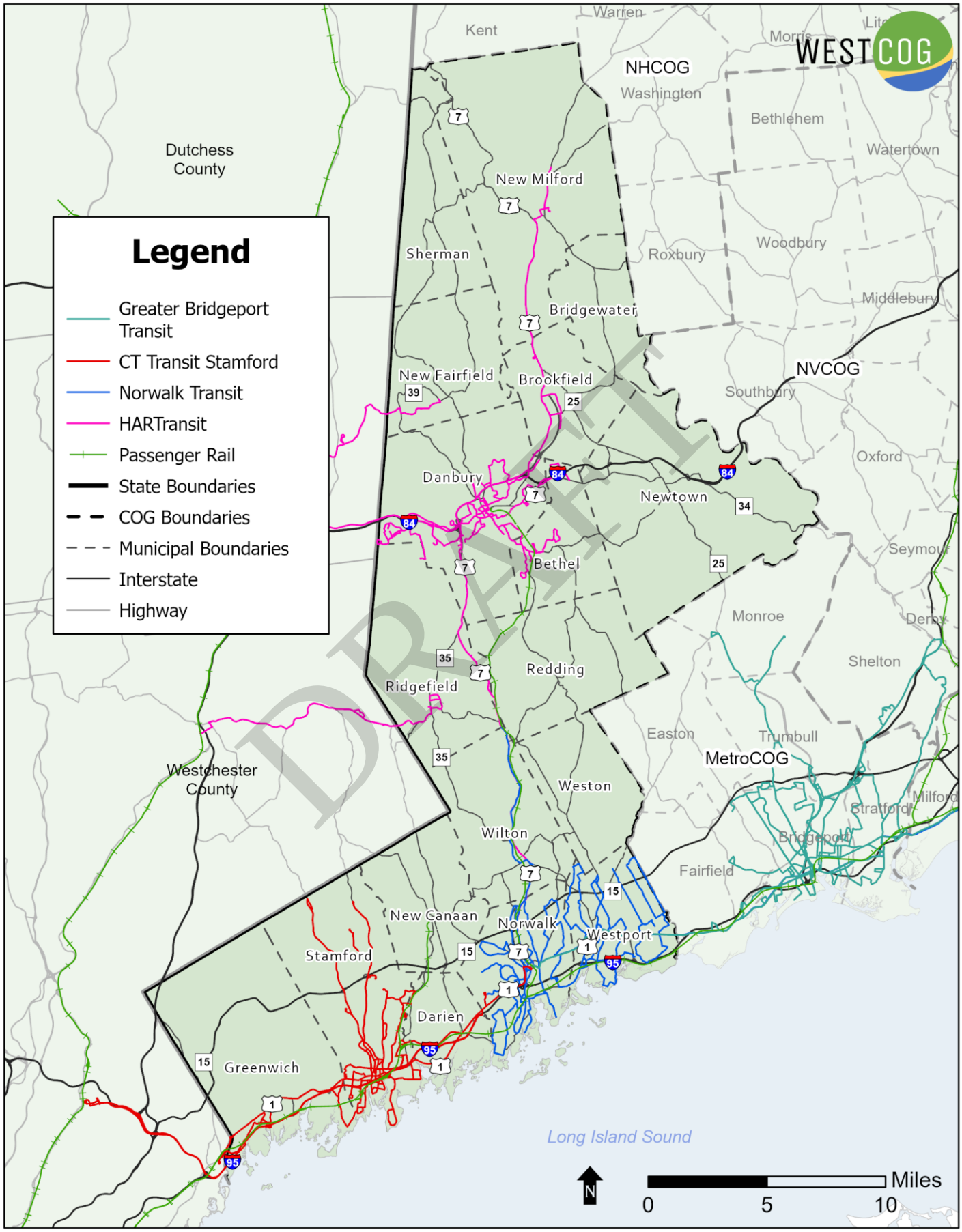
Additional challenges for transit:

- Determining how future federal and state funds are invested in transit. The $69.5 billion in federal funding under the CARES Act, Coronavirus Response and relief Supplemental Appropriations Act (CRRSAA), and American Rescue Plan represented a milestone for federal transit funding in two ways: it required no local match for COVID-19 related expenses, and it is the first time since 1981 that the federal government has provided significant operational funding for public transit. Federal funding for transit operations—now in practice—is proving critical to keeping service running. [i]
- Attracting and retaining skilled transit employees. This is an ongoing challenge for transit agencies including CTtransit, HARTransit and Norwalk Transit District, and the pandemic has exacerbated this challenge. The focus on essential workers during the pandemic increased awareness of the core value of transit to communities. At the same time, safety and health concerns prompted by the pandemic have driven some people away from working in frontline jobs driving vehicles and interacting with customers. [ii]
- Exploring the potential to mix fixed-routes and microtransit service to create a stronger transit network. This would take the shape of buses providing high frequency, all day service on core routes, augmented by microtransit in areas on the edge of the core service area. Microtransit could potentially help ridership grow to fixed-route levels, or simply serve areas well that do not warrant fixed-route frequency. [iii]

Figure 10: Transit Networks

Transit Networks

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Sources: Bus Networks - Transit Providers; Passenger Rail - NYS GIS Clearinghouse, 2013

- Maintaining and improving transit safety as well as a State of Good Repair. For example, under the Federal Transit Administration's (FTA) Public Transportation Agency Safety Plan (PTASP) Rule, applicable transit agencies are required to develop safety plans that define how these agencies will implement Safety Management Systems (SMS). These transit plans are required to include targets for performance measures defined in the National Public Transportation Safety Plan, which relate to fatalities, injuries, safety events, and system reliability. Metropolitan Planning Organizations (MPOs) are federally required to adopt performance targets for these transit safety and asset performance measures for their regions, in coordination with transit and state agencies. [iv]

Passenger Rail

The western Connecticut region has 53 miles of passenger railroad infrastructure that supports commuter and long-distance rail services.

New Haven Line

The Metro-North Railroad (MNCW) New Haven Line runs between New Haven and New York City and is one of, if not the busiest, commuter rail lines in the nation. Twenty-three miles of the seventy-four mile line runs through the western Connecticut region and provides service to four stations in Greenwich (Greenwich, Cos Cob, Riverside, Old Greenwich); one station in Stamford, two stations in Darien (Noroton Heights and Darien), three stations in Norwalk (Rowayton, South Norwalk, East Norwalk) and two stations in Westport (Westport and Greens Farms).

According to the 2020 MTA Annual Report, New Haven Line (NHL) ridership was strong and growing at the beginning of 2020. This trend, which also was evident in reviewing ridership over a twenty-year period[v], changed rapidly following the declaration of the COVID-19 outbreak as a global health emergency on January 30, 2020. In April 2020, MNCW reported that NHL ridership had decreased by 95 percent and thus reduced service by 47.3 percent by April 2020. Since then service has been increase in phases, with 82 percent restoration of weekday service and 100 percent restoration of weekend service by August 2021. Weekday ridership of the New Haven Line has yet to achieve pre-pandemic numbers, due to the increased number of employees working from home even if only for part of their schedule.

New Canaan Line

The 6.2-mile New Canaan Branch Line of the Metro-North Railroad provides electrified passenger service north of Stamford at two stations (Glenbrook and Springdale), and two stations in New Canaan (Talmadge Hill and New Canaan). Ridership on the New Canaan Branch was stable prior to the pandemic: in September 2019, nearly 124,446 riders used the New Canaan Branch. This number declined to 22,738 riders in September 2020.[vi] As on the New Haven and Danbury Branch Lines, service was reduced in March 2020 by 10%.[vii] Service was restored in phases; as of 2022, service has been restored to a pre-pandemic schedule.

Danbury Branch Line

The 23.7-mile Danbury Branch Line of the Metro-North Railroad is single track and non-electrified. The Danbury Line services Norwalk (Merritt 7), two stations in Wilton (Wilton and Cannondale), one station in Ridgefield (Branchville), West Redding Station, Bethel station and Danbury Station. Due to the Danbury Line not being electrified, all trips into New York need to transfer to an electrified train at the South Norwalk Station. As on the New Haven and New Canaan Branch Lines, service was reduced in March 2020 by 37 percent. Service was restored in phases; as of 2022, service has been restored to a pre-pandemic schedule. Ridership on the Danbury Branch is recovering, albeit at a slower pace than the New Haven Line.

Amtrak–Northeast Corridor

Amtrak owns and operates 80 percent of the mainline Northeast Corridor, stretching from Washington, DC to Boston. Carrying over 2,200 daily trains, including Amtrak, commuter and freight trains, the Northeast Corridor is the nation's most congested rail corridor

and is among the highest volume rail corridors in the world.[viii]

Amtrak provides intercity and high-speed train service along the Northeast Corridor with connections to destinations across the United States and Canada. Amtrak has one stop in the Region at the Stamford Station, where transfers to local bus routes, taxis, and other services are available.

Recently Completed Projects

Positive Train Control (PTC)

PTC is a technology designed to reduce the potential for human error to contribute to train-to-train collisions, trains traveling into zones where railroad employees are working on tracks, or derailments caused by a train traveling too fast into a curve or into a misaligned switch. MNCW completed implementation of PTC on the New Haven Line in 2021, including the Danbury and New Canaan Branches.

On-Going and Recommended Projects

There are many long-standing priorities for improving train service in the region, as discussed in the sections below. However, over the long history of train lines in the region, additional improvements have been proposed. If funding were to become available the Region could initiate a planning study to understand where additional stations, extensions, change in type of service (such as lighter-weight trams) or new train lines would benefit the most residents and workers in the region.

New Canaan Branch Line Noise Abatement Feasibility Study

WestCOG has engaged the services of SRF Consulting Group to prepare a Study to document and summarize findings related to implementation of a quiet zone(s) or other methods and railroad safety recommendations along the New Canaan Branch Line in Darien, New Canaan, and Stamford. The Study shall include but not be limited to, risk index computations for each crossing, exhibits and plans detailing proposed Supplemental Safety Measures (SSMs) for each crossing (concept designs); estimated design and construction costs for all improvements at each crossing; estimated cost of any permits required, and a design/construction schedule for implementation of the recommendations. This study began in January 2023 and is expected to be complete in 2024.

Danbury Branch Line Track Improvements and Extension to New Milford

A long-standing priority in the region has been to reinstate passenger train service 14 miles from the termination of the Danbury Branch Line in downtown Danbury to downtown New Milford. Up until 1971, passenger train service was provided to Brookfield and New Milford for nearly 85 years. Currently the one-track line serves freight movements only by the Housatonic Railroad Company and the line would require track rehabilitation, track reconfiguration, and the installation of a signal and communications system. Three stations are proposed to be added along the extension in North Danbury, Brookfield and downtown New Milford. Reinstating the passenger service to New Milford and improving the tracks along the Danbury Branch Line provides an attractive alternative to the heavily congested US-7 corridor.

Danbury Branch Line Electrification

This project would electrify the Danbury Branch Line from Norwalk to New Milford which is currently using diesel to power the trains. It would allow for extended one-seat service trips along the New Haven Line and into New York City, reduce fossil fuel consumption, and provide a more attractive transit option due to the improvement in service - further reducing congestion on the region's roadway network.

Bus & Shuttle Services

Buses play a vital role in the 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. There are three main bus service providers in the region: 1) CTtransit-Stamford Division, 2) Norwalk Transit District and 3)

Table 4: Annual Unlinked Passenger Trips

Bus Service Provider	2017	2018	2019	2020	2021
CTtransit-Stamford Division	2,954,460	2,839,604	2,743,779	2,457,580	2,003,543
Norwalk Transit District	1,590,387	1,528,482	1,477,503	1,218,837	856,786
HARTransit	781,881	741,496	682,224	565,947	397,710

Source: 2017-2021 Annual Database Service, National Transit Database, Federal Transit Administration.

HARTransit. They provide bus services in the three cities of Stamford, Norwalk and Danbury with services reaching other municipalities in the region but generally at lower levels. Total annual passenger trips have been declining with the pandemic expediating the decline – in the two years between 2019 and 2021, trips decreased by one-third (Table 4).

CTtransit-Stamford Division

CTtransit's Stamford Division operates twenty bus transit routes throughout the City of Stamford as well as to Greenwich, Darien, Norwalk and Port Chester, NY. Most of these routes operate in a radial pattern from the Stamford Transportation Center (STC). CTtransit reports that the Division's service area is 133 square miles and has a population of 281,327.

CTtransit also provides daily express bus service between Stamford and White Plains, New York from 5:30 a.m. to 10 p.m.

Norwalk Transit District

Norwalk Transit District, or NTD, operates local and regional fixed route services; microtransit service in Norwalk and Westport; commuter connection shuttles in Westport, Norwalk, and Greenwich; and paratransit services to a wide range of communities. The total population of all communities served by NTD is 108,700 people. NTD offers several different services as described below:

Fixed-Route

The WHEELS service consists of eight fixed bus routes that operate Monday- Friday and six routes that operate on Saturday, generally from 6:00 a.m. to 7:30 p.m. Additionally, services known as the Norwalk Evening and Sunday Shuttles operate on two routes, one serving the Connecticut Avenue corridor and the second serving the Main Avenue corridor.

In 1999 NTD partnered with Greater Bridgeport Transit and Milford Transit to establish the Coastal Link, a regional fixed route bus along the US-1 corridor that connects Norwalk, Westport, Fairfield, Bridgeport, Stratford, and Milford. NTD operates the service today. Prior to the COVID-19 pandemic, ridership on this service was one of the highest among all bus routes in the State of Connecticut.

Microtransit

In 2019, NTD initiated Wheels 2U as a test of microtransit in a first and last mile design concept. For this service, a specific travel zone was designated. By using an app, riders can request pickup and drop off locations within the zone. The shuttle drivers also have an app in each vehicle to provide navigation, live traffic conditions, and real-time pick-up and drop-off information. Services are offered Thursday through Saturday from 5:00 p.m. to midnight and Sunday from noon to 9:00 p.m. The Wheels2U service is intended to enhance mobility in the service area between South Norwalk, The Maritime Aquarium, the SoNo Collection, Wall Street Area, Merritt 7, Calf Pasture Beach and the East and South Norwalk Train Stations and most recently expanding to the Rowayton and Darien Train Stations.

During the initial five-month demonstration period over 4,000 trips were provided averaging 2.3 passengers per revenue hour. Data from the week ending March 17, 2019 recorded 257 passengers were carried at a production rate of 4.28 passengers per revenue hour indicating significant growth over the early introduction period. However, during the pandemic, ridership and productivity were predictably modest.

In partnership with Westport Transit District, NTD expanded WHEELS 2U operations into Westport in late 2020. Unlike the Norwalk service, the Westport WHEELS 2U is intended to provide trips between the Saugatuck or Greens Farms train station and destinations within the service area, which currently covers most of Westport. It operates on weekdays during the morning and evening peak periods.

Commuter Shuttles

NTD operates five commuter shuttle routes in the region that are scheduled to meet Metro-North trains on weekdays during the morning and evening commuting periods:

1) Greenwich Central Loop – Greenwich Train Station to downtown employers and points of interest
2) Merritt 7 – South Norwalk Train Station to Merritt 7 Businesses
3) 10-20 Westport Road – SoNo Train Station to Danbury Road and Westport Road Businesses
4) Norwalk Hospital- SoNo Train Station to Norwalk Hospital
5) Highland Avenue Express – SoNo Train Station to Brien McMahon High School and Roton Middle School

HARTransit

The Housatonic Area Regional Transit, otherwise known as HARTransit, operates on 190 miles of roadway in Danbury, Bethel, Brookfield, New Fairfield, New Milford, Norwalk, Redding, Ridgefield, and Wilton.

Fixed-Route Services

HARTransit's CityBus fixed routes operate in the four municipalities of Danbury, Bethel, Brookfield, and New Milford. The CityBus service is primarily a hub-and-spoke system with seven routes extending outward from the central business district of Danbury. As designed, Danbury has the highest ridership densities and levels of service. Accordingly, the CityBus routes are among the highest performing in the system. As for commuter routes, HARTransit operates peak period weekday-only commuter services along US-7 called the 7 Link. It connects Danbury to Norwalk and has stops at the municipalities along the way.

HARTransit also operates three LOOP bus routes that connect the communities of Bethel, Brookfield, Danbury, and New Milford. The LOOP routes were designed to complement the CityBus system by providing public transit to key employment sites and low- income housing after the close of the service day. The three coordinated routes provide a scaled down version of the CityBus system, with hourly headways and a timed transfer at the HARTransit Pulse Point.

Commuter Shuttles

In addition, HARTransit operates three shuttles (Danbury-Brewster; Ridgefield-Katonah and New Fairfield – Southeast) which provide weekday service from remote park-and-ride lots in Connecticut and New York to train stations on the northern segment of Metro-North's Harlem Line. The shuttles are designed to meet morning southbound train departures and afternoon and evening northbound arrivals, primarily for commuters working in White Plains and New York City (limited reverse commutes are possible). For these HARTransit services, Metro-North offers Unitickets to simplify the customer's trip management, as these can be purchased for a week or a month. Also of benefit to HARTransit shuttle patrons, Metro-North provides a guaranteed ride home program to shuttle users that purchase the combined rail-bus UniTicket.

Intercity Bus Services

The only intercity bus transportation operator currently serving the region is Greyhound Bus Lines (acquired by Flixbus) through the Stamford Transportation Center. Several other bus operators (Flixbus, OurBus, GoBus, Lucky Star and Megabus) travel through the region to provide Boston-New York service but do not stop at any destinations in the region.[ix] Peter Pan previously serviced both Stamford and Danbury but according to their website no longer provide service to these cities.

On-Going and Recommended Projects

Danbury Intermodal Hub

The 2019 Downtown Danbury Transit Oriented Development Study recommended the relocation of HARTransit's Pulse Point to a location closer to the Danbury Train Station. The new intermodal hub would be located on a site comprised of the utility-owned parcel on Pahquioque Avenue and the City-owned parcel on Patriot Drive station to provide sufficient space for an expanded bus facility, an overhead pedestrian bridge to the Danbury Train Station, and associated transit amenities (Figure 11). This would allow for convenient transfers between Metro North's commuter trains, HARTransit's bus services, and private intercity bus or taxi services shortening the walking distance between the train and bus stations from half a mile to under 50 feet.

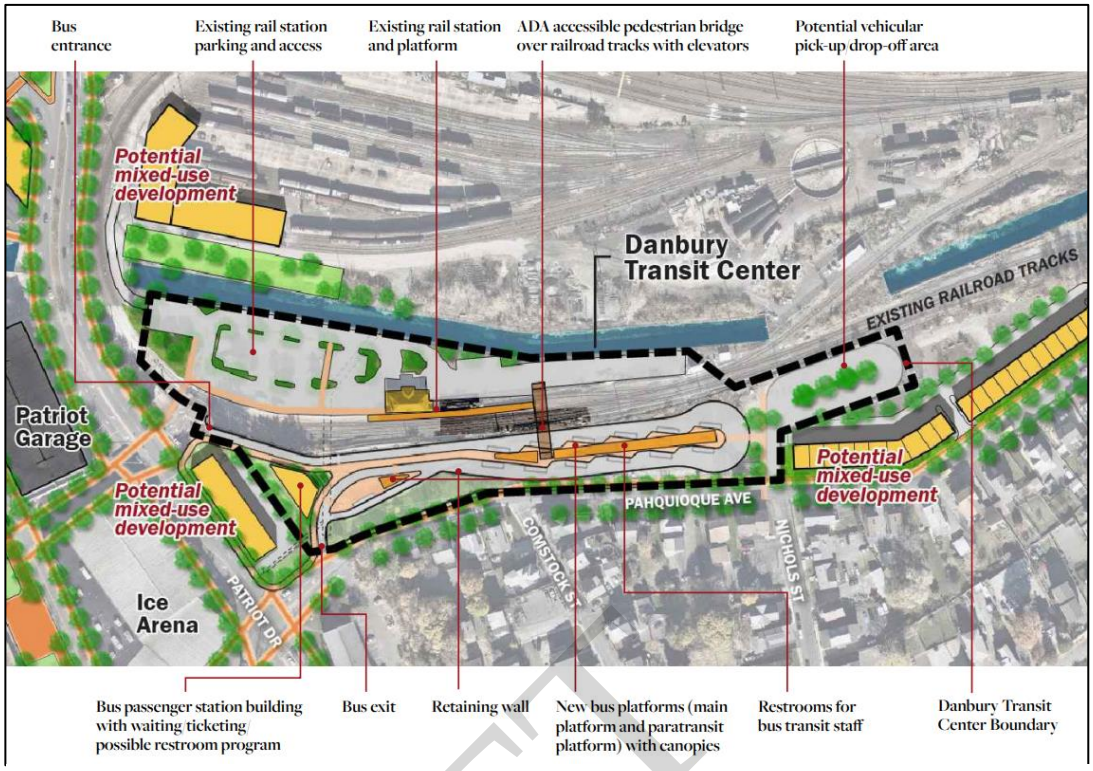


Figure 11: Preferred Schematic Design Layout for Danbury Transit Center– Downtown Danbury Transit Oriented Development Study, pg. 80

Norwalk Intermodal Hub

As funding becomes available for improvements for a transit facility in Norwalk, consideration should be given to identifying opportunities to construct an intermodal transportation hub that fully integrates all transportation modes in the city including bus, passenger rail, and bicycle and pedestrian travel. Currently, the WHEELS hub for the Norwalk Transit District is located on Burnell Boulevard which is not near a train station. Co-locating the transit hub with a rail station could provide more convenient and accessible service and become a more attractive transportation choice for residents and commuters in the region.

US-1 Bus Rapid Transit and Transit Signal Priority

In 2017, CTDOT published a transportation study which evaluated the feasibility of implementing bus rapid transit (BRT) service along US-1 between New Haven and the Connecticut/New York State line. The goal of the study was to evaluate alternatives to assess viability in improved transit service, including better travel times and higher ridership. The study analyzed five separate corridors along US-1 to determine the best location for implementation. Corridors were evaluated based on running time, ridership, capital and operating costs, and ease of implementation. The corridors considered in SWRMPO were 311 and 341 which are operated by CTtransit Stamford Division and run from Port Chester, NY to the Stamford Transportation Center (STC) and from the STC to Norwalk WHEELS Hub, respectively. Based on the analysis, the study concluded that the Route 341 corridor was the second-best corridor for BRT service and could be implemented alone or along with the Route 311 corridor. Given the level of congestion in southwestern Connecticut, BRT elements like transit signal priority or queue jumps could improve mobility

and reduce congestion. Though funding has not been available to carry out the recommendations from this study, the merits of implementing BRT, or BRT-light, service along CT-1 still hold true.

Automatic Vehicle Locator and Real Time Transit Maps

Automatic Vehicle Locator (AVL) is a technology that uses real-time GPS or wireless data to transmit the location of a vehicle back to the transit operator. Not only does it let the transit operator know exactly where their fleet of vehicles are at any time, it can be fed into a customer facing real time transit map or be used to calculate and display upcoming arrival times.

All three bus operators in the region use AVL as an internal fleet management tool. Norwalk Transit District has added to their website a Trip Planner function that allows real-time bus tracking. This can be accessed from a computer or smartphone. A similar service is available from the Stamford division of CTtransit.

The new intermodal transit hubs in the region and a selection of new bus shelters will integrate this technology to display upcoming arrival times to improve the customer experience using transit services in the region.

Human Services Transportation

Human Services Transportation include various transportation options for disadvantaged populations including seniors, persons with disabilities and/or persons with low income. These services are meant to provide rides that address day-to-day needs, including employment, medical appointments, grocery shopping, familial visits, and general recreation. The types of services include:

- Paratransit (American with Disabilities Act (ADA)): for individuals with disabilities who are unable to use fixed-route service due to their disability. ADA complementary paratransit service must be provided within ¾ of a mile of a bus route, at the same hours and day, for no more than twice the regular fixed route rate.
- Curb-to-Curb: transit vehicles pick-up and drop-off passengers at the curb or driveway in front of their destination.
- Dial-a-ride: This service is for individual passengers that contact an agency and request transportation from a specific location to another specific location at an arranged time. Vehicles that provide this service do not follow a fixed route but do travel through the community, transporting passengers according to their requests. These services usually require a pre-scheduled request.
- Deviated fixed route service: A hybrid of fixed-route and demand-response services. With this type of service, a bus or van stops at fixed points and keeps to a timetable. It can deviate off its course between two stops to go to a specific location for a pre-scheduled request. Deviated fixed routes services are often used to provide accessibility to people with disabilities without needing to provide a separate ADA paratransit service.
- Reduced Fares on Fixed-Route: Transit services where a vehicle or train run on a regular and scheduled route with fixed stops and no deviation. Seniors, 65 and over, and persons with qualifying disabilities can apply for a photo ID that qualifies them to purchase a reduced fare ticket that is typically less than half the regular fare.
- Non-Emergency Medical Transportation (NEMT): a transportation benefit provided to eligible Medicaid members by the CT Department of Social Services who have no other way of getting to their medical, behavioral health or dental appointments. It requires pre-approval and scheduling in advance.
- Volunteer transportation services: offered by local groups or organizations, typically low-cost options. Volunteers from the community provide transportation for clients (usually elderly individuals) to get to their appointments.

The **Kennedy Collective** provides one-to-one travel training for seniors and people with disabilities across the state on how to safely use the public transportation systems offered in the region at no-cost to the trainee. They also assist people in filling out the application to access paratransit and eligible ADA services that can also be used when traveling to different regions or states.

SweetHART

In addition to its regular bus services, HARTransit operates its SweetHART paratransit service which transports seniors and persons with disabilities via its Dial-a-Ride (Danbury, Bethel, Brookfield, New Fairfield, Newtown, and Ridgefield); Half Fare (CityBus communities), and ADA Paratransit services (Danbury, Bethel, Brookfield and New Milford). Ridership is generally steady, but ridership demographics have shifted somewhat with fewer seniors and more persons with disabilities using the service.

Norwalk Transit District Paratransit

Norwalk Transit District provides paratransit service to Norwalk, Stamford, Westport, and within a ¾ mile radius of CTtransit routes in Greenwich and Darien. Currently ADA service is offered in Norwalk and Wilton. In 1991, NTD became responsible for the CTtransit Stamford Division's ADA service opening the ADA service area to the City of Stamford and within ¾- mile radius of CTtransit bus routes in Greenwich, Darien, and Westchester County New York. In 1992, ADA and paratransit service for Westport elderly and residents with disabilities was added with service provided based on individual specific program requirements to Wilton, Weston, Norwalk, Darien, New Canaan, Stamford, and Greenwich. Wilton also offers a town-to-town program for its residents with disabilities like that offered by Westport. Annual ridership in 2018 was approximately 100,000 passenger trips utilizing a total fleet of twenty-one NTD-owned and operated vehicles and sixteen contracted vehicles.

Private Shuttle Services

Prior to the COVID-19 pandemic, privately funded shuttles were an important component of Stamford's overall transportation network. The majority of shuttle trips were two miles or less in length. Data collection undertaken by consultants to WestCOG in July 2015 observed 425 AM peak vehicle departures from the Stamford Transportation Center, more than 60 individual shuttle destinations, and an estimated AM peak ridership of over 3,000 customers. A longstanding concern with this activity was that shuttle volumes were contributing to congestion within an already constrained facility and on key roadways in the vicinity of the STC (e.g., North State Street, Washington Boulevard). General traffic affected the ability for shuttle operators to efficiently access and depart the STC; at the same time, the high volume of shuttle vehicles and circulation patterns contributed to conflicts and queuing on North State Street and impacted CTtransit' bus access and egress from the STC. In addition, the traffic within the STC was creating unsafe conditions for riders, some of whom had to cross two lanes of shuttles to board.

While CTtransit Stamford does not provide shuttle connections like HARTransit and NTD, there is an active shuttle service at the STC which is operated privately by Stamford businesses and employers. Principal routes serving multiple communities include:

- 311 (Downtown Stamford – Greenwich – Port Chester, NY)
- 341 (Stamford Transportation Center – Norwalk WHEELS Hub
- 971 I-Bus (Stamford Transportation Center – White Plains, NY)

Land Use and Transit Planning

Transit-Oriented Development

Factors such as density, land use mix, and job concentration affect the available modes and reliability of the transportation system. Likewise, the existing transportation system has broad impacts on where residential, commercial, and industrial developments are located. Coordinating land use and transportation intends to preserve and enhance valued natural and cultural resources and facilitate healthy, sustainable communities and

neighborhoods. This coordination can also encourage a mix of uses, such as residential, commercial, and open space in close proximity. Integrating land use and transportation planning is a core goal of this Plan. Currently, commercial, industrial, residential, and agricultural land uses are separated in much of western Connecticut. This separation of uses can encourage auto-oriented developmental patterns. This Plan seeks to encourage compact, mixed-use, developments. Walkable, mixed-use, and transit-oriented developments can decrease greenhouse gas emissions, save residents money, and increase public health.

To that end, this Plan also promotes transit-oriented development (TOD). TOD is compact, walkable, mixed-use development near transit stations. Nine of the twenty-three commuter train stations in the Region have some sort of TOD plan for getting closer to this goal. Many opportunities for TOD expansion exist in the Region, especially at current or proposed rail stations.

Train Station Parking

Commuter parking lots are located at every rail station along the New Haven Line, Danbury, and New Canaan Branch Lines. Until COVID-19 emerged in early 2020, it was common for lots on the New Haven Line to be at or near capacity – and waiting lists for yearly permits were excessively long. The 2018 HARTransit/WestCOG Commuter Parking Inventory Study reported that the New Haven Line had over 90 percent of the available parking in use.

The majority of Metro North rail stations in the South Western Region have large and/or multiple parking facilities to accommodate historically high demand. Most of these facilities are operated by the municipalities in which they are located.

Usage – Pre-Pandemic

For many years prior to the pandemic, staff review of availability suggested that most of the Metro North parking lots along the New Haven Mainline were at or above capacity. Danbury Branch lot usage overall has trended lower, except Bethel and Merritt 7 stations which have traditionally been well utilized. On the New Canaan Branch, parking at all stations approximated or exceeded capacity – particularly at New Canaan Station.

March 2020-January 2022

Predictably, the COVID-19 pandemic reduced the usage of all lots: most noticeable was the reduced usage of the Metro-North parking lots, in which usage rates were observed in January to be as low as 1.3 percent of the entire lot (Talmadge Hill). Darien Station was the highest utilized of all Metro-North lots in January 2021, at 39.5 percent - however still much lower than pre-pandemic, when it routinely was near or at capacity.

January 2022-Present

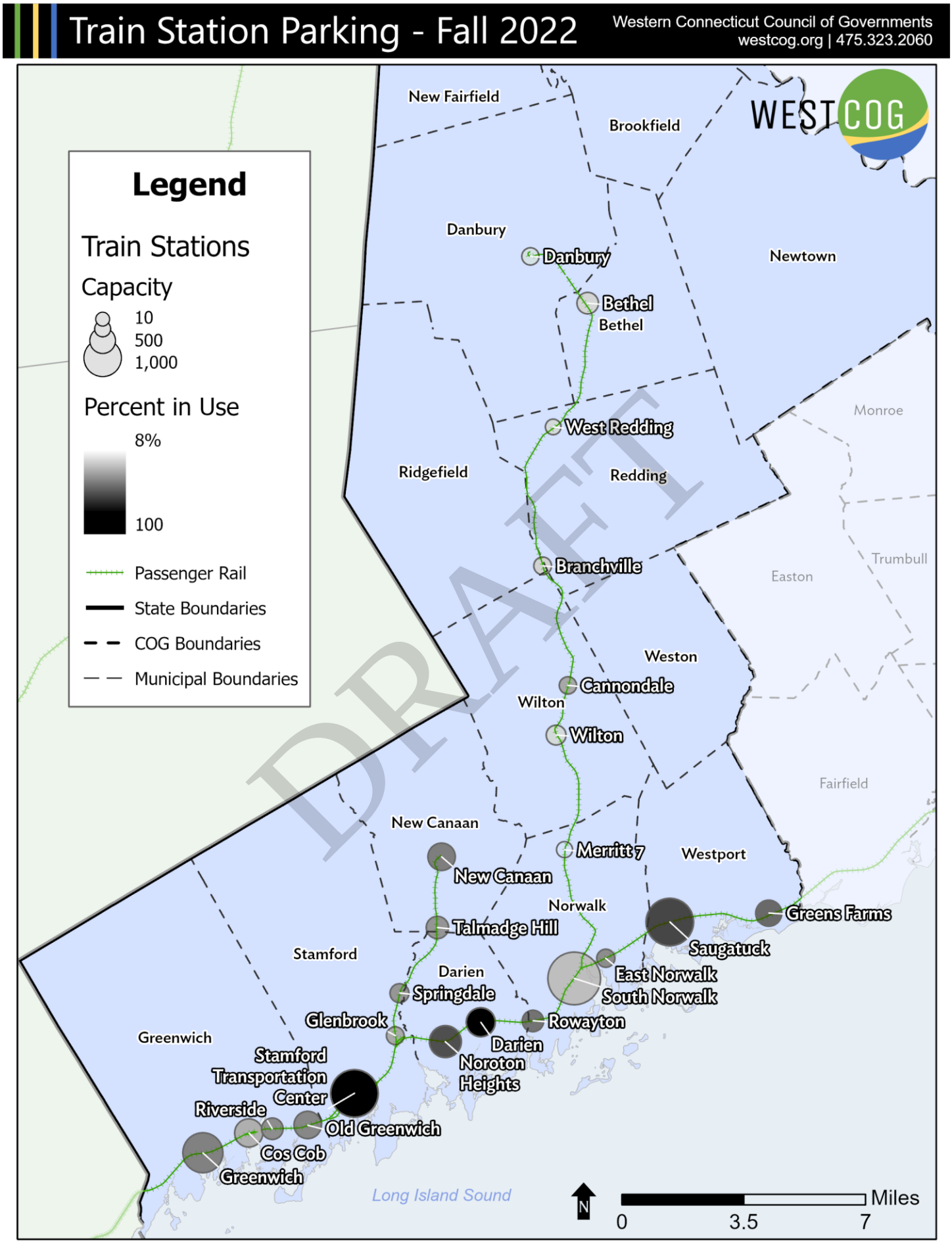
As the economy recovers from the pandemic, parking demand has increased overall, and in particular at many of the lots on the NHL – but not so much along the Branch lines. Parking counts have yielded particularly high numbers at the Stamford Intermodal Transportation Center parking garage. In concert with predictions about train ridership, it remains unclear whether parking demand will return to pre-pandemic levels in the near-term or otherwise. Evolving work/life trends suggest that near-term parking availability – particularly at the Metro-North Stations – is able to meet present demand. What will require monitoring – in concert with transit use – is the dilution of traditional peak-period demand and a shift toward off-peak travel, as well as reduced work week commuting in favor of blended schedules where commuters work from home some of the days and commute on others.

Tools

In 2021, the WestCOG GIS staff developed an online map that intakes station parking lot usage and condition data while generating a GIS-based product (map) that makes this data available to the public via WestCOG's website.

Using the data collected by WestCOG staff, Figure 12 shows the commuter parking lot usage trends for the Fall 2022 collection period.

Figure 12: Train Station Parking- Fall 2022



Source: Train Station Parking Usage - WestCOG Data Collection, 2022; Passenger Rail - NYS GIS Clearinghouse, 2013

Chapter 3 : Highways and Roads

The classification of roadways by function is a basic practice within transportation planning. It is a process by which roads and highways are grouped into similar classes according to traffic volume and type of service they are intended to provide.

Figure 13 displays the road network in HVMPO and SWRMPO, including interstates, highways, and local roads.

There is approximately 3,193 miles of roads and highways in the Region; 41 miles of interstate, 88 miles of other US designated routes, 426 miles of state designated routes, with the vast majority of roadway miles in the region being local roads at 2,638 miles or 83 percent.

National Highway System

Throughout the nation, the combination of all interstates and some major arterials forms the National Highway System (NHS). The NHS is a federal designation of the most important roadways in the country for the nation's economy, defense, and mobility.

Interstate 95

I-95, also known as the Connecticut Turnpike or Governor John Davis Lodge Turnpike, is the South Western Region's busiest highway. Opening in 1958 and traversing the Region from the state line in Greenwich to Westport, I-95 serves as the spine of the highway network, carrying upwards of 165,000 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.

On the western side of the corridor, I-95 provides a connection into New York to I-278 and the Cross-Bronx Expressway. On the eastern side of the corridor, I-95 provides access to Bridgeport, New Haven, Providence, RI, and Boston, MA. In New Haven, I-95 connects to I-91 which provides access to north to Hartford, Massachusetts, and Vermont.

I-95 between the state border and New Haven experiences the most significant truck bottlenecks in Connecticut. According to IHS-Transearch data, I-95 between the state border and New Haven carries the highest volume of trucks in the state, by tonnage and volume. The movement of goods along this corridor is critical for the regional and national economy.

Interstate 84

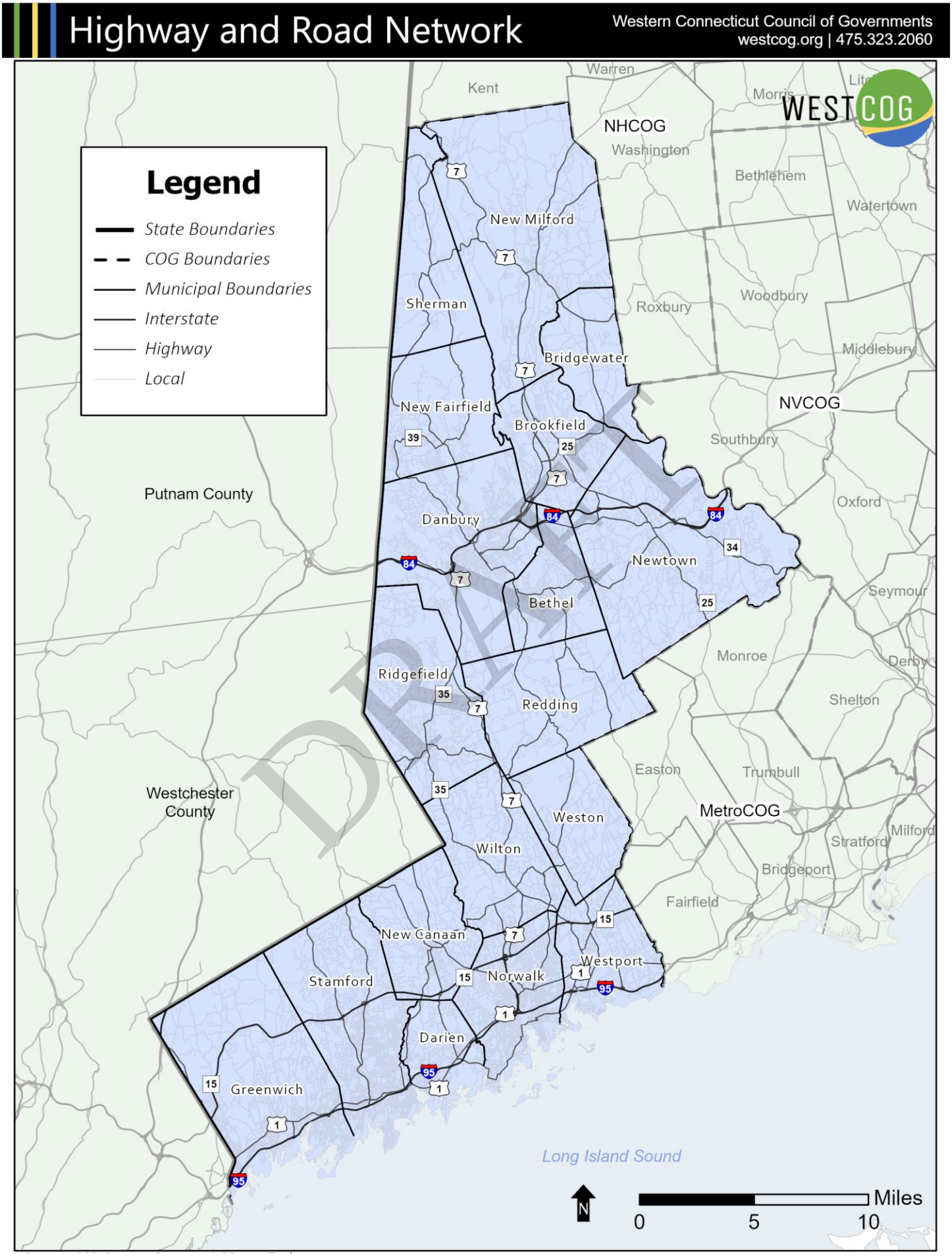
I-84 is the busiest highway in the Housatonic Valley Region. Like I-95, I-84 serves a critical role in the movement of people and goods within the Region, greater metropolitan area, and the eastern seaboard.

On the western side of the corridor, I-84 provides a vital connection to the New York area and access to I-684 and NY-22.

Through Danbury, I-84 serves as an important corridor for moving both through and local traffic. The Exit 3 interchange is the interface with US-7 which provides access south of Danbury to Ridgefield, Redding, Wilton, Norwalk and connection to the Merritt Parkway. The Exit 7 interchange is the interface with US-7 which provides access north of Danbury to Brookfield and New Milford. Current traffic volumes show that I-84 through the Danbury area carries between 85,000 and 125,000 vehicles each day.

Through Newtown, I-84 provides a connection to US-6 and CT-25. Continuing east, I-84 provides access to Waterbury and Hartford, and connects to the Massachusetts Turnpike.

Figure 13: Highway and Road Network



Route 15

CT-15, also known as the Merritt Parkway in the Region, is nationally recognized for its historic beauty and unique design. Constructed in 1938, 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. Since then, many efforts have been initiated to preserve the historic nature of the highway which has become a cultural resource, a tourist destination, and a gateway to the Region's tourism economy.

Just as importantly, 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 I-95. East of the Housatonic River, CT-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.

Route 7

US-7 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 US- 7 corridor and travelling outside of it, and through travel of trips originating and terminating outside the US-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 US-7's future existence have emerged and have been debated vigorously.

US-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 US-7 expressway 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 of development dissipates, as the highway begins to exhibit more rural characteristics. North of Olmstead Hill Road, US-7 narrows to two lanes, and traverses a more densely vegetated but still developed environment before reaching the Georgetown section of Redding.

US-7 continues north through Ridgefield, primarily as two lanes until the intersection at CT-35 at which point US-7 transitions to four lanes. In Danbury, US-7 merges with I-84 through to Exit 7. At this point US-7 continues north into Brookfield as four lanes and provide access to the downtown commercial area. Once in New Milford, US-7 splits with US-202 and heads northeasterly out of the Housatonic Valley Region to Litchfield County until passing through Massachusetts and Vermont before terminating at the Canadian border.

Route 1

US-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, US-1 serves as the Region's primary retail and service corridor, is home to many of the Region's largest employers, has the highest bus ridership, and functions as an alternate route for I-95 during major incidents.

The cross-section of US-1 varies according to its context. Through the highway commercial areas of Greenwich, Norwalk, and Westport, US-1 has two-to-three travel lanes in each direction and many curb cuts. Through town and neighborhood centers in Stamford, Darien, Norwalk, and Westport, US-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 US-1 are owned and maintained by municipalities. US-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.

Other Corridors and Local Roads

The performance, safety, and functionality of major surface streets in the Region notably include: US-6, CT-25, CT-34, US-202, CT-57, CT-53, CT-58, CT-136, CT-33, CT-35, CT-104, CT-106, CT-123, CT-124, and CT-136.

In recent years, with the growth of smart phones and mobile applications like Google Maps and Waze, local roads have experienced an increase in vehicular traffic. This has highlighted the importance of understanding the function of the entire roadway network, from the highways down to the local neighborhood streets.

Congestion

Traffic congestion is widely recognized as a preeminent quality of life and economic vitality issue in western Connecticut. Recurring highway congestion, slow speeds, delays are a common complaint and have been repeatedly recognized as a drag on the Region's economy. Congestion patterns change over time, a few decades ago congestion was primarily concentrated on the highways during the morning and evening commute periods. More recently, travel data indicated that congestion was spreading throughout the day and not isolated to specific commute times. By far, the biggest change to congestion was noted during the early pandemic. Travel restrictions and stay-at-home orders resulted in a dramatic decrease in the volume of vehicles and thus the level of congestion on the highways. However, these changes were not long lasting. Data shows that congestion has returned to, or in some cases exceeded, pre-pandemic levels. Due to changing work schedules and the prevalence of telecommuting, congestion has spread to local streets as many residents choose to conduct trips throughout the day, not just before or after work.

In January 2023, INRIX released their 2022 INRIX Global Traffic Scorecard[x] which reported Stamford as having some of the worst congestion in the entire nation: *"Throughout the country, delay on the busiest corridors increased in 2022 along with congestion metro wide. I-95 through Stamford, Connecticut, took the number 1 and number 3 spots. Drivers on the 30-mile corridor on I-95 Southbound from Sherwood Island Connector to Indian Field Road lost an average of 34.5 minutes per day in lost time during the morning commute, only to see significant congestion on the return trip Northbound, losing nearly 30 minutes on that stretch of I-95."* In total, INRIX reported that drivers lost an average of 246 hours while traversing I-95 through Stamford in 2022.

Congestion Management Process

SWRMPO is designated as part of a Transportation Management Area (TMA) in the Bridgeport-Stamford Urbanized Area. As a result, SWRMPO is federally required to develop a Congestion Management Process (CMP) in coordination with the other MPOs in the Bridgeport-Stamford TMA. WestCOG coordinated the development of the CMP with the Connecticut Metropolitan Council of Governments and the Naugatuck Valley Council of Governments.

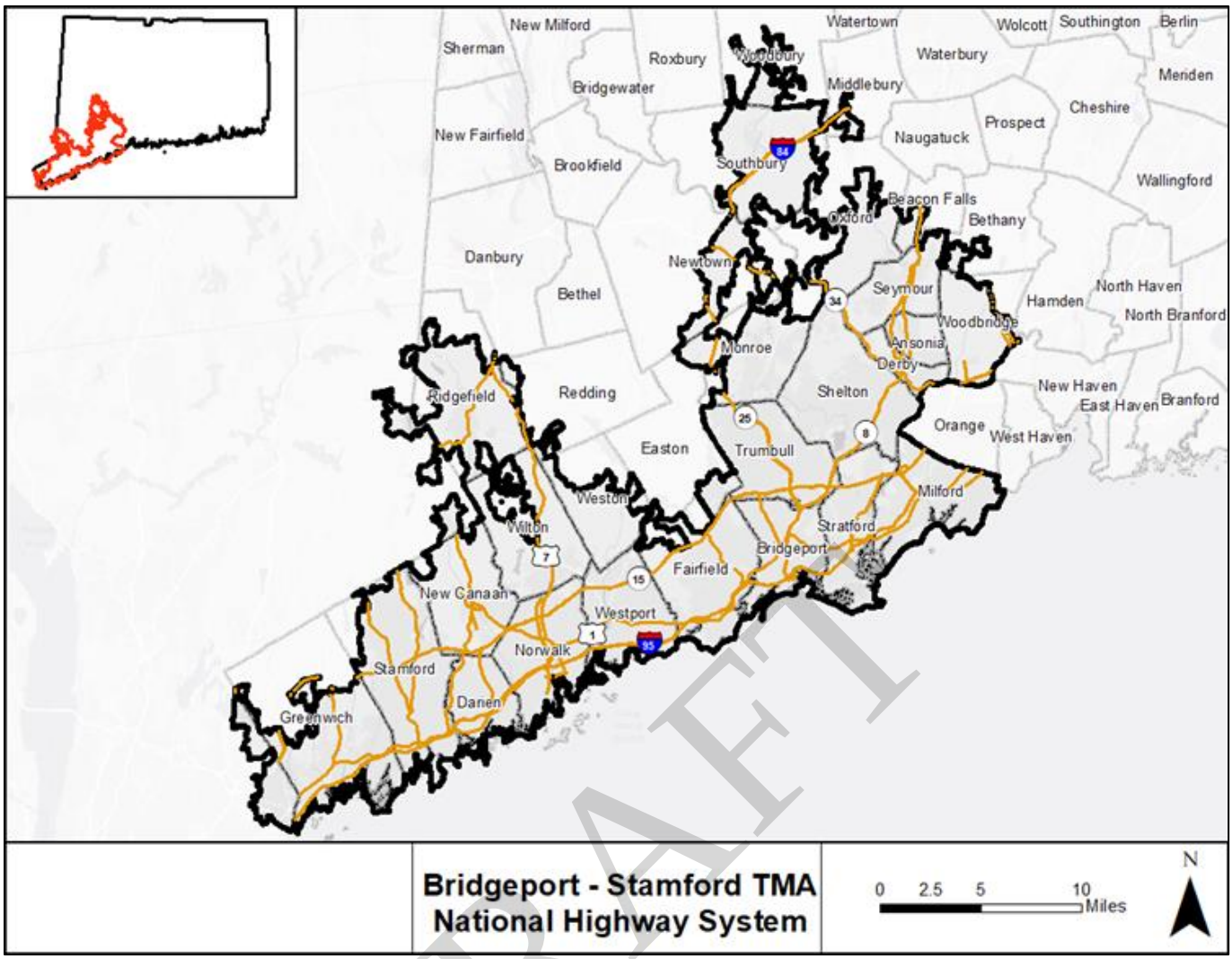
The purpose of a CMP is to evaluate and monitor traffic congestion and system performance. The CMP serves as a tool for evaluating deficiencies within the system and the effectiveness of transportation improvement projects over time. As shown in Figure 14.

, the analysis focuses on the National Highway System (NHS) roadways located in the urbanized area based on the 2010 Census data; in western Connecticut this includes all or partial coverage of the following municipalities: Darien, Greenwich, New Canaan, Newtown, Norwalk, Redding, Ridgefield, Stamford, Weston, Westport, and Wilton.

CMP Data Analysis

The roadways analyzed as part of the CMP include I-95, I-84, CT-15 (Merritt Parkway), US-7, CT-25, US-1, CT-34, CT-35, CT-104, CT-106, CT-123, and CT-137. Data for the CMP analysis is collected from U.S.

Figure 14: Bridgeport-Stamford TMA National Highway System Map



Census American Community Survey (5-year average from 2017 through 2021) as well as the RITIS platform using the National Performance Management Research Data Set (NPMRDS).

The following four performance measures were evaluated:

NON-SOV – NON-SINGLE OCCUPANCY VEHICLE

- **Measure:** The Non-SOV measure is the percentage of the population that does not drive to work alone for the longest leg of their trip, including individuals who carpool, use transit, bicycle, or walk.
- **Findings:** Non-SOV travel was 32.95 percent according to the 2021 5-year average data; this reflects a 4.58 percent increase since 2017.

LOTTR – (LEVEL OF TRAVEL TIME RELIABILITY):

- **Measure:** The level of travel time reliability (LOTTR) is expressed as a ratio of the 80th percentile travel time of a reporting segment to the "normal" (50th percentile) travel time of a reporting segment occurring throughout a full calendar year. Segments that have a ratio less than 1.5 are considered "reliable." The performance measure is the percent of the person-miles traveled on the Interstate section and the non-Interstate NHS that are reliable.
- "Normal" travel time (50th percentile): 50 percent of the times are shorter in duration and 50 percent are longer.
- 80th percentile travel time: Longer travel times. 80 percent of the travel times are shorter in duration and 20 percent are longer.
- The longest travel times are in the 100th percentile.

- **Findings:** The LOTTR measure for the region was 79.25 percent. That is, 79.25 percent of the NHS person miles traveled were reliable. I-95 and CT-15 have the largest amount of unreliable road mileage in both northbound and southbound directions. Both roadways are unreliable southbound during the AM peak and unreliable northbound during midday and PM peaks.

TTTR – Truck Travel Time Reliability

- **Measure:** Freight movement is assessed by the Truck Travel Time Reliability (TTTR) index. The Truck Travel Time Reliability metric is the ratio of long travel times (95th percentile) to a normal travel time (50th percentile). The TTTR is a measure of truck travel time reliability, not congestion. Segments of the highway that are regularly and predictably congested will not have a high TTTR index number. Rather, those segments of highway where delays are unpredictable and severe are scored highest.
- "Normal" travel time (50th percentile): 50 percent of the times are shorter in duration and 50 percent are longer.
- 95th percentile travel time: Longer travel times. 95 percent of the travel times are shorter in duration and 5 percent are longer.
- The longest travel times are in the 100th percentile.
- **Findings:** The Truck Travel Time Reliability for 2021 was calculated to be 2.50 for the region. Over the five-year period reviewed for this report, global events and the Covid-19 pandemic have had a significant impact on TTTR. Despite these changes, the 2021 TTTR remains lower than the pre-pandemic trend, with the 2021 index coming in at 2.5 and the 2018 and 2019 TTTR index at 2.7.

PHED – Peak Hour Excessive Delay

- **Measure:** The Peak Hour Excessive Delay measure was calculated to assess recurring congestion during commuting hours in the Bridgeport-Stamford TMA. This measure compares actual travel speed to the official speed limit to determine the amount of person time spent in excessive delay. PHED was calculated using all vehicles available in the NPMRDS between 6 am – 10 am and 3 pm – 7 pm during weekdays from 2017 through 2021.
- **Findings:** The annual hours of peak hour excessive delay per capita was 12.1 in 2021. There was a total of 11,871,079 hours of excessive delay in the TMA. I-95 accounted for 5,843,151 hours of delay in 2021, 52.5 percent of delay in the TMA. US-1 was next highest, with 2,213,007 hours of delay (19.9 percent) followed by CT-15, 1,545,007 (13.9 percent) The other 13.7 percent of delay in the TMA was spread out over the remaining NHS segments.

Congestion Reduction Strategies and Projects

Following the data analysis of the four performance measures, the CMP outlines a series of strategies and projects to help alleviate congestion. For SWRMPO, examples of projects and strategies include:

Demand Management Strategies:

These strategies help to promote alternatives to SOV travel and reduce the number of vehicles on the roadway, especially during peak travel periods. Actions may not pertain to a specific section of roadway in the CMP analysis but are more general practices that can be applied throughout the Region.

- Expand or complete trails including the East Coast Greenway, Norwalk River Valley Trail, Pequannock Valley Greenway, and the Georgetown-Branchville Trail.
- Implement Complete Streets enhancements:
    - Darien-New Canaan Bicycle Route
    - Stamford: Metro-North Railroad Bridge Replacements and Complete Streets Enhancements (Elm Street, East Main Street, Canal Street, Greenwich Avenue)

- Stamford: Grove Street/Strawberry Hill Avenue/Newfield Avenue intersection, Cove Road, and CT-137 (High Ridge Road).
- Norwalk: CT-53, Main Street, and CT-123

Public Transportation Strategies:
Improving public transportation will ideally increase non-SOV travelers and reduce demand on the road network.

- Implement recommendations from CTDOT's US-1 BRT Study to enhance transit service
- Real-time scheduling, smart card fare boxes, and multimodal fare technology improvements
- Implement recommendations from the Danbury Branch Line Study including extending passenger rail service to New Milford, track improvements between Norwalk and Danbury, and electrify the entire line from Norwalk to New Milford
- Implement improvements on the New Canaan Branch line including sidings and at-grade crossing improvements
- Continue state of good repair and improvements on the New Haven Main Line.

Traffic Operations Strategies:
These strategies focus on improving functionality of the existing roadway. Intelligent Transportation Systems (ITS) projects can be implemented to improve traffic operations, such as adaptive or coordinated signal systems or transit signal priority.

- *Route 1 Signal Upgrades and Adaptive Signal Coordination:* Between Greenwich and Westport upgrade outdated signal equipment, coordinate signal timings, implement intelligent transportation systems (ITS) for transit signal priority and adaptive signal technology.

Road Capacity Strategies:
These strategies alter the roadway to increase capacity. Such strategies are often expensive and include changes to road realignment, intersection improvements, and road widening. Further, significant analysis, modeling and design is often necessary before a project can be implemented.

- Interstate 95 – Exit 16: Implement Diverging Diamond Interchange

Monitoring and Evaluating Strategy Effectiveness

The CMP report will serve as a baseline to monitor all four performance measures and will be periodically updated to assess any implemented projects and their effectiveness on reducing congestion. It is clear that the pandemic resulted in dramatic shifts in travel patterns and as a result a decrease in congestion. All the performance measures improved in 2020 during the height of pandemic restrictions. However, Non-SOV usage was the only performance measure that continued to improve in 2021 while LOTTR, TTTR, and PHED regressed. The next CMP will be critical to assess if these were sustainable trends or just a blip due to reduced travel during the pandemic. For a more comprehensive review of the CMP analysis and the full outline of corresponding strategies and projects, refer to CMP report which can be found in Appendix D.

Regional Congestion Analysis

While the CMP serves as an important tool to monitor congestion across the Bridgeport-Stamford Urbanized area, the framework of the analysis tends to focus on major regional arterials such as I-95 and the Merritt Parkway. The strategies to address congestion on these roadways tend to be longer-term and larger-scale initiatives that are usually implemented by CTDOT projects. Building off the structure of the CMP, congestion can also be analyzed at a more granular level to identify specific intersection or corridor hotspots. In 2022, WestCOG developed a regional study that will address this through a deliberative, broad-scale evaluation and ranking of existing conditions, screening of remedial interventions and conceptual development of projects, each with a goal of reducing congestion.

Project locations will be identified by screening the region's entire surface road/street network (i.e., all public roads except freeways) for congestion, the systematic selection of project locations considering expected benefits, cost, impacts and host municipality preference. Unlike the CMP, which only evaluates congestion in the Bridgeport-Stamford UZA, this study will cover all municipalities in HVMPO and SWRMPO. Project concepts will be defined in sufficient detail to support grant applications such as Congestion Mitigation and Air Quality (CMAQ), Local Transportation Capital Improvement Program (LOTCIP), and municipal plans and budgeting.

As of the writing of this MTP, the data analysis of this regional study is underway and is expected to be completed by the end of 2023. Findings of this study and the corresponding concept projects will help inform the next MTP, future TIP programming, and other transportation grant solicitations. The goal of this study is to develop project concepts that the municipalities can implement on a faster timeline through programs like CMAQ and LOTCIP.

Selection of Congestion Reduction Projects

Improving congestion across the region is a multi-faceted effort, investment is needed for all modes to ensure efficiency, resiliency, reliability, and safety of the transportation system. HVMPO and SWRMPO will continue to support projects to address congestion including signal coordination upgrades, transit enhancements, and bicycle and pedestrian facilities. Many of the projects utilize intelligent transportation systems (ITS) like adaptive signal control, fiber optic cables, and video detection to make signal timing changes as traffic conditions change throughout the day and year.

Specific programs, like the Congestion Mitigation and Air Quality (CMAQ) Program, aim to implement projects that will help alleviate congestion. In February 2022, following a project solicitation from HVMPO and SWRMPO, CTDOT announced the recipients of CMAQ funding:

- **DANBURY:** $1,250,000 to provide signal coordination improve traffic flow, reduce congestion and delays along CT-39 and CT-53 (Main Street and Osbourne Street).
- **GREENWICH:** $4,000,000 to install adaptive signal control technology to adjust signal timing on US-1 within the town boundary.
- **NORWALK:** $3,401,850 to continue upgrading the remaining outdated traffic signals, extending the adaptive traffic control system, adding the transit signal priority and concurrent pedestrian phase.
- **STAMFORD:** $3,375,000 to upgrade old signal equipment at six intersections that are within existing city signal systems.

These awarded projects continue to build off the success of previous signal upgrades over the past few years. The City of Stamford has achieved tremendous success in reducing congestion. Through LOTCIP funding from WestCOG, Stamford completed the installation of 127,000 feet of fiber optic cabling to connect 209 signalized intersections to the city's new Traffic Operations Center. Stamford also received CMAQ funds to implement a Signal Optimization project which evaluated 209 signalized intersections for retiming. Together, these projects have resulted in numerous benefits to the transportation network and users. Stamford has reported reduced travel time by 14 percent, with some corridors experiencing as much as a 42 percent reduction. As municipalities continue to implement signal coordination projects, similar results can be achieved on a broader scale throughout the region.

Safety

HVMPO and SWRMPO recognize the importance of a safe transportation system for all roadway users, including motorists, bicyclists, pedestrians and transit riders. The MPOs support the strategies to enhance safety as identified in CTDOT's Strategic Highway Safety Plan (SHSP) and Highway Safety Improvement Program (HSIP). The SHSP is a statewide data-driven safety plan which integrates the 4E's of safety: engineering, enforcement, education, and emergency response. The SHSP focuses on the following

emphasis areas: critical roadway locations, driver behavior, young drivers, non-motorized road users, motorcyclist safety, and traffic incident management. Additionally, it identifies a series of statewide goals, performance objectives, and strategies to enhance safety in each of the six emphasis areas. In addition to supporting the statewide strategies identified in the SHSP and HSIP, HVMPO and SWRMPO are committed to enhancing safety on a regional level. This is achieved by completing safety analyses and using a data-driven approach in reviewing and prioritizing transportation projects. The SHSP is a major component and requirement of the HSIP. (23 U.S.C. § 148). It is a statewide-coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads.

Perceptions of safety are significant, as they may influence a person's decisions. An individual's perception of safety will lead them to choose a particular route, what time of day, etc. Transportation networks, such as bicycle and pedestrian, must feel safe to users. A lack of comfort in the facilities will limit potential non-motorized transportation.

Historically, crashes are primarily centered where there are a high volume of motor vehicles, bicyclists, and pedestrians. High volumes are seen in dense urban centers and coastal communities. Though vehicle volumes are lower in suburban and rural areas, a lack of signage, shoulder lines or crosswalk visibility may impact the roadway users experience.

Figure 15 shows a heatmap of crashes resulting in a serious injury or fatality between 2017 and 2021. These types of crashes occur most often in downtown Danbury, Norwalk and Stamford; along arterial corridors at exits or interchanges with other high-volume routes; and along higher speed corridors that have direct access to adjacent land uses and consequently many turning movement conflicts, like US-7/US-202 in New Milford and US-7 in Wilton.

Safety improvements will continue to be made in the Region. Redundancies have been shown to reduce safety risks by employing countermeasures that align with the Safe System elements. For example, installation of radar speed feedback signs will help motorists maintain the speed limit as safe road users. Layering this safety measure with safe speeds helps to create further redundancy.

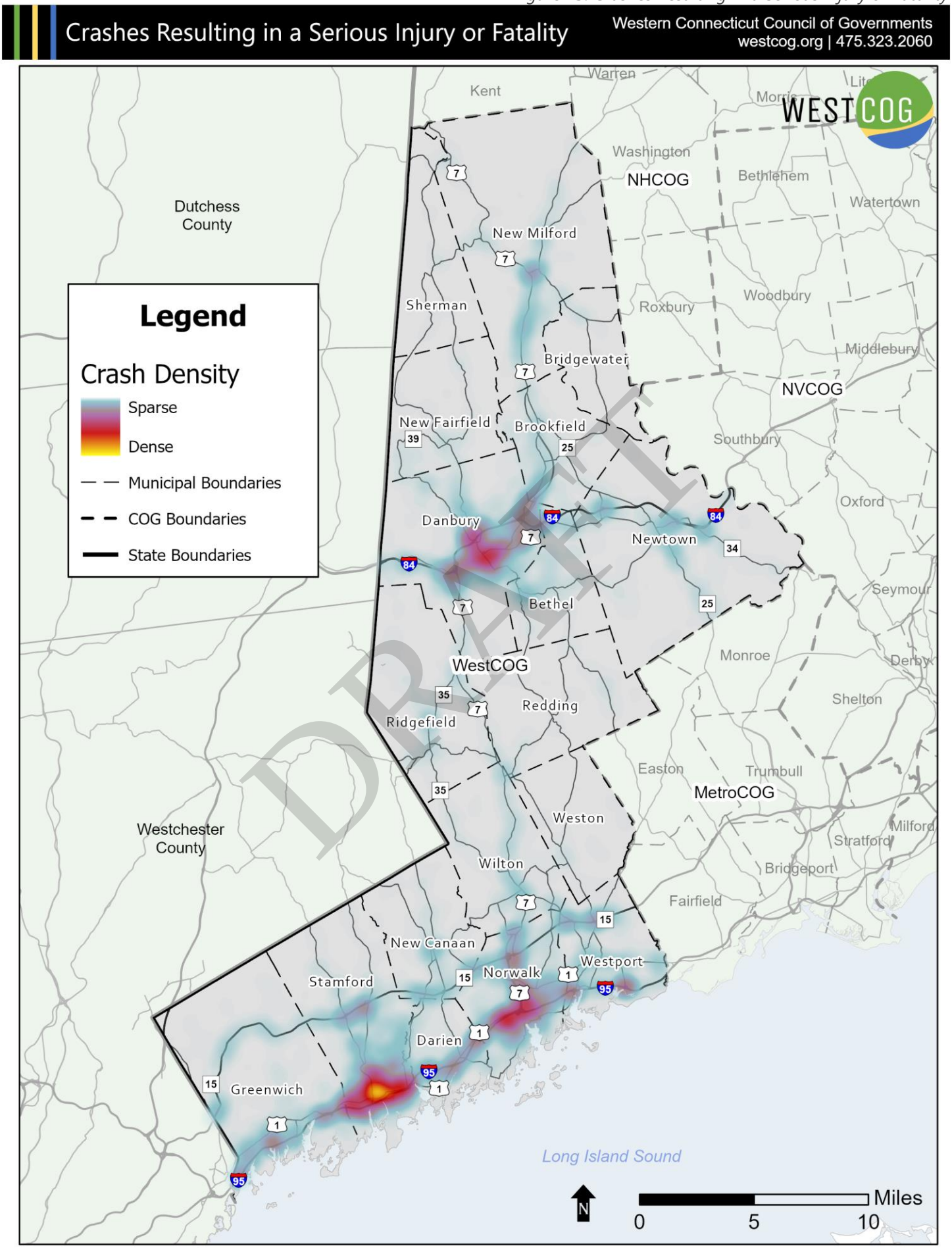
The **Regional Transportation Safety Plan** (RTSP) is in congruence with the Connecticut SHSP. It serves as a road map and strategy to help WestCOG and the municipalities collaborate with the State in reducing injury and fatal crashes. Additionally, it increases safety awareness and allows the Region to focus on transportation safety issues. The approach used in the study applies a similar methodology to the State plan, but includes more local input, reflecting both the needs of each of its 18 individual communities and the Region as a whole. Each municipality has its own mini report, which includes specific crash data and priority locations, while incorporating stakeholder feedback. The plan is data-driven, multimodal, and multidisciplinary. The plan was developed involving local stakeholders from the four Es of transportation safety: engineering, enforcement, education, and emergency response. It identifies the Region's high-frequency crash locations and outlines effective countermeasures to reduce crashes, such as potential infrastructure, behavioral education and/or enforcement improvements.

Selection of Safety Projects and Recommendations

New Milford: US-7/US-202 from Still River Drive to Bridge Street

This stretch of highway has a variety of retail establishments including large national chain stores, strip development, and drive through food

Figure 15: Crashes Resulting in a Serious Injury or Fatality



Source: Connecticut Crash Data Repository, 2017-2021

establishments and banks. The multitude of curb-cuts, high speeds and disconnected sidewalks contribute to an unsafe pedestrian and motorist experience along the corridor. The plan recommends implementing pedestrian accommodations such as sidewalks, crosswalks, lighting, and bus stops in addition to roadway safety improvements to reduce crashes on this stretch of highway.

Stamford: Bulls Head Traffic and Safety Improvements

Bulls Head is located at the intersection of High Ridge Road (CT-137) with Long Ridge Road (CT-104) and is the northern gateway into downtown Stamford. It is a central traffic node in the city and is the main intersection for North-South traffic movements. The **2015 Long Ridge | High Ridge Corridors Study** developed for the City of Stamford recommended removing one of the two right turning lanes from Bedford Street on to High Ridge Road to accommodate a sidewalk and make space for a bicycle facility, in addition to signal timing optimizations, intersection design improvements, high visibility crosswalks, physical barriers in a high conflict turning movement, and driveway consolidation.

Stamford: High Ridge Road (CT-137) Commercial Area Safety Improvements

This commercial area between Buxton Farms Road and Maplewood Place is directly adjacent to the Merritt Parkway (CT-15) and functions as a regional shopping and rest stop area. The **2015 Long Ridge | High Ridge Corridors Study** also included recommendations for roadway safety and complete streets enhancements along this high crash corridor. The recommendations included traffic calming measures, adding sidewalks, breaking up the long left turn lanes with a landscaped median, reducing the speed to 35 MPH, among other improvements.

Danbury: Intersection Redesign at Six Locations

Many of the region's roads have long existed since colonial or pre-colonial times and over the last century became paved for easier travel. This left many intersections not formally designed for modern day vehicles and speeds. Some of the following intersections in this category and in need of redesign for improving the safety of motorists and pedestrians while also increasing the efficiency of operations:

- Golden Hill Road/Farm Street
- West Street/Westville Avenue
- White Street/Triangle Street
- White Street/Federal Road
- Mountainville Road/Southern Boulevard
- Miry Brook Road/Backus Avenue

Scenic Roads

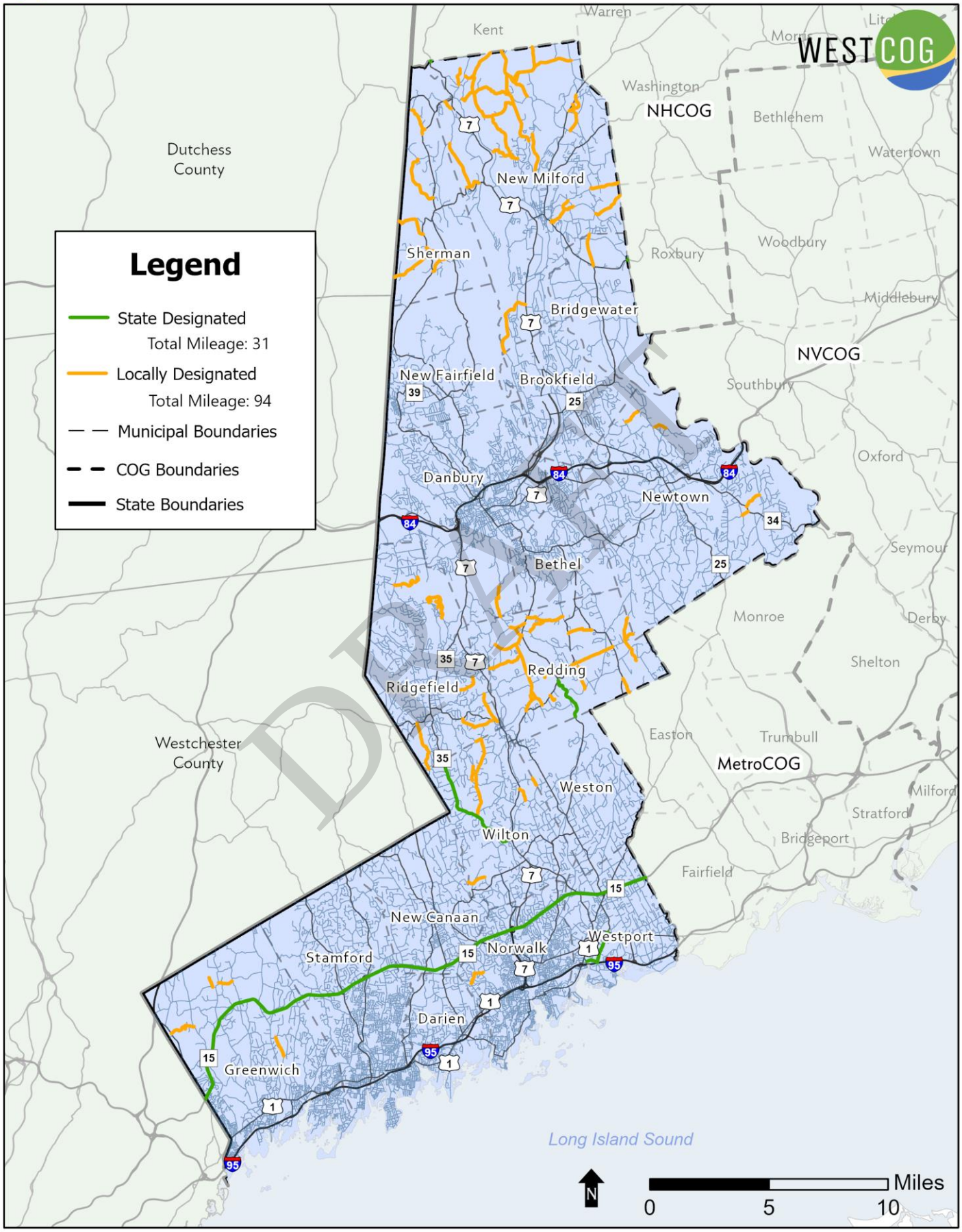
Since 1981, local governments have been authorized under Connecticut Public Act 81-401 to protect the unique historic features of local roads, many of which date back to the early 17th century. Today there are 81 locally designated scenic roads offering 94 miles of rural vistas protected by municipal ordinances that preserve unique historic, aesthetic, and physical features within the region. See Figure 16 for a map of Scenic Roads in the region. This represents nearly thirty percent of the locally designated scenic road miles in the entire state of Connecticut, reflecting the region's commitment to maintaining its rural New England character.

Legal requirements for designation as a Scenic Road are stringent and reflect the concern to preserve unique features and community character. The nominated road or road segment must be free of intensive commercial development and must meet at least one of the following criteria: it is unpaved; it offers scenic views; it is bordered by mature trees or stone walls; the traveled portion is no more than twenty feet wide; it blends naturally into the surrounding terrain; or it parallels or crosses over brooks, streams, lakes, or ponds. In addition, for designation to occur landowners representing a majority of frontage along the designated roadway must agree to the classification by filing a written statement of approval with the town. Usually this takes the form of a petition signed by abutting owners, which will then be verified by the municipal

Figure 16: Scenic Roads Map

Scenic Roads

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: WestCOG data collection, 2022

assessor to assure that owners representing more than fifty per cent of the road frontage concurs with the designation. By adopting a scenic road ordinance and designating a certain road as a scenic road, a municipality may regulate improvements or changes to the roadway which could alter its character. Such alterations could include widening, paving, straightening, changes in grade, and removal of mature trees or stone walls, whether proposed by municipal departments, utilities, or abutting property owners. While these restrictions accompany any road so designated, a scenic road ordinance does not interfere with normal maintenance activities or prevent essential safety improvements or construction of new roads or private driveways which intersect with the designated scenic road. Scenic roads preserve local community character and attract both residents and businesses to locate in the community.

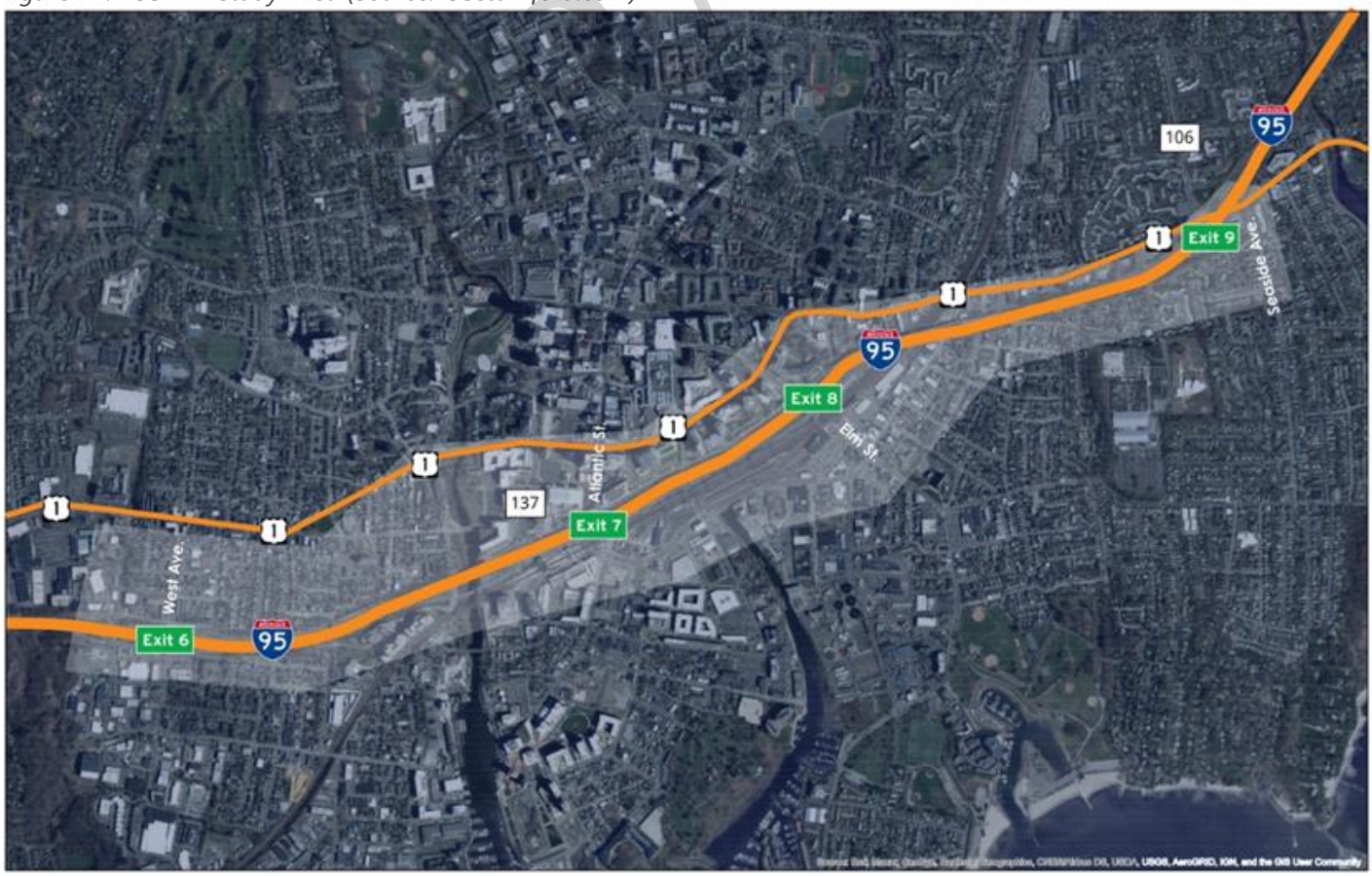
In addition to local scenic roads, there are four state designated scenic roads including the Merritt Parkway (entire length), CT-53 in Redding, CT-136 in Westport and CT-33 in Wilton offering 31 miles of scenic vistas. The Merritt Parkway passes through Greenwich, Stamford, Darien, Norwalk, and Westport connecting the region to New York in the south and Hartford in the north. State scenic road designations are managed by the Connecticut Department of Transportation.

The POCD and the MTP recommend identifying additional local scenic roads that should be preserved for their unique transportation qualities and tourist opportunities.

Selection of Project Needs for Limited Access Highways

As the limited access highways in western Connecticut, I-95, I-84, and CT- 15/Merritt Parkway handle a large volume of passenger and freight-related traffic for inter- and intra-regional travel. Continued investment on these highways is needed to keep the mainlines in a state of good repair. Projects include pavement preservation, bridge

Figure 17: I-95 PEL Study Area (Source: i95stamford.com)



repairs like concrete sealing, signage upgrades, and median barrier replacements. While these projects are vital to maintaining the operation of the highways, they may not address specific issues like congestion or improve capacity.

Interstate 95

To address future needs on I-95 in southwestern Connecticut, CTDOT has initiated several Planning and Environment Linkages (PEL) studies. PEL studies are structured to be a collaborative decision-making process that considers environmental, community and economic goals early in the transportation planning process. The goal is to expedite project delivery by identifying potential environmental or community concerns and develop solutions to mitigate those impacts.

The I-95 Stamford Planning and Environment Linkages (PEL) Study began in 2022 and is focused on I-95 between exits 7 and 9, US-1, and the I-95 bridge over Metro-North and Myrtle Avenue as shown in Figure 17. The goal of this study is to identify projects to help reduce congestion, improve safety, and identify alternatives for the bridge replacement.

Similar to this study, CTDOT will also be initiating a PEL study in Greenwich between exits 7 and the New York State Line. In Norwalk, CTDOT is exploring innovative engineering solutions to improve the interchange at exit 16. A first in Connecticut, a diverging diamond interchange is being considered to help improve throughput and safety for drivers merging on and off the highway. As shown in Figure 18, the design of this interchange results in fewer conflict points for drivers and improves safety.

Interstate 84

As the only interstate in HVMPO, I-84 plays a critical role in providing an east-west connection. Like the highways in southwestern Connecticut, I-84 experiences a significant amount of congestion between Danbury and Newtown. In particular, the interchange with US-7 has presented challenges for drivers in terms on traffic congestion and safety due

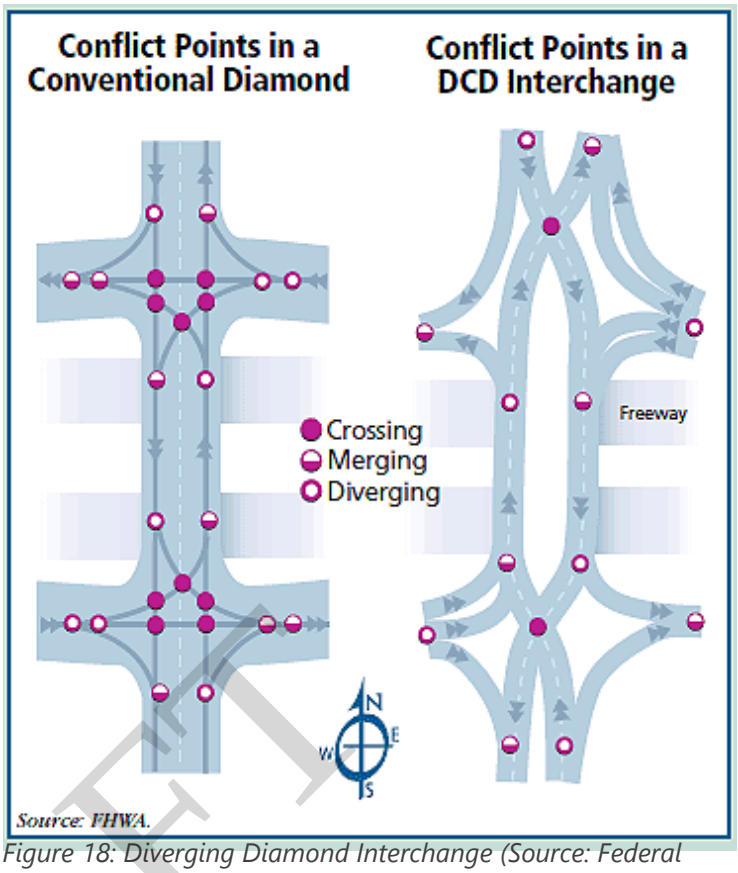


Figure 18: Diverging Diamond Interchange (Source: Federal Highway Administration)

to weaving vehicles. Several years ago, CTDOT initiated the I-84 Danbury Project to address congestion and improve mobility throughout the greater Danbury area. This project, which is still under development, is evaluating different concepts to address the existing issues between the New York/Connecticut State line and Exit 8. Construction of the recommended improvements is anticipated to begin in the late 2020's.

WestCOG has proposed conducting a circulation study in Danbury to complement the I-84 Danbury Project and to evaluate opportunities to improve access to Federal Road, Bethel, Berkshire Park, and other key destinations. This study will analyze existing traffic patterns and identify projects to improve circulation. The goal of this study is to improve cross-town connections which will reduce the need for vehicles to use I-84 for local trips.

WestCOG also recognizes that strategic capacity improvements could be implemented on I-84 to allow for three travels lanes in each direction. Congestion has been noted on segments of the

highway with only two travel lanes. In particular, the short acceleration lane on I-84 eastbound between Newtown and Southbury causes traffic delays.

Route 15

The Merritt Parkway is a unique highway and a cultural asset to southwestern Connecticut. Like the other highways in the region, the Merritt Parkway also struggles with traffic congestion, most notably during the commute periods. In the event of a vehicle crash or emergency, the level of congestion coupled with narrow shoulder areas can present delays to first responders accessing a scene. Enforcing the commercial vehicle prohibition has also been a challenge, particularly with large trucks. As a result, the Merritt Parkway, which is known for its historic bridges, has averaged one bridge strike per month over the last five years between Greenwich and Westport. This causes significant traffic delays and costly damage to the bridge structures. To date, improvements on the Merritt Parkway have been mostly limited to state of good repair or to address geometric concerns. To address congestion and safety issues, innovative projects such as ramp meters at strategic entrance ramps or over-height vehicle detection systems can be implemented while still preserving the historic and scenic nature of the highway.

In Norwalk, the US-7 and CT-15 interchange has been the topic of study for several years by CTDOT. This interchange currently lacks full connections on US-7 North to the Merritt Parkway and on Merritt Parkway South to US-7 South. As a result, these missing connections cause drivers to traverse the local roads to access entrance ramps for the highway they need to get on. The study, which is nearing completion, has evaluated different alternatives and will propose a design solution to improve connection and safety.

Ramp Metering

Ramp meters (Figure 19) are a type of traffic signal that are used to control the frequency of vehicles entering onto a highway. Without ramp meters or other traffic controls, vehicles can merge onto the highway in large volumes creating a platoon-effect which can cause congestion. These types of signals are installed at the entrance ramps, as a vehicle approaches the highway the driver must wait for the signal to turn green before merging onto the highway. Once implemented, this this technology has been shown to reduce crashes and injuries, increase traffic speed, decrease travel time, and reduce emissions. Though ramp meters have been deployed in other parts of the country and have been in use for over sixty years, it is novel to Connecticut. Given the significant level of congestion in this part of the state, ramp meters may provide an innovative and cost-effective solution to improving traffic delays. WestCOG has sought grant funding to complete a study that will evaluate the feasibility of this technology, how it can be effectively coordinated with adaptive traffic signal systems and identify where it can be deployed in southwestern Connecticut to have the most beneficial impact.

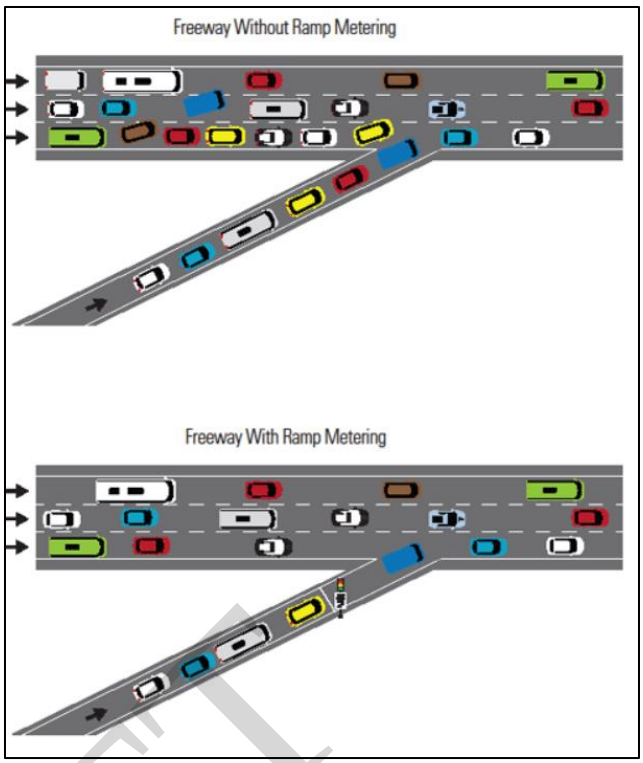


Figure 19: Ramp Metering Schematic (Image source: Washington State Department of Transportation)

Other Local Road & Highway Initiatives

The 2,638 miles of locally owned and maintained roads in the region account for 83 percent of all

roads and highways in the region. For the **2020-2030 Western Connecticut Plan of Conservation and Development** (POCD), staff counted 17,710 intersections; 816 of which are signalized; 111,124 catch basins; and 740 bridges that are the responsibility of the local municipalities in the region. The total replacement of the local roadways and related infrastructure is estimated to cost over $16 billion. These costs pose a significant financial burden on localities, especially as much of the region's infrastructure is reaching the end of design life. It underscores the importance of the POCD's recommendation for municipalities to develop and maintain local transportation asset management plans consistent with the guidelines given by FHWA. Quantifying the amount, location and condition of all transportation infrastructure in the region gives us the opportunity to develop prioritized maintenance plans, in addition to better understanding the entire lifecycle costs of the existing network and what adding any other roads (i.e. new subdivisions) would cost the residents.

Regional Data Collection Program

WestCOG continues to assist municipalities in developing grant proposals for local road improvements with data collected via the Regional Data Collection Program. The Region has purchased equipment and staff are trained in offering the following services:

- **Intersection Turning Movement Counts**
  - WestCOG has six temporary traffic cameras that can collect up to 50 hours of traffic video for 3 or 4 approach intersections.
  - Examples of Possible Uses: level of service (LOS), pedestrian and cyclist counts, intersection signal timing and capacity, traffic control warrants and signal coordination.
- **Speed and Volume Counts for Road Segments**
  - WestCOG has four temporary traffic radars available to collect up to 2 weeks of data for up to four, mid-block lanes.
  - Examples of Possible Uses: calculate ADT for a roadway or bridge, traffic calming studies (speed analysis), and corridor volume analyses.
- **Trail Counting**
  - WestCOG has three temporary infrared trail counters available for counting people on sidewalks, paths and trails.

Traffic Calming Plan and Design Guidelines

In the absence of local design guidelines, many local governments defer to the Connecticut Highway Design Manual for the design of local roads, a document principally intended for use on facilities that serve a transportation rather than property-access purpose.

WestCOG is planning on initiating a project that is intended to result in the development of a design manual for residential streets and access roads and driveways that reflects best practices. The manual would apply to lower-speed (less than 40 mph) roads and streets functionally classified as "local" and access roads/driveways and would be based on consideration of safety and mobility of all users (i.e., motorists, pedestrians, bicyclists, emergency responders), environmental sustainability, economy of construction and maintenance, community cohesion, land use, and utility accommodation.

Local Transportation Capital Improvement Program (LOTCIP)

This program provides state funding for a variety of municipal transportation capital improvements, including: bridge rehabilitation and replacement; road reconstruction; intersection improvements; traffic signals; streetscapes; sidewalks; multi-use trails; and pedestrian bridges. Since the program's inception in 2013, 39 projects in HVMPO and SWRMPO have been awarded $76,765,844 funding by CTDOT to carry out construction activities. WestCOG oversees the regional solicitation and coordination for projects. To date, WestCOG has

committed to 59 projects totaling $136,733,438 in LOTCIP funding.

Chapter 4 : Freight

Western Connecticut functions as a gateway for freight movements in and out of New England as well as Canada. It is also a generator and consumer of freight, as it is one of Connecticut's more densely populated regions. Its freight transportation network is chiefly comprised of Interstate, US, and state-numbered routes; railroads; and marine ports. Some of the nation's most productive population centers in the greater Boston and New York City areas lie just beyond the region's borders to the north and south with forty-four percent of all freight movements in Connecticut being through trips.

By Truck: Connecticut's roads, and especially its Interstate System, carry a disproportionate burden of this through traffic - trucks transport over 99 percent of the freight that passes through Connecticut.[xi] Put another way, nearly 94 percent of the freight that travels to, from or through Connecticut does so by truck. Trucks also move over 84 percent of the fuel oil that is shipped to the state.

By Rail: There are currently four recognized freight rail lines in the Region. The regional freight rail network centers in Danbury, with all four lines serving the city. CSX Transportation (CSXT), the Housatonic Railroad (HRRC) and Genesee & Wyoming (G&W)'s Providence and Worcester Railroad (PW) are the freight operators. CSX provides a link to Pittsfield, MA where rail freight originating or arriving in the region can connect to national and international markets.

By Sea: Connecticut hosts three deepwater ports outside the WestCOG region - at Bridgeport, New Haven, and New London. Freight movements to/from the region make use of Bridgeport and New Haven facilities. In addition, modest amounts of freight are reportedly transported to/from marine facilities in Norwalk and Stamford.

By Air: Air freight movements to/from the region are transported by truck and involve air cargo operations at JFK International (Queens, New York) and Bradley International (Windsor Locks, Connecticut) Airports.

Freight Generators

In 2017, WestCOG prepared an inventory of freight generators for the region in support of CTDOT's effort to develop a list of freight stakeholders to interview for the Statewide Freight Plan. For purposes of this Plan, freight stakeholders included anyone who is involved in the movement of goods, whether as a shipper or receiver. WestCOG staff reviewed a database of businesses (Figure 20) within the region and identified the following sites:

- Warehouses
- Distribution centers
- Freight railroads
- Retail – larger shopping centers and malls
- Trucking companies
- Manufacturers
- Freight forwarders – UPS, DHL, FedEx, US Postal Service

Highway

Connecticut's highway system is the most direct and accessible means of transporting freight, both for long-distance movements that begin or end outside the state and for local transport and deliveries.

Facilities

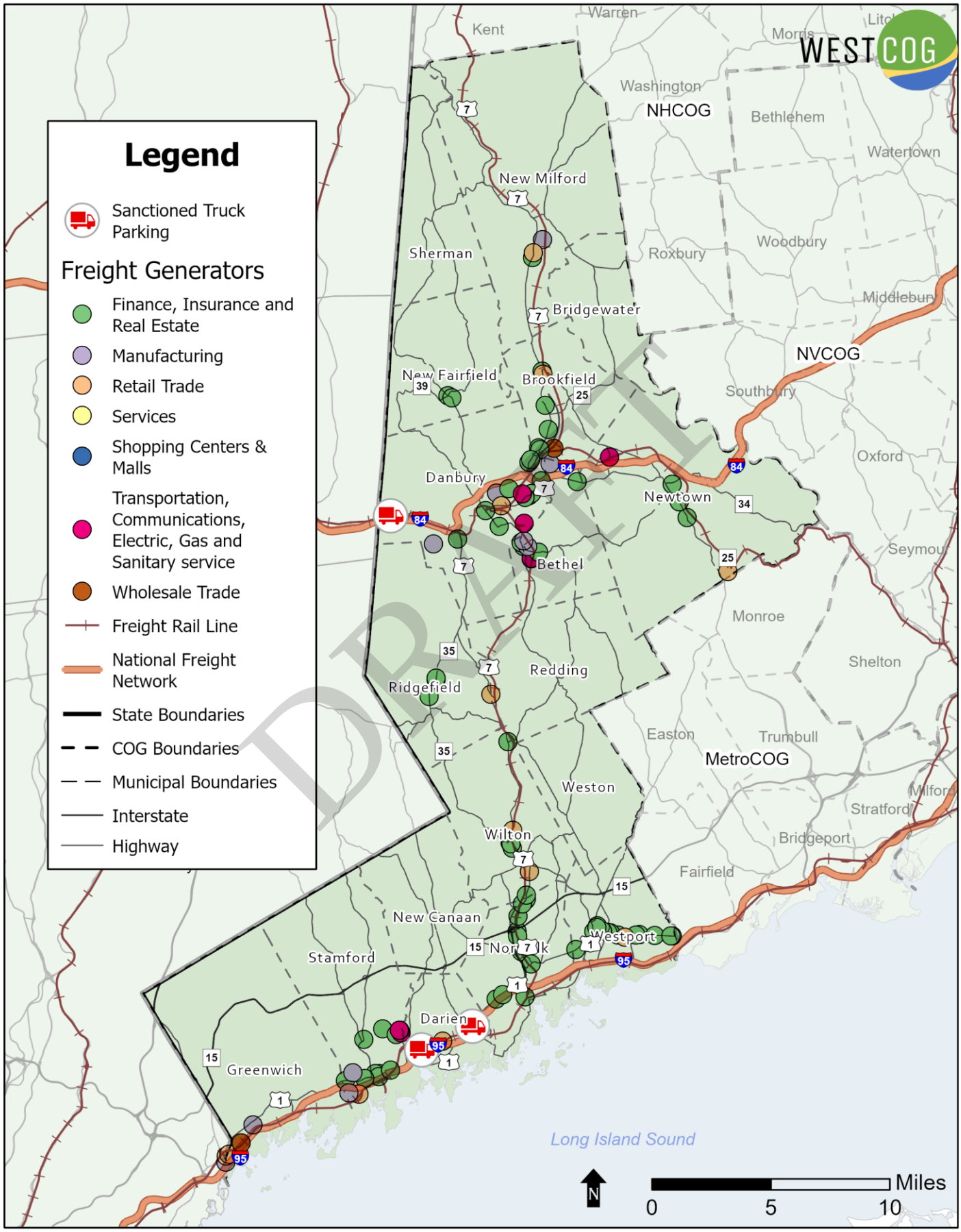
Weighing and inspection of trucks is conducted at over thirty locations statewide under the Department of Motor Vehicles (DMV). Two weighing stations are located in the WestCOG region:

- I-95 northbound in Greenwich—quadruple static scales and scale house (Weigh-in-Motion equipped)
- I-84 eastbound in Danbury—triple pad static scale and scale house

Figure 20: Freight Network Map

Freight Network

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Sources: Freight Generators - RefUSA, 2021; Freight Rail - NYS Railroad Lines, 2013

Sanctioned truck parking facilities are located in Danbury off of I-84 and in Darien at the I-95 service plazas.

