

# Metropolitan Transportation Plan 2019-2045

Greater Bridgeport & Valley  
Metropolitan Planning Organization

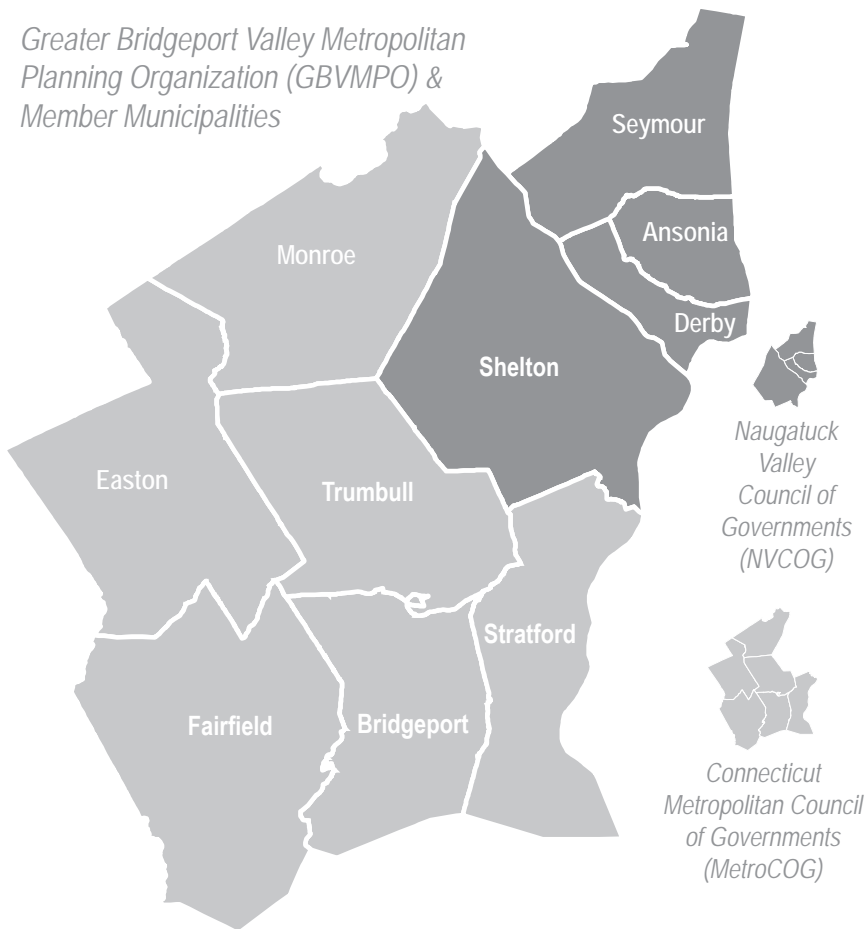
Endorsed March 28, 2019



# Table of Contents

1: Introduction . . . . .	3
2: Public Participation (draft) . . . . .	16
3: Existing Conditions & Trends . . . . .	17
4: Highways, Roads & Bridges . . . . .	23
5: Bus Transit . . . . .	65
6: Rail Transit . . . . .	85
7: Active Transportation . . . . .	101
8: Ferry & Aviation . . . . .	123
9: Freight . . . . .	130
10: An Intermodal Transportation System . . . . .	137
11: Performance Measures & Performance Targets. . . . .	147
12: Congestion Management Process (CMP) Summary . . . . .	155
13: Operations . . . . .	169
14: Resiliency & Mitigation . . . . .	187
15: Metropolitan Transportation Plan Financials & Funding Sources. . . . .	207

*Greater Bridgeport Valley Metropolitan Planning Organization (GBVMPO) & Member Municipalities*



The Metropolitan Transportation Plan was prepared by the GBVMPO, MetroCOG and NVCOG, in cooperation with the Connecticut Department of Transportation and the U.S. Department of Transportation’s Federal Highway Administration and the Federal Transit Administration.

The MPO may revise the transportation plan at any time using the procedures in 23 CFR Part 450.324 without a requirement to extend the horizon year.

MetroCOG staff are entirely responsible for the design and format of this report, using a style guide developed through SRMC (Susan Rubinsky Marketing Consulting).

The opinions, findings and conclusions expressed in this publication are those of the GBVMPO and do not necessarily reflect the official views or policies of the Connecticut Department of Transportation and/ or the U.S. Department of Transportation.

# 1: Introduction

## Why is this Plan Important?

Whether you drive, walk, bicycle or rely on bus, train, or ferry service, transportation plays a critical role in our choices – from where we work to how we spend our free time. When decisions are made about where to invest in the transportation system, understanding a community's needs is vital to this process.

The Metropolitan Transportation Plan identifies opportunities to improve mobility for people and businesses throughout the Greater Bridgeport and Valley Region from 2019 to 2045. By sharing your ideas and opinions about how to improve the safety and efficiency of your community's transportation system, you will help guide elected officials when they make decisions about where and how to invest in the transportation system in the future.

## What is Purpose & Need of the Metropolitan Transportation Plan?

The Metropolitan Transportation Plan is a 25-year vision for transportation system investments. The MTP includes long-range and short-range strategies to support an intermodal transportation system that facilitates the safe and efficient movement of people and goods. Current and future transportation problems and needs are also considered over this timeframe. Through public and stakeholder engagement, the MTP identifies improvements to roadways, bus, rail, bicycle and pedestrian routes, and connections between these modes to enhance the performance of the entire transportation system.

To be eligible for federal transportation funds, the Greater Bridgeport and Valley Region

Metropolitan must have a Metropolitan Transportation Plan. Transportation projects that are funded through the federal government must be identified in the MTP. The MTP must also be prepared in accordance with federal regulations (23 CFR 450§324). The required content detailed in 23 CFR 450§324(f) are summarized in the box below.

### Summary of MTP Requirements, 23 CFR 450§324(f):

- The current and projected transportation demand of persons and goods in the planning area over the planning period.
- Existing and proposed transportation facilities, giving emphasis to those facilities that serve important national and regional transportation functions.
- A description of the performance measures and performance targets used in assessing the transportation system.
- A system performance report and updates evaluating the condition and performance of the transportation system.
- Operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods.
- Consideration of the results of the congestion management process in TMAs, including the identification of SOV projects
- Assessment of capital investment and other strategies to preserve the metropolitan transportation infrastructure, provide for multimodal capacity increases, and reduce the vulnerability of the existing transportation infrastructure to natural disasters.
- Transportation and transit enhancement activities.
- Design concept and design scope descriptions of all existing and proposed transportation facilities in sufficient detail to develop cost estimates.
- Types of potential environmental mitigation activities and potential areas to carry out these activities,
- A financial plan that demonstrates how the plan can be implemented.
- Pedestrian walkway and bicycle transportation facilities.

## 8 Planning Factors, 23 USC §134(h)(1)

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; and

Enhance travel and tourism.

In addition, the transportation planning process must consider projects and strategies that support the eight planning factors from 23 USC §134(h)(1), listed in the box above.

This Metropolitan Transportation Plan is a major update of the Regional Transportation Plan for the Greater Bridgeport Planning Region: 2015-2040 and the Valley MPO Long Range Transportation Plan 2015-2040. The 2015-2040 plan was a minor update of the 2011 plan and did not determine the current condition of the transportation systems or estimate future needs. MAP-21 legislation was incorporated in the minor update, as well as four new major projects, an air quality assessment and a financial assessment.

Since the 2015 plan was finalized, a new transportation authorization bill has been

enacted: Fixing America's Surface Transportation (FAST) Act. The FAST Act continued the MAP-21 requirement for the MTP to evaluate whether the transportation system is meeting state and MPO adopted targets for the performance measures established by the US Department of Transportation. These measures assess progress in achieving the national goals for the transportation system.

The 2019-2045 update of the MTP utilizes this performance-based approach to evaluate the current condition of the transportation system, identify future needs, and develop a full range of strategies to improve the region's transportation system.

## Transportation Planning Process

### The Greater Bridgeport & Valley Region

The Greater Bridgeport Valley Metropolitan Planning region is located in the southwestern part of Connecticut (Fairfield and New Haven counties). It is comprised of the Cities of Ansonia, Bridgeport, Derby and Shelton and the Towns of Easton, Fairfield, Monroe, Seymour, Stratford and Trumbull. Some of these municipalities are located along the Interstate 95 and the Northeast Rail Corridor which provides rail access to New York City and Boston, Massachusetts. Four expressways, five rail stations along Metro North's New Haven line and three stations along Metro North's Waterbury line provide access to areas throughout Connecticut. These rail lines are owned by the State of Connecticut and operated by Metro North.

With a population of about 413,000 people and a land area of about 196 square miles, the Region has a population density (approx. 2,081 persons per square mile) that is the highest of any region in the state. This high

population density, coupled with intense development patterns, are reflected in the high proportion of the region that lies within the Census-defined Bridgeport-Stamford Urbanized Area. Over 95% of the population lives in the urban area and a significant percentage of the land area is located within designated federal-aid urban boundaries. Roughly 35% of the Region's approximately 413,000 residents live in the City of Bridgeport.

Each day, more than one million trips are made to, from and within the Region. This travel reflects the daily activities of its residents, and, in a broader perspective, the Region's economy. The efficiency of this travel is an important measure of economic vitality in the Region. Key transportation facilities are listed in the box to the left and a map can be found on the next page.

### **Greater Bridgeport Valley Metropolitan Planning Organization (GBVMPO)**

The Connecticut Metropolitan Council of Governments serves as the host agency for the Greater Bridgeport Valley Metropolitan Planning Organization (GBVMPO), which includes MetroCOG's six members (Bridgeport, Easton, Fairfield, Monroe, Stratford and Trumbull) as well as Ansonia, Derby, Seymour and Shelton. GBVMPO oversees the metropolitan transportation planning process and capital improvement program for this ten-town region. The membership of the GBVMPO consists of the Chief Elected Officials of the ten municipalities and the chairpersons of the region's two transit districts: Greater Bridgeport Transit and the Valley Transit District.

The MPO is federally authorized (23 United State Code § 134) and designated by the Governor to conduct transportation planning and policy-making and to endorse the Transportation Improvement Program (TIP) for the portion of the Bridgeport-Stamford Urbanized

### **Key Transportation Facilities**

Interstate Route 95 – Governor John Davis Lodge Turnpike.

State Route 15 – Merritt Parkway.

State Route 8 and State Route 25 Expressways.

Principal Arterials – US Route 1, State Route 25, State Route 34, State Route 58, State Route 113, State Route 115, Main Street in Bridgeport and Pershing Drive in Ansonia.

Interconnected Minor Arterials and Collector Roads – State Route 59, State Route 67, State Route 108, State Route 110, State Route 111, State Route 113, State Route 115, State Route 127, State Route 135, State Route 188, State Route 243, State Route 313, State Route 334, Bridgeport Avenue, Broadbridge Avenue, Constitution Boulevard, Daniels Farm Road, Fairfield Woods Road, Huntington Road, Huntington Street, Madison Avenue, and Park Avenue.

Greater Bridgeport Transit (GBT) & CTTransit - Local fixed-route bus services.

GBT & Valley Transit District (VTD) - Specialized paratransit services for the elderly and disabled.

Metro North Railroad Commuter Rail Service - New Haven Main Rail Line and Waterbury Branch Line

Amtrak -Intercity and interstate passenger rail service.

Bridgeport-Port Jefferson Steamship Company - Passenger and Auto Ferry Service.

Bridgeport Harbor – Deepwater port.

Sikorsky Memorial Airport – General aviation/charter operations

Regional shared-use trails: Pequonnock River Trail, Naugatuck River Greenway, Derby Greenway, Ansonia Riverwalk and Shelton Riverwalk

Freight and goods movement – motor carriers, freight rail, waterborne shippers, air cargo and multi-modal shipments.

Commuter Parking Lots – Located along limited access highways.

Area covered by the MPO. The MPO ensures that existing and future expenditures for transportation projects and programs are based on a continuing, cooperative and comprehensive (3-C) planning process:

- A continuing process enables changes in



the transportation systems to be monitored and reflected in a revised plan.

- A cooperative process involves local, state, and federal agencies, as well as the general public, in the development of plan alternatives, to solicit input, to achieve mutual support and to take community concerns into account.
- A comprehensive process ensures that all transportation modes are considered, that system impacts are assessed and that the recommended transportation projects relate to the surrounding environment.

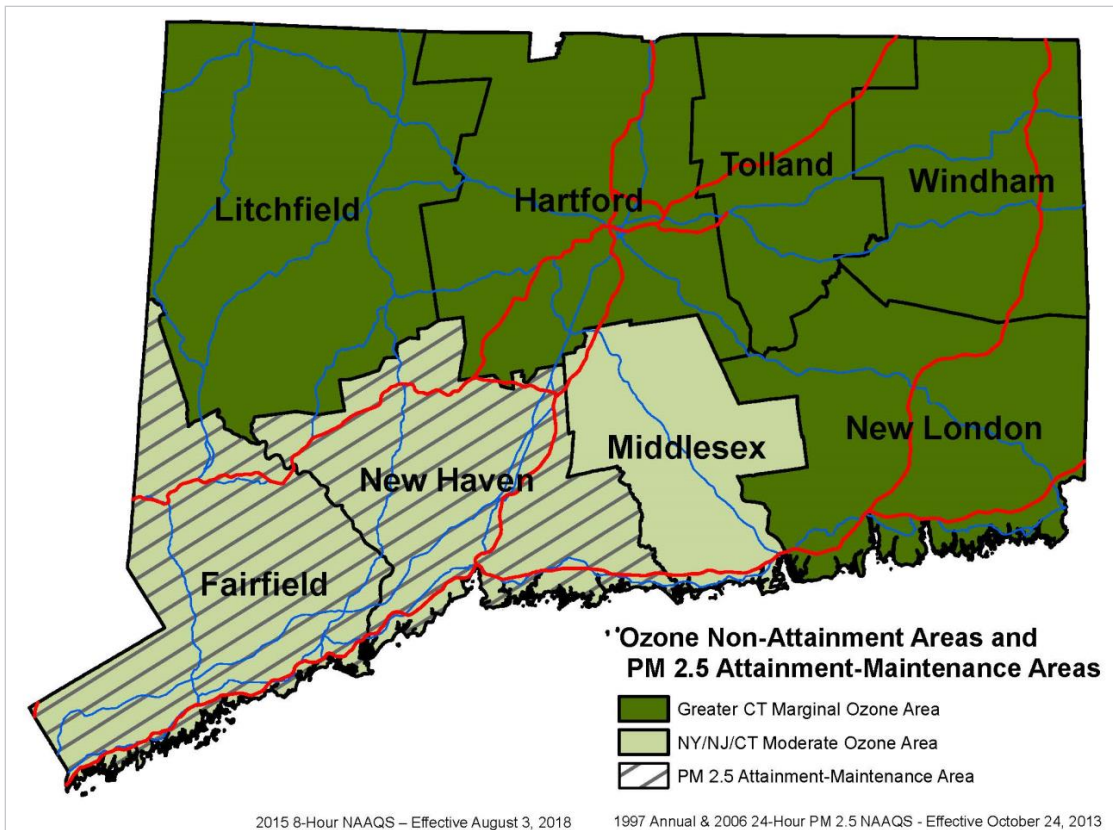
Oversight of the metropolitan transportation planning process is jointly provided by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). MPOs also cooperate with State and public transportation operators to set spending levels for federal funds that are meant for transportation projects.

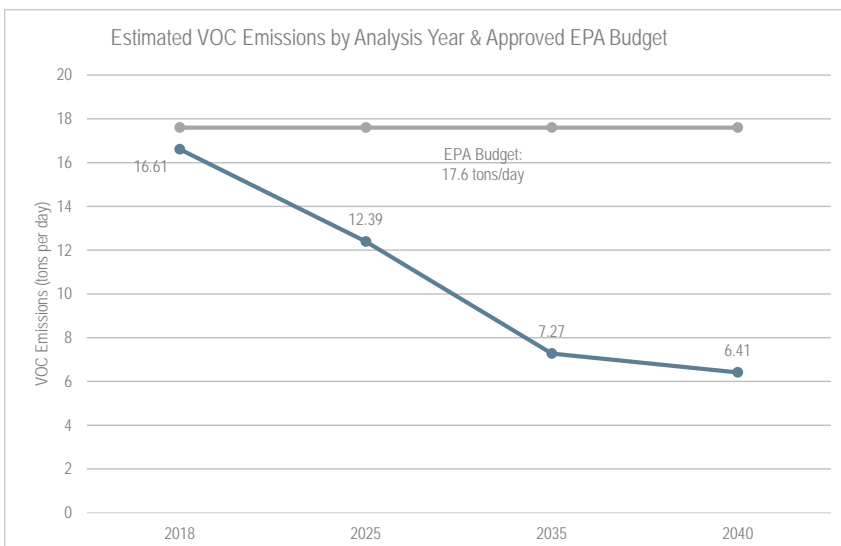
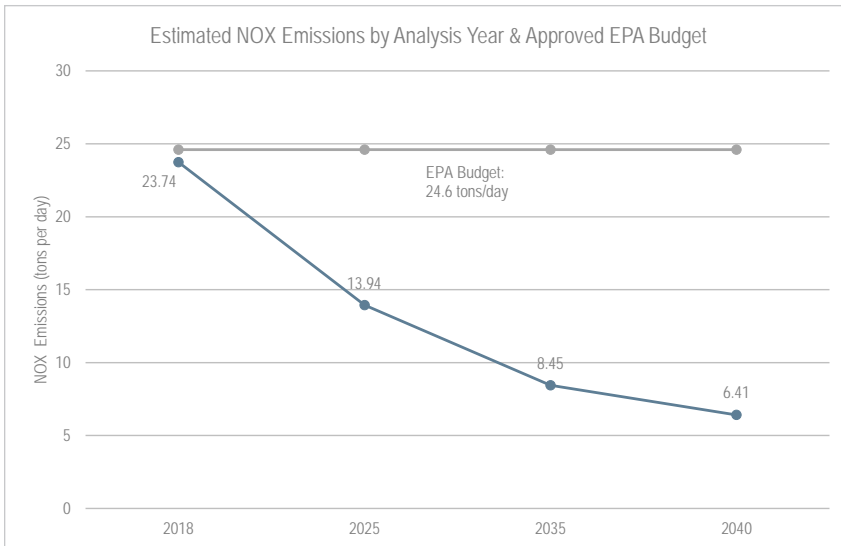
### Transportation Improvement Program (TIP):

The Transportation Improvement Program is the four-year program of immediate transportation system investments. This is a fiscally constrained document that identifies transportation projects and strategies that can help to achieve the goals, priorities and performance targets detailed in the Metropolitan Transportation Plan. All projects receiving Federal funding must be in the TIP.