Commodity Flows

Commodity flow data for the western Connecticut region comes from Transearch work that was prepared in support of CTDOT's 2017 State Freight Plan. This data is aggregated at the County level, making it possible to analyze the goods moved into, out of and through Fairfield and Litchfield Counties. Note that the WestCOG region also includes the towns of Bridgewater and New Milford, which are in neighboring Litchfield County.

Imports

Over half of all truck movements originated from a nearby state: New York (11.2 million, 23.0 percent), Massachusetts (7.7 million, 15.9 percent), and New Jersey (6.5 million, 13.4 percent). The primary destinations of inbound truck shipments were Hartford County (14.0 million, 28.8 percent), Fairfield County (11.7 million, 24.0 percent), and New Haven County (10.5 million, 21.6 percent).

Exports

Major outbound truck tonnages in 2014 have been broken down by county of origin. Truck movements are destined for out-of-state travel from Hartford County (8.5 million, 25.4 percent), New Haven County (7.0 million, 20.9 percent), and Fairfield County (6.0 million, 17.8 percent). Nearly two thirds of the out-of-state shipments were destined for a neighboring state. The major destinations of outbound freight were New York (10.2 million, 30.3 percent), Massachusetts (7.8 million, 23.3 percent), and New Jersey (3.5 million, 10.4 percent). [xii]

I-95 from New York to New Haven, I-91 from New Haven to Hartford and I-84 from New York to Massachusetts carry the highest volumes of trucks in the state, both by tonnage and by value.[xiii]

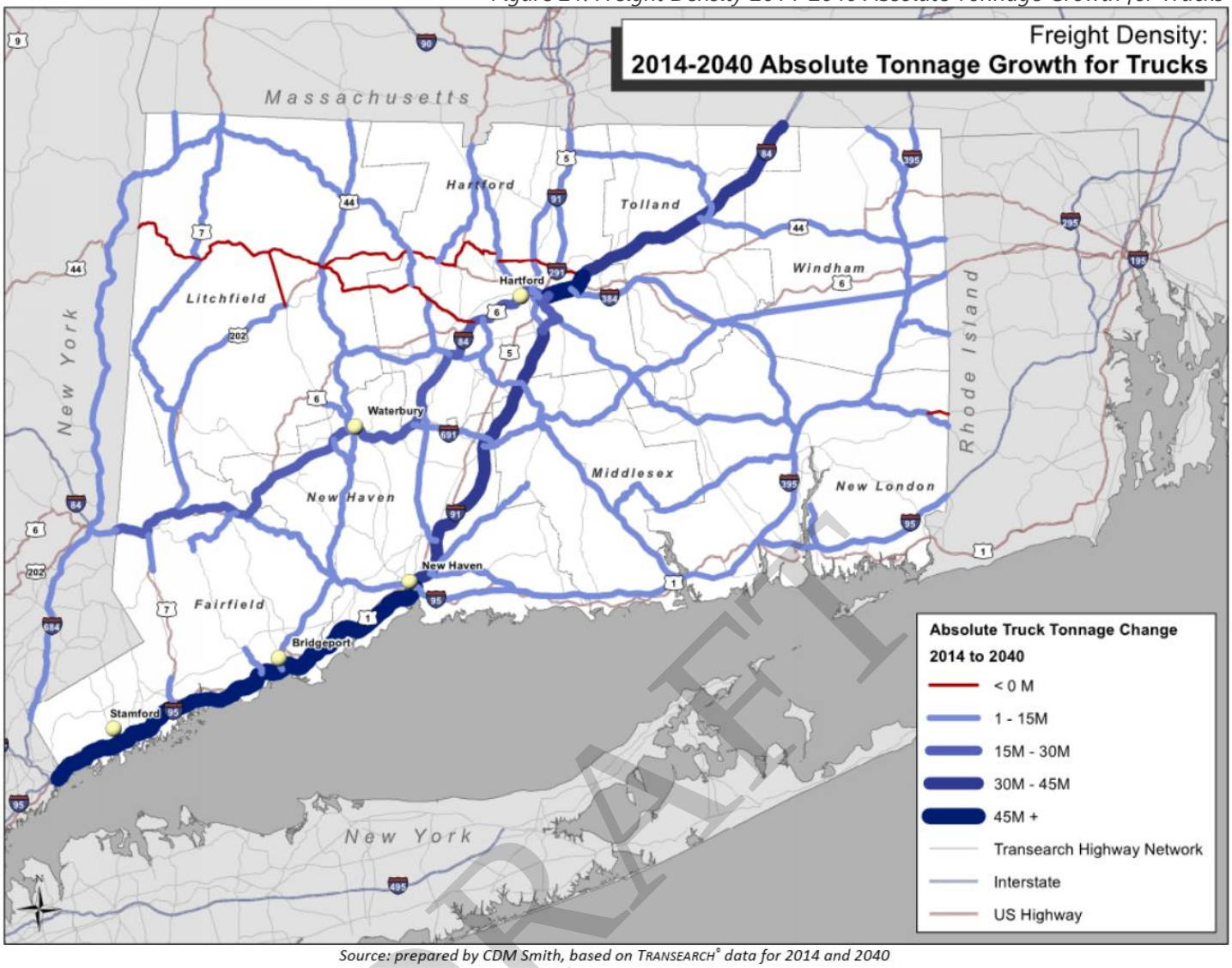
Highway Freight Projections

Truck tonnage is forecasted to increase from 198.7 million in 2014 to 315.4 million in 2040, an increase of 58.7 percent (1.8 percent annually). Truck commodity value is forecast to increase from $337.5 billion in 2014 to $681.1 billion by 2040, an increase of 101.8 percent (2.7 percent annually). The most heavily traveled truck routes today will absorb the most growth, according to forecasts, meaning I-95 from New York City to New Haven in the region (Figure 21). In percentage terms, the growth is more dispersed throughout Connecticut, with many secondary routes exhibiting a greater percentage growth than the primary interstate corridors. Total truck freight-related vehicle miles traveled (VMT) are expected to increase by 88 percent from 2009 to 2040. Through freight VMT is projected to increase by 103 percent and account for the largest share of the forecasted increase in Connecticut's freight truck travel. [xiv]

The growing effects of e-commerce, increased 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. "A pull inventory system prioritizes current demand. The supplier orders or manufactures goods in the quantity and timeframe needed, based on existing customer sales orders. In contrast, the push inventory system uses demand forecasting. The manufacturer instead produces goods to anticipate customer needs and pushes them through the supply chain to retailers."[xv]

Increased freight traffic threatens to further strain the Region's transportation system, which in many cases is already at or exceeding capacity. Trucks will likely 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 increase. Increased truck traffic will have to compete with higher forecasted passenger vehicle volumes for road capacity.

Figure 21: Freight Density 2014-2040 Absolute Tonnage Growth for Trucks



Source: prepared by CDM Smith, based on TRANSEARCH® data for 2014 and 2040

Rail

The western Connecticut region has 88 miles of railroad infrastructure that supports freight delivery (Table 5). The major commodities moved through the western Connecticut region by rail include municipal solid waste, lumber, crushed stone, construction debris, wood pulp, corn oil, and industrial chemicals.[xvi] These commodities are break-bulk, not intermodal.

The Berkshire Line operates in the communities of Canaan, Falls Village, Cornwall, Kent and enters the western Connecticut region at New Milford, proceeding south to Brookfield and Danbury. The line extends north to Pittsfield, Massachusetts where there are connections to the greater national freight rail network. The line passing through the region serves a paper mill, a limestone quarry, a plastics manufacturer, a pharmaceutical company, and two food manufacturers.

The Maybrook Line in the western Connecticut region extends from the New York State Line at Danbury east through the communities of Danbury, Brookfield, and Newtown. A railroad-owned lumber distribution center and a bulk transfer facility are located in Hawleyville, a borough of Newtown. Other customers on the Maybrook Line within and outside the region include three lumber companies, a waste disposal firm, a corrugated manufacturer, a printing company, a polyester products firm, and a variety of small manufacturing firms.

The Danbury Branch is located in the communities of Danbury, Bethel, Ridgefield, Redding, Wilton, and

Table 5: Freight Rail Lines and Operators

Rail Line	Freight or Passenger	Municipalities Served in Region	Owner(s)	Freight Trackage Rights Operator(s)	Length in Region (miles)
Maybrook Line	Freight	Danbury, Brookfield, Newtown	HRRC		22.0
Berkshire Line	Freight	Danbury, Brookfield, New Milford	HRRC		19.9
Danbury Branch Line	Freight & Passenger	Danbury, Bethel, Redding, Ridgefield, Wilton, Norwalk	CTDOT	PW	23.7
New Haven Line	Freight & Passenger	Greenwich, Stamford, Darien, Norwalk, Westport	CTDOT	CSXT, PW	22.7
Total Freight Miles					88.3

Source: National American Rail Network Lines, USDOT Bureau of Transportation Statistics
Note: Mileage does not account for multiple tracks on the same line.
Code: HRRC- Housatonic Railroad Company, CTDOT – Connecticut Department of Transportation, PW - Providence and Worcester Railroad, CSXT - CSX Transportation

Norwalk. It is owned by the Connecticut Department of Transportation (CTDOT). The Danbury Branch consists of a single-track system that currently accommodates freight service run by Providence & Worcester Railroad and passenger service provided by Metro North Railroad (MNCW). PWRR operations on the Branch are believed to be through freight movements at this time, with no local customers.

There have been some recent improvements on the Branch. For example, the Danbury Dock Yard project, which made improvements to the base of the line where it connects to the New Haven Line at South Norwalk Station, added rail sidings, signal improvements, and electrification at the Branch's southern end. This $30 million project was undertaken to improve the efficiency of train operations in the area and was timed to accommodate the commencement of the adjacent Walk Bridge Reconstruction Project.

The New Haven Line segment in the region runs through the communities of Westport, Norwalk, Darien, Stamford, and Greenwich. It is owned by the State of Connecticut through CTDOT and operated by Metro-North Railroad under contract with CTDOT. The New Haven Line is part of the Northeast Corridor; its share of the Northeast Corridor is the busiest rail line in the United States. Local freight service is provided on the line in Connecticut by CSX Transportation, and the Providence and Worcester Railroad operates unit trains of stone along the line.[xvii]

Rail Freight Projections

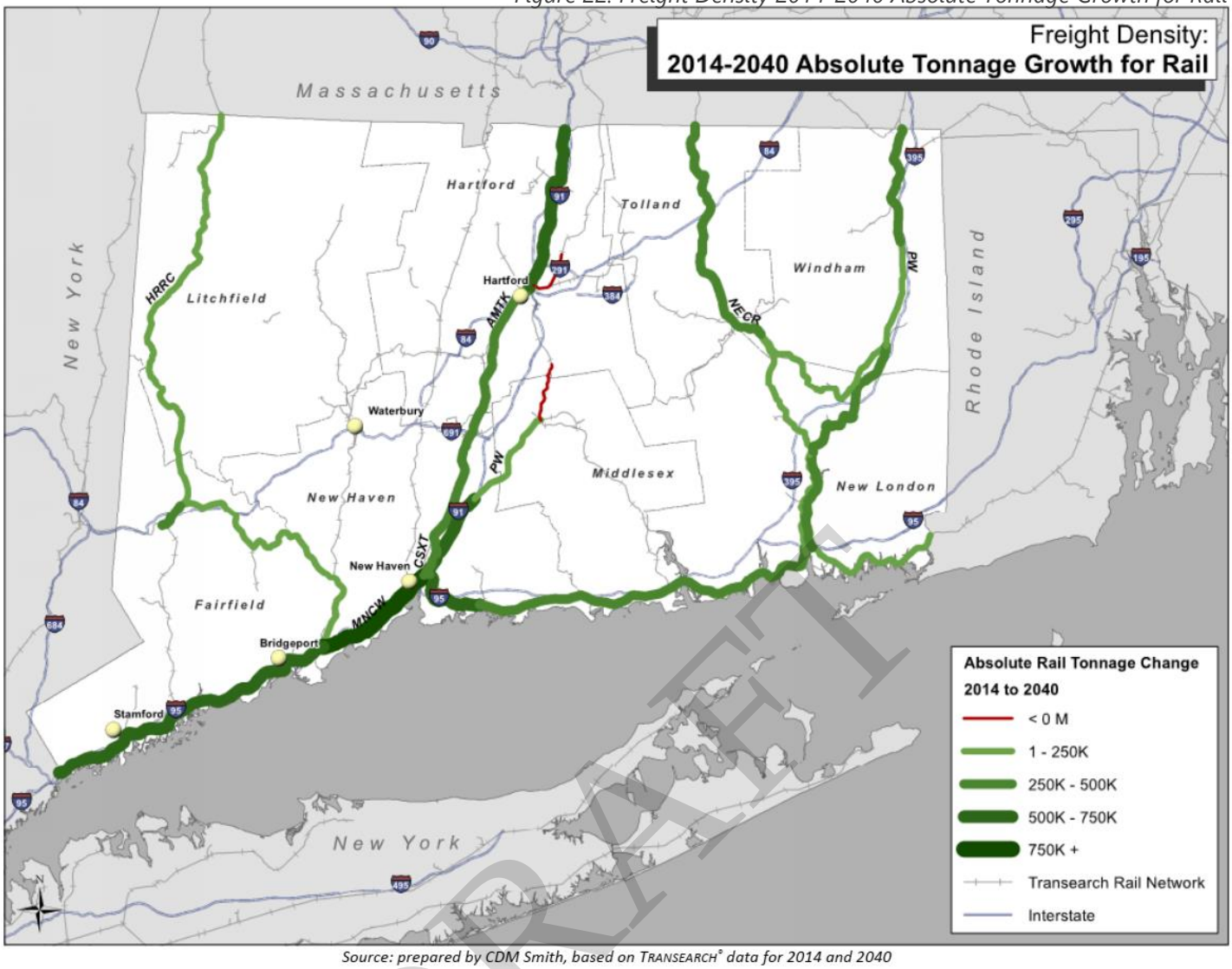
Freight tonnage is expected to increase the most along the New Haven Line and Hartford Line in the state. Generally, this aligns with the most heavily traffic truck routes of I-95 and I-91. In the region there is also expected to be growth on the Berkshire Line and the Maybrook Line- west of downtown Danbury according to the 2017 CTDOT State Freight Plan (Figure 22).

Increased rail freight movements will not only consist of raw materials and manufactured products. A recent regional waste management study completed for WestCOG (Barton and Loguidice, 2021) notes that waste handling firms in Connecticut and nearby states have been investing for several years in equipment and infrastructure to deliver municipal solid and other wastes to distant out-of-state landfills in states such as New York, Pennsylvania, Ohio, and Kentucky. Some of those waste streams are expected to be shipped by rail to facilities specifically designed to receive and offload inbound materials from railcars.[xviii]

Factors affecting freight rail in Connecticut:

- The lack of multiple Hudson River rail crossings makes freight shipping more

Figure 22: Freight Density 2014-2040 Absolute Tonnage Growth for Rail



Source: prepared by CDM Smith, based on TRANSEARCH® data for 2014 and 2040

challenging or less practical for many commodities and products to/from points west of Connecticut.

- Overhead clearances below the optimal 22'8" limits the size of freight cars that can be used.
- Freight railroads in Connecticut often operate at low speeds due to rail weight and age.
  i) Rail car weight restrictions below 268,000 pounds on some lines do not meet industry standards and limit per car loading. The industry is even pushing for increased track weight capacity upgrades from 286,000 lbs. to 315,000 lbs.; most lines in CT do not meet that capacity.
- High trackage fees for freight railroads operating over Amtrak right of way.
- The strong competitive position of the trucking industry due to the short distances involved in movement into and through Connecticut.
- The state's business and service activities trend toward generating smaller volumes of freight. The weakening and dilution of Connecticut's industrial base and the shortening and tightening of the product stream, have led to fundamental changes in the way goods are manufactured, shipped, and received. Rarely do plants receive rail cars full of materials to be converted into finished products, with all phases of manufacturing and assembly taking place at one location. Instead, manufacturing occurs at several locations with any one plant having a limited role. Changes in materials management, particularly just-in-time delivery, mean that sites are getting smaller,

more frequent deliveries of materials, and are doing the same with their outbound shipments.

- One of the major container ports in the world and one of the largest intermodal rail yards in the country are located in northeastern New Jersey, within one hundred miles of the WestCOG region.[xix]

Marine

The western Connecticut region hosts 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 transported 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. In general, the region is served by larger commercial ports in Bridgeport and New Haven and the globally significant Port of New York and New Jersey.[xx]

Forecast and Prospects for Future Marine Freight Activity

Connecticut's deep-water ports have historically been best suited for shipping break bulk goods. Break bulk goods are those that do not fit into standard shipping containers and are instead transported individually on a pallet or crate, or in a drum, bag, or box. Given the relatively small size of Connecticut's ports, this has been their most efficient economic use, but opportunity and time may modify the mix in the future.[xxi]

With the exception of the above facilities referred to in Norwalk and Stamford, maritime facilities in the region are chiefly devoted to recreational boating at this time.

The Connecticut Port Authority believes that Connecticut's geographic location could provide an alternative to New York/New Jersey as an entry point for perishable food products headed to the New England market – allowing shippers to avoid the transportation bottleneck of the I-95 corridor when moving goods north from more southern ports.[xxii] Such a development could reduce the number of trucks in the region if logistics permit.

Overarching Trends

While in some regions of New York, New Jersey, and Pennsylvania the market for new industrial development remains significant, a leading planning official in the NYMTC region is observing (as others have) that the industrial warehousing and distribution market is "entering an overbuilt phase. More 'on spec' construction by smaller investors appears to be occurring, and lease rates remain exceptionally high. While companies are now keeping more inventory than before because of supply chain disruptions, pent-up consumer demand is easing, and stores are trying to clear out older inventories. Combined with an economic slowdown, certain classes of industrial buildings may have peaked."[xxiii] An official of the Lehigh Valley Planning Commission (LVPC) in Pennsylvania noted in October 2022 that as for new development, LVPC reviewed 23,682,032 square feet of proposed industrial development through the third quarter of 2022. This represented over 10 million square feet more than was reviewed for all of 2021. However, even given those figures, the LVPC believes that the market for industrial property is saturated and may change.

Retailers may see that brands that rely solely on their online presence will falter during 2023. An industry analyst predicts that 75 percent of U.S. retail sales in 2023 will take place in stores, with a rise in online orders that have the option for in store pickup.[xxiv] This will temper the growth in direct-to-consumer shipping, which nonetheless will remain strong and contribute to regional traffic volumes.

While pressure on supply chains as experienced during the COVID-19 pandemic appear to have eased

somewhat, there remain issues with port, rail, and truck capacity. The New York Federal Reserve's Global Supply Chain Pressure Index, a global measure designed to identify supply chain disruptions using a range of indicators, is at 1.0 as of December 2022, down from a pandemic high of more than 4.0 in 2021. Additionally, freight rates and shipping container rates are in decline, a sign of slowing demand and an easing of port congestion.

On-Going Strategies and Opportunities

Freight Trucking

Trucking operations in the region can be improved with reductions in congestion – especially on the freight heavy corridors of I-84 and I-95. WestCOG, in coordination with the Bridgeport-Stamford TMA, continually update the congestion management process for the region that develops specific strategies for improving congestion including selective widening at known bottlenecks, geometric improvements on the interstates, and improving public transit and non-motorized vehicle options to reduce the number of single occupancy vehicles on freight routes.

A frequent source of non-recurring delay are trucks striking bridges. Improving the signing of height and weight restrictions of bridges more clearly can help to minimize these occurrences. This is especially important on CT-15, otherwise known as the Merritt Parkway, where the entire highway prohibits trucks due to low bridge clearances – better signage, height detectors, flashing lights and enforcement are needed. WestCOG also recognizes the need for inventorying the low height bridges in the region to have a consistent plan for signage and working with GPS providers to update their maps to identify all of these locations can reduce the frequency of such crashes. Trucks also often strike rail overpass bridges – the most frequent incident areas have been identified as needing added clearance and width in the project listing of the Plan.

Freight Rail

The region's goal is to preserve existing freight rail capacity and to work with freight industry stakeholders to ensure maintenance of rail freight service to key locations in the region. While current freight industry trends favor the use of trucks for most freight movements in the region, to the extent possible WestCOG seeks to increase the use of rail to move freight to/from and through the region that would otherwise be moved by truck. Part of that work might include the establishment of inland freight ports in the region, as has been proposed in nearby Naugatuck.[xxv]

Infrastructure maintenance is key. The economics of freight rail remain challenging, particularly so for the Class II railroads that serve the region. The 2020 award of the Better Utilizing Investments to Leverage Development (BUILD) grant for a Regional Value Capture Feasibility Study may prepare the region for the financing of improved rail infrastructure on the Danbury and New Canaan Branches, and there is potential for replication of value capture as a tool for investing in rail infrastructure that serves both passenger and freight movements in the region.

The vast majority of rail projects in the region will focus on the maintenance or improvement of passenger service, with freight rail benefitting from these improvements made along the New Haven and Danbury Lines. Additionally, the Connecticut Department of Transportation is evaluating the electrification of the Connecticut Rail System which includes both of those lines that also have freight movements.

Regional Models of Collaboration

Continue Coordination with CTDOT and other MPOs/COGs

WestCOG, in concert with other Connecticut COGs participants in the development of freight-relevant statewide plans such as the State Rail Plan (2016) and State Freight Plan (2022). CTDOT is currently updating the State Rail Plan for release in early 2023, where WestCOG participated in outreach to freight

rail operators in its region and provided updated information on freight generators for the Plan.

Continue Participation in the MAP Forum's Multi-State Freight Working Group

The working group of ten planning organizations coordinate freight planning work in Connecticut, New Jersey, New York, and Pennsylvania. The group has discussed several issues affecting the greater New York Metropolitan area including the shortage of truck drivers, inventorying truck parking, and share freight studies underway in the region.

The Multi-State Freight Working Group served as the Technical Advisory Committee for the New York Metropolitan Transportation Council's (NYMTC) *Clean Freight Corridors Planning Study* (2022). It assessed opportunities for designation and development of Clean Freight Corridors within the NYMTC planning area and across several states, including the western Connecticut region. The Study recommended I-95 as a Priority Development Corridor to advance clean freight by enabling the necessary infrastructure, such as charging/fueling and signage.

Appendix E: Regional Freight Profile provides a detailed overview of goods movements in western Connecticut.

Chapter 5 : Airport Access by Surface Transportation

There are no major commercial airports within the region. Residents, workers, and visitors rely on the surface transportation system for access to several nearby facilities in Connecticut, New York, and New Jersey. Connections to these airports can be made via the local highway system and transit, but more commonly by limousine, taxi and rideshare services.

Commercial Airports

The commercial airports nearest to Western CT (Figure 23) that offer domestic and international passenger service are:

- Tweed – New Haven (HVN)
- Bradley International (BDL)
- Westchester County Airport (HPN)
- John F. Kennedy International (JFK)
- LaGuardia (LGA)
- Newark Liberty International (EWR)
- New York Stewart International (SWF)

The MTP does not provide recommendations for air travel or airport facilities but does focus on surface transportation accessibility of airports. Travelling to these major commercial airports from WestCOG communities by public transportation varies from inconvenient to difficult to impossible. WestCOG continues to maintain relationships with regions in the greater metropolitan area to advocate for better and reduced transfers on public transportation to the airport, decreasing travel time on all of the train lines in and out of the region, and increasing the reliability of the highways in and out of the region.

Tweed-New Haven Airport

This airport is owned by the City of New Haven and straddles the New Haven/East Haven line. Passenger service is provided to fourteen cities in the eastern U.S. The airport recently completed a Master Plan that envisions a 700-foot extension to one runway and additional terminal area development.

Union Station in downtown New Haven is served by Amtrak and Metro-North passenger train services to western Connecticut. A CT Transit shuttle bus service from Union Station to the airport has been in operation since July 1, 2022.

Bradley International Airport

Bradley International is the largest airport in Connecticut and is operated by the Connecticut Airport Authority. Located in Windsor Locks, it is served by eleven airlines and is undergoing renovations, including construction of a new terminal.

To access the airport from western Connecticut, travelers can take Metro-North Railroad to New Haven and transfer to the Hartford Line to Hartford or Windsor Locks. Public access to Bradley is currently provided by two CTtransit Hartford based bus routes: Route 24 runs from the Windsor Locks train station (a second, modern station is under construction) to Bradley, while the Bradley Flyer (Route 30) runs from downtown Hartford.

The Capital Region Council of Government's Regional Transit Strategy recommends enhancements to Amtrak service in the existing New Haven-Hartford-Springfield Commuter Rail corridor with bus rapid transit connection to Bradley Airport- improving the last leg of the trip for Western Connecticut residents.

Westchester County Airport

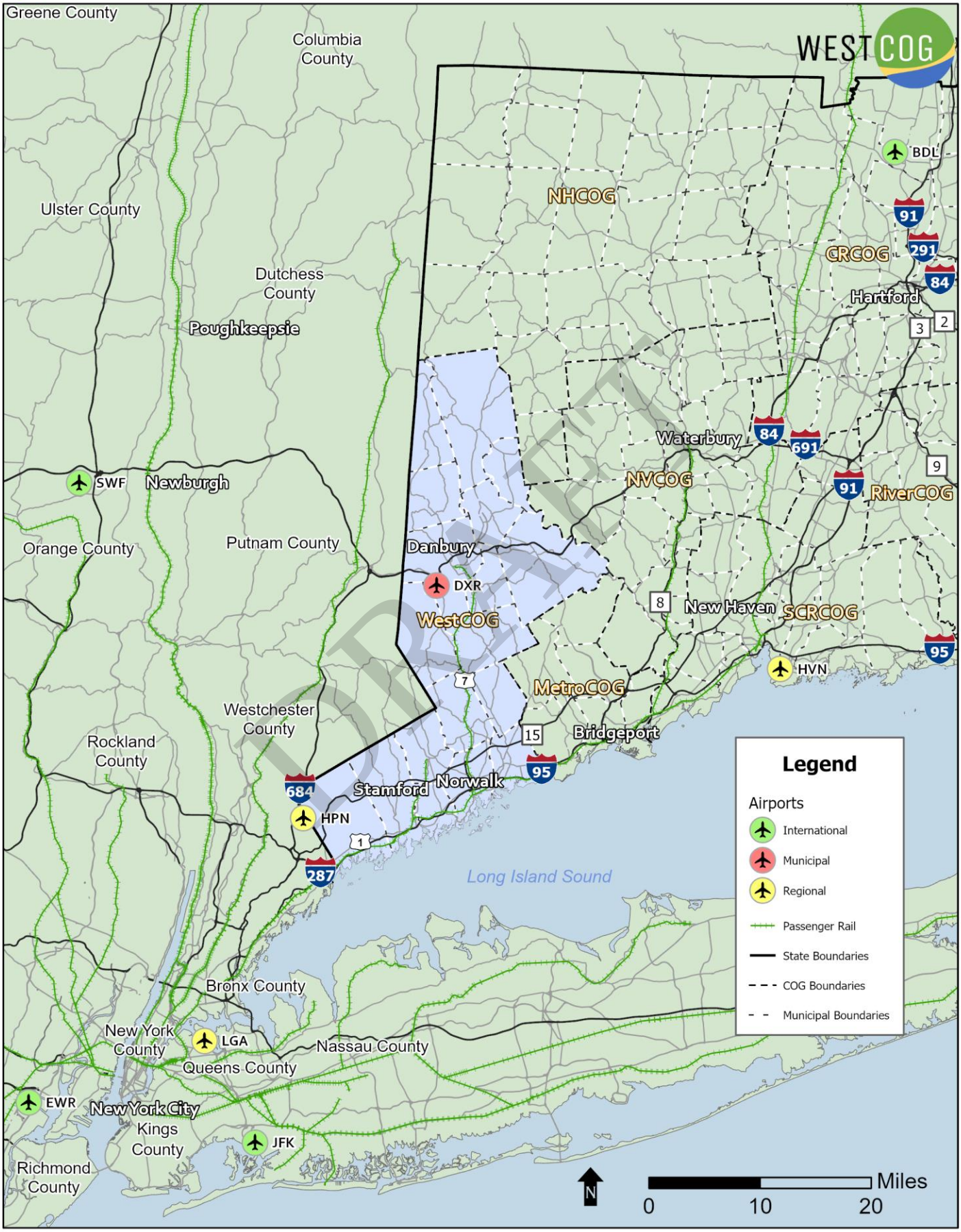
This facility is owned and operated by Westchester County and is located in the city of White Plains, NY, directly bordering the Town of Greenwich. Seven airlines serve the airport, flying to twenty-four destination cities.

Stamford's CTtransit Route 971 runs to White Plains, where it is possible to transfer to Bee-Line Route 12, which travels to the airport.

Figure 23: Passenger Airport Access Map

Passenger Airport Access

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: Passenger Rail - NYS GIS Clearinghouse, 2013

John F. Kennedy International Airport

This facility on the south side of Queens, New York is among the busiest in the country and serves a substantial amount of international traffic. It is served by seventy different airlines, many of which are foreign flag carriers.

To access JFK by public transportation from western Connecticut, travelers can take Metro-North to Manhattan, transfer to the subway then to the Air Train. The Air Train system connects all passenger terminals to airport parking lots, the hotel shuttle pick-up area, the rental car center, and NYC's public transportation network at Jamaica and Howard Beach Stations.

LaGuardia Airport

This airport on the northern side of Queens, New York is served by eleven airlines and provides international service to Canada.

To access LGA by public transportation from western Connecticut, travelers can take Metro-North to Harlem-125th Street, transfer to the M60-SBS bus, which makes multiple stops along 125th Street in route to the airport.

Newark Liberty International Airport

This airport is located nine miles west-southwest of Manhattan and is near the Newark Airport Interchange, the junction of I-95 and I-78, both components of the New Jersey Turnpike.

Newark Liberty is served by AirTrain Newark, a three-mile monorail that connects the airport terminals to the Newark Liberty International Airport Station on Amtrak's Northeast Corridor with connections to western Connecticut. Express buses also operate to the Port Authority Bus Terminal, Bryant Park and Grand Central Terminal in Manhattan.

New York Stewart International Airport

This airport is located near the intersection of I-84 and I-87 in the town of New Windsor, NY west of the Hudson River. It is approximately 30 miles from Western Connecticut.

The airport is operated by the Port Authority of New York and New Jersey and is served by three airlines flying to nine domestic destinations in the southeastern US. International service is provided by flights to Reykjavík, Iceland, with connections to European destinations.

Rail Service – The Metro-North Railroad's Hudson Line travels north from Grand Central to Poughkeepsie. A shuttle bus service (the Newburgh – Beacon Shuttle) is available from the Beacon station to the airport (approximately ten miles).

General Aviation

The region is also home to a municipal airport in Danbury and a small facility in New Milford.

Danbury Municipal Airport (DXR) is a public use general aviation airport located three miles southwest of the business center of Danbury. The 248-acre airport is owned and operated by the City of Danbury through an appointed Aviation Commission and staff. DXR is a self-sustaining airport that generates revenue from facilities and services at the airport which include aircraft maintenance, flight instruction, charters, hangars, and tie-down spaces.

Danbury Airfield (later Danbury Municipal Airport) opened in 1930 and is classified as a reliever airport by FAA, which means that it can accommodate general aviation traffic displaced from full-service airports (Bradley International, Tweed New Haven and ones in eastern New York State) when scheduled air services require more capacity.

Danbury Municipal has nearly 300 based aircraft and more than 67,000 operations. According to a 2013 report, aircraft owners at Danbury come from Fairfield and Litchfield Counties, as well as Long Island, New York City, Westchester and Putnam Counties in New York state. DXR is less than three miles from the New York border. As a result, a significant number of hangar tenants are New York residents or businesses. Approximately half of the total traffic is from general aviation flight training. General aviation and corporate traffic that would

otherwise fly to Westchester County Airport in White Plains, NY use DXR as an alternative.

Danbury Airport recently completed an Airport Master Plan (2009, with an update in 2017) and continues to seek Federal funds for capital improvements.

Danbury Municipal Airport is served by public transportation. The HART Danbury Fair Mall – Lake Avenue route stops along Backus and Kenosia Avenues. The Danbury-Norwalk Route 7 LINK bus also serves these streets as well as the nearby Miry Brook Park and Ride lot. Convenient road access is provided by I-84 to the north and US-7 to the east.

Chapter 6 : Active Transportation

Active transportation includes all modes that require the user to move their body to get to their destination including biking, walking, and rolling. The Plan advocates for roadway projects that give people a safe and accessible alternative to driving alone that also promotes increased physical activity. These corridors are called Complete Streets and when complemented with a backbone network of multi-use trails inter-municipal and regional travel by bicycling or walking becomes an attractive option.

Complete Streets

The Bipartisan Infrastructure Law defines "Complete Streets standards or policies" as "standards or policies that ensure the safe and adequate accommodation of all users of the transportation system, including pedestrians, bicyclists, public transportation users, children, older individuals, individuals with disabilities, motorists, and freight vehicles."

Connecticut General Statutes § 13a-153(f), which applies to WestCOG, requires that "accommodations for all users shall be a routine part of the planning, design, construction, and operating activities of all highways." Additionally, at least one percent of total yearly transportation funding is to be spent on improving infrastructure for non-motorized users, such as sidewalks, bike lanes or separated bike paths. This act also established the Connecticut Bicycle and Pedestrian Advisory Board, whose duties include "examining the need for bicycle and pedestrian transportation, promoting programs and facilities for bicycles and pedestrians in the state, and advising appropriate agencies of the state on policies…"

One of the six main regional goals of this Plan is to encourage complete streets by enabling safe and accessible streets for all users. This Plan has recommendations for complete streets in all three principal cities and along US-1, US-7/US-202, CT-34, CT-37, CT-53, CT-123, and CT-137. Any new roadway project proposal is evaluated for feasibility of incorporating complete streets into the scope.

Transportation Corridor Studies

Corridor and regional transportation studies are conducted as part of HVMPO and SWRMPO's transportation planning program and through study solicitations from CTDOT. Pedestrian and bicyclist mobility, safety, and accessibility are vital elements of a comprehensive transportation plan. Since the last plan, several studies have been completed and new ones are under development. These include:

Westport Main to Train

This study was completed in 2019 and was developed to identify improvements to vehicular, bicycle, and pedestrian safety and circulation along Post Road (US-1) and Riverside Avenue (CT-33). The main objective is to create better connections between the commercial center in Westport and the Saugatuck train station and to improve mobility by enhancing non-motorized transportation choices. Recommendations developed by this study include upgrades to pedestrian signal equipment, new crosswalks, curb extensions, upgrades for ADA accessibility, bicycle facilities and completing gaps in the sidewalk network on Riverside Avenue. Concept plans were developed to aid the town in future construction projects (Figure 24).

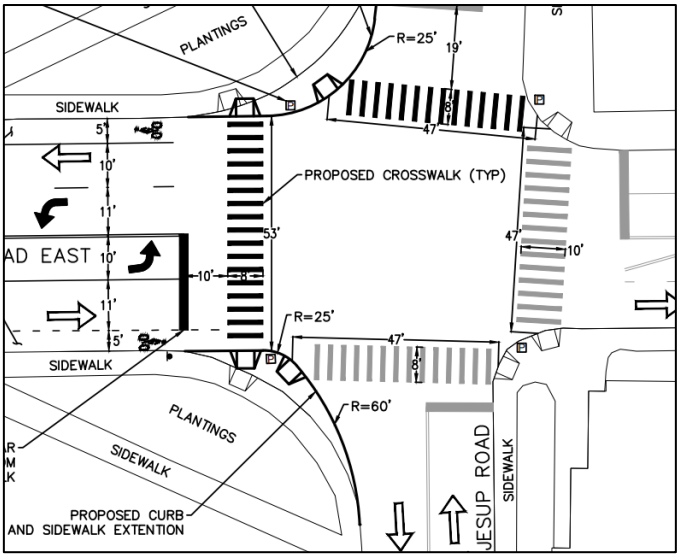


Figure 24: Intersection Concept for curb extensions and new crosswalks

Danbury and New Fairfield Route 37

In 2021, WestCOG finalized the CT-37 corridor study in close coordination with Danbury, New Fairfield, and CTDOT. The study sought to develop solutions to reduce congestion, enhance pedestrian mobility, improve safety, and promote environmentally friendly modes of transportation. The study developed a series of short, medium, and long-term improvements for key intersections throughout the corridor. Recommendations include new sidewalks to close existing gaps, new crosswalks, upgraded signal equipment and the use of leading pedestrian intervals to allow safer crossings for pedestrians (Figure 27).

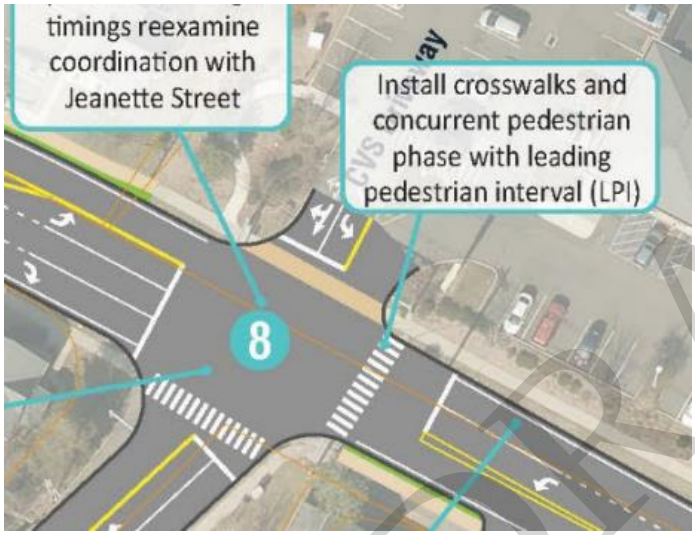


Figure 27: Route 37 Study Concept

Norwalk Route 1 Corridor Master Plan

A corridor study on US-1 in Norwalk is under development which will provide a comprehensive transportation and land-use plan by identifying short-term strategies for quick implementation that will improve mobility, safety, and accessibility for all users and address all modes of transportation utilized within the corridor. The study area involves the 2.9-mile corridor of Connecticut Avenue (US-1) and Van Buren Avenue (US-1) and extends to the parallel running roads of Flax Hill Avenue and West Cedar Street located in the City of Norwalk. The project, which is expected to begin in 2023, will be guided by an advisory committee and will have robust public engagement to ensure the plan reflects the needs of the Norwalk community.

Stamford Bicycle and Pedestrian Plan

WestCOG and the City of Stamford worked together to develop a Bicycle and Pedestrian Master Plan. The purpose of this plan was to analyze and recommend ways to improve the safety, accessibility, and mobility of pedestrians and bicyclists in Stamford. The plan focused on developing a bicycle network (Figure 26) for a variety of users. Figure 25 shows the different types of facilities that were recommended as part of this plan. Creating a network of different facilities lends itself to making bicycling safe and appealing to people of all ages and abilities. WestCOG is

Figure 25. Stamford Planned Bicycle Network

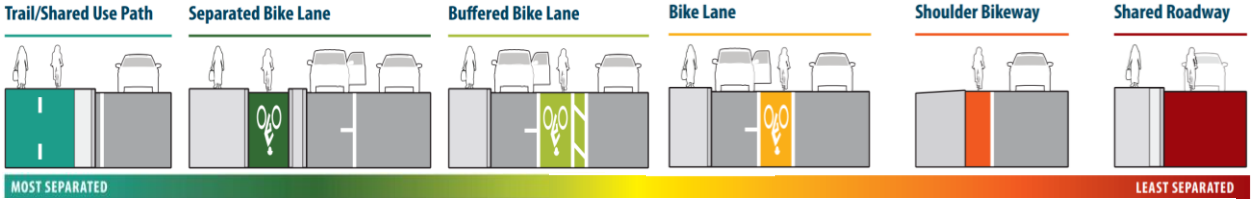


Figure 26. Types of Bicycle Facilities (Stamford Bicycle and Pedestrian Plan)

interested in building from this plan and developing similar networks and recommendations for the other municipalities in HVMPO and SWRMPO.

Regional Bicycle Planning

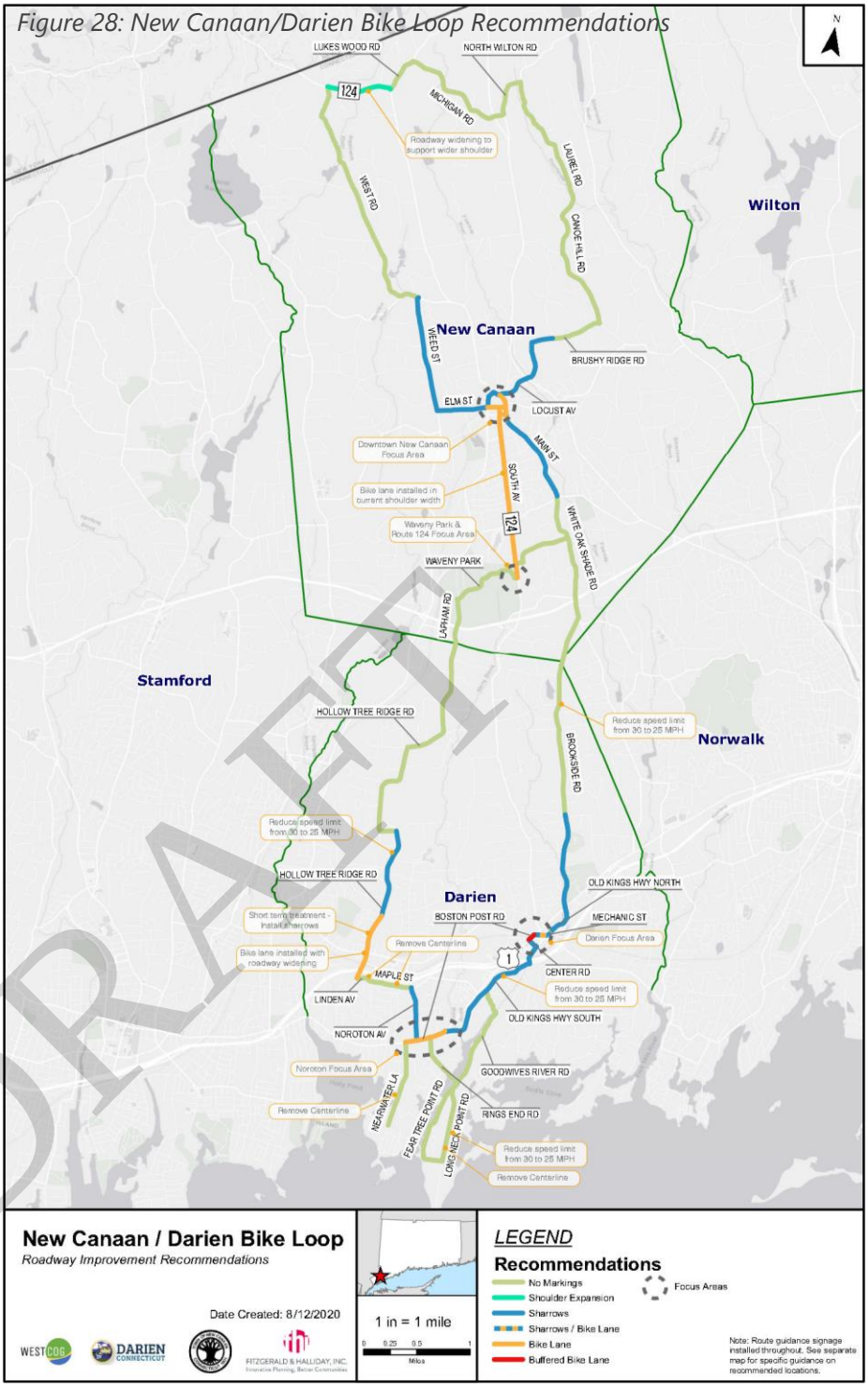
New Canaan-Darien Bike Loop

This initiative started as an idea brought forth by New Canaan and Darien in an effort to identify a route to connect key destinations between the two municipalities. WestCOG staff reviewed maps showing Average Daily Traffic (ADT) on local roads to develop a preliminary route for further exploration. The roads with the lowest ADT were considered to be the best starting point. The preliminary route stretched from northern New Canaan, through both downtown areas, and south to the beaches in Darien. Along the way, this route connects a number of destinations including schools, parks, local businesses, and transit stations.

In summer 2019, this initiative became a pilot project through the Active Transportation component of Department of Public Health's State Physical Activity and Nutrition (SPAN) grant. A consultant, Fitzgerald and Halliday Inc. (FHI), was tasked with evaluating the feasibility of this route, identifying safety challenges, and recommending the final routing and facility types.

In consultation with Darien and New Canaan, FHI developed a 25.5-mile route of various facility types including sharrows, bike lanes, and buffered bike lanes. Figure 28 displays the alignment of the bicycle route and the corresponding facility type.

Figure 28: New Canaan/Darien Bike Loop Recommendations



Regional Bicycle Plan

WestCOG completed a Regional Bicycle Plan in the development of the Metropolitan Transportation Plan to identify projects to improve bicyclist safety and mobility. The goal of this plan is to create a cohesive network building from existing studies' recommendations, promote municipal bicycle planning efforts, ensure regional coordination among such efforts, and set regional policies and funding

that can generate local and regional benefits. The plan supports continued development of the network of multi-use trails and on-road routes to further identify strategies to enhance these routes and better connect them to each other and to key destinations. As part of this effort, an inventory of existing, planned, and proposed bicycle facilities in the Region was developed (Figure 29). Please note, this map reflects general concept facilities for planning purposes. These concept facilities are meant to highlight existing gaps and where connections are needed; the final alignment of a specific bicycle facility requires further planning and analysis.

The full Regional Bicycle Plan can be found in Appendix C.

Connecticut Active Transportation Plan

CTDOT published the Connecticut Active Transportation Plan in 2019 outlining the state's goals of program and infrastructure investments to support a safer and more accessible transportation system. The plan analyzed data including trip types and crashes to better understand the user needs and priority locations for non-motorized infrastructure projects. The plan outlined a series of recommendations for strategies, policies, and projects to improve the pedestrian and bicyclist environment. Some examples include:

- Implement infrastructure and facility improvements to reduce bicycle- and pedestrian-involved crashes on state roads: implement recommendations from the Route 1 Road Safety Audit that address walking and bicycling deficiencies
- Improve pedestrian and bicycle safety near rail stations, transit hubs, and bus stops: assess department-maintained bus stops and shelters for accessibility barriers
- Enhance mobility for those with disabilities: complete a field inventory of curb-ramps, sidewalks, and traffic signals within the State right-of-way to assess barriers

Non-Motorized User Safety

Several programs have been implemented in Connecticut and the Region to promote safety through education, training, and implementation:

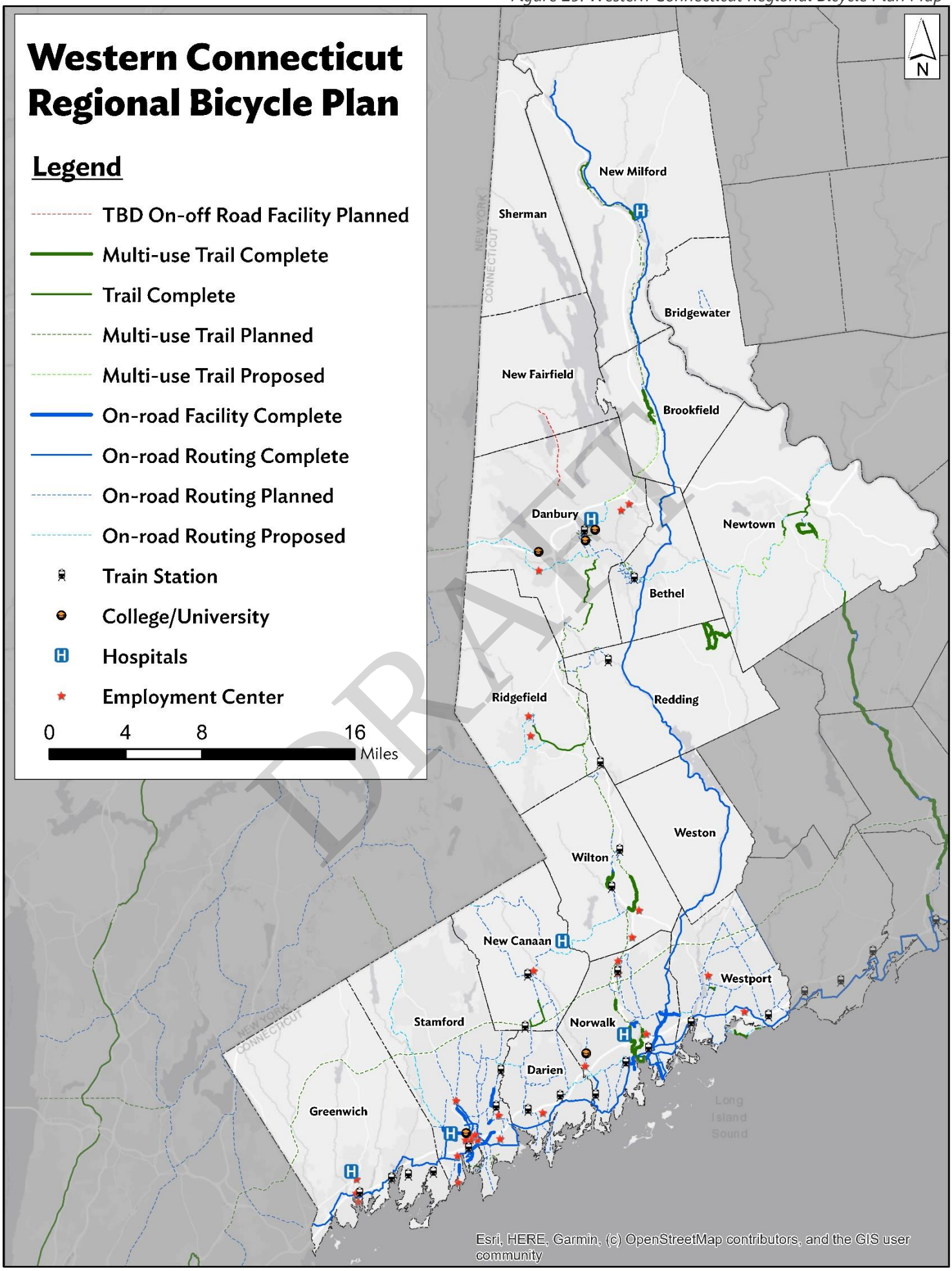
• **Share The Road Campaign:** Connecticut General Statute Section 14-232, effective October 1, 2008, requires CT motorists to allow for at least three feet of separation in overtaking and passing cyclists.

• **The Connecticut Safety Circuit Rider Program:** In partnership with the CT Technology Transfer (T2) Center at UConn, the program is designed to provide safety-related information, training, and direct technical assistance to agencies responsible for local roadway safety.

• **Watch for Me CT Program:** The CTDOT statewide program, in partnership with the CT Children's Injury Prevention Center, seeks to reduce the number of crashes of bicyclists and pedestrians with motor vehicles through public service messages, special events, and sponsorships.

• **Bike safety workshops**: Organizations such as Bike Walk CT administer cycling education and safety programs for both children and adults. These educational events are often co-sponsored with local clubs, nonprofits, and schools. Safety curricula can be designed for school settings, and the Smart Cycling Manual from the League of American Bicyclists is relied on.

Figure 29: Western Connecticut Regional Bicycle Plan Map



On-going and Completed Projects

Local Transportation Capital Improvement Program (LOTCIP)

As discussed in the Chapter 3, LOTCIP projects, which are at varying stages of development, have all evaluated non-motorized user accommodations to ensure safety and improve mobility. Many LOTCIP projects include sidewalk improvements, new crosswalks, or pedestrian signal equipment updates.

Figure 30: Stamford Boxer Square Project (Source: City of Stamford)

Some projects are solely focused on pedestrian enhancements. In 2020, the Town of Wilton received LOTCIP funding to construct a pedestrian bridge to connect the Wilton Train Station to Wilton Center. This bridge will provide a safe connection for pedestrians to access transit, commercial retail, restaurants, the town library, residential housing, and will be ADA accessible. Projects like this help foster safer, more sustainable, and accessible downtowns.

Community Connectivity Grant Program (CCGP)

This grant program was established by Governor Malloy's Let's Go CT Transportation Plan in 2015 to improve mobility and safety for pedestrians and cyclists across Connecticut. Funding has been granted to conduct Road Safety Audits (RSAs) and implement smaller-scale infrastructure improvements to improve connectivity. Since the program began, eleven municipalities across HVMPO and SWRMPO received RSAs and over six construction projects have received grant funding.

In 2020, the City of Stamford and CTDOT received a regional award for Quality of Life/Community Development by the Northeast Association of State Transportation Officials for the implementation of the Boxer Square Revitalization project (Figure 30). This project was funded $400,000 by the Community Connectivity Program. The redesigned intersection has improved traffic operations and provided safer facilities for pedestrians and bicyclists and improved access to transit.

In the past few years, the following projects in HVMPO and SWRMPO have been funded to improve active transportation safety, accessibility, and connectivity:

- Bridgewater, Center Street Connectivity Improvements
- Brookfield, Still River Greenway Town Hall Access
- Norwalk, Bicycle and Pedestrian Connectivity Project
- Westport, Hills Point RSA Enhancements (New Sidewalk)
- Stamford, Lower Summer Street Promenade

Future Needs

The passage of the Bipartisan Infrastructure Law (BIL) in November 2021 has presented a historic investment in the nation's transportation infrastructure. Among a number of new transportation funding programs, BIL has also increased funding levels for non-motorized projects through existing programs like Transportation Alternative Program. Over the next few years, these programs offer an opportunity to enhance the bicycle

and pedestrian environment throughout the region. In addition to these funding programs, continued planning is needed to identify barriers or gaps and to prioritize projects to address those challenges. To assist municipalities with planning for accessibility, WestCOG has sought grant funding to develop Transition Plans under the Americans with Disabilities Act for municipalities across the region. These plans will inventory municipal facilities and roadways to identify barriers then propose strategies for improved accessibility.

Recreational and Multi-use Trails

Access to recreational trails provides numerous benefits to the residents in the Housatonic Valley and South Western Regions. Multi-use trails in particular have the ability to serve both recreational and travel purposes, if designed correctly:

Still River Greenway - The Still River Greenway is a 2.25 mile, 10-foot-wide paved multi-use trail in Brookfield. Currently, the trail runs from the Four Corners area to the Brookfield Municipal Center. The other section of the trail runs from the Municipal Center, and loops around in the woods. The long-term goal for the greenway is to connect New Milford and Danbury.

New Milford River Trail – Once constructed, this trail is proposed to be 13-miles and follow the Housatonic River south through downtown New Milford and provide a connection to the Still River Greenway in Brookfield. Two sections of the trail have been completed:

- Phase 1: 5 miles from the Boardman Road entrance to Gaylordsville. It runs for 1½ miles on a crushed, gravel surface through Sega Meadows Park, where it joins the unpaved and lightly trafficked River Road and continues for another 3½ miles to the center of Gaylordsville.
- Phase II: Downtown New Milford ¼ mile section at Young's Field's new riverside park, was completed in Spring of 2017.

In 2021, following a grant from CTDEEP's Recreational Trails Grant Program, the town completed additional planning and design work for the trail segment between Boardman Road and the MedInstill entrance.

Norwalk River Valley Trail – The NRVT is an important multi-use trail providing a north-south connection from Calf Pasture Beach in Norwalk, through Wilton, Ridgefield, Redding, and ends at Roger Park in Danbury. When complete it will be 30-miles long and handicapped accessible. Various segments of this trail have been completed, while others are still in planning or conceptual phases. Most recently, the "Redding Mile" was completed in 2022 with a grant received through the CTDEEP Recreational Trails Grant Program. Two segments of the trail have funding through the LOTCIP program:

- Ridgefield Ramble from Simpaug Turnpike to Fire Hill Road – 1.6 miles of stone dust and timber boardwalk trail. Construction is anticipated to start in 2024
- Wilton Loop North from Skunk Lane at the current northern terminus to the Cannondale Train Station – 0.9 miles of stone dust and timber boardwalk trail over wetlands.

Approximately 15 miles still need funding to complete the entire trail.

Mill River Greenway – Located in downtown Stamford, this trail will improve bicycle and pedestrian movement in the city. It will create a link to several existing parks and open spaces located along the Mill River including Scalzi Park. Construction of the Mill River Park has been completed, and at full build, the greenway will provide an alternative to Washington Boulevard for bicyclists and pedestrians between the Stamford Transportation Center, Downtown Stamford, and the Ridgeway neighborhood.

The Ridgefield Rail Trail follows the old Branchville Connecticut rail corridor for 2.3 miles from Ridgefield to Branchville. It was donated to the town of Ridgefield by Connecticut Light and Power in 2000. While it does not currently allow bicycling, there have been discussions in recent years to change this policy. The Plan calls for extending the trail to the

Georgetown and Branchville train stations and also connect to the Norwalk River Valley Trail.

The Housatonic Rail Trail/Pequonnock River Trail is a 13.6-mile trail that starts just north of the Bridgeport Transportation Center on Housatonic Ave./Water St. in Bridgeport and ends about a mile north of Pepper Street in Monroe at the Monroe-Newtown town line. The trail follows an abandoned rail line and its surfaces are asphalt and crushed stone. The long-term goal is to formalize the current trail in Newtown and extend it to the Fairfield Hills Campus and downtown Sandy Hook.

The **Western New England Greenway** (WNEG) is a multi-segment, multi-state network of mostly on-road bike routes that will follow the US-7 Corridor in Connecticut from Long Island Sound to the Canadian Border. It will eventually incorporate the Norwalk River Valley Trail, Still River Greenway, and the New Milford River Trail – and connect with the East Coast Greenway. It follows a route independent of the Norwalk River Valley Trail so as to appeal to recreational riders - the most scenic (and less direct) on-road route from Norwalk, to Brookfield - and points north. The Western New England Greenway has been designated as US Bike Route 7.

Connecting the Trails

In development of the Regional Bicycle Plan introduced earlier in the chapter, the regional network was built off a north-south and an east-west spine of accessible routes. The north-south spine is made up of the Norwalk River Valley Trail, Still River Greenway and New Milford River Trail. However, a crucial gap exists in the plans for these facilities- from the northern end of the Norwalk River Valley Trail in Danbury to the southern terminus of the Still River Greenway in Brookfield. Future studies will be needed to determine the exact alignment of the facilities but the plan recommends an on-road facility through downtown Danbury that would connect to a multi-use trail following the alignment of US-7 that flows into the Still River Greenway.

For the east-west spine of the network, the East Coast Greenway has been identified as the major corridor that connects the municipalities along the shoreline in the south. With the greater Danbury area over 20 miles from the East Coast Greenway, a second east-west corridor has been recommended. This mostly on-road facility will connect at the New York border through major retail locations, both Western Connecticut State Univiersity campuses, parks, downtown Danbury and Bethel, and finally connecting with the Fairfield Hills campus in Newtown. An important aspect of this facility is that it will intersect with the north-south spine for bicyclists to access destinations to the south and the north.

This east-west spine will not only be important as a regional connection but it is also a crucial link in the greater-regional network. The final segment of the Maybrook Trailway in Southeast, NY was completed in 2022 that connects the New York/Connecticut border in Danbury with Brewster, NY and via the Empire State Trail to Manhattan in the south and the Adirondacks, Buffalo, NY and Canada in the north. On the east side of this new, east-west spine it would connect to the Housatonic Valley Rail Trail/Pequonnock River Valley Trail in Newtown with a nearly complete connection to Bridgeport, CT.

Natural Surface Trails

In addition to these trails, there are a number of walking and multi-use trails located throughout western Connecticut. Many of the state's natural surface trails are largely built and maintained by volunteers: Connecticut New England Mountain Biking Association (CT NEMBA), local municipalities and land trusts, and the Connecticut Forest and Park Association (CFPA). Natural surface trails are the most extensive trail system and are a valuable asset for Connecticut. These recreational facilities also support tourism in the Region.

Al's Trail in Newtown is a natural surface trail between Fairfield Hills and the Upper Paugussett State Forest. It connects Fairfield Hills to Sandy Hook

Village. The trail requires some cleanup, and efforts are underway to improve it.

The Ives Trail Greenway is a regional trail that links open spaces in Bethel, Danbury, Redding and Ridgefield. The trail begins at Redding Open Space and continues for 20 miles, to Terre Haute in Bethel, northwesterly to Rogers Park in Danbury, past the Charles Ives Homestead, and then southerly through Tarrywile Park. It then continues southwesterly across US-7 and through Wooster Mountain State Park to the existing trail systems in Ridgefield's Bennetts Pond Park and Pine Mountain Park.

Ridesharing

Carpooling, otherwise known as ridesharing, was the second most common mode for workers traveling to work in 1980 at 16 percent of the region's population, it has steadily been declining since and in 2020 it dropped to the fourth most common mode at 8 percent of the population- trailing public transit and working from home. In 2020, the municipalities with the highest carpooling rates tended to be in or near cities where many workplaces were located. Danbury and New Milford have the highest carpooling rates in the Housatonic Valley MPO region and Stamford has the highest in the South Western Region.

In addition to the rail station parking lots, CTDOT maintains a statewide system of Park and Ride lots for ridesharing purposes, nineteen of which are in the Region. Exceptions here are lots in New Fairfield and Ridgefield which were established as parking locations for rail feeder services to the Harlem Line. Lot size and usage vary greatly among these lots but generally they are smaller, and most are utilized less than the rail station lots. Usage of some park-and-ride lots, while less used than prior to the pandemic, are experiencing greater utilization most notably the I-95 Westport Exit 18 and Newtown I-84 Exit 9 lots (Figure 31).

At the CTDOT Park-and-Ride facilities (particularly those along the I-84 corridor), staff has noticed that larger commercial vehicles and abandoned vehicles have been present in the lots. In particular, the lot at I-84 Exit 11 has been impacted by nearby interchange reconstruction, which has had commercial vehicles present. Other locations where commercial vehicles have been observed are at I-84 Exits 1 and 2, and the White Turkey Road Extension Lot in Brookfield. In particular, semi-trailers and box trucks have been observed on occasion at the I-84 Exits 1 and 2 lots, respectively. Abandoned vehicles have been observed at the New Fairfield Park-and-Ride. Staff has perceived a lack of security which may be impacting usage, and a potential need for increased surveillance. Park-and-Ride facilities across the region have repairs, improvements, and bus shelters replacements planned.

Telecommuting and Broadband Infrastructure

The number of workers working from home increased five-fold from about 2 percent in the 1980s to over 10 percent in 2020, the fastest growing method of commuting to work. The municipalities with the highest rates of people working at home are Darien, Redding, Sherman, Weston, Westport, and Wilton. Advances in telecommuting technologies have made working from home a viable option for many workers. Conditions for telework changed abruptly in early 2020 at the onset of the COVID-19 pandemic. In many workplaces, the workforce switched to a fully remote work schedule at the beginning of the pandemic, and many continue to work remotely at least a part of the time.

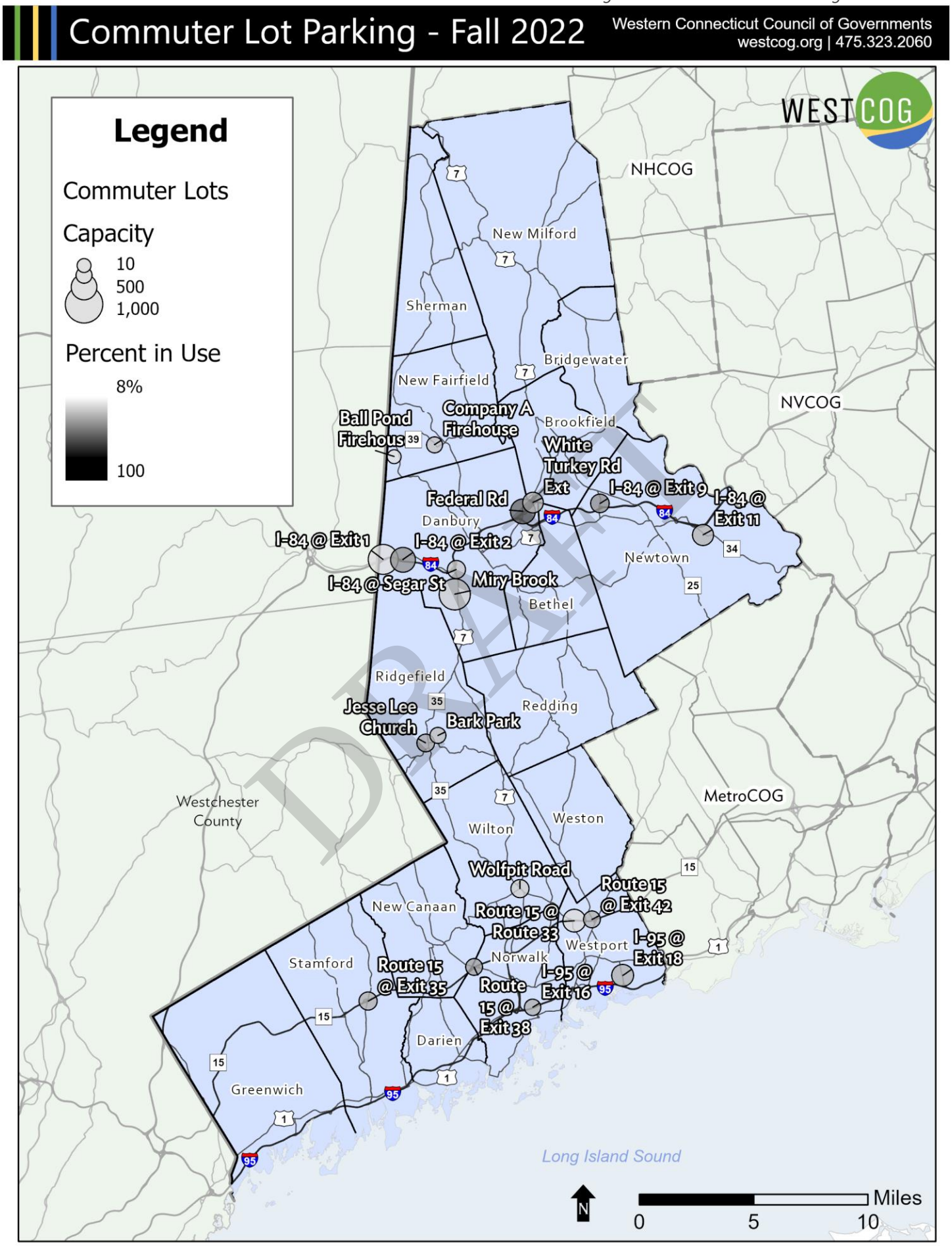
The COVID-19 pandemic highlighted the trend of increased reliance on internet service for daily needs beyond work such as childhood and post-secondary education; telehealth doctors' visits; fitness classes; virtually visiting with friends; grocery shopping; among others. Fast and reliable internet service to the home has become a necessity. In a July 2021 Consumer Reports Broadband Survey, they found 32 percent of Americans who do not have internet do not because it costs too much.[xxvi] Further work is needed to address the digital divide in many communities in the region and promote increased internet service availability at affordable rates.

WestCOG is currently working with consultant EntryPoint to understand the gaps in the broadband network and assess how different investment strategies would impact those gaps.

Personal and Micro-mobility

Uber, Lyft, Lyme scooters, and other forms of personal or micro-mobility are becoming more

Figure 31: Commuter Lot Parking - Fall 2022



Source: WestCOG Data Collection, 2022

popular among roadway users. Benefits of shared-use vehicles include improvement in air quality and congestion, especially in urban centers. Many municipalities are becoming interested in potential micro-mobility studies in the Region. Shared-use vehicles, if used by multiple travelers, would reduce the need to commute in a single occupancy vehicle, lessening the financial burden on vehicle owners. Increasing the availability of lower-carbon travel modes and micro-mobility is not only an opportunity for congestion mitigation, but also an opportunity for cost-savings. The creation of a safer, more multimodal, street increases the overall capacity of the roadway. This sustainable capacity increase means the corridor supports and encourages economic development through high density construction of housing and commercial space. The dense development within downtown centers is not only sustainable and generates significant economic activity, but due to the multimodal design of the roadway, tenants of these buildings are more likely to use modes of transportation other than cars. The increased availability of shared-use vehicles in downtown centers would positively impact the Region. Promoting alternative and sustainable modes of transportation promotes the reduction of congestion, air pollution, and personal financial burden. These themes are widely recognized as a preeminent quality of life issue in western Connecticut. Recurring roadway congestion, slow speeds, and delays are a common complaint and have been repeatedly recognized as a drag on the Region's economy. Much of the region's transportation activity is concentrated on the highway network, which is primarily oriented towards the major metropolitan areas in Norwalk, Stamford, and New York City. Shared-use vehicles and micro-mobility would expand connectivity for all road users to jobs and other opportunities, including residents in underserved communities.

Autonomous and Connected Vehicles

Since the last Plan was developed, a significant amount of development activity has occurred concerning Autonomous (AVs) and Connected Vehicles (CVs). These technologies are often discussed simultaneously; they are treated individually here.

Autonomous Vehicles

An AV is a vehicle that employs technology to replace the human driver partially or entirely in navigating a vehicle from an origin to a destination while avoiding road hazards and responding to traffic conditions.[xxvii]

The Society of Automotive Engineers (SAE) has developed a widely-adopted classification system for AVs with six levels based on the level of human intervention. The U.S. National Highway Traffic Safety Administration (NHTSA) uses this classification system.[xxviii]

AV technology is not sufficiently developed at this time for advanced deployment. A principal emphasis of AV technology development to date has been for freight movements. The industry is reporting limited progress in advancing it. There is also legitimate concern for the safety and reliability of AV technologies; further research and development is needed.

Connected Vehicles

According to USDOT, connected vehicles are vehicles that "enable safe, interoperable networked wireless communications among vehicles, infrastructure, and passengers' personal communications devices."[xxix] While some CVs can be AVs, all AVs must be CVs. Technology development is underway on vehicles, infrastructure, and personal communications devices.

In February 2021, the CTDOT published its first statewide Connected and Autonomous Vehicles (CAV) Strategic Plan[xxx]. The Plan's purpose was to provide the CTDOT's strategic approach to the development, release and sustainability of CAV technologies and solutions. CTDOT's two strategies are:

1. **Near-Term Strategy (2021-2025)** – CTDOT states that it will focus CAV objectives and actions on tangibles and deliverables, centered around the multiple facets of CAV technologies where there has been and continues to be significant

advancements by both industry and the public sector. This includes a variety of activities such as early policy coordination and development; assessments of workforce and infrastructure readiness; experience deploying pilot projects; and other activities.

2. **Long-Term Strategy (Beyond 2025)** – The CTDOT will continue to establish a timely feedback loop to adapt and engage with ongoing advancements in CAV technologies, policies and readiness in order to prepare for and support larger CAV deployments, to develop more comprehensive CAV policies, and to commit to upgrading the State's infrastructure and workforce for cooperative automation. This long-term strategy will be part of an overall assessment of CTDOT's institutional capabilities to implement multimodal CAV supportive infrastructure programs and to facilitate CAV technologies and services at a larger scale subject to available funding, standards, market penetration and readiness.

USDOT's Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) Program is funding development of several Connected Vehicle corridors across the U.S. An example is the Texas Connected Freight Corridors Project, a partnership led by the Texas Department of Transportation (TxDOT)[xxxi]. Technology applications include advanced traveler information, eco-dynamic routing, queue warning, work zone warning, wrong way driving detection and warning, road weather warning, low bridge height warning, truck signal priority, pedestrian/animal warning, truck parking availability, border wait time notifications, and emergency electronic brake light warning. USDOT advises that applying the technology to the freight community first achieves two goals: 1) a technology-ready sector that can easily integrate data from connected vehicle applications, and 2) immediate improvement in safety and mobility for trucks operating on Texas interstates. The Texas project will implement CV technologies in over 1,000 trucks and agency fleet vehicles that will be able to transmit data and receive warnings from these applications.

Reportedly, CTDOT is proposing to implement a CV test on a segment of the Berlin Turnpike (US-5/CT-15) in Newington. CTDOT will undertake two traffic projects on a ten-mile segment of the non-expressway portion of Berlin Turnpike to replace and upgrade 28 signalized intersections near the CTDOT's headquarters. These projects will test emerging traffic signal technologies, including V2I (Vehicle to Infrastructure) applications, traffic signal priority, adaptive signal control and automatic traffic signal performance measures (ATSPM).[xxxii]

Chapter 8 : Resilient Transportation Systems

Transportation systems must be adaptive to the changing climate and evolve to meet future needs. Planning needs to be forward-thinking to assess vulnerability, identify infrastructure and assets that are may be impacted by extreme weather events and mitigate those impacts to the greatest extent feasible.

Over the past decade, western Connecticut has experienced extreme weather events that have resulted in significant damage to regional infrastructure and transportation operations. In 2020, Tropical Storm Isaias brought high wind speeds which caused widespread power outages, and downed utility poles and trees. As a result, the transportation network was impassible in some areas which limited mobility and presented safety risks to residents in need of emergency response. Other storms have caused major flooding along the coast in southwestern Connecticut. During some events, passenger rail service is suspended, and transit service is impacted by blocked roadways. These impacts highlight the importance of considering resilience in all facets of transportation planning. Projects to help enhance resiliency include planning evacuation routes, training drills for emergency management and response, expanding transportation maintenance projects, elevating transportation assets in areas prone to flooding.

The Bipartisan Infrastructure Law (BIL) which was signed into law in November 2021, has strengthened USDOT's commitment to resiliency planning for transportation infrastructure. A new grant program, The Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT), will provide formula and discretionary funding over five years for projects that will make the surface transportation system more resilient to natural hazards and other climate-related events such as flooding, sea level rise, and extreme weather events. As part of this program, state DOTs have an opportunity to develop Resilience Improvement Plans to address the full range of weather events and natural disaster impacts to surface transportation infrastructure and systems. Should CTDOT prepare a Resilience Improvement Plan for Connecticut, HVMPO and SWRMPO will coordinate to ensure that regional needs are reflected in the plan.

Investments for a more resilient transportation system need to be made for all modes and infrastructure. This includes investing in more sustainable vehicle fleets, expanding transit service and enhancing non-motorized facilities to reduce non-SOV travel, upgrading roadway and bridge infrastructure to withstand extreme weather events, and improving technology to monitor and respond during emergencies. In addition to planning for climate change and weather events, transportation planning also needs to assess vulnerability regarding other emergency scenarios and disasters, such terrorist attacks or global pandemics. As discussed earlier in the MTP, the Covid-19 pandemic had tremendous impacts on daily life in early 2020. These events should be studied to better understand lessons learned and opportunities to respond faster and be more resilient should similar scenarios arise.

Emergency Management, Resiliency, and Hazard Mitigation

The United States' initiatives for emergency management and homeland security includes transportation system security programs that focus on passenger and asset safety. 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. MPO involvement in emergency management and homeland security, as well as transit security, is a required activity. The Connecticut Department of Emergency Management and Homeland Security (DEMHS) has designated five emergency planning regions in the state. WestCOG participates in Regions 1 and 5.

As Chair of the DEMHS Regions 1 and 5 Emergency Support Function group (a subset of the Regional Emergency Planning Team), WestCOG provides technical assistance to identify transportation emergency planning needs in the MPO area. The team works to identify regional emergency priorities need to be addressed, develops strategies to respond to potential threats to the Region's transportation systems, and decides how regional resources will be allocated.

The municipalities within DEMHS Regions 1 and 5 are diverse in many ways. They vary between urban and suburban; rural, hilly, and flat; as well as densely and sparsely populated. They enjoy varying levels of accessibility via highways, rail lines, and bus routes. However, they share many common goals, including a strong commitment to protecting their communities from the ravages of natural hazards. Five of these municipalities have direct coastal frontage on Long Island Sound. Several other municipalities are located less than 10 miles from the coast, while others are located farther inland. Geographic setting has an influence on the frequency and types of natural hazards that can affect the Region. Many municipalities in the Region have hilly topography and forested slopes. Other towns are relatively flat, with higher concentrations of prime and statewide-important farmland soils. Elevations in the Region ranges from sea level along the coastline to over more than 1,000 feet in some parts of Sherman and New Milford. The change in topography means that inland communities can experience significantly different weather and hazard event impacts than coastal communities. Major transportation routes in the Region include I-95 and the Merritt Parkway which traverse southern Connecticut and connects to I-91 in New Haven and Wallingford, US-7 running north from I-95 into New Milford, and I-84 connecting I-684 in New York to Hartford. All municipalities in the Region access these major routes through local and state highways.

While the Region is well connected with a variety of transportation routes spanning the municipalities, it is essential that these routes remain passable during and following a disaster. This allows residents to access shelters and provides efficient and timely recovery of the Region's businesses. Evacuation assistance for critical and special needs populations is handled differently in each of the Region's 18 municipalities. Numerous public and private facilities are critical to the assessment of risks from natural hazards and are important in mitigating the possible effects of events. Critical facilities include essential facilities, transportation systems, lifeline utility systems, high potential loss facilities, and hazardous material facilities. In the Region, critical facilities include facilities that support responses and recovery efforts, such as governmental offices and public works facilities. In addition, facilities that house vulnerable populations are considered in this category. This includes long-term care facilities, as these house populations of individuals that would require special assistance during an emergency. Critical infrastructure located in areas of flood risk are subject to flooding and therefore vulnerable to closure in the event of a natural disaster. Flooding is not the only concern, as infrastructure can be directly damaged by wind, fire, or earthquakes or impacted by downed powerlines, trees, and other debris.

The availability of major transportation infrastructure is critical for evacuation and response and to ensure that emergencies are addressed while day to day management of the each WestCOG municipality continues. These include highways, railways, airports, and waterways. In general, none of the waterways in the Region are used for commercial navigation. In addition to providing an essential mode of transportation under normal conditions, the availability of passenger and freight rail in the region are of critical importance for the movement of people and supplies following a disaster. In terms of evacuation, most WestCOG communities do not have large-scale evacuation plans.

Storm Surge Flooding

Western Connecticut Council of Governments
westcog.org | 475.323.2060

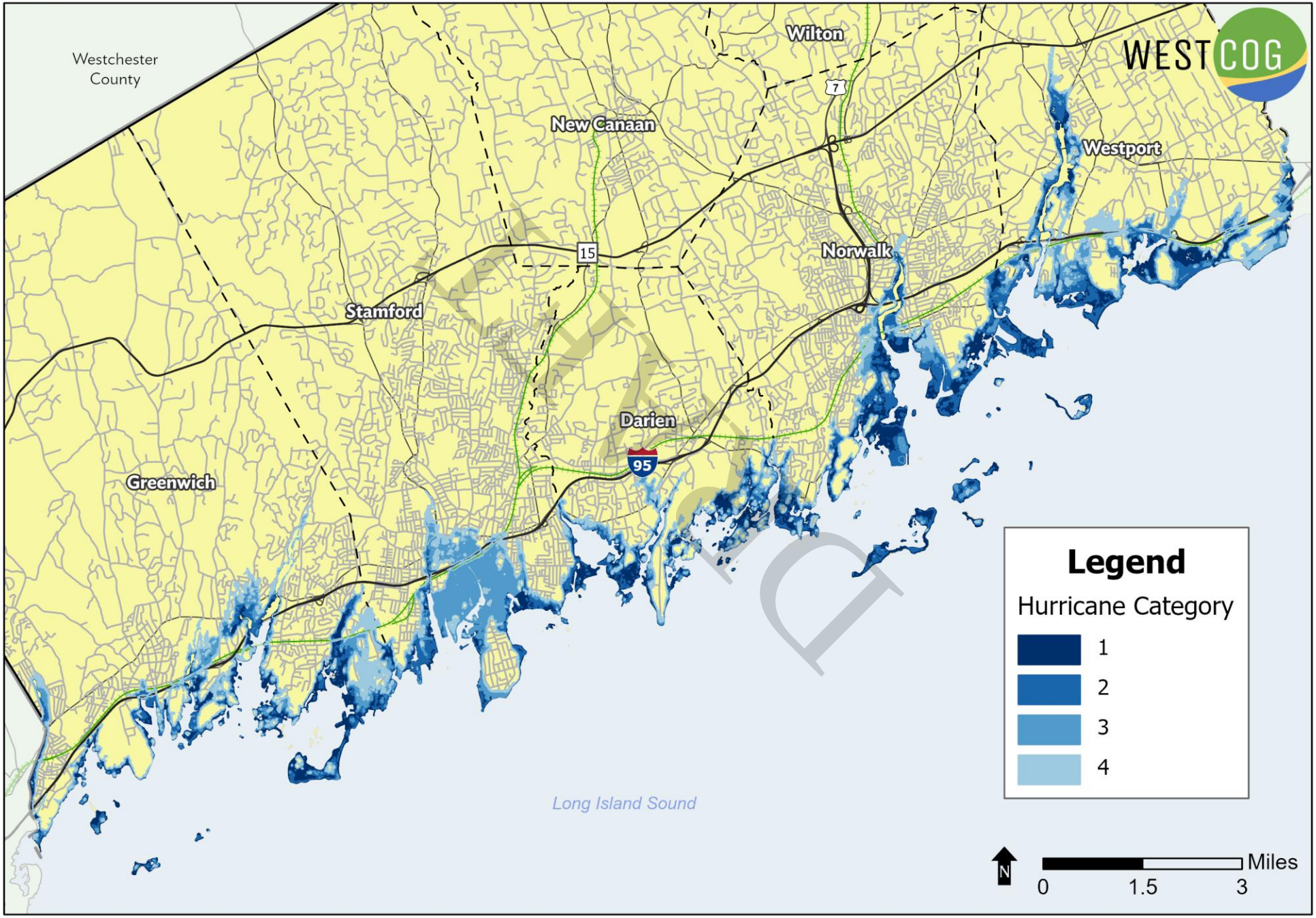


Figure 32: Storm Surge Flooding Map

Source: Hurricane Surge Inundation - CT ECO/National Hurricane Center, 2008

Instead, evacuation parameters and guidelines are provided within Local Emergency Operations Plans. This provides local emergency personnel the flexibility to respond as situations warrant. For example, along the shoreline the predicted storm surge may vary based on the timing of tides, which may affect which roads must be evacuated and which routes will be necessary.

While the probability of a winter storm occurring is roughly the same in all parts of the Region, the risk of damage will vary depending on infrastructure and population density. There is a high probability for traffic accidents and traffic jams during heavy snow and light icing events. Roads may become impassable, inhibiting the ability of emergency equipment to reach trouble spots and the accessibility of medical and shelter facilities. After a storm, snow piled on the sides of roadways can restrict sight lines and reflect a blinding amount of sunlight. When coupled with slippery road conditions, poor sightlines and heavy glare create dangerous driving conditions. Stranded motorists are at particularly high risk of injury or death from exposure during a blizzard.

Hurricanes and tropical storms are predicted to become more intense due to climate change. Both wind and storm surges associated with these storms are a concern for communities, as surges can inundate neighborhoods, commercial zones, and transportation systems. Figure 32 shows areas of the region where water would surge to under different hurricane categories.. Flooding can occur due to high tides, poor drainage, and high levels of runoff.

WestCOG's goal is to reduce loss of life, damage to property and infrastructure, costs to residents and businesses, and municipal service costs due to natural hazards and disasters. Education of residents and policymakers and the connection of hazard mitigation planning to other community planning efforts are key to achieving this goal, as is the enhancement and preservation of natural resource systems in each member community. However, potential mitigation strategies are numerous and varied. Not all mitigation strategies are appropriate for every community, and some communities have greater capacity to institute mitigation strategies than others. At the regional level, WestCOG's ability to implement mitigation activities is also tied to financial limitations. Funding is derived primarily from state and federal grants, as well as programs and municipal dues. As these various levels of governments face changes in spending priorities, financial support to WestCOG can be impacted.

On-Going Projects and Recommendations

Flood Mitigation and Project Management Program

As a service to our municipalities, WestCOG has contracted with Dewberry Engineers, Inc. to establish a Flood Mitigation and Project Management Assistance Program. This Program is a one-year pilot that is offering technical assistance to property owners in participating WestCOG communities. Its purposes include:

- developing and implementing strategies to maximize federal and state assistance.
- prioritizing strategies with greatest benefit and relevance to flood hazard risks unique to WestCOG region municipalities,
- providing grant application grant maintenance/reporting and grant closeout services related to mitigation projects and recovery from disaster for submittal to the Federal Emergency Management Agency (FEMA) and CT Department of Emergency Management and Homeland Security (DEMHS),
- representing WestCOG and its members vis-à-vis FEMA, DEMHS, and other agencies as may be necessary,
- working to resolve disputes with FEMA, DEMHS, and other agencies and contractors as may be necessary, including but not limited to the preparation of appeals, and
- supporting implementation of WestCOG's Regional Hazard Mitigation Plan.

WestCOG is administering this Program in close cooperation with its member communities. Initial activities have included dissemination of information on the federal programs to the public. Depending upon demand, the Program has been designed to be flexible and WestCOG is pursuing options for extending the Program beyond the first year.

Other Environmental Mitigation Considerations

The natural landscape of the Region is varied, from the hills of northern Fairfield County to the coastal plain abutting the Long Island Sound. This 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. Environmental conservation, mitigation, land use, and historic preservation are all important considerations that impact the transportation planning process. Wherever possible, transportation projects should be designed to minimize negative impacts to natural systems.

Riparian Corridor Protections

The 2020-2030 Western Connecticut Plan of Conservation and Development discussed the many impacts the built environment has on riparian corridors when not separated by at least a 100-foot buffer; including increased erosion and sedimentation, effects on migratory pathways for terrestrial creatures, and water quality degradation. Many of the region's roads and infrastructure fall within the recommended no-build buffer space for riparian corridors (Figure 33). Moving forward the impacts can be mitigated by reducing new infrastructure built in buffer areas and increasing the tree canopy coverage between roads and riparian corridors in already built areas.

Figure 33: Still River Road, New Milford Bridge Crossing Housatonic River

Heat Island Effect and Impervious Surfaces

Cities tend to be hotter than suburbs and rural areas. This is partly because urban environments have a greater percentage of impervious surfaces, such as paved roads, sidewalks, parking lots, and roofs. These sealed surfaces absorb sunlight, and as they heat up, they warm the surrounding air, contributing to the urban heat island effect. Urban heat islands can increase peak energy demand and air conditioning costs during warmer months. They can increase air pollution and greenhouse gas emissions, instances of heat-related illness and mortality, as well as negatively impact water quality.

A strategy used to mitigate the impacts of transportation infrastructure in urban areas is to plant appropriate trees in the street right-of-way. In 2018, with funding from the America the Beautiful Grant managed by CTDEEP, WestCOG conducted a Regional Tree Canopy Analysis that found there is a potential to add 1,379,403 trees along the streets in the Region, with the highest opportunity in the Region's principal cities. WestCOG recommends that all infrastructure projects be evaluated for the inclusion of street trees.

Transitioning to Alternative Fuel Vehicles

Electric Vehicles

Electric vehicles utilize the most actively deployed Alternative Fuel technology at this time. The industry is advancing, though consumer acceptance is tempered by a lack of practicality, "range anxiety", and cost. Policy acceptance and deployment of AFVs is being advanced by the federal government and is filtering through CTDOT to the WestCOG region. The

total number of electric vehicles registered in Connecticut as of July 1, 2022, was 25,444.

One area in which there has been an evolution of AFV technology is the method of charging vehicles. There are currently three levels of charging. All electric cars can be charged with Level 1 and Level 2 stations. These types of chargers offer the same charging power as the ones you can install at home. Level 3 chargers - also called Direct Current Fast Charge (DCFC) or fast charging stations - are much more powerful than Level 1 and 2 stations; therefore, an EV can be charged much faster with them, however some vehicles cannot charge at Level 3 chargers.

National Electric Vehicle Infrastructure (NEVI) Plan

The Bipartisan Infrastructure Law (BIL) included a program and provision for $5 billion nationwide over five years to strengthen and accelerate development of charging infrastructure for electric vehicles. This program (the National Electric Vehicle Infrastructure Formula Program), required states, the District of Columbia, and the Commonwealth of Puerto Rico to each submit a plan to expand a safe, reliable, accessible, and equitable electric vehicle fast charging network throughout their respective jurisdictions by August 1, 2022. Connecticut's plan (Connecticut's Charging Ahead Plan: A Strategy to Expand Public Electric Vehicle Charging) was submitted on July 26 and approved on September 14. This approval made $7.7 million available to Connecticut for projects in the first year (FY 2022). Over the five years of the BIL, Connecticut will receive $52 million from the NEVI Program.

The Plan will be updated annually. As noted above, CTDOT's NEVI plan indicated that as of July 2022, there were 25,444 electric vehicles registered in the state, and new registrations were occurring at the rate of approximately 600 per month.

Under the NEVI program, Interstate Routes identified under FHWA's Alternative Fuel Corridor (AFC) program must be prioritized for infrastructure buildout before that can happen at other locations. The Alternative Fuel Corridors in Connecticut have been identified as I-84, I-91, I-95, I-395 and the expressway portion of US-7. CTDOT's goal is to have distances between charging stations on these facilities of 50 miles or less. CTDOT has identified ten areas (zones) in Connecticut where additional stations will be required to meet this goal. Four of these zones are in Western CT:

1. **Norwalk – I-95/U.S. Route 7 Intersection off I-95 Exit 15 NB/SB**

(Utility: South Norwalk Electric and Water)

This zone lies at a major intersection between I-95 and US-7, both designated AFC for EV vehicles, in Norwalk. The zone encompasses three EJ block group communities according to 2020 Census data, as well as three unique Justice40 Disadvantaged Communities. The zone is located 16.1 miles north of the New York State border and 18.6 miles south of an operational charging location in Stratford, CT. Following US-7, the zone is located 22.8 miles from the proposed zone in Danbury to the North. There are currently three existing Level 2 locations and one existing Direct Current Fast Charger (DCFC) location within this zone, which have the potential for upgrading to meet NEVI program requirements.

2. **Danbury – I-84 exit 5 (also U.S. Route 7)**

(Utility: Eversource Energy)

This zone lies off I-84 EB/WB Exit 5 in Danbury. This section of I-84 overlaps with US- 7, a designated AFC, and would fulfill both routes' NEVI Phase 1 build-out requirement. The zone encompasses an EJ block group community, according to 2020 Census data. This zone also encompasses three unique Justice40 Disadvantaged Communities. The zone is located 5.5 miles from the New York State border to the West, and 28.5 miles from the proposed zone in Waterbury to the East. There is currently one existing Level 2 location within this zone which has the potential for upgrading to meet NEVI program requirements.

3. **North Canaan - U.S. Route 7/U.S. Route 44 Intersection**

(Utility: Eversource Energy)

This zone lies at a major intersection between U.S. US-7 and US- 44 in North Canaan. The zone also encompasses an EJ block group community, according to 2020 Census data. The zone is located just 1.7 miles from the Massachusetts border to the North. The proposed zone would also be 39 miles from the proposed zone in New Milford, CT and 53.2 miles from the proposed zone in Danbury, both south of this location.

4. New Milford - U.S. Route 7/U.S. Route 202 Intersection

(Utility: Eversource Energy)

This zone lies at the intersection between US-7 and US-202 in New Milford. US-202 plays a critical transportation role, extending from the CT/NY border, connecting US-7 to US-44, and continuing to the CT/MA border to the North. The zone also encompasses an EJ block group community, according to 2020 Census data. The zone is located 39 miles south of the proposed zone in North Canaan to the North and 14.2 miles from the proposed zone in Danbury to the South. There is currently one existing DCFC location within this zone extending to North Canaan which has the potential for upgrading to meet NEVI program requirements.

The NEVI program provides for grants to establish or upgrade electric vehicle charging stations. CTDOT does not intend to own or operate these facilities, but to contract with eligible applicants, which may be either private or public entities and organizations. Locations within a mile of a designated highway interchange are eligible. The NEVI program operates within the Federal-Aid Program; projects proposed for advancement must therefore be in the TIP and STIP and comply with NEPA requirements. Grants will cover up to 80 percent of project costs. Criteria for evaluation of competitive proposals are in development. CTDOT expects to publish a solicitation for applications in the first quarter of FY 2023.

In addition, the Connecticut Department of Energy and Environmental Protection (DEEP) is in the first year of a multi-year Electric Vehicle Charging Program that will fund up to 50 percent of chargers for public areas and workplaces. Homeowners can apply for rebates of up to $500.

Hydrogen and EV Rebate: The Connecticut Hydrogen and Electric Automobile Purchase Rebate Program (CHEAPR) offers rebates of up to $5,000 toward the cost of purchasing or leasing an EV or hydrogen Fuel Cell Electric Vehicle (FCEV). The cost of eligible vehicles may not exceed $60,000 for FCEV models and $42,000 for EV models. Rebates are offered on a first-come, first-served basis.

Alternative Fuel Bus Fleet

Development of alternative fuels instead of traditional diesel for buses is underway in various places. The alternatives considered are electricity and hydrogen. Connecticut has undertaken an Electric Bus Initiative. The Connecticut Electric Bus Initiative is a partnership between CTDOT, CT Department of Energy and Environment Protection (DEEP) and bus transit providers. Incorporating electric transit buses into a bus fleet transitions bus operations away from fossil fuels and reduces air pollution caused by diesel combustion.

Transit Bus Electrification

Per Governor Lamont's Executive Order 21-3, CTtransit, HARTransit and NTD are planning for the transition of their revenue vehicle fleets to electric propulsion. Procurements of electric transit vehicles and capital improvements to their facilities (and possibly at remote locations) are underway to accommodate the charging of these vehicles.

Chapter 9 : Performance-Based Planning and Programming

In accordance with federal requirements, "The metropolitan transportation planning process shall provide for the establishment and use of a performance-based approach to transportation decision-making to support the national goals…".

The Final Rule on Statewide and Metropolitan Transportation Planning established new requirements for MPOs to coordinate with transit providers, set performance targets, and integrate those targets into the planning process (Figure 34). The MPOs are responsible, together with the State, for the comprehensive, continuing, and cooperative transportation planning process for the SWRMPO and HVMPO region. In May 2018, HVMPO and SWRMPO amended their respective Unified Planning Work Programs to include a Statement of Cooperation with CTDOT outlining the MPO's role and responsibilities in performance-based planning and programming.

Performance Measures use system information to support investment and policy decisions that help achieve these goals. Federal law requires a performance-driven and outcome-based approach for transportation planning and programming as per 23 USC § 134(c)(1); 49 USC § 5303(c)(1). Performance Measures support 3C planning and facilitates quantitative planning approaches. The Federal Highway Administration and Federal Transit Administration regulations governing federal transportation assistance require MPOs to integrate data-driven performance targets into their planning documents. As per 23 CFR 450.324 and 23 CFR 450.326, MPO's are required to incorporate performance targets and performance-based plans into their Transportation Improvement Programs (TIPs) and Metropolitan Transportation Plans.

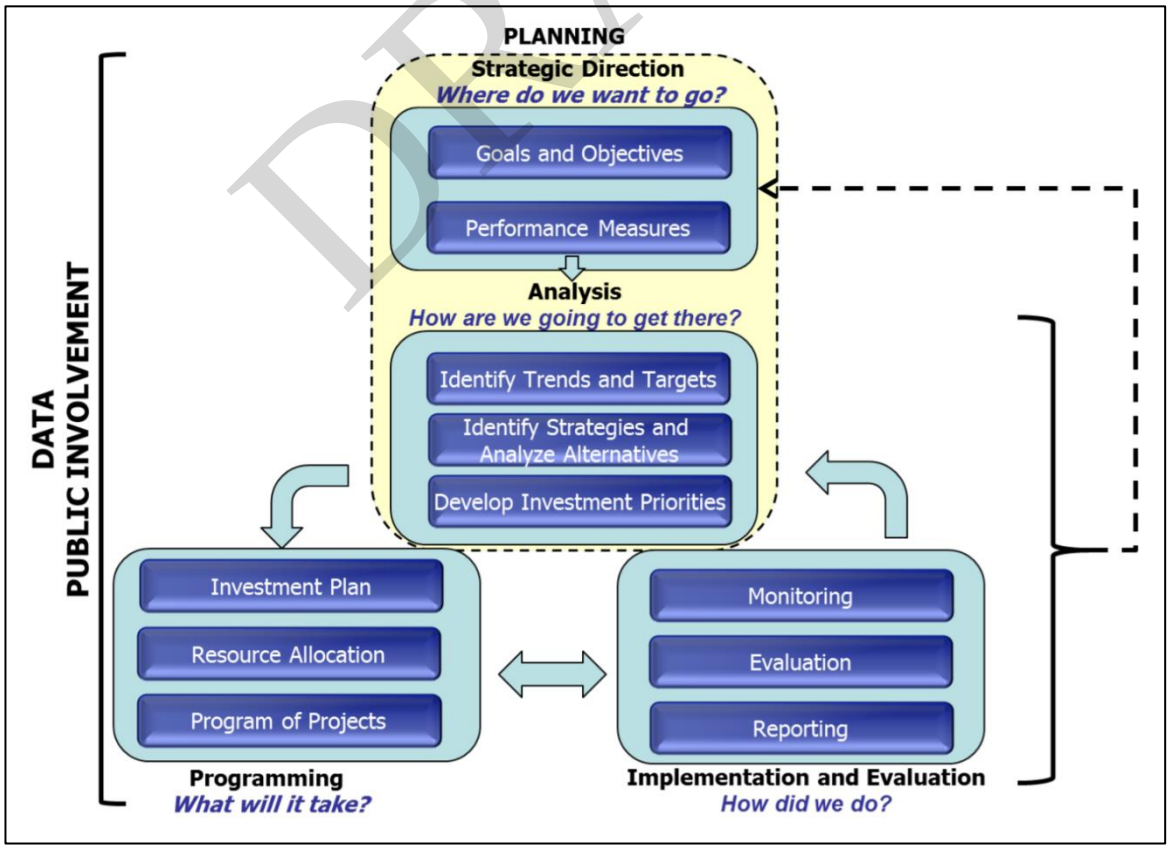


Figure 34. Performance-Based Planning Process (Source: FHWA, Performance-Based Planning and Programming Guidebook, page 14)

Performance-Based Planning and the MPO Planning Process

Per the federal requirements performance measures and the setting of targets are established in a collaborative process. HVMPO and SWRMPO collaborate with CTDOT and transit providers regarding target setting methodology and reporting.

Following the establishment of targets by CTDOT or a transit provider, the MPOs have 180 days to develop their own targets or support the established targets.

To facilitate this process, staff provide an overview of the performance measure area targets to the Technical Advisory Group (TAG). Members of the TAG review this information and provide a recommendation to the MPO Policy Boards to either support the targets or establish different targets for the MPOs.

The following section provides an overview of the performance management areas, progress made towards achieving targets that were referenced in the 2019 plan, and the current targets the MPOs are reviewing or have endorsed as of the writing of this plan.

Performance Management Areas:
Highway Safety
Pavement & Bridge Condition
System Performance
Freight Movement
On-Road Mobile Source Emissions
Transit Asset Management
Transit Safety

Highway Safety

Federal Highway Administration published a Final Rule to establish Safety Performance Measures for State Department of Transportation to carry out the Highway Safety Improvement Program (HSIP). The HSIP is a federal-aid program which seeks to reduce traffic fatalities and serious injuries on all public roads. The FHWA Safety Metrics are safety-related and included the following categories:

- Number of Fatalities
- Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT)
- Number of Serious Injuries
- Rate of Serious Injuries per 100 million VMT
- Number of Non-Motorized Fatalities and Serious Injuries

Highway safety data is evaluated on an annual basis and new targets are established each year by CTDOT and reviewed by the MPOs. Table 6 references the 2019 safety targets that were endorsed by HVMPO and SWRMPO and referenced in the 2019 plan as well as the actual performance of that reporting period. Based on CTDOT's reporting for the 2019 targets, progress was made on decreasing the number and rate of serious injuries, however the targets related to fatalities and non-motorized users increased.

On January 19, 2023 HVMPO and SWRMPO reviewed and endorsed a resolution supporting CTDOT's established targets for 2023 (as reflected in the last column in Table 6). Unfortunately, in recent years crashes involving fatalities, serious injuries, and non-motorized users has been on an upward trend. CTDOT has established more aggressive safety targets to reflect their commitment to improving safety for all roadway users.

Guidance from FHWA recommends that states must set realistic targets otherwise penalties can be issued to specific highway safety funding. Although the need for attainable short-term targets is understood, zero fatalities and serious injuries remain the long-term vision of HVMPO and SWRMPO. WestCOG works to promote safety by:

- Supporting countermeasures from the Regional Transportation Safety Plan, which identifies high crash locations and determines if infrastructure,

behavioral education and/or enforcement improvements are needed.

- Evaluating and prioritizing projects that address safety issues in transportation programs such as LOTCIP and TAP.
- Participating in the development of the CTDOT Strategic Highway Safety Plan and membership on its committee.
- Active membership on the Safety Circuit Rider Advisory Committee, Connecticut Training and Technical Assistance Center (T2 Center).
- Evaluating safety as part of ongoing transportation planning projects and corridor studies.
- Applying to transportation grant programs, such as Safe Streets and Roads for All, to implement systemic safety treatments across HVMPO and SWRMPO municipalities.

Table 6: Highway Safety Performance Measures

Performance Measure	**2019 Targets**	**2019 Actual Performance**	**2023 Targets**
Number of Fatalities	274	279.4	270
Rate of Fatalities per 100 million VMT	0.873	0.884	0.850
Number of Serious Injuries	1,574	1,510	1,300
Rate of Serious Injuries per 100 million VMT	5.024	4.782	4.300
Number of Non-motorized Serious Injuries and Fatalities	290	329.6	280

Pavement Conditions

Federal guidance focuses the Pavement Condition Performance Measures on the National Highway System (NHS) Infrastructure Management on the network of strategic highways, including interstates and other roads that serve major airports, rail or truck terminals, and other strategic transport facilities. The Performance Measure tracks the percent of the Interstate and National Highway System (NHS) in "Good" and "Poor" condition. Pavement condition is determined by measuring roughness, cracking, rutting, and faulting.

The MPOs endorsed resolutions supporting the Pavement Condition Measures targets established by CTDOT on November 15, 2018 as reflected in Table 8. In December 2022, CTDOT established new targets for the next performance period (2022-2025) which can be found in Table 7. These targets are under review and pending endorsement by HVMPO and SWRMPO in mid-2023.

Pavement conditions across the state have improved since the 2018-2021 performance period (Table 8). For both interstates and non-interstate NHS roadways, the percent in good and poor condition exceeded the targets established by CTDOT. Both MPOs continue to support CTDOT in achieving these targets by endorsing funding for pavement preservation projects. At the local level, WestCOG facilitated coordination with the Connecticut Advanced Pavement Laboratory (CAP Lab) to host a roundtable discussion with municipalities concerning longevity of pavement projects and best practices. Core samples were collected throughout the region and tested by the CAP Lab. Results of this analysis were shared with the municipalities and recommendations were provided to assist with future paving projects.

Table 8: 2018-2021 Pavement Performance Measures

	2018 Baseline Conditions		**2-year targets (2019)**		**4-year targets (2021)**	
	Good %	Poor %	Good %	Poor %	Good %	Poor%
Interstate Pavement	66.2	2.2	65.5	2.0	64.4	2.6
Non-Interstate NHS Pavement	37.9	8.6	36.0	6.8	31.9	7.6

Table 7: 2022-2025 Pavement Performance Measures

	2018-2021 Performance Period		**2-year targets (2023)**		**4-year targets (2025)**	
	Good %	Poor %	Good %	Poor %	Good %	Poor%
Interstate Pavement	68.6	0.2	72.0	1.0	70.0	1.3
Non-Interstate NHS Pavement	37.9	1.8	37.0	2.7	35.0	3.5

Bridge Conditions

Federal Highway Administration published a Final Rule to establish Bridge Condition Performance Measures for the National Highway Performance Program. This target measures the percent of National Highway System (NHS) Infrastructure Management bridges in "Good" and "Poor" condition.

Bridge condition is calculated using National Bridge Inventory condition ratings for bridge decks, superstructures, substructures, and culverts. Bridges located on off -& on- ramps connected to the NHS are included in the rule.

The MPOs endorsed resolutions supporting the Bridge Condition Measures targets established by CTDOT on November 15, 2018 as reflected in Table 10. In December 2022, CTDOT established new targets for the next performance period (2022-2025) which can be found in Table 9. These targets are under review and pending endorsement by HVMPO and SWRMPO in mid-2023.

According to CTDOT, bridge conditions have not improved since the 2018-2021 performance period. This highlights the importance of continued investment for bridge upgrades and preservation projects. Over the next performance period, CTDOT projects a slight improvement in the percent of bridges in good condition.

Table 10: 2018-2021 Bridge Performance Targets

	2018 Baseline Conditions		**2-year targets (2019)**		**4-year targets (2021)**	
	Good %	Poor %	Good %	Poor %	Good %	Poor%
NHS Bridge Condition	18.1	15.0	22.1	7.9	26.9	5.7

Table 9: 2022-2025 Bridge Performance Targets

	2018-2021 Performance Period		**2-year targets (2023)**		**4-year targets (2025)**	
	Good %	Poor %	Good %	Poor %	Good %	Poor%
NHS Bridge Condition	13.6	7.9	14.2	6.2	14.5	6.0

Reliability

The performance of the NHS target measures the percent of Interstate and National Highway System (NHS) person-miles that are "reliable" for the National Highway Performance Program (NHPP). Reliability is defined as the ratio of the 80th percentile travel time of a reporting segment to the 50th percentile travel time.

The MPOs endorsed resolutions supporting the Performance of National Highway System targets established by CTDOT on November 15, 2018, as reflected in Table 12. In December 2022, CTDOT established new targets for the next performance period (2022-2026) which can be found in Table 11. These targets are under review and pending endorsement by HVMPO and SWRMPO in early 2023. Reliability has improved since the 2018-2022 performance period, though some of this may be attributed to the dramatic changes in travel patterns experienced during the pandemic. CTDOT did not include 2020 and 2021 data when projecting future trends to establish targets for the next four years. CTDOT projects that reliability is going to worsen over the next four years, though the target is still an improvement from the 2018 baseline condition.

Table 12: 2018-2022 Reliability Performance Targets

	2018 Baseline Condition	**2-year targets (2020)**	**4-year targets (2022)**
	Reliable %	Reliable %	Reliable %
Interstate	78.3	75.2	72.1
Non-Interstate NHS	83.6	80.0	76.4

Table 11: 2022-2026 Reliability Performance Targets

	2018-2022 Performance Period	**2-year targets (2024)**	**4-year targets (2026)**
	Reliable %	Reliable %	Reliable %
Interstate	86.2	78.6	78.6
Non-Interstate NHS	90.0	84.9	84.9

Peak Hour Excessive Delay (PHED)

The PHED measure calculates the amount of person-time spent in excessive delay. The calculation compares actual travel speed to the official speed limit, and excessive delay is defined as when the travel speed was below 60% of the speed limit or 20mph.

This is a new performance measure for urbanized areas with populations over 200,000. CTDOT established targets for the Bridgeport-Stamford UZA for the second performance period beginning in 2022. These targets, shown in Table 13, and are under review and pending endorsement by SWRMPO in early 2023.

Table 13: 2022-2025 Peak Hour Excessive Delay Performance Targets

	2018-2022 Performance Period	2-year targets (2023)	4-year targets (2025)
Annual PHED per capita	**	20.0	21.9

***This measure was not applicable for the Bridgeport-Stamford UZA in the 2018-2022 first performance period.*

Non-Single Occupancy Vehicle (Non-SOV) Travel

The Non-SOV measure is calculated to assess the use of other transportation modes besides single occupancy vehicle travel. Other modes include transit, working from home, bicycle, or pedestrian travel.

This is a new performance measure for urbanized areas with populations over 200,000. CTDOT established targets for the Bridgeport-Stamford UZA for the second performance period beginning in 2022 and these targets and are pending endorsement by SWRMPO in early 2023(Table 14).

Table 14: 2022-2025 Non-SOV Performance Target

	2018-2022 Performance Period	2-year targets (2023)	4-year targets (2025)
Percent Non-SOV	**	27.8	27.8

*** This measure was not applicable for the Bridgeport-Stamford UZA in the 2018-2022 first performance period.*

HVMPO and SWRMPO support CTDOT in working towards progress on reliability, peak hour excessive delay, and non-SOV travel by investing in projects that will improve efficiency, expand and enhance transit service, and improve bicycle and pedestrian facilities.

Freight Movement

The Freight Movement on the Interstate target for the National Highway Freight Program (NHFP) is measured using the truck travel time reliability index (TTTR) along the Interstate system. TTTR is measured as the ratio between the worst congestion experienced along a segment (95th percentile) and the average congestion along that segment (50th percentile).

This target is measured using the truck travel time reliability index (TTTR) along the Interstate system.

TTTR is measured as the ratio between the worst congestion experienced along a segment (95th percentile) and the average congestion along that segment (50th percentile). As defined by FHWA, TTTR is considered reliable if the index is less than 1.5.

The MPOs endorsed resolutions supporting the Freight Movement on the Interstate System targets established by CTDOT on November 15, 2018, as reflected in Table 15. In December 2022, CTDOT established new targets for the next performance period (2022-2025) which can be found in Table 16. These targets are under review and pending endorsement by HVMPO and SWRMPO in mid-2023.

Since the last performance period, TTTR has improved and exceeded the targets established by CTDOT for the previous performance period in 2018. This is likely a reflection of the reduced congestion noted during the pandemic and may not be permanent trend. When evaluating trends and establishing targets for the new performance period, CTDOT did not include 2020 and 2021 data. CTDOT projects that the TTTR index is expected to increase over the next four years, this may be a result of a return to normal traffic volumes.

Table 15: 2018-2021 TTTR Performance Targets

	2018 Baseline Condition	2-year targets (2020)	4-year targets (2022)
Interstate TTTR	1.75	1.79	1.83

Table 16: 2022-2025 TTTR Performance Targets

	2018-2022 Performance Period	2-year targets (2023)	4-year targets (2025)
Interstate TTTR	1.56	1.95	2.02

On-Road Mobile Source Emissions

The Congestion Mitigation & Air Quality Improvement Program, or the On Road Mobile Source Emissions target, is measured by cumulative emissions of pollutants per day. This measure consists of the cumulative 2-year and 4-year Emissions Reductions (kg/day) for CMAQ-funded projects. The current and future targets reflect the rate of reduction in emissions. It covers the following pollutants: Nitrogen Dioxide (NOx), Carbon Monoxide (CO), Particulate Matter (PM10 and PM2.5), Ozone (O3), and Volatile Organic Compounds (VOCs). The contribution of a given project towards emissions reduction are only counted in the project's initial year.

This measure consists of the cumulative 2-year and 4-year Emissions Reductions (kg/day) for CMAQ-funded projects. The current and future targets reflect the rate of reduction in emissions. This performance management area covers the following pollutants: Nitrogen Dioxide (NOx), Carbon Monoxide (CO), Particulate Matter (PM10 and PM2.5), Ozone (O3), and Volatile Organic Compounds (VOCs).

The contribution of a given project towards emissions reduction are only counted in the project's initial year.

The MPOs endorsed resolutions supporting the Congestion Mitigation and Air Quality (CMAQ) Program Measures- On-Road Mobile Source Emissions targets established by CTDOT on November 15, 2018 (Table 18). In December 2022, CTDOT established new targets the next performance period (2022-2026) which can be found in Table 17. These targets are under review and pending endorsement by HVMPO and SWRMPO in mid-2023. HVMPO and SWRMPO support CTDOT in improving air quality and working towards progress on these targets. Specific funding programs like CMAQ have funded projects in HVMPO and SWRMPO that have reduced emissions.

Table 18: 2018-2021 On-Road Mobile Source Emissions Performance Targets

	2018 Baseline Condition		**2-year targets (2020)**	**4-year targets (2022)**
	2-year cumulative kg/day	4-year cumulative kg/day	2-year cumulative kg/day	4-year cumulative kg/day
Volatile Organic Compounds (VOC)	10.820	263.890	19.320	30.140
Nitrogen oxide (NOx)	34.680	462.490	67.690	102.370
Particulate Matter (PM2.5)	1.040	12.950	1.632	2.674

Table 17: 2022-2025 On-Road Mobile Source Emissions Performance Targets

	Baseline	**2-year targets (2024)**	**4-year targets (2026)**
	4-year cumulative reduction kg/day	2-year cumulative reduction kg/day	4-year cumulative reduction kg/day
Volatile Organic Compounds (VOC)	0.0	87.346	87.346
Nitrogen oxide (NOx)	0.0	81.978	81.978
Particulate Matter (PM2.5)	0.0	6.290	6.290

Transit Asset Management

FTA's Transit Asset Management (TAM) Performance Measure set performance targets for achieving a State of Good Repair (SGR). TAM applies to recipients and sub-recipients who own, operate, or manage public transportation capital assets. In HVMPO and SWRMPO, this includes: Metro-North Railroad (Tier 1), CTtransit Stamford (Tier 1), Norwalk Transit District (Tier 2), and Housatonic Area Regional Transit (Tier 2). Target setting is coordinated with CTDOT and transit operators. The MPOs will continue to actively coordinate with these entities.

FTA's Transit Asset Management Final Rule (TAM) Performance Measures set performance targets for achieving a state of good repair for the following four asset categories:

- **Rolling Stock:** The percentage of revenue vehicles (by type) that exceed the useful life benchmark (ULB).
- **Equipment:** The percentage of non-revenue service vehicles (by type) that exceed the ULB.
- **Facilities:** The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale.
- **Guideway Infrastructure:** The percentage of track segments (by mode) that have performance restrictions. Track segments are measured to the nearest 0.01 of a mile.

HVMPO and SWMRPO endorsed resolutions supporting the initial State of Good Repair (SGR) Performance Targets set by CTDOT for 2018-2021 to comply with the FTA Transit Asset Management Final Rule on June 15, 2017. CTDOT has established new targets for the next performance period, 2022-2025, as reflected in Table 19. These targets are under review and pending endorsement by HVMPO and SWRMPO in early 2023.

Most of the 2018-2021 and 2022-2025 targets are unchanged. In general, when comparing Tier 1 FY21 actual performance numbers with Tier 1 targets, revenue vehicle SGR showed increased investment, while increased investment in service vehicles is needed. The exception to this is in cutaway vehicles, for which investment is needed. As shown in Table 19 above, Tier II revenue vehicles are performing well in general; some investment in vans are needed. Tier II passenger facilities are in a comparatively good SGR while improvement to Tier I passenger facilities are needed.

Table 19: TAM Performance Targets

Tier 1	**Asset**	**Connecticut ULB**	**2018 – 2021 Targets**	**FY 21 Actual Performance**	**2022 – 2025 Targets**
Rail Revenue Vehicles	Commuter rail locomotive (MNR)	35 years	13%	37%	13%
	Commuter rail coach (MNR)	35 years	13%	38%	13%
	Commuter rail self-propelled car	35 years	13%	0%	13%
Rail Service Vehicles	Rubber Tire Vehicle (Truck)	14 years	7%	37%	7%
	Automobiles	5 years	17%	100%	17%
	SUVs	5 years	17%	72%	17%
	Vans	5 years	17%	100%	17%
	Steel Wheel Vehicle	25 years	0%	100%	0%
Bus Revenue Vehicles	Bus	12 years	14%	22%	14%
	Articulated Bus	12 years	14%	49%	14%
	Over-the-road Bus	12 years	14%	49%	14%
	Cutaway	5 years	17%	100%	17%
Bus Service Vehicles	Rubber Tire Vehicle (Truck)	14 years	7%	37%	7%
	Automobiles	5 years	17%	100%	17%
	Vans	5 years	17%	38%	17%
	SUVs	5 years	17%	100%	17%
Tier 2	**Asset**	**Connecticut ULB**	**2018-2021 Targets**	**FY21 Actual Performance**	**2022-2025 Targets**
Bus Revenue Vehicles	Bus	12 years	14%	5%	14%
	Cutaway	5 years	17%	57%	17%
	Mini van	5 years	17%	100%	17%
Bus Service Vehicles	Trucks	14 years	7%	22%	7%
	Automobiles	5 years	17%	100%	17%
	Vans	5 years	17%	71%	17%
	SUVs	5 years	17%	81%	17%
Tier 1	**Asset**	**FTA TERM Scale**	**2018-2021 Targets**	**FY21 Actual Performance**	**2022-2025 Targets**
Bus Facilities	Passenger	TERM 1- 5	0% below 3	58%	0% below 3
	Administrative/Maintenance	TERM 1- 5	0% below 3	0%	0% below 3
Tier 2	**Asset**	**FTA TERM Scale**	**2018-2021 Targets**	**FY21 Actual Performance**	**2022-2025 Targets**
Bus Facilities	Passenger	TERM 1- 5	0% below 3	6%	0% below 3
	Administrative/Maintenance	TERM 1- 5	0% below 3	6%	0% below 3
Tier 1	**Asset**	**Current Performance**	**2018-2021 Targets**	**FY21 Actual Performance**	**2022-2025 Targets**
Rail	Percentage of track segments with performance restrictions	3%	2%	3%	4%

Transit Safety

The Public Transportation Agency Safety Plan (PTASP) regulation, at 49 C.F.R. Part 673, requires covered public transportation providers, State Departments of Transportation (DOT) and MPOs to establish transit Safety Performance Targets to address Safety Performance Measures (SPMs) identified in the National Public Transportation Safety Plan (49 C.F.R. § 673.11(a)(3)). A safety performance measure is a quantifiable indicator of performance or condition that is used to establish targets related to safety management activities, and to assess progress toward meeting the established targets. Transit providers may also choose to establish additional targets for the purpose of safety performance monitoring and measurement.

Transit authorities and regional transit authorities are required to establish a total of seven targets pertaining to the following four safety performance management measures:

- **Fatalities:** Total number of fatalities reported to the National Transit Database and rate per total Vehicle Revenue Miles (VRM) by mode.
- **Injuries:** Total number of injuries reported to the National Transit Database and rate per total VRM by mode.
- **Safety Events**: Total number of safety events reported to the National Transit Database and rate per total VRM by mode.
- **System Reliability:** Mean distance between major mechanical failures by mode.

It is each MPO's responsibility to establish its own regional transit safety performance targets in consultation with the transit operators in its region. For the HVMPO region, WestCOG staff consulted with HARTransit. For the SWRMPO region, staff consulted with both CTDOT (on behalf of CTtransit Stamford) and the Norwalk Transit District (NTD). Note that CTDOT/CTtransit and NTD each submitted individual targets for the modes that they operate in the SWRMPO region. In addition, CTtransit subsequently provided safety performance targets for services operated from its Stamford garage. Taken together, the Safety Performance Targets adopted by the transit agencies are intended to guide each MPO's development of transit performance targets (23 CFR § 450.306(d)(3) of the FTA/FHWA joint planning rule); each MPO can choose to adopt a transit authority's targets or set its own. MPOs must establish their initial safety targets no more than 180 days after receipt of the Agency Safety Plan from public transportation providers. HVMPO and SWRMPO subsequently endorsed their initial transit 2021 Safety Performance Targets on September 16, 2020 and November 10, 2020, respectively Table 20, Table 21, and Table 22 reflect the initial 2021 targets as well as the new targets for 2023 that are currently under review for endorsement by SWRMPO and HVMPO in early 2023.

SWRMPO region's transit providers maintained their targets for fatalities and reduced the target number for injuries and MB/DR-DO Safety Events. Significant progress was also made in increasing the targets for Mean Distances Between (Vehicle) Failures. HVMPO region's transit provider maintained their targets for fatalities, injuries, safety events and system reliability.

Table 22: SWRMPO Safety Performance Targets 2021

Mode of Transit Service	Fatalities		Injuries		Safety Events		System Reliability – Mean Distance Between Failures
	Total	Per 100,000 VRM	Total	Per 100,000 VRM	Total	Per 100,000 VRM	VRM/Mechanical Failures
MB	0	0	15	0.46	76	3.8	13,700
DR-DO	0	0	13	1.62	4	.50	22,300
DR-PT	0	0	0	0.00	1	0.12	50,744
MB: Motorbus, e.g., fixed-route service; DR-DO: Demand Response, e.g., paratransit services; DR-PT: Demand Response, Purchased Transportation, e.g., paratransit services							

Table 21: SWRMPO Safety Performance Targets 2023

Mode of Transit Service	Fatalities		Injuries		Safety Events		System Reliability – Mean Distance Between Failures
	Total	Per 100,000 VRM	Total	Per 100,000 VRM	Total	Per 100,000 VRM	VRM/Mechanical Failures
MB	0	0	12	0.8	49	3.0	22,044
DR-DO	0	0	4	.59	2	.2	125,000
DR-PT	0	0	0	.19	3	.3	55,000
MB: Motorbus, e.g., fixed-route service; DR-DO: Demand Response, e.g., paratransit services; DR-PT: Demand Response, Purchased Transportation, e.g., paratransit services							

*Table 20: HVMPO Safety Performance Targets 2021 and 2023**

Mode of Transit Service	Fatalities		Injuries		Safety Events		System Reliability – Mean Distance Between Failures
	Total	Per 100,000 VRM	Total	Per 100,000 VRM	Total	Per 100,000 VRM	VRM/Mechanical Failures
MB	0	0	7	.6	5	.5	25,800
DR	0	0	3	.6	3	.6	10,775
MB: Motorbus, e.g., fixed-route service; DR-DO: Demand Response, e.g., paratransit services							
**Per HARTransit, the 2023 targets are unchanged from 2021.*							

Chapter 10 : (Draft) Public Participation

Public and Stakeholder Engagement

The purpose of the report is to summarize the public involvement activities and input received regarding the Housatonic Valley Metropolitan Planning Organization (HVMPO) and South Western Region Metropolitan Planning Organization (SWRMPO) 2023-2050 Metropolitan Transportation Plan. The public engagement efforts used for the development of this plan are in accordance with HVMPO and SWRMPO's Public Involvement Plan. Opportunities for public participation were offered throughout the planning process.

The key objectives of the MTP public involvement process were to:

- Obtain input on important transportation issues, needs, projects and priorities from key stakeholders during the development of the MTP;
- 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 TAG and MPO to review and comment on the draft MTP and for the MPO to adopt the LRTP; and
- Comply with federal requirements regarding public participation in the development of the MTP.

Public Outreach

Public outreach for the Plan began in October 2022 with a solicitation for comments and feedback on how the transportation system is currently being used and what improvements they would like to see. Postcard sized flyers were made with English on one side and translated into Spanish on the other (Figure 35). It included an introduction to the MTP, the type of feedback we were looking for, email and a QR code for sending feedback. WestCOG conducted a hybrid in-person and virtual strategy for public outreach.

Figure 35: Public Outreach Flyer

Environmental Justice Community Outreach

WestCOG is committed to engaging residents in underserved communities, particularly those identified as minority and/or low-income Environmental Justice populations. Two pop-up events were scheduled in EJ identified census tracts where staff passed out flyers and spoke with over 80 members of the public. This gave members of the public opportunities to share their experiences and perspectives on the region's transportation system firsthand. Posters with prompting questions were available for members of the public to engage with and all additional verbal comments were collected and recorded in notes taken by staff.

The first event was held at the Stamford Farmers' Market on October 22, 2022, and the second at the Danbury CityCenter Halloween on the Green on October 29, 2022 (Figure 36).

Virtual Public Outreach

Two virtual public outreach sessions were held to discuss focused topics:

Figure 36: Public Outreach at Danbury CityCenter Halloween on the Green

- Business and Freight, November 16, 2022, 3PM
- Transit and Active Transportation, November 17, 2022, 7PM

The purpose of these sessions was to provide members of the public opportunities to share their experiences and perspectives on the region's transportation system firsthand. All comments were collected and recorded in notes taken by staff and when desired by members of the public, by written comments submitted to WestCOG staff in the chat box. Comments (submitted verbally or in the chat box) were compiled into a spreadsheet.

To provide the greatest opportunity to participate, public outreach events were scheduled in the mornings, afternoons, and late evenings.

Public Outreach Feedback

The following is a summary of the feedback received during the two pop-up events, two virtual events, and submitted to the Plan email address:

Most of the comments pertained to one of three main topics: improving public transportation, safety, and increasing active transportation opportunities.

Many participants requested improvements to public transportation services and would use it to get around more often if services were more frequent and covered more hours throughout the evening and weekend. Buses are not convenient, especially for weekend or evening shift workers. Bus shelters, better signage, and real-time technology would make services more attractive and improve user experience. Schedules between trains and buses, as well as from bus to bus and train to train need improvement to reduce wait time. Comments about the Danbury Branch and New Haven Lines primarily concerned improving service speeds and schedules. Many reported that service towards New York City is slow, especially along the Danbury Branch Line, and is also prohibitively inconsistent and frequently delayed. The first and last mile of transit trips is difficult, on-demand ridesharing services were offered as a solution. Bus service between the region and the Westchester Airport is also desired.

Many participants reported not feeling safe when walking to and from bus stops. Wider, more connected sidewalks and crossings in downtown with connections to residential areas were requested. Participants wanted traffic to be slower, especially in downtown areas and active transportation corridors.

Attendees want the ability to choose to bike and walk places but need the appropriate and safe infrastructure to do so – bike lanes (or separated bike paths) and wide sidewalks in urban contexts and wider shoulders along rural regional routes. Bike racks and more urban "curb appeal" would make for a more enjoyable user experience.

Stakeholder Workshops

WestCOG conducts regular monthly or quarterly meetings with various stakeholder groups. Workshops were held at each of the following meetings to have an open discussion on the transportation needs for their municipality and identify regional solutions for inclusion in the plan:

- Municipal Planners, September 21, 2022
- Chief Elected Officials, October 20, 2022
- Technical Advisory Group, November 8, 2022

These groups interact with the general public on a daily basis and receive concerns regarding the transportation system that are incorporated into the Plan.

Additionally, during the development of the Comprehensive Economic Development Strategy (CEDs), WestCOG hosted seven Business Sector Focus Groups from February to April 2022. Staff interviewed the participants on matters related to economic development with a portion of the discussion devoted to transportation related questions for development of the MTP.

Stakeholder Outreach Feedback

The following is a summary of the feedback received during the stakeholder outreach events:

Ongoing vehicular traffic and non-recurring incidents were reported to be a major concern. Complaints for traffic along I-95, I-84, CT-15, and US-7 continue but since the pandemic there has been a noticeable shift on to the other routes in the region and local roads. Traffic incidents and bridge strikes on I-95 or CT-15 frequently put highway traffic on to local roads or US-1. There has also been a rise in erratic driving and speeding since the start of the pandemic.

Children are not able to walk to schools safely and are being dropped off by a personal vehicle which in turn increases traffic. People want to be able to walk for recreational and travelling purposes, sidewalks need to connect.

There needs to be a shift to focus on improving rail to make it a better option for members of the public. Safety and amenity improvements to station areas should be addressed. Transit-oriented development should be encouraged, especially for workforce housing. The Danbury Line extension to New Milford is still a top priority.

Many patients are using telehealth for attending appointments, particularly behavioral health. Better access to wifi and devices can help address the digital divide and allow for increased surveillance of vulnerable populations. Some businesses in the region have shifted to wholly or partially selling goods online and report continued supply chain issues with the need for more reliable freight network.

Public Comment Period and Public Hearings

The public comment period for the draft plan began on February 8, 2023 and concludes on March 9, 2023. Members of the public are provided the opportunity to view the draft plan on WestCOG's website or request to view a hard copy of the draft plan in WestCOG's office. Presentations will be given to the TAG and MPO at the January and February monthly meeting, and the following public information meetings will be held:

1) February 22, 2023, 6:30PM at the Danbury Library, Lower-Level Meeting Room

2) February 23, 2023, 1:00PM on Zoom Webinar

3) February 23, 2023, 6:30PM at the Ferguson Main Library, Auditorium

To provide the greatest opportunity to participate, public information meetings were scheduled in the afternoons and late evenings. The February 23, 2023 virtual public information meeting will be recorded and posted on the WestCOG website for members of the public to view at their leisure. The draft MTP will be considered for endorsement at the HVMPO and SWRMPO meeting on March 16, 2023.

Schedules were distributed to Town/City Clerks, posted on WestCOG's website, monthly newsletter, social media accounts, and provided as news releases. Legal notices were distributed to Town/City Clerks and placed in the following newspapers: The Danbury News-Times, The Stamford Advocate, The Norwalk Hour, La Voz Hispana (translated in Spanish), and La Tribuna (translated in Spanish and Portuguese).

All comments received during this time period will be recorded, reviewed, and incorporated into the updated plan as appropriate.

Online Presence

WestCOG Website

WestCOG maintains a webpage for HVMPO and SWRMPO material on the WestCOG website. A separate webpage was created for the MTP to

document public outreach efforts and planning materials, including the draft MTP and air quality conformity documents.

Information about the process of developing the MTP, public outreach events, public comment period, and public hearings is here: https://westcog.org/transportation/foundational-plans/metropolitan-transportation-plans/

Social Media

WestCOG also maintains several social media accounts including Twitter (@WesternConnCog), Facebook (@WestCOG), and LinkedIn (Western Connecticut Council of Governments). Figure 37 is an example of how WestCOG publicized information about the MTP through these channels:

Figure 37: Twitter Public Outreach Example

Newsletters

The WestCOG newsletter is distributed to those who sign up for the newsletter mailing list on WestCOG's home page on a monthly basis. It is also posted to the website after distribution, as well as linked in WestCOG social media accounts. MTP updates were included the newsletters distributed during the duration of the planning process. Figure 38 is an example from the November 2022 Newsletter.

Mailing List

WestCOG created a mailing list so that interested parties and known community interest groups could receive updates on the development of the MTP and announcements about scheduled public outreach, the public comment period, and dates for the public hearings.

Other Coordination

The development of the MTP requires close coordination with municipalities and other state agencies to ensure the MTP is complementary with other plans that impact transportation. The objective is to compare plans, maps, and inventories by other agencies with the MTP and the Transportation Improvement Program to ensure compatibility. This is an on-going effort that extends beyond the development of the MTP. The following are examples of agencies or plans that were reviewed during the development of the MTP:

- **Connecticut Department of Transportation**
  - Statewide Metropolitan Transportation Plan
  - State Transportation Improvement Program
  - 5-year Capital Plan
  - Transportation Performance Management
  - Strategic Highway Safety Plan
  - Highway Safety Improvement Program
  - Statewide Active Transportation Program
  - Statewide Freight Plan

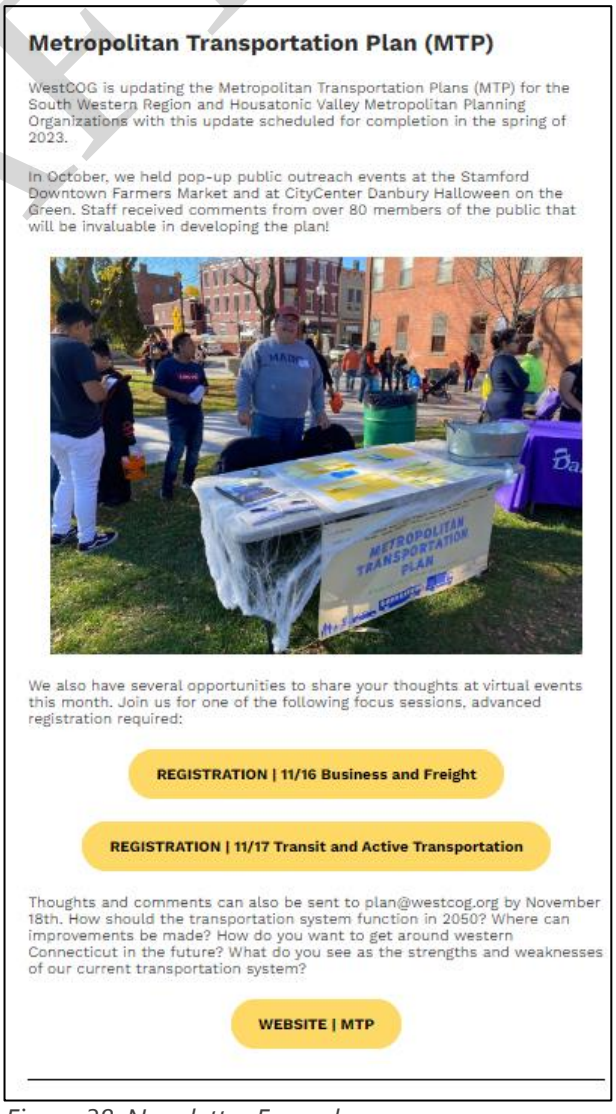


Figure 38: Newsletter Example

- Statewide Rail Plan
- **Connecticut Department of Energy and Environmental Protection**
  - Statewide Comprehensive Outdoor Recreation Plan
  - Environmental and Natural Resources inventories and GIS data
- **Connecticut Department of Economic and Community Development**
  - State Historic Preservation Office
- **UCONN Center for Land Use Education and Research**

HVMPO and SWRMPO Municipal Plans of Conservation and Development

Chapter 11 : Strategies and Investments

The intent of the Metropolitan 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 into broad categories based on the Plan's overarching goals. For each overarching goal indicated, a series of sub-goals is listed.

Preserve the Existing System *Emphasize the preservation of the existing transportation system and maintain a state of good repair.*
Implement traffic signal and system improvements required to adequately maintain, replace/upgrade as needed to maximize vehicular and pedestrian traffic flow, efficiency, and safety.
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
Support performance goals identified in the Transportation Asset Management Plans (TAMPs) & Transit Asset Management Plans (TAM Plans)
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
Support performance goals related to system performance, pavement conditions, bridge conditions
Continue to inventory park & ride lots and train station lots usage and condition. Identify projects needed to maintain a state of good repair of these facilities.
Ensure transit operators have sufficient funding to operate and maintain all services and facilities under their control.

Improve System Performance *Increase accessibility and mobility to promote the efficient movement of people and goods. Reduce congestion related delays.*
Enhance connections to other regions so that people can move more easily between home and work
Expand intermodal connections at Metro North rail stations

Study deficient roadway segments and intersections to develop improvement programs. Determine context sensitive design solutions that improve safety and performance including signal system upgrades, traffic signal timing and coordination, and intersection redesign solutions such as roundabouts, diverging diamond interchanges, and other geometric changes.
Expand traffic counting program to monitor traffic patterns and congestion
Implement innovative measures to improve bus service, including enhanced bus service and integration of intelligent transportation systems components
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
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
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
Expand passenger rail service to additional communities and reactivate former freight and passenger rail lines for passenger rail service, including the extension of passenger rail service on the Danbury Branch Line north into New Milford
Explore innovative techniques for improving traffic flow, congestion, and safety, such as using ramp meters in appropriate location
Improve current rail infrastructure to reduce travel times and transfers, including electrification of the Danbury Branch Line
Explore opportunities to improve coordination between bus and passenger rail service
Implement recommendations from the CTDOT Route 1 BRT study.

System Management & Operational Efficiencies
Improve the efficiency of the existing resources and current systems through effective transportation systems management and operation.
Monitor congestion and coordinate with TMA partners to update the CMP to evaluate progress and identify new strategies as needed.
Work with CTDOT, municipalities, and transit agencies to advance ITS strategies that improve the operations and efficiency of the regional transportation system, including low-bridge warning systems
Develop smart-card technology that can be used universally across all transit modes in the Region and State
Optimize use of the region's rail system for passenger and freight movement

Maintain flexibility in the type of vehicles used in paratransit and dial-a-ride operations in consideration of rider comfort and ease of access
Develop real time traveler information programs

Improve Safety
Increase the safety and security of the transportation system for all users.
Support Traffic Incident Management Programs and Activities
Monitor progress and update the 2021 Regional Transportation Safety Plan periodically.
Support education and training programs and regulations for truck safety, bicycles and pedestrians, older drivers, and driving under the influence.
Support CTDOT's efforts to implement the strategies and achieve the goals set forth in the Strategic Highway Safety Plan.
Focus on improving the safety of the traveling public through a program of engineering upgrades and enhanced use of technology.
Inventory location of low-bridges to reduce truck bridge strikes
Conduct safety analyses in corridor and special studies
Work with DEHMS and Municipalities to develop evacuation plans and to identify resource and infrastructure needs.
Upgrade high risk at-grade rail crossing locations
Develop access management plans for all major corridors, and utilize access management strategies to improve safety and reduce congestion

Implement Complete Streets
Enable safe and accessible streets for all users - especially those underserved with limited choices. Improve and expand bicycle and pedestrian facilities.
Evaluate the feasibility of incorporating complete streets into the scope of all new roadway proposals and studies.
Upgrade pedestrian signals and ramps
Improve transit amenities to provide improved signage, wayfinding information, shelter, and more attractive public spaces
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
Coordinate land use and transportation planning to create communities that support transit and to provide new opportunities for mixed use "village" type development
Promote transit-oriented development and related techniques to concentrate new construction along existing transit corridors and within walking distance of train stations

Improve bicycle and pedestrian infrastructure in the vicinity of rail stations and bus stops to support transit-oriented development
Implement the recommendations from the Regional Bicycle Plan. Work with municipalities to develop bicycle facilities in their communities.
Support the Community Connectivity Program

Improve Quality of Life & Create More Resilient Transportation Systems *Protect and enhance the environment, promote energy conservation, and improve the quality of life for all people who live, work, and play in the region. Improve the resiliency and reliability of the transportation system.*
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, rail, and municipal services fleets, including the use of battery powered/electric technology, or hydrogen 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)
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
Evaluate the opportunity to include street trees in projects to reduce impacts from the urban heat island effect.
Work with state agencies and municipalities to study the likely impacts from climate change and to develop mitigation strategies
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
Wherever possible, 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
Promote the development of greenways, multi-use trails, and recreational trails
Identify tourism destinations and access to the transportation network
Improve bike storage at rail station to provide adequate rail station bicycle storage facilities that are convenient, safe, secure, and well-maintained
Reduce new infrastructure built in riparian buffer areas and increase the tree canopy coverage between roads and riparian corridors in already build areas

Financial Constraint

This section focuses on the financial details and funding that will be used to implement the projects recommended in the plan. Per federal requirement, the MTP must be fiscally constrained meaning that the level of funding expected over the next 25 years must be sufficient to implement the plan and its projects.

Highway Funding Apportionment

Over the next 25 years, HVMPO and SWRMPO are estimated to received $3,307,741,479 and $6,967,489,604, respectively, from FHWA funding. Table 23 and Table 24 display the funding for each MPO for system preservation projects, system improvement projects, and major projects of statewide significance.

Project Type	Totals	
System Preservation	$	1,471,267,100
System Improvements	$	1,326,474,379
Major Projects of Statewide Significance	$	510,000,000
Total	**$**	**3,307,741,479**

Table 23: HVMPO - FHWA Funding

Project Type	Totals	
System Preservation	$	1,747,056,056
System Improvements	$	1,669,433,548
Major Projects of Statewide Significance	$	3,551,000,000
Total	**$**	**6,967,489,604**

Table 24: SWRMPO - FHWA Funding

These funding levels are developed by CTDOT, the methodology for estimating the apportionments for the Connecticut MPOs is based on the formula process outlined below:

1. CTDOT calculated the total estimated funds for Connecticut ($53,570,365,877) for the period 2023-2050 by compounding the estimated federal and state funds for FFY 2023 $ 1,600,000,000 at 1.5% for 28 years.
2. Funding for transportation projects was divided among two project categories:
    a. **System Preservation Projects:** projects such as repaving roadways, bridge repair or replacement, and any other form of reconstruction in place.
    b. **System Improvement Projects**: projects that enhance safety, improve mobility, increase system productivity or promote economic growth.
3. Of the total estimated funds ($53,570,365,877), Major Projects of Statewide Significance culled from the State's Long-Range Plan ($17,632,713,000) were deducted.
4. Of the balance of the total estimated funds ($35,937,652,877), 60% was allocated for System Preservation ($21,562,591,726), and forty percent (40%) was allocated for System Improvement ($14,375,061,151).
5. Five percent (5%) of the System Preservation funds were distributed equally to each of the MPO/RCOGs and 3.8% of the System Improvement funds were distributed equally to each of the MPO/RCOGs. This provided each of the 10 MPO/RCOGs with a minimum allocation of funds.
6. CTDOT used weighted variables to distribute the remainder of the System Improvement and System Preservation funds. The variables used were Vehicle Miles of Travel (VMT), Average Travel Time Index (AVR TTI), and Lane Miles (LM).
    a. For System Improvement funds: .25 weight for VMT and .75 weight for AVR TTI.
    b. For System Preservation funds: .25 weight for VMT and .75 for LM.

7. The amounts allocated to these variables (VMT, AVR TTI and LM) for each category (System Preservation and System Improvement) were then distributed to each MPO/RCOGs in proportion to its respective percentage to the total of the variables.

The amount estimated for System Improvement for each MPO/RCOGs is the initial minimum allocation (3.8%), plus the amount allocated from the VMT and AVR TTI calculation. The amount estimated for System Preservation for each MPO/RCOG is the initial minimum allocation (5.0%), plus the amount allocated from the VMT and LM calculation. The estimated amount available to each MPO/RCOG for planning proposes, over the next twenty-eight years, is the sum of the MPO/RCOG's total allocation for System Improvements plus its total allocation for System Preservation and total of identified Major Project in that MPO/RCOG.

System Improvements: Projects that address safety, improve mobility, increase system productivity, or promote economic growth.

System Preservation: Projects such as repaving roadways, bridge repair or replacement and any other form of reconstruction in place.

Major Projects of Statewide Significance: Projects identified by CTDOT that have significance beyond the HVMPO or SWRMPO boundary.

Appendix B includes the full listing of highway projects for HVMPO and SWRMPO. The projects reflected in this plan fall within fiscal constraint of the anticipated funding levels expected through 2050.

Transit Funding Apportionment

CTDOT provided an estimate of FTA funding available over the next 25 years for transit projects. Table 25 provides an overview of the level of funding available for rail transit and bus transit projects. Approximately $3,378,000,000 is available for rail transit projects in SWRMPO; in HVMPO approximately $8,000,000 is available for rail transit projects. Table 25 also displays funding estimates for projects that are considered multi-regional and extend beyond HVMPO and SWRMPO's boundaries. Approximately $94,000,000 is available for rail transit projects on the New Haven Main Line, approximately $1,869,000,000 is available for projects on the New Haven Line Systemwide, and approximately $12,000,000 is available for the Danbury Branch Line. Table 25 also provides an overview of funding available for bus transit projects in HVMPO and SWRMPO: CTtransit Stamford is estimated to receive $156,910,532, Norwalk Transit District is estimated to receive $117,598,750, HARTransit is estimated to receive $3,610,000, and approximately $56,734,000 is available for various transit projects across the state. CTDOT has indicated that maintaining the transit system in a state of good repair and implementing the Transit Asset Management Plan requires use of all the transit funds available for the MTP timeframe. Appendix B includes a listing of the transit projects proposed by CTDOT. These projects fall within the expected levels of funding estimated by CTDOT through 2050 and are fiscally constrained.

In addition to these projects, HVMPO and SWRMPO recognize that there are additional transit needs across the region beyond the fiscally-constrained projects. Appendix B includes a list of Fiscal Year Illustrative projects to highlight the transit projects that are recommended but are in need of funding. Should additional funding become available, HVMPO and SWRMPO recommend these projects be implemented.

Projects

The Map displays the locations of projects recommended in this plan across HVMPO and SWRMPO. The map is intended to provide a general overview of where investments will be made, but it does not provide a full account for all projects noted in this plan. Some projects, like systemic improvement across the region, are difficult to

display geographically and thus are not included in the map.

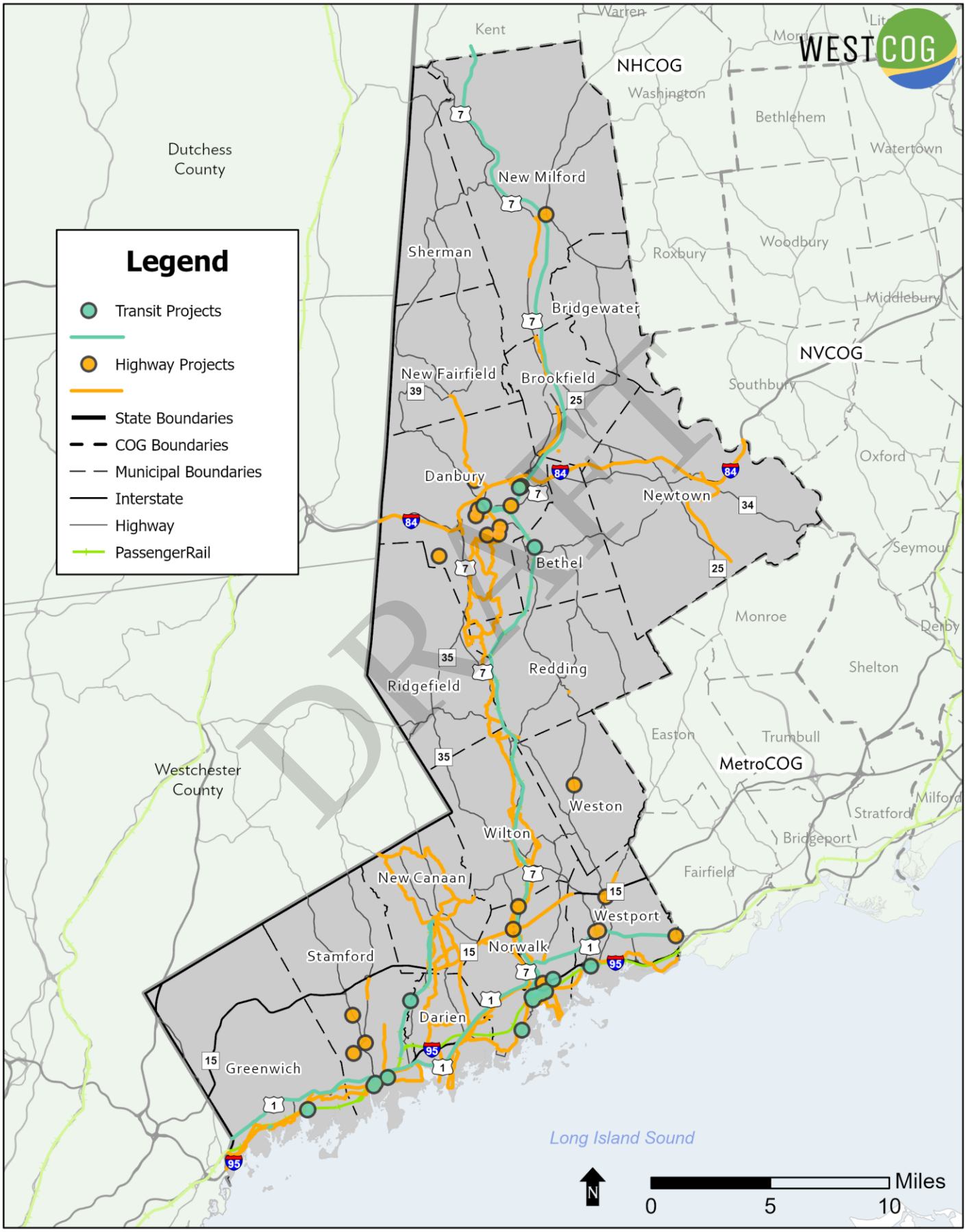
Appendix B contains the full highway and transit project listing.

Table 25: FTA Funding

Expected Revenue for Rail Transit Projects				
Federal Funds and State Share				State Funded Only
MPO	**Total Anticipated Funding**	**FTA Share**	**State Share**	**State Funded**
SWRMPO	$2,103,000,000	$1,682,400,000	$420,600,000	$1,275,000,000
HVMPO				$8,000,000
Expected Federal Revenue for Rail Transit Projects - Multiregional				
Federal Funds and State Share				State Funded Only
MPO	**Total Anticipated Funding**	**FTA Share**	**State Share**	
New Haven Line - Main Line (MPOS 1,7,8)	$85,000,000	$68,000,000	$17,000,000	$9,000,000
New Haven Line - Systemwide (MPOS 1,2,5,7,8)	$1,150,000,000	$920,000,000	$230,000,000	$719,000,000
Danbury Line				$12,000,000
Expected Federal Revenue for Transit Projects - Transit Districts				
Federal Funds and State Share				State Funded Only
TRANSIT DISTRICT	**Total Anticipated Funding**	**FTA Share**	**State Share**	
CTtransit - Stamford	$156,910,532	$125,528,426	$31,382,106	
Housatonic Area Regional Transit	$3,610,000	$2,888,000	$722,000	
Norwalk Transit District	$117,598,750	$94,079,000	$23,519,750	
Various	$56,734,000	$45,387,200	$11,346,800	

MTP Projects

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: WestCOG Data Collection, 2022

Chapter 12 : Equity Assessment and Air Quality Conformity

A requirement for transportation planning is the continuing compliance with Title VI, Environmental Justice, and Limited English Proficiency procedures.

Limited English Proficiency

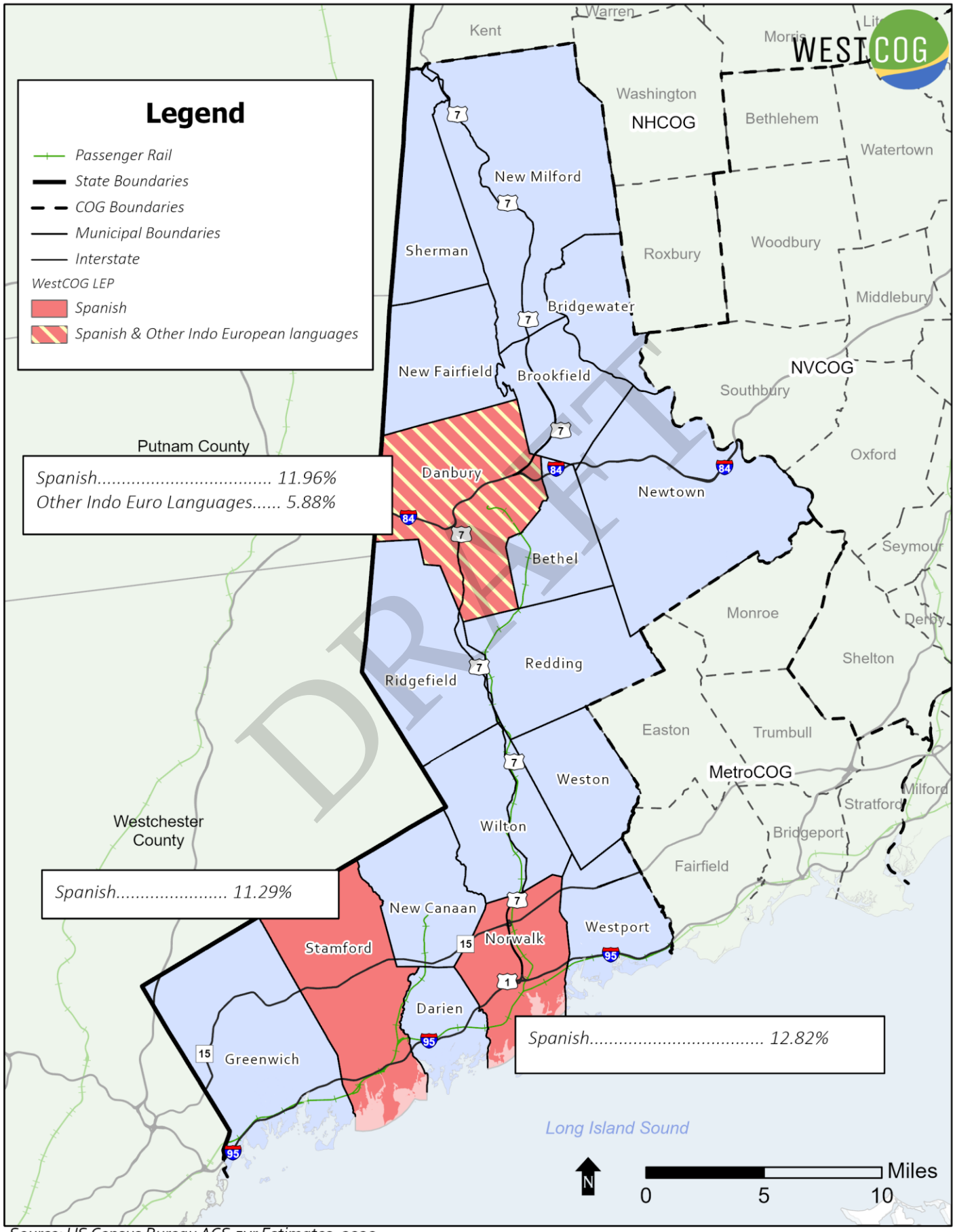
Title VI, specifically 42 United States Code Section 2000d, was enacted as part of the landmark Civil Rights Act of 1964. It prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance. Supplementing the 1964 Civil Rights Act is a 1974 landmark case whereby the United States Supreme Court determined that one specific type of national origin discrimination is that based on a person's inability to speak, read, write, or understand English. Therefore, concerns about overcoming what is termed Limited English Proficiency (LEP) have become a subset of Title VI compliance law. Recipients of federal financial assistance are given an obligation to reduce language barriers that can preclude meaningful access by LEP persons to important benefits, programs, information, and services. The guidelines on LEP are within Executive Order 13166 issued in 2000 and entitled "Improving Access to Services for Persons with Limited English Proficiency." The federal LEP definition refers to persons for whom English is not their primary language and who have a limited ability to read, write, speak, or understand English. This includes those who have reported to the U.S. Census that they speak English "less than very well, not well, or not at all". These populations within the Region have been identified and mapped in Figure 39.

Based on the federal standard for identifying areas of Limited English Proficiency, a language is considered an LEP language if the language group in a federally defined census tract constitutes 5 percent or more of the total population and speaks English as federally defined "less than very well." Using the Census Bureau's American Community Survey (ACS) 2020 data, WestCOG measured LEP languages for each municipality in the SWRMPO and HVMPO federally designated transportation planning regions. The map shows that 11.96 percent of the total population speaks English as federally defined "less than very well" and speaks Spanish as their primary language in the City of Danbury. Additionally, Other Indo European Languages totaled 5.88 percent as an LEP language for Danbury's population. Note that the US Census Bureau consolidated numeration of several languages that they consider to be "Other Indo European Languages", including Portuguese. Spanish as a LEP language was identified at 11.29 percent for the City of Stamford and 12.82 percent for the City of Norwalk.

Figure 39: Limited English Proficiency Map

Limited English Proficiency

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: US Census Bureau ACS 5yr Estimates, 2020

Environmental Justice and Transportation Assessment

Although Environmental Justice (EJ) has stemmed from three important movements in U.S. history (transportation policy, civil rights movement, and the environmental movement), attention to Environmental Justice (EJ) was amplified by Executive Order No. 12898, issued February 11, 1994, which requires that each federal agency incorporate EJ into its mission. This is to be accomplished *"by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations."* Therefore, Environmental Justice principles are incorporated into the processes and products of federally funded regional transportation planning. As guidance, the US DOT outlined three principles to guide Metropolitan Planning Organizations in their EJ evaluations, as follows:

1. *Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low income populations.*
2. *Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.*
3. *Prevent the denial of, the reduction in, or the significant delay in, the receipt of benefits by minority and low-income populations.*

In compliance with EJ mandates, the HVMPO and SWRMPO area populations were evaluated against three criteria at the census tract level. The three criteria and thresholds utilized are:

1. *Percent of minority population, defined as all persons except those identifying themselves as White, non-Hispanic. The threshold for measurement is the MPO area percent of minority population.*
2. *Per capita income. The threshold for measurement is the MPO area median per capita income.*
3. *Percent of persons below the poverty level. The threshold for measurement is the MPO area percent of person below the poverty level.*

Table 26: 2020 Tract EJ Thresholds

	Percent Minority Population	Median Per Capita Income	Percentage Below Poverty Level
HVMPO	33.1%	$52,286	6.4%
SWRMPO	39.3%	$70,744	6.7%

Using the method described above, an analysis was conducted examining all census tracts in the SWRMPO and HVMPO areas. If a census tract satisfies one threshold (Table 26), then it is designated as an area for EJ evaluation. The qualifying census tracts are mapped in Figure 40, Figure 41, and Figure 42.

In the Table 27, WestCOG's total population and total number of households is broken down by number and percentage of EJ census tracts. More than half the population and number of households resides within an EJ census tract.

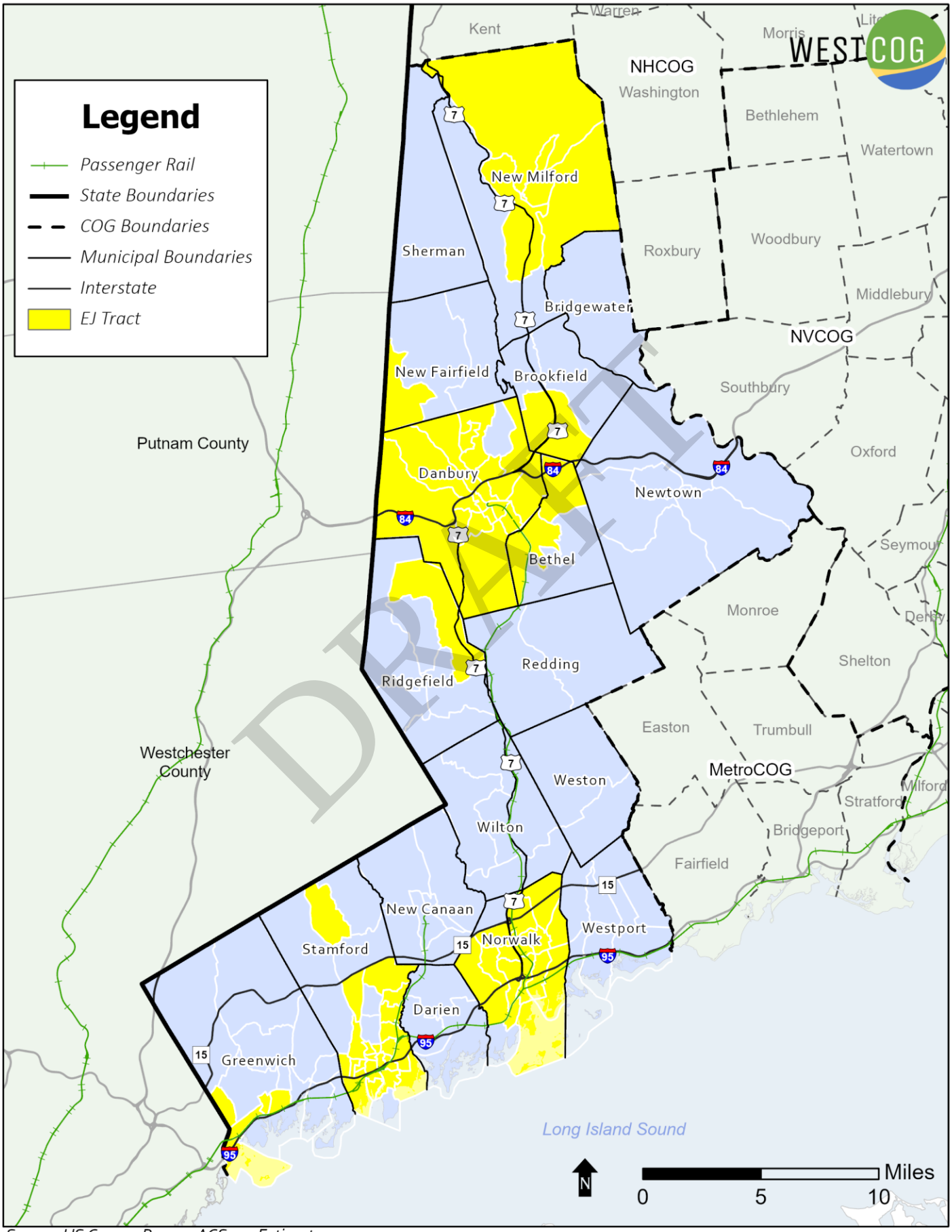
Table 27: 2020 EJ Tract Summary

	Population	# of Tracts	# of Households
Total	620,549	145	225,405
EJ Tracts	351,881	80	131,500
EJ Proportion	57%	55%	58%

Figure 40: Environmental Justice Census Tract Map

Environmental Justice

Western Connecticut Council of Governments
westcog.org | 475.323.2060

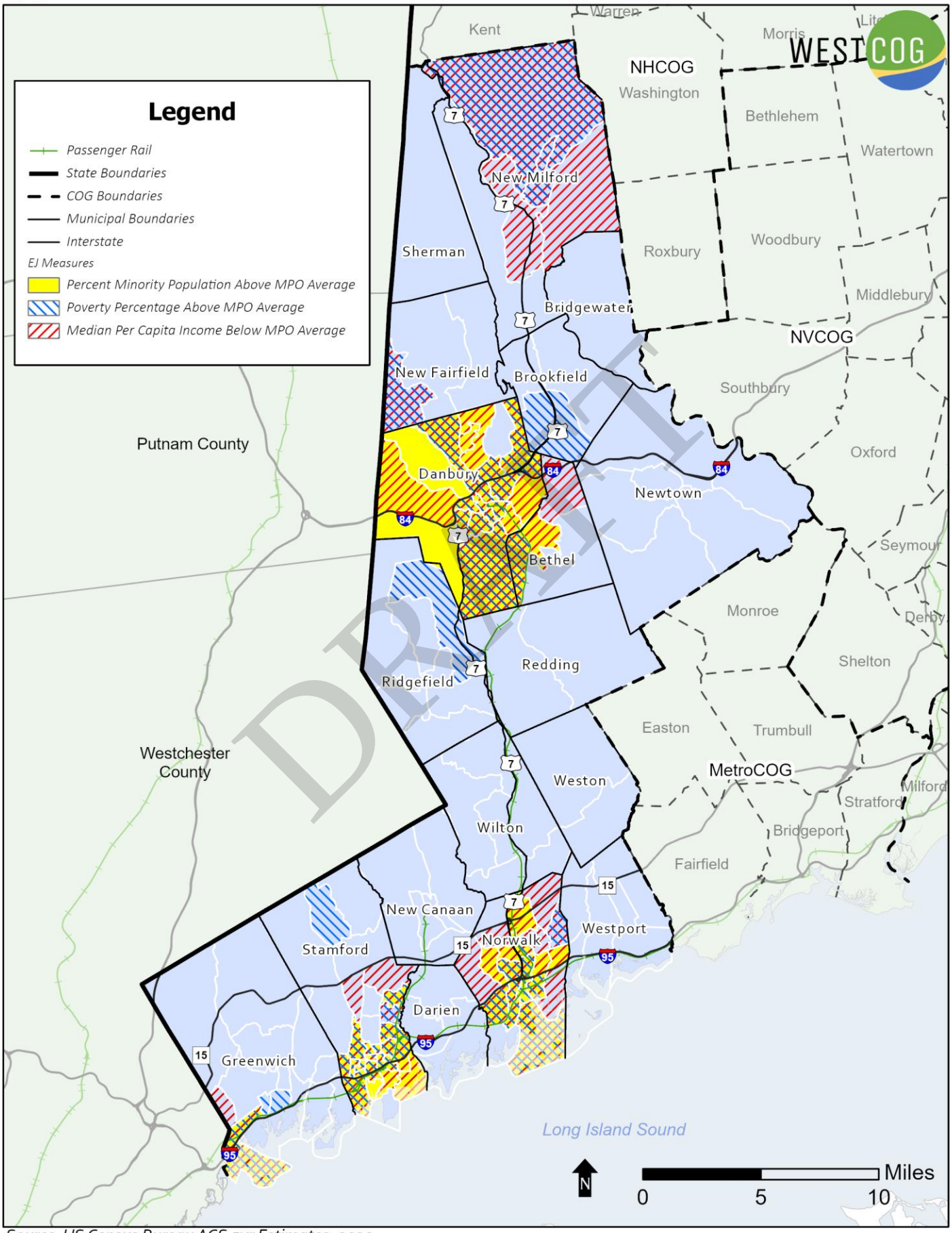


Source: US Census Bureau ACS 5yr Estimates, 2020

Figure 41: Environmental Justice Measures Map

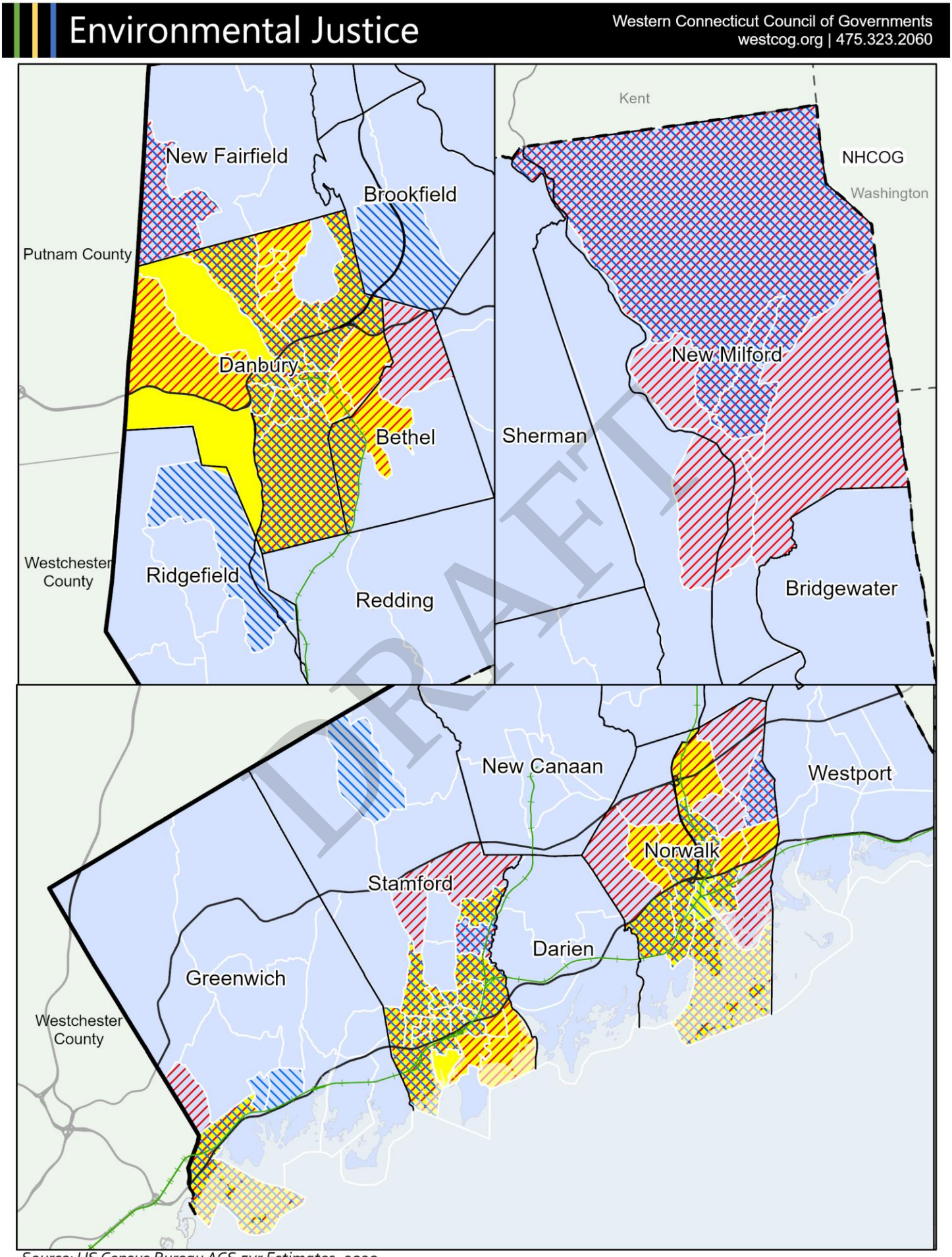
Environmental Justice

Western Connecticut Council of Governments
westcog.org | 475.323.2060



Source: US Census Bureau ACS 5yr Estimates, 2020

Figure 42: Environmental Justice Measures Detailed Map



Source: US Census Bureau ACS 5yr Estimates, 2020

Safety is an important component in assessing transportation burdens and benefits. WestCOG analyzed crashes resulting in a serious injury or fatality in EJ tracts and the Region using 2017-2021 data from the UConn Crash Data Repository. The total number of crashes in WestCOG during this period resulted in 18,716. Of these, 11,776 were in EJ tracts, accounting for 63 percent of the total crashes that occurred in the Region.

Additionally, the means of transportation to work has been analyzed for EJ census tracts, non-EJ census tracts, and the Region as a whole. Seven percent of those living in an EJ tract work from home, which is less than the ten percent average of the Region. Ten percent of those living in an EJ Tract carpool, which is higher than the eight percent regional average (Table 28) EJ tracts have more single occupancy trips to work than non-EJ tracts (Figure 43). The average time to work was analyzed in the Region, with the average for WestCOG being 33 minutes. The average of those living in an EJ tract was identified at 29 minutes and the average of those living in in a non-EJ tract was 38 minutes (Figure 44). Access to a vehicle calculations are shown in Table 29. Out of the 12,376 households without access to a vehicle, 10,343 of them are in an EJ tract (Figure 45).

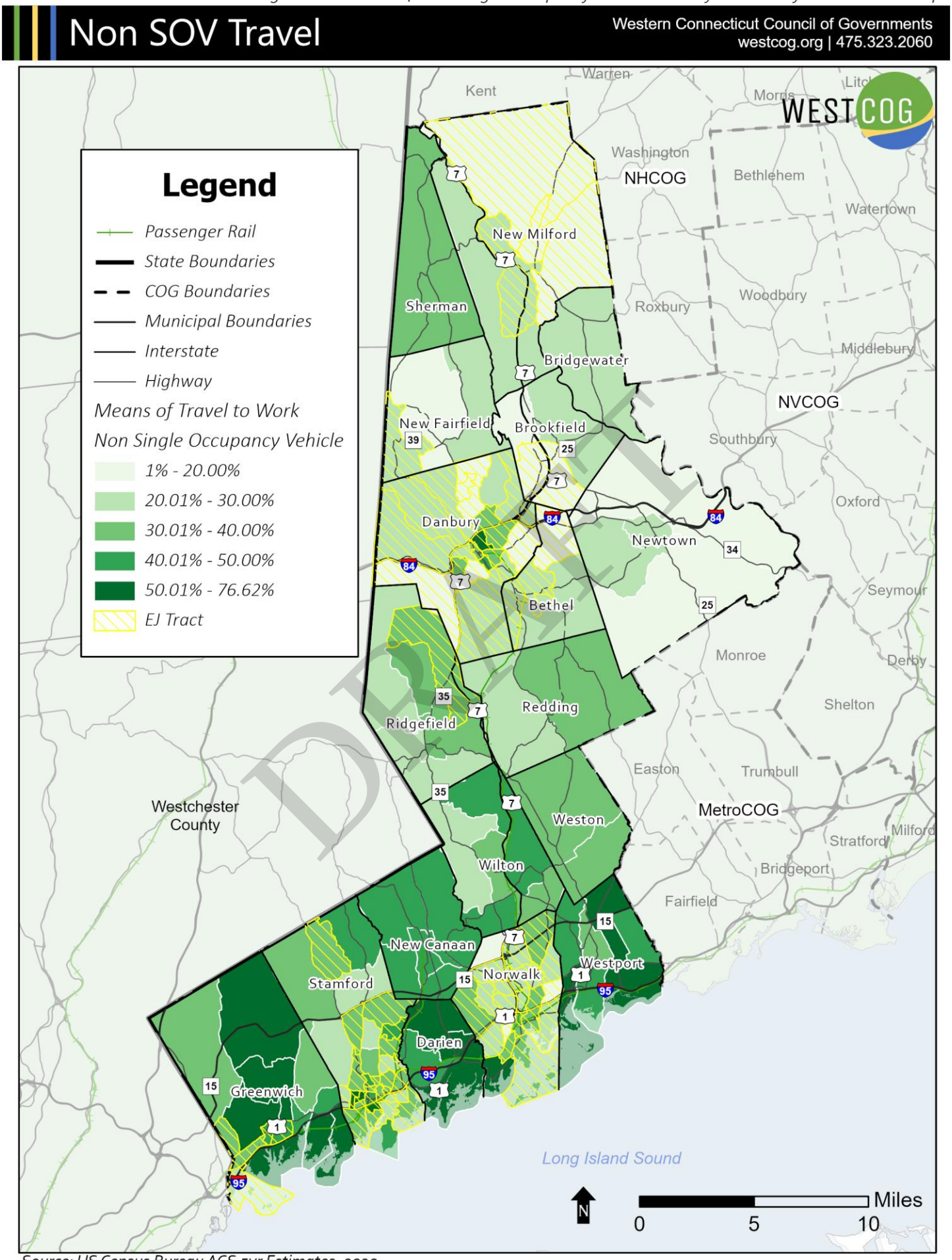
Table 28: Means of Transportation to Work

	Drove Alone	Carpooled	Public Transportation	Walked	Other	Worked from Home
EJ Tracts	71%	10%	8%	3%	1%	7%
Non-EJ Tracts	64%	5%	13%	2%	1%	16%
WestCOG Average	68%	8%	10%	3%	1%	10%

Table 29: Access to a Vehicle

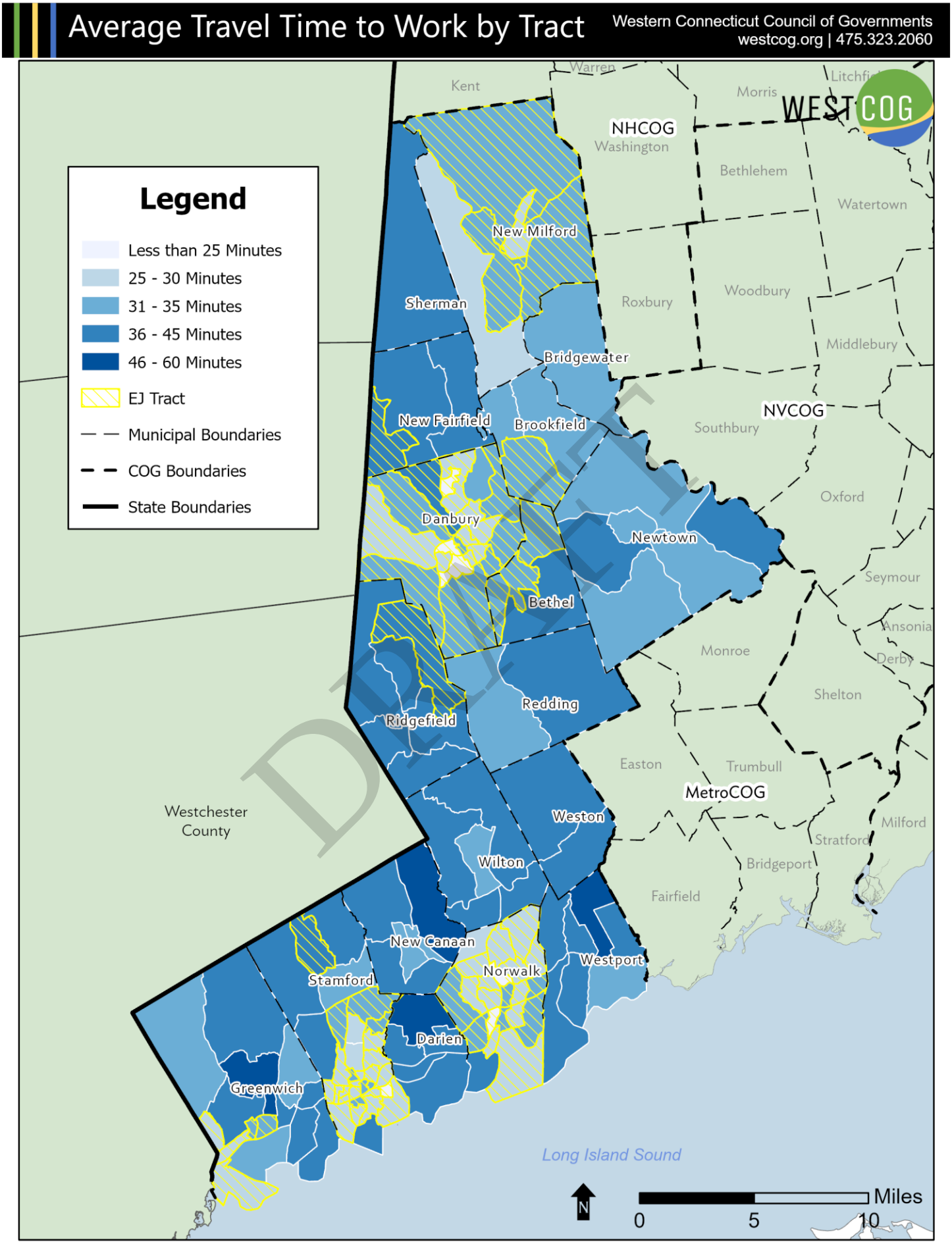
	Households without Access to a Vehicle	Total # of Households	% of Households Without Access to a Vehicle	% of Households With Access to a Vehicle
EJ Tracts Total	10,343	131,500	7.9%	92.1%
Non-EJ Tracts Total	2,033	93,905	2.2%	97.8%
WestCOG Total	12,376	225,405	5.5%	94.5%

Figure 43: Percent of Non-Single Occupancy Vehicle Journey to Work by Census Tract Map



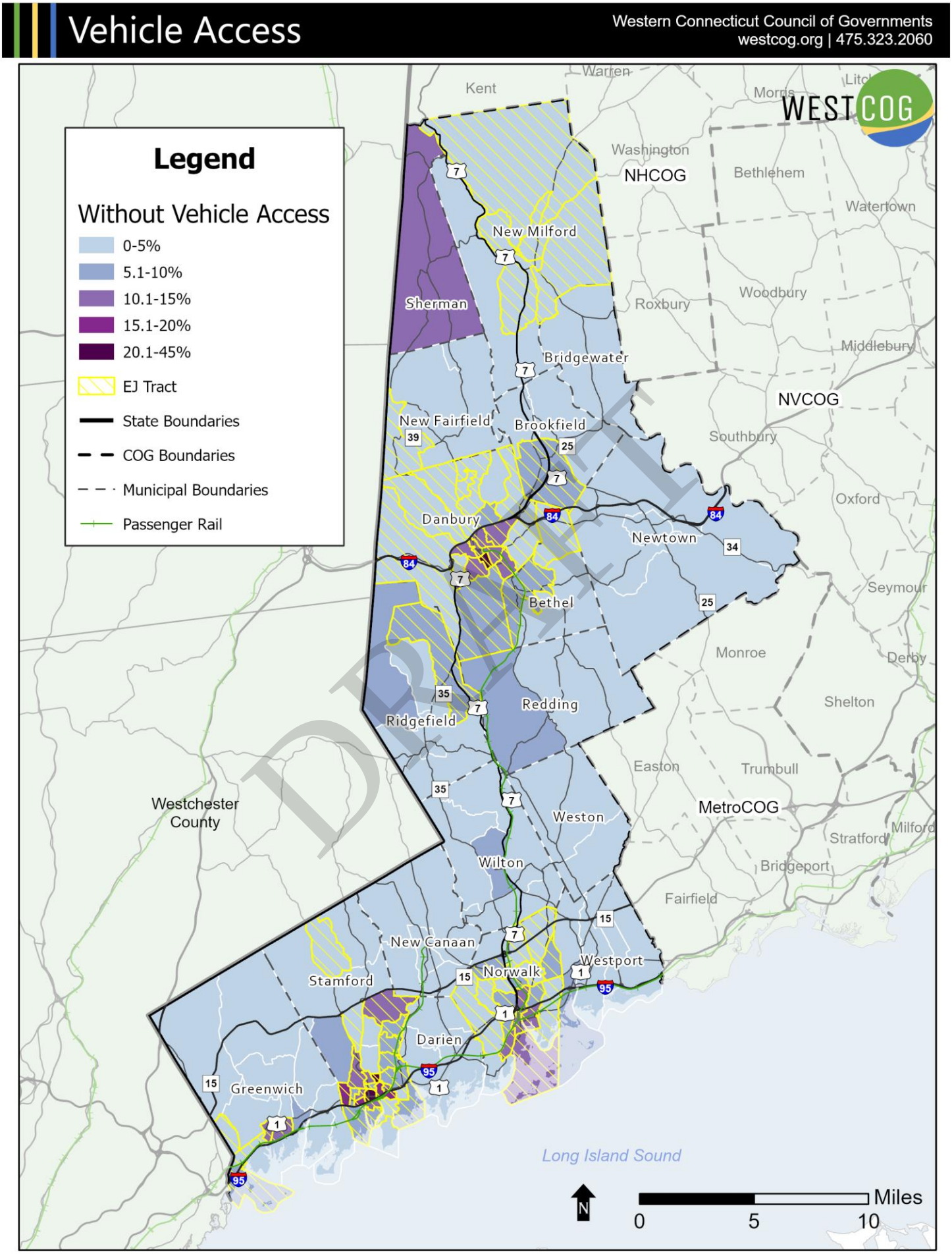
Source: US Census Bureau ACS 5yr Estimates, 2020

Figure 44: Average Travel Time to Work by Census Tract Map



Source: WestCOG analysis based on 2020 ACS 5yr Estimates, Table B08303

Figure 45: Percent of Households without Vehicle Access Map



Source: US Census Bureau ACS 5yr Estimates, 2020

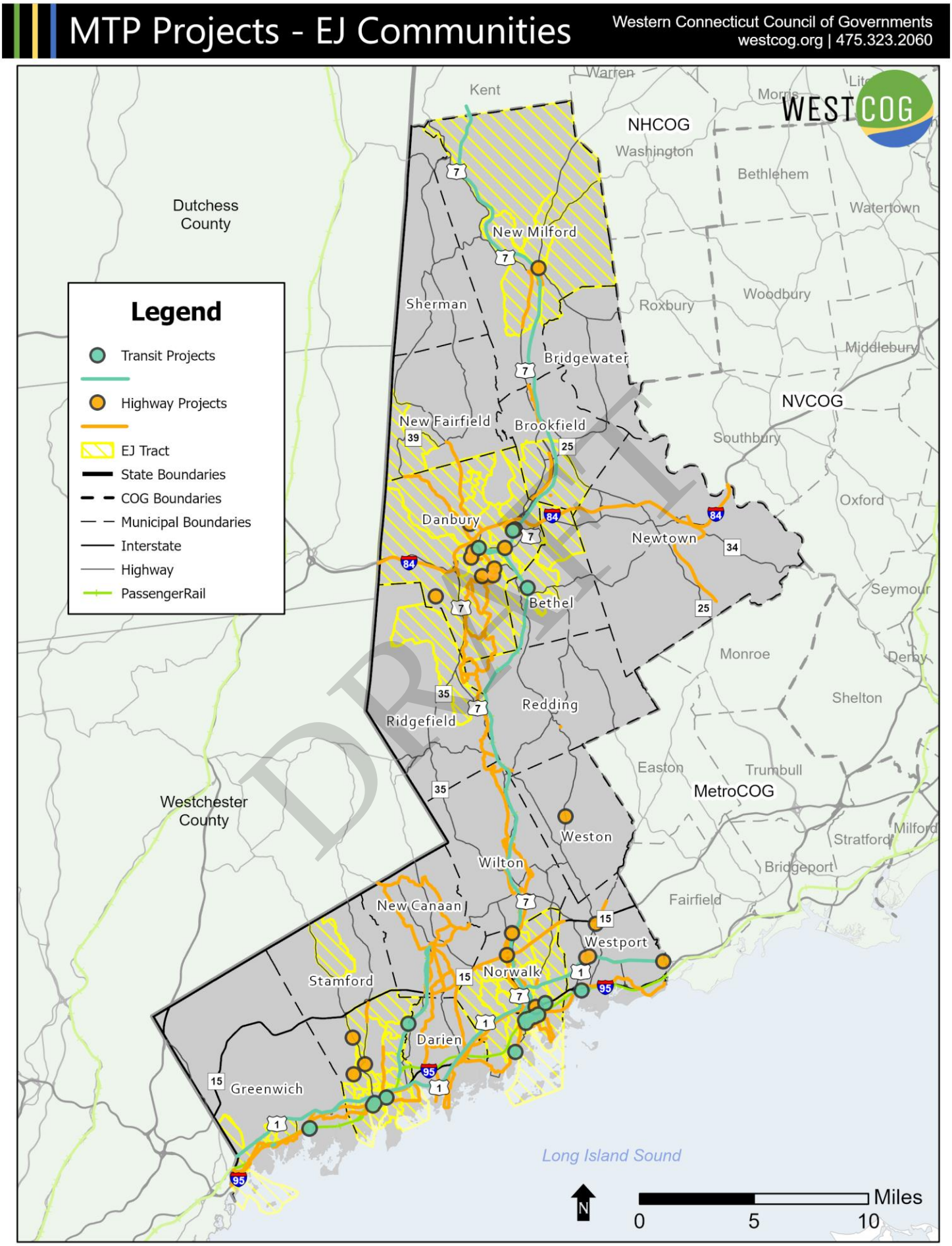
Plan Project Assessment

Many projects listed in the Plan are small-scale. Short-term construction related impacts associated with these projects are likely to be minimal and affect all users of the transportation system equally. Furthermore, the improvements proposed in the Plan have the potential to create significant benefits for all populations by improving the transportation system. Given the potential projects and equitable distribution of short-term construction related impacts, environmental justice requirements are satisfied following the federally prescribed process and consistent with Title VI, Limited English Proficiency (LEP), and public involvement policies.

Larger-scale projects similarly aim to create significant benefit to all users equally, though impacts, especially during construction, are generally larger. To reduce the negative impacts, Public Involvement Plans tailored to specific projects are developed and managed by CTDOT. Information and schedules are posted to project websites, as are outreach materials. Additionally, for each project in this Plan, additional public outreach, Title VI, EJ, LEP, and environmental considerations are at a more localized scale.

All Plan projects that could be mapped are included in Figure 46.

Figure 46: MTP Projects in EJ Census Tracts Map



Source: WestCOG Data Collection, 2022

Air Quality Conformity

The Clean Air Act of 1970, as amended in 1990, requires that the US Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) for seven common pollutants: carbon monoxide, lead, ozone, nitrogen oxides (NOx), Sulfur Dioxide, and fine particulate matter less than 10 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 been identified as a major source for many of these pollutants. HVMPO and SWRMPO are currently within the Connecticut portion of the New York – Northern New Jersey – Long Island, (NY-NJ-CT) area designated a PM 2.5 Attainment/Maintenance Area, and the Greater Connecticut and NY-NJ-CT Ozone Nonattainment Areas. 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 contributions to degraded air quality, projects included in the Metropolitan Transportation Plan 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 CTDOT according to the State Implementation Plan (SIP) for ozone and PM 2.5. The SIP establishes the vehicle emissions budget used to evaluate the Region's transportation program based on the following tests:

- VOC and NOx transportation emissions from future Action Scenarios must be less than the 2017 Transportation Emission Budgets if analysis year is 2017 or later.
- PM2.5 and NOx transportation emissions from future Action Scenarios, must be less than the 2017 Transportation Emission Budgets if the analysis year is 2025 or later.
- PM2.5 and NOx transportation emissions from future Action Scenarios, must be less than the 2025 Transportation Emissions Budgets if the analysis is 2025 or later.

CTDOT 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 February 2023, emissions analyses were completed by CTDOT and included in the Air Quality Conformity Reports for the NY-NJ-CT and Greater CT Non-Attainment Ozone Area (Table 31), as well as the NY-NJ-CT PM 2.5 Attainment/Maintenance Area (Table 30). 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 towards meeting all NAAQS.