### Air Quality

The Clean Air Act (CAA) of 1970 requires the US Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) and designate areas of the country based on pollution levels. Three transportation-related pollutants are regulated: Ozone, Carbon Monoxide and Particulate Matter. In areas that do not meet standards for air quality, projects contained in the Met-





ropolitan Transportation Plans and Transportation Improvement Plans must demonstrate that they will contribute to annual reductions in transportation-related emissions and not delay or prevent attainment of air quality standards.

The GBVMPO is located in the Connecticut portion of the New York-Northern New Jersey-Long Island eight-hour Ozone Moderate Nonattainment Area and the PM2.5 Attainment/Maintenance Area. Until 2013, the region was in nonattainment for PM2.5, but the designation was changed to maintenance/attainment after conformity with the PM2.5 standards was demonstrated. Con-

tinued compliance with the PM2.5 standards must be demonstrated through 2025.

The Connecticut portion of the New York-Northern New Jersey-Long Island eight-hour Ozone Moderate Nonattainment and PM2.5 Attainment/ Maintenance Area includes New Haven and Fairfield Counties. The rest of the state makes up the Greater Connecticut area for analysis of these pollutants. Due to these designations, the CAA requires that Connecticut develop a State Implementation Plan for Air Quality (SIP), which specifies how the state plans to improve air quality and achieve the NAAQS. The Department of Energy and Environmental Protection (CTDEEP) is responsible for developing the SIP. CTDOT is responsible for conducting the regional emissions analysis, which compares the estimated emissions from all transportation sources to the EPA approved emissions budget. The MPO reviews the analysis and makes the information available for public review and comment. The approved budgets are listed in the table to the right.

Ozone is an area-wide pollutant that forms from a chemical reaction of hydrocarbons, oxygen, and nitrogen oxides (or precursors) with sunlight. Carbon Monoxide is emitted from vehicles and can become concentrated at spot locations. It dissipates fairly quickly, so the concern is more associated with intersections where severe congestion occurs. Particulate Matter is made up of small particles present in the air formed by incomplete combustion by engines. It also includes dust and small particles from the wear of vehicle parts (tires, brake linings, etc) re-entrained into the air by the movement of vehicles. The finer the particulate matter, the greater the health risk.

A discussion of actions that can mitigate the impacts of the transportation system on air quality and the natural environment can be found in Section 14.



Table 1-1: EPA Approved Emissions Budgets

Ozone Pollutants		2018-2040 Budgets (tons per day)	
Volatile Organic Compounds (VOCs)		17.6	
Nitrogen Oxide Emissions (NOx)		24.6	
Particulate Matter Pollutants		Budgets (tons per year)	
		2018	2025-2040
Direct PM2.5 Emissions		575.8	516
Indirect PM2.5 Emissions		12791.8	9278.1

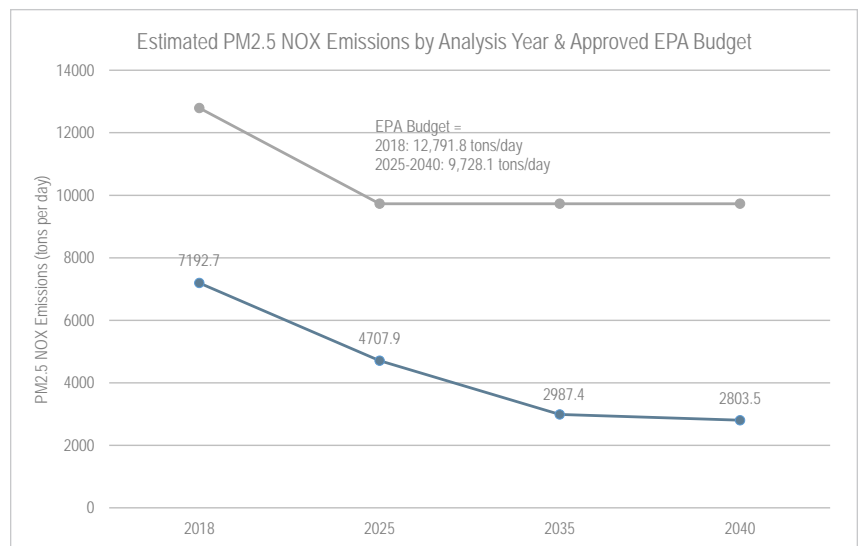
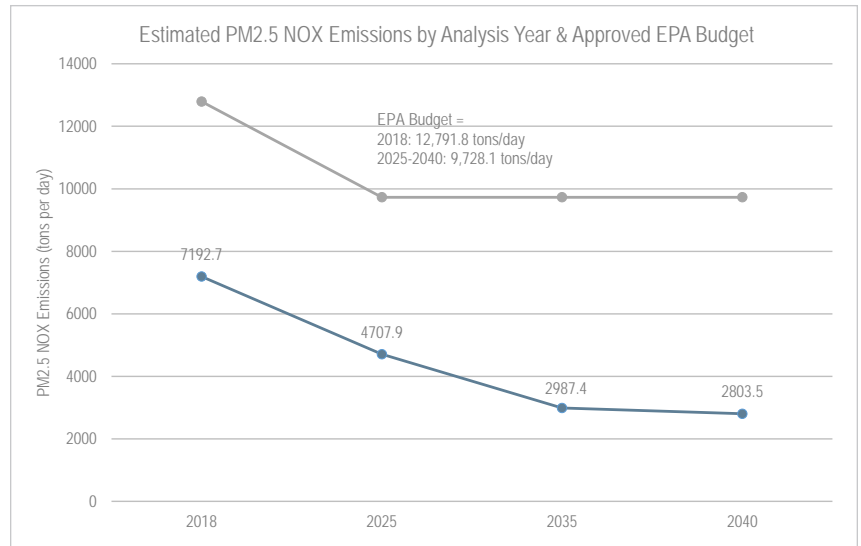
### Transportation Management Area

Over 900,000 people live in the Bridgeport-Stamford Urbanized Area (American Community Survey, 2016). UZAs with populations exceeding 200,000 typically have more complex transportation systems and associated challenges than smaller regions. These large UZAs have additional planning responsibilities and are designated as Transportation Management Areas (TMAs), including a congestion management process.

### Environmental Justice

Environmental Justice “is the fair treatment and meaningful involvement of all people, regardless of race, ethnicity, income, national origin, or educational level with respect to the development, implementation and enforcement of environmental laws, regulations and policies” (US DOT). MetroCOG is committed to addressing Environmental Justice concerns and issues in all aspects of the transportation planning process, including the metropolitan transportation plan. The intent of Environmental Justice is three-fold:

1. To ensure full and fair participation of minority and low-income persons.



2. To ensure no action prevents, prohibits or makes it difficult for minority or low-income persons from participating in the transportation planning process.
3. To ensure transportation investments are made in minority and low-income areas and the improvements planned for these areas meet the needs of the residents, improve access to jobs and services, and increase overall mobility.

In addition to the above, the MTP is evaluated through the Environmental Justice process to answer the following questions:

1. Are transportation investments being made in targeted or critical areas?

2. Are the transportation improvement projects appropriate, that is, are they meeting the travel needs of the residents?
3. Will the transportation improvements improve access and mobility?
4. Will the transportation improvements cause adverse and disproportionately high impacts?

## Livability Initiatives & Sustainable Communities

In 2009, six livability principles were established by the Partnership for Sustainable Communities, an interagency partnership established by the U. S. Department of Transportation (USDOT), U.S. Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA). The three agencies have agreed to work together to improve access to affordable housing, provide more transportation options, and lower transportation costs. By linking these efforts, transportation improvement programs and projects will be the catalyst for protecting the environment, addressing climate change and creating sustainable communities.

Livability ties the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools, and safe streets. This includes addressing safety and capacity issues on all roads through better design and maximizing new technologies, as well as support for transit oriented development. Interconnected transit oriented districts that expand on existing centers and infrastructure foster both an increase in non-motorized trips to work but encourage the use of alternative modes for other trips as well. By growing these centers, many current vehicular trips will be replaced with shorter trips to these centers rather than dispersed to peripheral areas. The six livability principles are:

1. **Provide more transportation choices:** Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.
2. **Promote equitable, affordable housing:** Expand location-and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
3. **Enhance economic competitiveness:** Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services, and other basic needs by workers, as well as expanded business access to markets.
4. **Support existing communities:** Target Federal funding toward existing communities—through strategies like transit oriented, mixed-use development, and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.
5. **Coordinate and leverage Federal policies and investment:** Align Federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.
6. **Value communities and neighborhoods:** Enhance the unique characteristics of all communities by investing in healthy, safe, and walk able neighborhoods—rural, urban, or suburban.

In response to the HUD Sustainable Commu-

nities Regional Planning Grant Program, a partnership of seventeen cities, counties and MPOs in Long Island, the Hudson Valley, and southern Connecticut was formed to develop a regional plan of sustainability. It was known as the New York-Connecticut Metropolitan Region Sustainable Communities Planning Consortium and included the GBVMPO. The Consortium, over a three-year period, developed a regional plan for sustainable development which leverage the region's robust transit network to promote and achieve more sustainable growth. The primary goal of the plan is to foster sustainable development and transportation.

To adhere to the livability principles, this MTP promotes a shift to an increased emphasis on mode choice, public transit opportunities, sustainable development, housing, and interconnectedness of transportation planning and transit supportive land uses.

## Connecticut Metropolitan Council of Governments (MetroCOG)

The Connecticut Metropolitan Council of Governments, or MetroCOG is the Council of Governments for the six municipalities of the Greater Bridgeport Region: Bridgeport, Easton, Fairfield, Monroe, Stratford and Trumbull. MetroCOG works closely with federal, state, and local agencies to facilitate a regional approach to transportation, conservation, economic development, natural hazard mitigation and land use planning, as well as municipal shared services.

Councils of Governments (COGs) are defined in Connecticut General Statutes Chapter 50 § 4-124i through § 4-124u. Each municipality (or member) in the Greater Bridgeport Region is represented by their Chief Elected Official, which makes up MetroCOG's Policy Board.

As a Council of Governments, MetroCOG is responsible for drafting, maintaining and periodically updating the Regional Plan of Conservation and Development (POCD). The Regional POCD makes recommendations for "land use, housing, principal highways and freeways, bridges, airports, parks, playgrounds, recreational areas, schools, public institutions, public utilities, agriculture and such other matters as will be beneficial to the area." (Connecticut General Statutes Chapter 127 § 8-35a). MetroCOG utilizes the plan in reviewing land use changes that may affect member municipalities (CGS Chapter 124 § 8-3b). Other regional programs that MetroCOG provides a forum for communication, coordination and collaboration include:

- Local Transportation Capital Improvement Program (LOTICIP)
- Natural Hazard Mitigation Plan
- Comprehensive Economic Development Strategy
- Brownfields Assessment, Cleanup and Redevelopment

A key component of MetroCOG's role in the transportation planning process is to align local goals for land use, economic development, conservation, natural hazard mitigation and brownfields remediation with transportation investments.

## Metropolitan Area Planning (MAP) Forum

The MAP Forum is a consortium of metropolitan planning organizations (MPOs) in New York, New Jersey, Connecticut and Pennsylvania that have signed a Memorandum of Understanding (MOU) for the coordination of planning activities in the multi-state metropolitan region. The MAP Forum was established in 2008 to cooperate and coordinate transportation planning activities in the New York metropolitan area. The GBVMPO, was an

original member of the MAP Forum, and both MetroCOG and NVCOG assumed membership. Members are:

- New York Metropolitan Transportation Council (NYMTC)
- Orange County Transportation Council (OCTC)
- North Jersey Transportation Planning Authority (NJTPA)
- Western Connecticut Council of Governments (WestCOG)
- Connecticut Metropolitan Council of Governments (METROCOG)
- Naugatuck Valley Council of Governments (NVCOG)
- South Central Regional Council of Governments (SCRCOG)
- Lower Connecticut River Valley Council of Governments (RiverCOG)
- Lehigh Valley Planning Commission (LVPC), Pennsylvania

## Regional Plan Association

RPA is a New-York based urban research and advocacy organization with a focus on improving the prosperity, infrastructure, sustainability and quality of life of the New York-New Jersey-Connecticut metropolitan region. RPA provides leadership on transportation, environmental and economic-development issues in the Northeast and across the U.S.

### RPA's Fourth Regional Plan

Adopted by RPA in 2017, the Fourth Regional Plan is focused on creating and recreating our public institutions, and shaping them to make positive change happen. The Plan is guided by the core values of greater equity, shared prosperity, better health, and sustainability. One of the Plan's four action areas is Transportation:

*"Transportation is the backbone of the region's economy. It is also vital to the*

*quality of life of everyone who lives and works here. But years of population and job growth and underinvestment in both maintenance and new construction have led to congestion, lack of reliability, and major disruptions on a regular basis. Some transportation improvements are relatively quick and inexpensive, such as redesigning our streets to accommodate walking, biking, and buses. But the region also needs to invest in new large-scale projects to modernize and extend the subways and regional rail networks, as well as upgrade airports and seaports. These investments will have far-reaching and positive effects on land use, settlement patterns, public health, goods movement, the economy, and the environment"*

Recommendations from the plan that are most relevant to the Greater Bridgeport Region's transportation system, and the systems regularly used by the Region's residents, are as follows:

- Reform regional transportation authorities and reduce the costs of building new transit projects.
- Price greenhouse gas (GHG) emissions using California's comprehensive approach.
- Levy charges and tolls to manage traffic and generate revenue.
- Modernize and expand New York City subways.
- Create a unified, integrated regional rail system and expand regional rail.
- Design streets for people and create more public space.
- Expand and redesign John F. Kennedy and Newark International airports

The City of Bridgeport represents an opportunity to achieve significant, positive change in the plan, with a 2040 vision of the City as "flourishing again as the center of a new

green economy in Connecticut." A walkable downtown, fast and reliable transit and the implementation of complete streets on Seaview Avenue would help the city achieve this vision. The Route 8 corridor would be connected to Downtown Bridgeport and Steele Pointe via Seaview Avenue. A regional, improved rail network, bus rapid transit and pedestrian-friendly roads are recommendations that could improve this corridor.

## Goals and Priorities for the Transportation System

### Federal

After passage of MAP-21, and continuing with the FAST Act, states and MPOs became required to utilize a performance-based approach to transportation decision-making based on the following national goals for the transportation system (23 USC §150(b)):

- **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

The US DOT established a number of performance measures to evaluate progress in realizing the national goals. States and MPOs are required to set a target for each measure, and to program projects that will support attainment of their adopted targets.

The MTP must evaluate the condition and performance of the transportation system relative to these targets. Through this requirement, the national goals for the transportation system are incorporated as goals in the MTP for this region.

### State Goals

Lets Go CT! is a 30-year vision for Connecticut to establish a best in class transportation system. The plan outlines the investments necessary for a safer and more reliable transportation system responsive to 21st century lifestyles and economic opportunities. A strategic public outreach process informed the development of the following goals:

- The safest highway, rail, bus, aviation, bicycle and pedestrian systems in New England.
- Highway networks without bottlenecks or unnecessary and costly delays.
- Affordable, convenient, frequent, and reliable commuter bus and rail services.
- Frequent and fast rail service across Connecticut, with regional access to Boston, New York, and Philadelphia and intercity service to Washington, D.C., to the south and Montreal to the north.
- Convenient travel for all residents, such

as those with special needs, including the elderly, people with disabilities, and those who are transit-dependent residents.