Table 30: Air Quality Conformity - Ozone

Year	Ozone Area	Tons per day					
		Cube Series 2		Budgets		Difference	
		VOC	NO_x	VOC	NO_x	VOC	NO_x
2023	CT Portion of NY-NJ-CT Area	15.28	18.56	17.6	24.6	-2.32	-6.04
	Greater CT Area	13.58	16.30	15.9	22.2	-2.32	-5.90
2025	CT Portion of NY-NJ-CT Area	13.89	16.54	17.6	24.6	-3.71	-9.06
	Greater CT Area	12.42	13.67	15.9	22.2	-3.48	-8.53
2035	CT Portion of NY-NJ-CT Area	8.66	8.36	17.6	24.6	-8.94	-16.24
	Greater CT Area	7.78	7.47	15.9	22.2	-8.12	-14.73
2045	CT Portion of NY-NJ-CT Area	7.47	7.65	17.6	24.6	-10.13	-16.95
	Greater CT Area	6.74	6.82	15.9	22.2	-9.16	-15.38
2050	CT Portion of NY-NJ-CT Area	7.03	7.61	17.6	24.6	-10.57	-16.99
	Greater CT Area	6.35	6.80	15.9	22.2	-9.55	-15.40

Table 31: Air Quality Conformity - $PM_{2.5}$

Year	$PM_{2.5}$ Area	Tons per year					
		Cube Series 2		Budgets		Difference	
		$PM_{2.5}$	NO_x	$PM_{2.5}$	NO_x	$PM_{2.5}$	NO_x
2023	CT Portion of NY-NJ-CT Area	205.36	5954.80	575.8	12,791.8	-370.44	-6837.00
2025	CT Portion of NY-NJ-CT Area	192.15	5003.72	516.0	9,728.1	-323.85	-4724.38
2035	CT Portion of NY-NJ-CT Area	143.73	2792.78	516.0	9,728.1	-372.27	-6935.32
2045	CT Portion of NY-NJ-CT Area	125.72	2530.02	516.0	9,728.1	-390.28	-7198.08
2050	CT Portion of NY-NJ-CT Area	127.35	2531.04	516.0	9728.1	-388.65	-7197.06

Chapter 13 Appendices

Appendix A: List of Acronyms

ADA Act	Americans with Disabilities Act
AVL	Automatic Vehicle Location
CDC	Center for Disease Control and Prevention
CMAQ	Congestion Mitigation & Air Quality Improvement Program
CMP	Congestion Management Process
CTDOT	Connecticut Department of Transportation
EJ	Environmental Justice
EPA	Environmental Protection Agency
EPE	Extreme Precipitation Events
FAST Act	Fixing America's Surface Transportation Act
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GIS	Geographic Information System
HARTransit	Housatonic Area Regional Transit
HMP	Hazard Mitigation Plan
HSIP	Highway Safety Improvement Program
HVCEO	Housatonic Valley Council of Elected Officials
HVMPO	Housatonic Valley Metropolitan Planning Organization
ITS	Intelligent Transportation Systems
LEP	Limited English Proficiency
LOTCIP	Local Transportation Capital Improvement Program
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NHFP	National Highway Freight Program
NHPP	National Highway Performance Program
NHS	National Highway System
NTD	Norwalk Transit District
PPP	Public Participation Plan
SGR	State of Good Repair
SHSP	Strategic Highway Safety Plan
SIP	State Implementation Plan
SLR	Sea Level Rise
SWRMPO	South Western Region Metropolitan Planning Organization
SWRPA	South Western Regional Planning Agency
TAG	Technical Advisory Group

TAM	Transit Asset Management
TIP	Transportation Improvement Program
TNC	The Nature Conservancy
TOD	Transit Oriented Development
TSP	Transit Signal Priority
TTTR	Truck Travel Time Reliability Index
ULB	Useful Life Benchmark
UPWP	Unified Planning Work Program
USDOT	United States Department of Transportation
VMT	Vehicle Miles Traveled
WCSU	Western Connecticut State University

Appendix B: Project Listing

HVMPO and SWRMPO MTP Project List

Highway:

- SWRMPO Major Projects
- SWRMPO Highway Preservation Projects
- SWRMPO Highway Improvement Projects
- HVMPO Major Projects
- HVMPO Highway Preservation Projects
- HVMPO Highway Improvement Projects

Transit:

- Rail Transit Projects
- Bus Transit Projects
- Fiscal Year Illustrative Projects

Related Performance Measures Key:

Performance Measures	Code
Transit Asset Management	TAM
Transit Safety	TS
Highway Safety	HS
Pavement and Bridge Condition	PB
System Performance	SP
On-Road Mobile Source Emissions	E
Freight Movement	F

SWRMPO Major Projects

Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11 - 27 (2033 - 2050)	Total
TBD	Greenwich/Stamford	I-95	I-95 Improvements, NYS Line to Interchange 7 including Bridge No. 00001 (Future PEL Recommendations)	Performance Improvement		E, F, SP			$ 400,000,000	$ 600,000,000	$ 1,000,000,000
TBD	Stamford	I-95	I-95 Improvements, Exit 7-9 including Bridge No. 00032 (PEL recommendations)	Performance Improvement		E, F, SP			$ 500,000,000	$ 1,000,000,000	$ 1,500,000,000
TBD	Norwalk	US-7	Rt. 7 Reconfiguration at End of Expressway (at Grist Mill Road)	Performance Improvement		E, SP			$ 20,000,000		$ 20,000,000
TBD	Darien/Norwalk	I-95	WAS: I-95 Northbound & Southbound Widening & Reconfiguration Between Exits 13 &16 Now: I-95 Improvements, Exits 13-16 including Bridge No. 00059 (Yankee Doodle) - (Future PEL Recommendations)	Performance Improvement		E, F, SP			$ 250,000,000	$ 500,000,000	$ 750,000,000
TBD	New Canaan	CT-106	Drainage Improvements along Old Stamford Road (Rt 106)	System Management/Operation		-		$ 5,000,000			$ 5,000,000
TBD	Greenwich/Stamford	I-95	I-95 Pavement Preservation - NYS Line to Exit 6	System Preservation		PB		$ 50,000,000			$ 50,000,000
0102-0358	Norwalk	US-7/US-15	Rt. 7 / Rt. 15 Interchange Reconstruction and Reconfiguration	Performance Improvement	System Management /Operation	E, PB, SP		$ 80,000,000	$ 95,000,000		$ 175,000,000

SWRMPO Major Projects

TBD	Westport	CT-57/CT-136	Intersection Improvements, Rt 57 at Rt 136 and Easton Road: The proposed improvements include replacing the existing flashing beacon at the intersection of CT-57 and CT-136 with fully actuated traffic signal. The proposed work will include widening the roadway approaches to provide an adequate number of lanes for efficient traffic operation, the replacement/installation of sidewalks along most approaches and other associated ancillary work.	Performance Improvement	Safety	E, HS, SP	$ 6,000,000			$ 6,000,000
TBD	Norwalk	US-7/CT-33	Was: Rt. 7 Reconstruction from Grist Mill Road to Rt. 33 Now: Rt. 7 Improvements from Grist Mill Road to Rt. 33	Performance Improvement		E, SP	$ 30,000,000			$ 30,000,000
TBD	Stamford	US-1	Complete Streets: Improve Conditions for Active Transportation Users - Approx. Alvord Ln. easterly to Seaside Ave	Complete Streets		E, HS, SP	$ 5,000,000	$ 10,000,000		$ 15,000,000
Total							**$ 176,000,000**	**$ 1,275,000,000**	**$ 2,100,000,000**	**$ 3,551,000,000**

SWRMPO Highway Preservation Projects

Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023-2026)	Years 5-10 (2027-2032)2	Years 11-27 (2033-2050)	Total
TBD	Various	Expressways	Noise Wall Replacement Program (TAM) - Replace existing poor condition noise walls	System Preservation		-		$ 5,500,000	$ 9,625,000	$ 15,600,000	$ 30,725,000
TBD	Various	Various	Retaining Wall Program (TAM) - Replace or Repair existing poor condition retaining walls	System Preservation		-		$ 8,250,000	$ 10,175,000	$ 16,575,000	$ 35,000,000
TBD	Various	Various	Culvert Replacement Program (TAM) - Replace existing poor condition culverts	System Preservation		-		$ 16,500,000	$ 27,500,000	$ 146,250,000	$ 190,250,000
0161-0145	Wilton	Cannon Road	REHAB BR 04981 o/ NORWALK RIVER: Currently on TIP	System Preservation		PB	STPB	$ 4,675,000	$ -	$ -	$ 4,675,000
0157-0090	Weston	CT-53	REPLACE TWO UNDERSIZED CULVERTS: Currently on TIP	System Preservation		-	STPA	$ 4,647,500	$ -	$ -	$ 4,647,500
0102-0296	Norwalk/New Canaan	CT-15	RESURFACING, BRIDGE & SAFETY IMPROVEMENTS, CT 124 TO NEWTON TURNPIKE - AC ENTRY: Currently on TIP	System Preservation	Safety	HS, PB	STPB		$ -	$ -	$ -
0056-0321	Greenwich	US-1	REPLACE FAILING ACCMP b/t OLD POST ROAD #1 & FERRIS DRIVE: Currently on TIP	System Preservation		PB	NHPP	$ 2,211,000	$ -	$ -	$ 2,211,000
0056-0305	Greenwich	US-1	REPLACE BR 01872 o/ GREENWICH CREEK - AC CONVERSION: Currently on TIP	System Preservation		PB	STPB	$ 17,380,000	$ -	$ -	$ 17,380,000
TBD	Various	Various	Regional pavement preservation projects: strategic repaving in priority areas					$ 27,500,028	$ 82,500,000	$ 370,500,000	$ 480,500,028
TBD	Various	Various	Regional bridge preservation projects (maintain, rehabilitate and restore various highway bridges determined to be deficient)					$ 22,000,028	$ 96,250,000	$ 487,500,000	$ 605,750,028
TBD	Various	Various	Regional sidewalk preservation projects					$ 11,000,000	$ 27,500,000	$ 78,000,000	$ 116,500,000

SWRMPO Highway Preservation Projects

	Various	Regional reconstruction projects to meet ADA requirements	$ 5,500,000	$ 21,312,500	$ 78,000,000	$	104,812,500
TBD	Various	Various	Regional signal upgrade projects	$ 5,500,000	$ 41,250,000	$ 107,855,000	$	154,605,000
Total				**$ 130,663,556**	**$ 316,112,500**	**$ 1,300,280,000**	**$**	**1,747,056,056**

SWRMPO Highway Improvement Projects

Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023-2026)	Years 5-10 (2027-2032)	Years 11-27 (2033-2050)	Total
TBD	Norwalk, Wilton	US Bike Route 7	Norwalk River Valley Trail: Completion remaining miles of the corridor between Norwalk and Danbury	Quality of Life/Resiliency		E, SP	State/ Federal	$ -	$ 9,625,000	$ -	$ 9,625,000
TBD	Greenwich, Stamford, Darien, Norwalk, Westport	US-1	Route 1 - Signal upgrades, Adaptive Signal Control, and Coordination: Upgrade outdated equipment, coordinate signal timings, implement transit signal priority. Implementation of Adaptive Traffic Signal Technology to mitigate congestion.	Performance Improvement		E, SP	State/ Federal	$ -	$ 30,525,000	$ -	$ 30,525,000
TBD	Stamford	CT-104/CT-137	Bulls Head Traffic and Safety Improvements: At the intersection of Long Ridge Road, Cold Spring Road, High Ridge Road, Summer Street, and Bedford Street this project will improve traffic operations, congestion, and safety at this central traffic node that handles north-south travel in the Stamford.	Performance Improvement	Safety	E, HS, SP	City/State/Federal	$ -	$ -	$ 22,491,948	$ 22,491,948
TBD	Stamford	CT-104	Long Ridge Road/Stillwater/Roxbury Intersection Reconstruction: Stamford received $200 Million from the State to rebuild West Hill High School which will have regional educational programs. This unconventional intersection reconstruction will reduce the traffic impacts of the new school and reduce commute times for students from outside Stamford.	Performance Improvement		E, SP	City/State/Federal	$ -	$ 9,625,000	$ -	$ 9,625,000
TBD	Stamford	Various	CMAQ Phase I Signal Upgrades: upgrade traffic signals to improve traffic congestion throughout the city	Performance Improvement		E, SP	City/State/Federal (CMAQ)	$ -	$ -	$ 11,700,000	$ 11,700,000

SWRMPO Highway Improvement Projects

TBD	Stamford	Various	CMAQ Phase J Signal Upgrades: upgrade traffic signals to improve traffic congestion throughout the city	Performance Improvement		E, SP	City/State/Federal (CMAQ)	$ -	$ -	$ 11,700,000	$ 11,700,000
TBD	Stamford	Various	CMAQ Phase K Upgrades: upgrade traffic signals to improve traffic congestion throughout the city	Performance Improvement		E, SP	City/State/Federal (CMAQ)	$ -	$ -	$ 11,700,000	$ 11,700,000
TBD	Norwalk	US-1	Widening last remaining section of US Route 1 from two lane to four lane cross-section from the intersection of Hoyt Street to East Avenue	Performance Improvement		SP	State/ Federal	$ -	$ -	$ 29,250,000	$ 29,250,000
TBD	Stamford	Various	Grove Street/Strawberry Hill Avenue/Newfield Avenue Safe Streets for All Reconstruction	Safety		E, HS	City/State/Federal (SS4A)	$ -	$ 55,000,000	$ -	$ 55,000,000
TBD	Stamford	CT-137	Rt 137 HRR Commercial Area Safety Improvements: Roadway safety and complete streets enhancements along this high crash corridor. This commercial area is directly adjacent to the Merritt Parkway and functions as a regional shopping and rest stop area.	Safety	Complete Streets	E, HS, SP	City/State/Federal	$ -	$ 41,250,000	$ -	$ 41,250,000

SWRMPO Highway Improvement Projects

0158-0215	Westport	US-1	VARIOUS INTERSECTION IMPROVEMENTS - AC CONVERSION: Project currently on TIP- Two locations - 1. intersection with the Fresh Market/The Village Center Driveways to the intersection of Roseville Road and Hillspoint Roads. 2. Intersection of Bulkley Avenue, North and South. Project proposes to add exclusive left turn lanes at the three signalized intersections, two-way left turn lanes, realign the offset intersection at Buckley Avenue. The project will include new traffic signals, curbing, curb ramps, sidewalks, crosswalks, signal timing optimization and pavement reconstruction.	Safety	Performance Improvement	E, HS, SP	STPB	$ 12,870,000	$ -	$ -	$ 12,870,000
TBD	Stamford	Stillwater Rd	Stillwater Road at Bridge Street Reconstruction: this project would realign an unconventional intersection to be safer and the flow of traffic between Stamford and Greenwich.	Performance Improvement	Safety	HS	City/State/Federal	$ -	$ -	$ 19,500,000	$ 19,500,000
SPN 102-331	Norwalk	I-95	Diverging Diamond Interchange (DDI) at Exit 16, Interstate 95: Currently under conceptual design and would involve the bridge over I-95. This type of interchange would be the first in the state. They are designed to reduce dangerous turning movement conflicts and improve operations by redirecting traffic patters to allow for less phasing for traffic signals.	Performance Improvement	Safety	E, HS, SP	State/ Federal	$ -	$ 27,500,000	$ -	$ 27,500,000

SWRMPO Highway Improvement Projects

TBD	Westport	US-1/CT-33	Intersection Redesign: Route 33/Wilton Road/Riverside Rd intersection project to upgrade pedestrian and traffic signal equipment, new crosswalk pavement markings, ADA access improvements, and bicycle accommodations.	Complete Streets	Performance Improvement	HS	State/ Federal	$ -	$ 4,125,000	$ -	$ 4,125,000
TBD	Various	US-1	East Coast Greenway Route: Implement ECG route including safety and wayfinding improvements	Complete Streets		E, HS, SP	State/ Federal	$ -	$ 27,500,000	$ -	$ 27,500,000
TBD	Darien, New Canaan	Various	Darien-New Canaan Bicycle Loop: Implement recommendations from Bike Loop study - signage, pained bike lanes, buffered bike lanes, roadway restriping, sidewalk curb extensions, pedestrian refuge island, shoulder widening.	Complete Streets		E, HS, SP	State/ Federal	$ -	$ 1,375,000	$ -	$ 1,375,000
TBD	Stamford	Elm Street/New Haven Line	Elm Street MNRR Bridge Replacement and Complete Street Enhancements: Widening of MNRR Railroad Bridge over Elm Street. Additional travel lanes, widened sidewalks, protected bike facilities and other Complete Streets and safety improvements	Complete Streets	Performance Improvement	E, HS, SP	State/ Federal	$ -	$ -	$ 292,500,000	$ 292,500,000
TBD	Stamford	East Main Street/New Haven Line	East Main Street MNRR Bridge Replacement and Complete Street Enhancements: Widening of MNRR Railroad Bridge over East Main Street. Additional travel lanes, widened sidewalks, protected bike facilities and other Complete Streets and safety improvements	Complete Streets	Performance Improvement	E, HS, SP	State/ Federal	$ -	$ -	$ 292,500,000	$ 292,500,000

SWRMPO Highway Improvement Projects

TBD	Stamford	Greenwich Avenue/New Haven Line	Greenwich Avenue MNRR Bridge Replacement and Complete Street Enhancements: Widening of MNRR Railroad Bridge over Greenwich Avenue. Additional travel lanes, widened sidewalks, protected bike facilities and other Complete Streets and safety improvements	Complete Streets	Performance Improvement	E, HS, SP	State/ Federal	$ -	$ -	$ 292,500,000	$ 292,500,000
TBD	Stamford	Canal Street/New Haven Line	Canal Street MNRR Bridge Replacement and Complete Street Enhancements: Widening of MNRR Railroad Bridge over Canal Street. Additional travel lanes, widened sidewalks, protected bike facilities and other Complete Streets and safety improvements	Complete Streets	Performance Improvement	E, HS, SP	State/ Federal	$ -	$ -	$ 292,500,000	$ 292,500,000
TBD	Stamford	Cove Road	Cove Road East Coast Greenway Construction: Reconstruction of Cove Road to address Complete Streets and Safety deficiencies. Part of East Coast Greenway Phased Implementation Plan.	Complete Streets	Safety	E, HS, SP	City/State/Federal	$ -	$ 34,375,000	$ -	$ 34,375,000
TBD	Norwalk	CT-53	Corridorwide Bicycle and Pedestrian Improvements: CT-53 (East Avenue) from intersection of Westport Avenue/North Avenue to intersection of Newtown Avenue, exact improvements to be determine with future study	Complete Streets		E, HS, SP	State/ Federal	$ -	$ 2,750,000	$ -	$ 2,750,000
TBD	Norwalk	CT-123	Main Street Complete Streets Improvements: CT-123 from the intersection of Cross Street/North Avenue to New Canaan Avenue, signal upgrades, sidewalk widening, amenity zones, ped lighting, undergrounding utilities and bus shelters	Complete Streets		E, HS, SP	State/ Federal	$ -	$ 33,825,000	$ -	$ 33,825,000

SWRMPO Highway Improvement Projects

TBD	Norwalk	CT-123	Corridor Pedestrian Improvements: Install sidewalks and crosswalks on CT-123 from the intersection of Ells to Nursery Street. This will enable residents in the area to access the businesses to the south via non-vehicular means. Currently there are no existing sidewalks.	Complete Streets	E, HS, SP	State/ Federal	$ -	$ 2,062,500	$ -	$	2,062,500
TBD	Westport	US-1	Pedestrian Crossing and Sidewalk Improvements: Parker Harding Plaza intersection	Complete Streets	HS	State/ Federal	$ -	$ 412,500	$ -	$	412,500
TBD	Westport	Easton Road	Sidewalks: Easton Road from Weston Road to North Ave	Complete Streets	HS	State/ Federal	$ 1,320,000	$ -	$ -	$	1,320,000
0157-0089	Weston	Various	PEDESTRIAN IMPROVEMENTS AT VARIOUS LOCATIONS: Project currently on TIP	Complete Streets	HS	TAPB	$ 2,701,600	$ -	$ -	$	2,701,600
TBD	All		Municipal EV Charging Infrastructure and Necessary Electric Upgrades: approximately 70 stations with upgrades to electric service to have adequate capacity	Quality of Life/Resiliency	E	State/ Federal	$ -	$ 96,250,000	$ -	$	96,250,000
Total							**$ 16,891,600**	**$ 376,200,000**	**$ 1,276,341,948**	**$**	**1,669,433,548**

HVMPO Major Projects

Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023-2026)	Years 5-10 (2027-2032)	Years 11-27 (2033-2050)	Total
0034-0349	Danbury	I-84/US-7	WAS: I-84 Widening from Danbury Exit 3 to Exit 8 Ramp Improvements NOW: I-84/Rt 7 Improvements (PEL Recommendations): Several concepts are currently being analyzed to determine the best option to reduce congestion and eliminating left lane ramp maneuvers.	Performance Improvement		E, F, SP			$ 275,000,000	$ 225,000,000	$ 500,000,000
TBD	Danbury	CT-53	Complete Streets: Improve Conditions for Active Transportation Users - Approx. South St. northerly to Downs St	Complete Streets		E, HS, SP		$ 3,000,000.00	$ 7,000,000		$ 10,000,000
Total								**$ 3,000,000**	**$ 282,000,000**	**$ 225,000,000**	**$ 510,000,000**

HVMPO Highway Preservation Projects

Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023-2026)	Years 5-10 (2027-2032)	Years 11-27 (2033-2050)	Total
TBD	Various	Expressways	Noise Wall Replacement Program (TAM) - Replace existing poor condition noise walls	System Preservation		-		$ 5,500,000	$ 9,625,000	$ 15,600,000	$ 30,725,000
TBD	Various	Various	Retaining Wall Program (TAM) - Replace or Repair existing poor condition retaining walls	System Preservation		-		$ 8,250,000	$ 10,175,000	$ 16,575,000	$ 35,000,000
TBD	Various	Various	Culvert Replacement Program (TAM) - Replace existing poor condition culverts	System Preservation		-		$ 16,500,000	$ 27,500,000	$ 97,500,000	$ 141,500,000
TBD	New Milford	US-202/US-7	Bridge Replacement/Rehab: Veteran's bridge will need to be replaced or rehabilitated. Specific recommendations to be determined during a future planning analysis	System Preservation		E, PB, SP		$ -	$ -	$ 17,550,000	$ 17,550,000
0096-0201	Newtown	I-84	NHS - REHAB BR 01218 & 04180 o/ HOUSATONIC RIVER - AC CONVERSION: Currently on TIP	System Preservation		PB	NHPP-BRX	$ 17,147,900	$ -	$ -	$ 17,147,900
0116-0135	Redding	CT-53	REPLACE BR 01015 o/ SAUGATUCK RESERVOIR: Currently on TIP	System Preservation		PB	STPR	$ 4,224,000	$ -	$ -	$ 4,224,000
0117-0165	Ridgefield	Depot Road	REPLACE BR 07031 o/ NORWALK RIVER - AC CONVERSION: Currently on TIP	System Preservation		PB	STOP	$ 2,068,000	$ -	$ -	$ 2,068,000
TBD	Various	Various	Regional pavement preservation projects: strategic repaving in priority areas					$ 13,219,200	$ 68,750,000	$ 321,750,000	$ 403,719,200
TBD	Various	Various	Regional bridge preservation projects (maintain, rehabilitate and restore various highway bridges determined to be deficient)					$ 15,000,000	$ 82,500,000	$ 370,500,000	$ 468,000,000

HVMPO Highway Preservation Projects

TBD	Various	Various	Regional sidewalk preservation projects	$ 8,800,000	$ 13,750,000	$ 82,875,000	$	105,425,000
TBD	Various	Various	Regional reconstruction projects to meet ADA requirements	$ 5,500,000	$ 20,625,000	$ 78,858,000	$	104,983,000
TBD	Various	Various	Regional signal upgrade projects	$ 3,300,000	$ 20,625,000	$ 117,000,000	$	140,925,000
				$ 99,509,100	**$ 253,550,000**	**$ 1,118,208,000**	**$**	**1,471,267,100**

HVMPO Highway Improvement Projects

Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11-25 (2033-2050)	Total
TBD	Danbury, Bethel, Newtown	I-84	I-84 Strategic Congestion Relief Projects: create 3 travel lanes in each direction, specific projects to be determined with future study	Performance Improvement		E, F, SP	State/ Federal	$ -	$ -	$ 914,798,129	$ 914,798,129
TBD	New Milford	US-7/US-202	Downtown Congestion Improvements: Specific recommendations to be determined in a future planning analysis but will likely include signal timing and coordination revisions and realignments.	Performance Improvement		SP	State/Federal	$ -	$ -	$ 48,360,000	$ 48,360,000
TBD	Danbury	CT-37	Corridor Improvements: Traffic signal modifications and coordination, pedestrian and bicycle accommodations, intersection realignment, turning lanes, northbound widening from the I-84 exit ramp to the New Fairfield town line	Performance Improvement	Complete Streets	E, HS, SP	State/Federal	$ -	$ 7,851,250	$ -	$ 7,851,250
TBD	New Fairfield	CT-37	Corridor Improvements: Traffic signal modifications; pedestrian and bicycle accommodations, turning lanes, intersection realignment, shoulder widening from the Danbury line to the intersection with CT-39	Performance Improvement	Complete Streets	E, HS, SP	State/Federal	$ -	$ 3,850,000	$ -	$ 3,850,000
TBD	Danbury	CT-53	Main Street/East Franklin Street to Rose Street: The existing 4 lane cross section will be widened to a 5 lane cross section to accommodate left turn lanes from Main Street to all side streets.	Performance Improvement		SP	State/Federal	$ -	$ 4,125,000	$ -	$ 4,125,000

HVMPO Highway Improvement Projects

TBD	Danbury	West St & Westville Ave Improvements	West St & Westville Ave Improvements: Realign the intersection from an offset geometry to a 4-way intersection with exclusive left turn lanes to Westville Avenue and Oil Mill Road with an additional westbound right turn bypass lane to Westville Avenue. This would eliminate the current split phase signal operation and improve the level of service and excessive queuing along Lake Avenue.	Performance Improvement	Safety	E, HS	State/Federal	$ -	$ 5,500,000	$ -	$ 5,500,000
TBD	Danbury	CT-53	Main Street/South Street Intersection Improvements: Add left turn lanes and revise signal and pedestrian timings to reduce delay and increase pedestrian crossing safety.	Performance Improvement	Safety	HS, SP	State/Federal	$ -	$ 3,437,500	$ -	$ 3,437,500
TBD	Danbury	Sandpit Rd Corridor	Sandpit Rd Corridor Improvements: The existing 3 lane operation along Sandpit Road from Rockwell Road to Germantown Road will be extended to Starr Road. This improvement will reduce excessive queuing between Rockwell Road and Starr Road.	Performance Improvement		-	State/Federal	$ -	$ 3,437,500	$ -	$ 3,437,500
TBD	Danbury	West St Corridor	West St Corridor Improvements: West Street will be widened from the existing 2/3 lanes to a 4 lane operation between Division Street and CT-53 (Main Street) to reduce queuing and delays during AM and PM peak periods.	Performance Improvement		-	State/Federal	$ -	$ 6,875,000	$ -	$ 6,875,000

HVMPO Highway Improvement Projects

TBD	Danbury	Various	360 Degree Video Detection System: Install at 70 signals to improve operational efficiency and reduce congestion throughout the city.	Performance Improvement		E, SP	State/Federal	$ 3,300,000		$ -	$	3,300,000
TBD	Danbury	Various	Traffic Signal System Upgrade - Phase 1: Citywide	Performance Improvement		E, SP	State/Federal	$ 3,300,000		$ -	$	3,300,000
TBD	Danbury	Various	Traffic Signal System Upgrade - Phase 2: Citywide	Performance Improvement		E, SP	State/Federal	$ 3,300,000		$ -	$	3,300,000
TBD	Danbury	Various	Traffic Signal System Upgrade - Phase 3: Citywide	Performance Improvement		E, SP	State/Federal	$ -	$ 4,125,000	$ -	$	4,125,000
TBD	Danbury	Various	Traffic Signal System Upgrade - Phase 4: Citywide	Performance Improvement		E, SP	State/Federal	$ -	$ 4,125,000	$ -	$	4,125,000
TBD	Danbury	Various	Traffic Signal System Upgrade - Phase 5: Citywide	Performance Improvement		E, SP	State/Federal	$ -	$ 4,125,000	$ -	$	4,125,000
TBD	Danbury	White Street	White Street/Triangle Street Intersection Improvements: The proposed improvements in this project include realignment of the intersection of White Street/Triangle Street/Cross Street/Beaver Brook Road/Newtown Road to improve the safety and operations from all approaches.	Safety	Performance Improvement	E, HS	State/Federal	$ -	$ 5,500,000	$ -	$	5,500,000
TBD	Danbury	White Street	White Street/Federal Road Intersection Improvements: this project would realign an unconventional intersection to be safer and improve operations.	Safety	Performance Improvement	E, HS	State/Federal	$ -	$ 4,125,000	$ -	$	4,125,000
TBD	Danbury	Segar Street	Segar Street RRX Rehabilitation: single track freight only at-grade crossing on the Maybrook Line.	Safety	System Preservation	HS, TAM, TS	State/Federal	$ -	$ 2,750,000	$ -	$	2,750,000

HVMPO Highway Improvement Projects

TBD	Danbury	Golden Hill Road	Golden Hill Road/Farm Street Intersection Redesign: Safety and operational improvements at this unconventional intersection. Alternative road to CT-37 near Danbury High School. Realign to 4-leg 90 degree intersection with pedestrian safety improvements.	Performance Improvement	Safety	HS	State/Federal	$ -	$ 5,500,000	$ -	$ 5,500,000
TBD	Danbury	Mountainville Road	Mountainville Road/Southern Boulevard Intersection Redesign: This project would realign the intersection in a highly trafficked corridor.	Safety		HS	State/Federal	$ -	$ 3,437,500	$ -	$ 3,437,500
TBD	Danbury	Miry Brook Road	Miry Brook Road/Backus Avenue Intersection Redesign: design to be determined upon further analysis to be stop controlled or a roundabout. This busy intersection is poorly designed and is commonly misused.	Safety		HS	State/Federal	$ -	$ 2,750,000	$ -	$ 2,750,000
TBD	Danbury	Southern Blvd	Southern Boulevard/Lincoln Avenue Intersection Redesign: This project would realign the intersection in a highly trafficked corridor with sharp turns.	Performance Improvement		-	State/Federal	$ -	$ 687,500	$ -	$ 687,500
TBD	Brookfield	Vail Road	Railroad Bridge Upgrade: Raise bridge clearance and widen to one lane in each direction	Performance Improvement		-	State/Federal	$ -	$ -	$ 5,850,000	$ 5,850,000
TBD	Brookfield	Sand Cut Road	Railroad Bridge Upgrade: Raise bridge clearance and widen to one lane in each direction	Performance Improvement		-	State/Federal	$ -	$ -	$ 5,850,000	$ 5,850,000
TBD	Bethel	CT-53/Danbury Branch Line	Metro North Railroad Bridge on Rt 53 leading to Industrial Park: Raise bridge clearance to allow for trucks to access industrial park	Performance Improvement		-	State/Federal	$ -	$ 4,125,000	$ -	$ 4,125,000

HVMPO Highway Improvement Projects

TBD	Danbury	Maybrook Line and Berkshire Line	Low Bridge Warning System: install low-clearance warning system on three rail underpasses at West Street, Rose Hill Avenue, and Beaver Brook Road	System Management/Operation	TAM	State/Federal	$ 2,200,000	$ -	$ -	$ 2,200,000
TBD	New Milford	US-7/US-202	Safety improvements and sidewalks: Implement pedestrian accommodations and roadway safety improvements to reduce crashes from Still River Drive to Bridge Street	Complete Streets Safety	E, HS, SP	State/Federal	$ -	$ 6,875,000	$ -	$ 6,875,000
TBD	Newtown	CT-34/Wasserman Way	Municipal Sidewalk Connection: Install sidewalks to connect municipal Fairfield Hills Campus to Sandy Hook Village	Complete Streets	HS	State/Federal	$ -	$ 1,815,000	$ -	$ 1,815,000
TBD	Newtown and Danbury	Pequonnock Valley Greenway	Extension of Pequannock Valley Greenway: Extend the trail to Fairfield Hills in Newtown and into Danbury to NY state line/Maybrook Trail	Quality of Life/Resiliency	E, SP	State/Federal	$ -	$ 27,500,000	$ 58,500,000	$ 86,000,000
TBD	Danbury, Brookfield, New Milford	US Bike Route 7	Still River Greenway: Extension of the Still River Greenway in Brookfield, south to Danbury at the Norwalk River Valley Trail and north through New Milford	Quality of Life/Resiliency	E, SP	State/Federal	$ -	$ 27,500,000	$ 39,000,000	$ 66,500,000
TBD	Ridgefield and Redding		Georgetown-Branchville Trail: Construct a multi-use trail to connect the villages of Branchville and Georgetown, connect to the Ridgefield Rail Trail	Quality of Life/Resiliency	E, SP	State/Federal	$ -	$ 13,750,000	$ -	$ 13,750,000

HVMPO Highway Improvement Projects

TBD	All		Municipal EV Charging Infrastructure and Necessary Electric Upgrades: approximately 30 stations with upgrades to electric service to have adequate capacity	Quality of Life/Resiliency	E	State/Federal	$ -	$ 41,250,000	$ -	$	41,250,000
TBD	Redding, Ridgefield, Danbury	US Bike Route 7	Norwalk River Valley Trail: Completion remaining miles of the corridor between Norwalk and Danbury	Quality of Life/Resiliency	E, SP	State/Federal	$ -	$ 27,500,000	$ 19,500,000	$	47,000,000
Total							**$ 12,100,000**	**$ 222,516,250**	**$ 1,091,858,129**	**$**	**1,326,474,379**

HVMPO and SWRMPO Transit Projects

HVMPO State-Only Funded Rail Transit Projects

MPO	Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
HVMPO	302-0028	Danbury	Danbury Branch Line	Danbury Fueling Facility: Adding a diesel fueling station in Danbury for the trains using the Danbury Branch Line	System Management/Operation		TAM	State	$ 8,000,000			**$ 8,000,000**
									$ 8,000,000	$ -	$ -	**$ 8,000,000**

SWRMPO State-Only Funded Rail Transit Projects

MPO	Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
SWRMPO	TBD	Greenwich	New Haven Line	Cos Cob Bridge Replacement	System Preservation		TAM	State			$ 1,000,000,000	**$ 1,000,000,000**
SWRMPO	301-0509	Stamford	New Haven Line	Stamford Maintenance of Equipment (MOE) Facility Improvements	System Management/Operation		TAM	State	$ 65,000,000			**$ 65,000,000**
SWRMPO	301-0525	Stamford / Greens Farms (Westport)	New Haven Line	Switch Towers Rehab	System Preservation		TAM	State	$ 6,000,000			**$ 6,000,000**
SWRMPO	301-177	Westport	New Haven Line	Interim Repairs of Saga Movable Bridge	System Preservation		TAM	State	$ 27,000,000			**$ 27,000,000**
SWRMPO	301-173	Greenwich	New Haven Line	Interim Repairs of Cos Cob Movable Bridge	System Preservation		TAM	State	$ 37,000,000			**$ 37,000,000**
SWRMPO	303-0011	New Canaan	New Canaan Branch Line	New Canaan Branch Sidings: Adding passing sidings would allow for multiple trains to run on the Branch line at one time.	Performance Improvement		TAM	State			$ 40,000,000	**$ 40,000,000**
SWRMPO	301-0192	Stamford	New Haven Line	Replacement of Catenary for Stamford Yard Leads and Car Wash Facility	System Preservation		TAM	State		$ 100,000,000		**$ 100,000,000**
Total									**$ 135,000,000**	**$ 100,000,000**	**$ 1,040,000,000**	**$ 1,275,000,000**

HVMPO and SWRMPO Transit Projects

SWRMPO Federal/State Funded Rail Projects

MPO	Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
SWRMPO	301-0512	Stamford	New Haven Line	Stamford Station Improvements - Phase 2	System Management/Operation		TAM	State/Federal		$ 60,000,000		**$ 60,000,000**
SWRMPO	TBD	Norwalk	New Haven Line	Track Improvement Mobility Enhancement (TIME) - Project #2 (WALK Small Bridges, Station, Retaining wall and East Avenue Roadway)	System Management/Operation		TAM	State/ Federal		$ 62,000,000	$ 100,000,000	**$ 162,000,000**
SWRMPO	300-175	Westport	New Haven Line	Track Improvement Mobility Enhancement (TIME) - Project #4 (SAGA Fixed Bridge, Saugatuck Ave Bridge, Compo Rd Bridge, Rebuild Westport Station)	System Management/Operation		TAM	State/ Federal		$ 50,000,000	$ 350,000,000	**$ 400,000,000**
SWRMPO	TBD	Greenwich	New Haven Line	Track Improvement Mobility Enhancement (TIME) - Project #5 (New CP227\228, Arch St Brdge Deck Repair, Steamboat Rd Bridge)	System Management/Operation		TAM	State/Federal		$ 50,000,000	$ 360,000,000	**$ 410,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0189 - Fort Point Street Bridge (1st Half Only): Walk Bridge Program	System Preservation		TAM	State/ Federal		$ 50,000,000		**$ 50,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0188 - Osborne Ave Bridge (entire original project): Walk Bridge Program	System Preservation		TAM	State/ Federal	$ 15,000,000			**$ 15,000,000**

HVMPO and SWRMPO Transit Projects

SWRMPO	301-0524	Norwalk	New Haven Line	301-0189 - Haul Routes Paving (Pulled from original 301-0176): Walk Bridge Program	System Preservation	-	State/ Federal		$ 10,000,000		**$ 10,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0190 - Retaining Wall 427 Replacement (entire original project): Walk Bridge Program	System Preservation	TAM	State/ Federal	$ 10,000,000			**$ 10,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0524 - OCS Work (Pulled from original 301-0189 & 301-0176): Walk Bridge Program	System Preservation	TAM	State/ Federal		$ 60,000,000		**$ 60,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0189 - Strawberry Hill: Walk Bridge Program	System Preservation	TAM	State/ Federal	$ 6,000,000			**$ 6,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0187 - East Avenue Bridge Replacement: Walk Bridge Program	System Preservation	TAM	State/ Federal	$ 60,000,000			**$ 60,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0189 - East Norwalk Station (in bridge folder under 301-040): Walk Bridge Program	System Preservation	TAM	State/ Federal		$ 20,000,000		**$ 20,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	102-0207A - East Ave Roadway (Only Drainage work, most other work added to Advanced Utility Proj.): Walk Bridge Program	System Preservation	TAM	State/ Federal		$ 15,000,000		**$ 15,000,000**
SWRMPO	301-0524	Norwalk	New Haven Line	301-0516 - Local Bridge Utilities (entire original project): Walk Bridge Program	System Preservation	TAM	State/ Federal		$ 25,000,000		**$ 25,000,000**
SWRMPO	301-0176	Norwalk	New Haven Line	Walk (Norwalk) Bridge (Accelerated Construction)	System Preservation	TAM	State/ Federal	$ 800,000,000			**$ 800,000,000**
Total								**$ 891,000,000**	**$ 402,000,000**	**$ 810,000,000**	**$ 2,103,000,000**

HVMPO and SWRMPO Transit Projects

Danbury Branch Line - State-Only Funded Projects

MPO	Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
HVMPO/SWRMPO	302-0023	Wilton and Bethel	Danbury Branch Line	Danbury Branch Slope and Track Stabilization (3 sites) (Lochner)	System Preservation		TAM	State		$ 12,000,000		$ 12,000,000
Total									**$ -**	**$ 12,000,000**	**$ -**	**$ 12,000,000**

New Haven Line Main Line - State-Only Funded Projects

MPO	Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
Various	300-0196	Various	New Haven Line	Scour Rehabilitation Project-(CosCob M.P. 29.9), (Five Mile River M.P. 39.02), (Norwalk River DB M.P. 9.42), (Canal WB M.P. 12.57)	System Preservation		TAM	State	$ 9,000,000			$ 9,000,000
Total									**$ 9,000,000**	**$ -**	**$ -**	**$ 9,000,000**

New Haven Line Main Line - Federal/State Funded Projects

MPO	Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
Various	301-0520	Cos Cob (Greenwich) / Fair Street (New Haven)	New Haven Line	Power Substation Program - Phase 1: Improve system reliability through replacement of signal power substations.	System Preservation		TAM	State/ Federal	$ 35,000,000			$ 35,000,000
Various	301-0520	Sasco Creek (Westport)/ East Portchester	New Haven Line	Power Substation Program - Phase 2: Improve system reliability through replacement of signal power substations.	System Preservation		TAM	State/ Federal		$ 30,000,000		$ 30,000,000
Various	301-0520	Devon (Milford) / Cos Cob (Greenwich)	New Haven Line	Power Substation Program - Phase 3: Improve system reliability through replacement of signal power substations.	System Preservation		TAM	State/ Federal		$ 20,000,000		$ 20,000,000
Total									**$ 35,000,000**	**$ 50,000,000**	**$ -**	**$ 85,000,000**

HVMPO and SWRMPO Transit Projects

New Haven Line Systemwide - State-Only Funded Projects

MPO	Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
Various	300-0191CN	Various	New Haven Line	Station State of Good Repair Program: (ANNUAL)	System Preservation		TAM	State	$ 2,000,000	$ 3,000,000	$ 5,000,000	**$ 10,000,000**
Various	Various	NH Branch Lines & NHHS	New Haven Line/Hartford Line/Waterbury Line	Concept-Level Electrification Study for CT Rail System	Performance Improvement		E, SP	State	$ 2,000,000			**$ 2,000,000**
Various	300-0097	Various	Various	Railroad Bridge Inspection Program	System Preservation		TAM	State	$ 16,000,000	$ 20,000,000	$ 20,000,000	**$ 56,000,000**
Various	170-2010	Various	Various	Off-System Railroad Bridge Inspection Program	System Preservation		TAM	State	$ 16,000,000	$ 20,000,000	$ 20,000,000	**$ 56,000,000**
Various	300-175PE & 300-213CN	Various	New Haven Line	S-Program - Metro-North Bridge Repairs Program	System Preservation		TAM	State	$ 24,000,000	$ 75,000,000	$ 120,000,000	**$ 219,000,000**
Various	300-175PE & 170-3368CN	Various	Various	F-Program - Freight Bridge Repairs Program for Freight Line Bridges	System Preservation		TAM	State	$ 22,000,000	$ 40,000,000	$ 60,000,000	**$ 122,000,000**
Various	Various	Various	New Haven Line	Bridge Timber Program	System Preservation		TAM	State	$ 24,000,000	$ 75,000,000	$ 120,000,000	**$ 219,000,000**
Various	TBD	Various	Various	5G Program: Internet upgrades on Metro North trains.	System Management/Operation		-	State	$ 25,000,000			**$ 25,000,000**
Total									**$ 131,000,000**	**$ 233,000,000**	**$ 345,000,000**	**$ 709,000,000**

HVMPO and SWRMPO Transit Projects

New Haven Line Systemwide - Federal/State Funded Projects

MPO	Project #	Town	Route/Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
Various	300-0202	Various	New Haven Line	Upgrade to Network Infrastructure - Phase 3: Upgrading communication network infrastructure by installing fiber optic communication cable and equipment to support security cameras a vulnerable passenger stations and bridges. Supports information displays, improved travel times, and customer experience.	System Management/Operation		TAM	State/ Federal	$ 30,000,000			**$ 30,000,000**
Various	300-0215	Various	New Haven Line	Upgrade to Network Infrastructure - Phase 4: Upgrading communication network infrastructure by installing fiber optic communication cable and equipment to support security cameras a vulnerable passenger stations and bridges. Supports information displays, improved travel times, and customer experience.	System Management/Operation		TAM	State/ Federal		$ 30,000,000		**$ 30,000,000**

HVMPO and SWRMPO Transit Projects

Various	301-0154	Various	New Canaan Branch Line	New Haven Line Signal System Replacement Section 4 (New Canaan Branch-Springdale to New Canaan Station including all grade crossing)	Safety	HS, TAM, TS	State/ Federal		$ 40,000,000		**$**	**40,000,000**
Various	300-0199	Various	New Haven Line	Customer Service Initiatives (CSI): Audio and visual communication system upgrades	System Management/Operation	-		$ 3,000,000	$ 6,000,000		**$**	**9,000,000**
Various	301-0519	Various	New Haven Line	New Haven Line – Signal Replacement Program CP244,245,255,257,261 & 266 - Sections 2 & 3	System Preservation	TAM	State/ Federal		$ 60,000,000		**$**	**60,000,000**
Various	Various	Various	New Haven Line	C-Program (Capital Track Program)	System Preservation	TAM	State/ Federal	$ 140,000,000	$ 340,000,000	$ 500,000,000	**$**	**980,000,000**
Total								**$ 173,000,000**	**$ 476,000,000**	**$ 500,000,000**	**$**	**1,149,000,000**

HVMPO and SWRMPO Transit Projects

CTtransit Stamford

MPO	Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
SWRMPO	TBD	Stamford	CTtransit - Stamford	Infrastructure improvements to accommodate electric vehicles and bring facility up to state of good repair	Quality of Life/Resiliency		E, TAM	State/ Federal	$ 25,000,000	$ 45,910,532		$ 70,910,532
SWRMPO	TBD	Various	CTtransit - Stamford	Fixed bus replacement - battery electric buses	Quality of Life/Resiliency	System Preservation	E, TAM	State/ Federal	$ 15,000,000	$ 41,000,000		$ 56,000,000
SWRMPO	TBD	Stamford	CTtransit - Stamford	Stamford Transportation Center Refurb Bus Area	System Management/Operation		TAM	State/ Federal		$ 30,000,000		$ 30,000,000
Total									**$ 40,000,000**	**$ 116,910,532**		**$ 156,910,532**

Norwalk Transit District

MPO	Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
SWRMPO	TBD	Norwalk	Norwalk Transit	Infrastructure improvements to accommodate electric vehicles and bring facility up to state of good repair	Quality of Life/Resiliency		E, TAM	State/ Federal	$ 25,000,000	$ 53,598,750		$ 78,598,750
SWRMPO	TBD	Various	Norwalk Transit	Fixed bus replacement - battery electric buses	Quality of Life/Resiliency	System Preservation	E, TAM	State/ Federal	$ 15,000,000	$ 24,000,000		$ 39,000,000
Total									**$ 40,000,000**	**$ 77,598,750**	**$ -**	**$ 117,598,750**

HVMPO and SWRMPO Transit Projects

HARTransit

MPO	Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
HVMPO	TBD	Danbury	HARTransit	Infrastructure improvements to accommodate electric vehicles and bring facility up to state of good repair	Quality of Life/Resiliency		E, TAM	State/ Federal	$ 1,000,000	$ 2,610,000		$ 3,610,000
Total									**$ 1,000,000**	**$ 2,610,000**	**$ -**	**$ 3,610,000**

Various Transit

MPO	Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Years 1-4 (2023 - 2026)	Years 5-10 (2027-2032)	Years 11+ (2033 +)	Total
Various	TBD	Various	Various	Park & Ride Lot Repairs & Improvements	System Preservation		E, SP, TAM	State/ Federal	$ 15,000,000	20000000	$ 21,500,000	$ 56,500,000
Various	TBD	Various	Various	Park & Ride Lot Shelter Replacement	System Preservation		E, SP, TAM	State/ Federal	$ 50,000	$ 75,000	$ 109,000	$ 234,000
Total									**$ 15,050,000**	**$ 20,075,000**	**$ 21,609,000**	**$ 56,734,000**

HVMPO and SWRMPO Transit Projects - Fiscal Year Illustrative

MPO	Project #	Town	Route/ Network	Project Description	Regional Goal	Secondary Regional Goal	Related Performance Measures	Funding Source	Fiscal Year Illustrative
HVMPO	TBD	Danbury, Brookfield, New Milford	Danbury Branch Line	Track Improvements and Extension: Extend passenger service to New Milford. Implement recommendations from the Danbury Branch Study, including adding three stations in Danbury (Berkshire Park), Brookfield Center and New Milford.	Performance Improvement		E, SP, TAM	State/Federal	$ 250,000,000
HVMPO	TBD	Danbury	HARTransit	Intermodal Hub: relocating the HARTransit hub that provides bus services to a location closer to the Danbury Train Station. This would improve connections between bus and train service to promote non-single occupancy vehicle modes of travel.	Performance Improvement	Quality of Life/Resiliency	E, SP	State/Federal	$ 5,000,000
HVMPO	TBD	Bethel	Danbury Branch Line	Pedestrian Overpass: Currently the downtown area of Bethel is bisected by railroad. The proposed pedestrian bridge overpass will allow for a convent location where pedestrians can cross the tracks without having to travel far out of their way to reach their destination. The pedestrian bridge overpass will be located directly to the south of the existing train station.	Complete Streets		HS, TS	State/Federal	$ 8,000,000
HVMPO	TBD	Various	HARTransit	Fixed bus replacement - battery electric buses	Quality of Life/Resiliency	System Preservation	E, TAM	State/Federal	$ 31,200,000
HVMPO/ SWRMPO	TBD	Various	Various	Bus Shelter Enhancements: Provide new and enhance existing bus shelters throughout the region's bus routes to improve the level of care for passengers.	Quality of Life/Resiliency		-	State/Federal	$ 20,000,000
HVMPO/ SWRMPO	TBD	Norwalk, Wilton, Ridgefield, Redding, Bethel, Danbury	Danbury Branch Line	Track improvements: along the existing Danbury Branch Line, as recommended in the Danbury Branch Study, track improvements will increase reliability, frequency and travel speed for both passenger and freight service on the line. This project would include track replacement and realignment to allow for increased operating speeds. It would also increase the track weight capacities from 263,000 lbs. to 286,000 lbs.	Performance Improvement		TAM	State/Federal	$ 263,000,000

HVMPO and SWRMPO Transit Projects - Fiscal Year Illustrative

HVMPO/ SWRMPO	TBD	Norwalk, Wilton, Ridgefield, Redding, Bethel, Danbury, Brookfield, New Milford	Danbury Branch Line	Electrification of the line: This project would electrify the Danbury Branch from Norwalk to New Milford that currently uses diesel to power the trains. It would allow for extended one-seat service trips along the New Haven Line and in to New York City, reduce fossil fuel consumption and provide a more attractive transit option due to the improvement in service - further reducing congestion on the region's roadway network.	Performance Improvement	Quality of Life/Resilienc y	E, SP	State/Federal	$	122,000,000
SWRMPO	TBD	New Canaan, Stamford, Darien	New Canaan Branch Line	New Canaan Branch Capacity Improvements: Extending platforms at the New Canaan Station and adding a platform to opposite side of Springdale and Talmadge Hill station would decrease boarding time and improve platform crowding. Additional improvements to be determined after further study.	Performance Improvement		TAM	State/Federal	$	100,000,000
SWRMPO	TBD	Greenwich, Stamford, Darien, Norwalk, Westport	US-1	Route 1 BRT Implementation: Bus Rapid Transit service on US-1 as recommended in the Route 1 BRT Feasibility Study Final Report. This route would extend from Port Chester, NY to New Haven, CT through the region, add stations and coordinate with the transit signal priority equipment being installed during the US-1 signal upgrade project.	Performance Improvement		E, SP	City/State/Fed eral	$	20,000,000
SWRMPO	TBD	Stamford	Various	Stamford Trolley Bus and Network Upgrades: Purchase of new electric trolley busses and expand Stamford's trolley network to the South End, Downtown, West Side and East Side Neighborhoods.	Performance Improvement	Quality of Life/Resilienc y	E, SP	City/State/Fed eral	$	20,000,000
SWRMPO	TBD	Norwalk	Norwalk Transit	Intermodal Hub: relocating the Norwalk transit hub that provides bus services to a location closer to the South Norwalk Train Station. This would improve connections between bus and train service to promote non-single occupancy vehicle modes of travel.	Performance Improvement	Quality of Life/Resilienc y	E, SP	State/Federal	$	5,000,000
SWRMPO	TBD	Norwalk	Various	Transit Service Connecting Wall Street and SONO: High frequency service along East Avenue, Van Zant Street, Fort Point Street, Washington Street, and MLK Boulevard.	Performance Improvement		E, SP	State/Federal	$	20,000,000
SWRMPO	TBD	Stamford, Darien, New Canaan	New Canaan Branch Line	New Canaan Branch Line - at-grade crossing improvements: Installation of additional infrastructure to improve safety at crossings.	Safety		HS, TAM, TS	State/Federal	$	25,000,000

Appendix C: Regional Bicycle Plan

Western Connecticut
Council of Governments

Regional Bicycle Plan

WESTCOG

This page is intentionally left blank

Table of Contents

Acknowledgement of Funding Sources

This document was prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration, and State of Connecticut Department of Transportation. The opinions, findings, and conclusions expressed in this publication are those of the authors and do not necessarily reflect the official views or policies of the Western Connecticut Council of Governments.

Introduction

The Western Connecticut region is diverse and yet cohesive. Spanning 532 square miles, its eighteen communities constitute a harmonious combination of high-density coastal towns; suburban and rural villages. The region is oriented toward two major employment areas: one, in the City of Stamford, and to the New York City Metropolitan Area. The region has a strong identity and a wide range of natural resources and neighborhoods that make it an attractive place to live, work and recreate.

Over the years, there have been numerous studies conducted in the cities and towns of Western Connecticut that relate to bicycle infrastructure and safety. In addition to these plans, each of the eighteen municipalities in the region has (or is currently drafting) a Plan of Conservation and Development (POCD).[i] To varying degrees, each of these studies documents the existing bicycle infrastructure, sets goals and provides recommendations for improvements.

The Western Connecticut Council of Governments (WestCOG) was established on January 1, 2015 from the merger of the former Housatonic Valley Council of Chief Elected Officials and the Southwest Regional Planning Agency (SWRPA). WestCOG's charge is to address the fundamental decision-making constraints posed by local governments attempting to solve regional natural resource and infrastructure issues on their own. Many such issues are identified in the above-referenced studies.

As host to the Housatonic Valley Metropolitan Planning Organization (HVMPO) and the South Western Region Metropolitan Planning Organization (SWRMPO) WestCOG plays a major role in planning for and programming funding of the region's transportation system, including bicycle facilities. Accordingly, WestCOG has several initiatives underway to improve bicycling so as to advance regional economic and community development; create a balanced transportation network; stimulate travel and tourism, and positively impact the environment and public health.

WestCOG's purposes in preparing this Bicycle Plan are to: promote its communities' individual bicycle planning efforts; ensure regional coordination among such efforts, and set regional priorities and advocate for supportive policies and funding that generate local and regional benefits. Accordingly, this Plan builds upon the solid foundation of work cited above while proposing some incremental steps communities can take to encourage bicycling, as well

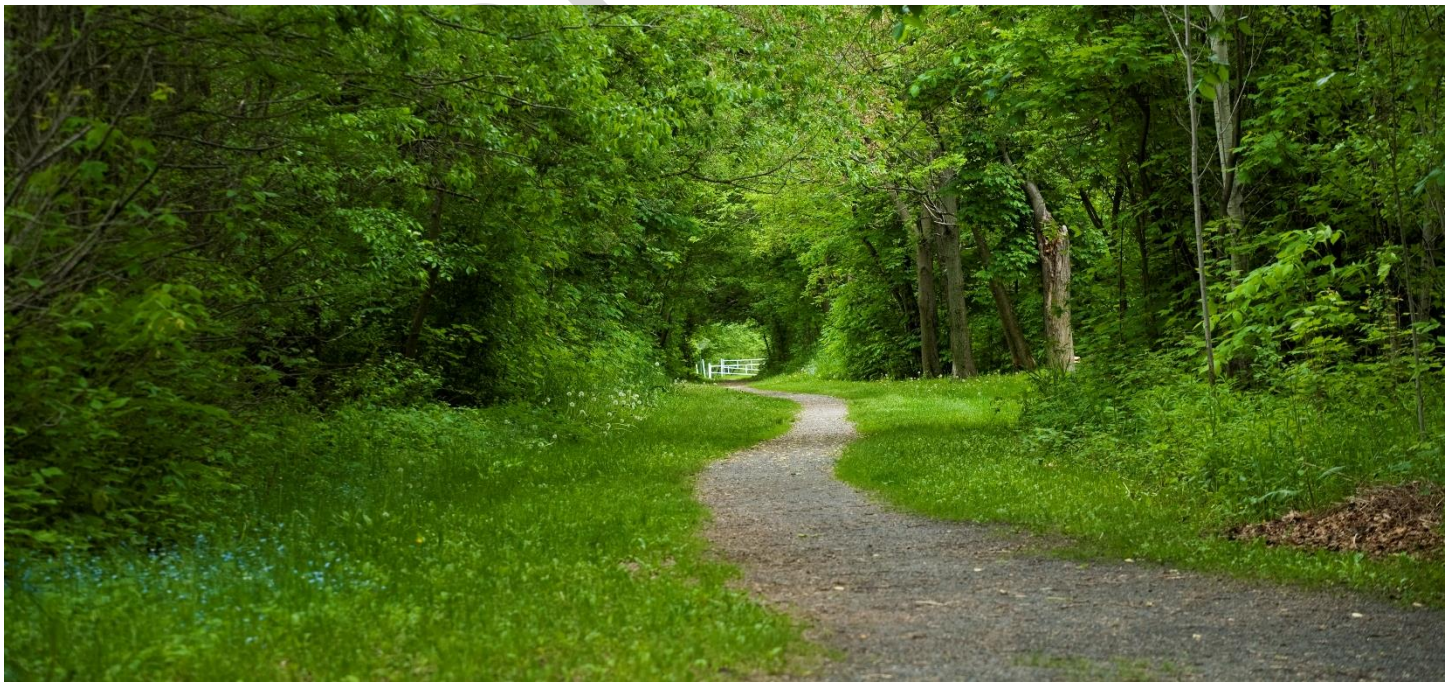


Figure 1. Norwalk River Valley Trail (Photo Credit: Former State Representative Gail Lavielle)

as taking a regional approach to connecting existing and planned bicycle routes.

Accordingly, WestCOG will:

- survey and report upon the region's bikeability;
- track and report upon bicycling safety;
- identify and prepare actions to address unmet bicycling needs;
- set attainable bicycling performance measures, and
- ensure that this Plan is coordinated with the region's development and transportation plans.

Vision Statement

WestCOG seeks to promote bicycling as an active transportation and recreation activity that provides access to essential goods and services while generating a wide range of benefits including tourism, economic development, and improved mental and physical health. The vision will be achieved by making best use of existing bicycling infrastructure while advancing bicycling infrastructure development and educating the public of bicycling's benefits. Advocacy will over time generate more bicycling activity and support for expanded infrastructure and education.

Goals, Objectives, and Accomplishments

Previous Regional Bicycle Plans

In preparing this Plan, goals and objectives set in the South Western Region Bicycle and Pedestrian Plan (2013) and the Greater Danbury Regional Bike Plan (2015) were reviewed to assess progress and accomplishments made as well as suitability for carrying goals and objectives forward in this Plan. These goals and objectives are regrouped and condensed as follows, with achievements noted:

Goal 1: Develop and maintain an efficient, accessible, and convenient bicycling system

Objectives:

- Designate an overall network of on-road bicycling facilities: the HVCEO 2015 Bicycling Plan evaluated existing on-road facilities for suitability as a network, identifying roadway segments suitable for regional travel as well as segments requiring improvement.
- Maintain bicycle facility safety (SGR)
- Improve existing bicycle routes (shoulders, marking and signage)
- Continue developing a network of separated bicycling facilities in both densely developed and rural/suburban areas to offer a wide range of experiences

Accomplishments:

- Network: staff continues to develop a regional bicycle network plan using existing studies, and prepared a region-wide Bicycling Suitability Analysis for state routes based on Average Daily Traffic and shoulder widths
- Safety: staff continues to monitor crash data and to participate in Road Safety Audits to evaluate the need for bicycling improvements as stand-alone or integrated projects.
- Route improvements: for example, the Norwalk Valley Rail Trail (NRVT), a 30.6- mile trail in five of the region's communities, is being developed: 12 miles have been completed and approximately 3 additional miles are in progress.
- Intermodal Connections: Phases 1 & 2 of the $117 million Stamford Urban Transitway, which includes bicycle lanes and other bicycling amenities, was completed by October 2017.

Goal 2: Integrate and connect the bicycling system with the larger surface transportation system.

Objective:

- Prioritize infrastructure investments that integrate bicycling and other transportation modes

Accomplishments:

- Local Transportation Capital Improvement Program (LOTCIP): this Program has funded a wide range of projects more flexibly, and in the WestCOG region the following projects include improvements that benefit bicyclists. Examples include:
  - Roadway Improvements: US-202 (Brookfield)
  - Intersection improvements: Brookfield, Darien, Greenwich, New Milford, Norwalk, Stamford, Westport
  - Roundabout installation: New Milford

    - Streetscape Improvements: Brookfield, Norwalk
- CT Bicycle and Pedestrian Advisory Board (CBPAB): the WestCOG Executive Director, as an appointee to the CBPAB, continues to advise the State upon bicycling systems, their effectiveness, and need for improvements.
- Coordination/participation in organizations devoted to trail and off-road bicycling: New England Mountain Biking Association; local land trusts, and CT Forest and Park Association.
- Buses and Trains: CTtransit, HART and NTD transit buses are equipped with bicycle racks. Metro North stations are also equipped with bicycle racks. Bike racks on Metro-North Railroad trains allow bikes during off peak travel. Staff has advocated for these improvements.
- Park and Ride Facilities: the staff continues to monitor parking utilization at the region's facilities and documents the presence of bicycle parking and associated amenities.

Goal 3: Support and encourage bicycling connections between neighborhoods, commercial areas, employment centers, schools, state and municipal parks, and other community destinations.

Objectives:

- Develop TOD plans that include accommodations for bicycling
- Adopt Complete Streets policies at the municipal level.
- Encourage developers to accommodate bicyclists in projects
- Travel and Tourism: promoting bicycling

Accomplishments:

- TOD Plans (Danbury Downtown, Danbury Branch, Bethel, Stamford and others) prepared
- Complete Streets Policy (Stamford), adopted January 2015
- Developer accommodation of bicyclists
- Travel and Tourism: information supplied to for-profit and non-profit organizations hosting bicycle tours, including Bike Walk CT and CT Bike Tours.
- Wayfinding and Tourism: for example, the Town of Bridgewater created a "Tour of the Town" downtown bicycling route & map for its town center (2016).

Goal 4: Improve bicycling safety

Objectives:

- Measurement of safety: monitor/analyze crash data
- Conduct Road Safety Audits to evaluate the region's roadways for bicycling safety
- Support for the development of the CTDOT 2017-2021 State Highway Safety Plan (SHSP)
- Regional implementation of the Share the Road Initiative
- Support for the Watch for Me Connecticut Program
- Encourage WestCOG municipalities to participate in the Community Connectivity Program (CCP) and implement recommendations identified through the Road Safety Audit (RSAs)

Accomplishments:

- In 2021, WestCOG finalized the Regional Transportation Safety Plan (RTSP) which evaluated safety data to identify high-risk locations involving fatalities, serious injuries or crashes involving non-motorized users including bicyclists.. This plan developed a series of safety countermeasures to improve safety at the high-risk locations.
- CT Community Connectivity Program: WestCOG supported its municipalities in participating in this program. To date, 11 Road Safety Audits were completed and over six construction projects were awarded.

Goal 5: Develop and implement educational programs to ensure that transportation facilities will be used safely and responsibly.

Objectives:

- Encourage local officials to sponsor a Mayors' Fitness Initiative in their own communities (a national program)
- Encourage sponsorship of Connecticut Cycling Advancement Program – youth cycling events

Figure 2. Road Safety Audit/Safe Routes to School (Photo Credit: VN Engineers)

- Encourage safety and skills trainings for children and adults
- WestCOG staff participation in bicycle-related trainings and conferences

Accomplishments:

- City of Norwalk Mayor Rilling implemented Fitness Challenge (2016)
- Bike/Walk Groups: Norwalk, New Milford, Ridgefield
- People Friendly Stamford (Complete Streets advocacy)
- Technical assistance to communities establishing trails: Newtown (Al's Trail)
- Coordinated with the UConn T2 Center to complete Road Safety Audits (RSAs) in New Fairfield, Darien, and Stamford.

Goal 6: Provide financial and technical support and obtain funding for the development and construction of bicycle and pedestrian facilities throughout the region.

Objectives:

- encourage CTDOT to enact a consistent policy for providing non-federal match;
- support the use of federal aid funds from all programs eligible for bikeway, trail and walkway projects
- encourage CTDOT to streamline project scoping, design and review
- update regional plan periodically to ensure relevance,
- ensure that regional bicycle and pedestrian working groups meet regularly to address issues and update Plans.

Accomplishments:

- The WestCOG region, in concert with other COGs, worked with CTDOT to implement the LOTCIP Program in 2013.
- This Plan will serve as an update of the SWRPA 2013 and HVCEO 2015 Plans.
- Coordinate with stakeholders on transportation plans and corridor studies: BikeWalk CT; Sound Cyclists Bicycle Club, and People Friendly Stamford

Goal 7: Contribute to public health by providing safe and accessible opportunities to make bicycling a viable means of travel.

Objectives:

- Collaboration with DEEP and DPH, and municipal public health departments to promote bicycling
- Safe Routes to Schools (SRTS) – Construction
  - Norwalk: Roton Middle School, 2018
  - Norwalk: Strawberry Hill Avenue Bike Lane
  - Bethel, CT: Whittlesey Rd, Maple Ave & Plumtrees Rd
  - Stamford: K.T. Murphy School
- Community Connectivity Program – Road Safety Audits: Bridgewater, Brookfield, Danbury, Darien, Greenwich, New Fairfield, New Milford, Norwalk, Ridgefield, Stamford, Weston, and Westport.

Goals, Objectives and Accomplishments

Regional Bicycle Plan

General Goals:

- Improve bicyclist safety and mobility
- Create a cohesive network, built on existing studies' recommendations
- Support cycling as a viable transportation mode – improving public health, increasing transportation options, and spurring economic development

Connectivity Goals:

- Support continued development of North/South & East/West travel corridors
- Connect major routes (Merritt Parkway, US Routes 1 & 7, Western New England Greenway segments) and destinations (Metro-North Stations, employer sites, parks) to the corridors

Implementation Goals:

- Identify some "Quick Build" projects
- Identify sources of funding for bicycle trails and on-road improvements
- Provide a means for bicyclists to report bicycle facility and accessibility issues
- Work with communities to adopt Complete Streets policies

Education Goals:

- Work with BikeWalk CT and other partners to:
  - Bring bike safety and skills into elementary schools' Physical Education curriculum (and possibly Parks and Recreation Departments' programming)
  - Provide "Bike Skills 101" trainings to anyone who wants to become more informed, skilled and comfortable riding a bicycle in traffic

Both the local and the regional approaches combined will result in a more balanced transportation network that makes bicycling a viable transportation mode in western Connecticut.

Demographics

According to data from the American Community Survey (5 year average 2016-2020), approximately 1% of residents in WestCOG commute to work via bicycle.

The National Household Travel Survey indicates that the most common use of bicycles is for recreational purposes, although the share of other trip purposes is growing over time. Commuting represents the greatest rate of increase among trip purposes.

NHTS data reveal no significant differences between income levels and cycling. However, researchers have suggested that low-income riders are more likely to cycle for employment and basic needs, while upper income riders ride more for recreation and exercise.

Among those bicycling facilities in the region for which usage is sampled every year, the Still River Greenway in Brookfield posts impressive numbers: 182,579 for 2019 = 500/day – 3,500/week. The Norwalk River Valley Trail registered 53,290 users = 146/day – 1,022/week.

COVID-19 and bicycling activity

During the pandemic, bicycling on the region's trails and roadways increased dramatically – particularly in the first half of calendar year 2020. Trail Census CT counts performed in March 2020 showed significant year-over-year increases in trail use during the coronavirus pandemic; in fact, demand upon many existing trails was unprecedented – and in some cases led to crowding and resultant closures. Table 1 shows usage figures for two trails in the WestCOG region in March 2019 and March 2020:

Table 1. Percent Change in Infrared Trail Counts: March 2019 and 2020

Trail	2019	2020	% change, 2019-2020
Norwalk River Valley Trail Wilton	4,705	11,520	144.9%
Still River Greenway Brookfield	13,414	24,235	80.7%

Source: CT Trails Census, COVID-19 Trail Impact Report

Also, bicycle retail industry representatives reported increased sales during this same period.[ii] The takeaway is that the stay-at-home policies and mandatory telework for much of the workforce generated increased walking and bicycling. While

the spike in bicycling in February-May 2020 was a unique occurrence, the long-term shift toward remote working and increased flexibility in work schedules will likely continue to generate new demand for bicycle infrastructure – while fewer people may bike a traditional daytime commute, more people will recreate and conduct other business by bicycle during the workday. That existing facilities were often at or above capacity during this period points to the need to advance long-term bicycling infrastructure development throughout the region for many purposes, including public health. During the pandemic, the World Resources Institute reported that some cities worldwide responded to the demand by creating pop-up bicycling facilities, using excess road capacity.[iii]

Figure 3. Social-distancing sign on the Norwalk River Valley Trail (source: Friends of the NRVT)

Economics of Bicycling

The CT Trail Census Project has had a counter installed on a segment of the Norwalk River Valley Trail in Wilton which has documented 1,022 users/week (2019) If the lower of the two day-trip expenditure figures ($43.81) is multiplied by 1,022 users – and 52 weeks, the revenue generated by that segment of trail alone is $2,328,220 annually.

The economic development impacts – referenced in the general goals of this study – that can be expected from better bicycling infrastructure, are documented. The 2013 "Outdoor Participation Report" conducted by the Outdoor Industry Association (OIA) found that participants involved in nonmotorized recreational activities in Connecticut spent an average of $60.26 per trip on trail-based recreational day trips and $43.81 on bicycle related recreational day trips. Overnight trips averaged $148.89 for trail-based trips and $150.93 for bicycle related trips.[iv] This same annual study shows that road bicycling, mountain bicycling and BMX are consistently ranked the third most popular outdoor activity in the US.

The OIA periodically updates its Outdoor Participation Report. Its 2017 Outdoor Participation Report was developed with expanded survey research. Estimations of spending per participant and trip type ranged as shown in Table 2.

Table 2. Overall Spending per Participant Trip

Trip Type	Amount Spent
In-State Day Trip	$100
Out-of-State Day Trip	$250
In-State Overnight Trip	$288
Out-of-State Overnight Trip	$563

The State of Vermont has also been monitoring use of its' recreational trails and their impact on the economy. An "Economic and Fiscal Impact Analysis on of the Vermont Trails and Greenway Council Member Organizations" from October of 2016 showed that over $30 million in revenue was derived

from visitors to Vermont's trails, as shown in Figure 4[v]

Long-term Economic Benefits of Bicycling Infrastructure – Property Values

Bicycling infrastructure - specifically shared-use trails - can also generate long-term benefits to the economy that accrue to property. Resources such as trails and greenways can generate 'preservation' and 'property valuation' values for properties in the areas surrounding a facility. For example, a 2011 Connecticut Center for Economic Analysis study analyzed values of properties overlooking state parks and/or forests and state trails. Although results varied by region, this study identified a green space bonus of $41,961 to $50,124 for properties overlooking Connecticut Department of Energy and Environmental Protection (CTDEEP) managed green

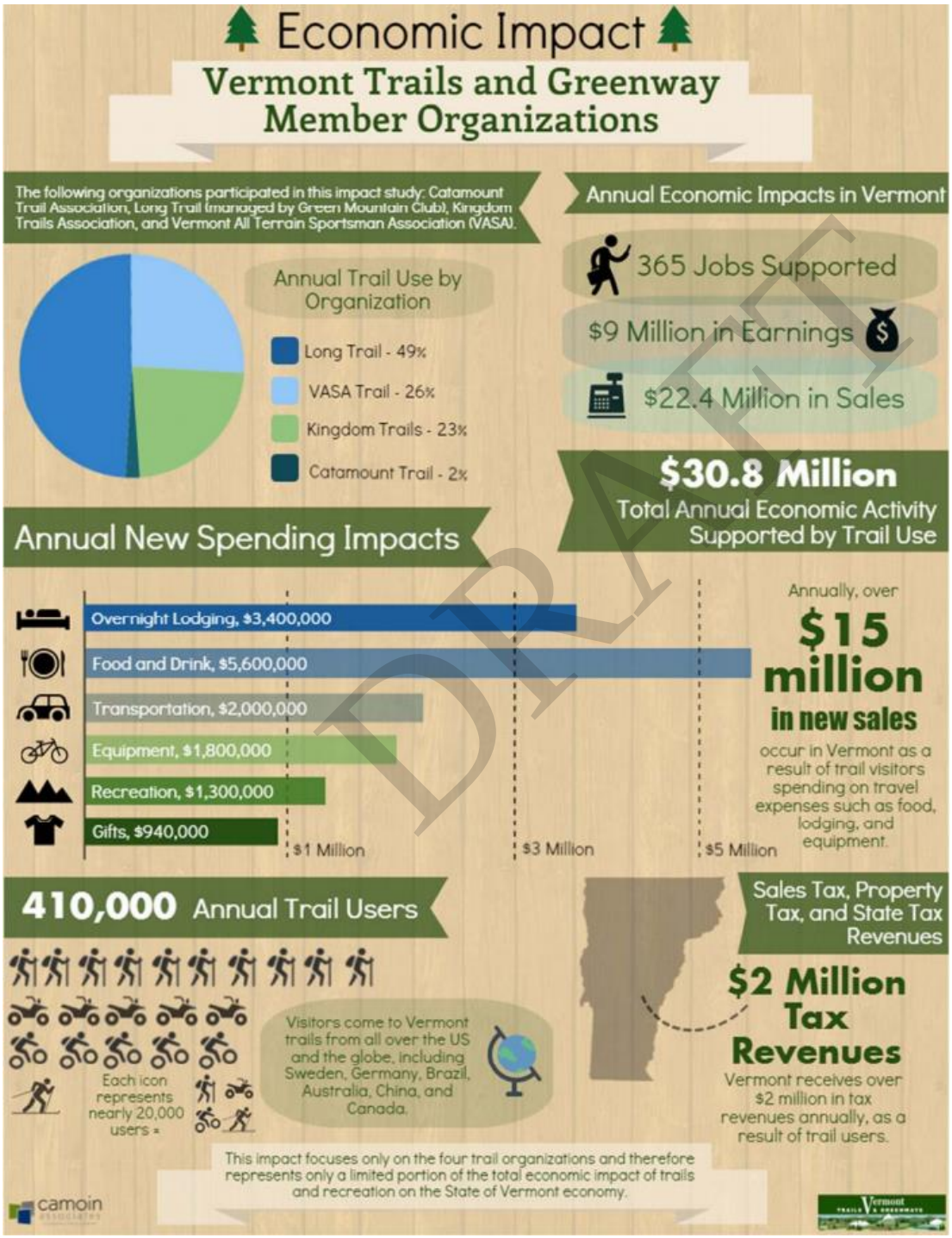


Figure 4. Economic activity generated by Vermont's trail system

spaces compared to properties that did not[vi].

Public Health

As various on- and off-road facilities that accommodate bicyclists are completed and opened, the regional health benefits from active and frequent use will increase proportionally. As was noted in the NVCOG Pathway to Revitalization Study,[vii] The relationship between moderate exercise and reduced incidence of various diseases is well established. The development of bicycling facilities throughout the region will greatly increase access to an attractive and convenient venue for exercise, resulting in health benefits accruing to frequent users.

Dr. Clare Safran-Norton, a physical therapist at Harvard-affiliated Brigham and Women's Hospital, summarized the physical health benefits of bicycling for individuals as follows:

1. It's easy on the joints. When you sit on a bike, you put your weight on a pair of bones in the pelvis called the ischial tuberosities, unlike walking, when you put your weight on your legs.

2. Pushing pedals provides an aerobic workout. That's great for your heart, brain, and blood vessels. Aerobic exercise also triggers the release of endorphins, the body's feel-good chemicals—which may make you feel young at heart.

3. Cycling builds muscle. In the power phase of pedaling (the downstroke), you use the gluteus muscles in the buttocks, the quadriceps in the thighs, and the gastrocnemius and soleus muscles in the calves. In the recovery phase (backstroke, up-stroke, and overstroke), you use the hamstrings in the back of the thighs and the flexor muscles in the front of the hips.

Cycling works other muscles, too. You use abdominal muscles to balance and stay upright, and you use your arm and shoulder muscles to hold the handlebars and steer.

4. It helps with everyday activities. The benefits carry over to balance, walking, standing, endurance, and stair climbing.

5. Pedaling builds bone. Resistance activities, such as pushing pedals, pull on the muscles, and then the muscles pull on the bone, which increases bone density.

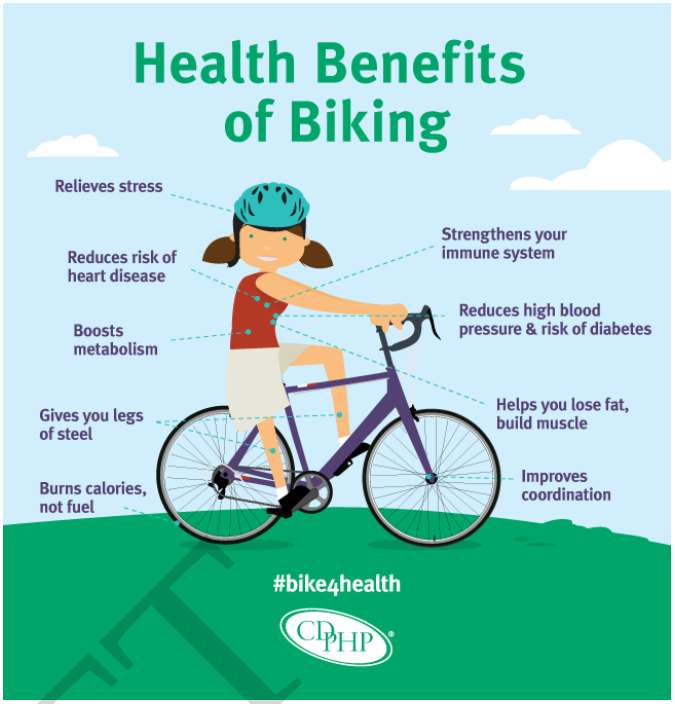


Figure 5. Benefits of Bicycling (Source: Capital District Physicians' Health Plan (CDPHP))

Background

Local and Regional Bicycle Planning Initiatives

All of the communities in the region mention bicycle policies and planning in their Plans of Conservation and Development (POCD). Each states a desire to develop more and safer bike routes that connect important destinations. Several of the region's communities specifically mention adoption of a Complete Streets policy to help accomplish this.

Six of the communities that mention bicycle policy or planning in their POCDs have stated a need for improved bicycle parking facilities – and three of those communities specifically call for improved bicycle parking at train stations. Two of the communities reference the League of American Bicyclists' "Bicycle Friendly Community" program.

All of these aspirations – and the policies or planning tools that will help realize them – are discussed in the "Community Level Recommendations" and

"Case Studies" sections of this Plan and its Appendices.

Statewide Bicycle Planning Initiatives

Statewide Bicycle Planning Initiatives include the Connecticut Department of Transportation (CTDOT)'s Community Connectivity Program and Statewide Active Transportation Plan (2019).

CTDOT's Vision and Goals, as stated in the Statewide Active Transportation Plan, are included in the sidebar on this page and provide a context for bicycle (and pedestrian) planning in the state:

> The vision and goals of the Statewide Active Transportation Plan are stated as follows:
>
> CTDOT is committed to the principle that walking and bicycling promote healthy lives, strong communities, and more sustainable environments.
>
> The Connecticut Department of Transportation will encourage, promote, and improve walking, bicycling, and other forms of active transportation, so that any person, regardless of age, ability, or income will be able to walk, bicycle, or use other types of active transportation modes safely and conveniently throughout Connecticut. An integrated network of on-road facilities and multi-use trails will connect key destinations, municipalities and regions, while strengthening Connecticut's links to neighboring states. The three goals to support the vision include:
>
> Goal #1 – Improve Pedestrian and Bicyclist Safety
>
> Goal #2 – Enhance Mobility for Pedestrians and Bicyclists

CTDOT's Community Connectivity Program was designed to improve conditions for walking and bicycling to and within urban, suburban and rural community centers. The program was intended to encourage more people to use healthy and environmentally sustainable modes of travel. It is also intended to transform Connecticut's community centers into more attractive and livable places.

Funding

Community Connectivity Program

CTDOT's Community Connectivity Program funded road safety audits and other projects – which identified improvements to make conditions for pedestrians and cyclists safer and more accommodating. Road Safety Audits (RSAs) were performed for twelve municipalities in the region. In addition to funding the Road Safety Audits, the Community Connectivity program has provided some funds for on- and off-road bicycle facilities. Two 2019 Program awards for such facilities include: Brookfield ($207,355) to construct access to the Still River Greenway from the Town Hall, and Norwalk ($280,000) to install shared lane markings (sharrows) on Route 136 in Norwalk to the Darien and Westport borders. In 2020, the City of Stamford and CTDOT received a regional award for Quality of Life/Community Development by the Northeast Association of State Transportation Officials for the implementation of the Boxer Square Revitalization project. This project was funded $400,000 by this program. The redesigned intersection has improved traffic operations and provided safer facilities for pedestrians and bicyclists and improved access to transit. In 2021, the City of Stamford also received another grant to implement the Lower Summer Street Promenade project, this redesign includes a dedicated bicycle lane.

Recreational Trail Grants

The Recreational Trails Program also made a large financial commitment to improving or expanding off-road trails throughout the state. The State's Department of Energy and Environmental Protection (DEEP) has awarded grant funding to several municipalities in western Connecticut. To date, $680,500 has been invested in trail development. Most recently, the City of Danbury was awarded $40,000 to complete a study for trail routing. Table 3 includes a few examples of bicycle and trail projects that have been awarded funding in the past few years.

Table 3. Bicycle and Trail Projects in Western Connecticut

Applicant	Project Title	Funding Program	Description	Award
New Milford	New Milford River Trail-Phase 1	CTDEEP Recreational Trails Grant Program	Design of a 2.5-mile extension of the multipurpose New Milford River Trail: Boardman Rd. to MEDInstill Entrance Dr.	$180,500
Redding - NRVT	Norwalk River Valley Trail - Redding Mile	CTDEEP Recreational Trails Grant Program	First section to be constructed in Redding. The design for the trail is complete and was funded with private community donations.	$300,000
Danbury	Trail Routing Planning Study	CTDEEP Recreational Trails Grant Program	This routing study will identify a connection from the existing Maybrook Trailway East Branch Reservoir (at the state border) to downtown Danbury and other trails in the city.	$40,000
Brookfield	Still River Greenway Extension	CTDOT Community Connectivity Grant Program	Extend the Still River Greenway by 2,500 feet, connecting it to an existing parking lot at the firehouse on Pocono Road.	$207,355
Norwalk	Bicyclist and Pedestrian Connectivity Project	CTDOT Community Connectivity Grant Program	Sharrows and signage to be installed on Routes 123 and 136, other various roadways (in design, 2020)	$280,000
Stamford	Lower Summer Street Promenade	CTDOT Community Connectivity Grant Program	Redesign Lower Summer Street to become a vibrant community destination. The design includes widened sidewalks, a dedicated bicycle lane, new lighting and trees.	$600,000

Local Transportation Capital Improvement Program (LOTCIP)

LOTCIP (2013) was created by the Connecticut Department of Transportation as a new funding source for transportation projects (Section 74 of Public Act 13-329). Municipalities applying for LOTCIP funds must complete a Bicycle and Pedestrian Travel Needs Assessment Form.

Since LOTCIP was created, a project in Ridgefield: Farmingville Road Combined Use Trail ($1.1 million) was funded. A number of other LOTCIP projects have included bicycle improvements - in Brookfield, Norwalk, and Stamford. WestCOG expects to work with its communities to assist with the development of bicycling infrastructure through the LOTCIP Program in the future.

Figure 6. Bicyclists on the New Milford River Trail (source: New Milford River Trail Association)

Existing Conditions

Facility Types

WestCOG and its member communities continually work with bicycling advocates, state and federal officials, and bicycle-based organizations to plan for safe, convenient and comfortable bicycling facilities. Their approach has evolved from one of 'share the road' to providing separate facilities where feasible. A driver of this approach shift is perception of safety, and a realization that shared use of the right-of-way with motor vehicles worked for experienced cyclists but did not create a broader bicycling culture.[viii]

Facilities may be grouped according to increased degree of physical separation from other users:

- Advisory Bike Lanes: designed to allow motorists to enter when yielding to approaching traffic in a narrowed travel lane;
- Neighborhood Bikeway: streets with low motor vehicle volumes and speeds that give walking and bicycling the priority.
- Bicycling Lanes: where a portion of a street is designated for exclusive use of bicycles, separated by striping, signage and pavement markings;
- Buffered Bicycling Lanes: lanes with a designated buffer space separating the lane from adjacent motor vehicle travel or parking lanes;
- Separated Bicycling Lanes/Cycle Tracks: exclusive bikeway that is physically separated from motor vehicles and sidewalks, and
- Trails/Shared-Use Paths: separated facilities for two-way travel (walking, bicycling & activities).

Figure 7 shows the range of bicycle lane types described above, from most to least separated

Given the densely developed and heavily traveled nature of roadways in the region's urban areas and the topography and rights-of-way constraints in much of the region generally, planners have generally focused upon creating bicycling lanes and trails/shared-use paths. To meet the needs of experienced cyclists, planners have focused upon roadway and intersection improvements that include realignments, shoulder widenings, improved lane markings and the use of sharrows in certain locations.

Facilities in the Region

To create an integrated network of multi-use trails, the existing and planned bicycle facilities throughout the region were considered. The existing trails in the region – at various levels of completion – are:

- Norwalk River Valley Trail (Norwalk, Wilton, Ridgefield, Redding, Danbury)
- Western New England Greenway (multi-town)
- East Coast Greenway (Westport, Norwalk, Darien, Stamford, Greenwich)
- Ives Trail (Danbury, Bethel, Ridgefield, Redding)
- Still River Trail (Brookfield)
- Ridgefield Rail Trail (Ridgefield)
- Mill River Greenway (Stamford)
- Al's Trail (Newtown)
- Housatonic Rail Trail/Pequonnock River Trail (Bridgeport, Monroe, Newtown, Trumbull)
- New Milford River Trail (New Milford)[ix]

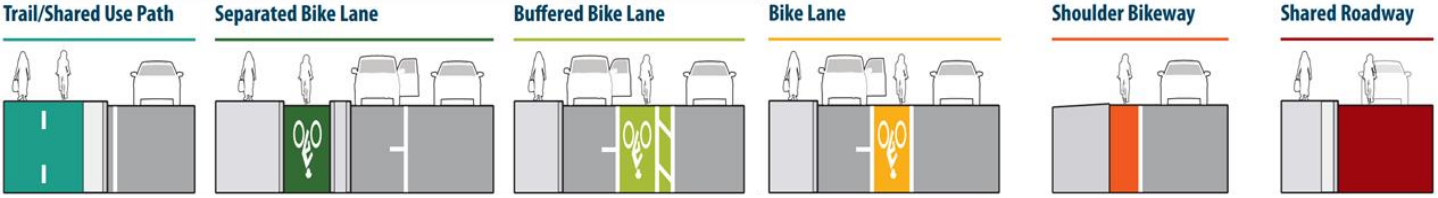


Figure 7. Bicycle Lane by Type and Degree of Separation (Source: Stamford Bicycle and Pedestrian Plan)

The **Norwalk River Valley Trail (NRVT)** will provide a north/south “spine” through the region. It begins at Calf Pasture Beach in Norwalk and will end at Rogers Park in Danbury. It will pass through Wilton, Ridgefield, and Redding as individual segments are funded and constructed. Thus far, there are 8.2 miles have been completed. The City of Norwalk has been significant progress in implementing segments of the proposed trail in their city. Most recently, the city completed a critical link between Union Park and New Canaan Avenue (Route 123) with an off-road 10-foot wide trail. Connecting Norwalk and Wilton will create connectivity between three train stations and several large employment centers.

The **“Western New England Greenway”** (WNEG) is a multi-segment, multi-state network of mostly on-road bike routes that will follow the Route 7 Corridor in Connecticut from Long Island Sound to the Canadian Border. It will eventually incorporate the Norwalk River Valley Trail, Still River Greenway, and the New Milford River Trail – and connect with the East Coast Greenway. It follows a route independent of the Norwalk River Valley Trail so as to appeal to recreational riders - the most scenic (and less direct) on-road route from Norwalk, to Brookfield - and points north. The Western New England Greenway has been designated as US Bike Route 7.

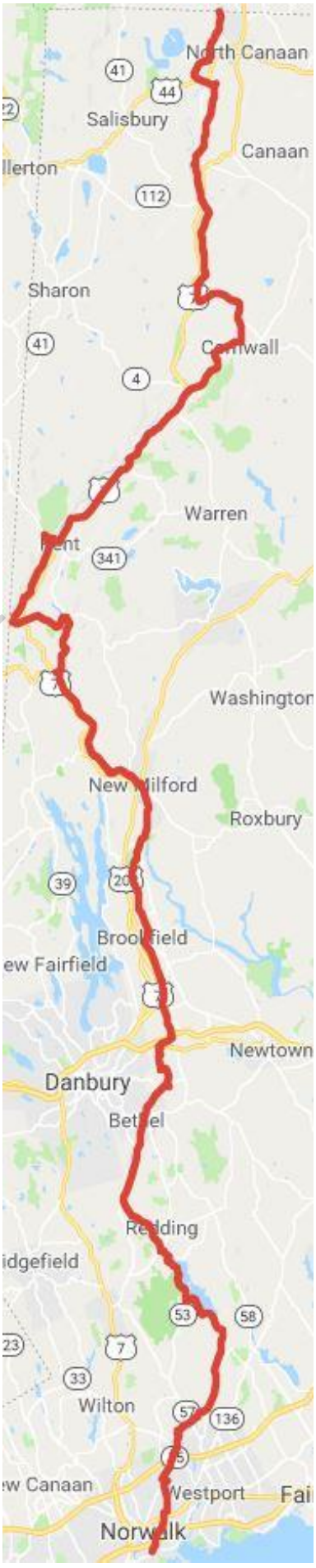


Figure 8. CT segment of the Western New England Greenway on-road route

The New Milford River Trail currently extends for 5 miles from the Boardman Road entrance to Gaylordsville. It runs for 1½ miles on a crushed, gravel surface through Sega Meadows Park, where it joins the unpaved and lightly trafficked River Road and continues for another 3½ miles to the center of Gaylordsville.

This is Phase I of the proposed 13-mile trail that will follow the Housatonic River south through downtown New Milford all the way to the town border with Brookfield. Phase II of the trail construction - the Downtown New Milford section at Young's Field's new riverside park, was completed in Spring of 2017. In 2021, following a grant from CTDEEP's Recreational Trails Grant Program, the town completed additional planning and design work for the trail segment between Boardman Road and the MedInstill entrance.

As is true of the Norwalk River Valley Trail, the New Milford River Trail will eventually be incorporated into the Western New England Greenway.

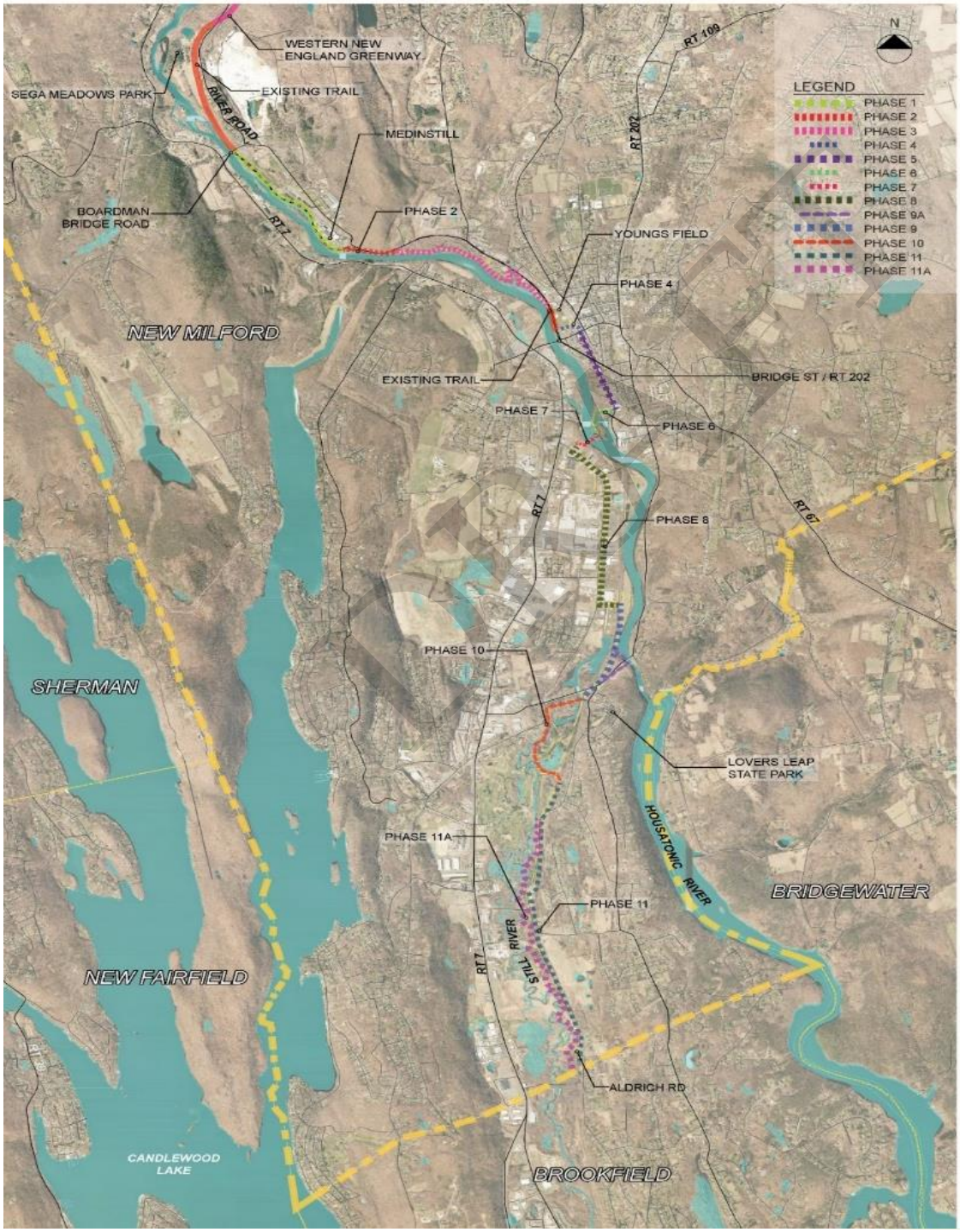


Figure 9. New Milford River Trail vision

The East Coast Greenway (ECG) provides an East/West "spine" through the region. Although the current East Coast Greenway routing through the region is on-road (shown in pink on the map in Figure 10), and close to the coast, there is potential for a trail near sections of the Merritt Parkway (shown in green). However, further determination of the costs and benefits of the trail would need to be weighed – such as the cost and safety of crossing the on- and off-ramps, the impact of the steep grades, and water/wetland crossings.

CTDOT evaluated a concept for a proposed trail near the Merritt Parkway. The study noted that if developed, the trail "an east-west connection to north-south trails in the planning or construction phase, including the Mianus, Rippowam, Norwalk, Pequonnock, and Housatonic Greenway."