- A robust network of bicycle and pedestrian trails and sidewalks to add quality-of-life benefits and attract tourism.
- Smart, sustainable Transit Oriented Development (TOD) with easy access to jobs, education, and options for living car-free.
- Efficient freight rail and highway networks to deliver goods and products without wasteful and costly congestion, without bridge weight restrictions, and with expanded commercial parking at modern service plazas and rest areas.
- Vibrant deep-water ports for the import and export of goods and materials, contributing to a reduction in the freight truck demand on our interstate highways.
- A best-in-class international airport that is a hub for direct and connecting flights within the continental U.S. and to major cities in Europe, providing leisure travelers and businesses with convenient access to new destinations and an increasingly globalized economy.
- A new CTDOT that is committed to a new way to work with an efficient, highly skilled, collaborative, and diverse team of professionals devoted to: Safety, Customer Service, Communication, and Innovation. An organization of proud public servants recognized by all Connecticut stakeholders for integrity and the highest level of stewardship of the public resources with which it is entrusted, and that focuses on delivering projects on time and on budget.

### Regional goals

The principle goal of the MTP is to continue efforts toward an efficient, effective and safe

transportation network that accommodates a variety of modes. Through the transportation planning process, the goals of past plans were evaluated against national, state and local priorities. The following updated goals are generally consistent with those of past plans and will provide the framework for making future transportation investment decisions.

- **Preserve, Maintain and Enhance the Highway System:** Maintain the principal expressway and highway system in a state-of-good repair to improve safety and operating efficiency. Strategically expand the capacity of key highways to reduce delay and congestion.
- **Congestion Management:** Alleviate congestion through the implementation of intersection improvements, traffic signal modernization, and Transportation Demand Management strategies (ride-sharing, telecommuting and alternate work schedules).
- **Safety:** Improve the safety and efficiency of the highway network, for both motorized and non-motorized users.
- **Security:** Improve and expand transportation infrastructure security measures for persons while using, on-board or waiting for modes and services.
- **Transportation Technology:** Manage transportation operations, enhance safety and mobility, ensure greater travel time reliability, reduce travel delay, and provide accurate information to travelers and system operators through various Intelligent Transportation Systems (ITS) applications. Support new and emerging technologies, such as autonomous and connected vehicles.
- **Preserve and Enhance Public Transportation Services:** Maintain essential local bus, commuter rail and paratransit services by providing full funding for

operations, replacing capital equipment on a life-cycle cost basis, renovating and rehabilitating facilities and infrastructure to a state-of-good-repair and enhancing services by optimizing resource allocation and coordinating paratransit service delivery.

- **Multi-modal Opportunities:** Expand and enhance opportunities for linking multiple modes and facilitating the movement between modes by constructing new multi-modal facilities and coordinating transit services.
- **Bicycle and Pedestrian Activities:** Encourage the increased use of bicycling and walking while enhancing safety by developing a network of shared-use trails and providing pedestrian walkways and features.
- **Flexibility in Highway Design:** Plan road improvements and transportation facilities within the context of their physical setting. Preserve scenic, aesthetic, historic, cultural and environmental resources.
- **Environmental Mitigation:** Implement actions to mitigate the environmental impacts of transportation projects.
- **Freight Movement:** Implement actions and projects that diversify how goods are moved to, from and through the region and improve how well freight is moved.
- **Aviation:** Upgrade Sikorsky Memorial Airport to a high quality, regional facility capable of supporting commuter airline services and meeting corporate needs, while enhancing safety.
- **Sustainability:** Link local land use management, transportation improvements and sustainability and livability initiatives for consistency with municipal Plans of Conservation and Development, the Regional Plan of Conservation and Development and the state Conservation

and Development Policies Plan.

- **Economic Development:** Improve transportation infrastructure critical to the economic revitalization of the Region's urban and suburban centers and that promote tourism and travel to the Region.
- **Resiliency:** Reduce the vulnerability of the transportation system to natural hazards, including flooding.
- **Environmental Justice:** Conduct the transportation planning process to ensure that agency programs, policies and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination because of their race, color or national origin.
- **Transparency and Proactive Public Involvement:** Ensure full, fair and meaningful opportunities to participate in the transportation planning process by providing complete information, timely public notice, and full public access at all key stages in the decision-making process.

The MTP also incorporates the goals and objectives of Reconnect One Region: A Comprehensive Plan for the MetroCOG Region. This Plan was adopted by the MetroCOG board in December of 2015. The goal of the Transportation and Mobility section is to:

*"Maintain and modernize the Region's established regional transportation network while improving access to all modes of transportation including transit users, bicyclists and pedestrians."*

## 2: Public Participation

The public participation, engagement and notification process followed the GBVMPO's Public Participation Plan and Title VI Program and Limited English Proficiency Plan, both endorsed by the GBVMPO on October 25th, 2018. Materials referenced can be found in Appendix B.

Federal guidelines require an effective public participation program to ensure that transportation actions do not adversely impact sensitive areas. To meet these guidelines, the MPO must:

- Proactively include public in transportation planning process.
- Provide reasonable opportunities for public to comment.
- Provide early and continuing notification and information.
- Make available plans and reports, including in an electronic format.
- Provide feedback to the public on comments and suggestions.

Public participation activities for the update of the MTP consisted of the following activities:

Beginning at the August 30, 2018 meeting of the GBVMPO, updates on the draft development, content, and outreach materials were provided to the board.

An online survey was distributed throughout January, February and March. Methods of distribution included an e-mail to the GBVMPO's stakeholder list, social media and paper handouts (with a QR code and link). A Spanish version was made available as well.

A webpage was made available with MTP information, a comment box and a link to the survey. A Spanish version was also made available.

A story map was developed and the link was distributed with the survey handouts. The link

to the story map was also made available on the webpage.

A press release about the MTP and survey was submitted to the CTPost and El Sol (Spanish) on January 14th, 2019.

The regional emissions analyses and draft air quality conformity reports for the 8-hour Ozone and the PM2.5 assessments were received from CTDOT on February 7th. The results were integrated into the plan and published on the MetroCOG website and NVCOG website. Links to these documents were also made available on the MTP webpage.

Public notification (legal notice) of the MTP for review and comment was published in the Connecticut Post on February 19, 2019 and submitted to El Sol for publication on February 13, 2019. This began the 30+ day comment public review and comment period, from February 19, 2019 to March 25, 2019. Comments on the plan will be reviewed and considered and responses will be provided. These can also be found in Appendix B.

A public information meeting was held on March 19, 2019 at the MetroCOG offices in Bridgeport (inclement weather date was March 25, 2019). The meeting began at 5:00 PM. MetroCOG and NVCOG staff will be available for a brief presentation and to answer questions about the MTP.

The final draft MTP was presented to and endorsed at the GBVMPO at a regular meeting on March 28, 2019. The public was provided an opportunity to comment on the MTP at this meeting as well.

---

In a few words,  
what do you  
like most about  
where you live?

---

**"Sense of community,  
walkability"**  
*- Bridgeport*

**"Proximity to train  
station and good  
schools"**  
*- Fairfield*

**"Location"**  
*- Derby*

**"excellent schools,  
wolfe park"**  
*- Monroe*

**"Local train station.  
Within driving distance  
to amenities.  
Affordable buying and  
rental options."**  
*- Stratford*

**"good services, easy  
access to 95 and  
Merritt"**  
*- Trumbull*

---

*More survey responses can  
be found in Appendix B*



# 3: Existing Conditions & Trends

## Overview of Region

The Greater Bridgeport and Valley Metropolitan Planning Organization Region, located in southwest Connecticut, consists of ten municipalities, the Cities of Ansonia, Bridgeport, Derby and Shelton and the Towns of Easton, Fairfield, Monroe, Seymour, Stratford and Trumbull. The Region is a complex area, with the State of Connecticut's largest community, the City of Bridgeport, at its urban core. The Region's three coastal communities that lie along Interstate 95 and the Metro-North Mainline Rail Corridor are the most populated and account for approximate 63% of the Region's population.

## Demographics

### Population

Based on the 2012-2016 American Community Survey 5-Year Estimates (ACS; through the U.S. Census Bureau) and detailed in Table 3-1, the estimated population of the region was 413,412, an approximate two-percent increase since 2010, which had a population of 406,254. With a land area of 196.6 square miles, the combination of population and area results in a population density of ±2,102.80 persons per square mile. This density is the highest of any region in the state. This is reflected in the high proportion of the Region that lies within the Census-defined urbanized area. About 98% of the Region's residents live in areas designated as urban.

The largest municipality in the region remains the City of Bridgeport, with an estimated population of 147,022. The city accounts for about 35.5% of the region's total population. The next largest communities are the Towns of Fairfield and Stratford, with estimated populations of 61,114 and 52,300, respectively. The

City of Shelton's population is 40,979, making it the fourth most populous community in the Region. The Towns of Easton, Monroe and Trumbull all experienced a slight increase (approximately 1.2%) in population since 2010. By contrast, the City of Ansonia and the Towns of Derby and Seymour saw populations stay the same or decline over the same timeframe. **Fairfield had the highest increase in population since 2010, with a 2.8% gain in residents.**

Based on the most recent population estimates developed by the University of Connecticut, the population of the region is expected grow slightly, over the next 25 years. Population is projected to increase for six communities, including Ansonia, Bridgeport, Derby, Fairfield, Seymour and Stratford. Population is expected to decline in Easton, Monroe, Shelton and Trumbull. Overall, the projected population of the region in 2040 is estimated at 414,101 persons. This growth could potentially increase the demand on the Region's transportation system.

Table 3-1: Current Population

Municipality	Total Population*	Land Area**	Population Density
Ansonia	18,850	6.0	3,141.66
Bridgeport	147,022	16.0	9,188.87
Derby	12,755	5.0	2,551
Easton	7,591	27.4	277.04
Fairfield	61,114	30.0	2,037
Monroe	19,784	26.1	758.01
Seymour	16,540	14.6	1,132.88
Shelton	40,979	30.6	1,339.18
Stratford	52,300	17.6	2,971.59
Trumbull	36,477	23.3	1,565.54
<b>Total</b>	<b>413,412</b>	<b>196.6</b>	<b>2,102.80</b>

\*2012-2016 American Community Survey (ACS) \*\* Square miles

## Age

Based on the ACS, there was an estimated 59,984 persons who were 65 years of age and older, about 14.5% of the region's population. The City of Shelton had the highest proportion of its population in this age cohort at approximately 20% while Bridgeport had the lowest, with only 10.3%. Eligibility for senior services vary between towns, however, not all who are over 65 years old require special transportation services. Therefore, the number of people in this age bracket is not indicative of special transportation needs.

The municipalities in the region sponsor senior centers to provide activities and services

to older residents. These programs typically include special transportation services to and from the center, shopping and medical appointments.

## Persons with a Disability

The Americans with Disabilities Act (ADA) requires operators of fixed-route bus services, such as Greater Bridgeport Transit (GBT), to provide supplemental paratransit service to those who, because of their disability, are not able to get to a bus stop or board or ride a fixed route bus. This service fills individual transit needs and promotes equality of mobility for all. A wide range of trip purposes are provided by the operator, including shopping, personal business and medical. In addition to the service offered by GBT, several social service organizations, including municipal and private, non-profit, provide special transportation for clients. Trips are typically limited to a narrow range of trip purposes, typically based on the type of service provided by the agency.

The Census form asks respondents whether they or other members of the family had any long-lasting conditions (over six months) that made it difficult to perform certain activities. These include sensory (blindness, deafness or other sight impairment), self-care, mental, employment, going outside-the-house, or physical (walking, climbing, carrying or lifting) disabilities. The data were tabulated for non-institutionalized persons five years of age or older. The data indicate about 10.8% of the region's non-institutionalized population had one or more disability, a total of 44,568. In Bridgeport, 12.1% of the population, or 17,729 persons, had some type of disability. As with the age data, the number of persons with disabilities is not a true indicator of paratransit need. The data do not provide a measure of the severity of the disability nor an indication of whether the disability pre-

Table 3-2: Race & Ethnicity by Municipality

Municipality	Population	White*	Black or African – American*	Hispanic or Latino**	Asian*
Ansonia	18,950	11,681 (61.6%)	1,953 (10.3%)	4,452 (24%)	490 (2.1%)
Bridgeport	147,022	31,942 (21.7%)	48,518 (33%)	57,688 (39.2%)	4,561 (3.1%)
Derby	12,755	7,973 (62.5%)	743 (5.8%)	3,244 (25.4%)	480 (3.5%)
Easton	7,591	6,875 (90.6%)	23 (0.3%)	374 (4.9%)	262 (3.5%)
Fairfield	61,114	51,987 (85.1%)	838 (1.4%)	3,864 (6.3%)	2,661 (4.4%)
Monroe	19,784	17,531 (88.6%)	131 (0.7%)	905 (4.6%)	768 (3.9%)
Seymour	16,540	12,919 (78%)	562 (3.4%)	2,370 (14.3%)	364 (2.2%)
Shelton	40,979	36,182 (88.3%)	495 (1.2%)	2,486 (6.1%)	1,515 (3.7%)
Stratford	52,300	33,970 (65.0%)	7,730 (14.8%)	7,835 (15%)	1,506 (2.9%)
Trumbull	36,477	29,170 (80%)	1,387 (3.8%)	3,143 (8.6%)	2,008 (5.5%)
<b>Total</b>	<b>413,412</b>	<b>240,230 (58.1%)</b>	<b>62,380 (15.1%)</b>	<b>86,361 (20.1%)</b>	<b>14,615 (3.5%)</b>

\*Non-Hispanic \*\*Any Race

vents a person from using regular fixed-route bus service.

## Race & Ethnicity

According to the 2012- 2016 American Community Survey 5-Year Estimates, 58.1% of the Region's population identify as White, while 20.1% identify as Hispanic or Latino, 15.1% as Black or African American and 3.5% as Asian. Table 3-2 provides a breakdown of Race/Ethnicity by Municipality.

## Income

The Average Medium Household Income in the Region is \$85,970.04, however household incomes vary significantly by municipality. The Town of Easton has the highest median household income, \$133,356. In stark contrast, the City of Bridgeport's medium household income is \$43,137. Table 3-3 provides a breakdown of Income by Municipality.

## Land Use, Development, Tourism, Housing & Employment

### Land Use & Zoning

The land use and development patterns of the region are diverse and are reflected in the distribution of its population and urban character. Much of the region is already developed with most of the undeveloped land located in the northern communities. Development is more intense along the coast while the northern reaches are more characteristic of rural patterns.

Future development patterns are likely to follow current configurations with in-filling occurring in more intensely developed areas and low-density developments locating in the suburban and rural areas. The majority of population growth is expected in the Region's three coastal communities of Fairfield,

Table 3-3 Income

Municipality	Median Household Income	Per Capita Income
Ansonia	\$43,386	\$23,937
Bridgeport	\$43,137	\$21,816
Derby	\$55,316	\$28,846
Easton	\$133,356	\$60,963
Fairfield	\$122,135	\$60,505
Monroe	\$113,333	\$50,195
Seymour	\$79,734	\$35,632
Shelton	\$87,277	\$43,810
Stratford	\$69,356	\$35,175
Trumbull	\$112,674	\$46,622
<b>Regional Median Household Income</b>	<b>\$85,970</b>	<b>\$40,750</b>

Bridgeport and Stratford (along Interstate 95 and Metro North's New Haven Line) and in Ansonia and Derby (along Route 8 and Metro North's Waterbury Line).

### Regional Core

The region's core is Bridgeport, a traditional manufacturing city, with areas of intense development radiating from the downtown area. Although there has been an increase in commercial development in the suburban areas, Bridgeport remains the regional center for offices, banking, government, education and associated activities. In addition, there is a substantial amount of unused and underused industrially and commercially zoned land that is primed for revitalization. In recent years, several former commercial properties in Bridgeport have been converted to residential uses and new construction has also taken place. With access to the deep-water of Long Island Sound, Interstate 95, and the Metro North New Haven Rail Line, along with a series of vacant and underutilized land par-

cels, Bridgeport is ripe for substantial growth in residential, commercial and manufacturing activity. Bridgeport is also the transportation focal point for the region and serves as a transfer center between local and intercity bus, commuter rail, passenger ferry, and an interstate highway.

### **Regional Activity Centers**

Aside from Bridgeport, higher density development is also located along the southern portions of Fairfield and Stratford, as well as in Ansonia, Derby and Shelton. These areas represent the most intense development and most integrated mix of uses within the Greater Bridgeport and Valley Region and are home to a majority of the Region's major employers and institutions. Community activity centers for shopping, professional services, local government, and various other functions are found in all towns except Easton. These activity centers are generally located near a limited access highway or a major state route, such as Route 1, Route 25, Route 34, Route 58 or, Route 110 and Route 111.

Most of the region's open areas, recreation uses and farmlands are in Easton, northern Fairfield, Monroe and Trumbull, Shelton and Seymour. The transportation system will continue to play a significant role in the development of the agricultural economy.

### **Area Amenities, Tourism & Education**

The Region's transportation network is utilized by both residents and visitors for the array of civic, educational, cultural, entertainment and recreational establishments. The Region is home to approximately 13,000 undergraduate students who attend three of the Region's higher education institutions - the University of Bridgeport, Fairfield University and Sacred Heart University.

### **Coastal Recreation**

Along the coast, Fairfield, Bridgeport and

Stratford offer access to Long Island Sound, including Jennings & Penfield Beaches in Fairfield, Short Beach in Stratford and the 325-acre, Frederick Law Olmsted-designed Seaside Park in Bridgeport. All of these are ideal places for biking, running or walking as well as boating, canoeing, kayaking and fishing. The beaches and parks each have their own amenities, including numerous baseball and soccer fields, basketball courts, playgrounds, beach volleyball courts, grilling and picnicking facilities, all of which provide abundant active and passive recreational opportunities for the entire Region and beyond.