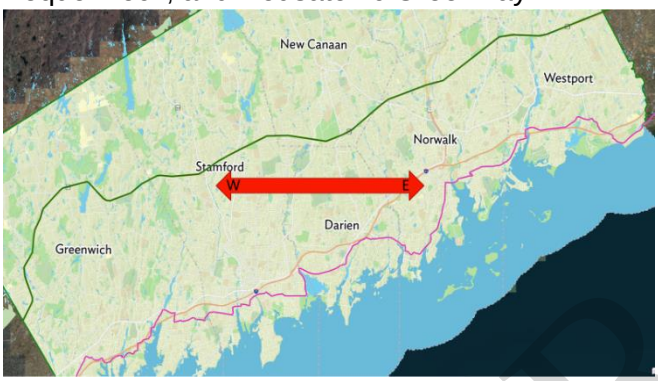


Figure 10. East Coast Greenway, on-street routing (pink) and Merritt Parkway Trail vision (green)

The Ives Trail

The Ives Trail Greenway (Figure 11) is a regional trail that links open spaces in Bethel, Danbury, Redding and Ridgefield. The trail begins at Redding Open Space and continues for 20 miles, to Terre Haute in Bethel, northwesterly to Rogers Park in Danbury, past the Charles Ives Homestead, and then southerly through Tarrywile Park. It then continues southwesterly across Route 7 and through Wooster Mountain State Park to the existing trail systems in Ridgefield's Bennetts Pond Park and Pine Mountain Park.

Figure 11. Ives Trail Route

The Mill River Greenway parallels the Mill River and extends over a mile through downtown Stamford's Mill River Park. It will connect several city parks and open spaces when completed. At full-build, it will provide an alternative to Washington Blvd. for bicyclists and pedestrians between the Stamford Transportation Center, Downtown Stamford, and the Ridgeway neighborhood.

Figure 12. Mill River Park in downtown Stamford

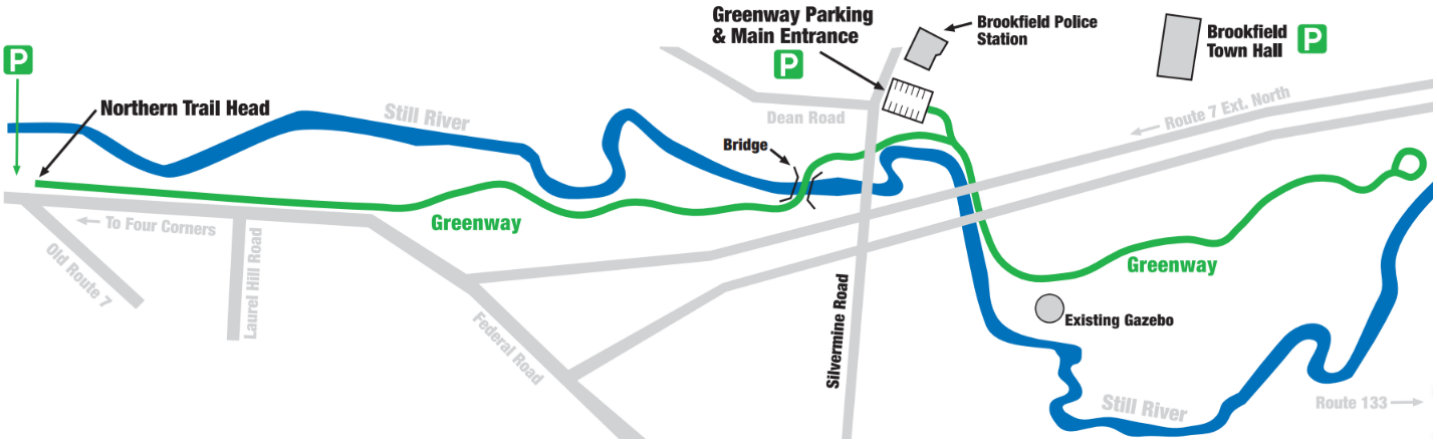


Figure 13. Still River Trail in Brookfield

The Still River Trail is a paved multi-use trail and greenway along the Still River in Brookfield. The trail is 2.25 miles long and runs from the Brookfield Municipal Center to the "Four Corners" district at Brookfield's Town Center. The other section of the trail runs from the Municipal Center, and loops around in the woods. The town has continued work to identify a route to connect this trail north to New Milford.

The Ridgefield Rail Trail follows the old Branchville Connecticut rail corridor for 2.3 miles from Ridgefield to Branchville. It was donated to the town of Ridgefield by Connecticut Light and Power in 2000. While it does not currently allow bicycling, there have been discussions in recent years to change this policy. If expanded, it could connect to the Norwalk River Valley Trail.

Al's Trail in Newtown is a natural surface trail between Fairfield Hills and the Upper Paugussett State Forest. It connects Fairfield Hills to Sandy Hook Village. The trail requires some cleanup, and efforts are underway to improve it.

Figure 14. Al's Trail in Newtown, at the end of Dayton St.

The Housatonic Rail Trail/Pequonnock River Trail is a 13.6-mile trail that starts just north of the Bridgeport Transportation Center on Housatonic Ave./Water St. (Bridgeport) and ends about a mile north of Pepper Street in Monroe at the Monroe-Newtown town line. The trail follows an abandoned rail line and its surfaces are asphalt and crushed stone.

Figure 15. Housatonic Rail Trail/Pequonnock River Trail near the border to Newtown in Monroe

Regional and Interregional Connectivity

Strategies to enable a connected off-road bicycle network are discussed in the "Regional Planning Recommendations" section. Regional planning efforts must take the Naugatuck River Greenway and Housatonic River Trail into account, although they are outside western Connecticut, in order to develop a network of bicycle facilities. Figure 16 depicts most of the of the Statewide Active Transportation Plan's map of trails that have been prioritized in the region.

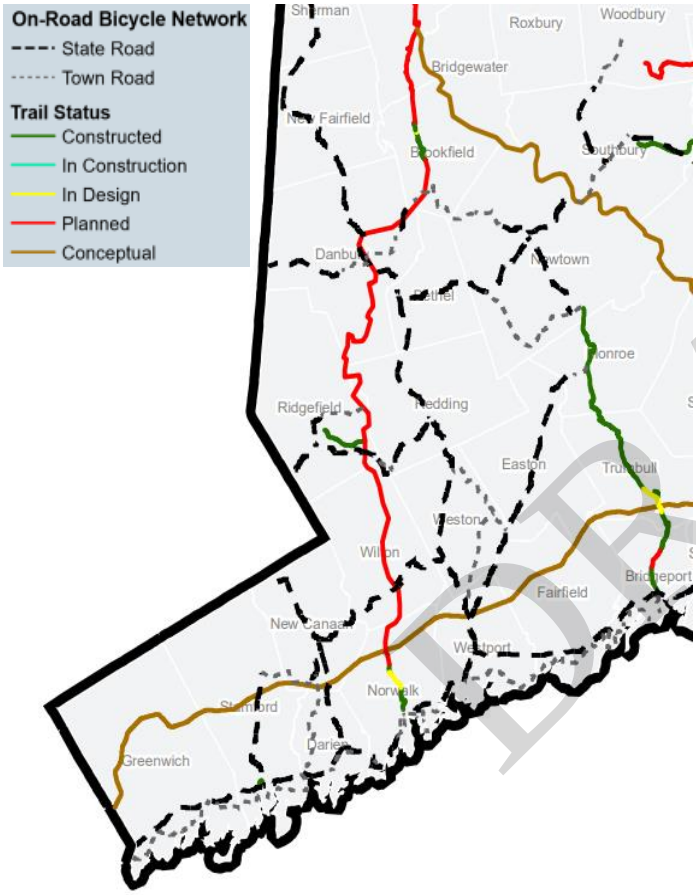


Figure 16: Trails of regional significance – and on-road options – from the CT Statewide Active Transportation Plan

Technology

The basics of bicycling technology have changed modestly over the years with respect to motive power -i.e. the rider - and yet there are innovations. A recent such innovation is the electric bicycle or e-bike, which allows the rider an assist up to certain speeds. According to the Rails to Trails Conservancy, there are currently three classes of e-bikes:

• Class I: Pedal-assist only, where the pedal-assist cuts off at 20 mph, and the user must pedal manually to go faster;

• Class II: Throttle on demand—which operate by a throttle, by pedal-assist or by both—where the throttle cuts off at 20 mph, and the user must pedal to go faster, and

• Class III: Pedal-assist only, where the pedal-assist cuts off at 28 mph, and the user must pedal to go faster.[x]

In general, electric bicycles come in a wide variety of configurations and for the most part resemble standard bicycles, excepting the presence of a battery pack which is often mounted on the frame.

The Conservancy's position is that there is a need to more clearly define in law (at the state and/or local level) the distinctions between bicycles with motors and motorized vehicles. Motorized vehicles—with the exception of motorized wheelchairs and snowmobiles – are prohibited on certain federally funded trails.

Figure 17. Example of an electric bicycle (Source: Wikimedia)

In Connecticut, the use of e-bikes is subject to provisions of the Connecticut General Laws. Highlights:

- Riders must possess a valid Connecticut Driver's License;
- Class I and II electric bicycles are permitted on trails and bikeways;
- Class III electric bicycles are not permitted on trails and bikeways, and

- E-bikes are not permitted on unsurfaced trails or ways.

Safety

Safety statistics

The region from 2017-2021 had 346 crashes involving a bicyclist; of these 25 reported serious injuries, and 3 fatalities occurred. The locations of these crashes are distributed across the Region. However, concentrated areas or 'hot spots' can be seen on the map (Figure 18).

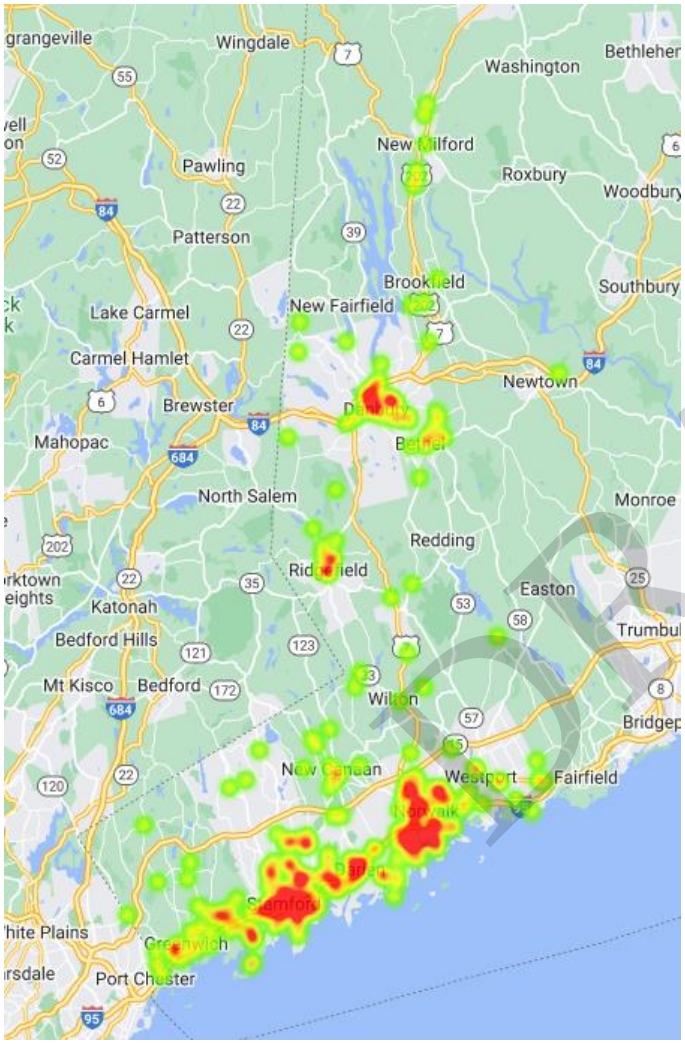


Figure 18. Heat map of crashes involving bicyclists

Improvements can be made to the bicycle and pedestrian network in the Region, as many of the facilities may not feel safe to users. This limits potential non-motorized transportation. Crashes are primarily centered where there is a high volume of motor vehicles, bicyclists, and pedestrians. As shown in Figure 18, high volumes are seen in dense urban centers and coastal communities.

Though vehicle volumes are lower in suburban and rural areas, there have been serious injuries in 9 out of 18 municipalities in the Region between 2017-2021. A lack of signage, shoulder lines, sharrows, or dedicated bike lanes may cause bicyclists to utilize the vehicle travel lane. Additionally, municipalities may have ordinances which prohibit bicyclists to utilize sidewalks. Although bicyclists tend to be most active in pleasant weather conditions, they also are some of the most vulnerable users of transportation infrastructure. Most crashes occur in daylight with dry pavement conditions. Out of the 346 crashes involving a bicyclist between 2017-2021:

- 90.5% occurred on dry road surface
- 89.3% occurred on a clear day
- 82.9% occurred during daylight hours

Past Plans (SWRPA, 2013) identified safety corridors based upon activity and crashes/injuries/fatalities.

- Putnam Avenue (US-1), Greenwich
- Tresser Boulevard (US-1) Stamford
- Washington Boulevard (US-1) Stamford
- East Main Street (US-1) Stamford
- Connecticut Avenue (US-1) Norwalk
- Main Street (CT-123) Norwalk
- Post Road, Westport (US-1/CT-33)

In the 2013 SWRPA Plan, Countermeasures were recommended for high-crash locations. Most improvements are likely to be implemented in concert with larger-scale projects; some improvements, such as sharrows on CT-123 in Norwalk, are underway as of 2020.

A subsequent WestCOG analysis of US-1/CT-33 in Westport recommended a menu of safety improvements (signalization, pavement markings, signage and access management, as well as bicycle accommodations (sharrows, lanes, pathways and signage) for Riverside Avenue (CT-33).

Other facilities of concern for safety based upon crash activity include:

- CT-53 (Bethel, Danbury and Redding);
- West Street (Danbury);
- US-6 (Danbury and Bethel);
- CT-302 (Bethel), and
- US-7 and US-202 (New Milford).

Safety Perceptions and Promotion

Perceptions of safety are also important, as they may influence a person's decisions. An individual's perception of safety will lead them to choose a particular route, what time of day to ride, or to bicycle at all. Although bicycling on sidewalks is prohibited in several communities throughout the Region, inexperienced bicyclists may choose to ride on sidewalks when the roadway is perceived as unsafe. The survey section of this plan provides regional insight into human behavior and the aspect of bicycle safety.

The following promotes safety through education and training:

- Share The Road Campaign (2008): Connecticut General Statute Section 14-232, effective October 1, 2008, requires CT motorists to allow for at least three feet of separation in overtaking and passing cyclists.
- The Connecticut Safety Circuit Rider Program (2016): In partnership with the CT Technology Transfer (T2) Center at UConn, the program is designed to provide safety-related information, training, and direct technical assistance to agencies responsible for local roadway safety.
- Watch for Me CT Program (2017): The CTDOT statewide program, in partnership with the CT Children's Injury Prevention Center, seeks to reduce the number of crashes of bicyclists and pedestrians with motor vehicles through public service messages, special events, and sponsorships.
- Bike safety workshops: Organizations such as Bike Walk CT administer cycling education and safety programs for both children and adults. These educational events are often co-sponsored with local clubs, nonprofits, and schools. Safety curriculums can be designed for school settings, and the Smart Cycling Manual from the League of American Bicyclists is relied on.
- FHWA Performance Measures- Safety Targets (2020): There are five safety performance management measures for the purpose of carrying out the Highway Safety Improvement Program, this includes the Number of Non-Motorized Fatalities and Serious Injuries. In 2020 the MPO policy boards endorsed safety targets set by CTDOT for the State of Connecticut. As a comparison, WestCOG calculated additional data specific to the region for the Number of Non-Motorized Fatalities and Serious Injuries. The data, which includes bicyclists, showed the following:
    - The 5-year moving average for Non-Motorized Fatalities and Serious Injuries in the HVMPO did not increase or decrease.
    - The 5-year moving average for Non-Motorized Fatalities and Serious Injuries in the SWRMPO decreased by 1 per year.
- WestCOG Regional Transportation Safety Plan (2021): The plan identifies high crash locations and determines if infrastructure, behavioral education and/or enforcement improvements are needed. Bicycle and pedestrian facilities make up a significant portion of the plan.
- Some of the region's communities are in the process of setting their own bicycling safety measures or performance goals For example, the Stamford Bicycle and Pedestrian Plan recommended that the City adopt Vision Zero policies and a "safe system" approach to traffic safety that places an emphasis on improving the safety of the most vulnerable road users – people on foot and on bicycle.[xi] In 2022, the City of Stamford was the first municipality in Connecticut to adopt a Vision Zero Policy committing to eliminate roadway fatalities by 2032.

Challenges

The region presents special challenges to bicycling including topography, narrow rights-of-way, weather conditions, and severe congestion along roadways where bicyclists ride. Speeds are an issue too; winding roadways present safety challenges without offering sufficient shoulder width. Finding facilities that meet a variety of users – those who bike of necessity have different needs from those who are recreational riders. Who to plan for – what type of facilities are most needed – must be balanced with available resources. Maintenance of bicycling facilities, while a challenge, has benefited greatly from 'friends of the trail' groups; municipalities have also made progress in addressing infrastructure maintenance in an incremental way as roadway and other transportation projects are undertaken.

Survey

In 2019, WestCOG developed a survey to better understand current challenges and opportunities to improve bicycling in western Connecticut. The survey was circulated to residents, local bike shops, advocates, and other MPO members and stakeholders. The survey results helped identify the level of bicycling activity and preferences for on-road versus off-road facilities, and asked respondents to prioritize improvements to bicycling infrastructure. Results from this survey helped inform this plan and a copy of the survey questions can be found in Appendix G of this report.

At a high level, the survey showed that the vast majority of those cycling in western Connecticut were doing so for recreation or exercise – but 11 percent were riding a bicycle for travel to work. The most common answer to the question that ascertains what would encourage someone to ride a bike – or ride more – was “safe bicycle routes.” This shows that there may be opportunity to encourage more carbon-free commuting if bicycle infrastructure is safer. The highest priorities for improvements to bicycle infrastructure were “more on-road routes,” and “a more connected network of bicycling routes.” More survey analysis follows.

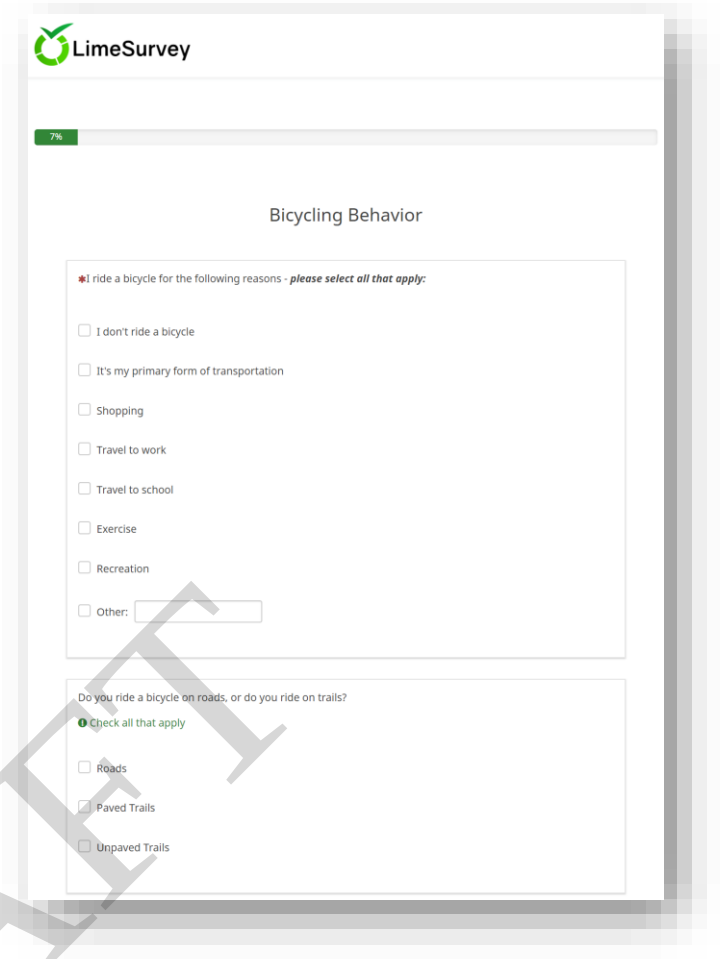


Figure 20. Survey

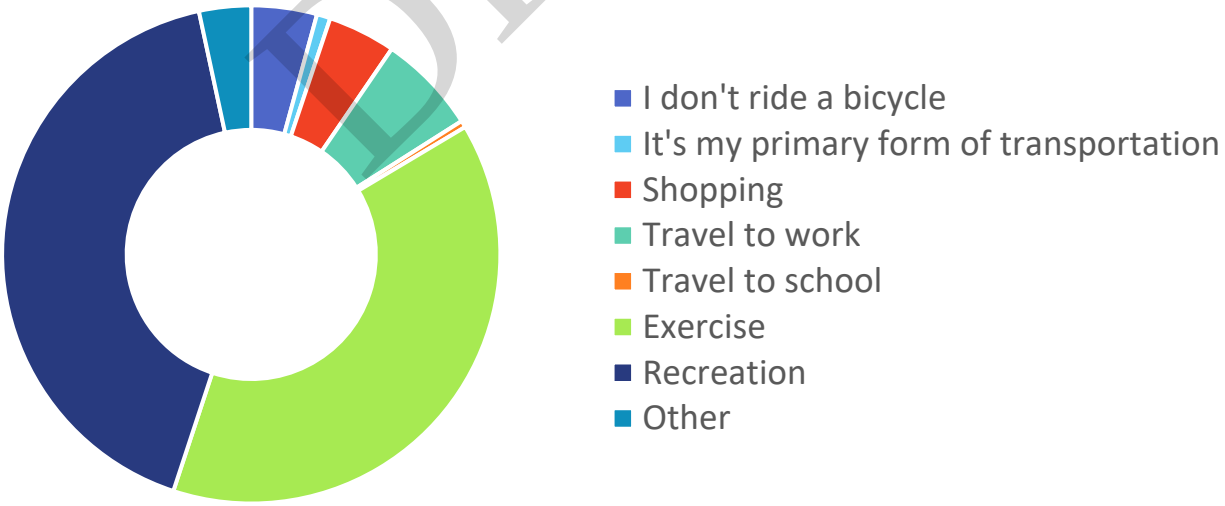


Figure 19. Responses to the question “I ride my bicycle for the following reasons”

Community	Responses
Wilton	60
Bethel	56
Norwalk	48
Stamford	37
Danbury	12
Westport	12
Darien	10
Newtown	9
Southbury	9
Brookfield	9
Fairfield	8
Trumbull	7
New Milford	6
Weston	6
Monroe	5
Sandy Hook	5
Stratford	4
Shelton	3
Greenwich	3
Ridgefield	2
New Canaan	2
Redding	2
Bridgewater	1
Sherman	1
Other	*43*
Total	**359**

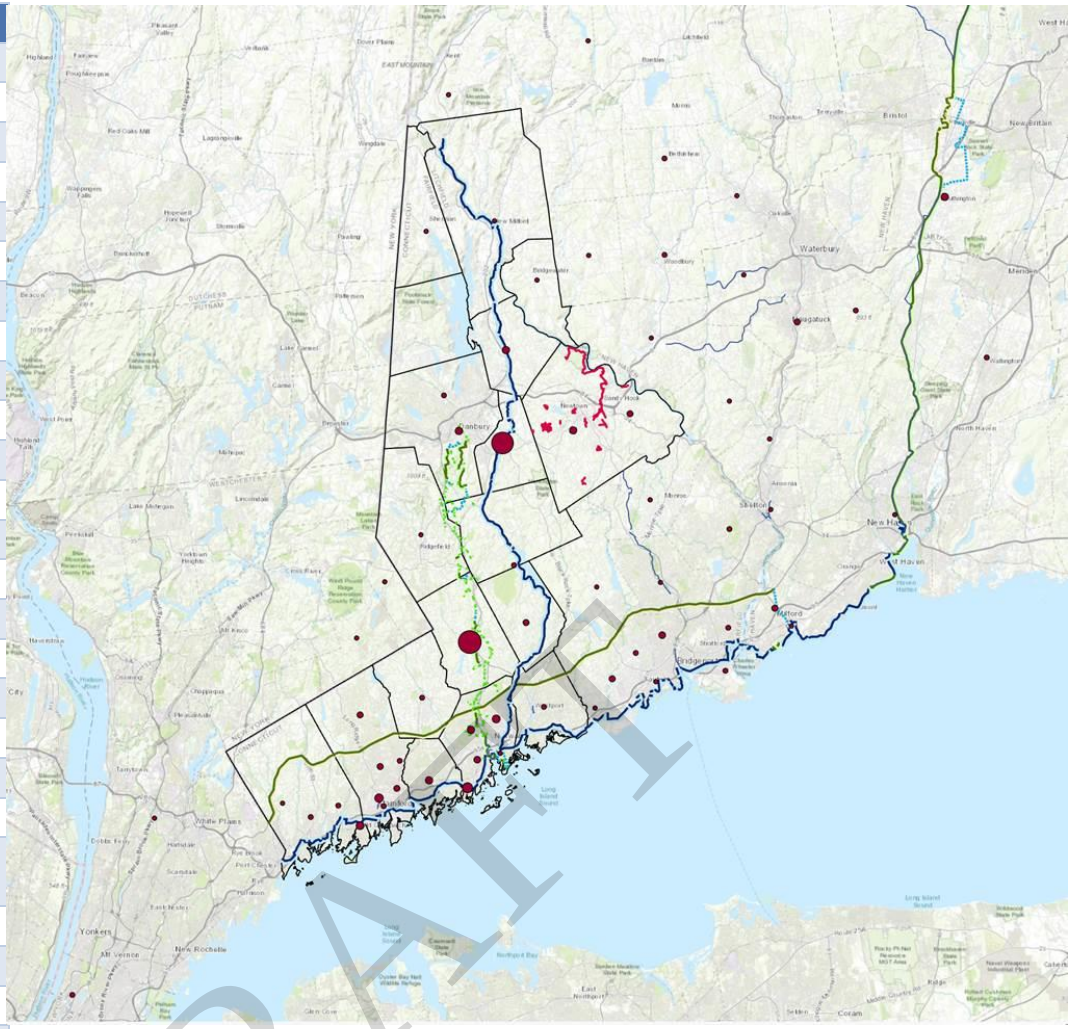


Table 4 and Figure 21. Distribution of survey respondents

Figure 21 shows the distribution of survey responses by town or city, as does Table 4.

The majority of respondents reported that they ride:

- for recreation (73 percent) or exercise (68 percent) – followed by travel to work (11 percent)
- on roads (69 percent) – followed by paved trails (50 percent) and unpaved trails (35 percent)
- once or twice/week (27 percent) – followed by 3-4 times/week (25 percent)
- 21-50 miles (20 percent) – 50 miles or more (17 percent)

Almost 8 percent ride a bike for shopping trips, but only 1.6 percent of survey respondents cited bicycling as their primary form of transportation. The smallest group of respondents was those who ride a bicycle to travel to school (0.8 percent).

When asked “what would encourage you to ride a bicycle (or to ride more)?” 69 percent of respondents said that “safe bicycle routes” was very important, while 42 percent of respondents stated that “easy access to a direct route was very important”. That was followed by “more off-road bike routes” (38 percent). Better signage,

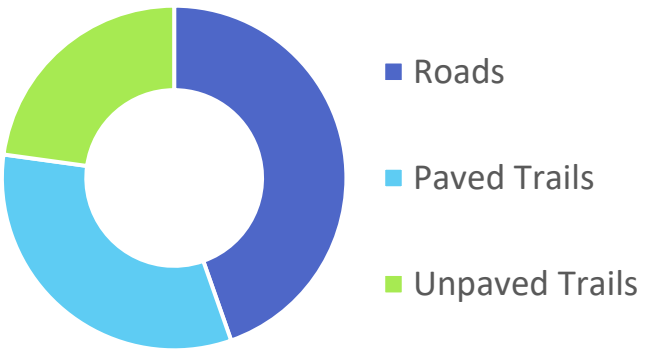


Figure 22. Responses to the question "Do you ride a bicycle on roads, or do you ride on trails?"

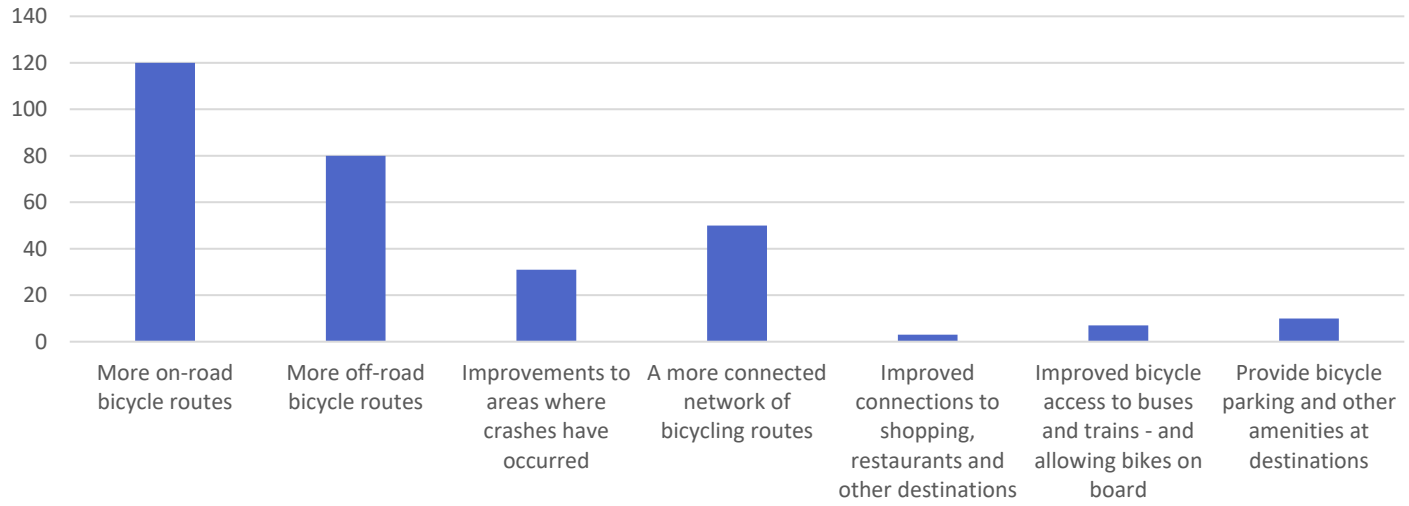


Figure 23. Responses to the question "What factors should be used to prioritize bicycle improvements?"

information, or maps showing where to ride, was considered very important to 33 percent of respondents.

When ranking priorities for improvements to bicycle infrastructure, “more on-road bicycling routes” ranked as priority one. “A more connected network of bicycling routes” was the second – and the third – highest-ranked priority.

In response to the question “what would encourage you to ride (or ride more)?” 29 percent of respondents ranked “Feeling confident or comfortable on a bicycle” as “very important.”

Twenty two percent of respondents said that “I don’t know how to ride a bicycle” – and rated that as a “very important” factor in encouragement to ride a bicycle. This informs the study’s educational outreach recommendations.

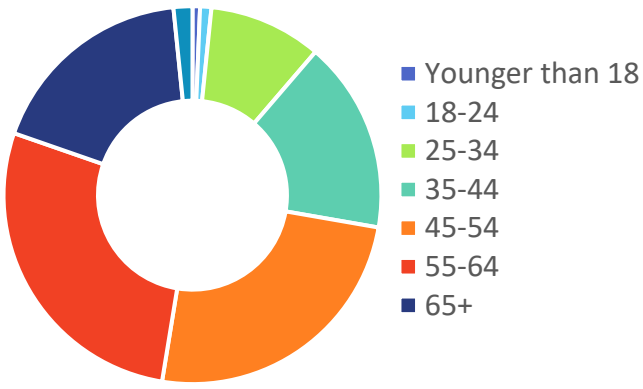


Figure 24. Responses to the Question "What is your age?"

The most common response to the statement “I have 1 or more school-aged children who don’t ride a bicycle to school because:” was “concerns about road safety” (26 percent), followed by “other safety concerns” (9 percent).

The age/gender breakdown was 55-64 years (22 percent); 45-54 years (20 percent), followed by the next largest age demographic was 65+ (15 percent) - and male (41 percent) / female (36 percent).

Almost half of all survey respondents provided written comments. The largest percentage of them related to the provision of more or better on-road bicycle facilities. Bike lane creation was mentioned 62 times – and usually preceded by the words “separated” or “wider.” The next most common topics of comments were more or better off-road bicycle facilities and bicycle safety.

On the topic of regulation, most comments asked for more enforcement of driving rules. Five people asked for more signs or education of motorists around the 3-foot rule – requiring motorists to allow 3 feet between their vehicle and a bicyclist, when passing.

Most of the comments about road maintenance mentioned the poor condition of roadways. Specific comments included requests to fix potholes and crumbling or cracked pavement, and also to improve sidewalk conditions.

In terms of signage, wayfinding and information, the most common suggestion was to install signs stating that bicycles can take the full lane. There were more comments about signs that educate

drivers than about wayfinding, but there were several comments about signage indicating the locations of trails as well.

Comments were also made about specific cities and towns, driving and bicycling culture, geography, e-bikes, and connections between on- and off-road facilities and between existing trail systems.

Summary of Existing Conditions and Trends

The majority of on-road bicycle facilities in the region are in municipalities that have invested in bicycle (or bicycle and pedestrian) plans. An almost equal number of survey respondents stated that they use on-road bicycle facilities as well as off-road facilities when they ride. Most respondents also said they bike for recreation or exercise. If on-road facilities connect to off-road trails in the region, higher usage of the trails could be expected, and this can generate more public support for trail expansion. The economic development impacts of this connectivity are significant, as shown in the example of the Wilton segment of the Norwalk River Valley Trail. Connecting the destinations to which people currently drive with bicycle facilities will encourage more bicycle use for general transportation.

Recommended Strategies for Cities and Towns in Western Connecticut

Fundamentally, municipalities in western Connecticut should review codes, ordinances and policies for opportunities to increase support for bicycle accommodation in municipal decision making. The following recommendations provide solutions that will augment that process with some visible "quick build" strategies that are implementable in a relatively short timeframe and at relatively low cost. The recommendations are organized into the categories of Infrastructure, Policy and Education.

Infrastructure

Recommendation 1: Community Bike Route or Loop

- Plan a bicycle route or loop within the community – or between communities. This forms the foundation upon which to build a bicycle network.

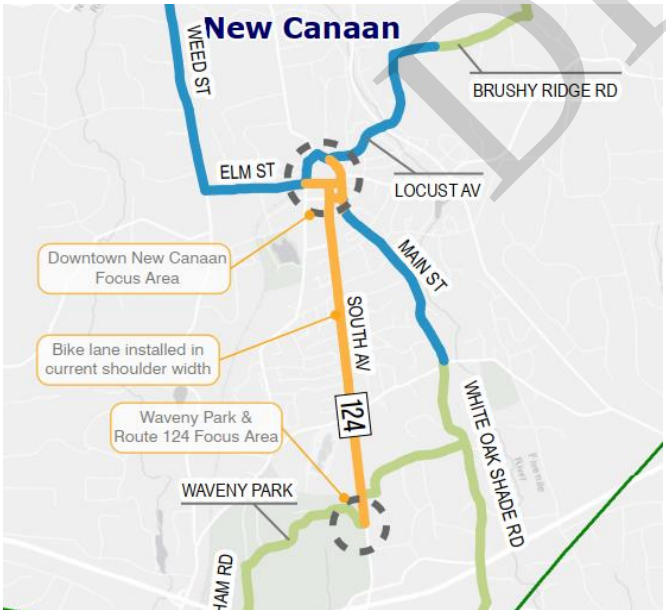


Figure 25. Proposed segment of New Canaan-Darien Bike Loop

- Case Study: Darien/New Canaan Bicycle Loop (see Appendix A)

Recommendation 2: Build a bicycle network

- By narrowing travel lanes – with "Road Diets" and reallocating space, bicycles can be accommodated as part of routine resurfacing.
- The **Federal Highway Administration's (FHWA)** ***Workbook for Building On-Road Bike Networks through Routine Resurfacing Programs*** can assist communities with this task by means of this publication: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf
- Weston suggests "Identify opportunities, during regular road maintenance to provide a wide, well-paved shoulder(s) without impinging on private property rights." in their current Plan of Conservation and Development.
- Hope Street in Stamford was reconfigured in 2020 according to a Road Diet principle in 2020; a portion of the preexisting roadway was restriped for bicycling lanes during a repaving project. This project is a good example of the Road Diet approach and should be publicized.

Recommendation 3: Allocate funds from the annual paving or Department of Public Works or other municipal budget for bicycle facilities

- Darien suggests "Evaluate bicycle potential as part of any roadway improvement or pavement striping project in Darien." in their current Plan of Conservation and Development.

Recommendation 4: Allow the public to request, and comment on, bicycle facilities

- A "Bicycle Project Request Form" has been developed and can be easily linked from a municipality's website. This is provided in Appendix C.
- Wilton uses See Click Fix as a platform that allows feedback on public facilities – as shown in Figure 26:

Recommendation 5: Improve all transit stations/hubs/pulse points to include secure bicycle parking

- The Noroton Heights Station Study (2018) proposed the creation of an on-street network of bicycle facilities for accessing the station by

bicycle, and on-site bicycle parking – among other bicycle-related amenities.[xii]

Recommendation 6: Create a bike rack request form

- Allows local citizens and businesses to suggest a location for a bike rack. New Haven does it through this Transportation, Traffic and Parking web page:

  Request a Public Bike Rack

  As funds become available, the City of New Haven is installing bike racks within the public right-of-way in various high-traffic, high-demand areas around the City. Racks are typically installed in the area between the curb and the main sidewalk area. Racks can be installed at lower cost if this area is already paved with concrete.

  To request a bike rack, please use the bicycle rack request category in See Click Fix at seeclickfix.com.

- Stamford's Bike Rack Request Form is included in Appendix D.

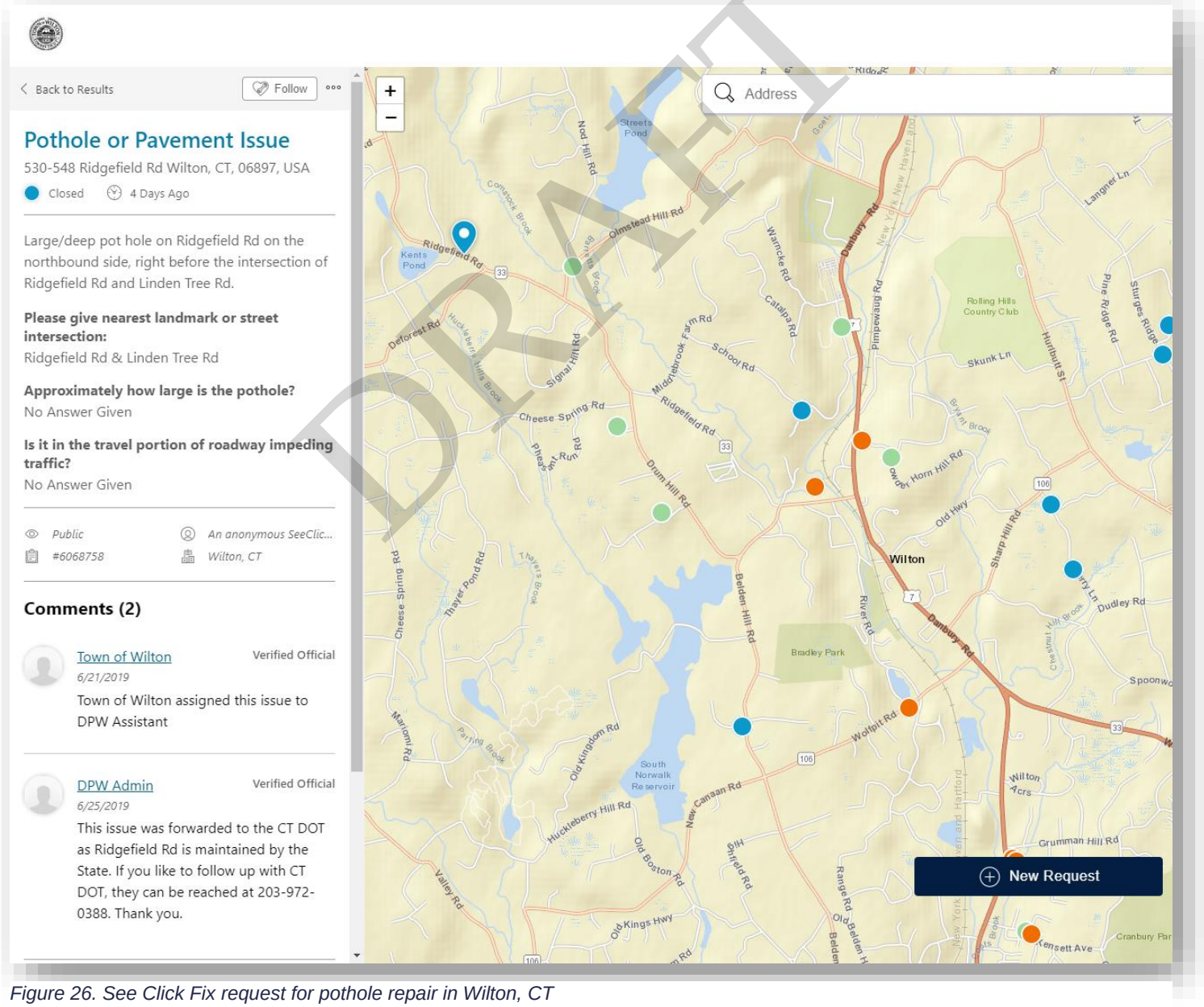


Figure 26. See Click Fix request for pothole repair in Wilton, CT

Policy

Recommendation 7: Adopt a Complete Streets policy

- As discussed in the report's Background, a Complete Streets policy is referenced in several of western Connecticut's Municipal Plans of Conservation and Development. "Complete Streets" involves designing and operating roads for all users, including pedestrians, bicyclists, disabled citizens and transit users. The Connecticut Department of Transportation adopted Complete Streets in 2014 and has formalized it through policy revisions to design manuals and education of staff. Examples of Complete Streets provisions include sidewalks, bike lanes, wider shoulders, pavement markings, signing, traffic signal enhancements, bus turnouts, and appropriate landscaping. Implementation does not mean an immediate retrofit of all streets, but rather incremental changes to the built environment resulting from a shift in everyday planning and engineering practices. Whenever construction on existing roads, reconstruction, or new construction are planned, the accommodation of all transportation mode users should be considered. Stamford has a Complete Streets Policy, and Madison and Fairfield, CT both made the list of "Top 10 Complete Streets Policies" in the US in 2018. Portland, CT's Policy is included as well – as an example of a rural community adopting Complete Streets.
- Stamford, Fairfield, and Portland, CT Complete Streets Policies can be found in Appendix B.

Education

Recommendation 8: Bring Bike Walk CT's Youth bike safety education program to local schools or Parks and Recreation Departments

- Bike Walk CT has an elementary school program that provides bicycle education in communities across the state with the goal of

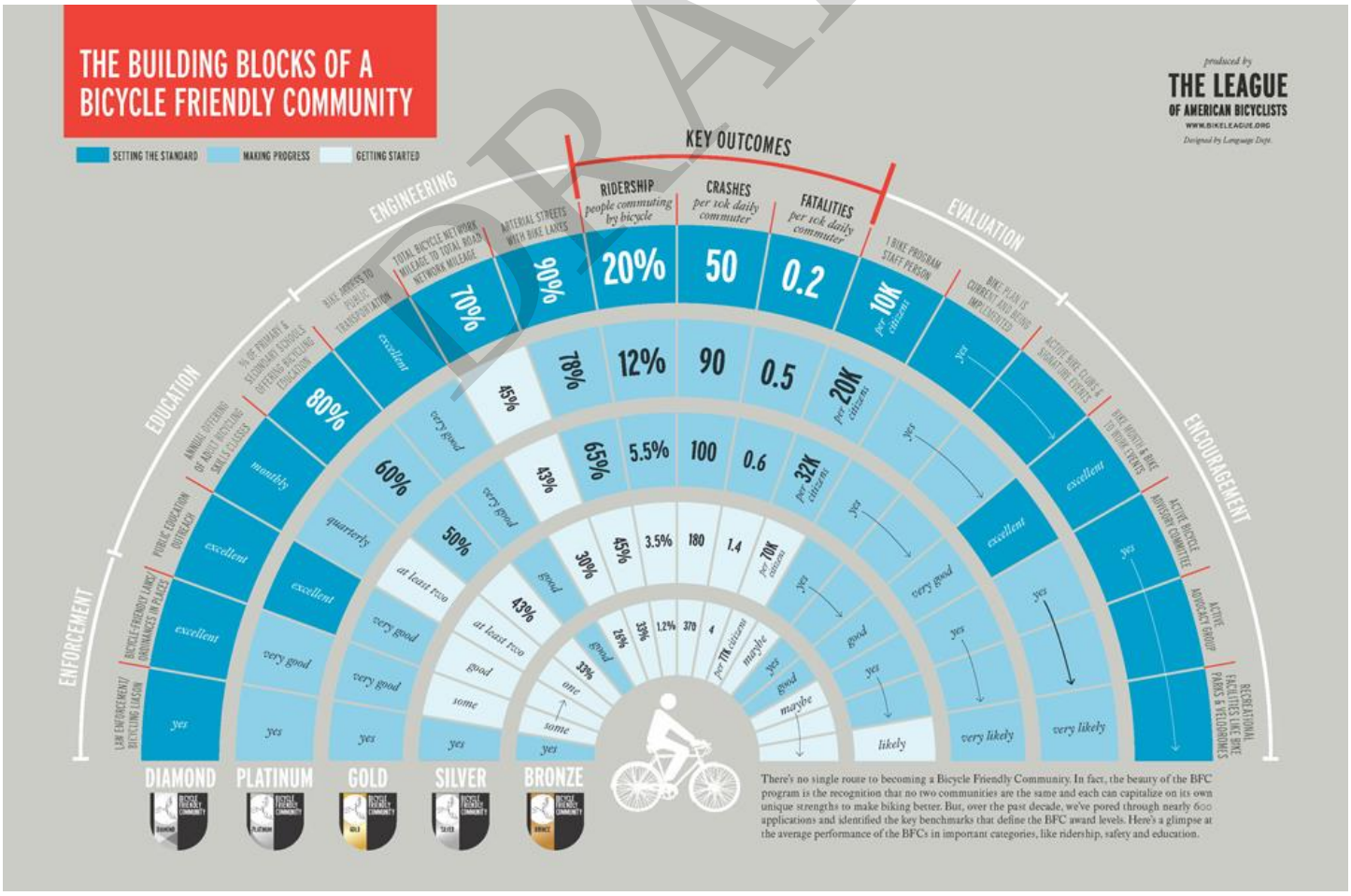


Figure 27. The League of American Bicyclists' Building Blocks of a Bicycle Friendly Community

having such programs becoming self-sustaining through local funding. Bike Walk CT has infrastructure in place to instruct 60-75 elementary students per week. Each student receives 6 hours of instruction (in-class & on-bike). The goal in 2019 is to teach up to 600 students this bicycle education curriculum, which includes:

- 4 days of 90-minute classes, 3 classes per day, student groups of 20-25 per class.
- League Cycling Instructors & physical education teachers working side-by-side to teach students.

Recommendation 9: Apply to the League of American Bicyclists' "Bicycle Friendly America" program

- The "Bicycle Friendly America" program provides a roadmap, hands-on assistance, and recognition for states, communities, universities and businesses to make bicycling a real transportation and recreation option for all people. Communities, businesses, and colleges/universities may apply. Bicycle Friendly Community applications are solicited on an annual basis. WestCOG may be able to act as facilitator for Bicycle Friendly Business/Community/University applications – keeping and updating information about its' communities existing bicycle amenities.

Achieving bronze-level (or higher) Bicycle Friendly Community status also adds points to a community's Sustainable CT rating.

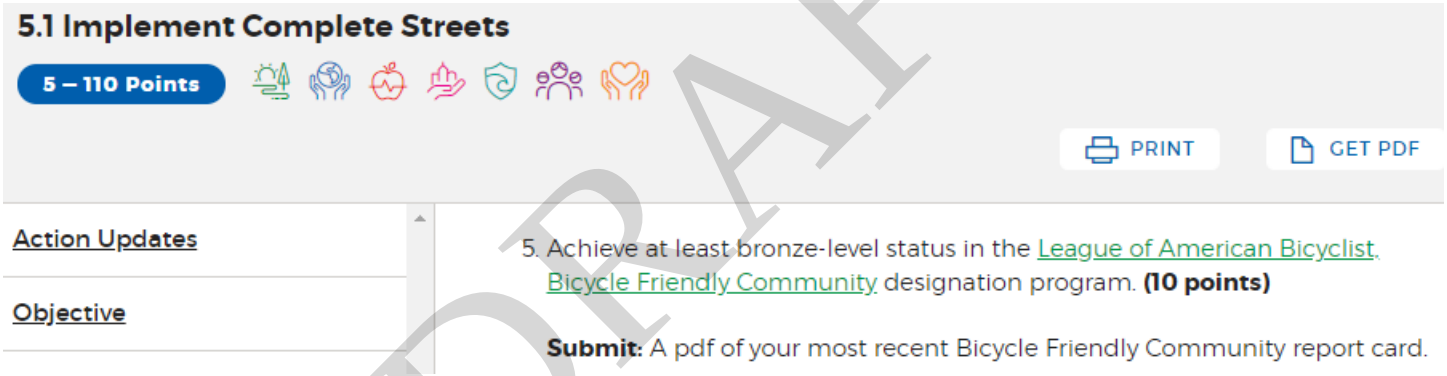


Figure 28. Excerpt from the Sustainable CT website - Action 5.1 (https://sustainablect.org/actions-certifications/actions/#open/action/39)

Strategies for Regional Bicycle Planning in Western Connecticut

As additional on-and off-road bicycle facilities are planned in the region, future connectivity to the Norwalk River Valley Trail (NRVT) and East Coast Greenway (ECG), as well as to other on- and off-road facilities in the region should be considered - funding, local support, and geography permitting. With the exception of Stamford's recent Bicycle and Pedestrian Plan – which geography does not include the Norwalk River Valley Trail – most recent planning documents support the NRVT and ECG/Merritt Parkway Trail as shown in Table 5 below:

Table 5. Recent Plans in the Region

	Supports ECG/Merritt Parkway Trail Concept	Supports Norwalk River Valley Trail Concept
Norwalk Pedestrian & Bikeway Transportation Plan (2012)	✓	✓
Southwestern Region Bicycle and Pedestrian Plan (2013)	✓	✓
Greater Danbury Regional Bike Plan (2015)	✓	✓
HVMPO and SWRMPO Long Range Transportation Plans (2019 and Draft 2023)	✓	✓
Connecticut (Statewide) Active Transportation Plan (2019 & Draft 2023)	✓	✓
Stamford Bicycle and Pedestrian Plan (2019)	✓	**N/A**

Some communities have planned on-street bicycle facilities as part of a municipal bicycle and pedestrian plan or other local planning initiative. As future transportation projects are considered in all of western Connecticut's communities, they may be prioritized based on their ability to create a network of on- and off-road bicycle facilities by connecting to the trails and roadway network shown on the maps that follow. Projects that contribute to a bicycle network could be elevated in the funding process based on their contribution to regional connectivity.

Developing the Regional Network

While many of the communities in Western Connecticut have planned and started to build their intramunicipal bicycle facilities, no previous plan has mapped all of these facilities in one place. Before a regional network could be evaluated and planned, the location of existing and planned facilities were documented through a series of steps:

1. Collected existing geographic information system (GIS) files of existing and planned facilities.
2. Digitized planned facilties and routes from municipal plans of conservation and development, municipal bicycle plans, regional trail plans, corridor studies, etc.
3. Confirmed existing or newly built facilties using aerial photographs and google street view.

After mapping the planned and existing facilties, gaps in the intermunicipal network were identified as potential connections. A set of priorities was used to narrow down the specific locations of facilties proposed in this plan that included: available right-of-way and shoulder width, elevation change, access to transit hubs and stops, proximity to schools and parks, connection of urbanized areas and villages, and the extent the new facility would connect the regional and greater regional network. The proposed on-road and multi-use trail connections recommended in this plan can be found in the following map (Figure 29) and are discussed in further detail in the next section. Please note, these maps reflect general concept facilities for planning purposes. These concept facilities are meant to highlight existing gaps and where connections are needed, the final alignment of a specific bicycle facility requires further planning and analysis.

Facility Types

On-Road Facility Complete: includes bicycle facilities in or directly adjacent to a roadway that provides a degree of protection for a bicyclist. The types of facilities included are bike lanes, buffered bike lanes, side paths or cycle tracks.

On-Road Routing Complete: includes bicycle routes that are marked with signage and/or sharrows. This category also includes the East Coast Greenway and on-road sections of the Western New England Greenway; both routes may be missing signage in segments, but the full routing is available online.

On-Road Routing Planned: includes on-road routes and facilities that have been recommended in municipal, regional or intermunicipal trail plans (NRVT).

On-Road Routing Proposed: on-road routes or facilities recommended by this plan to fill missing gaps in the complete and planned network. The feasibility, facility type and alignment would need to be investigated in future studies.

Multi-use Trail Complete: high-capacity trails that were built to accommodate bicyclists, pedestrians, and other non-motorized users through natural corridors, not in the road right-of-way.

Trails Complete: includes trails not in the road right-of-way that are designed for lower capacity use by bicyclists and pedestrians. Trails generally require more technical maneuvering around obstructions compared to multi-use trails. In the future, studies should be conducted to determine if a trail should be upgraded to a higher capacity, multi-use trail.

Multi-Use Trails Planned: includes higher-capacity trails that have been recommended in municipal, regional or intermunicipal trail plans (NRVT).

Multi-Use Trails Proposed: multi-use trail recommended by this plan to fill missing gaps in the complete and planned network. The feasibility and exact alignment would need to be investigated in future studies.

TBD On-Off Road Facility Planned: includes planned facilities where the location (on- or off-road) has not yet been finalized.

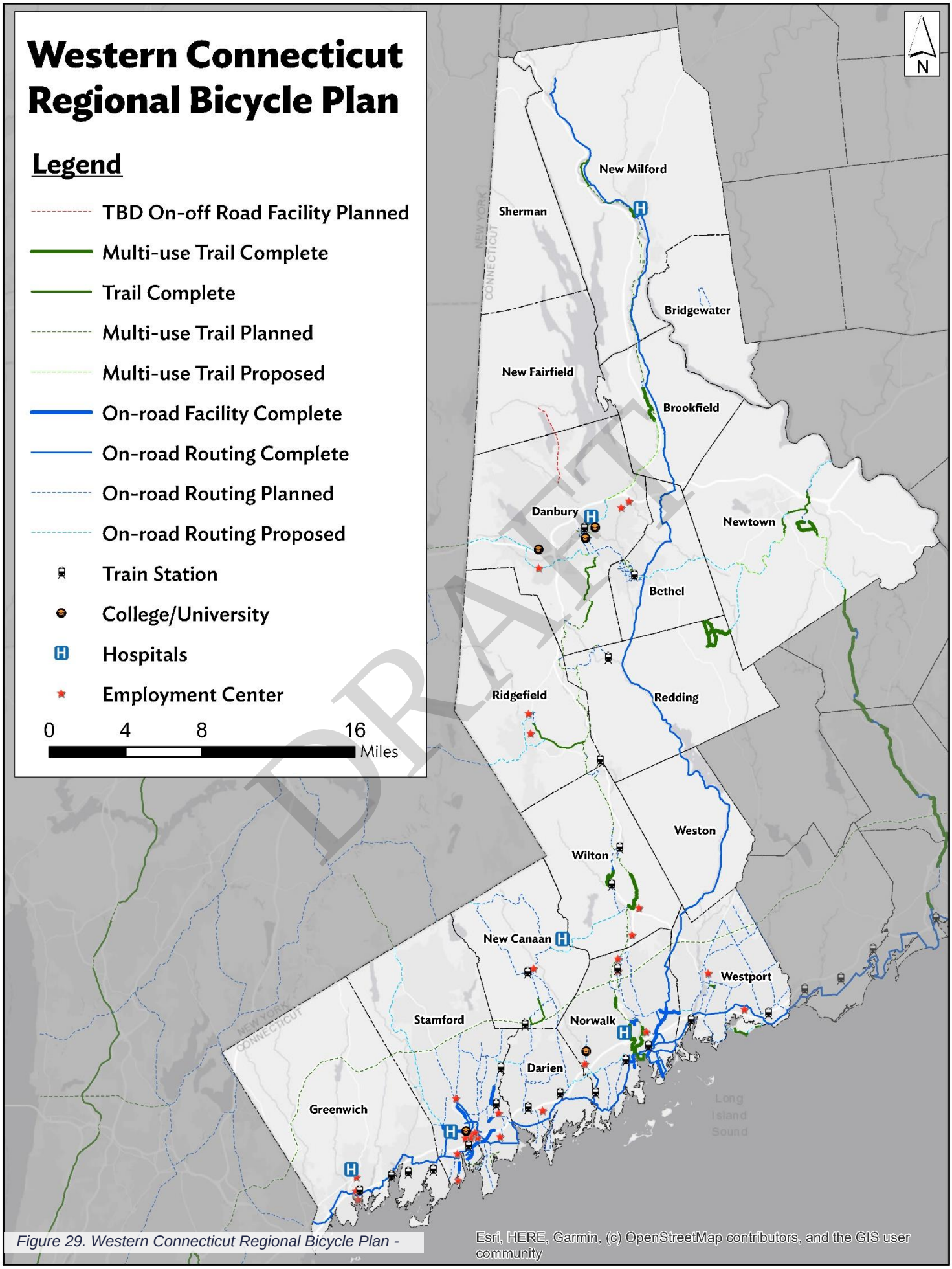


Figure 29. Western Connecticut Regional Bicycle Plan -

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Major highlights

As discussed in the Existing Conditions chapter of the plan, the regional network will build off of north-south and east-west spines. The north-south spine is made up of the Norwalk River Valley Trail, Still River Greenway and New Milford River Trail. However, a crucial gap exists in the plans for these facilities- from the northern end of the Norwalk River Valley Trail in Danbury to the southern terminus of the Still River Greenway in Brookfield. Future studies will be needed to determine the exact alignment of the facilities but the plan recommends an on-road facility through downtown Danbury that would connect to a multi-use trail following the alignment of Route 7 that flows into the Still River Greenway (see Figure 30).

For the east-west spine of the network, the East Coast Greenway has been identified as the major corridor that connects the municipalities along the shoreline in the south. With the greater Danbury area over 20 miles from the East Coast Greenway, a second east-west corridor has been recommended. This mostly on-road facility will connect at the New York border through major retail locations, both Western Connecticut State Univiersity campuses, parks, downtown Danbury and Bethel, and finally connecting with the Fairfield Hills campus in Newtown. An important aspect of this facility is that it will intersect with the Norwalk River Valley trail for bicyclists to access destinations to the south and the north.

This east-west spine will not only be important as a regional connection but it is also a crucial link in the greater-regional network. One of the final segments of the Maybrook Trailway was recently completed and now connects the New York/Connecticut border in Danbury with Brewster, NY and via the Empire State Trail to Manhattan in the south and the Adirondacks, Buffalo, NY and Canada in the north. On the east side of this new, east-west spine it would connect to the Housatonic Valley Rail Trail

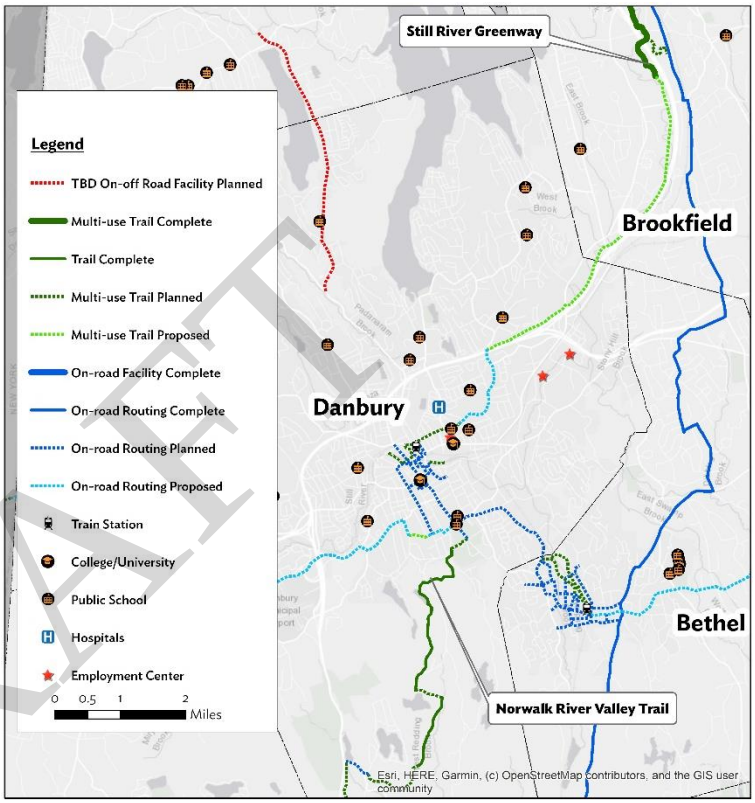


Figure 30. Link NRVT (Danbury) to the Still River Greenway (Brookfield)

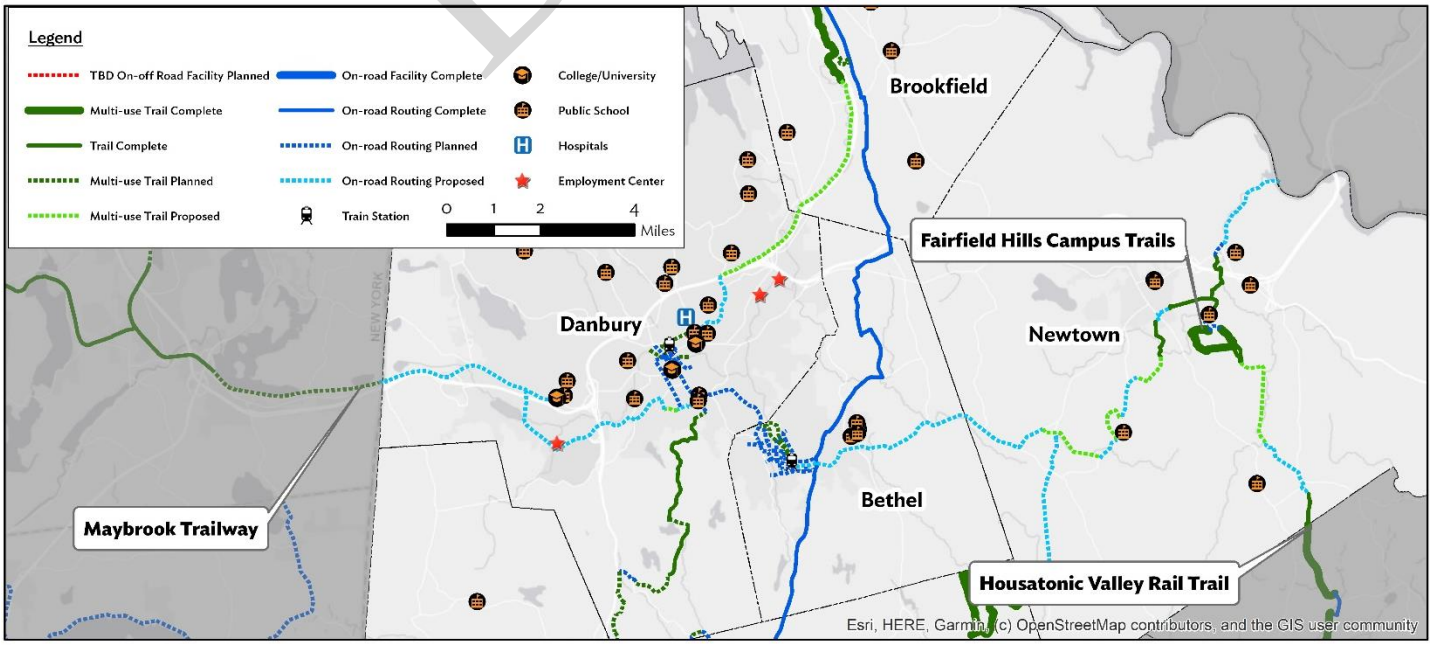


Figure 31. East-West Spine from Maybrook Trailway (Brewster, NY) to Housatonic Valley Rail Trail (Monroe)

in Newtown with a nearly complete connection to Bridgeport (see Figure 31).

Finally, efforts were focused on connecting municipally planned and existing facilities to create an overall more connected regional network. These shorter connections expand the reach of the municipally planned bicycle networks to neighboring communities which is important for access to more employment opportunities, acess to transit stops and train stations, safe routes to schools by bicycle, and to fulfill shopping and recreation needs. Examples of these proposed facilities are shown in Figure 32 where there is a dense network of existing and planned facilities.

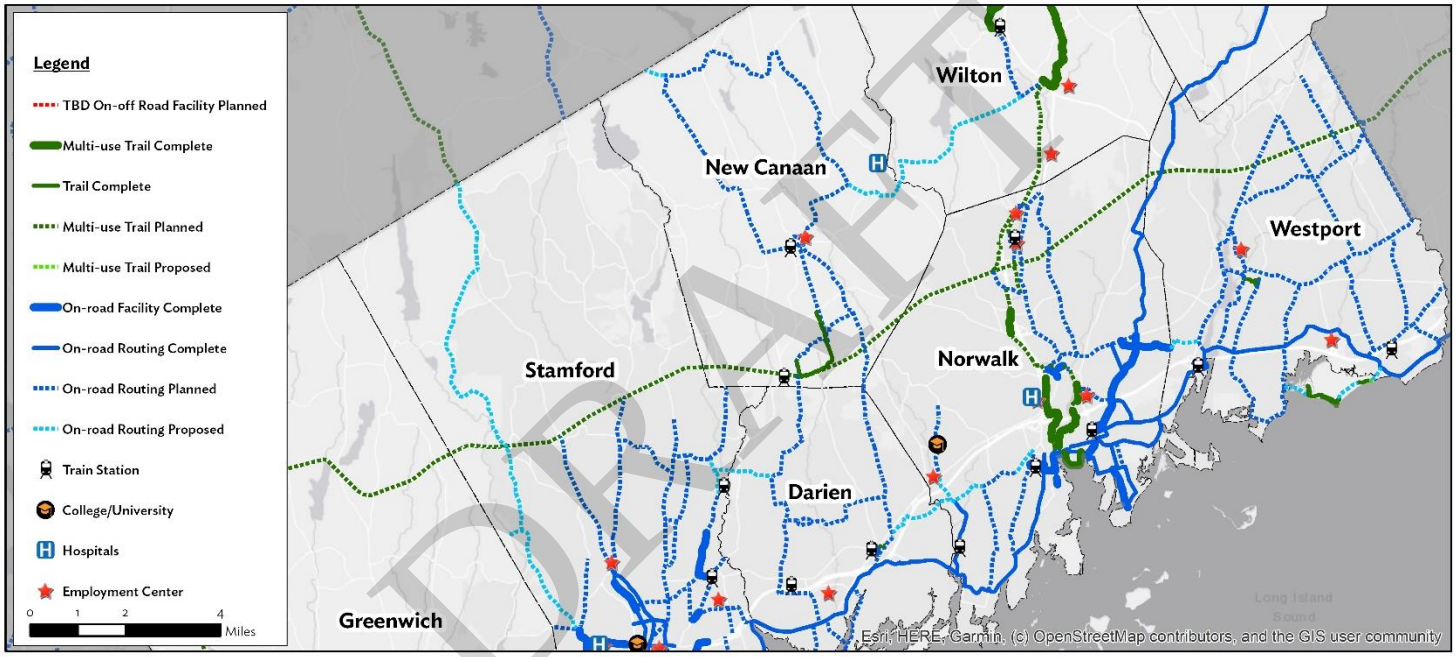


Figure 32. Example of proposed on-road connections between planned and existing facilities.

Performance Management

WestCOG, as the host to SWRMPO and HVMPO, utilizes various data sources and methods to track performance of the transportation system. This performance-based approach helps inform the transportation planning process and aids in decision-making by developing performance measures, targets, and achievement timeframes.

The following goals have been established for this plan and were informed by the Federal Highway Administration's Guidebook for Developing Pedestrian & Bicycle Performance Measures:

Goal 1: Increase the number of miles of on- and off-road bicycling facilities

Target: increase the number of miles by 10%

Measurement: # of miles of on- and off- road bicycle facilities constructed

Timeframe: five years from the development of this Plan

Associated Goals: supports Connectivity and Implementation

Goal 2: Increase % in bicycling mode share for commuting

Target: increase by 2%

Measurement: Census Journey to Work data

Timeframe: five years from the development of this Plan

Associated Goals: Improve bicyclist safety and mobility; support cycling as a viable transportation mode

Figure 33. Bicycling 101 Training Class (courtesy of the League of American Wheelmen)

Goal 3: Reduce the number of nonmotorized serious injuries and fatalities

Target: Support CTDOT in achieving the safety targets which are updated annually.

Measurement: number of non-motorized crashes involving bicyclists.

Timeframe: five years from the development of this Plan

Associated Goals: Improve bicyclist safety and mobility; provide Bike Skills 101 trainings to anyone who wishes to develop or improve bicycle riding skills, particularly in traffic

Goal 4: Increase the number of residents participating in bicycling education training sessions/programs over the next five years

Target: increase by 10%

Measurement: number of participating residents

Timeframe: five years from the development of this Plan

Associated Goals: bring bike safety and skills into schools and parks/recreation programs and provide Bike Skills 101 trainings to anyone who wishes to develop or improve bicycle riding skills, particularly in traffic.

Goal 5: Increase the availability of bicycling facilities in communities where transportation-disadvantaged populations reside.

Target: increase by 20%

Measurement: number of bicycling facilities

Timeframe: five years from the development of this Plan

Associated Goals: Improve bicyclist safety and mobility; support cycling as a viable transportation mode

Conclusion

The Regional Bicycle Plan's purpose is to analyze current bicycling conditions in the region; discuss policies and projects that would benefit bicycling, and integrate bicycling with the region's overall transportation planning efforts. This Plan has incorporated elements and content from several preceding bicycle plans that were prepared for the HVMPO and SWRMPO regions and covers the eighteen communities that are WestCOG members.

Western Connecticut already offers an attractive place to ride a bicycle. In recent years, the region has continued to plan new routes, seek grant funding to construct bicycle facilities and trails, and enhance safety and wayfinding for bicyclists. Together, these improvements have helped the municipalities become more bicycle-friendly. While these improvements are certainly to be commended, the work to enhance bicycling in the region is never finished. This Plan offers a regional perspective on bicycle facilities and best practices and provides recommendations to improve upon over the next five to ten years. These recommendations focus on routing, planning, education, policy and construction activities. The Plan should be used as a resource within the region and WestCOG will update the Plan on a regular basis to evaluate completed projects, assess progress towards achieving goals, and develop new recommendations.

This page is intentionally left blank

Appendix A: Darien/New Canaan Bike Route Case Study

Darien and New Canaan Bicycle Route

This initiative started as an idea brought forth by New Canaan and Darien in an effort to identify a route to connect key destinations between the two municipalities. WestCOG staff reviewed maps showing Average Daily Traffic (ADT) on local roads to develop a preliminary route for further exploration. The roads with the lowest ADT were considered to be the best starting point. The preliminary route stretched from northern New Canaan, through both downtown areas, and south to the beaches in Darien. Along the way, this route connects a number of destinations including schools, parks, local businesses, and transit stations.

In summer 2019, this initiative became a pilot project through the Active Transportation component of DPH's State Physical Activity and Nutrition (SPAN) grant. A consultant, Fitzgerald and Halliday Inc. (FHI), was tasked with evaluating the feasibility of this route, identifying safety challenges and recommending the final routing and facility types.

In consultation with Darien and New Canaan, FHI developed a 25.5 mile route of various facility types including sharrows, bike lanes, and buffered bike lanes. Figure 34 displays the alignment of the bicycle route and the corresponding facility type.

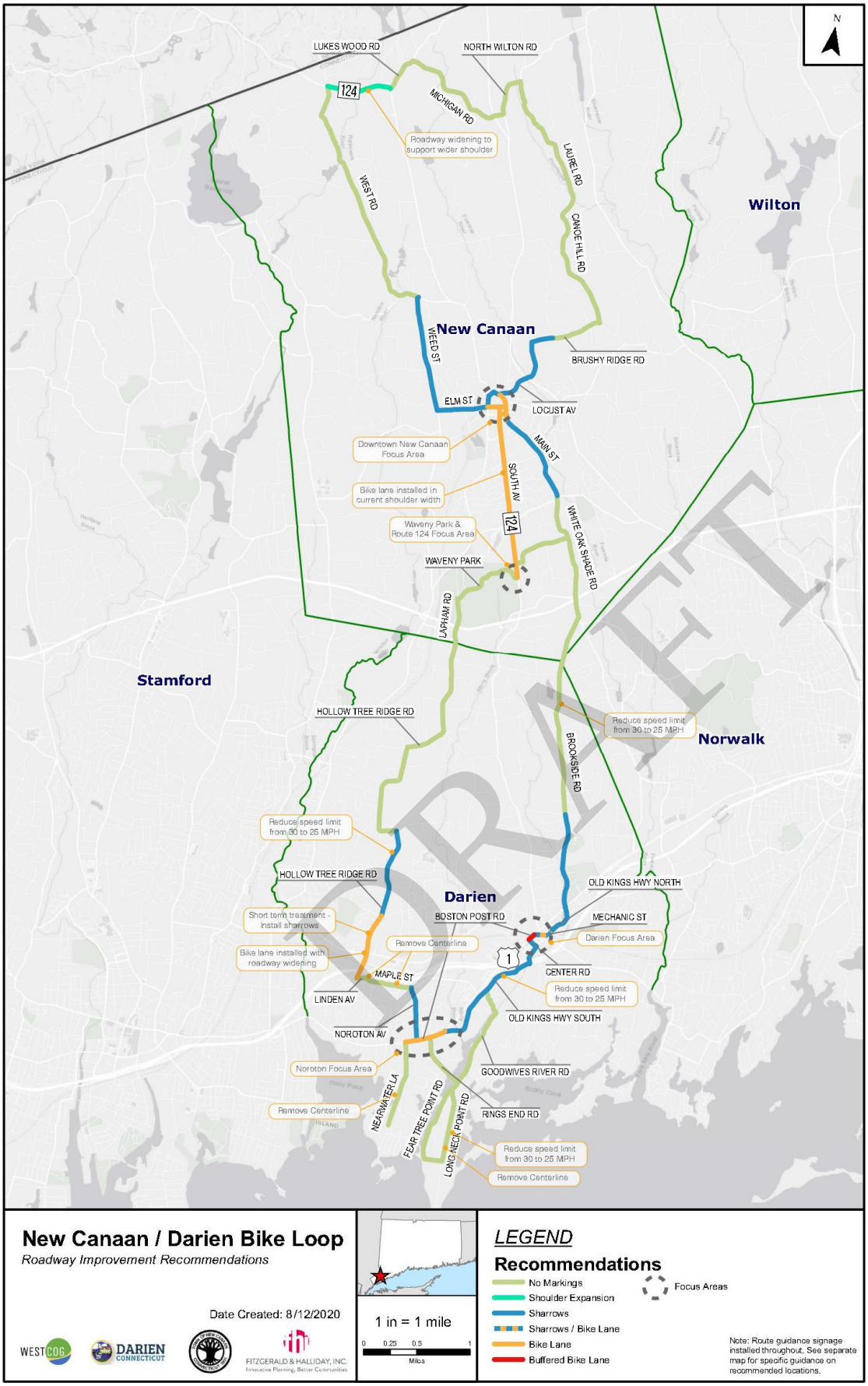


Figure 34. Proposed Darien and New Canaan Bicycle Loop

Other resources for planning a bicycle route

The State of Connecticut DOT's website has maps of ADT by town at https://portal.ct.gov/DOT/PP_Bureau/Documents/Maps.

Two excellent resources when considering where and how to plan a bicycle route are the Strava Heat Map website [www.strava.com/heatmap] and the Best Bike Rides Connecticut book by David Streever.

The Strava heatmap is populated with data from bicyclists, walkers, hikers and runners who use the roads and trails and track their trips with GPS. The lightest colored routes on a map show the heaviest use. The map can be filtered for walking or cycling trips:

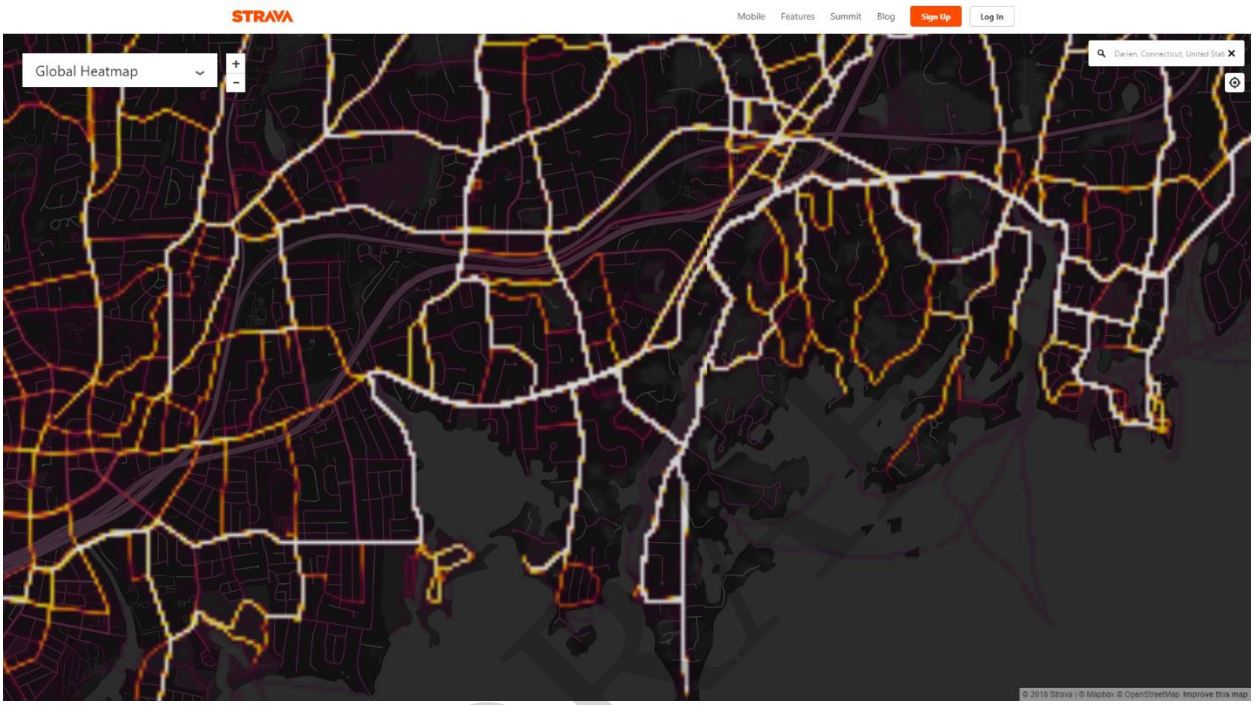


Figure 35. Example of a Strava Map

The *Best Bike Rides in CT* book documents several bike routes in the state that can serve as examples. Riding a few of these routes will help route planners understand and appreciate what makes a good route from the perspectives of traffic, roadway infrastructure, amenities connections to desirable destinations, signage, and parking. It is important to consider multiple access points that people can get to by car – where parking is available.

Once a bike route has been established in a community, connecting it to other routes that serve important destinations begins to create a network. The Bike Network Mapping Idea Book developed by the Federal Highway Administration (FHWA) in 2016 suggests these next steps:

1. Identify a consistent set of bicycle facility types and community destinations that can serve as a baseline for bicycle network planning efforts across jurisdictions and geographic locations. The tables below are intended to inform this conversation.

2. Undertake a significant national push to research, apply, and document methodologies for measuring bicycle network connectivity and tracking change in connectivity over time.

3. Examine ways to integrate bicycle network infrastructure data into national infrastructure databases and data management systems.

4. Continue to identify and promote strategies for integrating bicycle network planning into ongoing planning processes at the local, MPO, and State level (e.g. resurfacing, TIP and STIP, Highway Safety Improvement Program, project design and development, MPO certification review).[xiii]

BICYCLE FACILITY TYPES

- Bike Lane
- Buffered Bike Lane
- Climbing Lane (i.e., bike lane on uphill side only)
- Separated Bike Lane or Protected Bike Lane or Cycle Track
- Bike Boulevard
- Shared Use Path
- Other (such as shared lane marking and paved shoulder)

COMMUNITY DESTINATIONS

- Bike share stations
- Bus stops
- Community centers
- Community colleges
- Community service center
- High density residential
- Major retail and entertainment
- Parks
- Places of worship
- Public libraries
- Retirement homes
- Schools
- Government offices
- Universities or colleges
- Major tourist destinations
- Hospitals and other health care facilities
- Transit centers

Appendix B: Complete Streets Policies

Referenced below is a copy of Stamford's Complete Street's Policy. Other municipalities in Connecticut, including Fairfield and Portland, may offer other language or policies that are helpful when crafting a new policy for a western Connecticut municipality.

Stamford, Connecticut Complete Streets Policy:

ARTICLE XII. - COMPLETE STREETS

Sec. 231-78. - Title.

This Article shall be entitled the Complete Streets Ordinance.

Sec. 231-79. - Definitions

As used in this Article, the following terms shall have the meanings indicated:

Complete Streets. Roadways that are designed and operated to provide safe and convenient access to all Users.

Users. Are all people that use roadways, including pedestrians, bicyclists, public transportation riders, and motorists and includes people of all ages and abilities, including children, seniors and individuals with disabilities.

Transportation Improvement Project. Any public or private investment within the public right-of-way, regardless of funding source, including, but not limited to, new construction, reconstruction, alteration and maintenance inclusive of road resurfacing, except that a Transportation Improvement Project shall not include routine upkeep such as cleaning, sweeping, plowing or spot repair.

Sec. 231-80. - Implementation

This Article shall require the implementation of Complete Streets in appropriate locations within the City of Stamford by the Office of Operations, as follows:

(a) The Office of Operations shall review all Transportation Improvement Projects being designed for implementation within the City limits and explore opportunities to meet the needs of all Users. including but not limited to motorists. pedestrians. bicyclists. and transit vehicles.

(b) All Transportation Improvement Projects located within 1,000 feet of a school, commercial center, or bus stop shall include infrastructure designed to accommodate pedestrians.

(c) The requirements of this Article shall not apply to Transportation Improvement Projects:

(1) where specific users are prohibited by law (e.g. interstate highways or pedestrian-only paths); or

(2) where the cost of the accommodations necessary to implement Complete Streets is excessively disproportionate to the need or probable use; provided, however, that the Director of Operations must document the rationale for exemption from the Complete Streets Ordinance in such cases.

Sec. 231-81. - Complete Streets Manual.

A Complete Streets Manual, detailing the steps to be taken to implement this Ordinance, shall be adopted by the Office of Operations and approved by the Board of Representatives.

Portland, Connecticut Complete Streets Policy:

INTRODUCTION

PORTLAND COMPLETE STREETS POLICY

The purpose of the Portland Complete Streets (CS) Policy is to guide a transition from traditional automobile-focused transportation planning to a more comprehensive approach that accounts for all users including children and seniors, persons with disabilities, and those that travel by foot, bicycle, and transit. The Policy was developed through an extensive public process spearheaded by the Portland Complete Streets Group with input from elected officials, town staff (including EMS), business owners and residents.

In addition to the policy, a set of three maps graphically illustrates desirable outcomes of the policy. Map One indicates the Complete Streets Priority Area - predominantly the center village district and all streets within walking distance to Portland public schools. Map Two indicates gaps in the sidewalk network and suggests areas of improvement. Map Three depicts favorable bike routes, the path of the Air Line Trail and possible connection between the trail and the center district.

The Policy provides guidance in seven related areas:

1. Principles: The rational for the CS Policy is explained by emphasizing that it addresses all users and modes of travel, all transportation projects, a comprehensive network approach, Connecticut state law, jurisdiction, design standards, exceptions, land use context, and performance standards.
2. Users and Modes: All users of the transportation system shall be considered in planning and design.
3. Procedures: All transportation projects shall follow a path from concept to implementation that considers Complete Streets options.
4. Jurisdiction and Network Connectivity: Town-owned streets are the focus of the Policy but the State of Connecticut shall be encouraged to follow both the Town's and State's CS Policies on state right-of-ways. A priority of the Policy shall be to facilitate the completion of gaps in the sidewalk and trail network with emphasis on streets near schools and the Air Line Trail.
5. Design Guidance and Performance Standards: The most current design guidance provided by authoritative organizations such as AASHTO and FHWA shall be referenced in the formulation of projects.
6. Inclusions and Exceptions: The Policy addresses all transportation improvements but allows for exceptions where specific criteria prevent implementation of CS improvements.
7. Policy Implementation and Performance Measurement: The progress of CS improvements shall be measured and reported on a periodic basis.

Implementation of the Policy is expected to be gradual as new projects, repairs and major maintenance take place. Certain projects may be eligible for State or Federal grant programs.

TOWN OF PORTLAND, CONNECTICUT COMPLETE STREETS POLICY

I. VISION, GOALS & PRINCIPLES

VISION

To improve the streets of Portland making them safer and more accessible for all users including pedestrians, cyclists, people with mobility challenges, transit users, and motorists. To encourage non-motorized modes of transportation and a Complete Streets culture that promotes healthy living.

GOALS

The overarching goal of this policy is to gradually transform Portland from a community that disproportionally encourages automobile travel to one that invests in transportation infrastructure equitably across all modes to the benefit of all citizens. Specific goals are the following:

1. Make Portland roads safer by increasing the capacity for various uses while decreasing the rate and severity of vehicle, pedestrian and bicycle crashes;
2. Enable healthier lifestyle choices by providing an expanding variety of walking and bicycling options;
3. Promote a Complete Streets culture in Portland through education and events,
4. Encourage private sector economic development that will benefit from, and contribute to, a more livable community;
5. Expand the network of safe walking and bicycling routes to schools;
6. Connect with other town/citizen's action groups in Portland that have goals related to Complete Streets.

PRINCIPLES

The National Complete Streets Coalition states: "By planning, designing, and constructing Complete Streets, communities of all sizes – whether rural hamlets, small towns, or booming metropolises – are able to provide the quality access to jobs, health care, shops, and schools their residents deserve, while also achieving greater economic, environmental, and public health benefits." Application of Complete Streets policy is not a one size fits all process. Some streets are more adaptable to change than others. The following principles shall guide the planning and implementation of all Complete Street improvements:

1. All Users and All Modes: All users and all modes should benefit from Complete Streets improvements;
2. All Projects & Phases: All transportation projects shall incorporate Complete Streets improvements – from new construction to maintenance, it is anticipated that most complete streets improvements will be planned and completed concurrently with other scheduled roadway projects, but some complete streets improvements may be implemented independently of other road improvements and maintenance. Priority or special consideration shall be given to locations/improvements identified in the Complete Streets Policy Maps discussed in more detail in Section III;
3. Network: Complete Streets policy should encourage a network understanding/approach to the town's transportation system;
4. State law: Public Act 09-154 states: "From funds received by the department or any municipality for the construction, restoration, rehabilitation or relocation of highways, roads or streets, a reasonable amount shall be expended to provide facilities for all users, including, but not limited to, bikeways and sidewalks with appropriate curb cuts and ramps. On and after October 1, 2010 not less than one percent of the total amount of any such funds received in any fiscal year shall be so expended."
5. Jurisdiction: Complete Streets policy shall address all agencies involved in transportation: Department of Public Works (DPW), Emergency Management Services (EMS), CT Department of Transportation (CTDOT), Middletown Area Transit (MAT);
6. Design: Standards and guidelines shall refer to latest editions of guidance documents published by American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA),

Institute of Transportation Engineers (ITE), American Planning Association (APA), National Association of City Transportation Officials (NACTO), and the U.S. Access Board;
7. Exceptions: Shall be made according to clear criteria and authorization stipulated within this policy document;
8. Context Sensitivity: Land use context and flexibility shall be considered relative to potential Complete Streets improvements;
9. Performance Standards: Performance standards shall be established with measurable outcomes.

II. USERS AND MODES

This transportation system shall be designed and operated in ways that improve the safety, comfort and convenience of pedestrians, bicyclists, public transit users, assistive mobility device users, motorists, emergency management services, freight providers, and users of other common modes of transportation.

When there is conflicting needs among users and modes, the following prioritization will apply:

1. Safety is the highest priority, followed by mobility;
2. Among modes, pedestrian needs shall receive priority, followed by the next most vulnerable user in each case;
3. Strive for balance among all modes involved in each case. It is recognized that all modes cannot receive state of the art accommodation within every right-of-way (ROW – the publicly owned transportation corridor), but the overall goal is that all users of varying ability can safely and conveniently use the transportation network.

III. PROCEDURES

The Town of Portland commits to applying Complete Streets principles at the outset of all transportation improvement projects. Each project shall be approached as an opportunity to improve the safety and accessibility of the street/ROW for all users. Projects may include, but not be limited to, subdivision, new development, new construction, major maintenance (such as resurfacing, storm drainage, curb repair, etc.), and privately-funded projects. Improvements through planning, programming, design, and ROW acquisition shall be considered. Examples of such projects may be specific such as sidewalks and crosswalks or general such as traffic calming, enhanced traffic enforcement, and 'Road Diets". Priority or special consideration shall be given to locations/improvements identified in Complete Streets Policy Maps:

1. Complete Streets Priority Areas (attached as pdf file "Complete Streets Map final 6-23-16")
2. Existing & Possible Sidewalks (attached as pdf file "Sidewalks Map Final 6-21-16")
3. Possible Bike Routes & Multi-Use Paths (attached as pdf file "Bike Routes Map final 6-21-16")

The following procedural guidelines shall be followed:

1. A new project is identified and brought to the attention of the First Selectman / Board of Selectmen;
2. Input is gathered from relevant stakeholders - The CSG, Town Engineer, Planning, Public Safety and Public Works departments - regarding current Complete Streets needs in the area of the project;
3. Planning, Public Works, and Finance departments will develop a project budget to include recommended Complete Streets improvements and present for approval to the Board of Selectmen.

IV. JURISDICTION & NETWORK CONNECTIVITY

This Policy shall apply to all Town owned streets and land within public ROWs. Additionally, the State of Connecticut controls three principal transportation corridors that traverse the town including routes, 66, 17, and 17A. The Town shall work cooperatively with Connecticut Department of Transportation to plan and implement Complete Streets improvements within these ROWs. At a minimum, PA 09-154 An Act Improving Bicycle and Pedestrian Access and the

Connecticut Complete Streets Policy EX.0.-31, shall be applied to all planning, design, construction and major maintenance within state-controlled ROWs. Wherever possible, the Town's Complete Street policy shall be considered, especially where a state ROW provides Complete Streets network connectivity identified in the Town's Plan of Conservation and Development. Owners of privately owned streets and ways shall also be encouraged to adhere to the policy.

Private utility companies operate within Town and State ROWs. Their planning, construction, and major maintenance can create both opportunities and barriers to Complete Streets improvements. The Town shall coordinate with the private utilities to ensure that utilities projects and Complete Streets improvements are coordinated wherever possible.

The Portland School District encourages students to walk to school and has established standards that stipulate the distance a student can be expected to walk if sidewalks and safe crossings are provided. The Town shall coordinate Complete Streets improvements to ensure safe routes to schools including sidewalks, road crossings and multi-use routes that encourage walking and bicycling to school.

The Town shall also coordinate Complete Streets planning and construction with Middletown Area Transit, River COG (Council of Governments), and adjacent municipalities to facilitate effective application of resources.

NETWORK CONNECTIVITY

The Town shall identify gaps in the sidewalk and trail network that upon completion will improve connectivity and facilitate completion of a Complete Streets network. Ideally there should be non-motorized ways to get to key areas in Portland including the recreational areas, the economic development areas, and schools. Connections between the Village District/Town Center and Riverfront Recreation area are specifically mentioned in the town's 2016 POCD. These improvements are considered high priority projects.

Existing pedestrian crossings shall be evaluated for safety and functionality. The expansion of the sidewalk network will require the implementation of new crossings. All new crossings shall be determined based on accepted standards related to speed limit, site lines, stopping distance, etc.

The Air Line Trail (ALT) will provide unprecedented connectivity across the southern part of town for bicyclists and pedestrians. Additional multi-use pathways shall be investigated that connect to the ALT such as the existing north-south utility corridors. Town and State open space areas shall also be evaluated for potential multi-use trail connectivity.

V. DESIGN GUIDANCE & PERFORMANCE STANDARDS

All Complete Streets improvements within public ROWs shall conform to the following standards. Of the following list, AASHTO and MUTCD are considered the definitive design guides for changes within the State ROW. Because Complete Streets design is an evolving field, the latest edition of these standards shall be referenced for design guidance:

American Association of State Highway and Transportation Officials (AASHTO)
- A Policy on Geometric Design of Highways and Streets
- Guide for the Development of Bicycle Facilities
- Guide for the Planning, Design and Operations of Pedestrian Facilities

American Planning Association (APA)
- Complete Streets: Best Policy and Implementation Practices
- U.S. Traffic Calming Manual

Federal Highway Administration (FHWA)
- Manual of Uniform Traffic Control Devices (MUTCD)
- PEDSAFE: Pedestrian Safety Guide and Countermeasures Selection System

Institute of Transportation Engineers (ITE)

Designing Walkable Urban Thoroughfares: A Context Sensitive Approach

National Association of City Transportation Officials (NACTO)

Urban Bikeway Design Guide

Urban Street Design Guide

U.S. Access Board

Accessible Public Rights-of-Way: Planning and Designing for Alterations

VI. INCLUSION & EXCEPTIONS

The Town of Portland commits to applying Complete Streets principles at the outset of all transportation improvement projects. Each project shall be approached as an opportunity to improve the safety and accessibility of the street/right of way for all users.

Exceptions shall be made if the following criteria render Complete Streets improvements unworkable:

1. Where specific users are prohibited by law from using the ROW (i.e. pedestrians and bicyclists within a limited access highway);

2. Cost is disproportionate to the current need or projected future need for Complete Streets improvements or funding is not available;

3. There is an absence of current and future need (i.e. a rural road that carries low Average Daily Traffic (ADT) and is remote from neighborhoods, schools, or points of interest);

4. Emergency repairs within Town ROWs (pre-existing Complete Streets elements impacted by these repairs must be restored to their original condition).

Protocol - Exceptions shall be granted according to the following:

The town shall issue Request for Exceptions (RFE) at the earliest project phase by posting the RFE on Town website and distribute to stakeholders including Complete Streets Group. Allow a 14 day public comment period and record comments as an Exhibit to the RFE.

Decisions regarding exceptions shall be decided by the First Selectman (Local Traffic Authority) in consultation with other Selectmen, a designated Complete Streets Group member, Directors of Public Works and Planning, and considering public input. A determination of exception will conform to one or more of the four allowable exceptions listed above.