### **Entertainment**

The Region is also home to the Ballpark at Harbor Yard and the Arena at Harbor Yard. The Ballpark at Harbor Yard is currently being transformed into a boutique concert venue with a seating capacity of 5,500, which will draw approximately 250,000 people a year.

The Webster Bank Arena "hosts over 150 world-class events each year" and provides seating configurations that vary from 2,000 to 10,000. The Arena is home to the American Hockey League's (AHL) Bridgeport Sound Tigers hockey team, an affiliate of the NHL's New York Islanders and the Fairfield University Stags NCAA Men's and Women's Basketball teams. The arena hosts "community and private events and world-class concerts and entertainment events throughout the year."

One of the Region's most sought-after developments is MGM Bridgeport. MGM Resorts International, which is a global entertainment company with national and international locations featuring hotels and casinos, live and theatrical entertainment experiences, and an array of restaurant, nightlife and retail offerings. MGM Resorts International is proposing to develop MGM Bridgeport, which will be comprised of a world-class casino floor, live

entertainment offerings, hotel accommodations, multiple dining and retail options. MGM Bridgeport will need to secure all appropriate legislative approvals prior to any advancement of the project.

### Beardsley Zoo & Cultural Institutions

Aside from educational, recreation and entertainment offerings, the Region is also home to the Beardsley Zoo, which is Connecticut’s only accredited Zoo and a member of the Association of Zoos and Aquariums (AZA). The Zoo is committed to the preservation of endangered animals and is actively developing strategies that protect endangered species and their habitats. The Zoo offers education, conservation, research and recreation opportunities to the approximately 250,000 visitors per year. The Fairfield Theater Company, the Downtown Cabaret Theatre, the Housatonic Museum of Art and the City Lights Gallery and the Barnum Museum are a few of the several Arts and cultural institutions located throughout the Region as well.

### Housing

The total number of housing units (occupied and vacant) in the region is 160,209, of which 36% are located in the City of Bridgeport. The growth in the number of housing units mirrored population trends. The average number of persons per housing unit is 2.8 persons per housing unit. The larger household sizes are found in less densely populated communities, such as Trumbull (3.00), Monroe (2.88) and Easton (2.84). This contrasts with the 2.53 persons per unit average for Stratford and the 2.81 and 2.82 persons per unit average for Fairfield and Bridgeport, respectively. Table 3-4 details housing in the region.

### Employment

#### Industry Sectors & Major Employers

The Region’s Labor Force is 222,251, of which 199,332 are employed. The largest in-

dustries for the employed include: Education Services & Healthcare and Social Assistance (24.4%), Professional, Scientific and Management and Administrative & Waste Services (13.3%) Manufacturing (12%), Retail Trade (10.5%), Finance and Insurance & Real Estate (9.3%) and Arts, Entertainment, Recreation, Accommodation & Food Services (7.5%) which make up approximately 75% of the Region’s jobs.

The largest concentrations of the jobs in the Region are found in Bridgeport (42,178 jobs, or 27.9%), with Stratford (25,404 or 16.8%), Fairfield (25,159 or 16.6%) and Shelton (23,774 or 15.7%) the next highest.

#### Commuter Travel Patterns

Within Greater Bridgeport & Valley Metropolitan Planning Organization, there are approximately 194,784 commuters, many of whom work within our Region, but which also comprise of residents who commute to other employment centers out of the Region, including the Danbury, New Haven, Stamford and Waterbury areas. Of the labor force,

Table 3-4: Housing

Municipality	Total Housing Units	Occupied	Vacant	Median Value	Gross rent
Ansonia	7,486	6,897	589	\$214,800	\$1,031
Bridgeport	57,658	50,357	7,301	\$168,200	\$1,111
Derby	5,479	4,949	530	\$199,400	\$1,069
Easton	2,784	2,672	112	\$629,200	\$1,805
Fairfield	21,278	20,155	1,123	\$589,500	\$1,752
Monroe	7,218	6,844	374	\$374,500	\$1,525
Seymour	6,619	6,063	556	\$255,800	\$996
Shelton	17,041	15,803	1,238	\$338,200	\$1,195
Stratford	22,112	20,540	1,572	\$249,600	\$1,229
Trumbull	12,534	12,040	494	\$392,800	\$1,813
<b>Region</b>	<b>160,209</b>	<b>146,320</b>	<b>13,889</b>	<b>\$341,200</b>	<b>\$1,353</b>

approximately 8,616 work from home. Of the commuters, approximately 7.6% commute by Public Transit and 8.5% by carpool, all of which exceed the State of Connecticut averages. However, the primary mode to work is the Single Occupancy Vehicle, of which 148,296 of the 194,784 commuters use as their primary mode of transportation (76%).

Ongoing, planned and unanticipated developments throughout the region may have a substantial impact on future commuting patterns. For example, in Bridgeport, one large scale mixed-use retail and entertainment district redevelopment project - Bridgeport Landing (Steel Pointe) is ongoing. In addition, the Lake Success Business Park is being considered that would create manufacturing, office and retail jobs that are well beyond those estimated by CTDOT and their Travel Demand Model. Similarly, large office/corporate and mixed-use developments have been proposed throughout the Region, which would generate both jobs and trips that are not accounted for in current CTDOT forecasts. The potential impacts from future development projects on a more localized

level will be assessed on a site-specific basis as the projects become more defined.

Commuter Transportation Modes and Travel Times are detailed in Tables 3-5 and 3-6.

Table 3-5: Mean Commute Travel Time

Municipality	Minutes
Ansonia	25.3
Bridgeport	27.6
Derby	23.9
Easton	36.9
Fairfield	34.1
Monroe	32.5
Seymour	27.3
Shelton	27.2
Stratford	28.2
Trumbull	30.4
<b>Average Regional Commute Travel Time</b>	<b>29.3</b>

Table 3-6: Transportation Mode to Employment

Municipality	S.O.V	Carpool	Public Transit	Walked	Other Means	Worked from Home	Total Commuters
Ansonia	6,574	780	179	334	86	146	7,953
Bridgeport	44,015	8,445	7,590	2,883	1,143	1,795	64,076
Derby	5,155	605	105	167	86	381	6,118
Easton	2,556	123	221	114	8	478	3,032
Fairfield	20,012	1,404	3,419	797	271	2,072	25,903
Monroe	9,067	497	241	100	16	491	9,921
Seymour	7,218	666	153	77	44	358	8,158
Shelton	18,037	1,219	508	110	152	720	28,184
Stratford	21,755	1,640	1,656	266	246	1,173	25,563
Trumbull	13,897	1,083	646	126	124	1,002	15,876
<b>Region</b>	<b>148,286</b>	<b>16,462</b>	<b>14,718</b>	<b>4,974</b>	<b>2,176</b>	<b>8,616</b>	<b>194,784</b>

## 4: Highways, Roads & Bridges

The Region's highway and roadway network is critical to the movement of private vehicles, motorcycles, transit (fixed-route bus and demand response) and freight. With the exception of the region's limited access highways, bicyclists and pedestrians also utilize the region's roadway system. A balanced transportation system supports safety for all users, the efficient movement of vehicles, and accommodation of bicyclists and pedestrians.

### Functional Classification

Most travel involves movement through a network of roads that range from limited access high-volume, high speed interstates to low volume collector and residential streets with numerous points of access. To understand how travel is channeled through the network, highways and roads are categorized into the following categories.

#### Principal Arterials:

**Interstates:** Designed for primarily long-distance travel. Limited access, divided highways that offer high levels of mobility while linking major urban areas. They do not provide access to adjacent land uses. Interstates receive their official designation from the US Secretary of Transportation.

**Other freeways and expressways:** Like interstates, this category of roadway provides a high level of mobility and does not directly serve adjacent land uses. A physical barrier usually separates the directional travel lanes. Access and egress points are often limited to on- and off-ramp locations or a very limited number of at-grade intersections.

**Other Principal Arterials:** Serve major metropolitan centers and provide a high degree of mobility, including through rural areas. Abutting land uses can be served directly,

such as access via driveways to specific parcels and at-grade intersections with other roadways. Multiple arterials typically serve a single urban area while a similarly sized rural area would be served by one arterial.

#### Minor Arterials:

Serve trips of moderate length, provide access to smaller geographic areas and offer connectivity to principal arterials. In urban areas, they interconnect and augment the principal arterial system, provide intra-community continuity and may carry local bus routes. In rural areas, minor arterials are typically spaced at intervals consistent with population density, so that developed areas are within a reasonable distance of an arterial. Minor arterials in rural areas are typically designed to provide relatively high overall travel speeds with minimum interference to through movement.

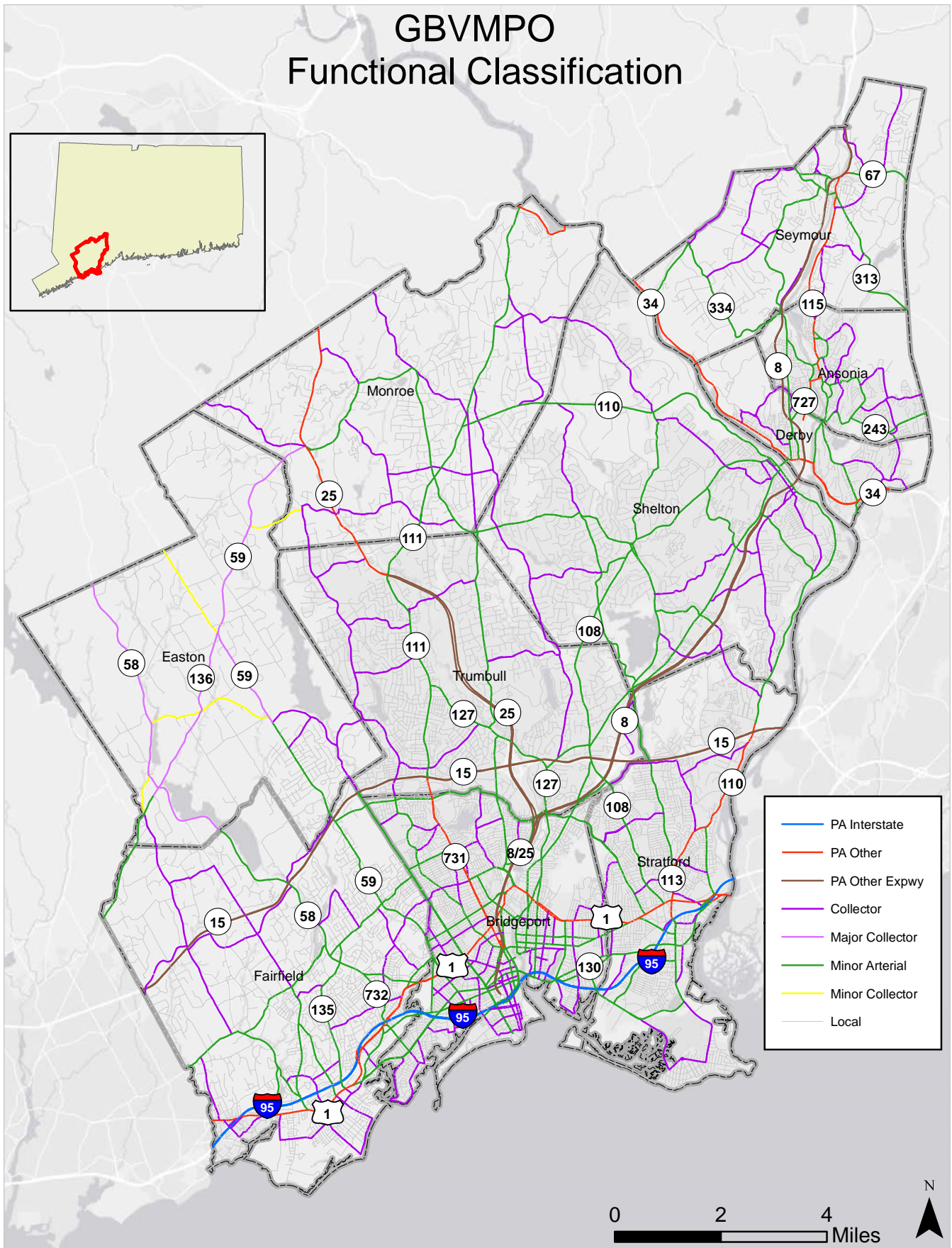
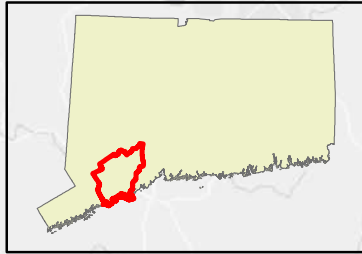
#### Major and Minor Collectors:

Gathers traffic from local roads and funnels it to arterials.

**Major Collectors:** In urban areas, serve both land access and traffic circulation in higher density residential, and commercial/ industrial areas. Major collectors often penetrate significant distances of residential neighborhoods and distribute trips between local roads and arterials. Operating characteristics include higher speeds and more signalized intersections. In rural areas, major collectors serve larger towns not directly served by the arterial system and provide links to other important traffic generators and/or Arterial routes.

**Minor Collectors:** In urban areas, minor collectors serve both land access and traffic circulation in lower density residential and

# GBVMPO Functional Classification



- PA Interstate
- PA Other
- PA Other Expwy
- Collector
- Major Collector
- Minor Arterial
- Minor Collector
- Local



commercial/industrial areas. They only penetrate residential neighborhoods for a short distance and distribute trips between local roads and arterials. Operating characteristics include lower speeds and fewer signalized intersections. In rural areas, minor collectors are spaced at intervals, consistent with population density, to collect traffic from local roads and bring all developed areas within reasonable distance of a Collector. They provide service to smaller communities not served by a higher class facility and link locally important traffic generators to less developed rural areas.

### Local Roads:

Account for the largest percentage of all roadways (in terms of mileage). They are not intended for use in long distance travel, except at the origin or destination end of the trip. Local roads provide direct access to abutting land. Bus routes generally do not run on local roads and they are often designed to discourage through traffic.

### Oversight of Roads

The National Highway System (NHS) includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. Roads that provide access from the NHS to intermodal facilities (such as bus, rail or ferry) are part of the system as well.

While municipalities own the majority of road miles, the State of Connecticut owns the roads with the highest number of miles traveled. The Federal-Aid Highway Program supports the NHS and other state highway systems by providing financial assistance for the construction, maintenance and operations of arterials, urban collectors and major rural collectors. These funds are administered by state and regional entities.

### Bridges

Bridges provide road network connectivity, spanning water bodies and other natural features, rail lines, and other roadways. CTDOT is responsible for the maintenance and operation of 4,106 roadway bridges and inspects an additional 1,290 bridges that are locally owned and maintained. 1,785 of these bridges are on the National Highway System.

To be on the FHWA's National Bridge Inventory (NBI), the bridge structure must be at least 20 feet in length. CTDOT inspects these bridges biannually. The inspection follows FHWA NBI standards: each structural component, such as the deck, superstructure and substructure are assessed and rated on a scale from zero (failed) to nine (excellent). If any component receives a rating of four or less, the bridge is considered to be structurally deficient and requires maintenance, rehabilitation or replacement.