VII. POLICY IMPLEMENTATION AND PERFORMANCE MEASUREMENT

Implementation of Complete Streets improvements represents a continuum that will require periodic and sustained evaluation to measure progress and effectiveness. To facilitate that regular evaluation, the Director of Public Works shall provide a written report to the Board of Selectmen on an annual basis by the first of February on the progress and effectiveness of the Complete Streets policy and any exceptions granted during the previous calendar year. If requested, CSG can work with the Public Works Department, to help create a form that can be used to provide the annual written report. The measurement of all Complete Streets Improvements for the previous calendar year are to include the following:

I. Funding:

Total dollar amount spent on Complete Streets Improvements

a. Town funds
b. Grant funds
c. Other funds

II. Sidewalks/Pedestrian/Transit Improvements:

1. Lineal feet of sidewalks and other pedestrian accommodations built or improved
    a. Within ½ miles of schools
    b. Outside ½ miles of schools
2. Number and description of crosswalks installed or improved
3. Number and description of Americans with Disabilities Act (ADA) accommodations installed or improved
4. Number and description of public or private transit accessibility improvements installed or improved by type and number

III. Bicycling Improvements:

1. Lineal feet of bicycle lanes, routes, or trails built by width and type
2. Number and description of bicycle parking facilities installed

IV. Traffic Calming:

1. Number and description of traffic calming measures implemented
2. Number of new traffic control signs/signals installed that assist with the town's Complete Streets policies
3. Number of street trees planted

V. Maintenance Activities:

Description of Maintenance Activities of existing Complete Streets Facilities

VI. User & Crash Data:

1. Bicycle and pedestrian traffic counts
2. Motor vehicle, bicycle and pedestrian accident data

VII. Exceptions:

Number of Request for Exceptions requested and approved, including dates and committee members

END

Town of Fairfield
Complete Streets Policy

Prepared by the Fairfield Bicycle and Pedestrian Committee
Endorsed by the Board of Selectmen on September 26, 2018

Background

In March of 2010, the Town of Fairfield created the Fairfield Bicycle and Pedestrian Plan Advisory Committee under former First Selectman Kenneth Flatto. This committee was then restructured in April of 2012 by First Selectman Michael Tetreau. With technical assistance from the Greater Bridgeport Regional Council, this committee developed the Fairfield Bicycle and Pedestrian Master Plan. The Plan was endorsed by the Board of Selectmen on June 19, 2013.

The Fairfield Bicycle and Pedestrian Master Plan indicated several recommendations including the formation of a standing Bicycle and Pedestrian Committee, and the development of a Complete Streets Policy. In November of 2014, the Town appointed the initial Fairfield Bicycle and Pedestrian Committee, which consists of 9 citizens and several Town staff advisors. In December of 2015, a subcommittee was formed to develop the Fairfield Complete Streets Policy.

Executive Summary

Complete Streets by definition are streets, highways, roadways, travel ways and corridors that are designed and operated to enable safe and comfortable access for all users. All users include pedestrians, bicyclists, public transit riders, and people of all abilities, cars, trucks, buses, and other modes of transportation.

Any future transportation project to which this policy is applicable should be sensitive to the context of the surrounding neighborhood and community, as there is not a one size fits all approach to Complete Streets design and implementation. The policy for Fairfield reflects this understanding.

The Fairfield Complete Streets Policy is based upon research and guidelines provided by the National Complete Streets Coalition, a division of Smart Growth America.

The National Complete Streets Coalition Steering Committee consists of: AARP, AECOM, America Walks, American Public Transportation Association, American Society of Landscape Architects, Association of Pedestrian and Bicycle Professionals, Institute of Transportation Engineers, MIG|SvR, National Association of City Transportation Officials, National Association of REALTORS®, Nelson\Nygaard Consulting Associates Inc., Smart Growth America, SRAM, Stantec, VHB, Voices for Healthy Kids, and the Washington State Department of Transportation.

The following list of items describes background information and many of the benefits of Complete Streets:

Complete Streets Saves Lives

Streets that, where appropriate, include sidewalks, better bus stop placement, traffic calming measures, treatments for disabled users, children and the elderly, save lives. From 2005-2014, 376 people were killed while walking in CT. The most threatened populations are children and older adults (info from Smart Growth America).

There is little or no cost associated with developing a Complete Streets Policy

The policy requires transportation planners to consider all users at the onset of transportation projects. Exceptions and exemptions are noted for projects where expected users would not include pedestrians, bicyclists, or public transit users, and considerations where costs would be too prohibitive.

Complete Streets Policies are expanding locally and nationally

Over 1,200 policies are now in place nationwide, and growing, including over 950 municipalities. Several CT municipalities have developed policies, including West Hartford, Middletown, Portland, Enfield, South Windsor, Hartford, Stamford and New Haven.

A Complete Streets Policy reinforces existing regulations

Zoning regulations require sidewalks in certain new construction and renovation projects as well as considerations for pedestrians and bicyclists. Regulations also require development of a bicycle and pedestrian plan as part of the Site Plan review process. The 2016 Fairfield Plan of Conservation and Development recommends a significant number of implementation measures to improve biking and walking in town. A Complete Streets Policy will support existing regulations and guidelines.

Complete Streets are the law in Connecticut

Complete Streets Law enacted in 2009 (CGS §13a-153f and §13b-13a) requires nearly all highway, road, and street programs and projects in Connecticut to accommodate pedestrians, bicyclists, and transit riders. The Connecticut Department of Transportation adopted a Complete Streets Policy in 2014 and encourages municipalities to do the same.

Complete Streets benefit the local economy

Many communities throughout the country that have completed Complete Streets designed projects saw an increase in private development creating the potential to revitalize neighborhoods and corridors. Complete Streets projects are supportive of new businesses and show increases in property values.

A Complete Streets Policy can lead to more funding

Funding for transportation projects that include Federal and/ or State funds usually require considerations for all users of the roadways and a Complete Streets design approach. Without a policy in place, Fairfield could be at a disadvantage when competing with other municipalities in the State for funding of transportation or infrastructure projects.

Complete Streets are flexible

Complete Streets improvements can be achieved in urban, suburban, and even rural areas. In a rural area, consideration can be made to have a paved shoulder for walking and biking as opposed to a sidewalk or other infrastructure. The policy promotes a balance of safety and convenience for everyone on the road.

View the entire Complete Streets Plan at:
https://www.fairfieldct.org/filestorage/10726/10994/15957/73404/Complete_Streets_Policy.pdf

Appendix C: Bicycle Project Request Form

BICYCLE PROJECT REQUEST FORM

Project Name
Project Location and Limits
Contact
Brief Description of Project
Project Impetus
Project Goals
Estimated Cost of Project (if known)
Funding Sources (if known)
Describe project context, including adjacent land uses, neighborhood character, and existing transportation system
Classification of affected street(s)

CONSISTENCY WITH COMPLETE STREETS POLICY & GUIDING PRINCIPLES

Describe how the proposed project supports Guiding Principles for Complete Streets. See the last page of this form for descriptions of each principle.

Safety and slow vehicle speeds
Connectivity
Human health
Livability
Context
Equity
Aesthetics
Economic development
Environment

COMPLETE STREETS GUIDING PRINCIPLES

Safety and Slow Vehicle Speeds

Traffic injuries and fatalities are predictable and often preventable, and there is a direct correlation between vehicle speeds and injury/fatality rates. Streets should be designed with safety of all users as a priority, and vehicle speeds limited, with the goal of reducing injuries and fatalities.

Connectivity

Connectivity is essential if non-motorized transportation is to be a viable and desirable option. Streets should be designed to provide connectivity that satisfies travel needs with redundant routes in an intact network system.

Human Health

Streets should be designed to increase opportunities for active transportation (walking, cycling, etc.) and to decrease air pollution and particulate levels caused by motor vehicles.

Livability

Livable cities are characterized by a built environment that enhances quality of life, strengthens community ties, encourages civic engagement, and promotes health. Public spaces (streets) should be designed with livability in mind, with the goal of enhancing quality of life in our city.

Context

Streets should be designed to respect and enhance the distinctive identity of our town/city, its character, and its cultural and historical context.

Equity

Public spaces such as streets should embody the democratic ideals of equality, freedom, individual rights and responsibilities, protection of minorities, transparency, accountability and the rule of law. Streets should be designed to provide for the needs and safety of all users, particularly people with disabilities, the elderly, children, and people who cannot afford a private vehicle.

Aesthetics

Aesthetically pleasing surroundings – such as public art, well-maintained landscaping, and human-scale architecture – enhance the experience of using a street and make it a place where people want to be. Streets should be designed with consideration for aesthetic elements, including materials, lighting, landscaping, street furniture, and maintenance.

Economic Development

Well-designed streets support economic vitality by drawing customers to businesses and providing access and transportation options for reaching businesses. Streets should be designed to support a framework for current and future development and contribute to the town or city's economic vibrancy.

Environment

Streets should be designed to support and encourage non-motorized transport, thereby decreasing vehicle miles travelled (VMT), leading to reductions in both air pollution and carbon emissions and better management of storm water runoff.

Appendix D. City of Stamford Bike Rack Request Form

BIKE STAMFORD

STAMFORD STREET SMART
PUBLIC SAFETY AND AWARENESS CAMPAIGN
STAMFORDCT.GOV/STREETSMART

Request a Bike Rack Program

Three easy steps

1. *Request*
2. *Evaluation*
3. *Rack Installation*

The City of Stamford is offering free sidewalk bicycle racks for businesses, organizations and institutions to encourage people to commute, take short trips or run errands on a bike. This program provides a free bike rack with the capacity to lock two bikes. The racks are designed to accommodate locking both the wheel and the frame.

When the City receives a request for a bike rack, it will be evaluated based on safety, available space, and whether it is in a location with the potential for high bicycle ridership. If the on-site evaluation is approved, the rack will be included in the next bike rack order. After installation, the bike rack remains the property of the City of Stamford. The City assumes responsibility for the bike rack, but not bicycles parked at the rack. These racks are not intended to serve as long-term bike parking.

Bike racks are sited to avoid interference with normal pedestrian flow and street activities. The following requirements must be met for the approval of a bike rack request:

- City-owned property with concrete surface
- Minmum sidewalk width of 10'
- In the amenity zone at least 1.5' from curb
- At least 3' clearance from utility grates and tree wells
- At least 5' clearance between street signs, light poles, parking meters or garbage bins
- At least 15' clearance between fire hydrants and bus shelters

Bike Rack Request Form

Type or print clearly. Email completed form to Emily Provonsha, EProvonsha@stamfordct.gov or mail to:
Stamford Transportation, Traffic & Parking Bureau
888 Washington Blvd, Floor 7
Stamford, CT 06901

Requester

Your Name: _____

Your Address: _____ *Apt#:* _____

City: _____ *State:* _____ *Zip Code:* _____

Phone: _____ *Email:* _____

Relation to Establishment: _____

Proposed Bike Rack Location

Name of Business or Establishment: _____

Street Address: _____

From (Cross Street): _____ *To (Cross Street):* _____

Phone: _____ *Email:* _____

Nearest Bus Route(s) and Stop: _____

Addition Information/Comments

_____

_____

_____

_____

_____

_____

How did you hear about this program?

_____

_____

Appendix E: Recent Studies Referencing Bicycle-related Initiatives & Policy

Community	Planning Document referencing bike/ped facilities	Notes
Bethel	Bethel Forward Plan 2016	Coordinate a pedestrian and bicycle priority network, integrated to the infrastructure plan to ensure parks and green linkages are aligned to pedestrian and bicycle priorities Adopt the proposed "Complete Streets" Toolbox that has been customized for Bethel and prioritize areas within the right-of way in order to facilitate implementation by the various municipal departments. These tools should be further tailored to the type of streets in which they occur.
	Greater Danbury Regional Bike Plan 2015	Park & Ride map for commuting cyclists Conduct safety studies on Rt 53 & 302: where there have been a high # of bike crashes
	POCD 2020	Develop a Bicycle Master Plan that identifies preferred bicycle routes throughout town. Expand bicycle parking at town facilities such as public schools, parks and open spaces, and town offices. Adopt a Complete Streets Policy.
Bridgewater	Greater Danbury Regional Bike Plan (2015)	Plan walkways & bike access around the town center [since '15, developed "Tour of the Town" downtown bicycling routes & map]; Restripe and sign Hut and Clapboard Roads to increase shoulder width Provide greater pedestrian (and bicycle) links from the Town center to the outlying Recreational Center and Senior Center Develop a feasible, appropriate plan to ease traffic along Main Street and Village Green.
Brookfield	POCD (2015)	Alleviate areas of vehicular congestion and address safety issues for pedestrians and cyclists on southern Federal Road. Identify funding opportunities for complete street plan improvements. Goal: Improve safety and accessibility for bikers in Brookfield, both recreational users and bike commuters. Collaborate with CT DOT, bike advocates and DPW to improve safety for bikes in the vicinity of Federal Road, White Turkey Road and Candlewood Lake Road. Develop a town-wide Bike Plan Consider how to work with the Bike Friendly Communities network to improve bike safety in Brookfield
	Greater Danbury Regional Bike Plan 2015	Continue to develop Still R Greenway Trail & connections to Danbury; support WNEG; Develop bike route concept plan w signage and markings
Danbury	Danbury POCD (2023)	Adopt a Complete Streets Policy that prioritizes the provision of pedestrian, bicycle, transit, and traffic calming

		improvements in transportation infrastructure and maintenance projects. Develop a bicycle plan and provide bike lanes and pathways where feasible as a means of accommodating bicyclists. Review zoning regulations and amend as necessary to require the provision of bicycle parking.
	Downtown Danbury TOD Study (2019)	Explore opportunities to link Downtown Danbury to pedestrian or bicycle paths in other areas such as Brookfield, Brewster, and the Norwalk River Valley Trail.
	Greater Danbury Regional Bike Plan 2015	Create a Bike/Ped Access Plan that includes multiuse trails, as recommended in the POCD Support WNEG & NRVT Install sheltered bike racks at Park&Ride lots Make trail connections
Darien	POCD (2016)	Consider bicycle access and amenities during the site plan review process Seek to establish a system of safe bicycle routes throughout the community Encourage and support provisions for bicycling. Evaluate bicycle potential as part of any roadway improvement or pavement striping project in Darien. Place funds in the Capital Improvement Program to establish and enhance bicycle routes. Encourage provision of safe, locking storage for bicycles.
	SWRPA Route 1 Corridor Study 2012	The Route 1 Study includes “Complete Streets Strategies and Tools for Boston Post Road, Darien”
Greenwich	Route 1 Greenwich – Stamford Study (2011)	Route 1 “Safety Corridor” referenced also in the 2013 SWRPA Bicycle and Pedestrian Plan. Bicycle Master Plan was published in 2001.
	POCD 2019	Implement traffic controls and pedestrian and bicyclist safety improvements on roads that meet the Town standards, especially near schools; , Provide bicycle racks at businesses, municipal facilities, train stations, schools and multi-family residences.
New Canaan	POCD (2014)	Enhance Bicycle Circulation As part of a “complete streets” policy, seek to provide for a cohesive and expansive bicycle route network in New Canaan. Enlist a committee comprised of local cyclists to look at local streets and establish a comprehensive system of bicycle routes in New Canaan, coded by potential suitability. Seek to identify and field mark roads for bicycle suitability (symbols on traffic signs, roadway markings, etc.). Make a bicycle suitability map available on-line. Work to become recognized as a “bicycle friendly community” by the League of American Bicyclists. Provide convenient and safe bicycle storage areas in downtown and other hub areas. Identify “scenic loops” and “exercise loops” in New Canaan.
New Fairfield	Greater Danbury Regional Bike Plan	Establish a town Bike/Ped Committee

	2015	
	POCD (2016)	Improve opportunities for bicycle and pedestrian traffic for a dedicated Bicycle and Pedestrian Committee; compete for Safe Routes to School funds to make improvements that allow children to walk safely to school; and organize more community events around getting out of the car
New Milford	New Milford River Trail Alignment Study & Preliminary Engineering Report 2018	Provides alignment, right-of-way, and cost evaluations and recommendations for the New Milford River Trail.
	Greater Danbury Regional Bike Plan 2015	Create a bike lane/signage on the shoulder of Rt 7 by restriping and narrowing (car) travel lanes (bicycle crashes sited). Install “Share the Road” signs and sharrows on back roads that are an alternative to Rt 7.
	New Milford Transportation Mgt Plan 2013	Includes bicycle access strategy and recommendations for Bridge St (bicycle crashes sited).
	POCD 2021	Consider a town-wide or downtown study to determine where to install appropriate bicycle facilities Continue to move forward with the design and construction of the New Milford River Trail as funding allows Use inexpensive strategies to improve safety for bicyclists
Newtown	Greater Danbury Regional Bike Plan 2015	Complete a bicycle & ped access plan which would include the study of multi-use trails as suggested by the Newtown Trails Cttee. Support extension of the Pequonnock River Trail into Newtown from Monroe.
	POCD (2014)	Advocate for trail systems as recreation and transportation needs that will give health, safety and economic benefits to the community; Develop a plan that places trails where people want to live, where they can walk or bike to both work and play. The Newtown Trail Committee meets monthly to reach these goals and to continue growing the trail system in Newtown; Suggestions have been raised concerning the extension of the Monroe rails to trails pedestrian/bikeway facility into Newtown and there was a proposal for the construction of a bike lane on Glen Road (SR 816) that would connect the Sandy Hook Village center with Southbury.
Norwalk		
	Pedestrian and Bikeway Plan (2012)	Makes strategic recommendations for walking and bicycling in the City of Norwalk
	Connectivity Plan (2012)	Provides a planning framework for a safer and more efficient pedestrian, bicycle, car, and transit-friendly environment to transform the various segmented areas in Norwalk’s core into one vibrant Downtown with a denser urban center.
	Citywide Plan (POCD) (2019)	Support investment in new bicycle and walking facilities equitably distributed throughout the city; Provide roads that serve the needs of Norwalk residents and commerce, and that facilitate safe and convenient access to transit, bicycle facilities, and pedestrian facilities; Make multimodal

		transportation a high priority by promoting pedestrian access, bicycle use, and transit options within Norwalk and to surrounding communities; Expand Norwalk's pedestrian and bicycle networks.
Redding	Redding POCD (2020)	Plan and support pedestrian paths, bikeways and greenways for non-motorized travel wherever feasible; Research and document roads with special character or need for protection, including roads with outstanding scenic qualities, roads long unused and eligible for discontinuance (including the possibility of their retained use for passive recreation or other minor use), and roads suitable or desirable for roadside pedestrian paths or bikeways.
	Greater Danbury Regional Bike Plan (2015)	Complete a study of roads suitable or desirable for roadside multi-use paths. "Redding Mile" segment of the NRVT is funded from 2019 DEEP Trails funds.
Ridgefield	POCD (2020)	Consider adopting a "complete streets" policy in Ridgefield. Seek to enhance and expand the trail network in Ridgefield including the Branchville Rail Trail and Norwalk River Valley Trail. Prepare and share maps of on-road and off-road bicycle facilities. Investigate ways to create a system of signs and/or pavement markings to identify appropriate on-road and off-road bicycle routes. Seek to enhance bicycle connections from the Branchville train station to other parts of Ridgefield. Encourage new development and redevelopment to provide bicycle amenities. Support accommodations and improvements which will enhance bicycle use in Ridgefield (on-road and off-road).
	Greater Danbury Regional Bike Plan (2015)	Implement recommendations of the town Bicycle Trail Study; The Ridgefield Rail Trail runs 2.3 miles from downtown Ridgefield to Branchville
Sherman	Greater Danbury Regional Bike Plan (2015)	Identify areas where multiuse trails between proximate dead-end roads would be feasible. Study feasibility of a multiuse trail between Town Center and Volunteer Park along Rt 39.
	POCD (2013)	Greenways and trails, particularly in areas of significant or unique geologic or biologic interest, are as important to people as they are to wildlife. To promote outdoor enjoyment, gaps in individual trails or between pieces of the State's trail network should be filled.
Stamford	Bicycle and Pedestrian Plan (2019)	Minor and Major Improvements proposed for the road network to accommodate bicyclists – primarily in the southern half of Stamford.
	Route 1 Greenwich – Stamford Study (2011)	Route 1 bicycle lanes would provide a connection to the existing bicycle lanes on Sound Beach Avenue and the trails in Stamford's Mill River Greenway
	POCD (2014)	Fund and create a City-wide bicycle and pedestrian plan [done]

		Adopt a Complete Streets ordinance [done] Establish clearly delineated bicycle route(s) between Downtown and the South End Encourage the use of the National Association of City Transportation Officials' (NACTO) Urban Street Design Guide where appropriate
Weston	POCD (2020)	Increase pedestrian and bicycle connectivity to enhance quality of life: The desire for biking on Routes 53 and 57 and Valley Forge Road was expressed at the Plan workshops. This may warrant the committee of biking stakeholders further exploring options and recommendations for these ideas.
Westport	POCD (2017)	Improve Facilities for BICYCLES Create a better bicycle system throughout Westport. Deploy signage and pavement markings as appropriate to inform vehicles and drivers about bicycle usage. Continue to make better provisions for cycling (bike lane, shared right-of-way, and other approaches) where possible. Consider the need for bicycle facilities (racks, lockers, etc.) at the train stations, business locations, or elsewhere.
Wilton	POCD (2019)	Improve bike and pedestrian connections along Danbury Road and Route 57 that connect to the Branchville TOD area and Main Street (Redding) Improve bike and pedestrian linkages throughout Wilton, especially connecting neighborhoods to Wilton Center/ villages and other commercial areas, schools, active and passive recreation areas and the NRVT Significant progress has been made in planning and building the NRVT over the last five years. Additional opportunities exist to better integrate the trail by building bicycle and pedestrian connections to the surrounding neighborhoods. Improve bike/pedestrian connections to Wilton Center (consider appropriate connections during Master Planning process as discussed above) In any major road reconstruction project, consider opportunities for bike lanes, sidewalks and other pedestrian/bike improvements

Appendix F: Connecticut Statewide Transportation Study

Selected results of the CT Statewide Household Transportation Survey (2017)

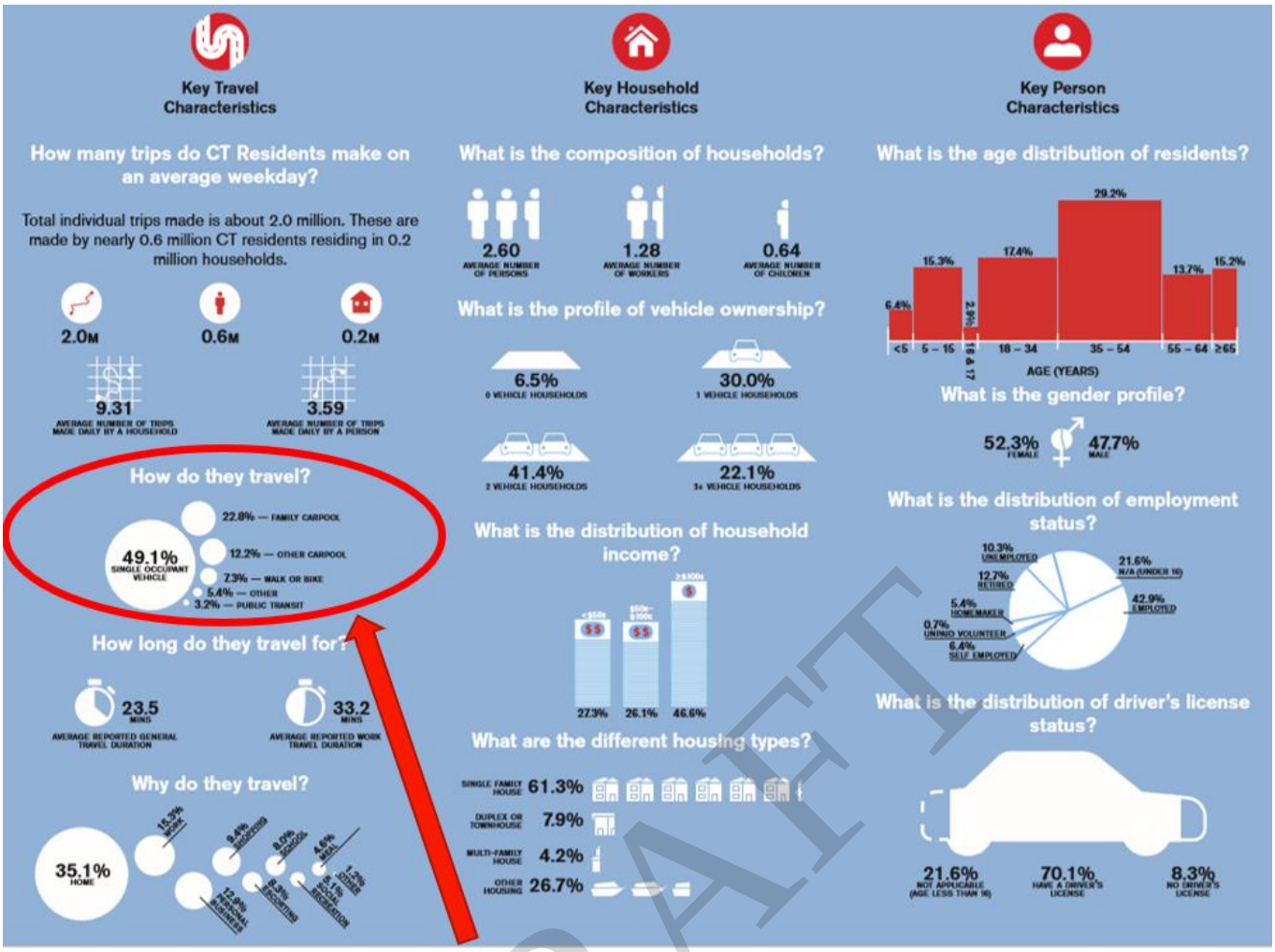
Statewide Results

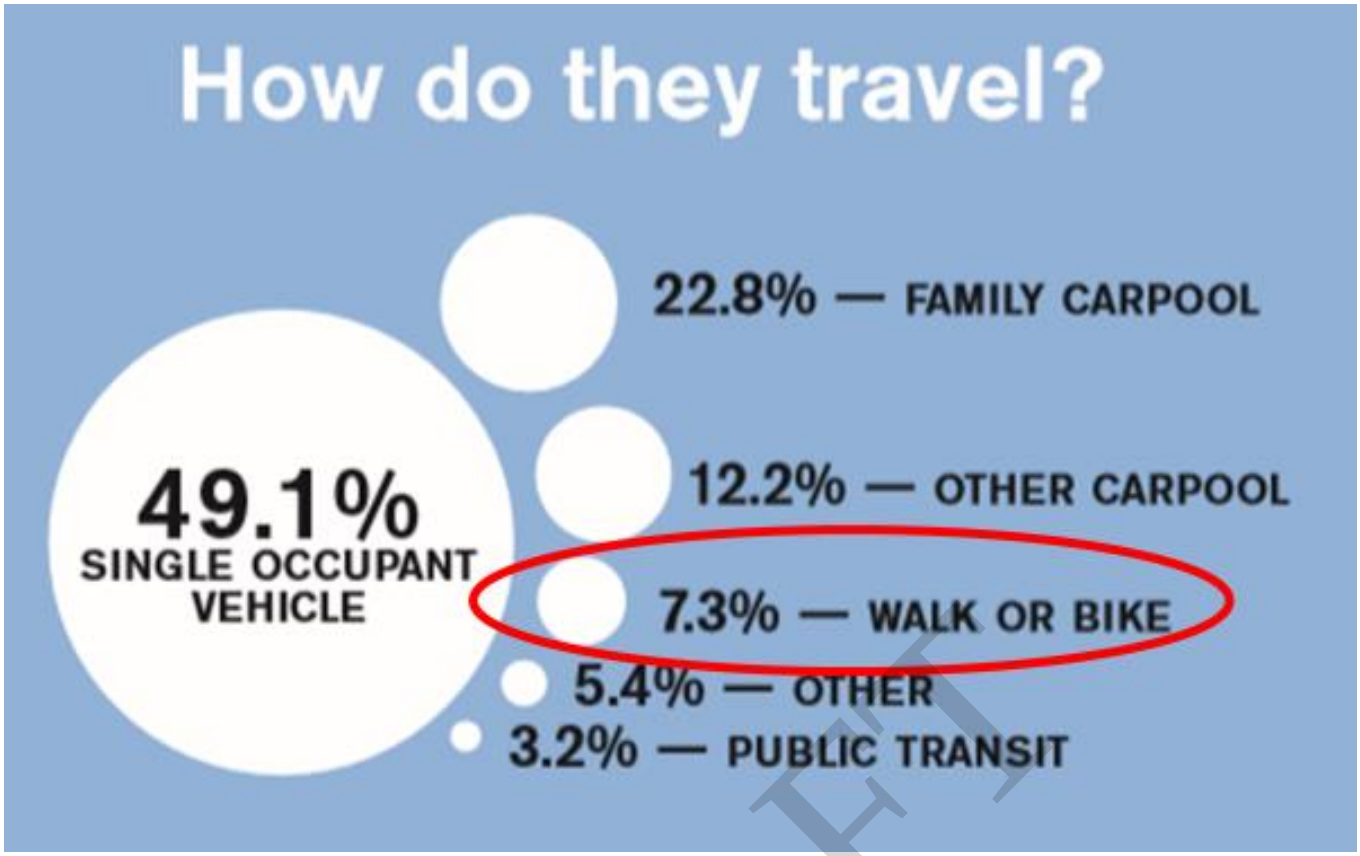
In the weighted analysis, driving trips comprise approximately 82.8 percent of the total trips in the statewide dataset. These trips can be split further in the following manner: 48.2 percent of trips are made by Single Occupant Vehicle (SOV) mode, with the remaining 34.6 percent of trips involve some form of carpooling. Walk/bike is the next most popular mode accounting for 9.2 percent of all trips. Public transit serves 3.2 percent of all weekday trips in Connecticut.

SOV is the most popular mode for all types of trips except for school trips and escorting trips. 76.5 percent of work trips are made by SOV mode. About 50 percent of shopping, personal business and home trips are made by SOV mode as well. 28.4 percent of school trips are made by family carpool and 27.6 percent are made using school bus.

Western Connecticut Results

Slightly more trips are taken by SOV in western Connecticut than in the rest of the state and the rate of walking and biking in the region is almost two percentage points lower in western Connecticut than is average for the rest of the state. Data segmented out for WestCOG can be found in the images below, taken from a project handout (see Endnote [ii]).


Key Travel Characteristics
How many trips do CT Residents make on an average weekday?
Total individual trips made is about 2.0 million. These are made by nearly 0.6 million CT residents residing in 0.2 million households.
2.0M
0.6M
0.2M
9.31
AVERAGE NUMBER OF TRIPS MADE DAILY BY A HOUSEHOLD
3.59
AVERAGE NUMBER OF TRIPS MADE DAILY BY A PERSON
How do they travel?
49.1%
SINGLE OCCUPANT VEHICLE
22.8% — FAMILY CARPOOL
12.2% — OTHER CARPOOL
7.3% — WALK OR BIKE
5.4% — OTHER
3.2% — PUBLIC TRANSIT
How long do they travel for?
23.5
MINS
AVERAGE REPORTED GENERAL TRAVEL DURATION
33.2
MINS
AVERAGE REPORTED WORK TRAVEL DURATION
Why do they travel?
35.1%
HOME
15.3%
WORK
9.4%
SHOPPING
8.0%
SCHOOL
4.6%
MEAL
1.2%
OTHER
5.1%
SOCIAL RECREATION
8.3%
RECORDING
12.9%
PERSONAL BUSINESS
Key Household Characteristics
What is the composition of households?
2.60
AVERAGE NUMBER OF PERSONS
1.28
AVERAGE NUMBER OF WORKERS
0.64
AVERAGE NUMBER OF CHILDREN
What is the profile of vehicle ownership?
6.5%
0 VEHICLE HOUSEHOLDS
30.0%
1 VEHICLE HOUSEHOLDS
41.4%
2 VEHICLE HOUSEHOLDS
22.1%
3+ VEHICLE HOUSEHOLDS
What is the distribution of household income?
27.3%
26.1%
46.6%
What are the different housing types?
SINGLE FAMILY HOUSE 61.3%
DUPLEX OR TOWNHOUSE 7.9%
MULTI-FAMILY HOUSE 4.2%
OTHER HOUSING 26.7%
Key Person Characteristics
What is the age distribution of residents?
6.4%
15.3%
2.9%
17.4%
29.2%
13.7%
15.2%
<5
5 – 15
16 & 17
18 – 34
35 – 54
55 – 64
≥65
AGE (YEARS)
What is the gender profile?
52.3%
FEMALE
47.7%
MALE
What is the distribution of employment status?
10.3%
UNEMPLOYED
21.6%
N/A (UNDER 16)
12.7%
RETIRED
42.9%
EMPLOYED
5.4%
HOMEMAKER
0.7%
UNPAID VOLUNTEER
6.4%
SELF EMPLOYED
What is the distribution of driver's license status?
21.6%
NOT APPLICABLE (AGE LESS THAN 16)
70.1%
HAVE A DRIVER'S LICENSE
8.3%
NO DRIVER'S LICENSE



Appendix G: Western Connecticut Bicycle Survey

Overview

Below is a summary of a survey that was circulated to better understand the current needs and opportunities to improve bicycling in western Connecticut. The results of this survey were reviewed to help inform the strategies and goals of this Plan. The survey responses included in this appendix are the opinions of the survey respondents and do not necessarily reflect the official views or policies of the Western Connecticut Council of Governments.

Survey Instrument

The Western Connecticut Council of Governments would like your input on bicycling in the region. **It will take 5-10 minutes.**

Your responses will help guide transportation recommendations that improve bicycle safety and accessibility.

If you would like to be entered into a raffle for one of three $25 Amazon Gift cards, please answer all questions and provide your contact information at the end. Your contact information will not be used for any other purpose, and your **responses to the survey will remain anonymous.**

There are 13 questions in this survey.

Q1. What is your home Zip Code? (This question is mandatory)

Q2. Please provide the names of the TWO streets that intersect close to your home.

Example: Main Street & Elm Street

Q3. I ride a bicycle for the following reasons - ***please select all that apply****:*
(This question is mandatory)

- ☐ I don't ride a bicycle
- ☐ It's my primary form of transportation
- ☐ Shopping
- ☐ Travel to work
- ☐ Travel to school
- ☐ Exercise
- ☐ Recreation
- ☐ Other:

Q4. Do you ride a bicycle on roads, or do you ride on trails?

Check all that apply

- ☐ Roads
- ☐ Paved Trails
- ☐ Unpaved Trails

Q5. During the time(s) of year you ride a bicycle, how much do you ride?

- o less than once/week
- o once or twice/week
- o 3 to 4 times/week
- o 5 or more times/week

Q6. On average, how far do you ride your bicycle in a week?

- o A mile (10-20 minutes or less)
- o 5 miles (50-60 minutes or less)
- o 5-10 miles (more than 50 minutes)
- o 11-20 miles (1-2 hours)
- o 21-50 miles (2-5 hours)
- o 50 miles (5 hours or more)

Q7. What would encourage you to ride a bicycle (or to ride more)?

	Not Important	Somewhat Important	Very Important
Having a bicycle (I don't have one currently)			
Easy access to a direct route			
Safe bicycle routes			
More off-road bicycle routes			

More destinations (grocery store, job, shops, school, park, transit station) close by			
Good bicycle parking at my destination			
Having the ability to safely carry packages, children, etc.			
Knowing how to ride a bicycle			
Feeling confident or comfortable on a bicycle			
Better signage, information, or maps showing where to ride			
Availability of group bicycle rides			
Maintenance for my bicycle			

Q8. What factors should be used to prioritize bicycle improvement projects?

[Please rank your top 3 answers. All your answers must be different, and you must rank in order. Double-click or drag-and-drop items in the left list to move them to the right - your highest ranking item should be on the top right, moving through to your lowest ranking item.]

1. More on-road bicycle routes
2. More off-road bicycle routes
3. Improvements to areas where crashes have occurred
4. A more connected network of bicycling routes
5. Improved connections to shopping, restaurants and other destinations
6. Improved bicycle access to buses and trains - and allowing bikes on board
7. Provide bicycle parking and other amenities at destinations

First Priority (provide number from list above) _____

Second Priority (provide number from list above) _____

Third Priority (provide number from list above) _____

Q9. I have one or more school-aged children living in this region who don't ride a bicycle to school because (select all that apply):

o Not applicable
o Our school district requires busing
o They have no interest in bicycling
o They don't have a bicycle
o They are not skilled enough on a bicycle
o Concerns about road/traffic safety
o Other safety concerns
o We live too far from school

Q10. Is there anything else that would encourage you or your family members to ride a bicycle (or ride more) that was not mentioned? If so, please explain:

Q11. What is your age?

- Younger than 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

Q12. What best describes your gender?

[Choose one of the following answers]

- Female
- Male
- Prefer not to say
- Prefer to self-describe_____
- No answer

Endnotes

[i] Route 1 Greenwich – Stamford Study (2011)
Norwalk Connectivity Plan (2012)
Norwalk's Pedestrian & Bikeway Transportation Plan (2012)
South Western Regional Planning Authority Bicycle – Pedestrian Safety Corridors Study (2012)
Darien Route 1 Corridor Study (2012)
Southwestern Region Bicycle and Pedestrian Plan (2013)
New Milford Transportation Mgt Plan (2013)
New Milford River Trail Alignment Study & Preliminary Engineering Report (2018)
Southwestern Region Route 1 Corridor Study (2013)
Greater Danbury Regional Bike Plan (2015)
Stamford Bicycle and Pedestrian Plan (2019)
Connecticut (Statewide) Active Transportation Plan (2019)
HVMPO and SWRMPO Long Range Transportation Plan (2019)
Connecticut DOT Community Connectivity Program Route 1 Road Safety Audits in Darien, Greenwich, Norwalk, Stamford, Westport
Connecticut DOT Community Connectivity Program Road Safety Audits in Bridgewater, Brookfield, Danbury, New Fairfield, New Milford, Norwalk, Greenwich, Ridgefield, Stamford, Weston, and Westport

[ii] Bicycle Retailer and Industry News, "This Could Be The Start of Bike Boom 2020", 19 March 2020 https://www.bicycleretailer.com/opinion-analysis/2020/03/19/heather-mason-could-be-start-bike-boom-2020#.XrAxqW5FxPY

[iii] World Resources Institute, "Biking Provides a Critical Lifeline During the Coronavirus Crisis" 17 April 2020

[iv] "Outdoor Participation Report" The Outdoor Foundation (2013) – as referenced in this presentation by Bruce Donald for the 2016 CT ASLA Conference

[v] Economic and Fiscal Impact Analysis on of the Vermont Trails and Greenway Council Member Organizations (2016)

[vi] Gunther, P., Parr, K. E., Graziano, M., & Carstensen, F. V. (2011). The Economic Impact of State Parks, Forests and Natural Resources under the Management of (Connecticut) Department of Environmental Protection. Connecticut Center for Economic Analysis (CCEA) University of Connecticut, p. 17. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2195058. Adapted from Pathway to Revitalization Economic Impacts of Phased Completion of the Naugatuck River Greenway, March 2017, prepared by the Naugatuck Valley Council of Governments (NVCOG) in partnership with the University of Connecticut College of Agriculture, Health and Natural Resources Department of Extension and The Connecticut Center of Economic Analysis.

[vii] Pathway to Revitalization, p. 45.

[viii] City of Stamford, CT: Stamford Bicycle and Pedestrian Plan (2019), p. 6-4.

[ix] The Housatonic Rail Trail / Pequonnock River Rail Trail currently ends in Newtown at Swamp Road, near the border with Monroe

[x] Rails to Trails Conservancy, E-Bikes on the Trail https://www.railstotrails.org/resourcehandler.ashx?id=11762

[xi] Stamford Bicycle and Pedestrian Plan, p. 11.3.

[xii] Noroton Heights Station Area Study, Western CT Council of Governments, October 2018

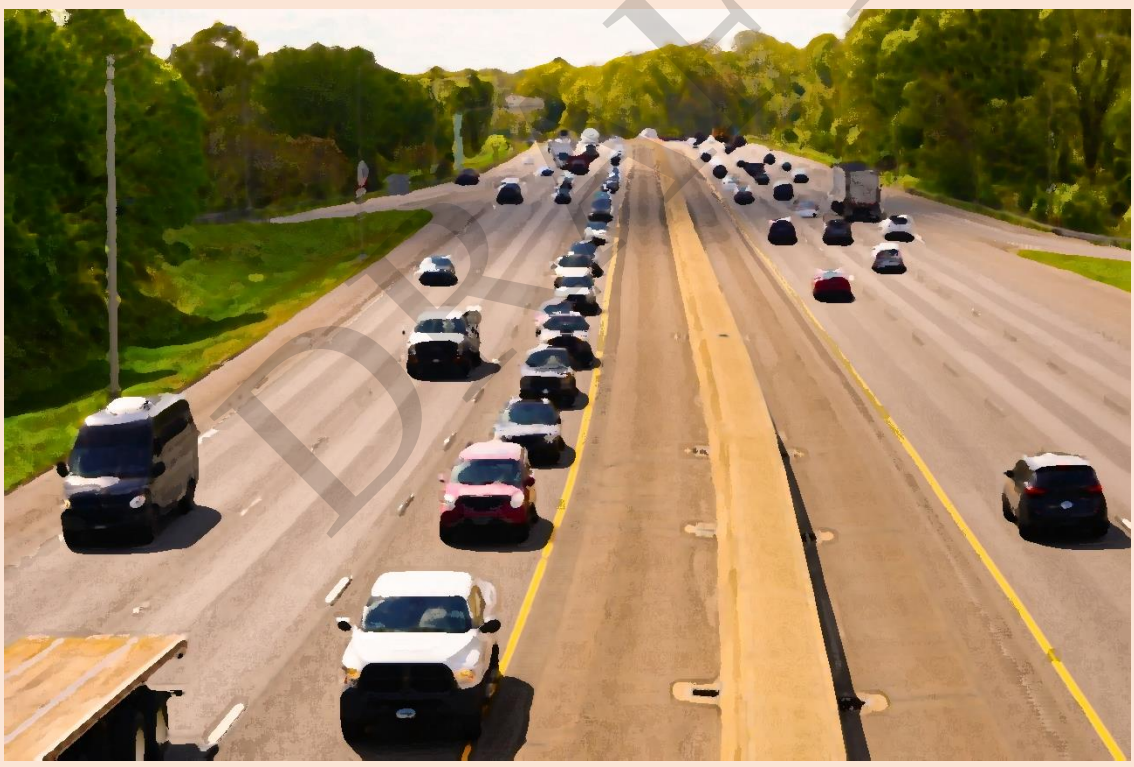
[xiii] FHWA Bike Network Mapping Idea Book (2016)

Appendix D: Congestion Management Process

Congestion Management Process

2023

Bridgeport-Stamford, CT-NY Urbanized Area Transportation Management Area



Contents

List of Figures

List of Tables

List of Appendixes

1.0 Introduction:

A Congestion Management Process (CMP) is required for any Metropolitan Planning Organization (MPO) that includes an urbanized area exceeding 200,000 known as a Transportation Management Area (TMAs). This plan covers the Bridgeport-Stamford TMA and was developed cooperatively by the MPOs within the TMA. The Congestion Management Process (CMP) is a data driven approach for managing congestion that utilizes current data, including performance measures, to assess alternative strategies for congestion management. The CMP provides strategies to be included in the Metropolitan Transportation Plan (MTP) to secure future funding. This update is being developed concurrently to and will inform each MPO's 2023 – 2050 MTP. This CMP relies heavily on data made available to the MPOs through the RITIS platform using the National Performance Management Research Data Set (NPMRDS). The data and methodology for analyzing congestion is consistent with guidance from FHWA regarding Transportation Performance Management.

This TMA-wide CMP will focus on the National Highway System (NHS) roadways located in within the urbanized area based on the 2010 Census data; this includes all or partial coverage of the following municipalities: Ansonia, Beacon Falls, Bridgeport, Darien, Derby, Easton, Fairfield, Greenwich, Milford, Monroe, New Canaan, Newtown, Norwalk, Oxford, Redding, Ridgefield, Seymour, Shelton, Southbury, Stamford, Stratford, Trumbull, Weston, Westport, Wilton, Woodbridge, and Woodbury. A map depicting the extent of the Bridgeport-Stamford Urbanized Area may be found in Figure 3.1.

The elements of the CMP are as follows:

- Develop regional objectives for congestions management
- Define CMP network
- Develop multimodal performance measures
    - Collect data/calculate performance measures
    - Analyze congestion problems and needs
- Develop Strategies
- Program and Implement Strategies
- Evaluate Strategy Effectiveness

2.0 Objectives:

This CMP will provide an analytical process for understanding congestion and developing mitigating strategies in the Bridgeport-Stamford TMA.

The primary objectives will be:

- Determine the highway & transit CMP network
- Calculate current congestion through performance measures
- Develop strategies to reduce congestion
    - Increase Non-Single Occupancy Vehicle usage
    - Increase Level of Travel Time Reliability

- Increase Truck Travel Time Reliability
- Decrease Peak Hour Excessive Delay

3.0 CMP Network:

This Bridgeport-Stamford TMA encompasses five MPOs in southwestern Connecticut; Housatonic Valley, South Western, Greater Bridgeport and Valley, Central Naugatuck Valley and South Central. The MPOs do not share boundaries with the Council of Governments in CT so the same TMA encompasses four COGs; Western CT, Naugatuck Valley, CT Metropolitan, and South Central CT.

As of the 2020 census, there are 860,964 people that live in the Bridgeport-Stamford TMA. The TMA is also a major employment center, attracting commuters from across Connecticut and southern New York. Many of these employees work in industries that provide critical services, attracting an equally significant number of non-commuting travelers to the region's core cities of Stamford and Bridgeport, as well as the many suburban office and retail locations spread throughout the 27 municipalities across the TMA, resulting in a high volume of vehicular traffic that is served by multiple expressways and state-maintained arterials

The region's two interstate highways, I-84 and I-95, both travel east/west within the region, though Interstate 95 is a north/south route. Aside from interstate highways, Connecticut Route 8, 15, and portions of US Route 7 also serve as limited access expressways within the region, with 7 and 8 providing north/south travel and 15 mainly serving east/west traffic. Additionally, the remaining portion of Route 7, along with US Route 1, and CT Routes 25, 34, 35, 58, 104, 106, 110, 113, 115, 123, and 147 all carry large volumes through diverse development patterns, passing through low density, suburban commercial, and urban center corridors. Finally, the CMP network within the region includes three unsigned CT State Routes, which are 727, 731, and 732, located in Ansonia, Bridgeport-Trumbull, and Fairfield respectively.

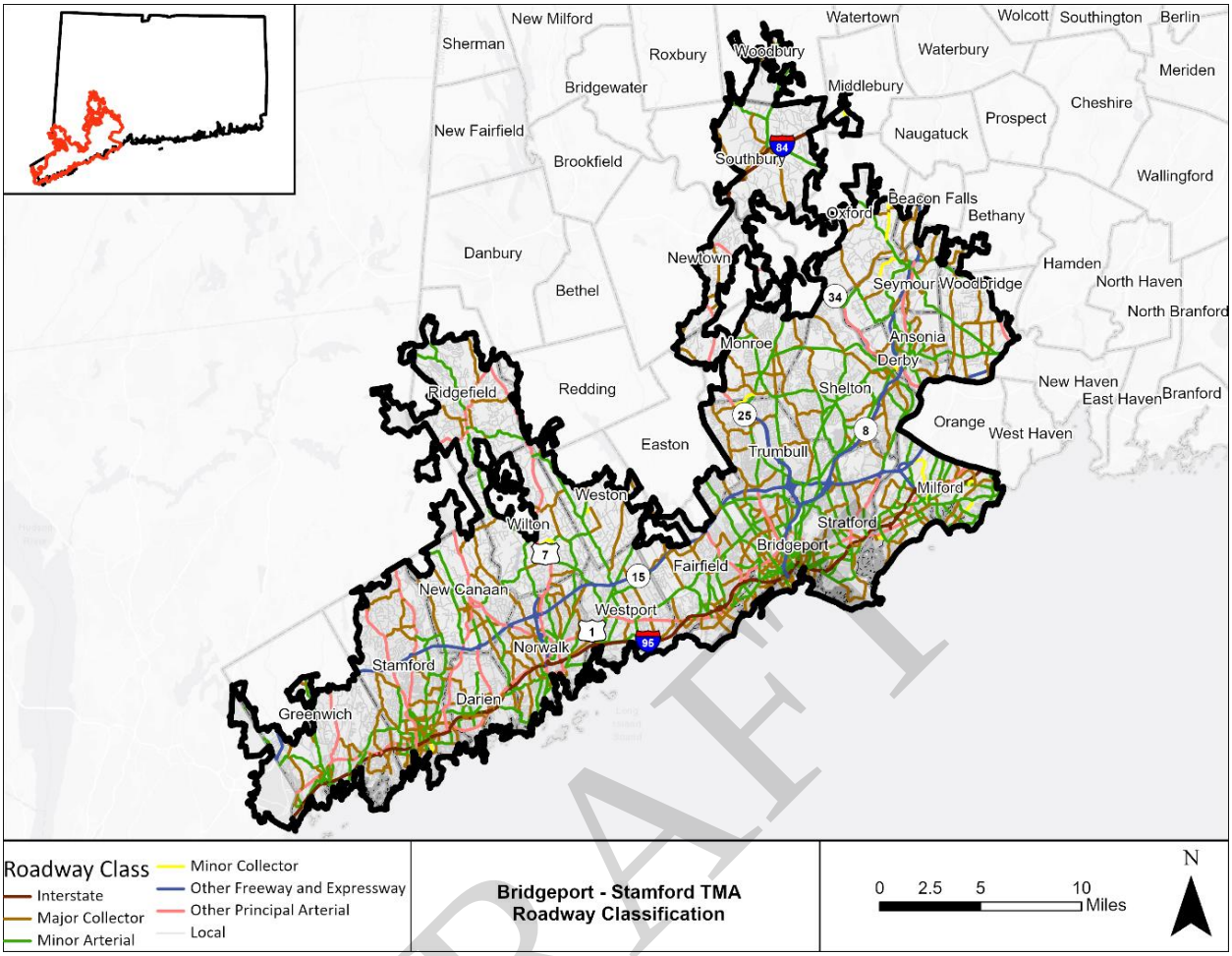


Figure 3. 1 Bridgeport-Stamford TMA Road Network

Transit is available throughout the Bridgeport-Stamford TMA. While this CMP will not focus on transit directly, improvements made to transit could increase the number of non-single occupancy vehicles potentially mitigating congestion. CT Transit- New Haven provides services to the eastern TMA towns of Seymour, Ansonia, Derby, Woodbridge, and Milford. Greater Bridgeport Transit provides bus service throughout Bridgeport, Stratford, Fairfield, Trumbull, Monroe and Shelton. Norwalk Transit provides service in Norwalk, Westport and Wilton and connections to Greater Bridgeport Transit through the Coastal Link which also goes to Milford. Stamford Transit District provides service to Greenwich, Stamford, and Darien and connects to Norwalk as well. HART transit is out of Danbury and provides service through Ridgefield, Wilton, to Norwalk.

Rail travels east-west and provides travel to NYC and New Haven on Metro-North as well as Amtrak service to other parts of the country (Figure 3.2). Metro-North also provides inland branches to New Canaan, Danbury, and Waterbury.

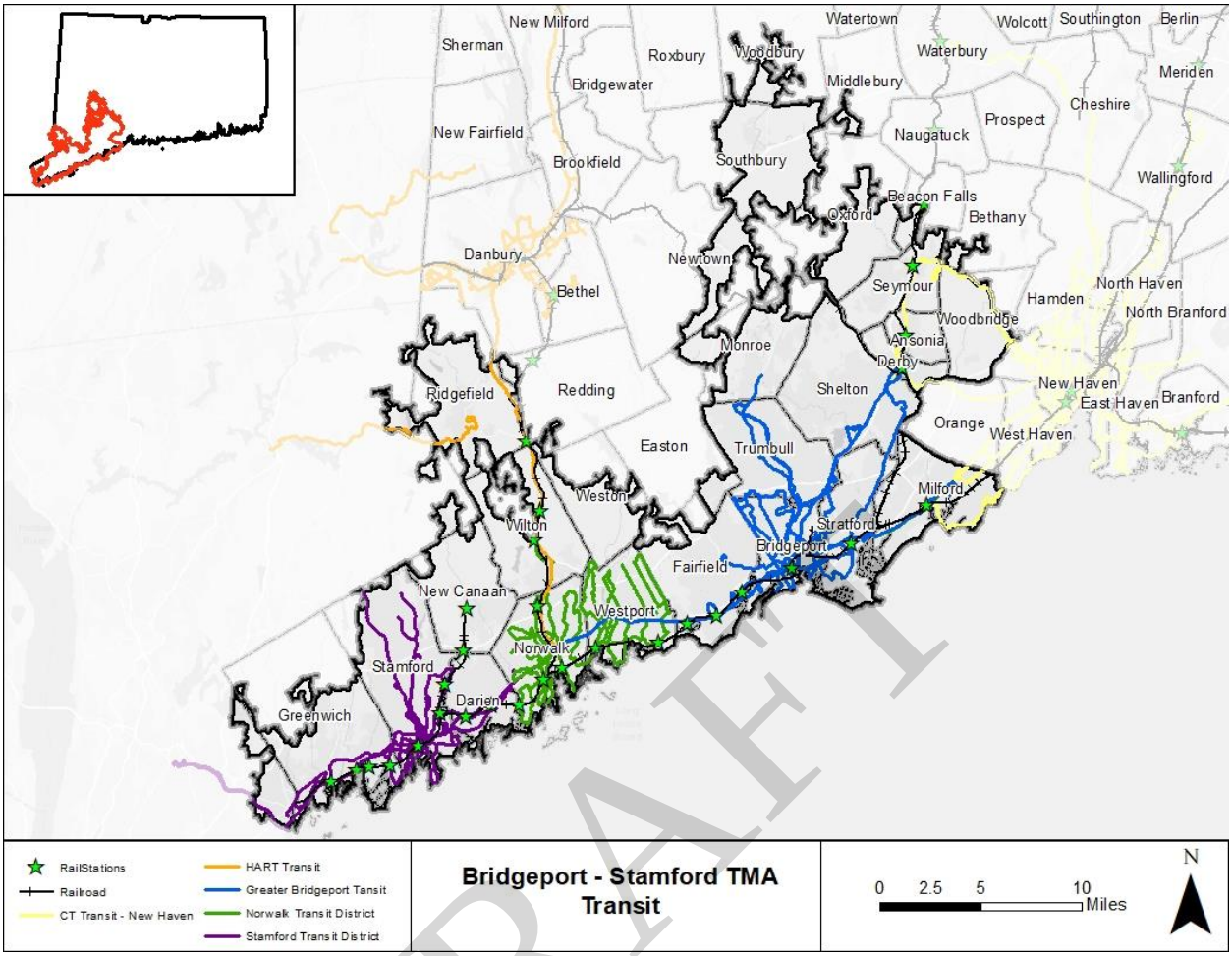


Figure 3. 2: Transit in the Bridgeport-Stamford TMA

This CMP will focus on road segments that are included in the FHWA National Performance Management Research Data Set (NPMRDS). This dataset encompasses all segments in the enhanced National Highway System along with some additional intersecting road segments. The analysis of this study will focus on the large continuous segments that had reliable data in the NPMRDS for 2017-2021 (Figure 3.3).

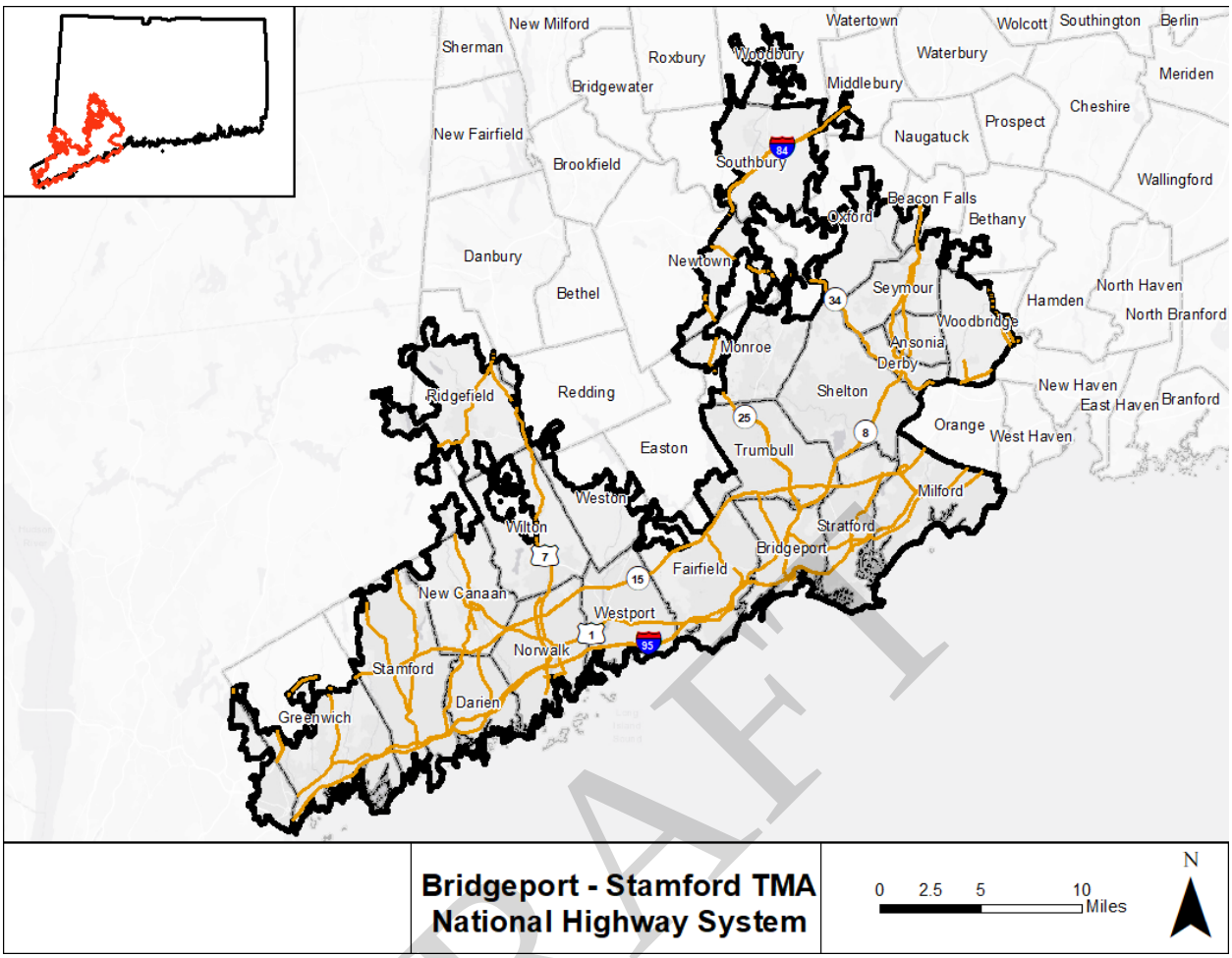


Figure 3. 3: National Highway System in the Bridgeport-Stamford TMA

3.1 Principal Arterials: Interstate

Interstate 95

I-95 runs east-west, though it is a north-south route, through nine municipalities in the Bridgeport-Stamford TMA: Milford, Stratford, Bridgeport, Fairfield, Westport, Norwalk, Darien, Stamford and Greenwich. Travelling east, I-95 provides access to New Haven and major cities throughout New England, such as Boston and Providence. Most critical to the economy of the Region is the connection that I-95 provides to the New York Metropolitan area.

Along most of the 41+ miles that run through the TMA, I-95 is made up of three lanes running in each direction. I-95 widens to four travel lanes in one or both directions between exits 25 and 29 which include the Fairfield-Bridgeport line, Downtown Bridgeport, and the Exit 27A interchange to Route 8/25. In Darien, southbound I-95 expands to four lanes from exit 10 through exit 8 in Stamford.

The congestion scan shows reduced speeds southbound and northbound throughout the TMA. Southbound congestion begins in Fairfield between 6:00am and 7:00am. Congestion continues south

through the TMA and peaks in Stamford between 7:00am and 8:00am. There is also some notable congestion later in the afternoon especially when approaching the CT/NY border.

Northbound congestion is more concentrated between 1:00pm and 6:00pm. There is persistent speed reduction from the CT/NY border through Bridgeport, with the most congestion occurring between exit 17 and exit 23 in Westport and Fairfield.

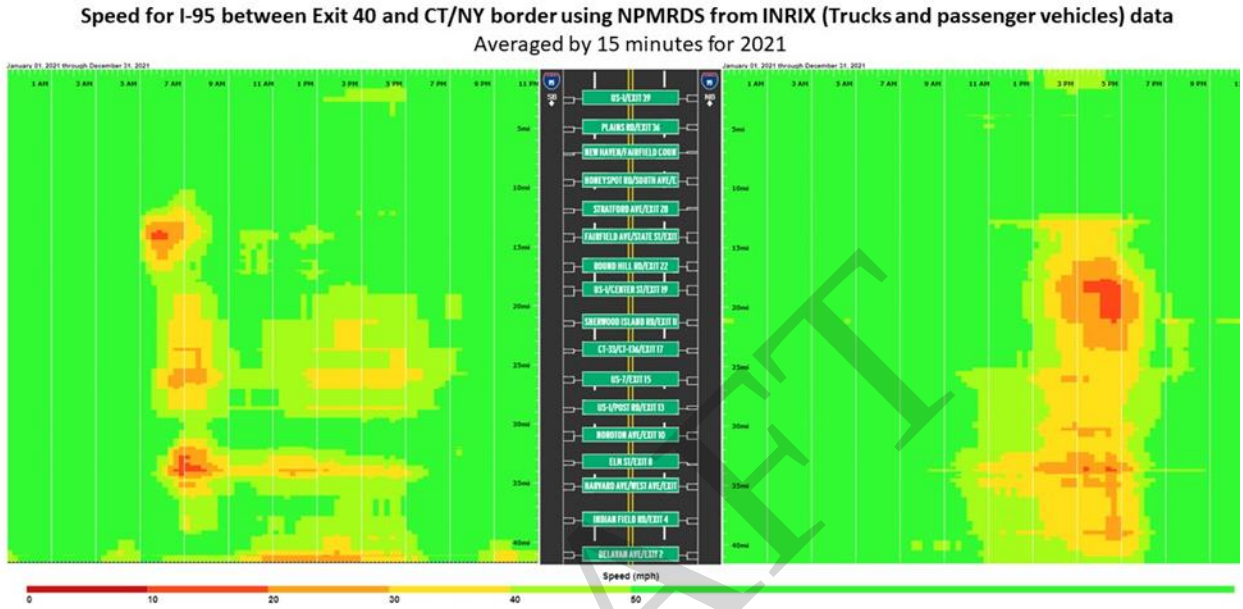


Figure 3. 4: I-95 Congestion Graph

Interstate 84

I-84 runs east-west through 2 municipalities within the TMA, Newtown and Southbury. At only 8.44 miles, the TMA represents only a short portion of the highways distance through Connecticut, connecting New York State and Danbury to the west to Waterbury, Hartford, and ultimately eastern Massachusetts to the east. Interstate 84 provides a critical route for travelers and freight to eastern and northern New England from points west.

At two through lanes in each direction throughout the region, Interstate 84 regularly experiences congestion at points east and west of the TMA, but within the boundaries tends to perform better than the system average. It meets in a major interchange with Routes 25 and 34 in Newtown, and projects underway currently aim to address congestion created at this location.

Though delay along Interstate 84 is limited within the TMA, delays both east and west of the TMA are notable. The NPMRDS congestion scan for I-84 contains too many missing data points to be useful for analysis, and therefore was not included within this CMP.

3.2 Principal Arterials: Other freeways and expressways

CT Route 15/Merritt Parkway:

CT Route 15, or the Merritt Parkway is a limited access, principal expressway that runs 52 miles east-west through Milford, Stratford, Trumbull, Fairfield, Westport, Norwalk, New Canaan, Stamford and Greenwich, with two lanes in each direction. Like I-95, the Merritt provides a critical link to western Fairfield County and New York. East of the Housatonic River (in Milford), Route 15 continues as the Wilbur Cross Parkway and the Berlin Turnpike, which provides access to central Connecticut, Hartford, and I-91.

As a transportation facility designed in the 1930s, a number of the Parkway's historic features limit its utility in the 21st century. Commercial and oversized vehicles are prohibited from the Parkway due to the low clearances of the historic Art Deco bridges. Tight curves and limited sight lines supports a maximum speed of 55 miles per hour. Two travel lanes in each direction is often insufficient to address the volume of traffic. Recent projects have utilized a context sensitive approach that balances historic preservation and enhancement with improving safety and mitigating congestion.

The congestion scan shows that speed reduction occurs southbound during the morning commute and northbound during afternoon travel. Southbound speed is reduced between 6AM and 8AM, especially between exit 42 and exit 37 between Westport and New Cannan.(Figure 3.5). Northbound travel is congested between 2PM and 6PM with the slowest travel occurring between exit 40 and exit 42 in Westport.

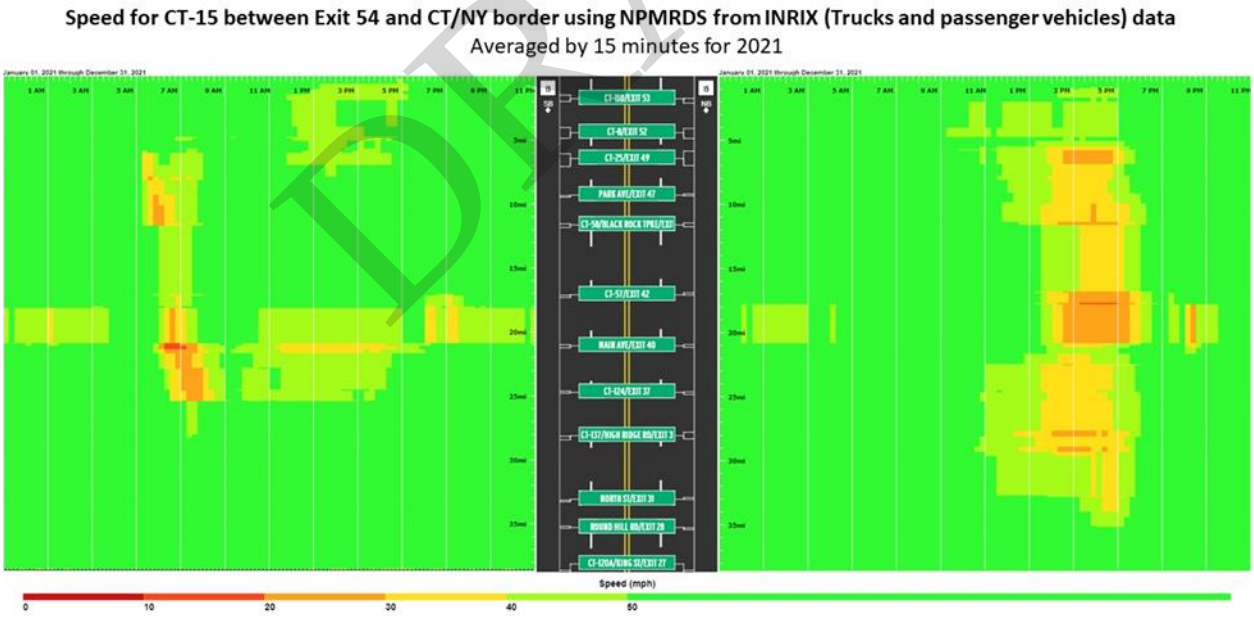


Figure 3. 5: CT Route 15 Congestion Graph

US Route 7

In the TMA, US Route 7 runs in the north-south direction from the intersection with Interstate 95 in Norwalk to Bennetts Farm Road in Danbury. The route further extends up through Northern Connecticut, Massachusetts, and Vermont to the Canadian border. The first 3.6 miles of the route is a limited-access, 4-lane principal arterial expressway that intersects with US Route 15, an east-west principal arterial in the region, before turning to a principal arterial with direct access to properties at the intersection with Grist Mill Road in northern Norwalk. The remaining 13.9 miles of road in the TMA pass through the towns of Wilton, Ridgefield, Redding to just over the border with Danbury. It has two lanes in each direction until just north of the Cannondale Train Station in Wilton where it reduces to one lane in each direction for the rest of the corridor. Vehicular traffic is controlled with traffic signals throughout the corridor.

US Route 7 parallels the Danbury Branch Line of the Metro North Railroad and when complete, the Norwalk River Valley Trail. The route is also serviced by bus via the HART 7 Link route. The properties along the route vary widely in the type and intensity- from large scale industrial and office buildings to open-space to smaller scale businesses to educational facilities.

The congestion scan for the limited access freeway segment of Route 7 shows northbound and southbound speeds averaging over 50mph. During the afternoon rush hour, between 3PM and 5PM, there is typically a slow-down at the northbound Grist Mill Road exit where the road is no longer an expressway.

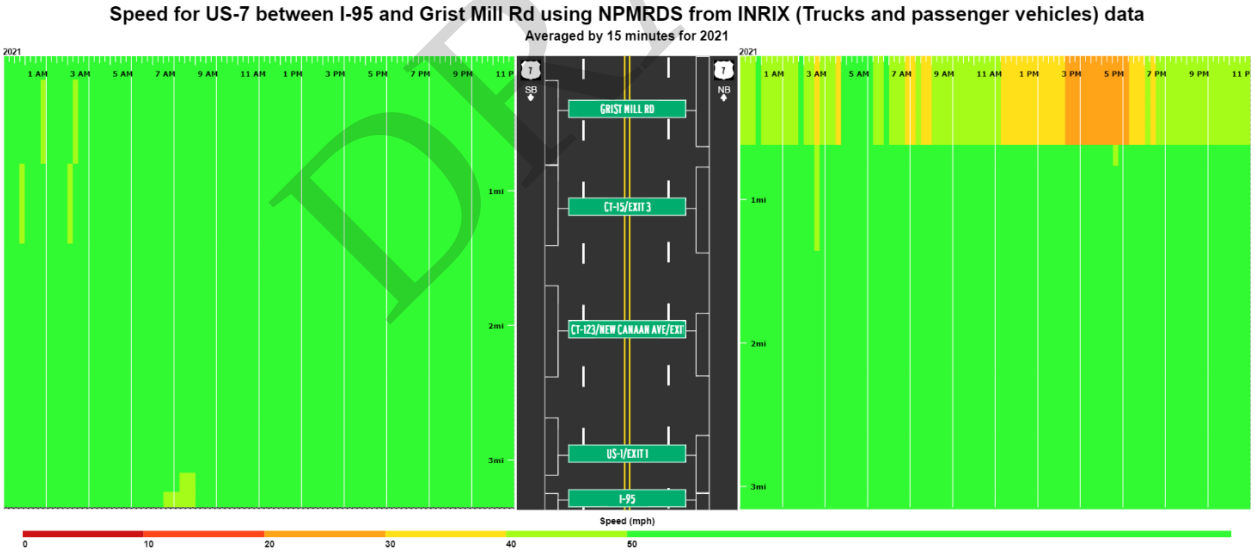


Figure 3. 6: US Route 7 Congestion Graph

CT Route 8

CT Route 8 is a north-south limited access expressway and runs north through Bridgeport (as 8-25), Trumbull, Stratford, Shelton, Derby, Ansonia and Seymour, a total of approximately 20 miles. At its southern termination in Bridgeport, Route 8-25 connects to I-95. In northern Bridgeport, Route 8-25 splits into Route 8 (northeast toward Trumbull, Stratford, Shelton, Derby, Ansonia and Seymour) with access to Route 15 north and Route 25 (northeast to Trumbull and Monroe) with access to Route 15 south. Farther north, Route 8 links to Route 34 in Shelton. Outside of the Region, Route 8 intersects I-84 in Waterbury and continues north with access to Torrington, Greater Litchfield County, and southwest Massachusetts.

As Route 8-25, primarily three or four travel lanes are provided in each direction. After the Route 25/Route 15 split, Route 8 is composed of two travel lanes in each direction.

On Route 8, speed is reduced as drivers approach the I-95 interchange throughout the day but is exacerbated during morning and afternoon peaks.

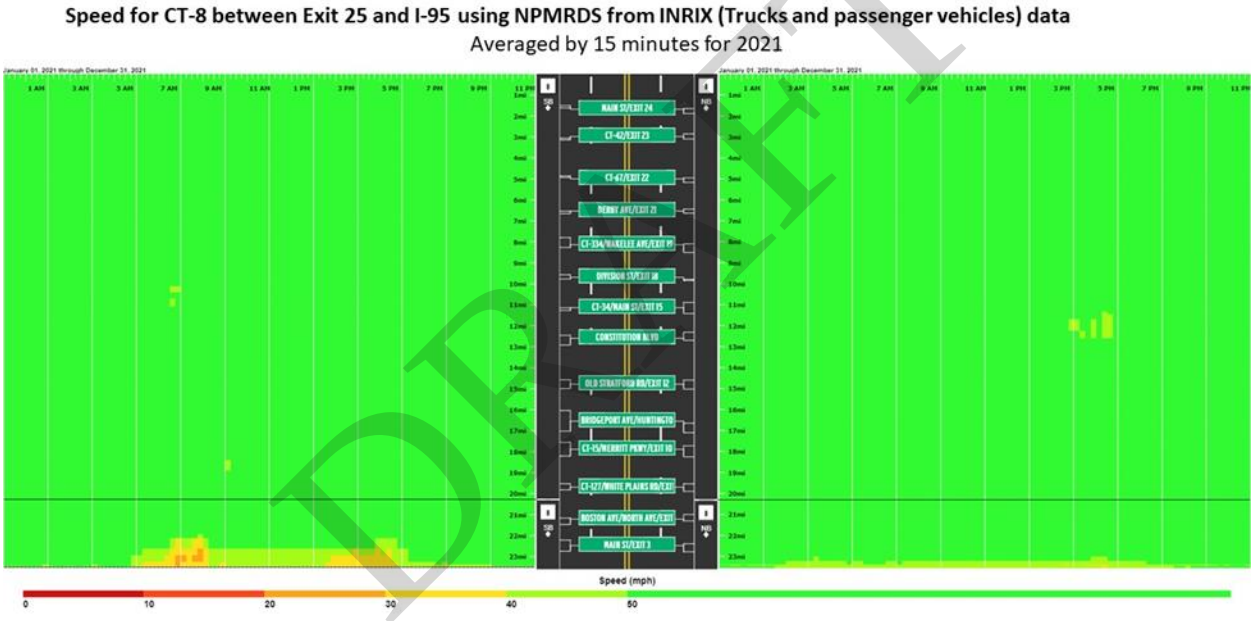


Figure 3. 7: CT Route 8 Congestion Graph

CT Route 25

After splitting with Route 8, Route 25 continues northbound as a limited-access expressway through Trumbull for 6.7 miles. North of the Route 111 intersection, Route 25 functions as a principal arterial that provides access to commercial, office and industrial developments in Monroe (4.5 miles). Route 25 also serves as a connection to I-84 in Newtown.

The limited access portion of Route 25 provides three travel lanes in each direction. North of Route 111, the road narrows to a single lane of travel in each direction. Although turn lanes are provided at several

signalized intersections, the two travel lanes often do not provide sufficient capacity for the volume of traffic on Route 25.

Below is the congestion scan for the limited access portion of Route 25. The scan shows that speed is reduced as cars approach or leave the Route 111 intersection.

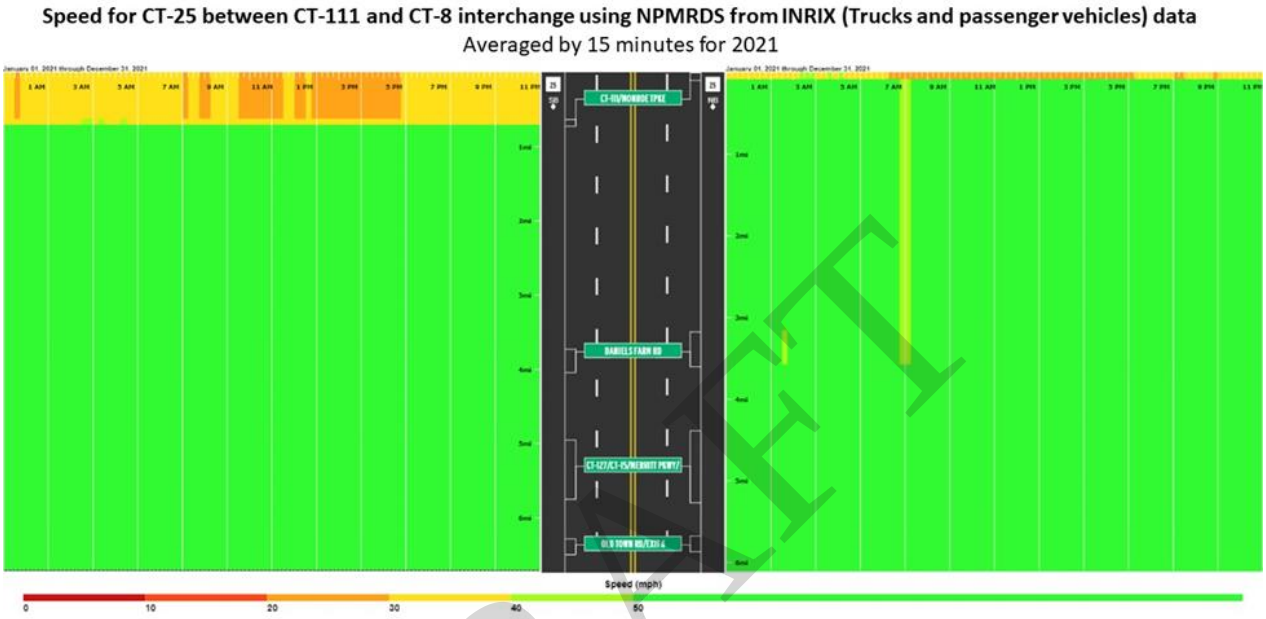


Figure 3. 8: CT Route 25 Congestion Graph

3.3 Principal Arterials: Other/NHS

US Route 1

US Route 1 is a principal arterial that runs about 41 miles east-west through the region's coastal municipalities: Milford, Stratford, Bridgeport, Fairfield, Westport, Norwalk, Darien, Stamford, and Greenwich. Route 1 runs roughly parallel to much of I-95 and like I-95, it is a critical link along the eastern seaboard from Maine to Florida. In Connecticut, Route 1 functions as an east-west commercial corridor that links the shoreline communities of Long Island Sound.

In the Bridgeport-Stamford TMA, Route 1 alternates between one or two travel lanes for each direction of traffic. Turn lanes are not consistently provided at signalized intersections. In addition, unsignalized intersections and numerous driveways cause further congestion.

On Route 1, speeds are reduced during daytime hours in both the northbound and southbound directions due to increased traffic and frequent traffic lights and stops.

CT Route 34

CT Route 34 a principal arterial that runs west from I-84 in Newtown to New Haven in the east. In the Bridgeport – Stamford TMA, Route 34 connects to I-84 in Newtown , then transects Monroe and crosses the Housatonic River via the Stevenson Dam Bridge (to Oxford). Route 34 follows the Housatonic south-east into Seymour and continues into downtown Derby. In Derby, Route 34 intersects Route 8. West of Route 8, 34 is made up of a total of two travel lanes. East of 8, Route 34 is made up of two travel lanes in each direction.

On Route 34 speed is reduced during the morning and afternoon peaks in both the eastbound and westbound direction. There is also a general slowdown through the commercial area in downtown Derby.

CT Route 35

CT Route 35 runs in the north-south direction from the New York State border in southwestern Ridgefield through downtown Ridgefield before intersecting with US Route 7 near the border with Danbury. The 2-lane principal arterial is 5.7 miles and is routed through medium density single family housing before reaching the denser, downtown Ridgefield which has frequent pedestrian and on-street parking activity. Except for the 1.2-mile segment through downtown, the corridor does not have traffic signals.

CT Route 58

CT Route 58 Functions as a minor arterial for a mile east-west between Route 1 (at the Bridgeport border) and State Route 732 in Fairfield. Between its intersection with State Route 732 and Route 15, Route 58 (Black Rock Turnpike) functions as a principal arterial that connects multiple shopping centers in a busy commercial corridor and runs approximately 2.4 miles east to northwest. After its intersection with Route 15, Route 58 becomes a minor arterial for 1.75 miles into Easton. In Easton, Route 58 is a designated scenic road and functions as a major rural collector that runs between 5 and 6 miles south-north to the Redding border. This CMP will focus on the 3.4 mile stretch in Fairfield from Route 1 to Route 15 as this is the section included in the NHS and NPMRDS dataset. This section is 2 lanes for the majority but expands to 2 lanes in each direction in the commercialized area between Burroughs Rd and Samp Mortar Dr.

CT Route 104

CT Route 104, more commonly known as Long Ridge Road, runs in the north-south direction in Stamford and is classified as a principal arterial. The route's southern terminus is in the Ridgeway-Bulls Head Neighborhood at the intersection with CT Route 137. It stretches 6.2 miles, passes under US Route 15 to the northern TMA limit at the intersection of Erskine Road. The northern half of the route is 2-lanes wide with medium density single-family housing and no traffic control. The southern half of the route, from just .15 miles north of US Route 15, widens to 4 through lanes with auxiliary turning lanes throughout. Major intersections are controlled with traffic signals as it passes by higher density single family housing neighborhoods and driveways to large scale office buildings and healthcare facilities. The route is serviced by CT Transit Stamford Division Bus Route 336 and there are no sidewalks or bicycle facilities.

CT Route 106

CT Route 106 runs in the north-south direction from the intersection of US Route 1 in Stamford, just west of Exit 9 off Interstate 95, to the intersection with CT Route 124 where it coincides with Route 124 through downtown New Canaan until turning on to East Avenue and intersecting with CT Route 123. It is a 2-lane,7.5-mile-long principal arterial that passes through Stamford with medium-density multi-family housing, high-density single-family housing, and a few industrial properties then through medium and high-density single-family housing in Darien and New Canaan before reaching the New Canaan downtown. Vehicular traffic is controlled with traffic signals at major intersections throughout the corridor. It parallels the New Canaan Branch Line of the Metro North Railroad and there are sidewalks on one or both sides of the road for the entire corridor except for the 3.8-mile segment between Lynn Court in Darien to Park Street in New Canaan.

CT Route 110

CT Route 110 runs south to north through Stratford and Shelton then east to west through Shelton and Monroe as a minor and principal arterial. The south-north portion of Route 110 roughly follows the Housatonic River. Route 110 begins at Route 1 in Stratford as a minor arterial. Between its intersection with Route 113 and Route 15, the road functions as a principal arterial and provides access to offices, retailers, and a major regional employer (Sikorsky). Route 110 continues north into Shelton as a minor arterial and intersects Route 8. Near Indian Wells State Park, the road begins to run east-west toward Monroe. Route 110 ends at its intersection with Route 111 in Monroe. This CMP will focus on a 3.3 mile stretch that has NPMRDS data which is north of the intersection with 113 to the intersection of Soundridge Rd.

CT Route 113

A small portion of Route 113 begins in Bridgeport as a minor arterial with access to I-95 southbound. Continuing south and east into Stratford, Route 113 functions as a major collector and runs adjacent to the Sikorsky Memorial Airport in Stratford's Lordship Neighborhood. Route 113 continues as a minor arterial and heads north through several commercial and industrial areas into Downtown Stratford. In Downtown Stratford, Route 113/Main Street is classified as a principal arterial and provides access to the Metro-North rail station, Route 1 and several neighborhood and commercial centers. Route 113 terminates at Route 110. Route 113 is 8.3 miles long, but this CMP will focus on the 2.6-mile principal arterial other segment which is Main St in downtown Stratford. Speed is reduced during the day south of I-95 past US 1 north to Paradise Green. This is a highly developed area with multiple commercial properties along with town facilities such as town hall/ Stratford High School/ Stratford Fire & EMS .

CT Route 115

Beginning in Derby and terminating roughly 5.5 miles north in downtown Seymour, Route 115 runs parallel to Route 8 on the eastern side of the Naugatuck River. From opposite the Derby-Shelton Train Station, Route 115 runs north as a minor arterial. In Ansonia, at the intersection with SR 727 at Bridge Street, Route 115 becomes a Principal Arterial. Route 115 continues north, coinciding with Main Street, Ansonia and Seymour. In this sense, Route 115 links the lower Naugatuck Valley downtowns and commercial districts. The terminus of Route 115 at Route 67 in Seymour lies in between the Route 8 Interchange 22 northbound and southbound ramps.

This CMP will focus on the 4-mile principal arterial other segment that connects State Route 727 to Route 8. This segment is part of the NHS and has NPMRDS data.

CT Route 123

CT Route 123 runs in the north-south direction from the intersection with US Route 1 in the center of Norwalk to the New York State border in New Canaan. The 2-lane road is 8.4 miles long. It is classified as a minor arterial in Norwalk up to Felix Lane then switches to a major arterial for the remainder of the route through New Canaan. Major intersections are controlled with traffic signals as the road passes through a variety of uses in Norwalk from single- and multi-family houses, small scale commercial before transitioning to mainly medium-density single family housing after crossing under US Route 15. There are sidewalks on both sides of the road for the first 1.4 miles through Norwalk and no bicycle facilities or transit.

CT Route 137

CT Route 137, more commonly known for most of the length as High Ridge Road, is a north-south route from the intersection of US Route 1/Tresser Boulevard in downtown Stamford to the New York State border in northeast Stamford. The 9.3-mile principal arterial is four lanes wide with axillary turning lanes from the southern terminus to just north of US Route 15 when the road reduces to two lanes wide. Major intersections are controlled with traffic signals for much of the route except for the northern sections. The built environment is very dense with a mix of uses downtown while slowly decreasing in intensity going north along the route. The middle of the route is characterized by high-density single-family housing and strip mall development. North of US Route 15 the land is characterized by medium density single family housing with sections of open space. The route is serviced by CT Transit Stamford Division Bus Route 331 and 336. There are sidewalks on both sides of the road south of the intersection with Scofieldtown Road, albeit there are many sections that are under built and/or damaged.

Route 727 (Pershing Dr)

SR 727 is a principal arterial that runs from Route 8 Interchange 16 north along Pershing Drive. At Bridge Street, in Ansonia, SR 727 turns east before terminating at the intersection with Route 115 (Main Street). Pershing Drive is a major commercial corridor, connecting downtown Ansonia with Route 8.

Route 731

Route 731 is a principal arterial that runs south-north from Downtown Bridgeport to the Trumbull interchange with Route 15 (as Main Street in both municipalities). Route 731 provides access to Route 8/25 in Bridgeport and Route 15 in Trumbull (where it becomes Route 111). Route 731 connects numerous commercial centers in Bridgeport. A regional shopping center (the Trumbull mall) is also located along Route 731 in Trumbull, in close proximity to the Bridgeport line.

Route 732

Route 732 is a 1-mile principal arterial located in Fairfield that runs south-north from Route 1/King's Highway to Route 58/Black Rock Turnpike. The road provides connections to I-95 and commercial areas in the eastern half of the town. A congestion graph was not suitable for this small section of roadway, but it will be part of the regional analysis.

4.0 Performance Measures:

Four performance measures were calculated for this Congestion Management Process. Non-SOV travel, Level of Travel Time Reliability, Truck Travel Time Reliability, and Peak Hour Excessive Delay.

4.1 Datasets:

Two datasets were used for these four performance measures. The Non-SOV travel was calculated by using Census Means of Transportation to Work information. For this analysis, the information from the American Community Survey 5-year estimates form 2017-2021 was used.

The other three performance measures were calculated using the National Performance Management Research Data Set (NPMRDS). This dataset was procured and sponsored by the Federal Highway Administration and made available through the Regional Integrated Transportation Information System (RITIS). The NPMRDS dataset includes speeds and travel times at 5-minute intervals for passenger vehicles and trucks on over 400,000 road segments. Speed and time travel data were collected using millions of connected vehicles, trucks and mobile devices.

To calculate the performance measures, we utilized the new Moving Ahead for Progress in the 21st Century Act (MAP-21) tool through the RITIS analytics dashboard. This widget was developed to easily calculate performance measures based on standardized geographic areas, including UZAs, that conform with Map-21 specifications. This tool reduced the amount of processing time and technical expertise needed to calculate the final performance measures.

4.2 Non-SOV

The Non-SOV measure was calculated to assess the use of other modes of transportation besides single occupancy vehicle travel in the Bridgeport--Stamford, CT--NY TMA. These other modes include transit, bicycle, or pedestrian travel.

Methodology:

The Non-Single Occupancy Vehicle (Non-SOV) measure is the percentage of the population that does not drive to work alone, including individuals who carpool or use mass transit. This metric was calculated using the 2017, 2018, 2019, 2020 and 2021 ACS 5-year estimate. Using the census information, the Non-SOV measure was calculated using the formula below.

((Total Number of Drivers – Number of Drivers that Drive Alone) / Total # Drivers)* 100 = % Non SOV

Results:

In the Bridgeport--Stamford, CT--NY TMA the Non-SOV measure was 32.93% in 2021. There was a 4.58% increase since 2017 (Table 4.1; Figure 4.1).

Table 4. 1: Percent Non-Single Occupancy Vehicle in the Bridgeport-Stamford TMA

	Total Workforce	Drove Alone	Non-SOV	% NON-SOV
2017 ACS 5 yr	462,878	331,627	131,251	28.36%
2018 ACS 5 yr	464,586	335,351	129,235	27.82%
2019 ACS 5 yr	466,800	336,220	130,580	27.97%
2020 ACS 5 yr	467,159	325,013	142,146	30.43%
2021 ACS 5 yr	473,213	317,363	155,850	32.93%

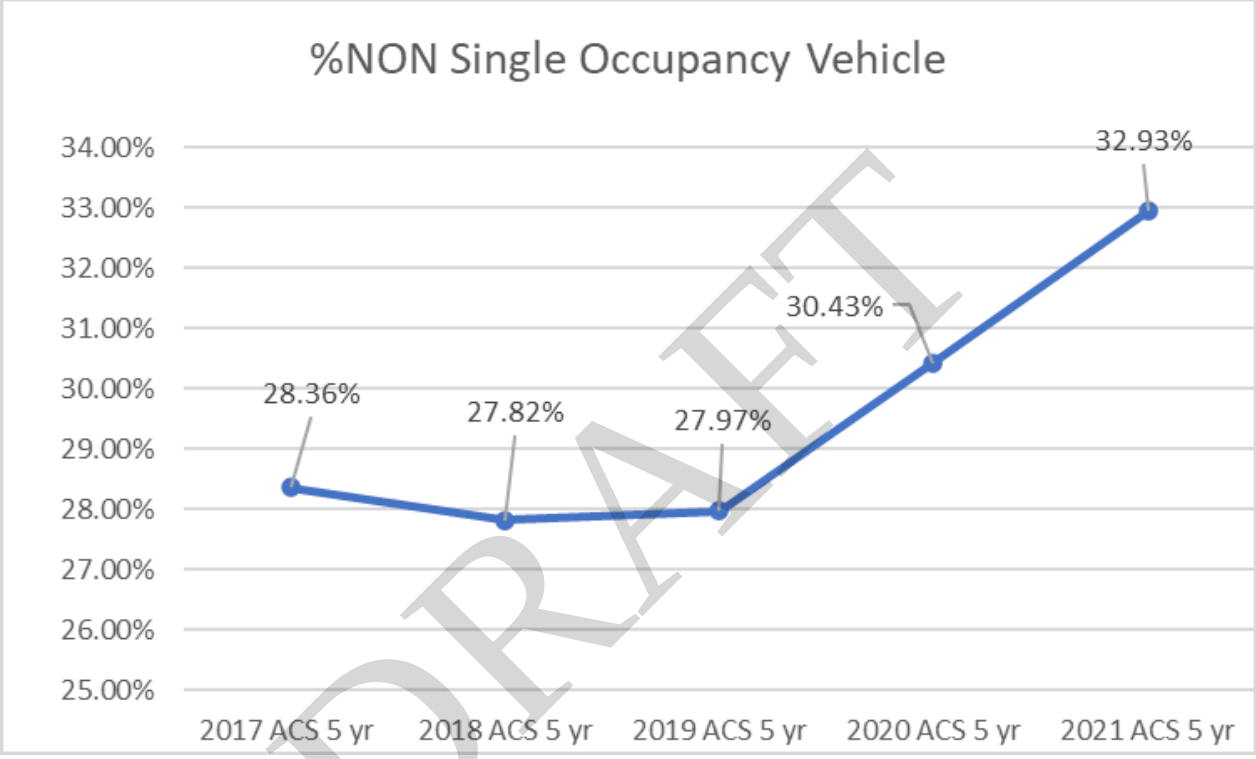


Figure 4. 1: Non-SOV Travel

4.3 Level of Travel Time Reliability (LOTTR):

Highway travel time reliability is closely related to congestion and is greatly influenced by the complex interactions of traffic demand, physical capacity, and roadway "events." Travel time reliability is a significant aspect of transportation system performance. The FHWA explains the importance of this metric:

> *"Travel time reliability is significant to many transportation system users, whether they are vehicle drivers, transit riders, freight shippers, or even air travelers. Personal and business travelers value reliability because it allows them to make better use of their own time. Shippers and freight carriers require predictable travel times to remain competitive."*[1]

[1] See the FHWA's "Travel Time Reliability: Making It There on Time, All the Time" at https://ops.fhwa.dot.gov/publications/tt_reliability/TTR_Report.htm#WhatisTTR

Operational-improvement, capacity-expansion, and to a certain degree highway road and bridge condition improvement projects, impact both congestion and system reliability. Demand-management initiatives also impact system reliability.

Methodology:

The level of travel time reliability (LOTTR) is expressed as a ratio of the 80th percentile travel time of a reporting segment to the "normal" (50th percentile) travel time of a reporting segment occurring throughout a full calendar year. Segments that have a ratio less than 1.5 are considered "reliable." The performance measure, as defined in Title 23 CFR 490.507, is the percent of the person-miles traveled on the Interstate section and the non-Interstate NHS that are reliable.

- "Normal" travel time (50th percentile): 50% of the times are shorter in duration and 50% are longer.
- 80th percentile travel time: Longer travel times. 80% of the travel times are shorter in duration and 20% are longer.
- The longest travel times are in the 100th percentile.

Travel time reliability data were downloaded using the RITIS platform using the National Performance Management Research Data Set (NPMRDS) app MAP-21 tool. Data were available as an annual average of travel time and for each time period below.

For each TMC segment, LOTTR was calculated for four time periods:

- AM Peak (Monday-Friday 6 am to 10 am)
- Midday (Monday-Friday 10 am to 4 pm)
- PM Peak (Monday-Friday 4 pm to 8 pm)
- Weekends (Saturday – Sunday 6 am to 8 pm)

LOTTR is calculated as:

$$\text{TMC LOTTR}_i = (80^{th} \text{ percentile travel time}_i) / (50^{th} \text{ percentile travel time}_i)$$

Values for each time period are compared to a threshold of 1.50. If LOTTR was over 1.5 during any of the four time periods, the segment was considered unreliable. The person miles traveled for each segment was then calculated by multiplying the segment length by the annual traffic (AADT * 365) and the occupancy factor (1.7):

$$(\text{Length} * \text{Annual Traffic} * \text{Occupancy Factor}) = \text{Person Miles Traveled}$$

The sum of all the person miles traveled on reliable segments was then divided by the person miles traveled on all roadways to provide the percentage of reliability for the Region (Figure 4.2).

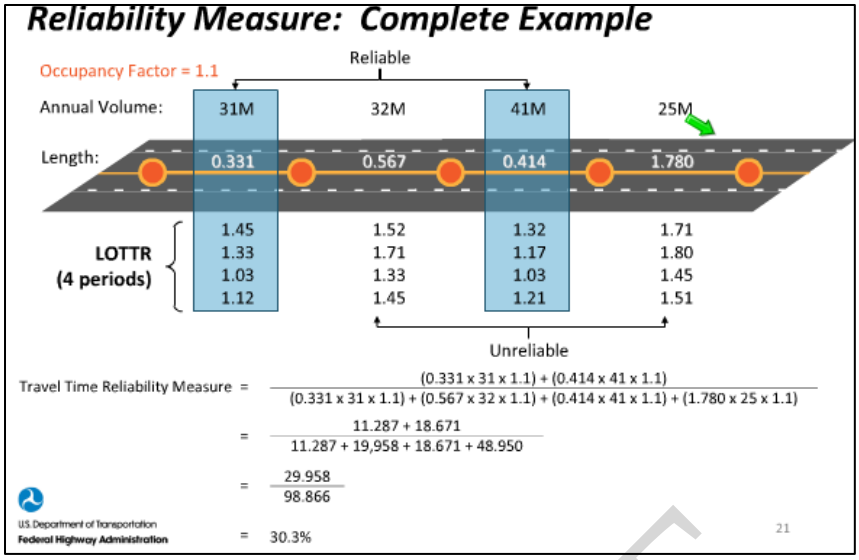


Figure 4. 2: Federal Highway Administration LOTTR Example

Results:

The LOTTR (Level of Travel Time Reliability) measure for the region was 79.25%. That is, 79.25% of the NHS person miles traveled were reliable. The map below shows the NHS segments that were calculated as reliable or unreliable (Figure 4.3).

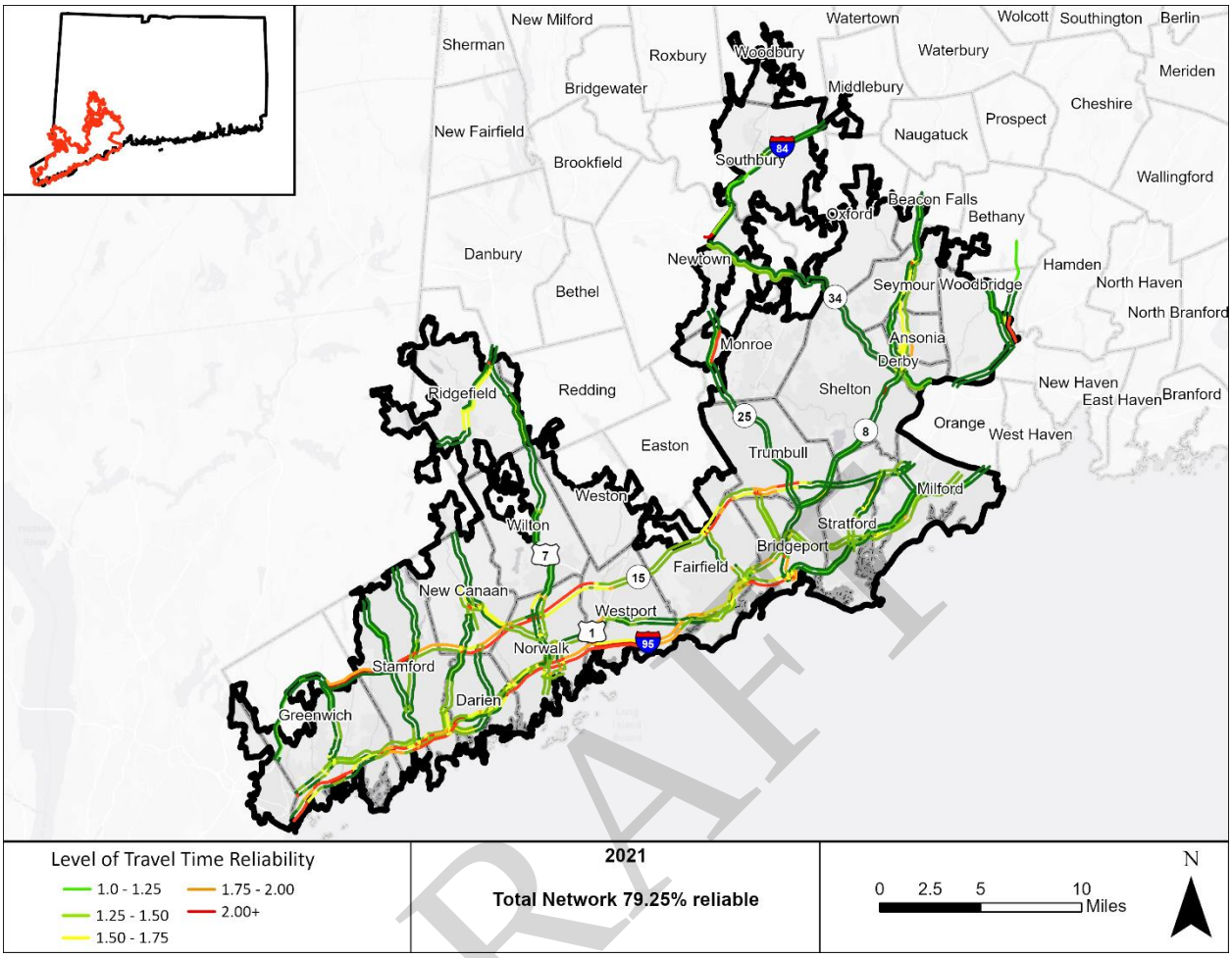


Figure 4. 3: Travel Time Reliability for 2021

By comparison the following targets were adopted by the CTDOT on May 20, 2018. (Table 4.2):

Table 4. 2: CTDOT System Reliability Targets

FHWA Measure for System Reliability:	**Baseline Condition (State)**	**2-year targets (2020)**	**4-year targets (2022)**	**Current Condition Bridgeport Stamford UZA**
% person-miles of Interstate NHS that are "reliable"	86.2%	78.6%	78.6%	79.25%

Most of the unreliable person miles in the region are confined to I-95 and Route 15. This can be attributed to the high volume of traffic on these two roadways. These coastal routes consist of the highest count of roadway miles. The unreliable segments for I-95 appear south of the intersection with Route 8 in Bridgeport both on the northbound and southbound route. Southbound on I-95 has more unreliable person miles during the AM peak of 6am-10am. The northbound side has higher unreliable miles during the PM peak 4pm-8pm.Route 15 shows unreliable segments in Fairfield, south of the route 8 and route 25 interchange through Stamford where route 15 crosses route 104 .

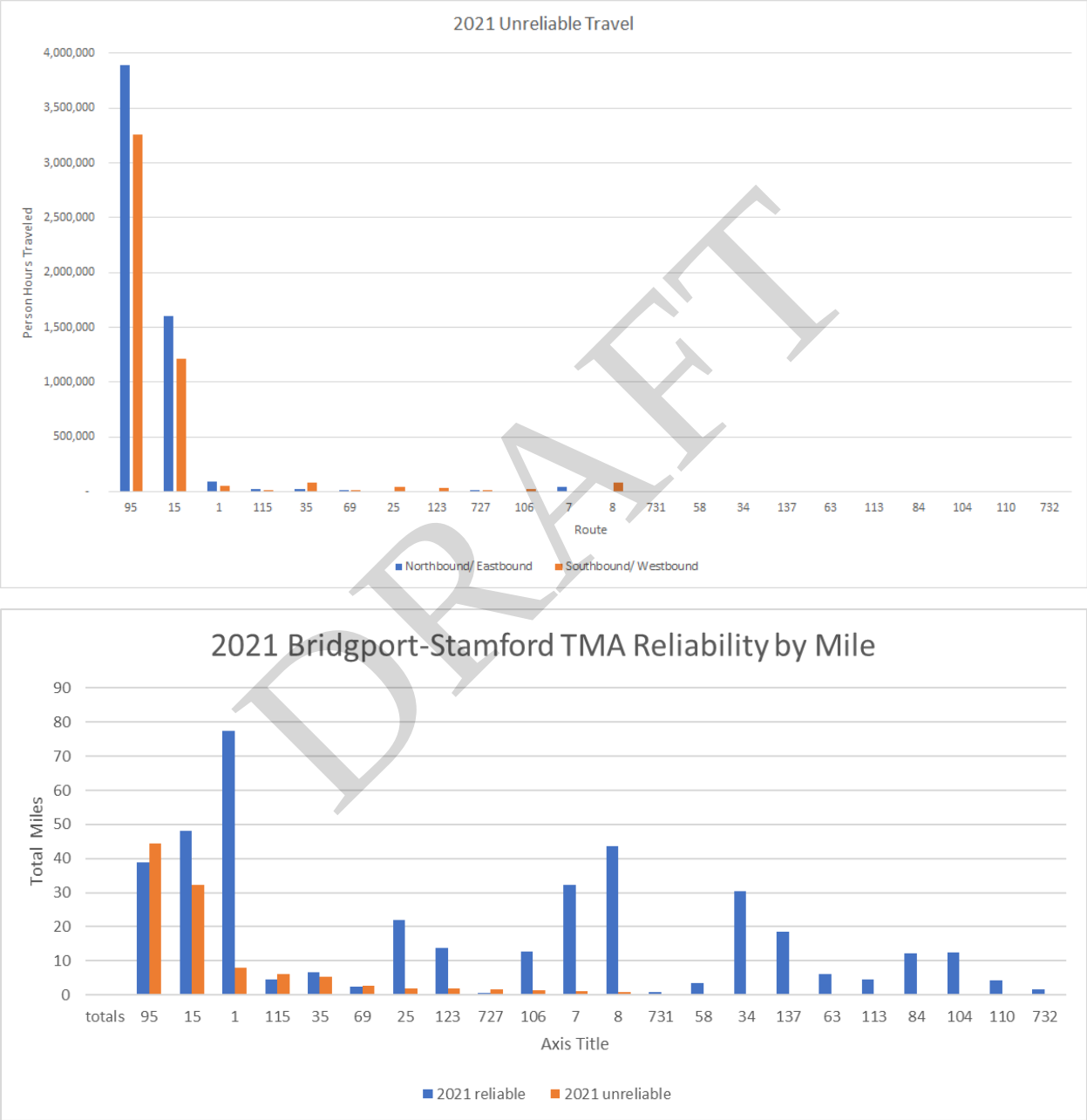


Figure 4. 4: Unreliable Travel by Route

I-95 and Route 15 have the largest amount of unreliable road mileage in both northbound and southbound directions. This compliments the previous chart which also indicates that I-95 and Route 15 have the most unreliable person miles. Both roadways are unreliable southbound during the AM peak and unreliable northbound during midday and PM peaks. Route 25 has 10 times the amount of unreliable person miles traveling southbound than north. All of the unreliable person miles on route 8 are when commuters are traveling southbound. . The other routes, which are not interstates or expressways, all had some unreliability during the weekend hours. Route 95, 115, 69, and 727 all were more than 50% unreliable. Route 7, 8, and 34 performed better than similar length routes In the region with a few unreliable miles on 7 north and 8 south. PHED was calculated annually from 2017 – 2021. Maps and graphs for each year can be found in the appendix. Like the other performance measures, the pandemic had a significant impact on peak hours of delay. However, this performance measure had the greatest decrease in 2020, declining over 55% from 2019. In 2021, PHED increased but not to pre-pandemic levels (Figure 4.8).

LOTTR was calculated annually from 2017 – 2021. Maps and graphs for each year can be found in the appendix. Like the other performance measures, the pandemic had a significant impact on travel time reliability. However, this performance measure had the greatest increase in 2020, increasing about 13% from 2019. In 2021, LOTTR decreased but not to pre-pandemic levels (Figure 4.4).

4.4 Truck Travel Time Reliability (TTTR):

Freight movement is assessed by the Truck Travel Time Reliability (TTTR) index. The Truck Travel Time Reliability metric is the ratio of long travel times (95th percentile) to a normal travel time (50th percentile). This measure considers factors that are unique to the trucking industry. The unusual characteristics of truck freight include:

- Use of the system during all hours of the day;
- High percentage of travel in off-peak periods; and
- Need for shippers and receivers to factor in more 'buffer' time into their logistics planning for on-time arrivals.

Methodology:

FHWA defines the reliable TTTR as less than 1.5; the comparison between the 50th and 95th percentiles is reliable if it is less than 1.5.

- "Normal" travel time (50th percentile): 50% of the times are shorter in duration and 50% are longer.
- 95th percentile travel time: Longer travel times. 95% of the travel times are shorter in duration and 5% are longer.
- The longest travel times are in the 100th percentile.

The TTTR is a measure of truck travel time reliability, not congestion. Segments of the highway that are regularly and predictably congested will not have a high TTTR index number. Rather, those segments of

highway where delays are unpredictable and severe are scored highest. Prioritizing reliability over congestion came from stakeholder outreach with the freight industry where predictability was deemed more important for scheduling. The TTTR index only applies to roads on the National Highway System. The time-period with the highest TTTR is used to determine the overall segment's TTTR, which is weighted by the segment length. The TTTR five statutorily defined time periods are:

- AM peak period (Monday – Friday 6 am – 10 am)
- Mid-day period (Monday – Friday 10am – 4pm)
- PM peak period (Monday – Friday 4pm – 8pm)
- Overnight (All Days 8pm – 6am)
- Weekends (Saturday – Sunday 6am – 8pm)

TTTR was calculated using the truck data from the NPRMDS. For segments that had no truck travel the travel time from all available vehicles was used. Route 15 was removed from the analysis as trucks are not permitted.

For each segment the maximum TTTR value over the five time periods was then used to calculate the overall TTTR for the region. For each segment the max TTTR was multiplied by the segment length to calculate a weighted average. Then the sum of the weighted averages was divided by the total length of the NHS segments to give a final TTTR score.

$$\frac{\text{Sum (Max TTTR * Segment Length)}}{\text{Total Length}} = \text{TTTR}$$

Results

The Truck Travel Time Reliability for 2021 was calculated to be 2.50 for the region. Similarly to LOTTR, a score of 1.5 represents reliable travel. (Figure 4.5).

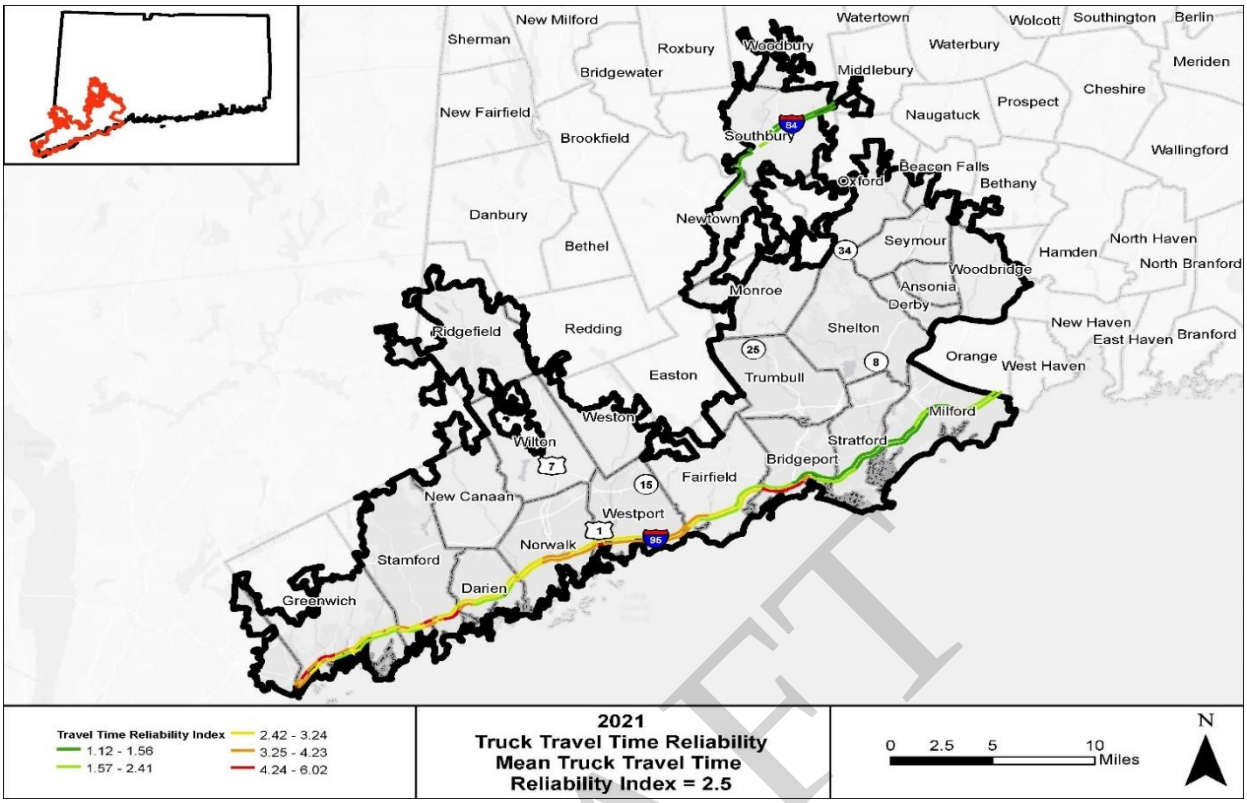


Figure 4. 5: Truck Travel Time Reliability for 2021

By comparison, the following targets were adopted by the CTDOT on May 20, 2018, and the state's MPOs within the following months:

Table 4. 3: CTDOT Freight Reliability Targets

FHWA Measure for Freight Reliability: Interstate NHS	**Baseline Condition (State)**	**2-year targets**	**4-year targets**	**Current Condition for UZA**
Truck Travel Time Reliability (TTTR) Index	1.56	1.95	2.02	2.50

Over the five-year period reviewed for this report, global events and the COVID-19 pandemic have had a significant impact on TTTR. Despite these changes, the 2021 TTTR remains lower than the pre-pandemic trend, with the 2021 index coming in at 2.5 and the 2018 and 2019 TTTR index at 2.7. The below chart reflects the full UZA's TTTR index over the defined period.

Between the two interstate highways, there is great variation in the Truck Travel Time Reliability Index. Interstate 84, through less reliable both east and west of the UZA, scores below the target of 1.5 for 2021 with a score of 1.3. Within that year, only two of the 26 segments in the region had an index above 1.5, with the area of 84 westbound at exit 14 having a reliability of 1.89 and the area of 84 westbound at

the entrance ramp from Bullet Hill Road having an index of 1.65. The below chart shows the full, bi-directional indices for Interstate 84 across the study period.

4.5 Peak Hour Excessive Delay (PHED):

The Peak Hour Excessive Delay measure was calculated to assess recurring congestion during commuting hours in the Bridgeport-Stamford TMA.

Methodology:

PHED was calculated using all vehicles available in the NPMRDS between 6 am – 10 am and 3 pm – 7 pm weekdays from 2017 -2021. The PHED measure calculates the amount of person time spent in excessive delay. The calculation compares actual travel speed to the official speed limit of each TMC segment. Excessive delay is defined as when the travel speed was below 60% of the speed limit or 20 mph.

The number of hours of excessive delay were multiplied by the average yearly traffic (AADT * 365) to calculate the annual hours of delay per each segment. These were then summed to calculate the annual hours of excessive delay for the Region. Dividing the annual hours of excessive delay for the TMA by the TMA's population provided the annual hours of peak excessive delay per capita.

Results :

Th annual hours of peak hour excessive delay per capita for the region for 2021 was 12.1. This calculation was generated by the RITIS MAP-21 tool by dividing the delay by the total population of the MPO. There was a total of 11,871,079 hours of excessive delay in the TMA. By comparison, the following targets were adopted by the CTDOT on May 20, 2018, and the state's MPOs within the following months:

Table 4. 4: CTDOT PHED Targets

FHWA Measure for Freight Reliability: Interstate NHS	**Baseline Condition (State)**	**2-year targets**	**4-year targets**	**Current Condition for UZA**
Truck Travel Time Reliability (TTTR) Index	**	20.0	21.9	12.6

High excessive delay occurred in some of the same areas that had high LOTTR and TTTR values such as I-95 and Route 15 south of Bridgeport. This indicates that these roadways experience both recurring and non-recurring events that delay travel over time (Figure 4.6).

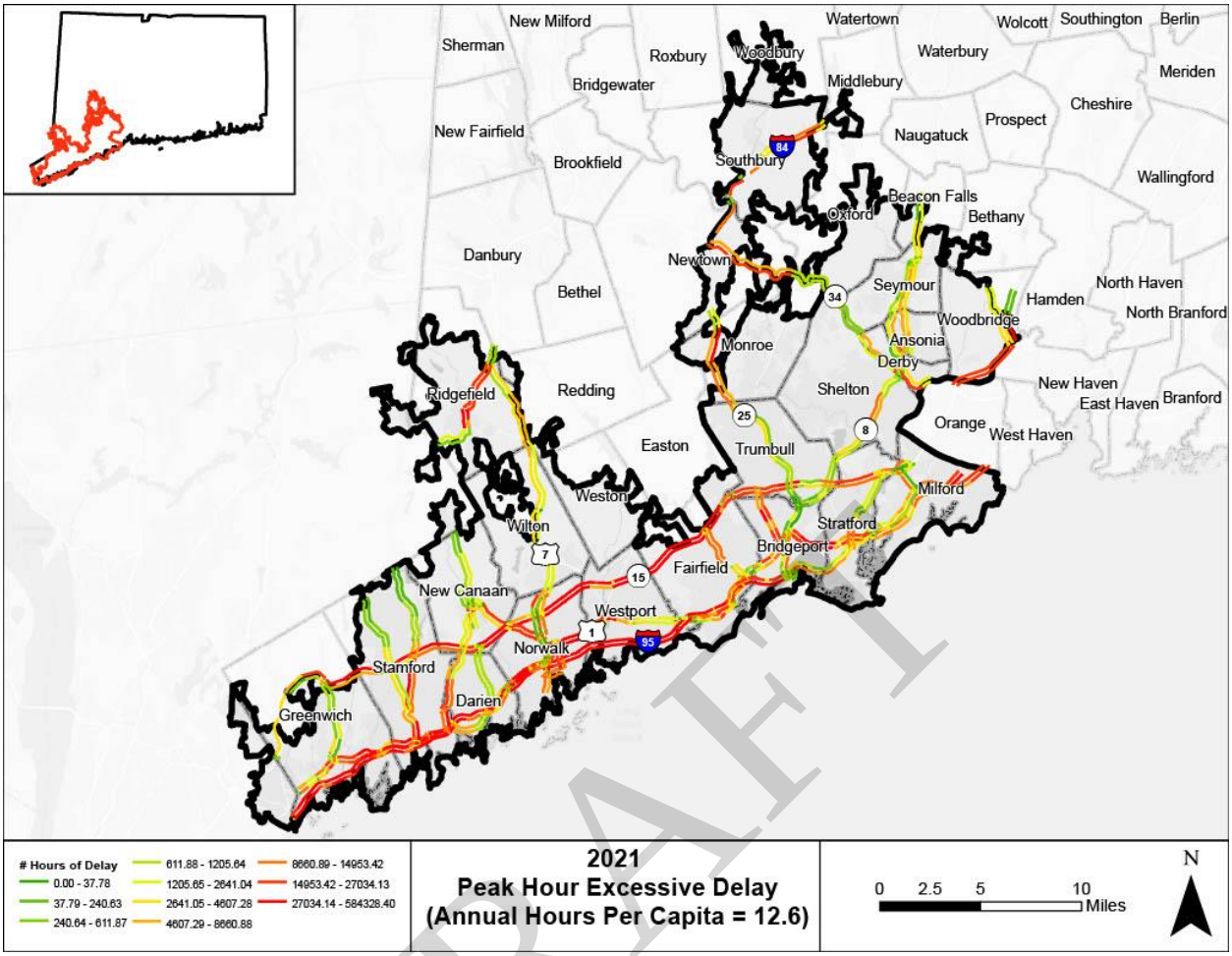


Figure 4. 6: Peak Hour Excessive Delay for 2021

I-95 accounted for 5,843,151 hours of delay in 2021, 52.5% of delay in the TMA. Route 1 was next highest, with 2,213,007 hours of delay (19.9%) followed by Route 15, 1,545,007 (13.9%) The other 13.7% of delay in the TMA were spread out over the remaining NHS segments (Figure 4.7)

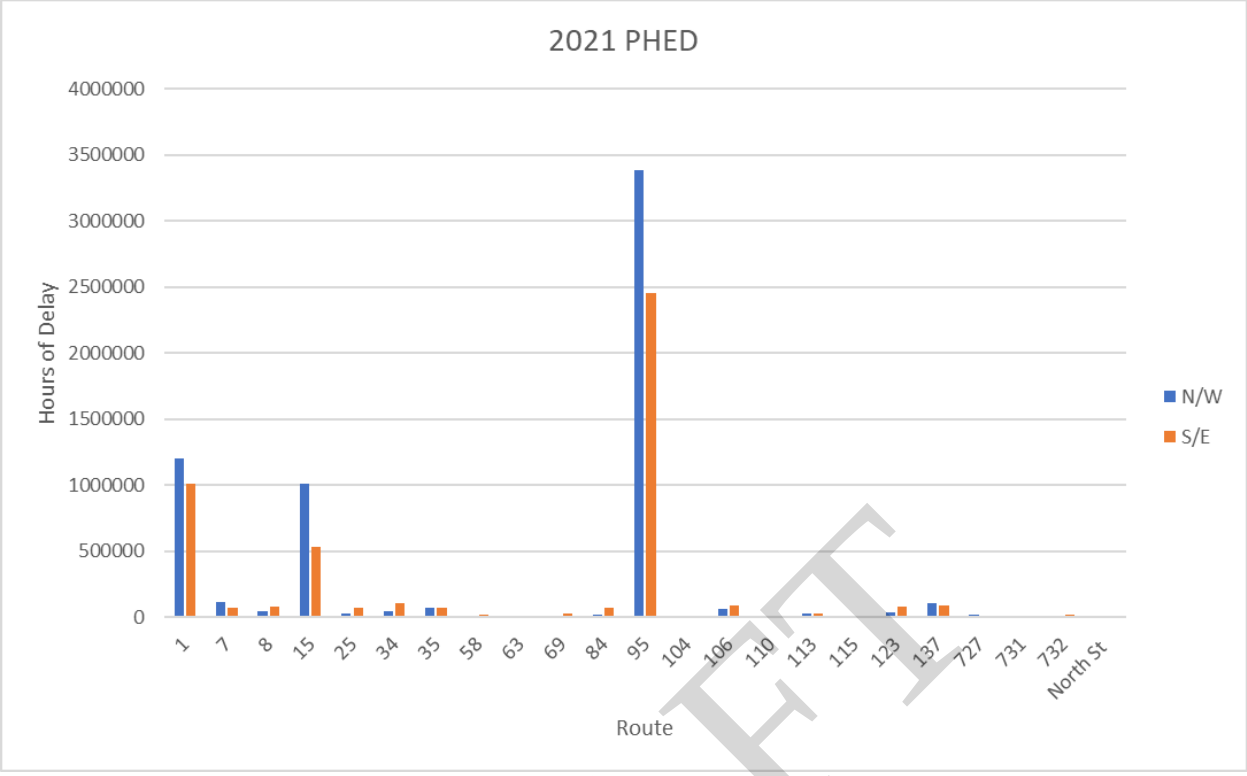


Figure 4. 7: Peak Hour Excessive Delay by Route

PHED was calculated annually from 2017 – 2021. Maps and graphs for each year can be found in the appendix. Like the other performance measures, the pandemic had a significant impact on peak hours of delay. However, this performance measure had the greatest decrease in 2020, declining over 55% from 2019. In 2021, PHED increased but not to pre-pandemic levels (Figure 4.8).

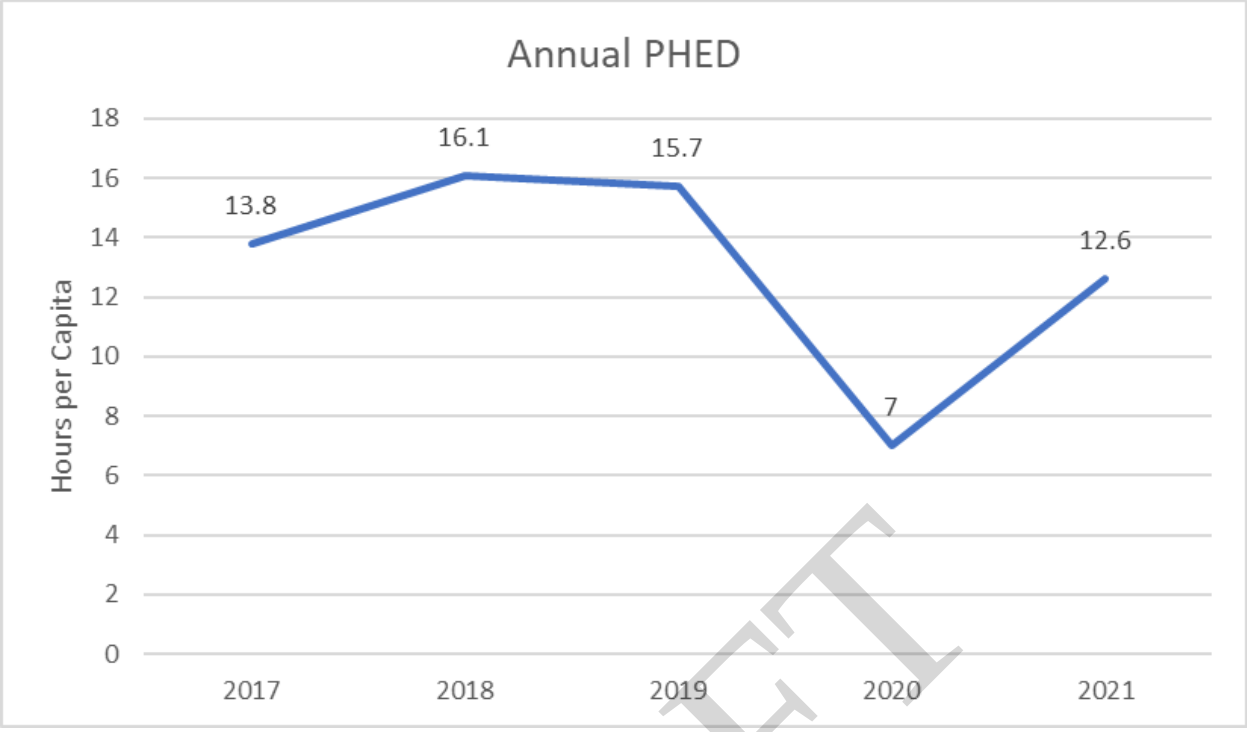


Figure 4. 8: Peak Hour Excessive Delay from 2017-2021

5.0 Strategies:

The Congestion Management Process is a data driven approach to develop strategies to mitigate congestion. The performance measures indicate that recurring and non-recurring congestion heavily impact the Region, especially in the western half. The following mitigation strategies are designed to improve travel in the Region, and will improve the performance of the transportation system in the next CMP by:

- Increasing Non-Single Occupancy Vehicle usage
- Increasing Level of Travel Time Reliability
- Increasing Truck Travel Time Reliability
- Decreasing Peak Hour Excessive Delay

The following strategies are broken down into the four following categories. Often, these strategies fall into more than one category, or integrates components from another category.

- Demand Management Strategies
- Public Transportation Strategies
- Traffic Operations Strategies
- Road Capacity

The 2023 CNVMPO, GBVMPO and SWRMPO Metropolitan Transportation Plans provides further project details. Corridor studies, charettes, Road Safety Audits (RSAs) and numerous community planning efforts have identified a range of projects that align with these strategies. Recommendations from these studies continue to be integrated into the CMP. Corridor studies include:

In Process:

- Fairfield Avenue/CT-130: Black Rock neighborhood, Bridgeport
- East End Streets: CT-130 in Bridgeport
- Norwalk Route 1 Corridor Study

Completed:

- Sport Hill Road Active Transportation Workshop: CT-59, Easton
- Black Rock Turnpike Safety Study: CT-58, Fairfield
- Post Road Circle Study: US-1 and CT-130, Fairfield
- CT-25 and CT-111 Engineering Planning Study, Monroe and Trumbull
- CT-110 Engineering Planning Study, Stratford (CT-15/Sikorsky bridge)
- Stratford Center Complete Streets Plan: US-1, CT-113 and CT-108
- Westport Main To Train Study (Route 1 and Route 33)
- Stamford Bus and Shuttle Study
- Stamford Bicycle and Pedestrian Master Plan
- Noroton Heights Station Area Study

5.1 Demand Management Strategies

These strategies help to promote alternatives to SOV travel and reduce the number of vehicles on the roadway, especially during peak travel periods. Actions may not pertain to a specific section of roadway in the CMP analysis but are more general practices that can be applied throughout the Region. Actions include:

- Encourage Access to Transit, Including the First- and Last-Mile
- Multi-Use Trail Improvements
- Complete Streets and other Pedestrian Improvements

Encourage access to transit:

- Bridgeport, Ash Creek Pedestrian Bridge: pedestrian access from Bridgeport's Black Rock Neighborhood to the Fairfield Metro Rail Station. This project was developed through a planning study (2014) and is in final design (LOTCIP).
- Stratford: Shuttle service from train station to localized businesses and popular destinations (MTP recommendation).
- Micromobility projects, such as the introduction of scooter-share service in Bridgeport and Fairfield.
- Park & Ride lot repairs, improvements, and shelter replacement (statewide CTDOT project in MTP).

Trail Improvements:

- **Housatonic River Greenway**: Stratford continues to plan for a facility that runs through Stratford in a north-south alignment. Connections will include Stratford Center (and the rail station), Roosevelt Forest, the Housatonic River, the East Coast Greenway, and other local points of interest.

- **Naugatuck River Greenway**
    - Ansonia:
        - The Ansonia Riverwalk Greenway will provide connections throughout Ansonia (along the Naugatuck River), to the downtown and to adjacent towns. Pedestrian & streetscape enhancements in downtown Ansonia will further improve connectivity within the Downtown and to the rail station.
        - East Main Street pedestrian improvement project to formalize on-street parking, and improve pedestrian access and mobility throughout the East Main Street corridor.
        - South Cliff / State Street Safety Improvement Project to improve pedestrian access and mobility in the State Street and South Cliff Street neighborhood.
    - Seymour:
        - Construct pedestrian & streetscape enhancements in downtown Seymour; construct pedestrian bridge over the Naugatuck River at Tingue Dam.
        - Connect sidewalks along Church Street from the Seymour Library to Route 67.
- **Pequonnock River Trail**: Improved linkages to the PRT in Bridgeport, Monroe and Trumbull will provide non-motorized access between commercial, recreational and residential areas. Projects that have secured funding include:
    - Trumbull: trail connection from commuter parking lot on White Plains Road to Twin Brooks park (funded through TA).
    - Monroe: the extension from Purdy Hill to Wolfe Park will move most of the trail to an off-road, protected facility (LOTCIP-funded, in final design).
- **Shelton River Walk**
    - Widen Canal Street & install various pedestrian & bicycle facilities & amenities.
    - Extend river walk along Canal Street West; construct pedestrian improvements on Wooster Street & provide connections into Riverview Park.
- **Newtown:**
    - Extension of the Poqounnock Valley Greenway – extend the trail to Fairfield Hills in Newtown.
- **East Coast Greenway (ECG)**: Implement route and wayfinding between Greenwich and Westport.
- **Norwalk River Valley Trail:** Complete remaining 15 miles of trail between Norwalk and Danbury.
- **Georgetown-Branchville Trail:** Construct a multi-use trail to connect the villages of Branchville and Georgetown as well as the Ridgefield Rail Trail.

Complete Streets and Pedestrian Improvements

Continue to identify locations for complete streets improvements and bicycle facilities. Several projects underway were identified through Road Safety Audits, charettes and corridor/planning studies. This collaborative, community-lead planning should continue throughout the TMA. Examples of projects underway include (but are not limited to):

- Fairfield/Southport US-1: based on a 2017 Road Safety Audit, the Town was awarded a Community Connectivity grant to jump-start this long-term project. Improvements will occur on- and off-road and will reduce congestion and improve safety for nonmotorized users.
- Seymour:
    - Pedestrian Improvements at Main Street and Deforest Street to normalize grades between sidewalk and roadway.
    - Pedestrian and sidewalk Improvements on 67 and 313, including completing gaps in the section along Route 67 from the Oxford TL to about North Street.
- Shelton:
    - Construct downtown pedestrian & streetscape enhancements along Route 110 & Bridge Street
- Stratford's Complete Streets Plan for the Stratford Center Area: The first phase of the project (train station vicinity) will begin construction in mid-2023. The second phase of the project (CT-113, north of Barnum Avenue) is in design. Since 2019, funding has been secured for
- Trumbull: The Town was awarded a Community Connectivity grant to install traffic light at the intersection of CT- 111 and Whitney Ave (Long Hill Green area), construct sidewalks and install pedestrian amenities. These improvements will connect a commercial development to residential neighborhoods. This project is a good example of how operations-related projects can integrate a complete streets approach.
- Split Route 115 into a one-way pair through Downtown Ansonia, with NB traffic utilizing East Main Street and WB traffic continuing along current alignment. Use newly available space to provide protected bike lanes, improved sidewalks, and pedestrian plazas.
- Darien-New Canaan Bicycle Loop: Implement recommendations from the Bike Loop Action Plan to construct 25.5 mile loop to connect the two downtowns. Improvements include painted bike lanes, buffered bike lanes, sidewalk curb extensions, pedestrian refuge islands, and signage.
- Stamford: Incorporate Complete Streets, safety improvements, sidewalks and protected bicycle facilities during the following projects:
    - Elm Street Metro-North Railroad Bridge Replacement and Complete Streets Enhancements: North State Street to Cherry Street
    - East Main Street Metro-North Railroad Bridge Replacement and Complete Streets Enhancements: Myrtle Avenue to North State Street
    - Greenwich Avenue Metro-North Railroad Bridge Replacement and Complete Streets Enhancements: South State Street to Pulaski Street
    - Canal Street Metro-North Railroad Bridge Replacement and Complete Streets Enhancements: North State Street to Dock Street
    - Grove Street/Strawberry Hil Avenue/Newfield Avenue Safe Streets for All Reconstruction
    - Cove Road East Coast Greenway Construction: Weed Avenue to Elm Street
    - Route 137 HRR Commercial Area Safety Improvements: Buxton Farms to Maplewood Place
- Norwalk:
    - Corridor Wide Bicycle and Pedestrian Improvements: State Route 53 from intersection of Westport Avenue/North Avenue to intersection of Newtown Avenue
    - Main Street Complete Streets Improvements: State Route 123 from the intersection of Cross Street/North Avenue to New Canaan Avenue

    - Corridor Pedestrian Improvements: State Route 123 from the intersection of Ells to Nursery Street
- Westport:
    - Pedestrian Crossing and Sidewalk Improvements: Route 1 and Parker Harding Plaza intersection
    - Route 1 Sidewalks: Weston Road to North Avenue
- Weston – Implement pedestrian improvements in town center to connect schools, municipal buildings, parks, and local businesses.

5.2 Traffic Operations Strategies:

These strategies focus on improving functionality of the existing roadway. The corridor studies listed above include operations strategies and improvements that should be evaluated as projects are implemented. Example strategies include but are not limited to:

- Access management: strategically consolidate, close, or relocate driveways on congested roads.
- Traffic signals: both state-owned and locally-owned signals should continue to be modernized, upgraded and optimized. For example, Bridgeport continues to upgrade and modernize their traffic signals. Signals on Park Avenue are currently being upgraded and the MTP includes additional locations in need of upgrades.
- Regional ITS improvements (highway and transit)
- Route 1 (Greenwich to Westport) Signal Upgrades, Adaptive Signal Control and Coordination: Upgrade outdated equipment, coordinate signal timings, implement transit signal priority, and implement adaptive signal technology.
- Stamford:
    - Bulls Head Traffic and Safety Improvements: Upgrade the intersection of Long Ridge Road, Cold Spring Road, High Ridge Road, Summer Street and Bedford Street to improve traffic and safety.
    - Citywide Signal Upgrades: Complete Phase I, Phase J, and Phase K

5.3 Public Transportation Strategies:

Improving public transportation will ideally increase non-SOV travelers and reduce demand on the road network. Many of these strategies strengthen the demand management projects above.

Regional:

- Seamless, statewide bus transit system: includes integrated fares and real-time information systems.
- Evaluate Bus Rapid Transit.
- Improve marketing of transit, branch line improvements and connections between transit modes.
- Fixed bus replacements – battery electric buses.
- Install new bus shelters or upgrade existing shelters.

Metro North New Haven Main Line (rail):

- Regional:

    - Continue state of good repair and improvements to the New Haven Main and branch lines, bridges, stations, and supporting facilities and technologies.
    - Improve efficiency of service and reduce trip lengths to NYC.
- Bridgeport:
    - New train station on Barnum Avenue/Crescent Avenue.
    - Study to assess possible tunnel for portion of New Haven Line, east of train station.
- Stratford: Extend RR platforms to accommodate full train length access/egress (Main Street/CT-113 RR).
- Norwalk: Complete Project 301-0524 WALK Bridge Program
- Track Improvement Mobility Enhancement (TIME) -
    - Project #2, Norwalk - WALK Small Bridges, Station, Retaining wall and East Avenue Roadway.
    - Project #4, Westport – SAGA Fixed Bridge, Saugatuck Ave Bridge, Compo Rd Bridge, Rebuild Westport Station.
    - Project #5, Greenwich – New CP227/228, Arch St Bridge Deck Repair, Steamboat Rd Bridge.
- Greenwich – Cos Cob Bridge Replacement

Waterbury Branch Line

- Construct high level platform with modern station amenities in Ansonia.
- Construct station area renovations, including rehabilitation of building, new commuter parking lot, bus bays & intermodal transfer point, information kiosk, high level platforms, accessible walkways and heated shelter in Derby-Shelton rail station.
- Relocate the Seymour Rail Station to north of Route 67 as part of TOD redevelopment project.
- Purchase three new locomotives and train sets (2 coaches + 1 push-pull) to operate on the WBL to expand service.
- Purchase four new locomotives and train sets (2 coaches + 1 push-pull) to operate on the WBL to replace old equipment.
- Operations: Expand service along the Waterbury branch line to provide 30-minute headways

New Canaan Branch Line:

- Implement at-grade crossing improvements
- Sidings
- Capacity improvements

Danbury Branch Line:

- Wilton and Bethel – complete slope and track stabilization project
- Implement recommendations from the Danbury Branch Study including extending passenger rail service north to New Milford, track improvements between Norwalk and Danbury, and electrify the entire line from Norwalk to New Milford.

Greater Bridgeport Transit (bus)

- Continue to optimize fixed-route services. This includes late night service, increased frequency and reducing mid-day service gaps.
- Evaluate innovative service delivery models, such as micro-transit and rideshare.
- Continue to replace fixed route buses (hybrid/electric/alternative fuel buses) and paratransit vehicles.
- Capital and facility improvements, including bus stop amenities.
- Stratford: Conduct feasibility study of BRT along Barnum Avenue. Plan for implementation of program.

Other Transit

- New BRT-Like Service for Stratford and Bridgeport
- Real-Time Scheduling and Smart Card Fare Boxes
- Multimodal Fare Technology Improvements
- New BRT/Express Bus service between Derby-Shelton Train Station and Bridgeport Train Station, following alignment of Bridgeport Avenue and median running along Route 8
- Implement recommendations from CTDOT's Route 1 BRT Study
- Stamford Trolley Bus and Newtork Upgrades: purchase new electric trolley buses and expand city's network through the South End, Downtown, West Side, and East Side neighborhoods.
- Norwalk – implement high frequency transit service to connect Wall Street and SONO along East Avenue, Van Zant Street, Fort Point Street, Washington Street and MLK Boulevard.
- Stamford:
    - Implementation of the Stamford Transportation Center Master Plan Recommendations
- Norwalk – new intermodal facility

5.4 Road Capacity Strategies:

These strategies alter the roadway to increase capacity. Such strategies are often expensive and include changes to road realignment, intersection improvements, and road widening. Further, significant analysis, modeling and design is often necessary before a project can be implemented. Examples from corridor studies include:

- Black Rock Turnpike Safety Study, CT-58, Fairfield: limited widening/realignment at specific cross streets and intersections. Installation of roundabouts at several key intersections.
- Post Road Circle Study, US-1 and CT-130, Fairfield: Installation of a roundabout at the traffic circle.
- CT-25 and CT-111 Engineering Planning Study, Monroe and Trumbull: Identified various realignment alternatives for CT-25 and CT-111 intersection. Recommended widening CT-25 to four lanes and realignment of some cross streets/intersections:
- CT-110 Engineering Planning Study, Stratford (CT-15/Sikorsky bridge): realignment of lanes for entrance to CT-15 ramps.

MTP projects include:

- I-95 Capacity and Safety Improvements: Exits 19-27A PD, Northbound Widening. Phase 1 of the projects will improve the CT-8 Connector at 27A. Phase 2 of the project will implement

recommendations from the Planning and Environmental Linkages study for exits 19 to 25. This is a major, long-term project.

- I-84 : Construct an additional travel lane in either direction between Waterbury (east of the TMA) and the Route 7 Interchange (west of the TMA)
- CT Route 8:
  Shelton:
    - Construct new SB on-ramp at Interchange 11; minor widening of Bridgeport Avenue to accommodate additional turning movements.
    - Reconstruct and realign ramps at interchange 14 (RTE 110 and Kneen St.) and construct new SB on-ramp at interchange 14 from RTE 110; convert interchange to single-point urban interchange. Preliminary design completed.

  Derby:

    - Reconstruct interchanges 16 & 17; extend Pershing Drive & construct local roads. Preliminary design completed.

  Seymour:

    - Realign SB lanes between Interchange 19 & 21; modify interchange. Preliminary design completed.
    - Construct new SB on-ramp at Interchange 22. Preliminary design completed.
- CT Route 34: Stevenson Dam Bridge**:** Currently, this project is in development to replace the Stevenson Dam Bridge, which was built in 1919. Because of the sharp curves along the approaches and the need to remove the bridge from the dam, the project would construct a new bridge upstream of the dam. This will eliminate the sharp curves in advance of the bridge and provide a straighter alignment.
- Reconstruct and widen Main Street from Bridge St. to Ausonio Dr. to 4 travel lanes, including additional turn lanes and enhancements to the interchange with Bridge Street/the Derby-Shelton Bridge.
- Stamford, Metro-North Railroad Bridge Replacements: Widening of the railroad bridges will allow for additional travel lanes at the following project locations:
    - Elm Street Metro-North Bridge Replacement and Complete Streets Enhancements: North State Street to Cherry Street
    - East Main Street Metro-North Bridge Replacement and Complete Streets Enhancements: Myrtle Avenue to North State Street
    - Greenwich Avenue Metro-North Bridge Replacement and Complete Streets Enhancements: South State Street to Pulaski Street
    - Canal Street Metro-North Bridge Replacement and Complete Streets Enhancements: North State Street to Dock Street
- Stamford:
    - Long Ridge Road, Stillwater, Roxbury intersection reconstruction
    - Stillwater Road and Bridge Street intersection reconstruction
- Norwalk:
    - Route 1 – widen to a four lane cross section from the intersection of Hoyt Street to the intersection of East Avenue

- Westport:
    - Route 1 intersection redesign: Wilton Road and Riverside Avenue intersection
- Interstate 95:
    - Exit 16 – Implement Diverging Diamond Interchange

6.0 Program and Implement CMP Strategies:

Each MPO will incorporate this CMP into their respective Metropolitan Transportation Plans (MTPs) and will use it to prioritize projects. Future corridor planning studies will emphasize congestion mitigation strategies. Currently, many of the CMP proposals have been derived through planning studies; we will continue to program short, medium and long term projects, as well as spot improvements.

7.0 Evaluate Strategy Effectiveness:

To assess strategy effectiveness, annual performance from 2017-2021 was monitored. System-level performance and strategy effectiveness were evaluated for each year from 2017 to 2021, based on the process created in the 2018 CMP for Greater Bridgeport and Valley MPO.

7.1 System-Level Performance

Performance measures were calculated annually from 2017-2021.

The strategies in this CMP are designed to reduce congestion by:

- Increasing Non-Single Occupancy Vehicle Usage
- Increasing Level of Travel Time Reliability
- Increasing Truck Travel Time Reliability
- Decreasing Peak Hour Excessive Delay

Non-Single Occupancy Vehicle Usage

Non-SOV travel increased from 28.36% in 2017 to 32.93% in 2021, meeting the objective.

Level of Travel Time Reliability

LOTTR increased from 70.6% in 2017 to 79.25% in 2021, meeting the objective.

Truck Travel Time Reliability

The TTTR index increased from 2.4 in 2017 to 2.5 in 2021, meeting the objective.

Peak Hour Excessive Delay

PHED decreased from 13.8 hours in 2017 to 12.6 hours in 2021, meeting the objective.

While the performance measures have all improved since 2017, the pandemic clearly impacted travel in the TMA. All the performance measures improved in 2020. Non-SOV usage was the only performance measure that continued to improve in 2021. LOTTR, TTTR, and PHED all regressed but not to 2017 levels. The next CMP will be critical to assess if these were sustainable trends or just a blip due to reduced travel during the pandemic.

7.2 Strategy Effectiveness

The following projects from the 2018 GBVMPO CMP have been completed. While it is difficult to assess if any of these specific strategies had a direct impact on the performance measures, due to the pandemic, it is still important to note the projects completed to improve congestion.

Demand Management:

- The Bridgeport Intermodal Center project has improved access to rail, bus and ferry service.
- Bridgeport's bicycle path between Beardsley Park and Seaside Park has improved access throughout the City and has strengthened access to the bus station, rail station and ferry terminal.

Traffic Operations:

- CT-8: Expanded state Incident Management Systems to CT-8, includes 24-hour monitoring, video surveillance, variable message signs & incident detection.
- CT-110, Stratford: The CT-110 Planning Study recommended the realignment of Sikorsky Gate #1 intersection to directly opposite of Oronoque Lane. Previously, the three closely spaced intersections (CT-15 southbound ramps and Navajo Lane) caused congestion throughout the weekday peak hours. By realigning the driveway, the traffic light at the driveway was removed, since traffic at the intersection can now be controlled by the Oronoque Lane traffic light.

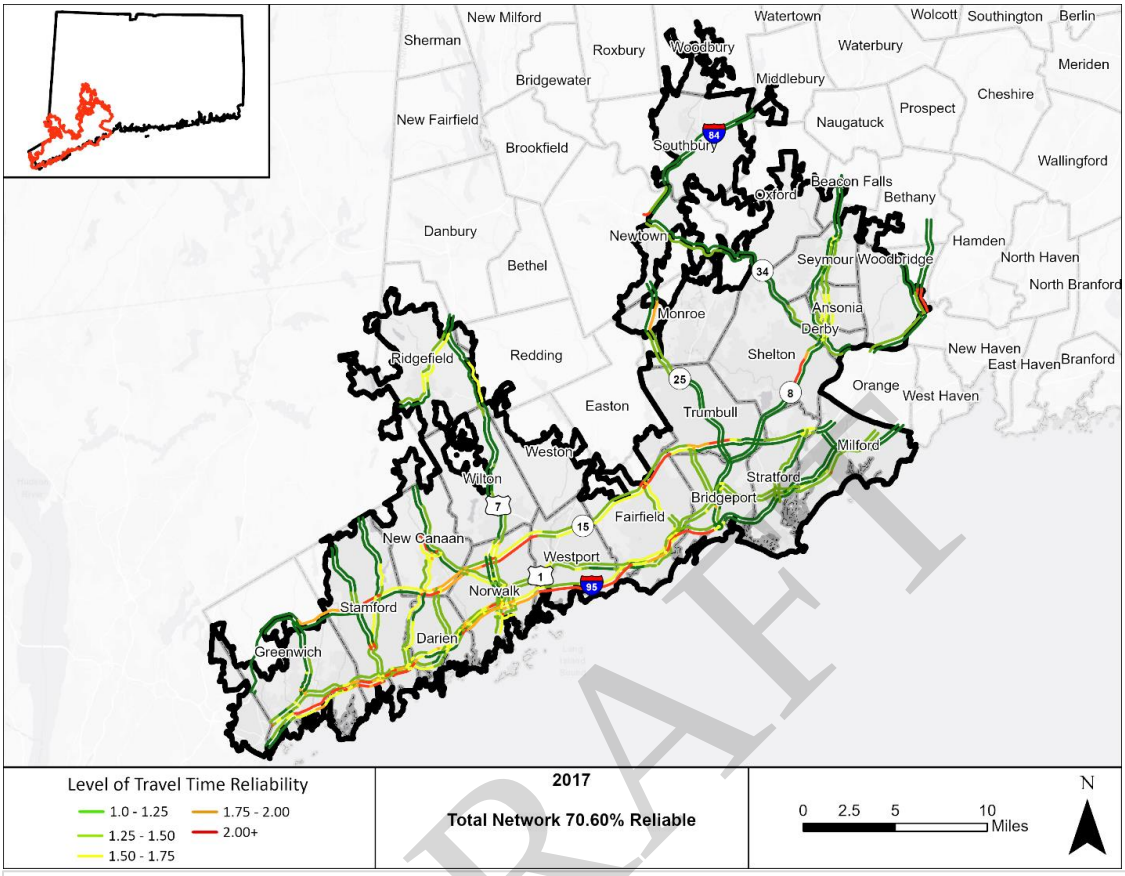
Road Capacity:

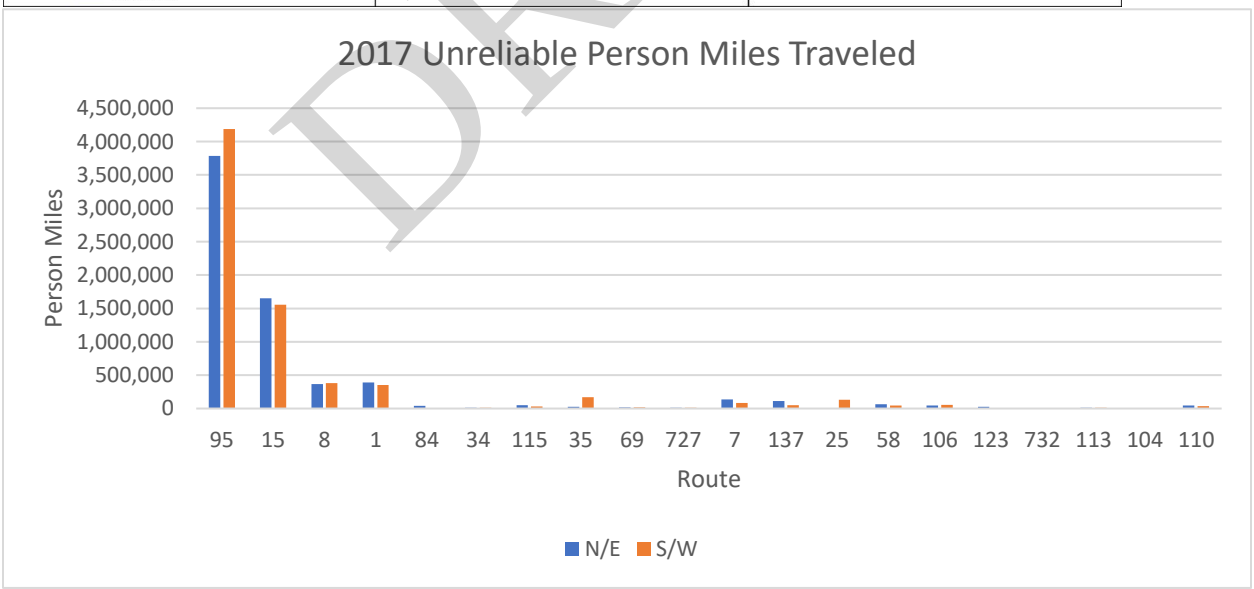
- I-95, Stratford Interchange 33: reconstructed from a partial interchange to a fully directional, diamond interchange. The project has provided better access to I-95 from adjacent commercial centers and included improvements to local roads.

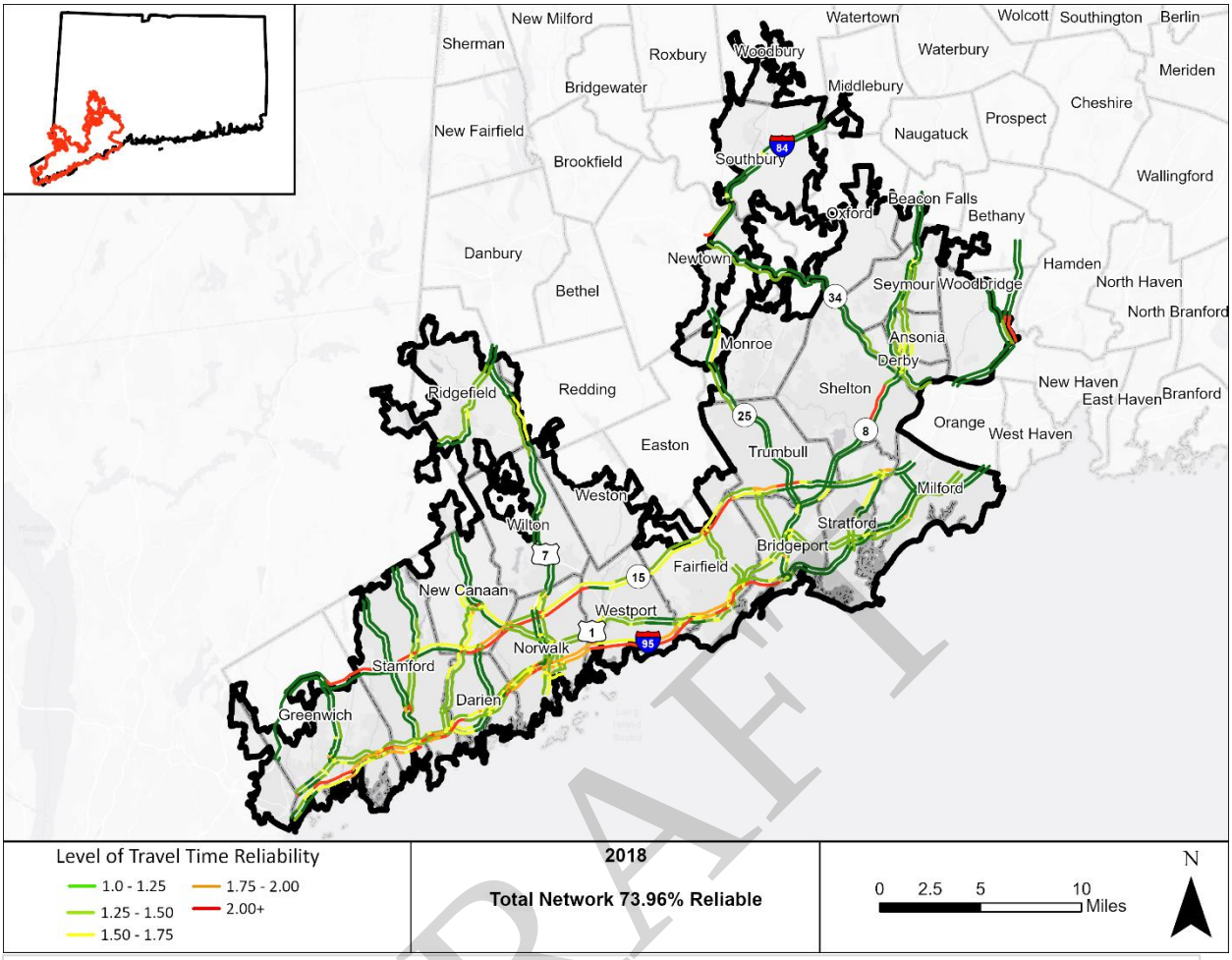
7.3 Monitoring

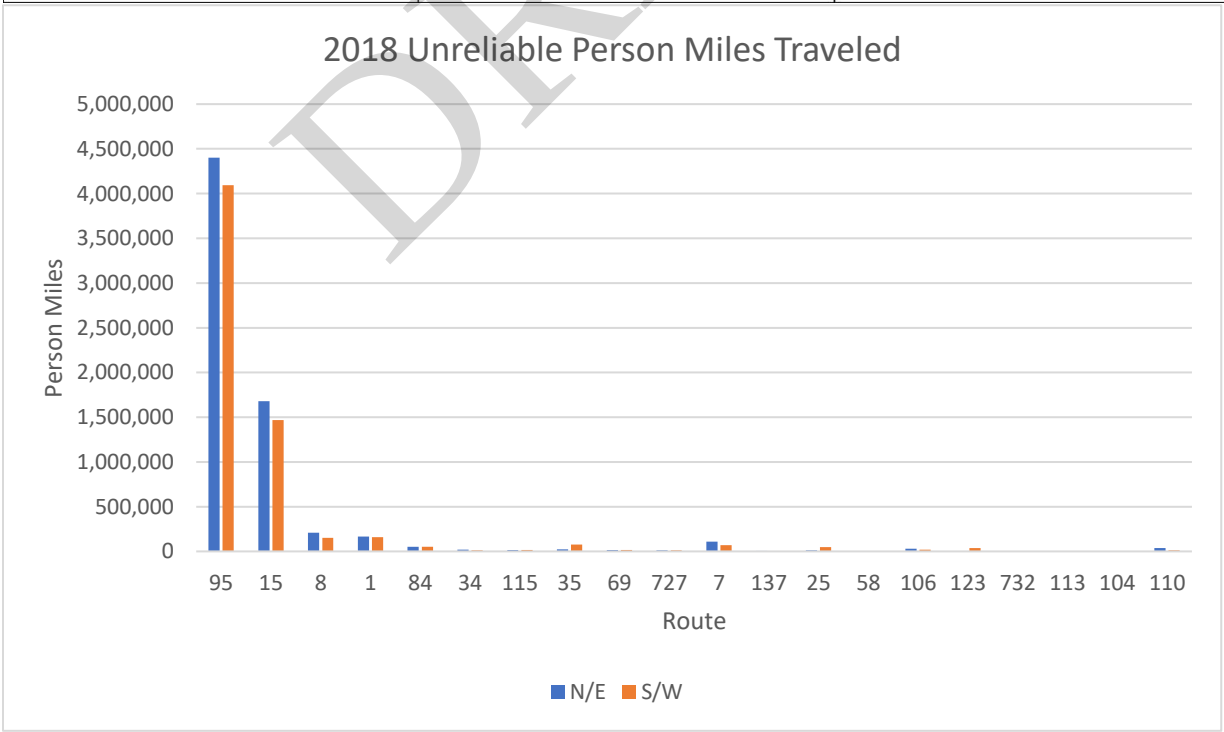
This is the first CMP for the entire Bridgeport-Stamford TMA and thus establishes a baseline to monitor performance measures moving forward. As projects are completed, the measures can be compared in the project area to gauge their effectiveness. The MAP-21 widget provides a quick and effective way to calculate LOTTR, TTTR, and PHED on demand. In addition, as the 5-year ACS is updated, Non-SOV travel in the TMA can be calculated.

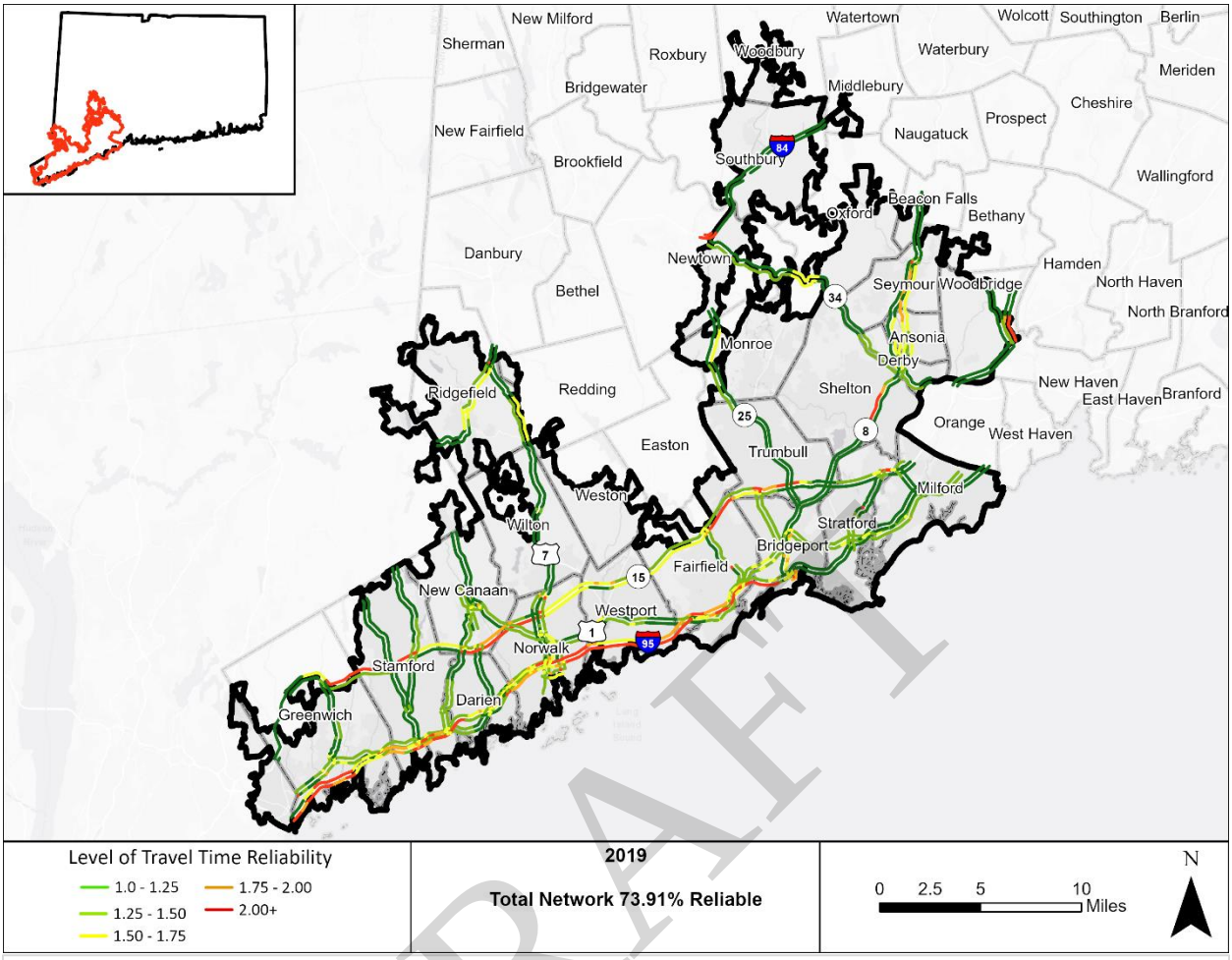
Appendix A: Level of Travel Time Reliability Index

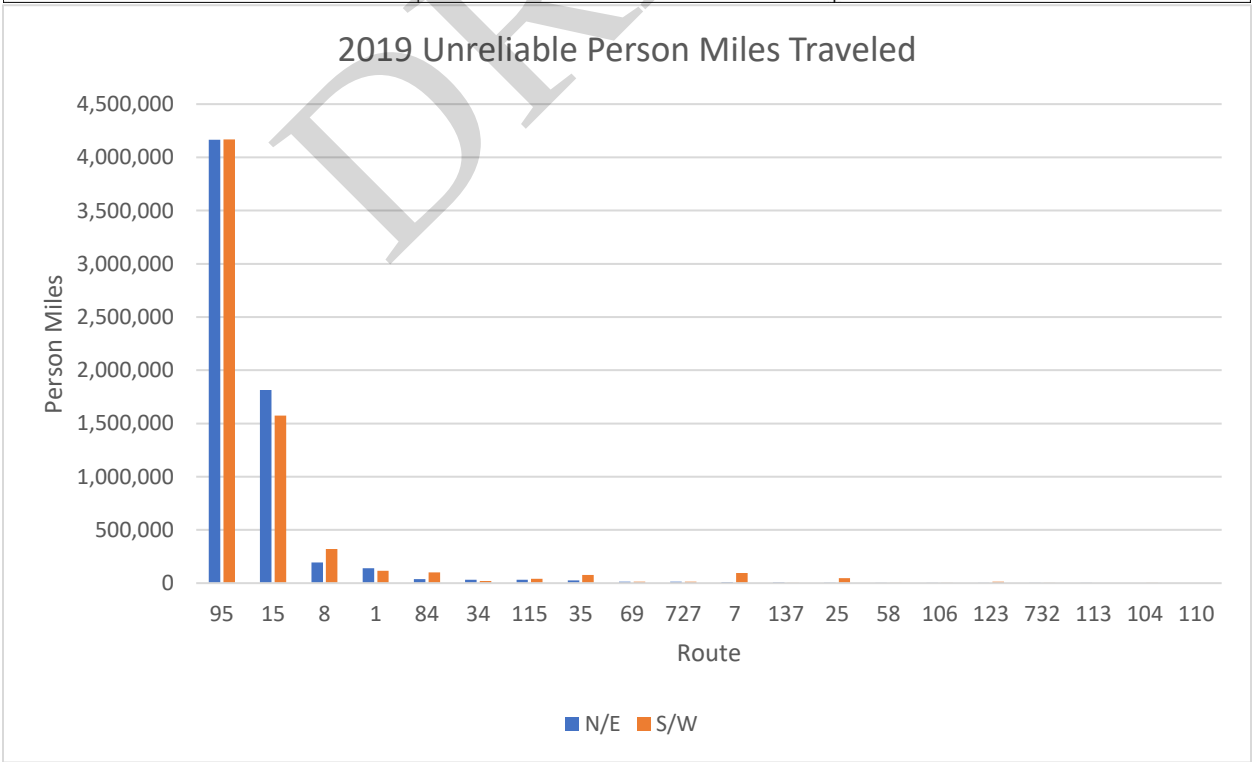


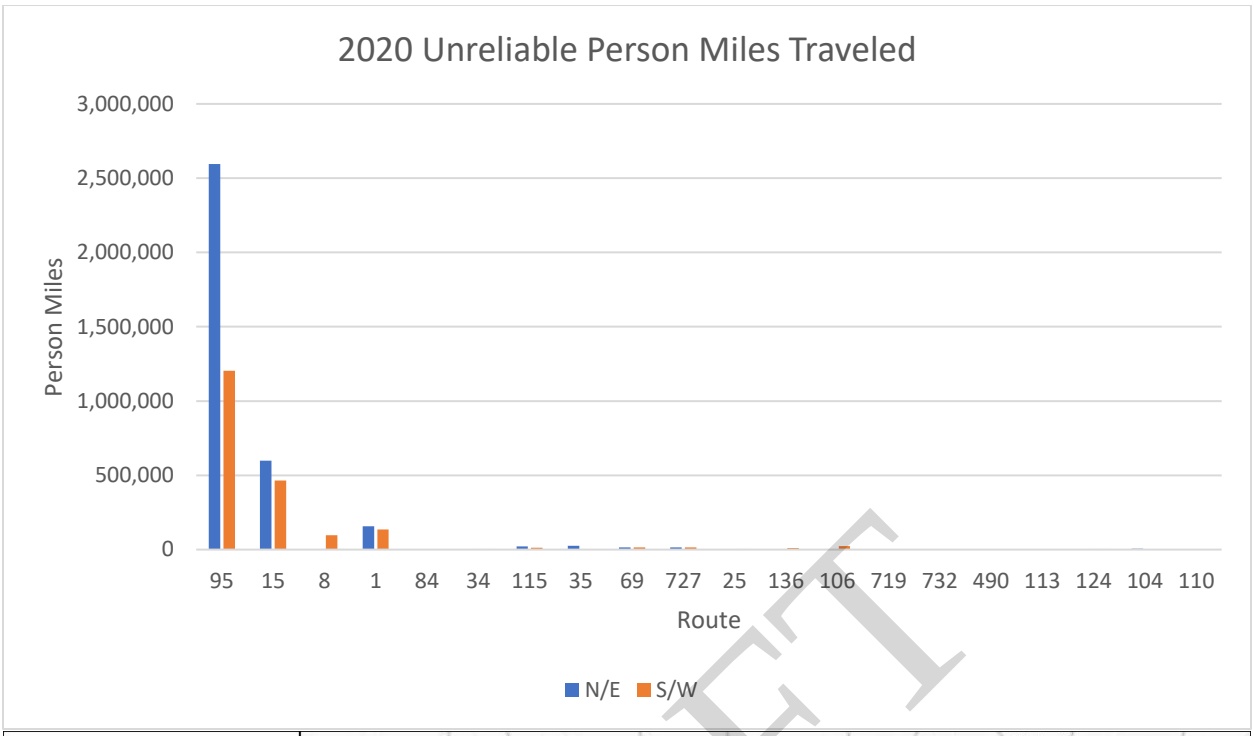


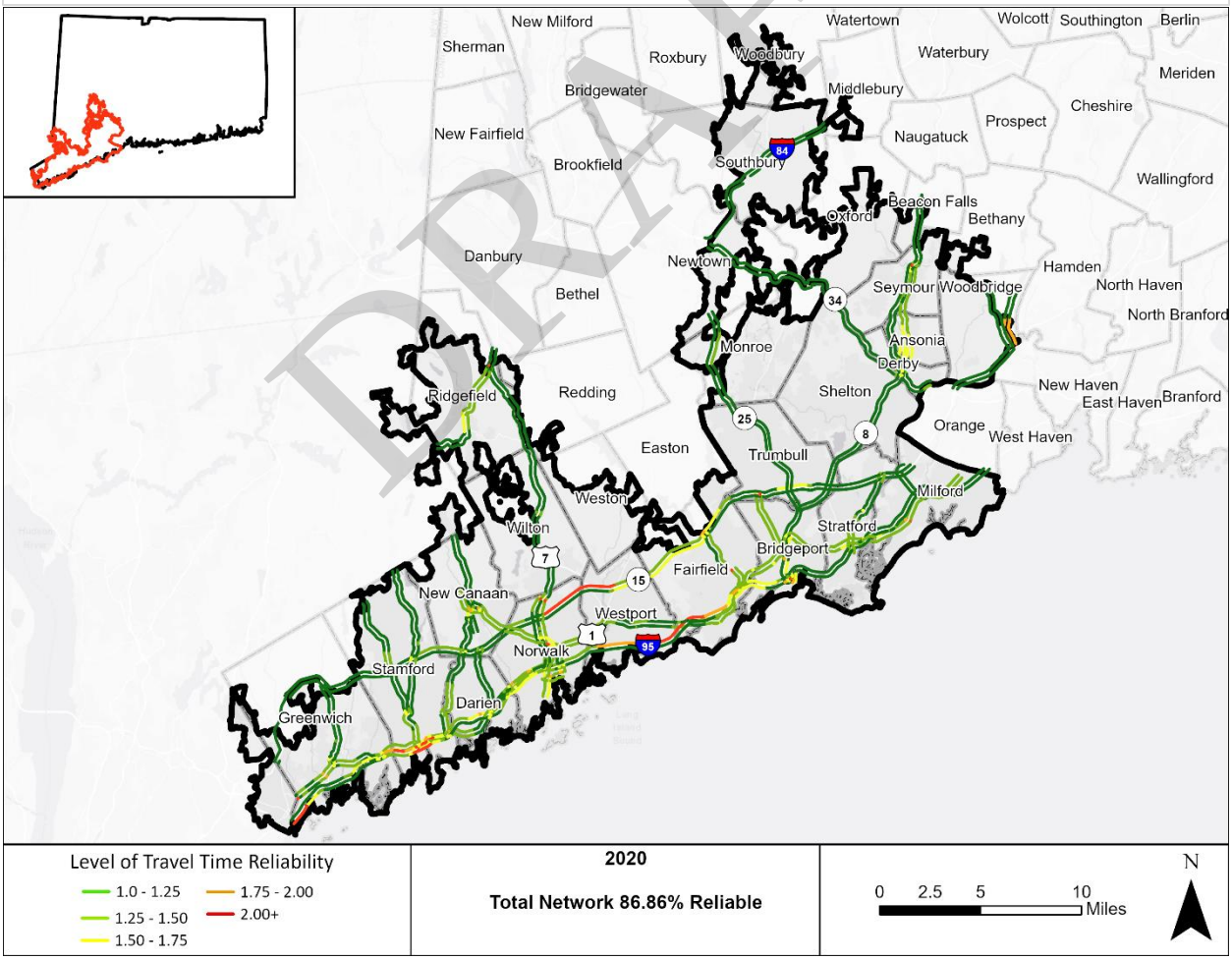

New Milford
Sherman
Roxbury
Woodbury
Watertown
Waterbury
Wolcott
Southington
Berlin
Meriden
Bridgewater
Middlebury
Cheshire
Prospect
New Fairfield
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Hamden
Seymour
Woodbridge
North Haven
Bethel
North Branford
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Level of Travel Time Reliability
1.0 - 1.25
1.25 - 1.50
1.50 - 1.75
1.75 - 2.00
2.00+
2018
Total Network 73.96% Reliable
0 2.5 5 10
Miles
N

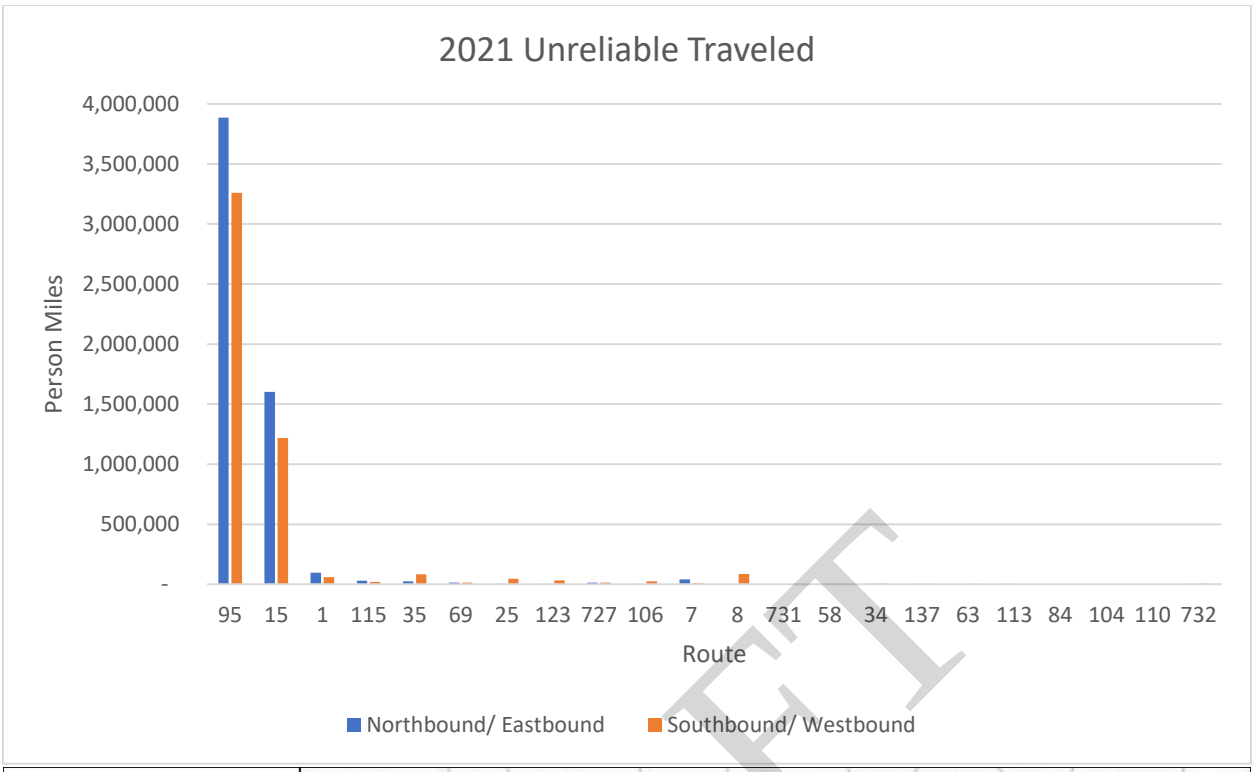

2018 Unreliable Person Miles Traveled
Person Miles
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
95 15 8 1 84 34 115 35 69 727 7 137 25 58 106 123 732 113 104 110
Route
N/E
S/W

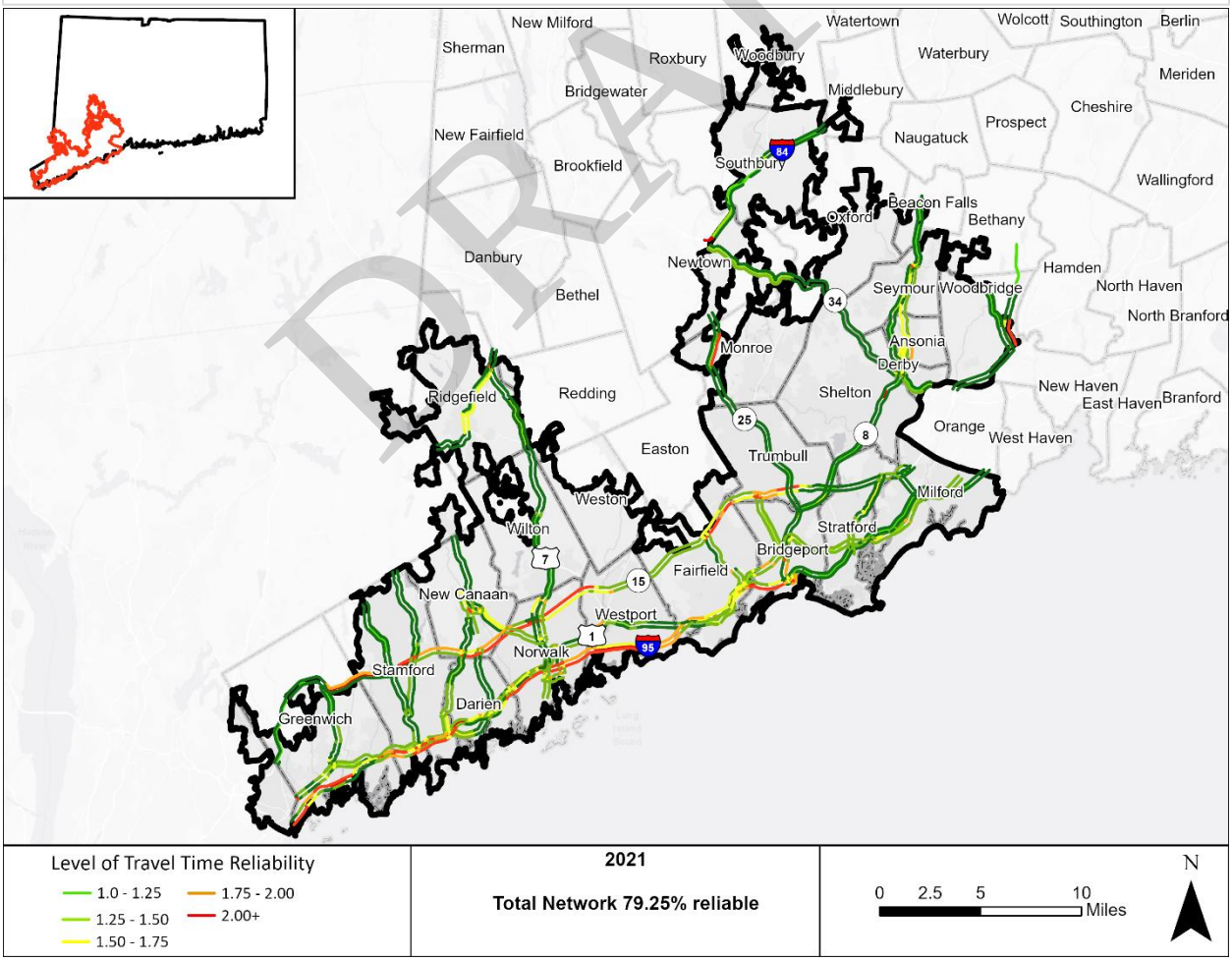

New Milford
Sherman
Roxbury
Woodbury
Watertown
Waterbury
Wolcott
Southington
Berlin
Meriden
Bridgewater
Middlebury
Cheshire
Prospect
New Fairfield
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Hamden
North Haven
Seymour
Woodbridge
Bethel
North Branford
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Level of Travel Time Reliability
1.0 - 1.25
1.25 - 1.50
1.50 - 1.75
1.75 - 2.00
2.00+
2019
Total Network 73.91% Reliable
0 2.5 5 10
Miles
N


2019 Unreliable Person Miles Traveled
Person Miles
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
95 15 8 1 84 34 115 35 69 727 7 137 25 58 106 123 732 113 104 110
Route
N/E
S/W

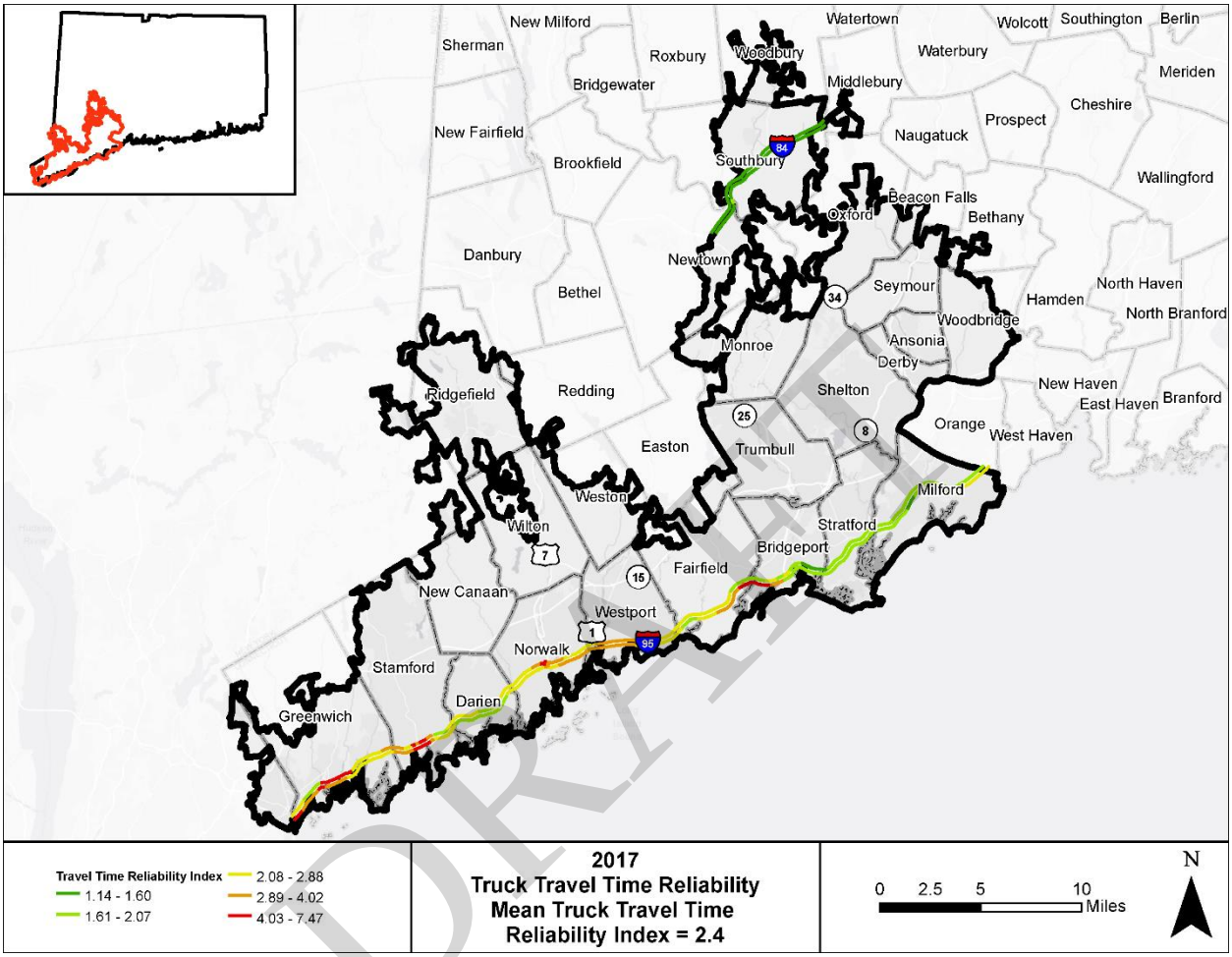

2020 Unreliable Person Miles Traveled
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Person Miles
95 15 8 1 84 34 115 35 69 727 25 136 106 719 732 490 113 124 104 110
Route
N/E
S/W

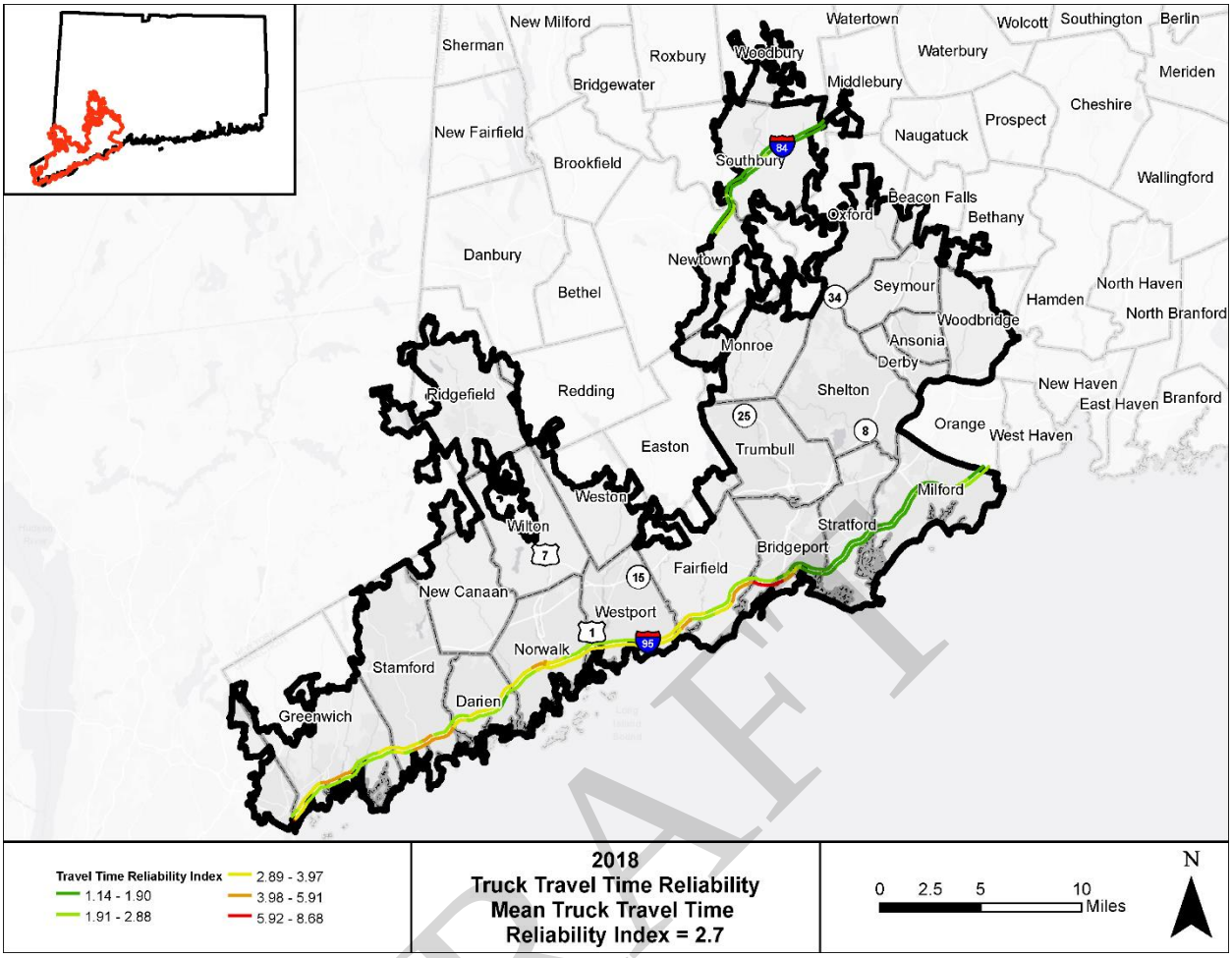

New Milford
Sherman
Roxbury
Woodbury
Watertown
Waterbury
Wolcott
Southington
Berlin
Meriden
Bridgewater
Middlebury
Cheshire
Prospect
New Fairfield
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Hamden
Seymour
Woodbridge
North Haven
Bethel
North Branford
Ansonia
Monroe
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Level of Travel Time Reliability
1.0 - 1.25
1.25 - 1.50
1.50 - 1.75
1.75 - 2.00
2.00+
2020
Total Network 86.86% Reliable
0 2.5 5 10
Miles
N

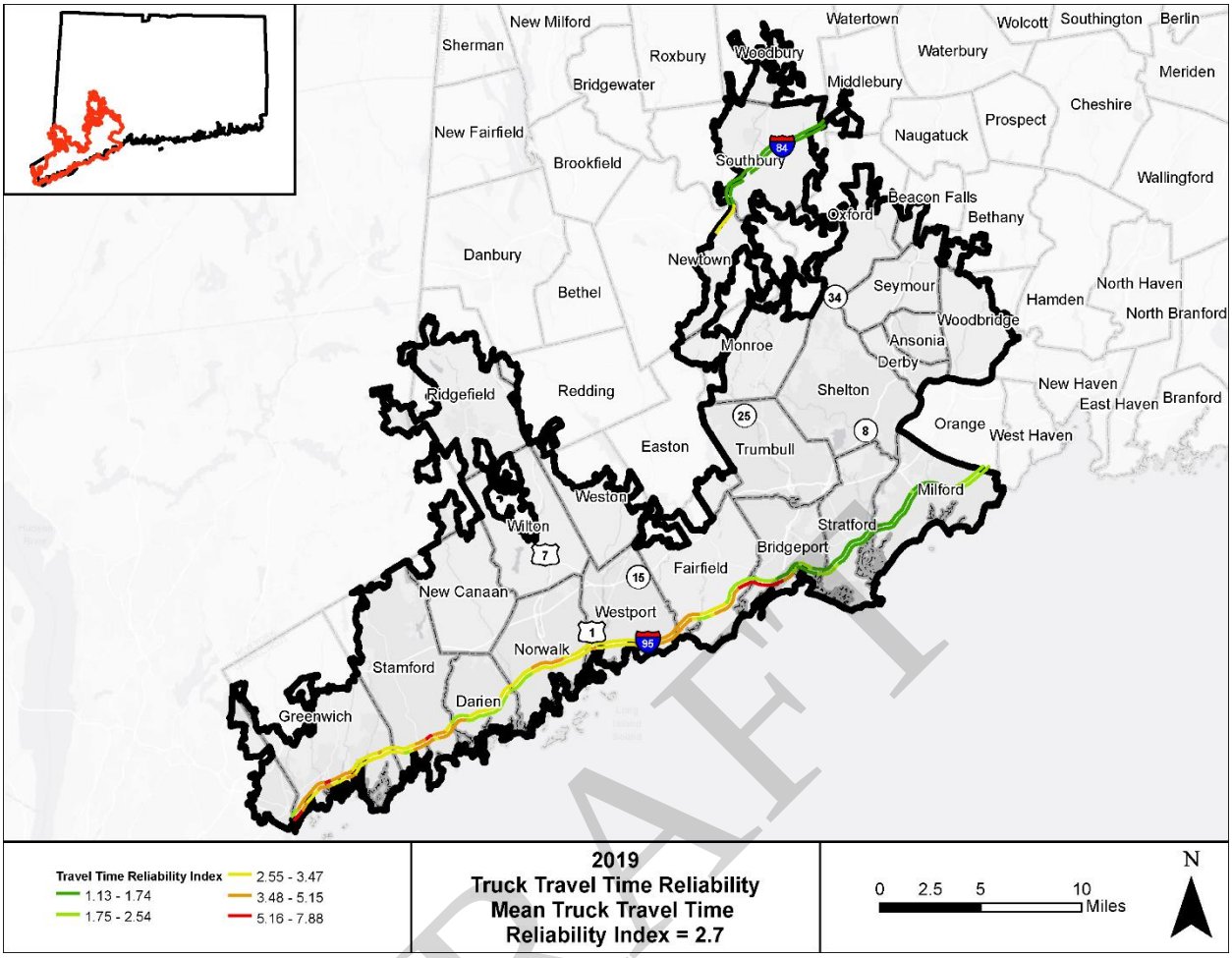

2021 Unreliable Traveled
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
Person Miles
95 15 1 115 35 69 25 123 727 106 7 8 731 58 34 137 63 113 84 104 110 732
Route
Northbound/ Eastbound
Southbound/ Westbound