### Roads in the GBVMPO

**Interstate:** Route 95 (Fairfield, Bridgeport, Stratford)

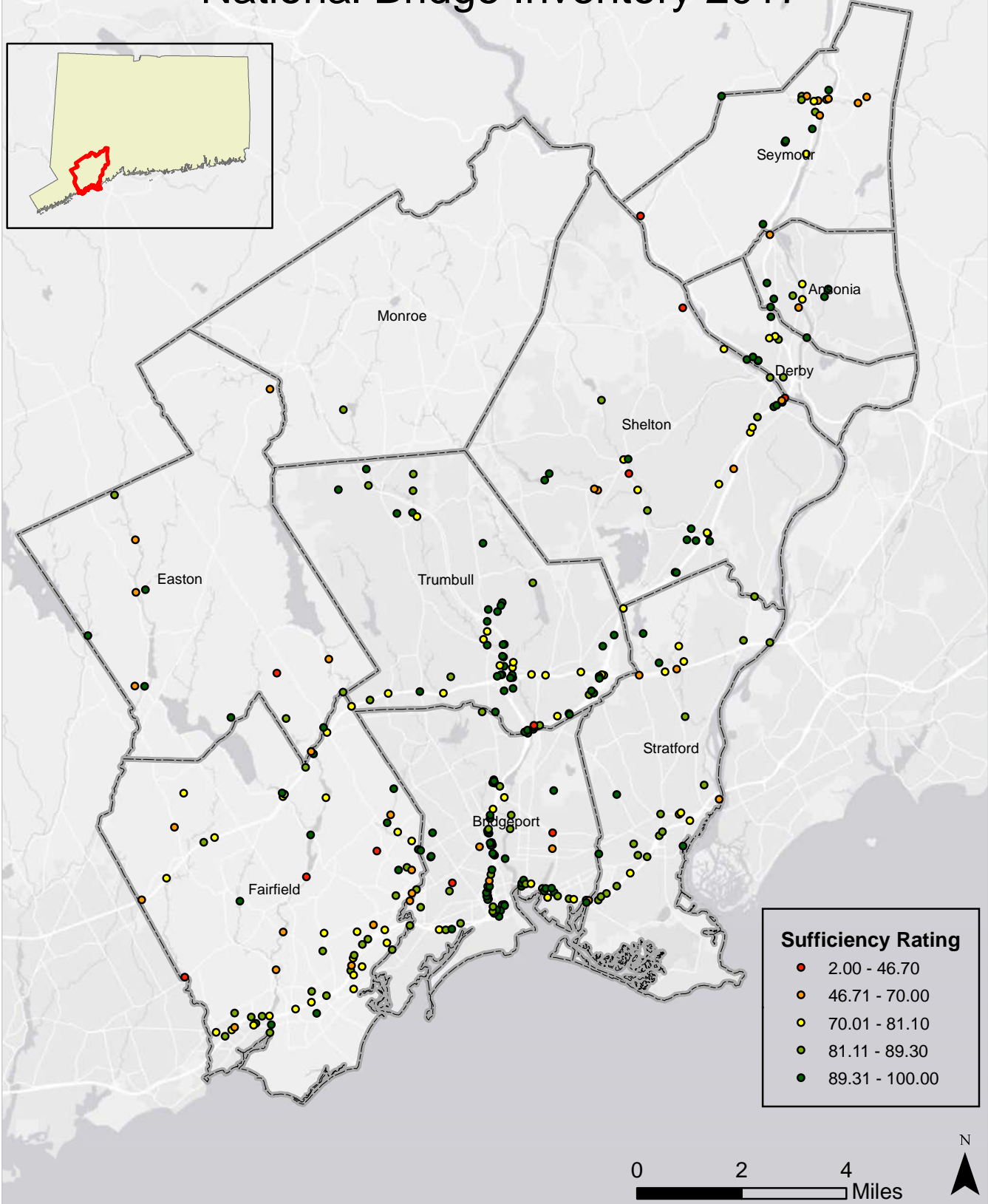
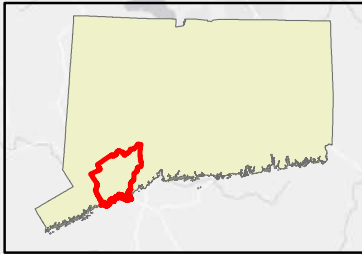
#### Other NHS Routes:

- CT 8 (Bridgeport, Trumbull, Shelton, Derby, Ansonia, Seymour)
- CT 25 (Bridgeport, Trumbull, Monroe)
- CT 8/25 (Bridgeport)
- CT 15 (Fairfield, Trumbull, Stratford)
- CT 34 (Derby)

**MAP-21 NHS Principal Arterials** were added to the NHS through MAP-21:

- US Route 1 (Fairfield, Bridgeport, Stratford)
- CT 34 (Derby, Seymour)
- CT 58 (Fairfield)
- CT 67 (Seymour)
- CT 110 (Stratford)
- CT 113 (Stratford)
- CT 115 (Ansonia, Seymour)

# GBVMPO National Bridge Inventory 2017



- CT 727 (Ansonia, Derby)
- CT 731 (Bridgeport)
- CT 732 (Fairfield)

**Intermodal Connectors:** road sections for access to the Water Street Dock ferry terminal (Bridgeport):

- South Avenue and North Frontage Road between Broad Street and Route 8/25.
- South Frontage Road between Broad Street and Route 8/25.
- Broad Street between North Frontage Road and Railroad Avenue
- Railroad Avenue between Broad Street and Main Street
- Interchange 27A (from I-95)

## Principal Arterials: Interstate

### Interstate 95:

I-95 runs east-west through three municipalities in the Greater Bridgeport and Valley Region: Stratford, Bridgeport and Fairfield. Within Connecticut, I-95 links the region with Stamford and Norwalk in southwestern Fairfield County. Traveling east, I-95 provides access to New Haven and major cities throughout New England, such as Boston and Providence. Critical to the economy of the Region is the connection that I-95 provides to the New York Metropolitan area, and the eastern seaboard from Maine to Florida.

Along most of the 12+ miles that run the through Region, 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.

### I-95 Improvements:

Feasibility Evaluation Study (Greenwich to New Haven) Technical Memorandum: In 2018, CTDOT completed a high-level

feasibility analysis of an additional travel lane for each direction of I-95 between Greenwich and Bridgeport, detailed in the “I-95 Improvements – Feasibility Evaluation Study (Greenwich to New Haven) Technical Memorandum.” Based on this analysis, the study concluded that four travel lanes in each direction on I-95 between Bridgeport and Greenwich were feasible and practical. Special studies were recommended for interchange 27A in Bridgeport (to Route 8/25) and Fairfield interchanges 20 to 22 and 23 to 24:

- Exit 22 to Exit 24 in Fairfield – This area exhibits significant operational issues with tightly spaced ramps that also serve a number of local roads. This segment might be better served by reconfiguring the interchanges through a series of frontage roads.
- Exit 27 I-95/Route 8 – The existing structure is wide enough to accommodate additional operational and auxiliary lanes on the to enhance improvements for the I-95 northbound off movement to Route 8 north and Route 8 southbound to I-95 southbound movement. The area is predominantly located on the existing structure and the existing northbound I-95 to Route 8 off-ramp has steep vertical geometry causing commercial vehicles to take the movement at slower speeds and impacting operational characteristics of passenger vehicles operating at higher speeds, which results in a queue on I-95 northbound direction. Consider improving the roadway assignment of pavement to lanes to accommodate a two lane off-ramp configuration to Route 8 northbound.

### Near-Term Projects:

Exit 33 in Stratford (0138-0248): Currently, exit 33 consists of a northbound off-ramp and a southbound on-ramp. Southbound traffic from I-95 and must either use exits 32

(Downtown Stratford) or 34 (Milford's Devon section) to reach the large retail areas in the exit 33 area. Access to I-95 northbound is via on-ramps in these two areas as well. This limited access means that motorists must travel additional miles on local streets, which is a further cause of congestion in these heavily trafficked areas.

This project will provide a full "diamond" interchange at Exit 33, with a new northbound on-ramp and a new southbound off-ramp. The new northbound on-ramp would begin at the northbound Ferry Boulevard/northbound US Route 1 intersection on the south side of I-95. The new southbound off-ramp would connect with Veterans Boulevard on the north side of I-95. The project includes additional improvements to improve safety and traffic operations, such as new signals, sidewalks, retaining walls, noise walls, and drainage.

**Bridgeport Highway Operations Center and Procurement:** 0015-0379, 0015-0380, 0015-xHOC and 0015-xPRO

#### **Long-Term Projects:**

**Interchanges 31 and 32, Stratford:** These two interchanges are close together, with all ramps intersecting with local roads. To reduce the number of ramps and provide separation of the interchanges, consider consolidating these interchanges and relocating and constructing a new diamond interchange at Route 130. The new interchange would be located between the existing ramps.

#### **Recently completed projects:**

**Moses Wheeler Bridge (00135), Stratford/Milford:** This bridge replacement project was completed in 2015. The 3,200 foot-long bridge connects Stratford to Milford over the Housatonic River. The bridge was widened from two travel lanes in each direction to three. A related, ongoing project will create new tidal wetland habitats on areas on both

sides of the river and construct a new boat launch ramp on the Milford side.

## Principal Arterials: Other Freeways & Expressways

### **Route 15/Merritt Parkway:**

Route 15, or the Merritt Parkway is a limited access, principal expressway that runs 14 miles east-west through Stratford, Trumbull and Fairfield 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 Stratford), Route 15 continues as the Wilbur Cross Parkway and the Berlin Turnpike, which provides access to central Connecticut, Hartford, and I-91.

The Merritt Parkway is one of the oldest scenic parkways in the United States.. It is listed on the National Registry of Historic Places and has been designated as both a national scenic byway and a state scenic highway. The Merritt Parkway's natural scenery and unique structural features are integral to its historic value.

As a transportation facility designed in the 1930s, a number of the Parkway's historic features limit its utility in the 21st century. Each bridge on the Parkway has a unique, Art Deco design. However, commercial and oversized vehicles are prohibited from the Parkway due to the low clearances of these 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. These efforts should continue.



### Long Term Projects:

**Interchange 46, Fairfield:** The southbound ramps consist of short ramps segments, with the exiting movement along a tight radius loop ramp and the entering movement along a short on-ramp that is stop controlled. Complicating exiting and entering is the proximity of the slip ramps for the rest area located between the ramps. These ramps should be realigned, lengthened and, if possible, relocated to provide a more efficient connection with Congress Street and Route 59, as well as the service area. CTDOT and the Town have implemented low cost improvements on Route 59 (minor signal improvements & lane reconfigurations) and CTDOT is considering improved signage for curves.

### Route 8 and Route 8/25

Route 8 is the region's 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 con-

nects 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 (northwest to Trumbull and Monroe) with access to Route 15 south. Farther north, Route 8 links to Route 34 in Derby. 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.

### Near-Term Projects:

**Various (0036-0203):** Resurfacing, Bridge rehabilitation and safety improvements in Derby, Ansonia and Seymour.

**Shelton (0126-0176):** Rehabilitate Bridge No. 00571A (Commodore Hull) over Route 110 & Housatonic River. The project consists of the complete rehabilitation of the Commodore Hull Bridge which carries Route 8 over

Route 8 improvement.

the Housatonic River and local streets in cities of Shelton and Derby. The rehabilitation work includes extensive structural steel repairs, new bridge joints and repainting of entire bridge. Work is currently underway.

**Various:** Expand state Incident Management Systems to include Route 8; includes 24-hour monitoring, video surveillance, variable message signs & incident detection.

### **Long Term Projects:**

**Southbound Approach to I-95 from 8-25, Bridgeport:** Reconstruct and modify the southbound approach to I-95 to eliminate the weave section created by the entrance to Route Rt 8/25 from Washington Avenue followed by the exit to Myrtle Avenue. The project would close the on-ramp from Washington Avenue and off-ramp to Myrtle Avenue to eliminate the weave section and conflicts between entering, exiting and mainline traffic.

**Route 8 and Route 25 Split, Bridgeport:** Three travel lanes carry Route 25 north while only two handle Route 8 traffic. Congestion occurs because of the higher traffic volumes on Route 8. To facilitate diverging traffic, construct a third lane for Route 8 northbound from the split to the vicinity of the off-ramp to Route 15.

**Derby (0036-0179):** Reconstruct and realign Route 8 Interchanges 16 and 17 and surface streets to improve connectivity of street network. To improve access to Route 8, a new northbound on-ramp from Pershing Drive is being suggested. Improvements to the surface street network include connecting Water Street to Pershing Drive, extending the Exit 17 southbound ramp to connect Seymour Avenue with Pershing Drive, and creating a new local connector street over the WBL. Preliminary design has been completed for this project.

**Shelton:** Reconstruct and realign ramps at interchange 14 (RTE 110 and Kneen Street)

and construct new southbound on-ramp at interchange 14 from Route 110. Additionally, to improve circulation in a constrained location, convert interchange to a single-point urban interchange. Preliminary design completed for this project

**Shelton:** In order to relieve congestion and improve safety at the intersection of Huntington Avenue and Bridgeport Avenue, construct a new southbound on-ramp at Interchange 11 directly south of the current southbound off-ramp. Widen Bridgeport Avenue at this intersection to accommodate left turn lane. Preliminary design completed.

### **Recently completed projects:**

**8-25 bridge replacement project:** Completed in 2016, four bridges were replaced on Route 8-25 in Bridgeport using design-build and accelerated bridge construction processes. By utilizing these processes, project construction time was reduced from two years to one summer, which significantly minimized traffic impacts. Design-Build is an alternative project delivery method where the owner selects a design and build team. The design and construction phases can be overlapped and the project team can work more closely with the contractor to utilize strengths. Accelerated Bridge Construction (ABC) makes use of prefabricated elements to minimize the amount of work on site.

**Knollwood Street to Judd Road, Monroe (0084-0099 and 0084-0100):** Bridge replacements and roadway reconstruction. Replacement of two bridges and raising of the roadway to address flooding issues.

### **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.

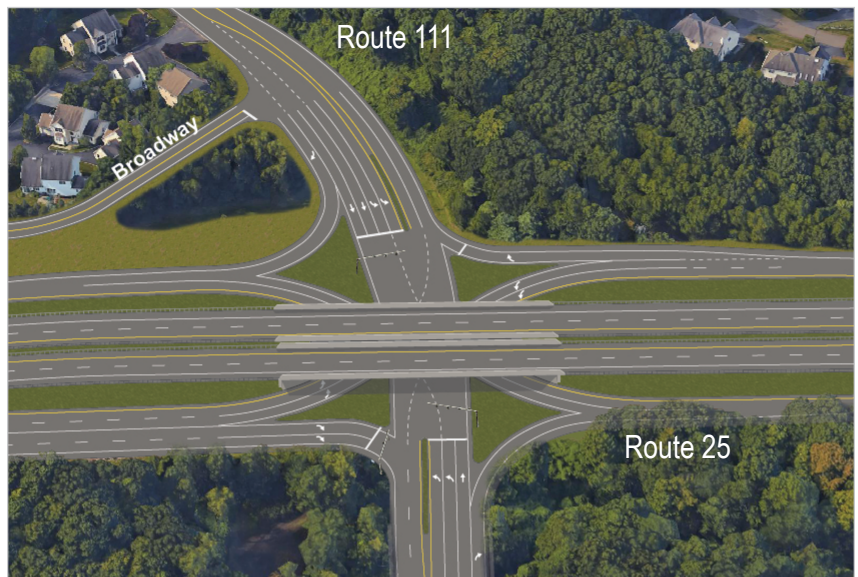
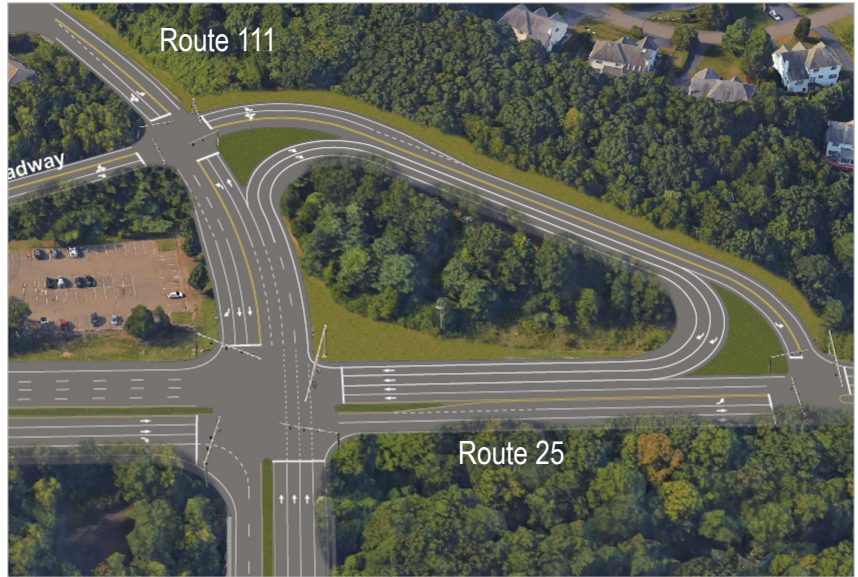
The limited access portion of Route 25 provides three travel lanes in each direction. North of Route 111, the road narrows to a single lane of travel in each direction. Although turn lanes are provided at several signalized intersections, the two travel lanes often do not provide sufficient capacity for the volume of traffic on Route 25.

Due to the severe congestion along the northern portion of Route 25, MetroCOG, and the Towns of Monroe and Trumbull partnered to conduct the Route 25 & Route 111 Engineering and Planning Study. The study has identified multiple strategies to improve traffic operations along the Route 25 and 111 corridors in northern Trumbull and Monroe, especially during peak commuting hours. In addition to traffic congestion, the study also identified strategies to address:

- Safety issues and measures to mitigate deficiencies.
- Appropriate accommodations for bicyclists, pedestrians and transit users.
- Mitigation of potential impacts to environmental resources.
- Future development potential along the Corridors.
- Access to businesses, employers & services.

**Recommendations include:**

**Congestion and traffic safety concerns at the Route 25 and Route 111 intersection.** Numerous traditional and non-traditional improvements were tested in the study. Traditional layouts were found to provide insufficient capacity to accommodate future traffic projections. The following less traditional solutions were found to provide sufficient capacity to accommodate future projections.



Both these options have been constructed in the northeast:

- Quadrant Roadway with Left-Turn Prohibition at the Route 25 and Route 111 Intersection. Benefits include reduced congestion with acceptable queues during peak periods, at-grade intersection and maintains the commuter lot capacity. Issues include user expectancy, all left turn movements would have to use the quadrant roadway, and increased distances for turning movements
- Single Point Urban Interchange (SPUI).

Alternatives for the Route 25 & Route 111 intersection. The quadrant roadway concept is top and the single point urban interchange is bottom, Source: Tighe & Bond

Benefits include reduced congestion with acceptable queues during peak periods, a single intersection for all movements, no delays for Route 25 through movements, and potential improved safety. Issues include the potential for increased speeds and reduced commuter lot capacity.