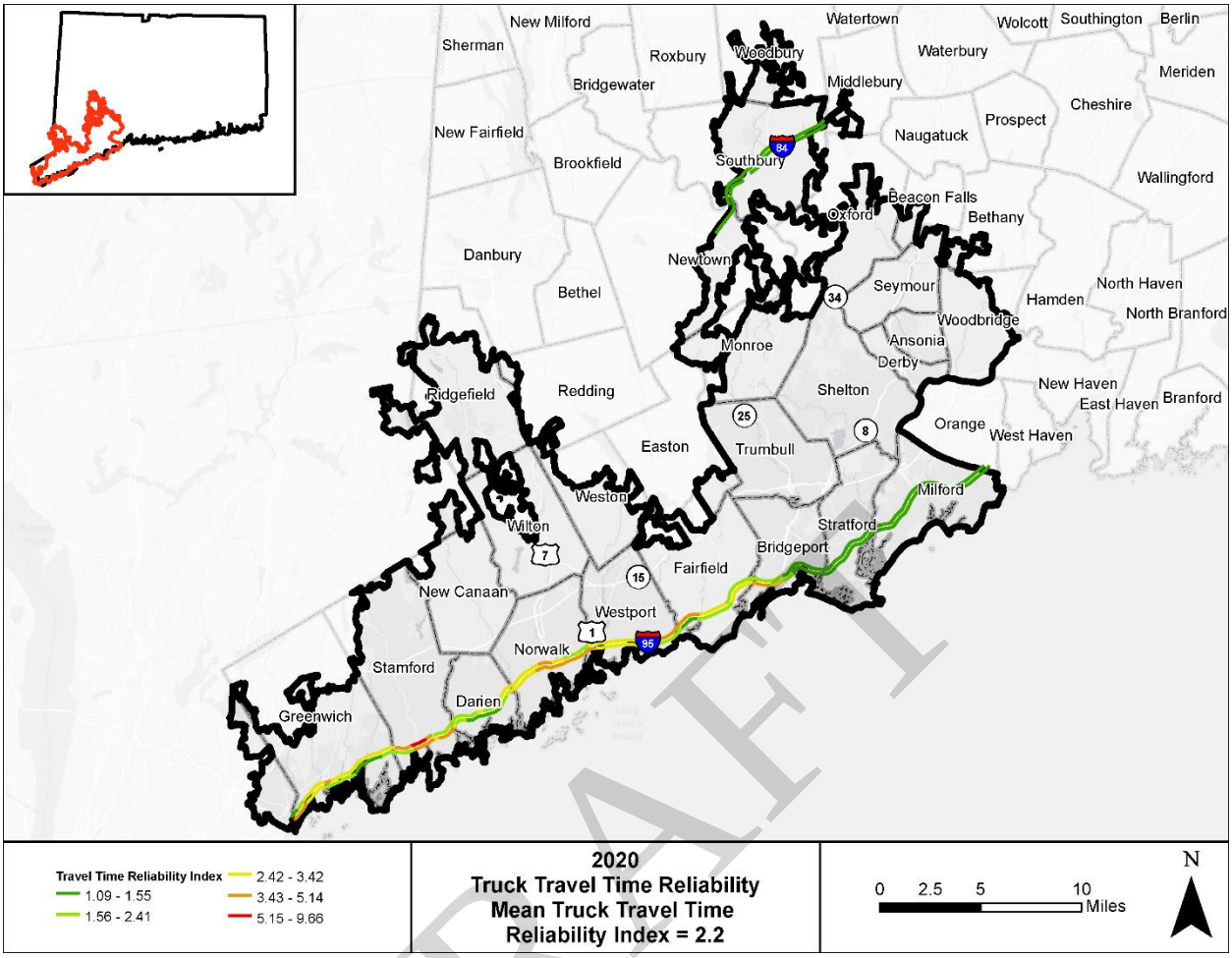

New Milford
Watertown
Wolcott
Southington
Berlin
Sherman
Roxbury
Woodbury
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
New Fairfield
Prospect
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Hamden
Seymour
Woodbridge
North Haven
Bethel
North Branford
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Level of Travel Time Reliability
1.0 - 1.25
1.25 - 1.50
1.50 - 1.75
1.75 - 2.00
2.00+
2021
Total Network 79.25% reliable
0 2.5 5 10
Miles
N

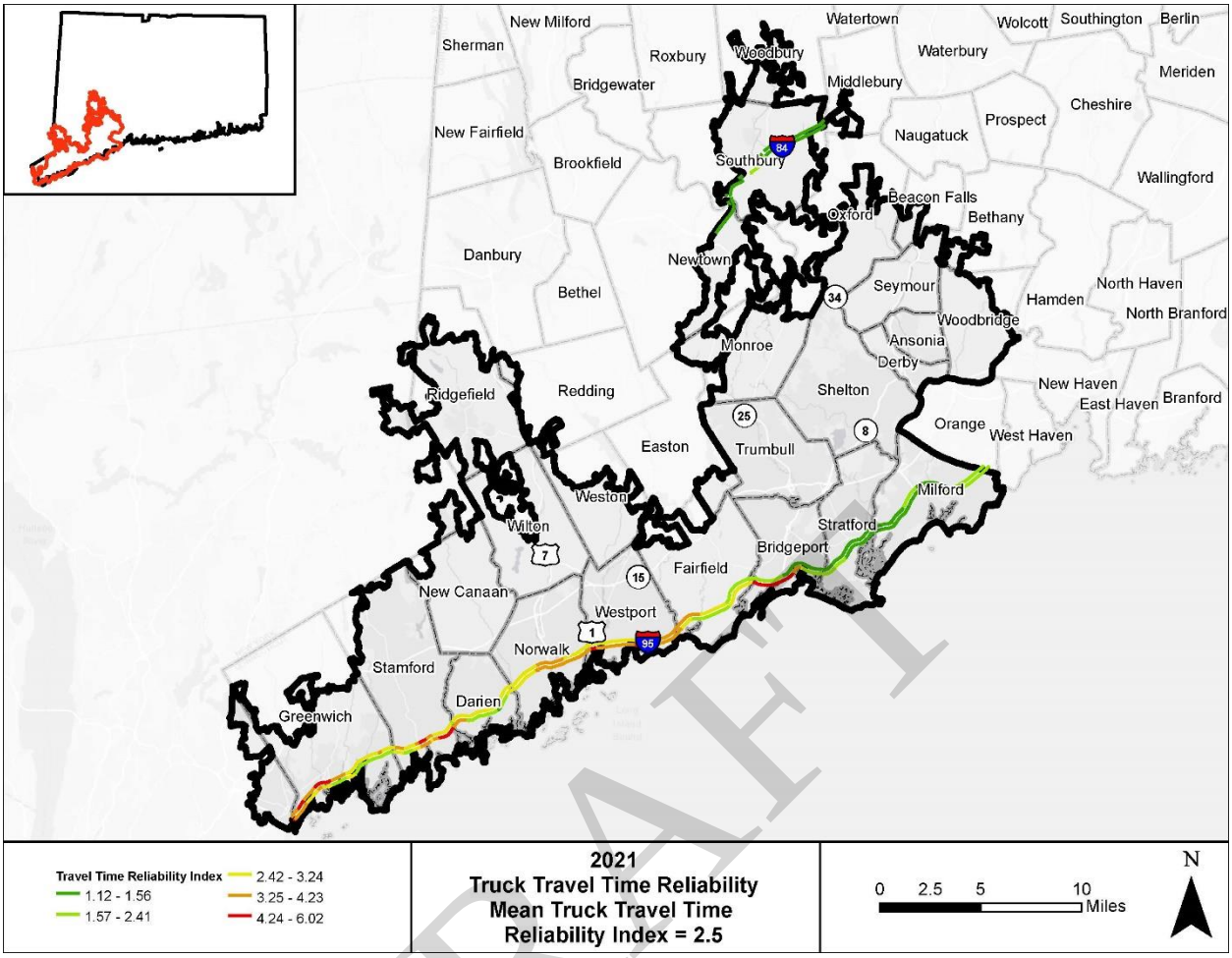
Appendix B: Truck Travel Time Reliability Index



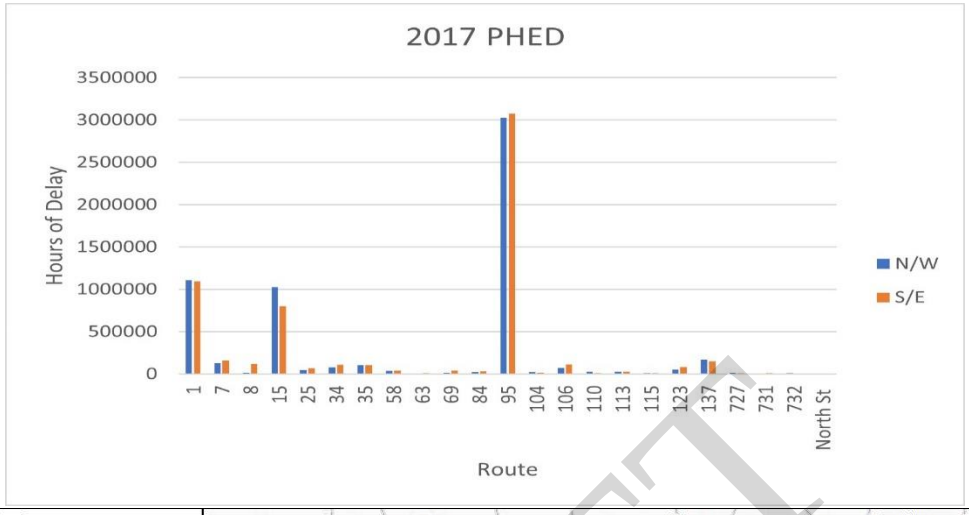

New Milford
Watertown
Wolcott
Southington
Berlin
Sherman
Roxbury
Woodbury
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
New Fairfield
Prospect
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Bethel
Hamden
North Branford
Woodbridge
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Milford
Weston
Stratford
Wilton
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Travel Time Reliability Index
1.14 - 1.90
1.91 - 2.88
2.89 - 3.97
3.98 - 5.91
5.92 - 8.68
2018
Truck Travel Time Reliability
Mean Truck Travel Time
Reliability Index = 2.7
0 2.5 5 10
Miles
N

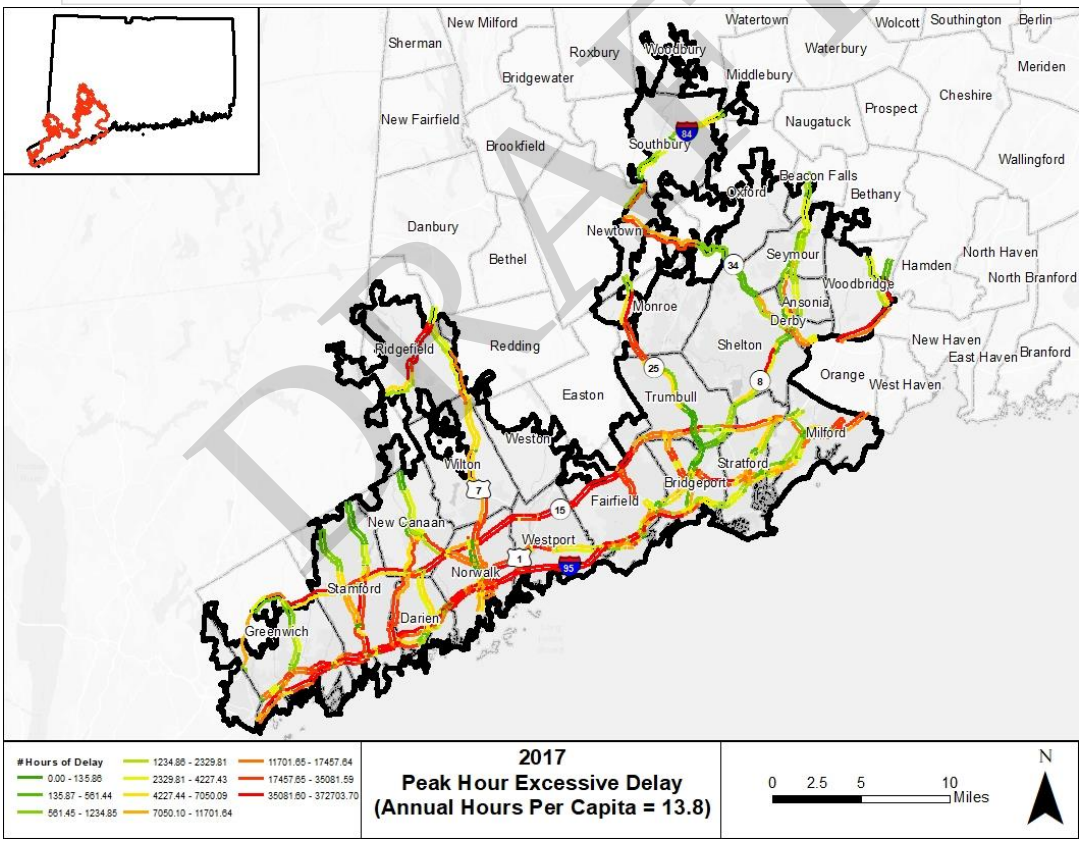

New Milford
Watertown
Wolcott
Southington
Berlin
Sherman
Roxbury
Woodbury
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
New Fairfield
Prospect
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Bethel
Hamden
North Branford
Woodbridge
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Milford
Weston
Stratford
Wilton
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Travel Time Reliability Index
1.13 - 1.74
1.75 - 2.54
2.55 - 3.47
3.48 - 5.15
5.16 - 7.88
2019
Truck Travel Time Reliability
Mean Truck Travel Time
Reliability Index = 2.7
0 2.5 5 10
Miles
N

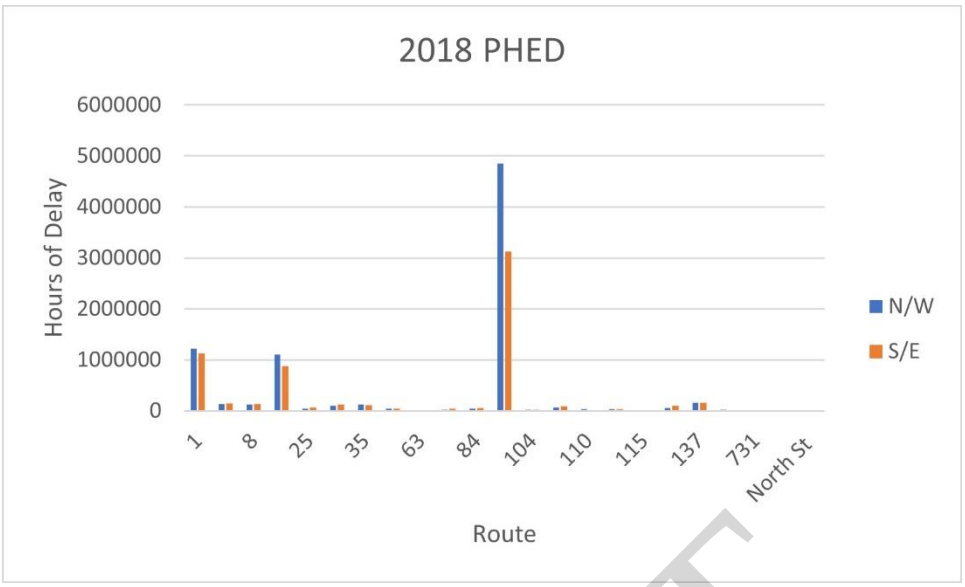

New Milford
Watertown
Wolcott
Southington
Berlin
Sherman
Roxbury
Woodbury
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
New Fairfield
Prospect
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Bethel
Hamden
North Branford
Woodbridge
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Milford
Weston
Stratford
Wilton
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Travel Time Reliability Index
1.09 - 1.55
1.56 - 2.41
2.42 - 3.42
3.43 - 5.14
5.15 - 9.66
2020
Truck Travel Time Reliability
Mean Truck Travel Time
Reliability Index = 2.2
0 2.5 5 10
Miles
N

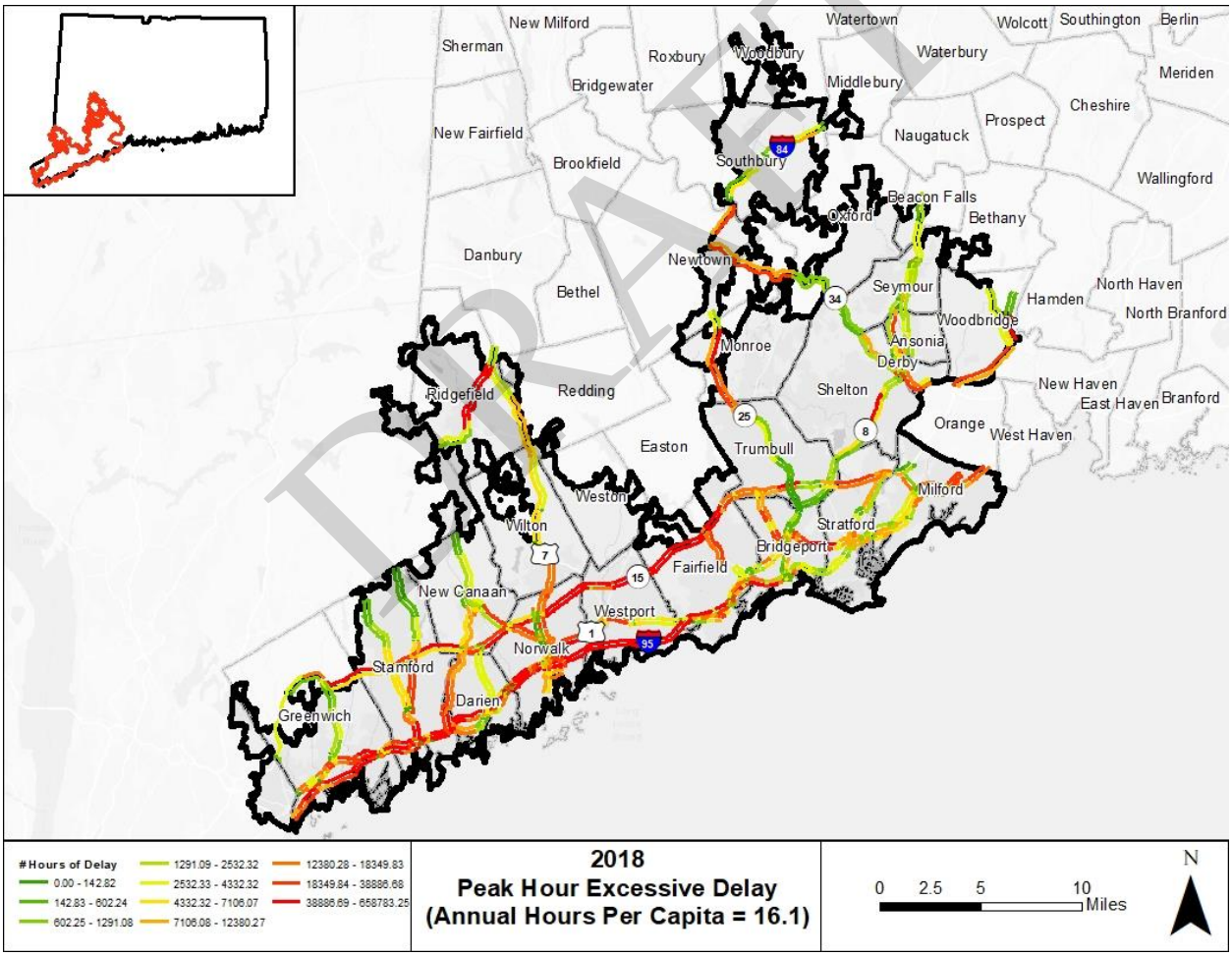

New Milford
Watertown
Wolcott
Southington
Berlin
Sherman
Roxbury
Woodbury
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
New Fairfield
Prospect
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Bethel
Hamden
North Branford
Woodbridge
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Milford
Weston
Stratford
Wilton
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Travel Time Reliability Index
1.12 - 1.56
1.57 - 2.41
2.42 - 3.24
3.25 - 4.23
4.24 - 6.02
2021
Truck Travel Time Reliability
Mean Truck Travel Time
Reliability Index = 2.5
0 2.5 5 10
Miles
N

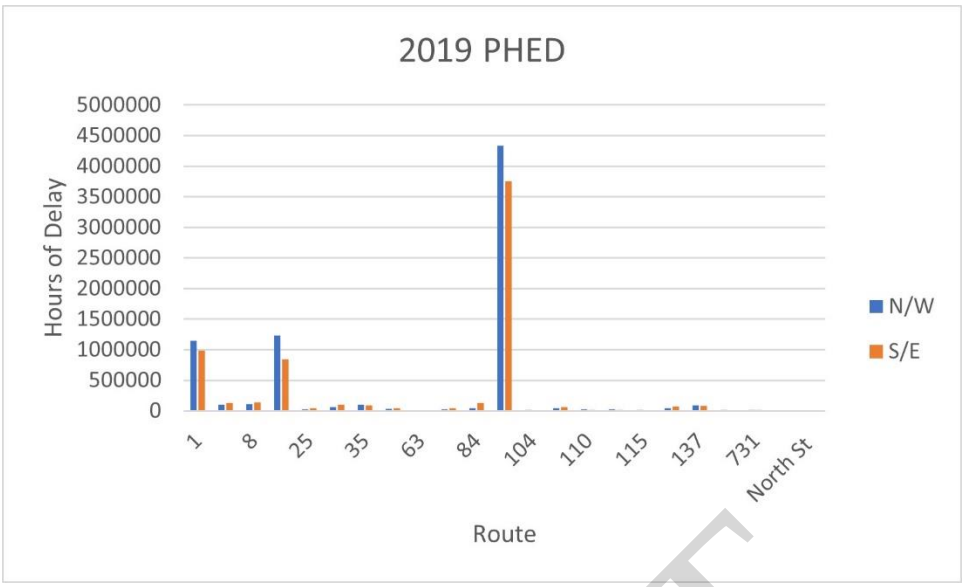
Appendix C: Peak Hour Excessive Delay

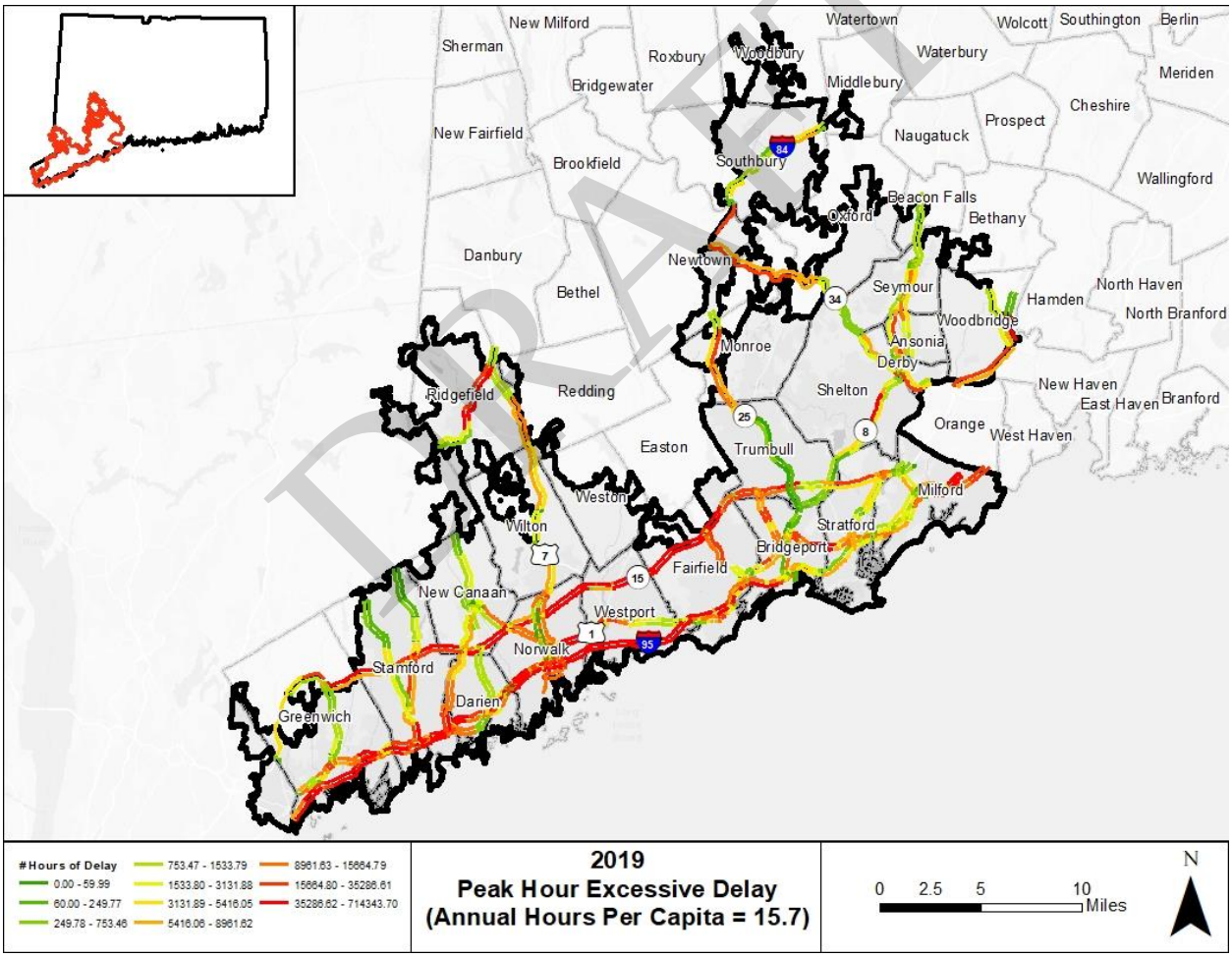


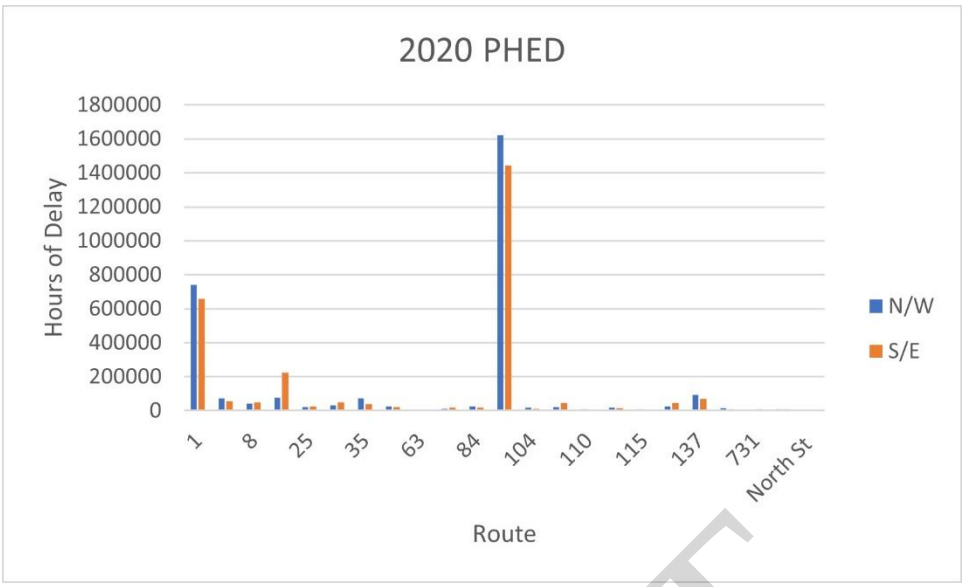


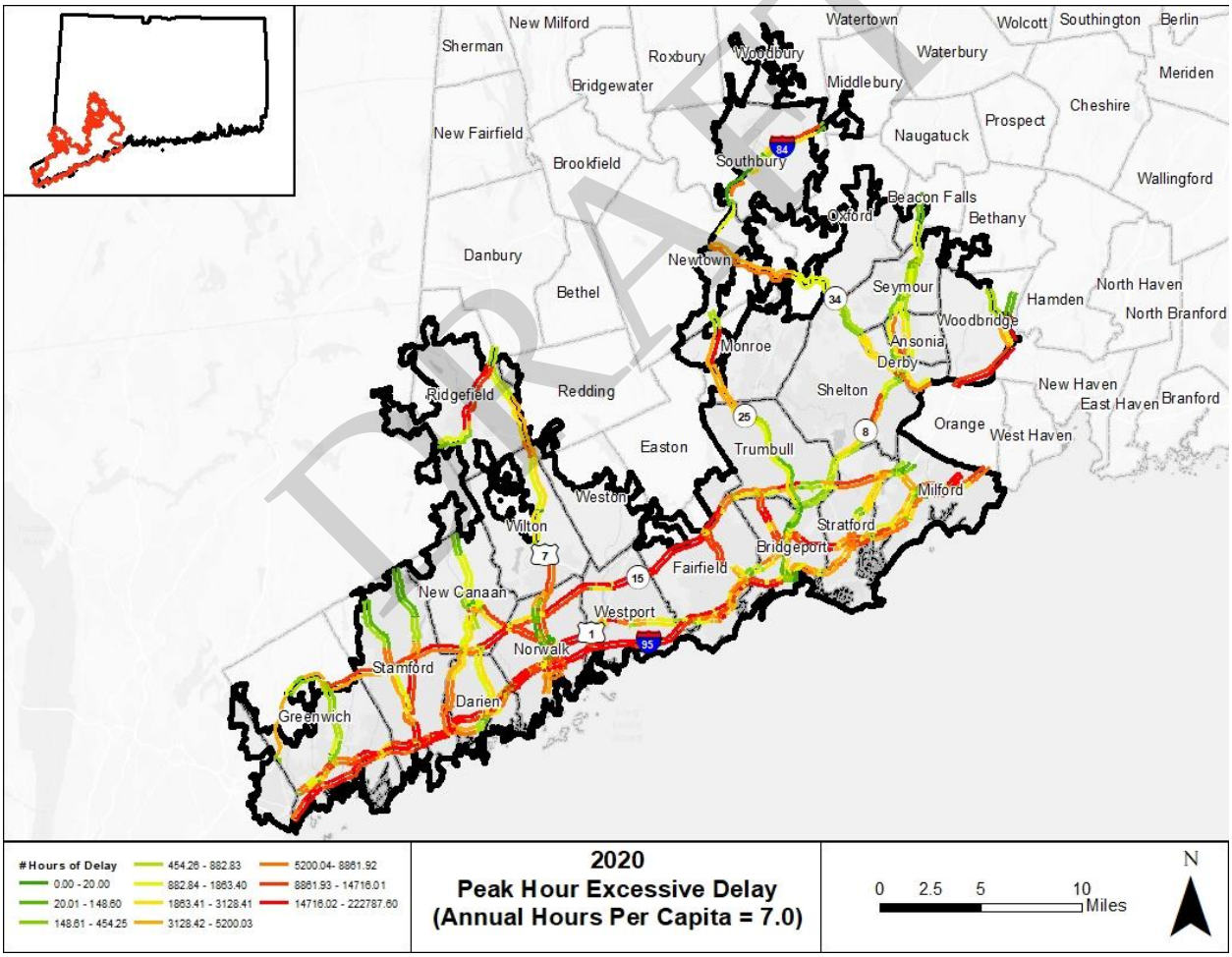

2018 PHED
Hours of Delay
6000000
5000000
4000000
3000000
2000000
1000000
0
1
8
25
35
63
84
104
110
115
137
731
North St
Route
N/W
S/E

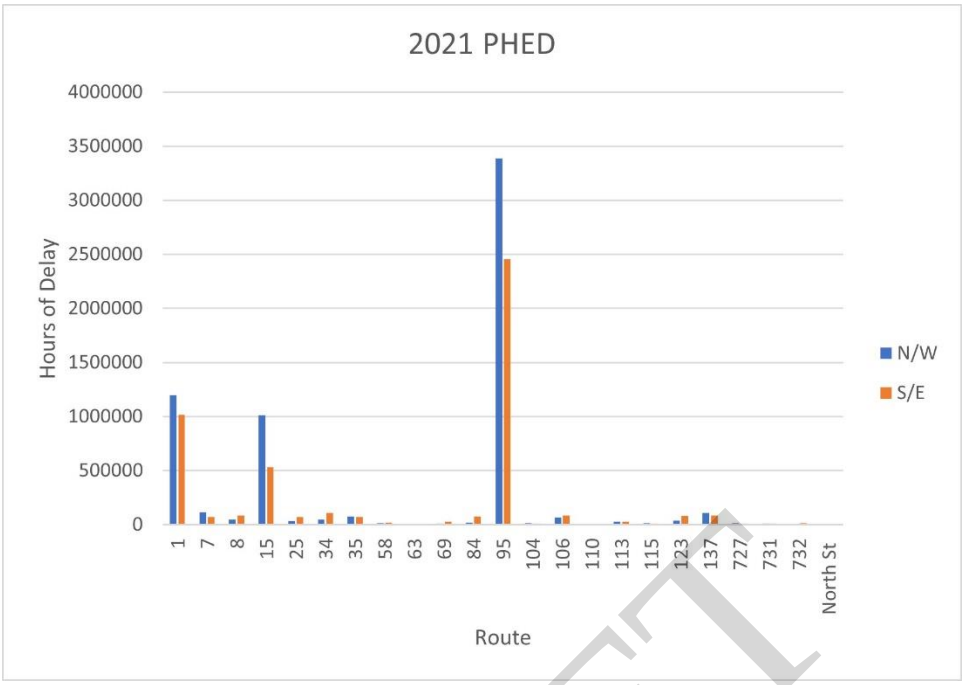

New Milford
Watertown
Wolcott
Southington
Berlin
Sherman
Roxbury
Woodbury
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
Prospect
New Fairfield
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Hamden
Bethel
Woodbridge
North Branford
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
#Hours of Delay
0.00 - 142.82
142.83 - 602.24
602.25 - 1291.08
1291.09 - 2532.32
2532.33 - 4332.32
4332.32 - 7106.07
7106.08 - 12380.27
12380.28 - 18349.83
18349.84 - 38886.68
38886.69 - 658783.25
2018
Peak Hour Excessive Delay
(Annual Hours Per Capita = 16.1)
0 2.5 5 10
Miles
N

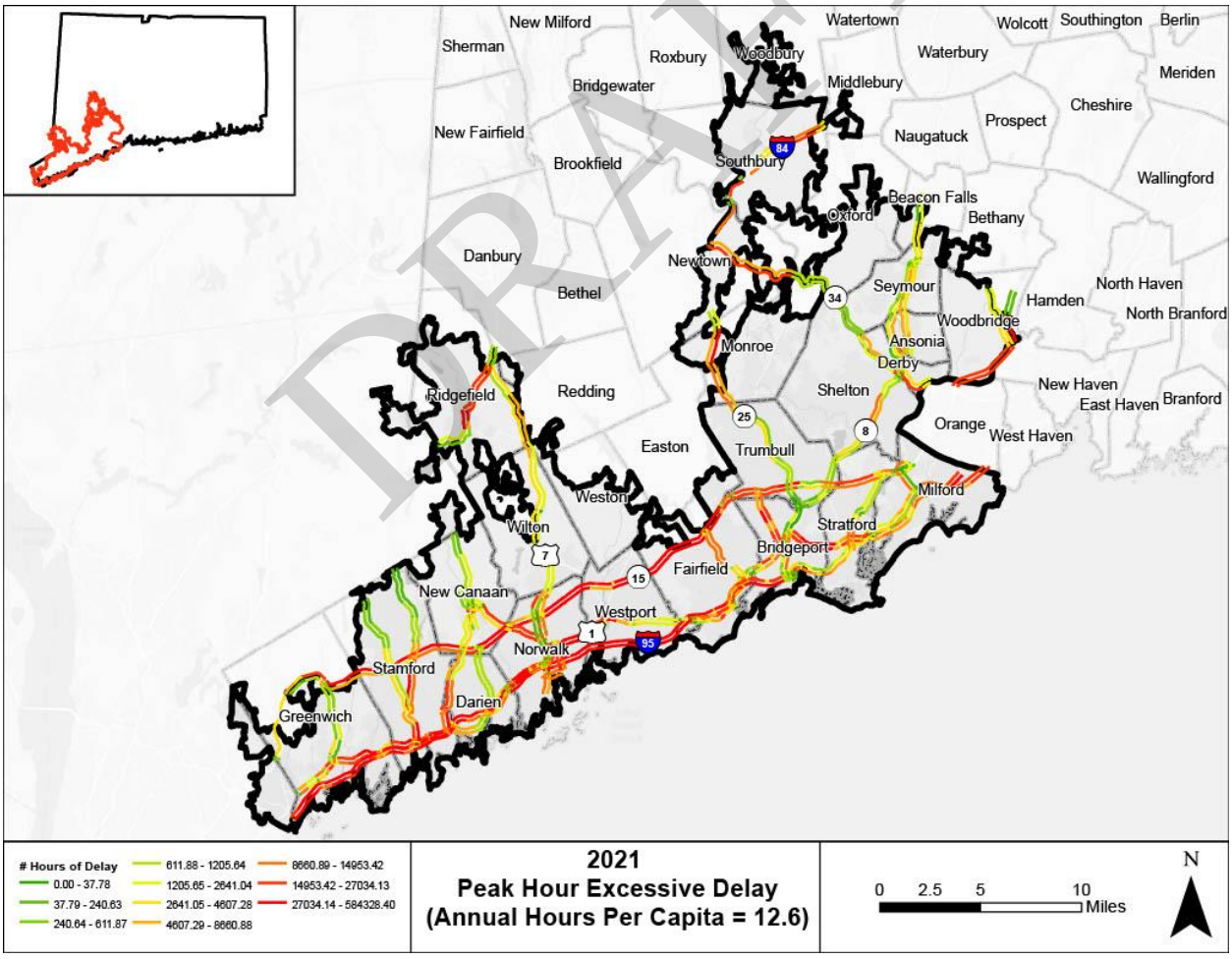

2019 PHED
Hours of Delay
5000000
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
1
8
25
35
63
84
104
110
115
137
731
North St
Route
N/W
S/E


New Milford
Sherman
Roxbury
Woodbury
Watertown
Wolcott
Southington
Berlin
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
Prospect
New Fairfield
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Hamden
Bethel
North Branford
Woodbridge
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
#Hours of Delay
0.00 - 59.99
60.00 - 249.77
249.78 - 753.46
753.47 - 1533.79
1533.80 - 3131.88
3131.89 - 5416.05
5416.06 - 8961.62
8961.63 - 15664.79
15664.80 - 35286.61
35286.62 - 714343.70
2019
Peak Hour Excessive Delay
(Annual Hours Per Capita = 15.7)
0 2.5 5 10
Miles
N


2020 PHED
Hours of Delay
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
1
8
25
35
63
84
104
110
115
137
731
North St
Route
N/W
S/E


New Milford
Sherman
Roxbury
Woodbury
Watertown
Waterbury
Wolcott
Southington
Berlin
Meriden
Bridgewater
Middlebury
Cheshire
Prospect
Naugatuck
New Fairfield
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Hamden
North Branford
Bethel
Woodbridge
Ansonia
Monroe
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
#Hours of Delay
0.00 - 20.00
20.01 - 148.60
148.61 - 454.25
454.26 - 882.83
882.84 - 1863.40
1863.41 - 3128.41
3128.42 - 5200.03
5200.04- 8861.92
8861.93 - 14716.01
14716.02 - 222787.60
2020
Peak Hour Excessive Delay
(Annual Hours Per Capita = 7.0)
0
2.5
5
10
Miles
N


2021 PHED
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
Hours of Delay
1
7
8
15
25
34
35
58
63
69
84
95
104
106
110
113
115
123
137
727
731
732
North St
Route
N/W
S/E


New Milford
Sherman
Roxbury
Woodbury
Watertown
Wolcott
Southington
Berlin
Waterbury
Meriden
Bridgewater
Middlebury
Cheshire
Prospect
New Fairfield
Naugatuck
Brookfield
Southbury
Wallingford
Beacon Falls
Oxford
Bethany
Danbury
Newtown
Seymour
North Haven
Bethel
Hamden
North Branford
Woodbridge
Monroe
Ansonia
Derby
Ridgefield
Redding
Shelton
New Haven
East Haven
Branford
Orange
West Haven
Easton
Trumbull
Weston
Milford
Wilton
Stratford
Bridgeport
Fairfield
New Canaan
Westport
Norwalk
Stamford
Darien
Greenwich
Hours of Delay
0.00 - 37.78
37.79 - 240.63
240.64 - 611.87
611.88 - 1205.64
1205.65 - 2641.04
2641.05 - 4607.28
4607.29 - 8660.88
8660.89 - 14953.42
14953.42 - 27034.13
27034.14 - 584328.40
2021
Peak Hour Excessive Delay
(Annual Hours Per Capita = 12.6)
0
2.5
5
10
Miles
N

Appendix E: Freight Profile

Western Connecticut Council of Governments

Regional Freight Profile

Updated February 2023

Introduction

Western Connecticut is a geographic region of Connecticut, defined by the Western Connecticut Council of Governments as being located in the southwest corner of the state.[1] Within this region, there are two Metropolitan Planning Organizations, those being the South Western CT MPO and the Housatonic Valley MPO. Western Connecticut encompasses the most densely populated region in the state[with a population of approximately 610,000.

Western Connecticut functions as a gateway for freight movements in and out of New England as well as Canada. It is also a generator and consumer of freight, as it is one of Connecticut's more densely populated regions. Its freight transportation network is chiefly comprised of Interstate, US and state-numbered routes. Some of the nation's most productive population centers lie just beyond the region's borders to the north and south. Forty-four percent of freight movements in Connecticut are through trips.

By Truck: Connecticut's roads, and especially its Interstate System, carry a disproportionate burden of this through traffic - trucks transport over 99 percent of the freight that passes through Connecticut.[1] Put another way, nearly 94 percent of the freight that travels to, from or through Connecticut does so by truck. Trucks also move over 84 percent of the fuel oil that is shipped to the state.

By Rail: currently, there are four recognized freight rail lines in the Region. The regional freight rail network centers upon Danbury, with all four lines serving the city. CSX Transportation (CSX), the Housatonic Railroad (HRRC) and Genesee & Wyoming (G&W)'s Providence and Worcester Railroad (PWRR) are the freight operators. CSX provides a link in Pittsfield, MA, to national and international markets for rail freight originating or arriving in the region.

By Marine: Connecticut hosts three deepwater ports outside the WestCOG region: 1) Bridgeport; 2) New Haven, and 3) New London. Freight movements to/from the region make use of Bridgeport and New Haven facilities. In addition, modest amounts of freight are transported to marine facilities in Norwalk and Stamford.

By Air: most air freight movements to/from the region are transported by truck and involve air cargo operations at JFK and Bradley International Airports.

[1] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf, p. iii.

System Condition and Performance

Freight Generators

In 2017 WestCOG prepared an inventory of freight generators for the region in support of CTDOT's effort to develop a list of freight stakeholders to interview as part of its Statewide Freight Plan. For the purposes of this Plan, freight stakeholders included anyone who was involved in the movement of goods, whether as a shipper or receiver. WestCOG staff reviewed a database of businesses within its region and identified the following sites:

- Warehouses
- Distribution centers
- Freight railroads
- Retail – larger shopping centers and malls
- Trucking companies
- Manufacturers
- Freight forwarders – UPS, DHL, FedEx, US Postal Service

The definition of a freight generator is not currently clearly defined. The chosen businesses were selected because they are larger than a single box store and have three (3) or more loading docks at their site. All shopping centers were also included.

The Freight Generators Map is viewable in the HVMPO and SWRMPO 2019-2045 Long-Range Transportation Plans at https://westcog.org/wp-content/uploads/2019/05/HVMPO-LRTP.pdf, p. 38 and https://westcog.org/wp-content/uploads/2019/05/SWRMPO-LRTP.pdf, p. 42 respectively.

Freight Transportation-Commodity Flows

Commodity flow data for the WestCOG region comes from Transearch work that was prepared in support of CTDOT's 2017 State Freight Plan. This data is aggregated at the County level, making it possible to analyze the goods moved into, out of, and through Fairfield and Litchfield Counties. Note that the WestCOG region also includes the towns of Bridgewater and New Milford, which are in neighboring Litchfield County.

Connecticut's highway system is the most direct and accessible means of transport, both for long-distance movements that begin or end outside the state and for local transport and deliveries.

Imports

Major inbound truck tonnages in 2014 are shown by state origin in Figure 7.9. Over half of all truck movements originated from a nearby state: New York (11.2 million, 23.0%), Massachusetts (7.7 million, 15.9%), and New Jersey (6.5 million, 13.4%). The primary destinations of inbound truck shipments were Hartford County (14.0 million, 28.8%), Fairfield County (11.7 million, 24.0%), and New Haven County (10.5 million, 21.6%).https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf?la=en

Exports

Major outbound truck tonnages in 2014 have been broken down by county origin. Truck movements destined for out-of-state travel from Hartford County (8.5 million, 25.4 percent), New Haven County (7.0 million, 20.9 percent), and Fairfield County (6.0 million, 17.8 percent). Nearly 2/3 of the out-of-state shipments were destined for a neighboring state. The major destinations of outbound freight were New York (10.2 million, 30.3%), Massachusetts (7.8 million, 23.3%), and New Jersey (3.5 million, 10.4%). [2]

I-95 from New York to New Haven, I-91 from New Haven to Hartford and I-84 from New York to Massachusetts carry the highest volumes of trucks in the state, whether by tonnage or by value.[3]

Truck tonnage is forecasted to increase from 198.7 million in 2014 to 315.4 million in 2040, an increase of 58.7 percent (1.8 percent annually). Truck commodity value is forecast to increase from $337.5 billion in 2014 to $681.1 billion by 2040, an increase of 101.8 percent (2.7 percent annually). The most heavily traveled truck routes today will absorb the most growth, according to forecasts, meaning I-95 from New York City to New Haven, along I-91 from New Haven to Hartford, and from Hartford to the Massachusetts border along I- 84. In percentage terms, the growth is more dispersed throughout Connecticut, with many secondary routes exhibiting a greater percentage growth than the primary interstate corridors. Total truck freight-related vehicle miles traveled (VMT) is expected to increase by 88 percent from 2009 to 2040. Through freight is projected to account for the largest share of the forecasted increase in Connecticut's freight truck travel, which is expected to increase by 103 percent. [4]

Existing Conditions – Roadways

As shown in Table 1 below, CTDOT records showed that in 2019 the WestCOG region had approximately 3,048 miles of roads. Approximately 87% of those miles were maintained by local municipalities.

Table 1: Roadways by Municipality

Municipality	State Maintained	Locally Maintained	Total
Bethel	12.54	87.67	100.21
Bridgewater	8.91	38.78	47.69
Brookfield	19.16	101.28	120.44
Danbury	35.60	242.16	277.76
Darien	14.61	83.37	97.98
Greenwich	21.07	266.25	287.32
New Canaan	20.0	122.96	142.96
New Fairfield	18.19	67.72	85.91
New Milford	28.41	208.80	237.21
Newtown	34.27	244.17	278.44
Norwalk	32.69	248.27	280.91
Redding	18.76	92.31	111.07
Ridgefield	24.84	169.84	194.68
Sherman	16.09	35.13	51.22

[2] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf?la=en
[3] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf?la=en, p. 7-5.
[4] (Development of a Strategic Plan for Reducing Emissions Associated with Freight Movement, Connecticut Department of Energy and Environmental Protection, July 2011), from 2017 CT State Freight Plan

Stamford	29.67	309.21	338.88
Weston	11.36	80.23	91.59
Westport	28.01	123.58	151.59
Wilton	22.30	129.64	151.94
Totals	396.48	2,651.37	3,047.85

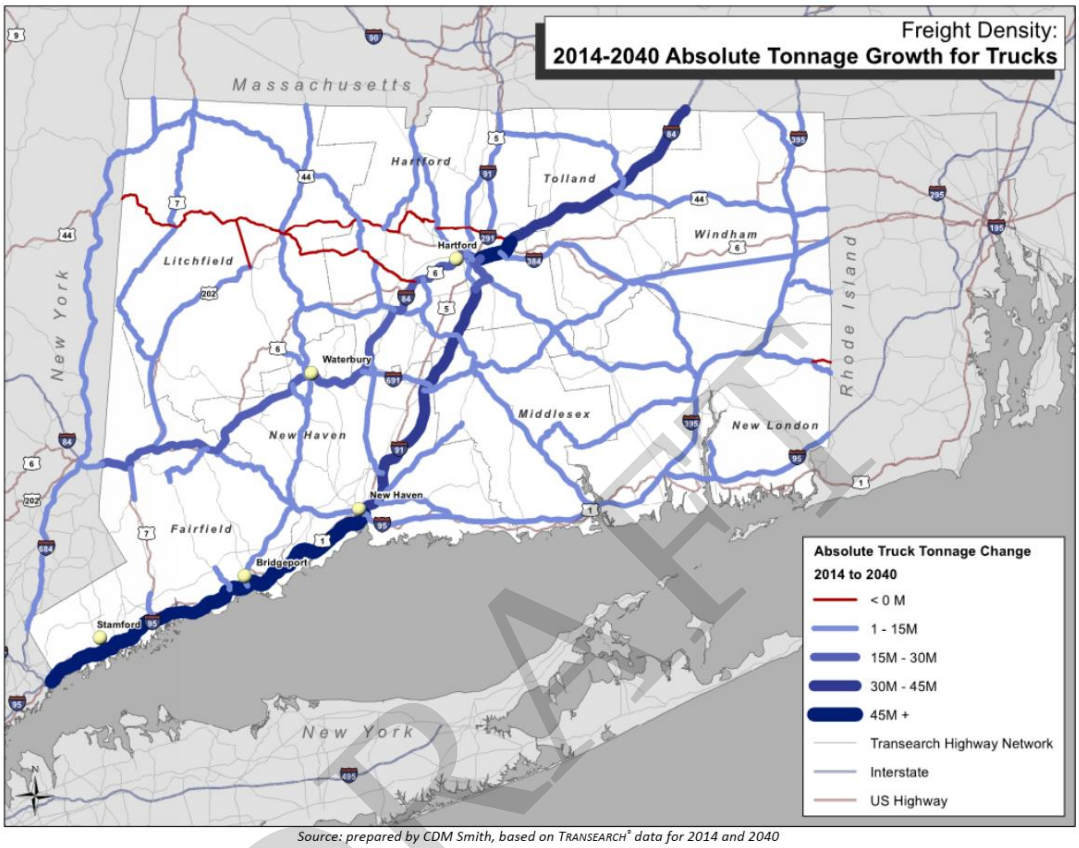
Data Source: CTDOT

WestCOG in 2023 calculated that there are 3,193 miles of roads in the region, including: 41 miles of interstates; 88 miles of U.S. numbered routes; 426 miles of state numbered routes, and 2,638 miles of local roads.

The primary truck routes in the region are Interstates 84 and 95; U.S. Routes 1, 7 and 202, and thirteen state-numbered routes.

Forecast – Truck Freight Movements

Figure 37: Truck Density Absolute Growth, 2014 to 2040



Source: prepared by CDM Smith, based on TRANSEARCH® data for 2014 and 2040

The growth in freight traffic cannot solely be attributed to a growing population and economy. Increased 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. "A pull inventory system prioritizes current demand. The supplier orders or manufactures goods in the quantity and timeframe needed, based on existing customer sales orders. In contrast, the push inventory system uses demand forecasting. The manufacturer instead produces goods to anticipate customer needs and pushes them through the supply chain to retailers."[5]

Increased freight traffic threatens to further strain the Region's transportation system, which in many cases is already at or exceeding capacity. Trucks will likely 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

[5] Finale Inventory, https://www.finaleinventory.com/inventory-management/pull-vs-push-system-management#:~:text=Push%20System%20%E2%80%94%20Key%20Differences,inventory%20system%20uses%20demand%20forecasting.

mean that the Region's reliance on trucks for goods movement will only increase. Increased truck traffic will have to compete with higher forecasted 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. [6]

Weighing and inspection of trucks is conducted at over thirty locations statewide under the Department of Motor Vehicles (DMV). Two weighing stations are located in the WestCOG region:

- I-95 northbound in Greenwich—quadruple static scales and scale house (Weigh-in-Motion equipped)
- I-84 eastbound in Danbury—triple pad static scale and scale house

USDOT-registered trucks: The FMCSA registration process requires that companies define the type of Motor Carrier, Broker, Intermodal Equipment Provider (IEP), Cargo Tank Facility, Shipper and/or Freight Forwarder business operation they plan to establish. The Agency administers the Federal Motor Carrier Safety Regulations (FMCSR) and Hazardous Materials Regulations (HMR) that govern interstate - and some intrastate - commercial trucking and bus industries. WestCOG in 2021 inventoried by community information for all USDOT-registered trucks, including information on use and materials carried.

Truck Parking: Sanctioned truck parking facilities are located in Danbury (I-84) and Darien (I-95).

Truck Exclusions: Section 14-298 of the General Statutes of Connecticut (CGS) grants authority to the Office of the State Traffic Administration (OSTA) to prohibit through truck traffic on streets and highways within the limits of and under the jurisdiction of any city, town, or borough within Connecticut. As shown in Table 3 below, in the WestCOG region there are 158 roadways subject to truck exclusions. Most of these roads are local; however, there are some excluded segments that are federal and/or state numbered routes, which may have a practical effect on freight movements within the communities.

Table 3: Number of Truck Excluded Routes by Municipality, WestCOG region

Municipality	# of truck excluded routes	Municipality	# of truck excluded routes
Bethel	4	Norwalk	17
Bridgewater	4	Redding	18
Brookfield	1	Ridgefield	3
Danbury	34	Sherman	1
Darien	10	Stamford	17
Greenwich	7	Weston	2
New Canaan	1	Westport	6
New Fairfield	1	Wilton	13
New Milford	3		
Newtown	16	Total	158

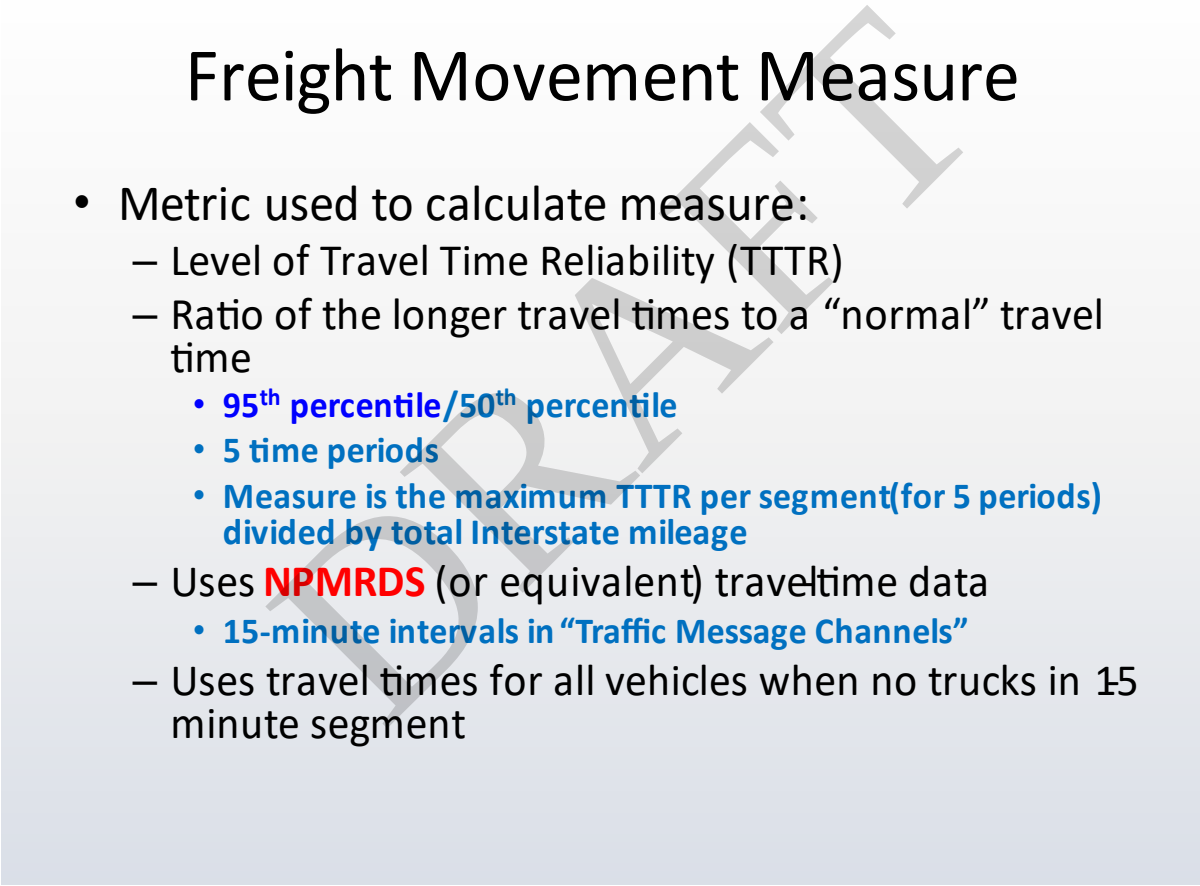
[6] https://westcog.org/wp-content/uploads/2015/12/LRTP-Update-2.pdf, p. 107.

Details on specific routes are available at Through Truck Prohibitions (ct.gov).

Truck Travel Time Reliability

The average volumes of combination trucks, e.g. tractor trailers, on I-84 and I-95 in the region constitute 10-15% of the total average annual daily traffic (AADT).[7] These routes are often unreliable for freight traffic, according to the Truck Travel Time Reliability (TTTR) measure, a federally-mandated performance measure for freight. The Freight Movement on the Interstate target for the National Highway Freight Program (NHFP) is measured using the truck travel time reliability index (TTTR) along the Interstate system. TTTR is measured as the ratio between the worst congestion experienced along a segment (95th percentile) and the average congestion along that segment (50th percentile).

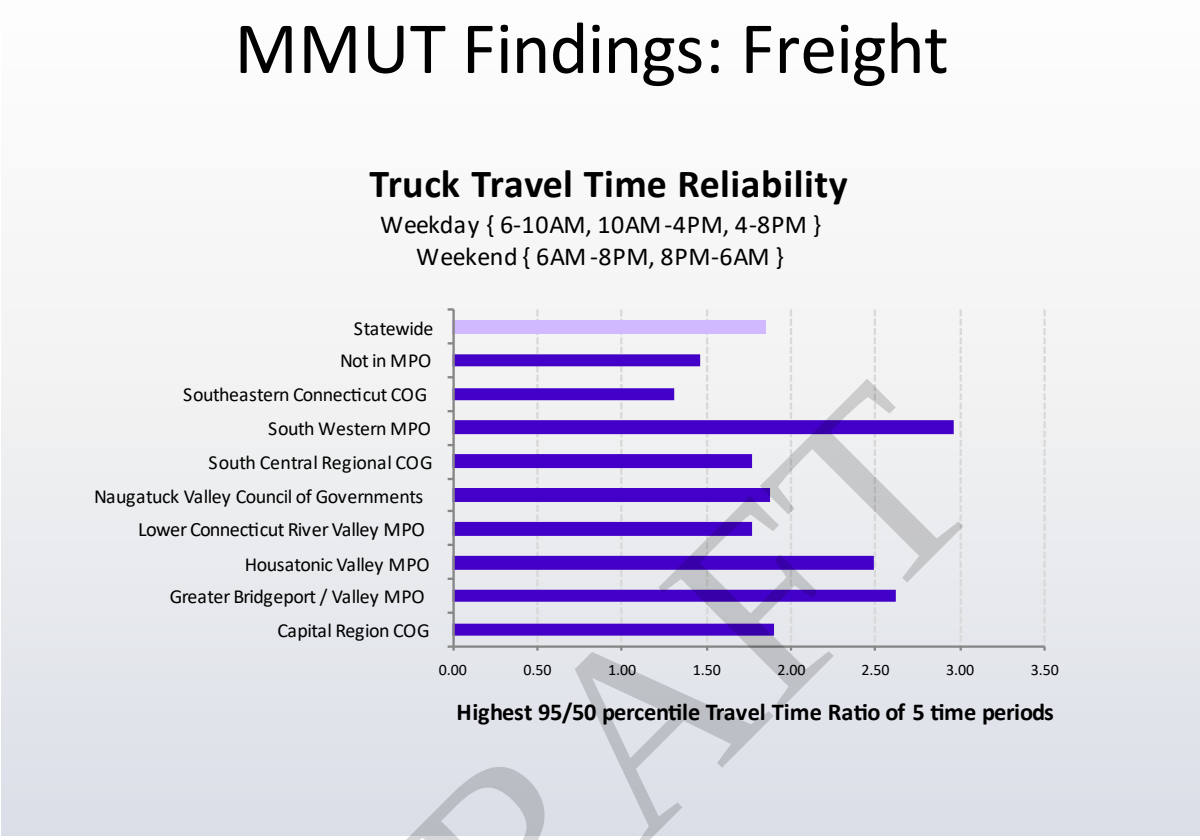
Figure 1 Courtesy of CTDOT



[7] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf?la=en , p. 7-5.

Mobility Management in Urban Transportation (MMUT)

Figure 2 Courtesy of CTDOT



Federal Highway Administration (FHWA) National Performance Management Research Data Set (NPMRDS), which provides travel-time data in 5- minute time aggregations (throughout the year) for both trucks and passenger cars on the traffic message channel (TMC) roadway network.

Table 4: Truck Travel Time Reliability on National Highway System (2021 through August, and 2020)		
Year	% of Reliable Miles HVMPO	% Reliable Miles SWRMPO
2020	2.05	2.80
2021 (to Aug.)	2.62	3.03

Source: National Performance Management Research Dataset

The HVMPO and SWMPO endorsed resolutions supporting the targets established by CTDOT on November 15, 2018:

Table 5: Interstate TTTR Current Conditions and Targets by year			
	Current Condition	2-year targets (2020)	4-year targets (2022)
Interstate TTTR	1.75	1.79	1.83

Source: HVMPO LRTP, p. 78

As is the case in some other regions of Connecticut, TTTR fluctuates seasonally. Like in those regions, WestCOG believes that this is attributable to increased tourism and vacation/holiday travel. This fluctuation for Calendar Year 2021 in the Housatonic Valley and Southwest Region MPOs is shown in Figures 3 and 4 below:

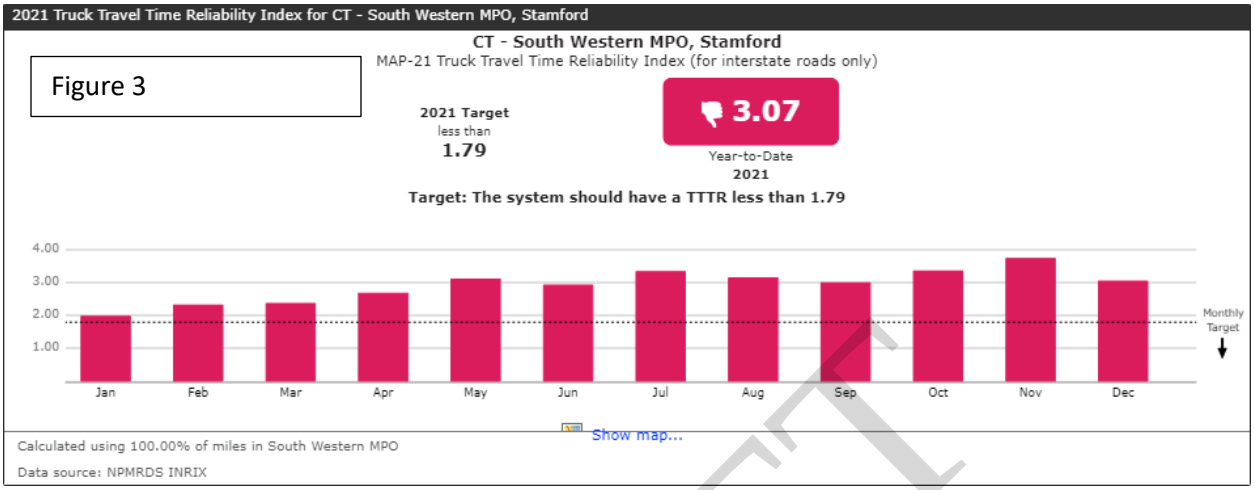


Figure 3

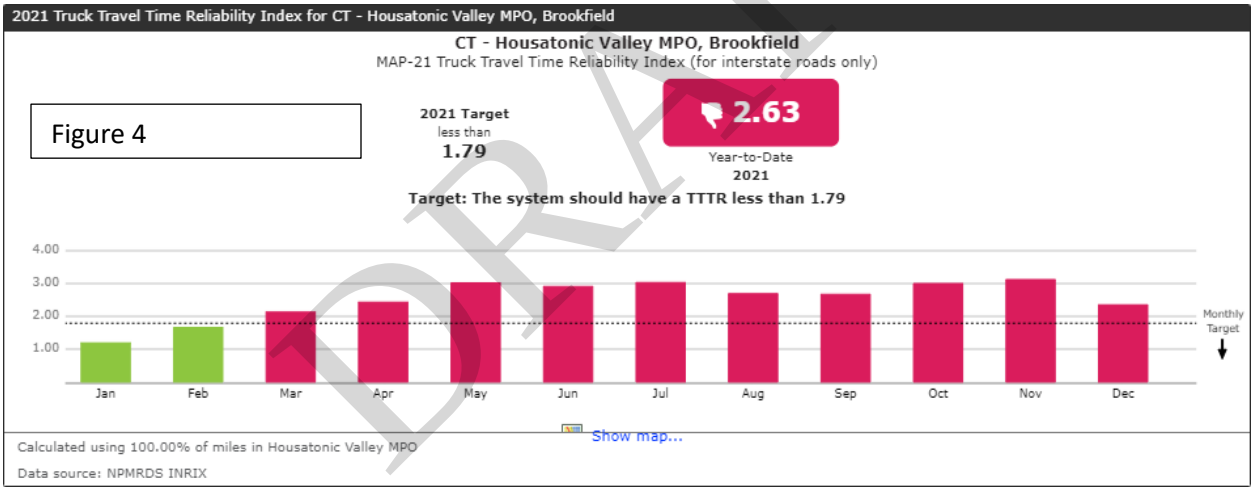


Figure 4

Prospects for increased freight movements by truck: local deliveries, and e-commerce are said to be increasing truck volumes and must be a factor in truck travel time reliability. A recent Metropolitan Area Planning Council study on the impacts of e-commerce in Massachusetts goes into the transportation impacts of e-commerce in greater detail.[8] An equivalent study has not, to WestCOG's knowledge, been conducted in Connecticut.

[8] MAPC, Hidden and in Plain Sight: Impacts of E-Commerce in Massachusetts, February 2021 https://www.mapc.org/wp-content/uploads/2021/02/Feb2021-Ecommerce-Report.pdf

Railroad

Network Overview/Existing Conditions

As shown in Table 6 below, the WestCOG region has approximately 88.3 miles of railroad infrastructure actively supporting freight movements.

Table 6: Lines Currently Used for Rail Freight Movements in the WestCOG Region

Rail Line	Municipalities in Region	Owner(s)	Freight Railroad Operator(s)	Termini	Length in region
Berkshire	Brookfield, Danbury, and New Milford	HRRC, CTDOT	Housatonic Railroad Company	Danbury, Pittsfield, MA	19.9 miles
Danbury Branch	Bethel, Danbury, Redding, and Ridgefield	CTDOT	Genesee & Wyoming	Danbury, Norwalk	23.7 miles
Maybrook	Brookfield, Danbury, and Newtown	HRRC	Housatonic Railroad Company, Genesee & Wyoming	Danbury, Derby	22 miles
New Haven	Westport, Norwalk, Darien, Stamford, Greenwich	CTDOT	Genesee & Wyoming	New Haven, New York City	22.7 miles

Rail Freight: The major commodities moved through the Housatonic Region by rail include municipal solid waste, lumber, crushed stone, construction debris, wood pulp, corn oil, and industrial chemicals.[9] These commodities are break-bulk, not intermodal.

The Berkshire Line segment in Connecticut operates in the communities of Canaan, Falls Village, Cornwall, Kent and enters the WestCOG region at New Milford, proceeding south to Brookfield and Danbury. That line segment serves a paper mill, a limestone quarry, a plastics manufacturer, a pharmaceutical company, and two food manufacturers.

The Connecticut segment of the Maybrook Line within the WestCOG region extends from the New York State Line at Danbury east through the communities of Danbury, Hawleyville, Newtown, and Botsford (a village within Newtown). A railroad-owned lumber distribution center and a bulk transfer facility are located in Hawleyville. Other customers on the Maybrook Line within and outside the WestCOG region include three lumber companies, a waste disposal firm, a corrugated manufacturer, a printing company, a polyester products firm, and a variety of small manufacturing firms.

[9] Housatonic Rail Cover (westcog.org)

While the Metropolitan New York region has a well-developed freight rail system, it is better developed and connected to the national rail network west of the Hudson River than it is east of the Hudson River. As a result, critical rail connections to the east-of-Hudson market are remote, inefficient, or have capacity restrictions, leading to a greater dependency on trucks for moving freight to and from the east-of-Hudson counties. As a result, a large portion of the region's freight shippers have limited transportation mode choice. Consequently, highway connections between the west-of-Hudson and east-of-Hudson regions experience the greatest proportion of surface freight transport impacts, and freight shippers, receivers, and carriers throughout the region continue to experience the negative effects of growing highway congestion.[10]

In terms of freight handling, the freight rail industry's business is moving toward the increased handling of intermodal shipments and less bulk shipments. Monthly and annual carload reports support this finding. Further, more 'first mile-last mile' freight movements are occurring by truck. Accordingly, the market for expanded direct rail service to/from producers and consumers in the WestCOG region is not expected to grow in the foreseeable future. Another consideration that is restricting the development of rail freight movements in the WestCOG region is the use of 'Plate F' boxcars, which cannot be used in electrified territory. This prohibits certain freight movements from making use of existing rail infrastructure in the region, specifically in the Northeast Corridor.

The region's goal is to preserve existing rail freight capacity and to work with freight industry stakeholders to ensure maintenance of rail freight service to key locations in the region. While current freight industry trends favor the use of trucks for most freight movements in the region, to the extent possible WestCOG seeks to increase the use of rail to move freight to/from and through the region that would otherwise be moved by truck. Part of that work might include the establishment of inland freight ports in the region, as has been proposed in nearby Naugatuck.[11]

Infrastructure maintenance is key. The economics of freight rail remain challenging, particularly so for the Class II railroads that serve the region. On a positive note, the 2020 award of the BUILD grant for a Regional Value Capture Feasibility Study may prepare the region for the financing of improved rail infrastructure on the Danbury and New Canaan Branches, and there is potential for replication of value capture as a tool for investing in rail infrastructure that serves both passenger and freight movements in the region.

The following factors have and will continue to affect the volume of freight transported in Connecticut by rail:

- The lack of multiple Hudson River rail crossings makes freight shipping more challenging or less practical for many commodities and products to/from points west of Connecticut.
- Overhead clearances of under the optimal 22'8" limits the size of freight cars that can be used.
- Freight railroads in Connecticut often operate at low speeds due to rail weight and age.
- Rail car weight restrictions below 268,000 pounds on many lines do not meet industry standards and limit per car loading.

[10] Federal Highway Administration (FHWA) and the Port Authority of New York and New Jersey (PANYNJ) Tier I Draft Environmental Impact Statement (DEIS), Cross Harbor Freight Program (CHFP) Alternatives (Executive Summary, p. ES-1).

[11] Naugatuck's Revival Is Well Underway And Here's What Is Next | Naugatuck, CT Patch

- High trackage fees for freight railroads operating over Amtrak right of way.
- The strong competitive position of the trucking industry due to the short distances involved in movement into and through Connecticut.
- The state's business and service activities trend toward generating smaller volumes of freight. The weakening and dilution of Connecticut's industrial base, and the shortening and tightening of the product stream, have led to fundamental changes in the way goods are manufactured, shipped and received. Rarely do plants receive rail cars full of materials to be converted into finished products, with all phases of manufacturing and assembly taking place at one location. Instead, manufacturing occurs at several locations with any one plant having a limited role. Changes in materials management, particularly just-in-time delivery, mean that sites are getting smaller, more frequent deliveries of materials, and are doing the same with their outbound shipments.
- One of the major container ports in the world and one of the largest intermodal rail yards in the country are located in northeastern New Jersey, within one hundred miles of the WestCOG region.[12]

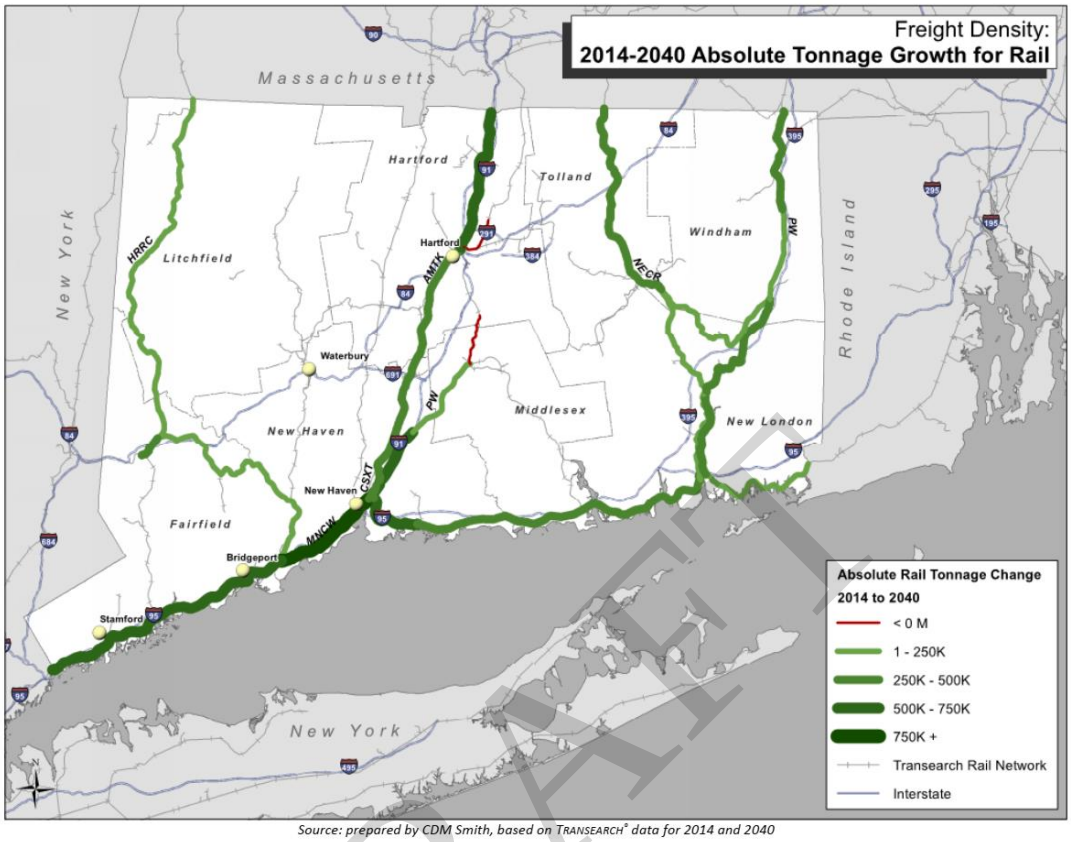
However, Transearch reported the following in the CTDOT State Rail Plan (2017):

"the greatest rail absolute tonnage increase is expected to occur on the existing densest routes, along the coast from New York City to New Haven, and from New Haven to Hartford to the Massachusetts border. Generally, the absolute rail growth is projected to occur on the rail-equivalent corridor of the densest truck routes, generally following I-95 and I-91….." [13]

Increased rail freight movements will not only consist of raw materials and manufactured products. A recent regional waste management study completed for WestCOG (Barton and Loguidice, 2021) notes that waste handling firms in Connecticut and nearby states have been investing for several years in equipment and infrastructure to deliver municipal solid and other wastes to distant out-of-state landfills in states such as New York, Pennsylvania, Ohio, and Kentucky. Some of those waste streams are expected to be shipped by rail to facilities specifically designed to receive and offload inbound materials from railcars.[14]

[12] https://westcog.org/wp-content/uploads/2015/09/HV-Regional-Transportation-Plan.pdf, p. 95.
[13] AppendixATransearchFreightMovements080417pdf.pdf, p. 57.
[14] Barton and Loguidice, WestCOG Regional Waste Management Study, p. 4.

Figure 39: Rail Density Absolute Growth, 2014 to 2040



Source: prepared by CDM Smith, based on TRANSEARCH® data for 2014 and 2040

Marine - Port facilities

In 2017 over 2.2 million metric tons of non-containerized goods were imported through Connecticut's deepwater ports. While other ports in the region have limited capacity for break bulk cargo and have begun to move towards the greater use of containerization of cargo, the majority of the cargo, aside from fuel, going through Connecticut's deepwater ports continue to be break bulk. Petroleum products, including motor fuels and home heating oils, represent over half of imports through Connecticut's three deepwater ports by value since 2003, and were 90% of imports by value in 2011 and 2013. While the volatility of petroleum prices is partially responsible for this fluctuation, the consistently high share of petroleum imports highlights the importance of these commodities to Connecticut's ports. Most of these imports enter through the Port of New Haven, including over 70% of home heating products in the state.[15]

The WestCOG Region hosts 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 transported 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. In general, the WestCOG Region is served by larger commercial ports in Bridgeport and New Haven and the globally significant Port of New York and New Jersey.[16]

Forecast and Prospects for Future Marine Freight Activity

Connecticut's deep-water ports have historically been best suited for shipping break bulk goods. Break bulk goods are those that do not fit into standard shipping containers and are instead transported individually on a pallet or crate, or in a drum, bag, or box. Given the relatively small size of Connecticut's ports, this has been their most efficient economic use, but opportunity and time may modify the mix in the future.[17]

With the exception of the facilities referred to in the Town of Norwalk and the City of Stamford, maritime facilities in the WestCOG region are chiefly devoted to recreational boating at this time.

The CT Port Authority believes that Connecticut's geographic location could provide an alternative entry point for perishable food products headed to the New England market – allowing shippers to avoid the transportation bottleneck of the I-95 corridor when moving goods north from more southern ports.[18] Such a development could reduce the number of trucks in the region if logistics permit.

[15] Connecticut-Maritime-Strategy-2018_Updated-April-2019.pdf (ctportauthority.com), p. 7.
[16] https://westcog.org/wp-content/uploads/2015/12/LRTP-Update-2.pdf, p. 105.
[17] Connecticut-Maritime-Strategy-2018_Updated-April-2019.pdf (ctportauthority.com), p. 4.
[18] Connecticut-Maritime-Strategy-2018_Updated-April-2019.pdf (ctportauthority.com), p. 7.

Air

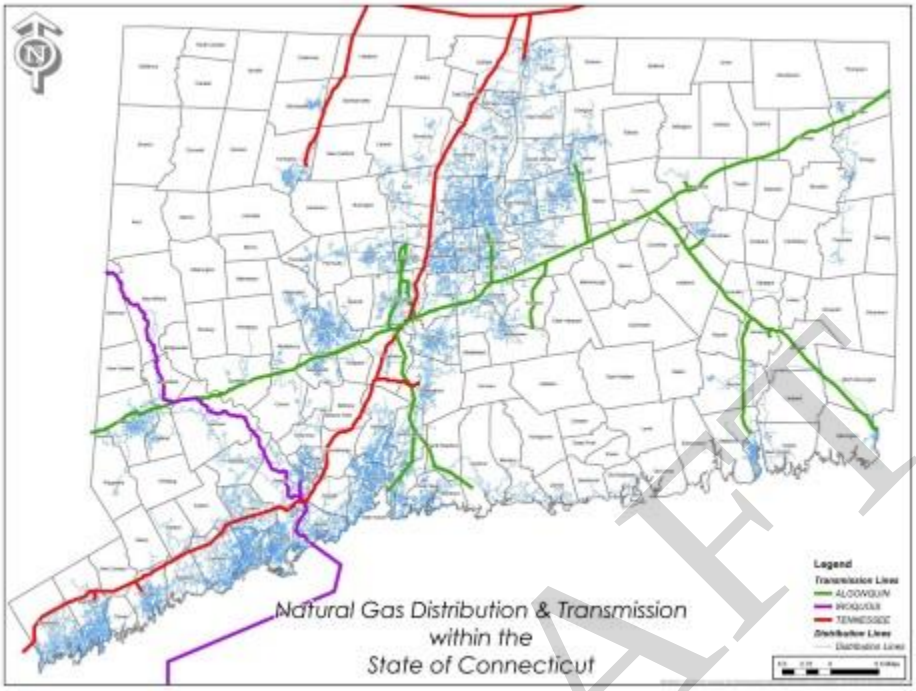
Most, if not all air freight movements in the region involve transportation by truck to John F. Kennedy International Airport and Bradley International Airports. From the CT Statewide Airport System Plan (2016):

https://www.ctairports.org/wp-content/uploads/2017/05/FINAL-CSASP-REPORT.pdf

Freight Volume Forecast (5, 10, 20-year periods): there are projections for BDL, which is where the focus is in CT on air freight movements. Approximately 75% of BDL's air freight currently moves on flights operated by U.S. domestic integrated carriers including FedEx and UPS. It is expected that BDL's location between two international gateways, JFK and BOS, will result in cargo tonnage continuing to increase. (https://www.ctairports.org/wp-content/uploads/2017/05/FINAL-CSASP-REPORT.pdf p. 118).

Pipelines

Connecticut is served by three interstate gas pipelines, each of which cross the WestCOG region:



Algonquin Gas Transmission (AGT - Enbridge) originates in New Jersey where it connects to Texas Eastern and runs from Danbury northeasterly to Thompson, with major spurs to North Haven and New London.

Iroquois Gas Transmission System (IGT) starts at the Canadian border, enters Connecticut at Sherman and runs southeast through Milford, then offshore to Long Island.

Tennessee Gas Transmission (TGP -Kinder Morgan) starts in the Gulf, enters Connecticut in Greenwich, runs northeasterly leaving Connecticut in Suffield, with a spur from Massachusetts to Torrington.

https://portal.ct.gov/PURA/Gas-Pipeline-Safety/What-transmission-pipelines-serve-CT

Note: current volumes are not available, but may be reported in the CTDOT State Freight Plan Update.

III Trends and Opportunities

Several freight planning studies cover all or a portion of the WestCOG region. For example, the South Western Region Freight Overview (2010, updated 2013) described the region's freight system and presented trends that may impact the freight system over the next twenty to thirty years. The report identified key elements of the freight transportation system in Southwestern Connecticut, described the movement of goods through the region, and recognized the safe, efficient, and economical movement of goods as an integral component of the region's multi-modal transportation system.

The CTDOT State Rail Plan (2017) highlighted truck freight industry trends and issues – both general and region-specific, that included the following:

- Freight traffic is expected to increase.
- Need more truck-only parking areas. The closure of the I-84 Southington and Willington rest areas is an issue. See Jason's Law report for information on the importance of truck parking for safety.
- Shortage of drivers nationally – in particular, a shortage of third party, contracted haulers.
- Plan for autonomous trucks. Automatic braking is already in use.
- Clear marking of all bridge height and weight restrictions.
- Sometimes posted speed limits conflict with the information in the TomTom OptiDrive system that drivers use. Database of speed limit information should be more readily accessible to technology companies.
- Online shopping and other shifts in consumer behavior are changing supply chain logistics.
- Expect more distribution warehouse operations by Amazon and similar companies.
- Need route planning assistance for oversized loads.
- Compliance, Safety, Accountability (CSA) ratings for haulers not reliable due to small inspection samples.
- Want slower speeds and greater safety in highway work zones, especially at night.
- US-7 and I-84 in Danbury; traffic slow-downs start at 6:00 AM and can result in delays of two or more hours.
- The diverge from southbound US-7 to I-84 East is a problem because vehicles block left-turning vehicles.

Top issues in the region will be congestion management; provision of adequate facilities serving trucks, and resolving freight bottlenecks on I-84, from New York through US-7 in Danbury.

Projects that could improve freight mobility/resiliency (CTDOT State Freight Plan, p. 11-6)

I-95: widen from NY State Line to Stamford ($1,660,000,000) and from Stamford to Bridgeport ($4,085,000,000). These projects include the construction of an additional operational lane in each direction along I-95 from the NY state border to Stamford. The highly congested I-95 corridor constructed in the early 1950s has outgrown its ability to serve the region and current operations present significant congestion and safety issues. The projects will enhance vehicular capacity, increase

operational safety, and provide a significant benefit to the economic environment, as well as the ability of the coastal route to support tourism and recreation. [19]

I-84: this roadway is heavily travelled by commercial vehicles and is a major freight corridor utilized by many of the interstate trucking routes and the following improvements would provide a higher level of service for commercial operations and improved safety for all motorists:

- widen from the NY State Line to Danbury Exit 3, with the addition of one operational lane increasing capacity from 2 to 3 lanes. Estimated cost: $150,000,000;
- widen in/near Danbury between Exit 3 and Exit 8, with the addition of one operational lane. Estimated cost: $640,000,000
- widen from Danbury Exit 8 to Waterbury Exit 18, with the addition of one operational lane. Estimated cost: $720,000,000

Potential Freight Rail Improvements:

- Restart operation of Maybrook Line (Derby to Maybrook, NY, via Danbury). Owner (HRRC) lacks financial capacity to undertake repairs.
- Construct new siding at O&G Industries in New Milford for quarry and road salt (State Freight Plan, p. 9-12).
- Develop a coordinated growth plan for the NEC, to establish adequate daytime windows for freight movements.
- Find an alternative to Plate F cars, which measure 17' tall and cannot be run under the overhead electrical system along the NEC (state freight plan, p. 9-13).

Automation

The trucking industry is investigating the feasibility of automated freight movements. In the future, the region may see deployment of automated trucks on its roadways. CTDOT released a Strategic Plan in February 2021 that addresses the future of CAV, with the goals of ensuring that CAV is operated safely, securely, and seamlessly across all jurisdictions. Building from this vision, CTDOT has developed near-term and long-term strategies to maximize the potential benefits of still evolving CAV technologies.

[19] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf?la=en p. 11-5

Strategies to Improve Performance and Connectivity

Regional Models of Collaboration

CTCOG/MPO Activities

WestCOG, in concert with other CT COGs, is a participant in CTDOT's development of freight-relevant statewide plans such as the State Rail Plan (2016) and State Freight Plan: CTDOT (CDM Smith, 2017). CTDOT is currently revising and updating the State Rail Plan for release in late 2022/early 2023. As an example activity, WestCOG was included in a CTDOT discussion with a freight rail operator in its region. WestCOG expects that it will interact with CTDOT on an ongoing basis as the 2017 Statewide Freight Plan is updated. WestCOG provided updated information on freight generators for the 2022 State Rail Plan.

MAP Forum Multi-State Freight Working Group

This group is comprised of representatives from the ten planning organizations (including WestCOG) that participate in the Forum. The working group coordinates freight planning work in Connecticut, New Jersey, New York, and Pennsylvania. The group has discussed the shortage of truck drivers, inventorying truck parking, and freight studies underway in the region. Visit https://map-forum-njtpa.hub.arcgis.com/pages/freight to learn more about the Group's activities.

NYMTC Clean Freight Corridors Study

The **Clean Freight Corridors Planning Study** (2020-2022) assesses opportunities for designation and development of Clean Freight Corridors within the NYMTC planning area and across several states, which includes the WestCOG region. The study is identifying a series of roadways to best advance high-efficiency, low-emission alternative transportation technologies for all types of vehicles that ship freight. The roadways assessed include high speed traffic highways, local roads that support the connection of modes of freight, trucking "hubs", and areas of concentrated goods movement activity.[20]

The Study has produced a series of recommended roadway designations as Clean Freight Corridors based on the availability of truck fuel infrastructure. It makes recommendations to address gaps in that infrastructure, and modifications to the demand side of freight deliveries to improve efficiency. This Study originated from the NYMTC Regional Freight Plan to advance more efficient goods movement. The Study's principal focus will be on interstate highways in the tri-state region as they carry the most trucks – including I-84 and I-95. The Multi-State Freight Working Group (WestCOG is a participant) served as the Study's Technical Advisory Committee.

Study documents are available at https://www.nymtc.org/Regional-Planning-Activities/Freight-Planning/Clean-Freight-Corridors-Study

NYSDOT - Interstate 684 (I-684) & Interstate 84 (I-84) Transportation Corridor Study

"Both I-684 and I-84 are considered strategic freight highways and facilitate the movement of trucks throughout New York State and the Northeast Region. Both corridors are part of the New York State Freight Core Highway Network. One rest area is located within the Study corridor (north of Exit 8 in

[20] https://www.nymtc.org/ereports/Spring-2021/Freight-Studies-Updates

Brewster) and serves as a commercial truck stop. In addition to truck freight, the region surrounding the Study area supports rail freight and air cargo freight."[21]

"It's anticipated that the Study corridor will experience significant increases in freight traffic in response to projected increases in freight value."[22]

Recommendations: Source: NYMTC, Moving Forward
https://nymtcmovingforward.org/pdfs/app_h.pdf#page=254

- Continue regional and megaregional collaboration through the MAP Forum, New York State MPO Association and the Eastern Transportation Coalition. These organizations are important resources for data exchange, plan and project coordination, and advancement of freight solutions across jurisdictional boundaries.
- Coordinate with responsible state and regional partners to identify needs and opportunities for truck inspection locations, weigh-in-motion facilities, truck parking and staging locations, and alignment of size/weight and other operating regulations.

As part of ongoing work, WestCOG will continue to support the improvement of Interstates 84 and 95 through its region. WestCOG also supports the NYSDOT Interstate 684 (I-684) & Interstate 84 (I-84) Transportation Corridor Study Findings Report, as they address an important freight route.

The COG is looking for innovative opportunities to upgrade infrastructure that supports freight. That opportunity may arise with the rollout of new federal grant programs in the coming year.

[21] https://www.lewisborogov.com/sites/default/files/fileattachments/community/page/17161/i684_and_i84_study_findings_report_june_2021.pdf, p.9.

[22] Ibid, p. 11.

[i] https://ctaa.org/wp-content/uploads/2021/07/CTAA_Vaccine_Transit.pdf , p. 49.
[ii] https://ctaa.org/wp-content/uploads/2021/07/CTAA_Vaccine_Transit.pdf , p.51.
[iii] https://www.tripspark.com/blog/6-important-transit-trends-2021-2022-post-covid-19
[iv] https://www.ctps.org/data/calendar/htmls/2021/MPO_0408_Memo_Transit_Safety_Performance_Targets.html
[v] http://web.mta.info/mta/news/books/docs/MNCW-2018-Annual-Ridership-Report.pdf p. 6
[vi] https://www.stamfordadvocate.com/local/article/A-strange-thing-to-see-Nearly-empty-trains-15767050.php
[vii] https://www.stamfordadvocate.com/local/article/A-strange-thing-to-see-Nearly-empty-trains-15767050.php
[viii] https://www.amtrak.com/about-amtrak/northeast-corridor.html
[ix] 2022 Outlook for the Intercity Bus Industry, v1.2 (1).pdf (depaul.edu)
[x] https://inrix.com/scorecard/#form-download-the-full-report
[xi] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf, p. iii.
[xii] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf?la=en
[xiii] https://portal.ct.gov/-/media/DOT/FASTLANE/Freight_Plan/CTDOTFreightPlanFinal111617pdf.pdf?la=en, p. 7-5.
[xiv] (Development of a Strategic Plan for Reducing Emissions Associated with Freight Movement, Connecticut Department of Energy and Environmental Protection, July 2011), from 2017 CT State Freight Plan
[xv] Finale Inventory, https://www.finaleinventory.com/inventory-management/pull-vs-push-system-management#:~:text=Push%20System%20%E2%80%94%20Key%20Differences,inventory%20system%20uses%20demand%20forecasting.
[xvi] Rail Freight in the Housatonic Valley Region (westcog.org), July 2011.
[xvii] https://en.wikipedia.org/wiki/New_Haven_Line#:~:text=The%20section%20from%20Grand%20Central,Department%20of%20Transportation%20(CTDOT).
[xviii] Barton and Loguidice, Regional Waste Management Study, p. 4.
[xix] https://westcog.org/wp-content/uploads/2015/09/HV-Regional-Transportation-Plan.pdf, p. 95.
[xx] https://westcog.org/wp-content/uploads/2015/12/LRTP-Update-2.pdf, p. 105.
[xxi] Connecticut-Maritime-Strategy-2018_Updated-April-2019.pdf (ctportauthority.com), p. 4.
[xxii] Connecticut-Maritime-Strategy-2018_Updated-April-2019.pdf (ctportauthority.com), p. 7.
[xxiii] A. Strauss-Wieder, NJTPA
[xxiv] Forrester's "Predictions 2023: Retail Report,"
[xxv] Naugatuck's Revival Is Well Underway And Here's What Is Next | Naugatuck, CT Patch
[xxvi] https://advocacy.consumerreports.org/wp-content/uploads/2021/08/CR_Broadband-Survey_8_2021_VF.pdf
[xxvii] . Anderson, J., et al. (2016) Autonomous Vehicle Technology: A Guide for Policymakers. Rand Corporation, Santa Monica, CA.
[xxviii] Society of Automotive Engineers (2021) Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles.
[xxix] https://www.its.dot.gov/cv_basics/cv_basics_20qs.htm
[xxx] https://portal.ct.gov/DOT/PP_Bureau/CAV/Strategic-Plan
[xxxi] https://ops.fhwa.dot.gov/fastact/atcmtd/2017/applications/texasdot/project.htm.
[xxxii] https://portal.ct.gov/DOT/PP_Bureau/CAV/Projects