**Widen Route 25 to a four-lane cross section with turn lanes at major intersections.**

The four-lane cross section would continue from the 25/111 intersection to just south of Stepney Plaza in Monroe, where the adjacent wetlands limit the ability to widen the corridor. Between Stepney Plaza and Brook Street, Route 25 continues with a single travel lane in each direction and a wide shoulder. North of Brook Street, the roadway is widened to the four-lane section past the Route 59 intersection. The widening includes accommodations for bicyclists, pedestrians, and transit. The following four key areas require significant improvements to accommodate the traffic projections:

**Tashua Road and Spring Hill Road:** Accommodate projected traffic volumes by relocating the existing commercial driveway opposite Tashua Road to consolidate turning movements and provide signalization for the driveway approach.

**Victoria Drive:** Builds upon the off-site improvement plan of a significant development parcel by adding an additional Route 25 northbound through lane.

**Judd Road and Purdy Hill Road:** Accommodate traffic demand by providing the four-lane cross section on Route 25 with exclusive left turn lanes to Judd and Purdy Hill and three lanes exiting Judd and Purdy Hill for exclusive left, through and right turn lanes. Judd Road and Purdy Hill Road serve as major collector and cut-through routes between the Route 25 and 111 corridors and

other regional routes. The high demand to access Route 25 at this location, combined with heavy commuter traffic and the skew of the intersection cause congestion and safety issues. The improvements would result in significant commercial property impacts along the east side of Route 25.

**Green Street and Route 59:** Widen to a four-lane cross section, add a double left turn lane from Route 25 northbound to Route 59 and maintain the existing turn lanes to and from the side streets. Green Street and Route 59 are major collector roadways in the area that carry significant commuter and retail traffic to, from and through the corridor.

**Long Term Project (not part of study):**

**Route 25 at Whitney Avenue, Trumbull:** Construct a partial interchange to provide access to and from Whitney Avenue and divert some traffic from Daniels Farm Road to access Route 25.

**Principal Arterials: Other/NHS**

**US Route 1:**

Route 1 is a principal arterial that runs about 12 miles east-west through the region's three coastal municipalities: Stratford, Bridgeport and Fairfield. 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 a west-east commercial corridor that links the shoreline communities of Long Island Sound.

In the Greater Bridgeport Valley Region, 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.

In Fairfield, two Metro North rail stations are located along Route 1: in Fairfield Center and



Southport. Route 1 crosses the Housatonic River on the Stratford/Milford line via the Moses Wheeler Bridge, a movable bridge.

### **Post Road Circle Traffic Safety Study, Fairfield:**

Located at Route 1 and Route 130 in Fairfield, the Post Road Circle is extremely difficult to navigate, especially for drivers not familiar with the road network. The high traffic speeds and volumes are exacerbated by layout issues, several turning movement conflicts, lane reductions, quasi lane expansions or swing around movements, criss-crossing maneuvers, and angled side streets. On some wider approaches, vehicles use one lane as two lanes, which increases the potential for sideswipe. Numerous curb cuts, driveways, and parking lots increases possible collision points. Pedestrian crossings are limited, and despite traffic control signals at the peripheries of the study area, there is limited traffic control. A lack of sidewalks in some areas, minimum handicap accessibility, and no transit amenities leave pedestrians underserved as well (GBT bus service runs through parts of the study area). The engineering and design of the circle was developed in the 1950s. Very little reconstruction or redesign has taken place since, but redevelopment and redefined land use have occurred, which further impacts the demands on the roadway. In the 1990s, CT DOT officials were concerned about the area enough that they had preliminary concept/design plans for intersection realignment, but budgetary constraints and access management issues impeded further development.

A Neighborhood Forum on traffic, pedestrian and safety concerns (November 2017) and a Roadway Safety Audit (2016) identified the following issues/potential improvements:

- Speed of traffic.
- Pedestrian safety, including crosswalks and other ways to safely cross CT 130

and improved sidewalks, accessibility and aprons/barriers between sidewalks and CT 130.

- Parking issues from area businesses
- Street lighting
- Pedestrian improvements
- Bus stop enclosures, bulb-outs and signage.
- Bike route incorporation
- Investigate median, islands, road diet, narrower roadway, including potential bike lands and curb realignment.
- Not yielding at the circle
- Turning left out of Shoreham Village

The Post Road Circle Traffic Safety will be conducted along Post Road (US 1, CT 130) from South Benson Road (west side) to Shoreham Terrace (east side). The study area includes the Post Road "Circle" where Route 1 and Route 130 intersect with Old Post Road and Kings Highway East. Ultimately, the study will identify strategies to eliminate the Route 1 and Route 130 traffic circle, construct a T-intersection and widen the westbound section to provide bi-directional travel.

### **Near-Term Projects:**

**Bridgeport (0015-0248):** Rehabilitate bridge 00325 over Stillman Pond Brook

**Stratford (0138-0245):** Replace bridge over Metro North railroad.

**Stratford/Milford (0083-0267):** Rehabilitate bridge 00327 over the Housatonic River.

### **Long Term Projects:**

**Fairfield at Interchange 24 (I-95):** Reconstruct and reconfigure the southbound on-ramp and the northbound off-ramp and eliminate the Route 1 traffic circle.

### **Regional Projects:**

Provide lane continuity over its entire length by widening Route 1 to a uniform four travel lanes with left turn lanes at signalized intersections.



Route 34 in Downtown Derby.

Construct intersection improvements, including minor widening and installing turn lanes, at various locations in Fairfield, Bridgeport and Stratford.

vicinity of Ausonio Drive to Bridge Street, a distance of about 3,300 feet. Work will include the reconstruction and widening of Main Street from Bridge Street to Ausonio Drive to 4 travel lanes. Design work is currently underway on this project.

### Principal Arterials: Other/NHS

#### CT Route 34:

Route 34 is a principal arterial that runs east-west from I-84 in Newtown to New Haven. In the Greater Bridgeport and Valley Region, Route 34 runs through the northern tip of Monroe and across 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, Route 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.

Seymour: Reconstruct and widen intersection at Route 34 and Route 188, including adding turn lanes and improving sight lines.

Stevenson Dam Bridge (01843) over the Housatonic River between Monroe and Oxford (0084-0114): Currently, this project is in development to replace the Stevenson Dam Bridge, which was built in 1919. First Light Power Resources (a subsidiary of GDF Suez Energy) is the owner of the dam/bridge and CTDOT is currently responsible for the wearing surface of the bridge. During a 2016 inspection, CTDOT found that the facility was in serious condition, with an overall rating of 3. Normal maintenance will not increase the rating of the structurally deficient and functionally obsolete bridge, as the existing 24-foot bridge width and the geometry of the

#### Near-Term Projects:

Derby (0036-0184): Improvements to Route 34 (Main Street) in the city of Derby from the

roadway approaches do not meet current standards. 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. Replacement of the bridge will allow CTDOT to own the bridge structure as well.

**Rehabilitation of bridge (02265) over Boys Halfway Brook (0084-0110), Monroe:** New decking and side wall reinforcement for existing stone masonry box style culvert.

### **CT Route 67:**

Route 67 is only designated as a principal arterial for slightly less than a ¼ mile, from its intersection with Route 115, west to the Route 8 Interchange 22 northbound on-ramp.

### **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. Route 110 continues north into Shelton as a minor arterial and intersects Route 8. In the vicinity of Indian Wells State Park, the road begins to run east-west toward Monroe. Route 110 ends at its intersection with Route 111 in Monroe.

### **Route 110 Planning & Engineering Study:**

Due to the severe peak period traffic congestion, extensive backups and minimal bicycle/pedestrian facilities on Route 110 in Stratford's Main Street/Warner Hill Road/Route 15 area, a Planning and Engineering Study

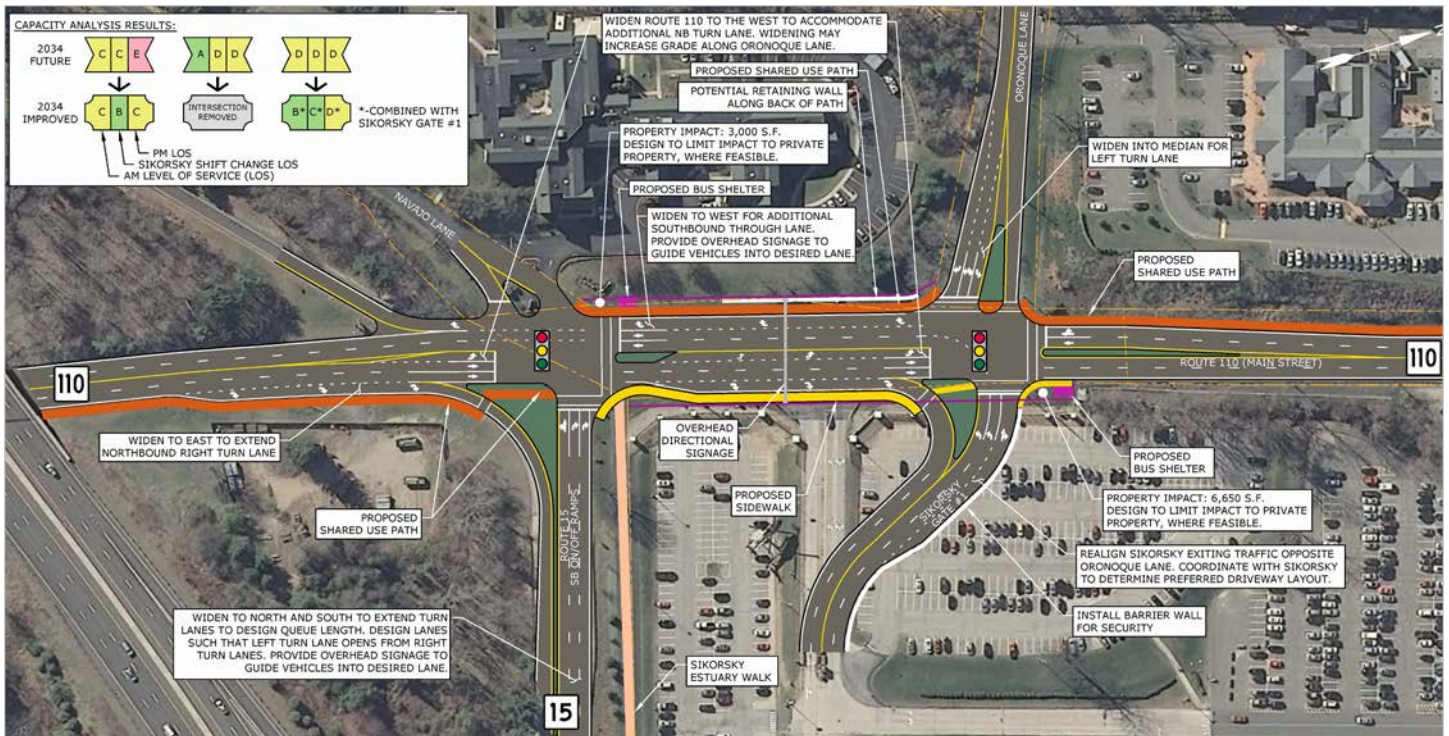


was conducted and completed in early 2017. The following concepts were developed to improve access to businesses and employers, reduce future congestion and increase the safety of transportation modes.

**Main Street/Putney Intersection:** the existing alignment intersects Route 110 at a skewed angle, which results in difficult turning movements and/or high speed maneuvers. Improvements include realigning Main Street-Putney to a perpendicular angle at the Route 110 intersection, and a northbound, exclusive left turn lane for vehicles traveling from Main Street to Route 110.

**Route 15 Northbound Ramps Intersection:** improves traffic operations at the intersection of Route 110 with the Route 15 northbound ramps and Charlotte Street. The Route 15 northbound entrance ramp would be widened to provide an extended merge area on the ramp, which would eliminate the existing yield condition for Route 110 southbound traffic and allow additional time for Route 110 traffic to merge on the ramp into a single lane

The current Stevenson Dam & bridge.  
Source: CTDOT



Concept for the realignment of the Sikorsky Gate #1 directly opposite of Oronoque Lane.  
Source: Tighe & Bond

before merging with Route 15 northbound traffic. Route 110 would be widened to the west to accommodate a southbound exclusive right turn.

Route 15 Southbound ramps/Navajo Lane and Oronoque Lane: Widen Route 110 to the west for a northbound left turn lane between Navajo Lane and Oronoque Lane and a southbound through-right turn lane starting south of Oronoque Lane and ending in an exclusive right turn lane onto the Route 15 southbound entrance ramp. The recommendation includes increasing storage for turn lanes at the Route 15 southbound off ramp and on the Route 110 northbound on ramp to Route 15 southbound.

Intersection improvements at Sikorsky Gate #2 and Warner Hill Road.

Pedestrian and Bike Accommodation Improvements include bus stops with shelter amenities on both sides of Route 110 and a shared-use path with additional in-fill sidewalk. This is discussed further in section ## (active transportation).

A key recommendation of the study was to realign the Sikorsky Gate #1 intersection to be directly opposite Oronoque Lane, which will be implemented in 2019. Currently, the three closely spaced intersections (Route 15 southbound ramps and Navajo Lane) cause congestion throughout the weekday peak hours resulting in the most congested portion of the corridor. By realigning the driveway, the traffic light at the driveway can be removed, since traffic at the intersection can be controlled by the Oronoque Lane traffic light.

#### Near-Term Projects:

Monroe, Intersection Safety Improvements at Route 110 and Wheeler Road would address poor sight lines at this intersection.

#### 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 (Stratford Center), 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.

#### **Stratford Center Complete Streets project:**

Currently, Route 113 through Stratford Center is primarily oriented to drivers. Expansive road right-of-ways encourage higher vehicular speeds and longer crossing times for pedestrians. Additionally, the current road cross section does not include bicycle amenities and the wide ROW with limited lane striping makes for an unsafe bicycle experience. This LOTCIP funded project builds upon the Complete Streets Plan for Stratford Center and will be discussed in Section 7.

#### **Completed Project:**

Lordship Boulevard/Route 113 was elevated in the vicinity of Sikorsky Airport. Route 113 is one of the primary access/evacuation routes to Stratford's Lordship Neighborhood.

#### **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.

#### **Near-Term Projects**

**Ansonia:** Road diet study for the section of Route 115 passing through the downtown area of Ansonia. The study will look at the possibility of Main Street one-way, adding back in angled parking, and bike lanes.

**Seymour:** Improve pedestrian access at the intersection of Deforest Street. Work will include normalizing grades between sidewalk and roadway.

**Seymour:** Intersection realignment at Pearl Street and Maple Street, and repair retaining wall between Maple Street and Main Street. Improved signaling, including flashing sign control and warning signs with flashers on each approach to the intersection.

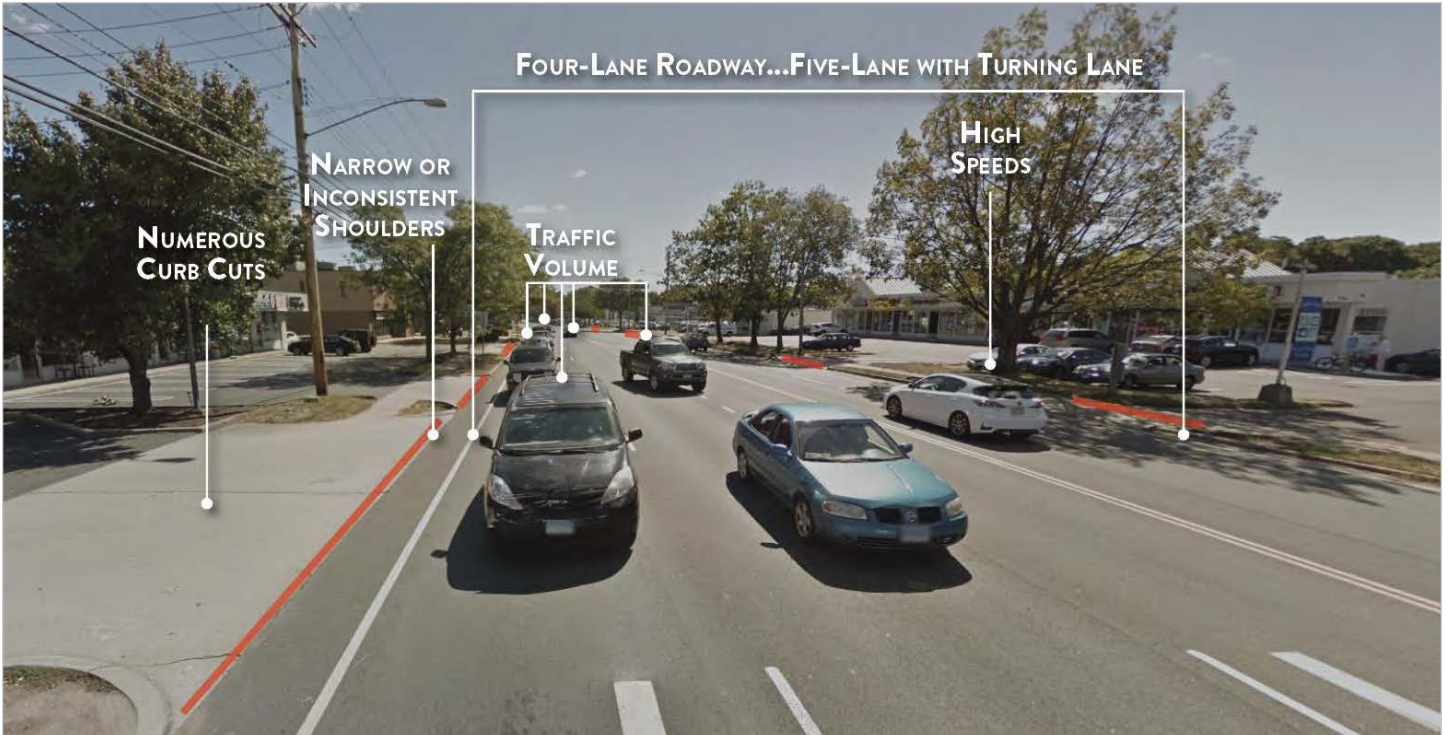
#### **Long Term**

**Ansonia:** Realign intersection at Division Street and Route 243 and widen approach lanes (the section of Route 115 on which this project lies is classified as minor arterial).

**Seymour:** Replace rail bridge on the southbound approach to intersection of Pearl Street and Maple Street. This replacement project should be undertaken to improve overall geometry at this location. This should be considered as a long-term option to be undertaken when/if the railroad bridge requires replacement.

#### **State Road 727:**

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.



Traffic volume, high speeds and numerous curb cuts reduce safety on Black Rock Turnpike.  
Source: FHI

### CT Route 58:

Route 58 Functions as a minor arterial for a mile east-west between Route 1 (at the Bridgeport border) and Route 732. Between its intersection with 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 it's 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.

### Black Rock Turnpike Safety Study:

The focus of this study is on the portion of between Tahmore Drive/Old Black Rock Turnpike to the north and Tunxis Hill Road to the south. Serving one of Fairfield's largest business and commercial districts, Black Rock Turnpike is a principal arterial that provides a key connection from residential neighborhoods to retailers.

The commercial portion of Black Rock Turnpike is marked with numerous driveways. The driveways (or curb-cuts), increase the number of potential conflicts, both vehicular and non-vehicular alike and also contribute to congestion, confusion, and frustration for motorists as they attempt to find a break in traffic. In addition to diminished safety and driver frustration stemming from congestion, Black Rock Turnpike also presents a hostile environment for pedestrians and bicyclists. Whether walking along the Turnpike or crossing it, pedestrians are often at a significant disadvantage. Crossings are infrequent and long, pedestrian visibility to motorists is low, and the frequent driveways pose a constant threat to those walking the sidewalks. Bicyclists, save very skilled riders, often avoid Black Rock Turnpike in favor of other routes even though they aren't as direct. The corridor also has inconsistent shoulders ranging 1 foot to 10 feet wide, with wider shoulders at the north and south ends of the study corridor and narrower along the denser development in the center of the study area.

Undersized shoulder widths of less than 4 feet cannot effectively accommodate larger vehicles and challenges bicycle and pedestrian travel along the corridor.

Anticipated for completion in early 2019, the Safety Study (Black Rock Study) has identified alternatives and strategies to enhance safety for all users along the corridor, including pedestrians, bicyclists, transit users, and motorists. Recommendations include:

**Four-leg single-lane roundabout at Route 58/Black Rock Turnpike:** Modify access with Moritz Place and Route 58 to be right-in/right-out access preceding roundabout. Remove access from Route 58 to Whitewood Drive (keep access to Route 58 from Whitewood Drive). Include pedestrian crossings on all corners with warning signage and potential pedestrian activated systems.

**Black Rock Turnpike and Burroughs Drive:** Reduce to one travel lane in each direction. Provide adequate shoulder width to allow passing of left-turning vehicles.

**Four-leg single-lane roundabout at Black Rock Turnpike, Burroughs Drive and Katona Drive:** Provide a four-leg single-lane roundabout with a right-turn bypass lane for the southbound approach at Katona Drive. At Burroughs Road, realign the eastbound approach and widen the westbound approach and dedicated left-turn lane. At the Route 58 northbound approach, modify at Burroughs to be 1-through lane with 1 dedicated right-turn lane. Install exclusive pedestrian phase with directional pedestrian crossings at Burroughs and pedestrian crossings on all corners with warning signage & potential pedestrian activated systems.”

**Black Rock Turnpike from Shoprite driveway to Stillson Road:** Narrow Route 58 to one through lane in each direction. Offset ShopRite and CVS plaza driveways, restrict left-turn out access with median and provide



full access for plazas with median U-turn. Provide pedestrian refuge island and bus pull-out.

**Black Rock Turnpike at Stillson Road:** Provide median south of intersection of Stillson Road. Realign and shorten pedestrian crossings. Provide dedicated right-turn lane on Stillson eastbound and westbound approaches.

**Stillson Road:** Lengthen Stillson Road eastbound left-turn lane to allow for higher utilization of left-turn signal; provide left-turn pocket at Stillson Place.

**Black Rock Turnpike from Stillson Road to Old Navy driveway:** Restrict left-turn access with median and remove some driveway access.

**Four-leg single-lane roundabout at Old Navy driveway:** Provide a four-leg roundabout with 2 northbound through lanes and a right-turn bypass for the southbound approach. Include pedestrian crossings on all corners with warning signage and potential

Roundabout concept for the Black Rock Turnpike & Tunxis Hill Cut Off intersection. Source: FHI

pedestrian activated systems as well as a bus pull-out to allow layover of GBT bus.

**Black Rock Turnpike from Old Navy driveway to Fairfield Woods Road:** Narrow Route 58 to one through lane in the southbound direction. Restrict left-turn access with median and provide a left-turn pocket to re-located shared driveway for Fairfield Woods Plaza and Duchess.

**Black Rock Turnpike at Fairfield Woods Road:** Provide a dedicated left-turn lane for southbound approach. Remove access to Fairfield Woods plaza and provide turn at shared drive with Duchess. Realign and shorten pedestrian crossings.”

**Black Rock Turnpike from Fairfield Woods Road to Brookside Drive:** Formalize left lane southbound as a dedicated left-turn lane.

### **Route 731:**

Route 731 is a principal arterial that runs south-north from Downtown Bridgeport to the Trumbull intersection 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 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.

## Minor Arterials

(highlighted here to reflect current projects)

### **Route 67:**

Route 67 runs north to south and west to east from New Milford to Woodbridge. It traverses the GBV planning area in the town of Seymour where it intersects Routes 8, 115, and 313. To the east of Route 8, Route 67 is a commercial corridor and carries significant truck traffic to and from the Silvermine Commerce and Technology Park in Seymour. Additionally, the route serves as an important connector to the Woodbridge Amity Road Corridor and New Haven beyond. West of Route 8, Route 67 crosses the Naugatuck River connecting the Seymour downtown. The road continues as a commercial corridor through the Seymour-Oxford town line.

#### **Near-term**

**Seymour (0124-0165):** Route 67 Spot Improvements. Implement spot Improvements along Route 67 and Route 313 including new traffic signals, minor widening, intersection realignment, pedestrian improvements and access control. Along Route 67, the project area is from Swan Avenue to Franklin Street; along route 313 the project area is from the intersection with Route 67 to Broad Street.

**Seymour:** Reconstruct and realign intersection of Route 67 at Silvermine Road and Chatfield Street to eliminate skewed angles, improve sightlines and ultimately improve safety.

### **Route 108:**

Route 108 begins at Barnum Avenue or US Route 1 in Stratford and proceeds north, intersecting Route 8 and the Merritt Parkway in Trumbull. Continues northward Route 108 intersects with Isinglass Road as it makes its way into the village of Huntington in Shelton where it bisects the historic Huntington



green. Route 108 turns eastward past the Huntington green and terminates at Route 110 in downtown Shelton. Route 108 is a two lane road that widens to four lanes with turning lanes and traffic lights at the intersections with Route 8 and Route 15 (Merritt Parkway) in Trumbull.

### Long-term

**Shelton:** Widen bridge carrying Shelton Avenue over unnamed stream.

**Shelton:** Reconstruct and realign the intersection at Isinglass Road.

### Route 110:

After intersecting with Route 15 in Stratford, Route 110 becomes a minor arterial. Continuing into Shelton, the road runs north along the Housatonic, intersects Route 8, then turns northwest through the center of town and west to Monroe. In Monroe, Route 110 continues west to end at an intersection with Route 111.

### Near-term

**Shelton:** Replace and upgrade traffic signal equipment along Route 110 from Kneen Street to White Street and add southbound left turn lane at Bridge Street

### Long-Term

**Shelton:** Realign and improve intersections at Beardsley Road, School Street and Birdseye Road

### Route 111:

Route 111 is an 11.7-mile minor arterial that runs south-north from Trumbull into Monroe. The road intersects with Route 15 and Route 25 in Trumbull and connects several neighborhood and commercial centers in the Town. In Monroe, Route 111 provides similar access to several neighborhood and commercial centers. In close proximity to Monroe's Town Center, Route 111 connects with the end point of Route 110 via a roundabout.

Route 111 terminates at Route 34 in Monroe.

The Route 25 and Route 111 Engineering and Planning Study includes the section of Route 111 in northern Trumbull and Monroe (from Route 25 to the intersection with Jeannette Street). Although less congested than Route 25, the Route 111 corridor is moderately congested during peak hours in the four-lane section in southern Monroe and northern Trumbull. Since the Pequonnock River Trail crosses Route 111 at grade, high vehicular speeds pose a safety issue to bicyclists and pedestrians.

### Recommendations for Route 111 include:

**Sidewalk construction and ADA improvements:** Fill in the gaps in walks along the Route 111 commercial corridors, including Complete Streets implementation along 111 to connect major businesses in Trumbull and Monroe as well as additional access to the Pequonnock River Trail.

**Trefoil Plaza and Woodland Hills Driveways:** Currently intersect Route 111 at unsignalized intersections. The Trefoil Plaza driveway would be signalized to accommodate safer turning movements. The Pequonnock River Trail crossing would be relocated north to the new signalized intersection. A new Route 111 northbound left turn lane into the Woodland Hills driveway would be added to address the illegal and unsafe turning movements observed at the intersection.

**Spot improvements along Route 111** to address capacity and/or safety issues at key intersections. These include additional turn lanes at intersections though pavement marking, restriping and/or minor roadway widening, as well as bicycle, pedestrian and transit enhancements.

### Near Term Projects:

**Install Traffic light at the intersection of Route 111 and Whitney Ave in Trumbull:** Currently the intersection is severely con-

gested. Whitney Ave is a major east/west corridor connecting Daniels Farm Road to Route 111. The project will include Complete Street Concepts such as sidewalks to connect major commercial development with residential areas.

#### Recently Completed Projects:

**Route 111/110 roundabout project:** This project was completed in 2018. The construction of a modern traffic roundabout was intended to improve safety and congestion at the Routes 110 and 111 intersection, as the area has had a high frequency of crashes. The project included reconstruction of Route 111 to reduce the grade of the road, construction of a cul-de-sac on Hurd Avenue, and installation of sidewalks to connect the intersection with the Monroe town center.

#### Route 127:

Route 127 is a minor arterial that runs south-north from Bridgeport to Trumbull. Route 127 begins at Route 130 in Downtown Bridgeport/ Steele Pointe. As East Main Street, Route 127 is primarily a business/retail corridor and

intersects with I-95 and Route 1. In northern Bridgeport, the road becomes more residential. At the Bridgeport/Trumbull border, Route 127/White Plains Road intersects with Route 8. Continuing into Trumbull as a residential corridor, Route 127 intersects with Route 15 and Route 25. North of Route 25, Route 127 connects several commercial centers and Trumbull's municipal center (Church Hill Road). Route 127 terminates at Route 111/ Main Street.

#### Near Term Projects:

**Widening and geometric revisions at Evers Street, Bridgeport (0015-0335)**

**Install Traffic light at the intersection of Route 127 (White Plains Road) and Quality Road, Trumbull.** This intersection connects two commercial areas of Trumbull and potentially warrants a traffic light. The project will potentially include the Pequonnock River Trail Crossing extension to connect the commercial development with the existing Trail.

#### Route 130/Route 700:

Route 130 generally runs west-east from eastern Fairfield to Stratford as a minor arterial. In Fairfield, Route 130 begins at the Route 1/Post Road traffic circle.

Crossing Ash Creek into Bridgeport, Route 130 runs northeast and provides access to neighborhood retailers and businesses in the Black Rock neighborhood (as Fairfield Avenue) and I-95. At its intersection with Commerce Drive/State Street, Route 130 becomes a one-way, eastbound thoroughfare (State Street). Route 700/Fairfield Avenue facilitates westbound travel into Downtown Bridgeport and access to Route 8/25. In Downtown Bridgeport, Route 700 ends at the Housatonic Avenue/Water Avenue intersection.

Route 130 begins to operate as a two-way thoroughfare (Water Street) at the Bridgeport

Multimodal travel on the newly installed roundabout at the Route 110 and Route 111 intersection in Monroe.  
Source: M. Goetz



train station. Crossing the Pequonnock River and the Yellow Mill Channel (via two movable bridges) as Stratford Avenue, Route 130 provides access to Steele Pointe (a regional commercial center that is partially developed) and I-95. At the Seaview Avenue intersection, Route 130 becomes a two-way couplet: Stratford Avenue for eastbound traffic and Connecticut Avenue for westbound traffic. Stratford Avenue is primarily an office/retail corridor for Bridgeport's East End neighborhood while Connecticut Avenue is a mix of residential, office/retail and industrial properties.

At the Stratford border, Route 130 again becomes two-way and continues as a commercial/industrial corridor with periodic access to I-95. Route 130 terminates at its intersection with Route 1 and I-95 in eastern Stratford, in close proximity to the Housatonic River and border with Milford.

In addition to the Post Road Circle Traffic Safety Study in Fairfield, the following studies and improvements are planned for the short term:

### **Connecticut Avenue & Stratford Avenue (Route 130 2-way couplet) Regional Transportation & Development Safety & Flow Study**

For well over a decade, the current condition of the Connecticut Avenue and Stratford Avenue Corridor has been viewed as a setback for Bridgeport's East End. While both avenues are one-way and facilitate the flow of traffic through the neighborhood, this may not be ideal for transportation within the East End itself. The Regional Transportation and Development Safety and Flow Study will identify feasible improvements for the corridor to increase safety for all modes, reduce traffic congestion and accommodate bicyclists, pedestrians and transit users.

Stratford Avenue and Connecticut Avenue



Route 130 over the Pequonnock River in Bridgeport.  
Source: M. Goetz

were part of the original U.S. Route 1 and were formerly two-way streets but were converted to one-way couplets in part to serve as escape valves to address congestion along I-95. The wider lanes resulting from the conversion have encouraged excessive speeding and contributed to poor site lines and dangerous intersection crossings. Their layout – as a one-way couplet thoroughfare with numerous offset and acutely angled intersections discourage circulation in the neighborhood. The connections to the broader transportation network are substandard as well:

- Along Seaview Avenue a constricting railroad bridge impedes access to the current Route 1.
- A massive six-way intersection -- with 21 lanes facing off against each other and a highway deck above -- presents a formidable threshold to cross (on foot or even by car) into Steele Pointe and Downtown.
- I-95 visually isolates the neighborhood from its surroundings.

### Near Term Projects:

Commerce and State Street Bridge Replacement Project (LOTICIP, Bridgeport and Fairfield)

Rehabilitate bridge over Pequonnock River (02475), 0015-0339

**Lafayette Circle Realignment:** Lafayette Circle intersects Fairfield Avenue/Route 700 and serves as the gateway to Downtown Bridgeport from Route 8/25. Built in the 1960s as part of a larger urban renewal project, the Lafayette Circle area does not convey a sense of entry into a vibrant downtown. Due to the existing configuration of the circle, traffic patterns are confusing and compromise both vehicular and pedestrian circulation.

To enhance the movement of traffic to and from Route 8/25 and improve access to Downtown Bridgeport, Lafayette Boulevard will be reconfigured as a traditional boulevard and will intersect directly with Fairfield Avenue/Route 700. Complete streets elements will include street trees, wide sidewalks and pedestrian amenities.

**Honeyspot Road roundabout:** The Stratford Avenue (Route 130), Honeyspot Road and South Avenue intersection is a gateway to one of Stratford's vibrant, rapidly developing commercial centers. However, the current, untraditional configuration of the intersection has caused safety concerns for all modes. The intersection is characterized by a wide expanse of pavement. From I-95, Honeyspot Road and South Avenue intersect Stratford Avenue at skewed angles. During peak hours of travel, the intersection often becomes congested due to the multiple traffic signal phases and awkward geometry.

By reconfiguring the Stratford Avenue, Honeyspot Road and South Avenue intersection as a single lane roundabout and removing the signal, traffic will flow more smoothly and less queuing will occur; thus reducing

opportunities for vehicular collisions. The roundabout would also accommodate and encourage bicycle and pedestrian mobility. Sidewalks and islands for pedestrian refuge would be included in the roundabout and bicycle lanes on Honeyspot Road would connect to the roundabout. Links to the East Coast Greenway via Stratford Avenue are envisioned in the future.

### Long Term Projects:

Conversion of State Street portion of Route 130 to a two-way street.

### Route 59:

A minor north-south arterial that begins in Bridgeport on the Fairfield border and runs north through Fairfield into Easton. In the rural portion of Easton, Route 59 is classified as a rural major collector. Running northeast into Monroe, Route 59 is classified as an urban major collector until it terminates at its intersection with Route 25.

The Route 25 and 111 Engineering and Planning Study made several recommendations for the Route 25 and Route 59 intersection in Monroe.

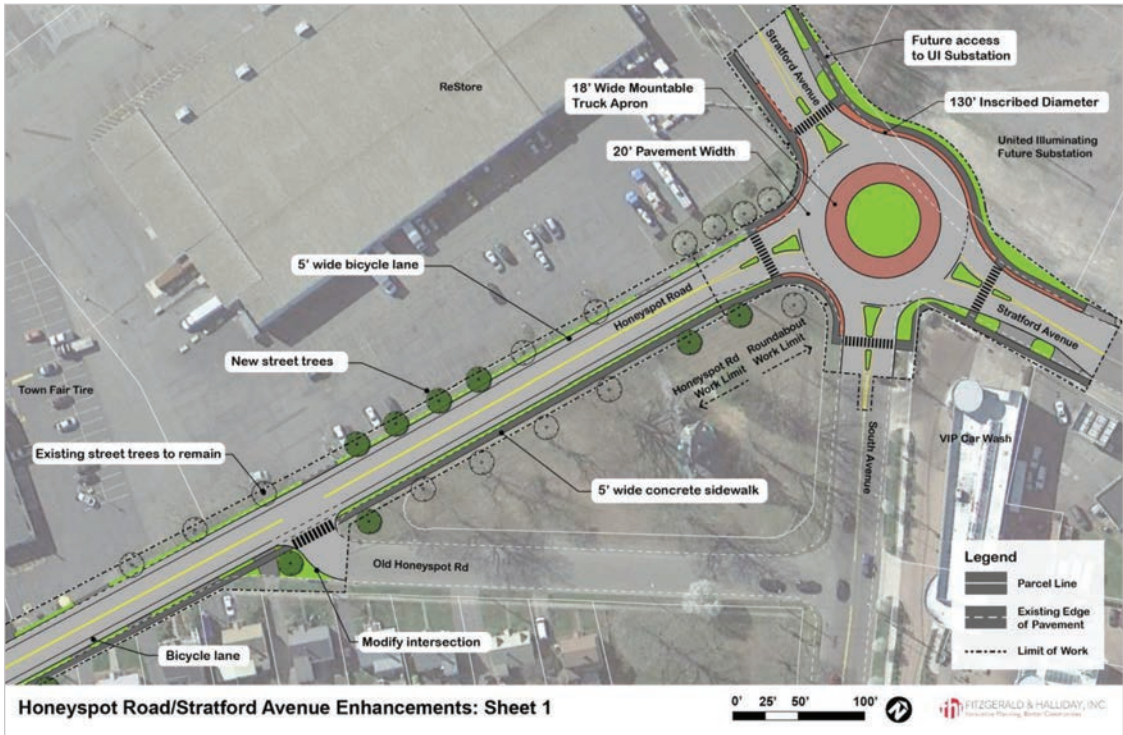
In September of 2018, a single rain storm dropped over 7 inches of rain to areas throughout the Region. Many of these areas had not experienced flooding for decades, and a portion of Route 59 in Fairfield, as well as several local streets (Bennett and Bond) were closed due to flooding. Drainage improvements to Route 59 will reduce the vulnerability of the road during future events.

### Near Term Projects:

**Easton,** intersection improvements to address safety and provide minimum sight lines.

### Route 136:

Judd Road



Original concept for the Honeyspot Road/Stratford Avenue roundabout.  
Source: FHI

**Fairfield, Fairfield Woods:** Four Corners Streetscape project.

**Route 313:**

Route 313 begins at an intersection with Route 67 in Seymour. It passes underneath Route 8, traverses the Naugatuck River, before running coincident to Route 115 and passing underneath the WBL. The road then continues southeast to the southeast to Woodbridge where it ends at an intersection with Route 243.

**Long-term**

**Seymour:** Minor widening of Route 313 to create consistent road width and 2-foot shoulders. Project limits extend from Main Street to Haddad Road (1.25 miles).

**Seymour:** Correct awkward intersection of Clinton Road and Route 313. Currently priority is given to Route 313 and turning traffic. Poor sight lines exist for both traffic entering and exiting Route 313, therefore this project proposes the construction of a round-about to replace an awkward “Y”.

**Route 334**

Begins at an intersection with Route 188. Near the Seymour-Oxford town it winds 4.4 miles south and east and intersects Route 8 at Interchange 19, before crossing into Ansonia. In Ansonia Route 334 runs coincident to, Franklin Avenue, traversing a residential neighborhood and serving as the primary link between downtown Ansonia and Route 8. It then crosses the Naugatuck River before terminating at an intersection with Route 115.

**Long-term**

**Ansonia:** Relocate Route 334 to a new alignment between Maple Street and Wakelee Avenue to provide a direct connection between Route 8 (at Interchange 19 northbound off-ramp) and downtown Ansonia. This new alignment would move Route 334 and associated traffic out of the residential neighborhood.

**Ansonia:** Realign Route 334 at Fountain Lake Road

## Other Minor Arterials, Collectors & Local Roads:

### Regional:

**Old Town Road:** Old Town Road is a locally maintained minor arterial that runs west-east alongside the Merritt Parkway from Fairfield to Stratford. Much of the road is located on the border of Bridgeport and Trumbull and Bridgeport. The road connects major developments such as Sacred Heart University, the Trumbull Mall, a newly constructed 200-unit apartment complex, and the Pequonnock River Trail. Currently, the road provides few accommodations for non-motorized modes of transportation. By reconstructing Old Town Road to a “Complete Street,” bicyclists and pedestrians from the four communities would be better connected to a several regionally significant developments.

**The Route 25 and 111 Engineering and Planning Study** also assessed operational and safety concerns on local roadways between the two corridors. These include:

**Cutlers Farm Road and Purdy Hill Road:** Traffic signalization (when warranted) of the existing 4-way stop sign at the intersection of Cutlers Farm Road and Purdy Hill Road to address expected future traffic operation concerns

**Spring Hill Road:** A stop control at the westbound approach would address poor sight distance at Cutlers Farm Road. Also, widen Spring Hill Road with turn lanes at the Trumbull Transfer Station and install a sidewalk connecting the Pequonnock River Trail to Trefoil Corporate Park.

**Modify traffic controls and/or traffic flow** to address safety concerns due to sight line issues, skewed geometry and/or reduce access points to the Route 25 corridor.

**Bridges:** Continue to maintain bridges through the federal and state local bridge programs.

**Derby-Shelton Bridge (0126-0174):** Rehabilitate Bridge No. 01659 over the Housatonic River carrying State Road 712. This project will improve the bridge aesthetics as well as provide an attractive gateway to the downtown areas of Derby and Shelton by improving the roadway, sidewalks, bridge parapets/railing/fencing, street lighting and under bridge lighting. This project also offers additional connectivity with the existing Housatonic River trail network. The project limits will extend from Canal Street to Main Street along Bridge Street and include the Derby-Shelton Bridge and portion of Canal Street.

**Seymour-Beacon Falls Route 42/Route 67 Connector:** Construct new connector arterial (2 lanes) between Route 42 in Beacon Falls and Route 67 in Seymour; includes construction of section of Naugatuck River Greenway

### Ansonia:

South Cliff / State Street Safety Improve-

Now demolished, the Congress Street Bridge was originally a moveable bridge. A new bridge is in design.



ment Project to improve pedestrian access and mobility in the State Street and South Cliff Street neighborhood.

East Main Street pedestrian improvement project to formalize on-street parking, and improve pedestrian access and mobility throughout the East Main Street corridor

### **Bridgeport:**

**Congress Street Bridge, Bridgeport:** This was originally a movable bridge over the Pequonnock River that became stuck in the open position in 1997 and was demolished a few years. The bridge connected Downtown Bridgeport with the East Side neighborhood. Drivers must use either East Washington or Stratford Avenue to cross the Pequonnock. The City of Bridgeport has been working to get this section of the Pequonnock listed as non-navigable, which will substantially reduce the cost of replacing the bridge.

**Seaview Avenue (0015-0371):** Operational improvements to corridor, and north of Route 1 to provide access for the proposed Lake Success Business Park and future local developments. Street approaches will be reconstructed and new traffic signals and turn lanes will be installed at several intersections. The project includes an attractively landscaped linear park along the Yellow Mill Channel, with bicycle and pedestrian pathways.

**Long Term:** Widen and reconstruct the existing New Haven rail line underpass and provide increased vertical clearance for Seaview Avenue. The project would include bicycle and pedestrian facilities and would potentially create an underpass based on Barnum Station configuration.

### **Easton:**

**Bridge Rehabilitation:** South Park Ave at Riverside Lane (04213)

### **Fairfield:**

**Fairfield Woods, Woodridge, Stillson & Farist** intersection improvement is mostly completed. A sidewalk should be added to Fairfield Woods Road and the Woodridge, Fairfield Woods and Stillson intersection should be assessed.

**Duck Farm Road, Replace Bridge 04953** over the Mill River (0050-0220)

**Mill Plain Road:** Widening/addition of lane to southbound approach from I-95 ramps to US 1. Could involve underpass reconstruction, signal/intersection realignment.

**Sturges Highway at Route 136:** Sight distance improvements would involve ROW acquisitions and grade change of intersection. Residents from several towns are sensitive to the drastic change in the roadway.

### **Monroe:**

**Pepper Street:** Full reconstruction with vertical realignment. Includes culvert replacement at the Pequonnock River, and off-road multi-use trail construction (0084-0109).

**Culvert replacement at Pequonnock River and Brook Street** (unprogrammed near term).

### **Seymour:**

**State Road 728:** Realign intersection of SR 728 (Derby Avenue) at Cedar Street; includes improvements to the ramps at Interchange 21 on Route 8.

**Connect sidewalks along Church Street** from the Seymour Library to Route 67.

**Pedestrian and sidewalk Improvements,** including completing gaps in the section along Route 67 from the Oxford TL to about North Street.

### **Shelton:**

**State Road 714:** Widening of Bridgeport

Avenue to provide a consistent 4-lane cross section with turn lanes from Trumbull town line to Constitution Boulevard; includes advance traffic signal system & access management.

**Center Street** intersection improvements at Long Hill Avenue. Project to include turn lanes and replacement of traffic signal equipment.

**Shelton Avenue Sidewalks:** Construct a sidewalk on the north side and replace sidewalk on north side west of the Shelton Lakes Recreational Path parking lot.

**Huntington Street and Buddington Road:** Realign and intersection to remove center island and create a “T” intersection. Narrow road and make turning angles less obtuse.

**Shelton River Walk:** Widen Canal Street & install various pedestrian & bicycle facilities & amenities.

**Walnut Tree Hill Road:** Minor widening to provide minimum two-foot shoulders and spot reconstruction and Improvements at various locations including at the intersection with Ripton Rd.

Construct a round-about at the intersection of Huntington St and Commerce Drive.

**Buddington Road:** Spot reconstruction and improvements (Various Locations).

**Long Hill Cross Road:** Spot reconstruction and improvements (Various Locations).

**Booth Hill Road:** Spot reconstruction and improvements (Various Locations).

**Mohegan Road Culvert Replacement** over Harvey Pete Brook.

**Meadow Street Bridge Replacement** over Curtiss Brook.

**Walnut Tree Hill Road:** Replace culvert over Farmill River.

## **Stratford:**

Construct intersection improvements at **Route 108 (Nichols Avenue)**, Connors Lane and Second Hill Lane, including safety improvements and realignment (near term).

Construct intersection improvements at **West Broad St and Linden Ave**, including safety improvements at the I-95 southbound ramp at Linden Ave, and minor roadway improvements from Linden Ave to California St (in construction, 0138-0241).

## **Trumbull:**

**Daniels Farm Road Improvement Actions:** Daniels Farm Road is a north-south minor arterial connecting Monroe and the east side of Trumbull with the Route 25 Expressway. Because of the residential land use, it serves a commuter function, with peak operating problems in the morning and evening. Complicating operations are the locations of Trumbull, Hillcrest Middle School and Daniels Farm Elementary School along the corridor. Vertical and horizontal alignment deficiencies along the southern section add to the operating problems. Proposed actions include minor widening to provide a uniform 32-foot road and installing turn lanes.

**Trumbull (and Weston) 0173-0415:** culvert rehabilitation



## Preservation Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Bridgeport</b>					
Congress Street	Replace Bridge			\$40,000,000	
Park Avenue	0015-0376: Traffic signal modernization at 5 intersections.	CMAQ	\$2,755,000		
Route 1	0015-0248: NHS - Rehab bridge 00325 over Stillman Pond Brook	FIF-Bridge	\$9,000,000		
Route 130	0015-0339: Rehabilitate bridge over Pequon-nock River (Phase 2)	STPA-BRX		\$30,000,000	
Various	0015-0379: Bridgeport Highway Operations Center (8/1/18-7/30/22)		\$13,740,000		
Various	0015-0380: Bridgeport Highway Operations Procurement (8/1/18-7/30/22)		\$9,075,000		
Various	0015-xHOC: Bridgeport Highway Operations Center		\$1,235,000		
Various	0015-xPRO: Bridgeport Highway Operations Procurement		\$2,415,000		
Washington Avenue	0015-0365: Traffic signal modernization at 5 intersections.	CMAQ	\$2,835,700		
<b>Bridgeport &amp; Fairfield</b>					
Commerce & State Streets	L050-0002: Bridge replacement	LOTICIP	\$2,759,433		
<b>Derby-Seymour</b>					
Route 8	0036-0203: Resurfacing, Bridge Rehab & Safety Improvements from Derby to Seymour (CTDOT Capital Plan; overprogrammed table)	NHPP	\$85,200,000		
<b>Easton</b>					
South Park Avenue	Bridge Rehabilitation: South Park Ave at River-side Lane (04213)	LOTICIP	\$1,500,000		
<b>Fairfield</b>					
Duck Farm Rd	0050-0220: Replace Bridge at Duck Farm Road over the Mill River (04953 )		\$2,160,000		

\* Known funding sources

## Preservation Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Fairfield Center	Implement various traffic signal and intersection improvements to improve traffic flow while enhancing pedestrian safety and maintaining the current supply of on-street parking.		\$1,000,000	2,500,000	3,500,000
Various	Federal/State Local Bridge program; 4 bridges			6,000,000	6,000,000
Various	Continue coordination w/CTDOT to identify improvements for traffic signal operations and safety.				
<b>Monroe</b>					
Pepper Street	0084-0109: Full reconstruction with vertical realignment. Includes culvert replacement at the Pequonnock River, and off road multi-use trail construction. From Main Street to Grant Road.	STP	\$6,500,000		
Pepper Street	Culvert Replacement at Brook Street, over the Pequonnock River.		TBD		
Route 25	0084-0099 and 0084-0100: Bridge replacements and roadway reconstruction. Replacement of two bridges and raising of the roadway to address flooding issues, from Knollwood Street to Judd Road.		\$11,500,000		
Route 34	0084-0110: Bridge replacement includes new decking and side wall reinforcement for existing stone masonry box style culvert.		\$1,000,000		
<b>Trumbull to Beacon Falls</b>					
Route 8	Expand state Incident Management Systems to include Route 8 from Trumbull town line to Beacon Falls town line. Includes 24-hour monitoring, video surveillance, variable message signs & incident detection	CMAQ	\$7,200,000		
<b>Shelton</b>					
Route 110	Replace & upgrade traffic signal equipment along Route 110 from Kneen Street to White Street and add SB left turn lane at Bridge Street.	CMAQ	\$1,200,000		

\* Known funding sources

## Preservation Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Route 8	0126-0176: NHS - Rehabilitate Bridge 00571A (Commodore Hull) over Route 110 and Housatonic River.	NHBR	\$5,000,000		
Mohegan Road	Culvert Replacement over Harvey Pete Brook.	Bridge	\$750,000		
Meadow Street	Bridge Replacement over Curtiss Brook, between Wheeler Street and Shelton Avenue	Bridge		\$1,000,000	
Walnut Tree Hill Road	Replace culvert over Farmill River	Bridge	\$1,200,000		
Route 454	0126-0172: Rehabilitate Bridge 01602 over Indian Hole Brook	Bridge	\$2,000,000		
<b>Shelton-Derby</b>					
Route 712	0126-0174: Rehabilitate Bridge 01659 over the Housatonic River	STBG, REP, State	\$4,000,000		
<b>Stratford</b>					
Route 1	0138-0250: Replace Traffic Control Signals in Various Locations		\$1,150,000		
<b>Trumbull &amp; Weston</b>					
Various	0173-0415: Culvert rehab; 06750, 06768, 06778	STPA	\$2,475,000		
<b>Region</b>					
Various	Strategic repaving in priority areas.		\$5,000,000	\$15,000,000	\$25,000,000
Various	Maintain arterial system in state of good repair.		\$25,000,000	\$50,000,000	\$75,000,000
Various	Replace, rehabilitate and restore various highway bridges determined to be deficient.		\$15,000,000	\$15,000,000	\$20,000,000
Various	Traffic signal modernization, enhancement and replacement.		\$5,000,000	\$5,000,000	\$15,000,000

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Ansonia</b>					
Route 115	Main Street road diet study for the downtown from Maple Street to Bridge Street. Look at making Main Street one-way, backed in angled parking, and bike lanes.	STBG		\$500,000	
Route 115/ Route 243	Realign intersection at Division Street and Route 243; widen approach lanes.	STBG	\$2,000,000		
Route 334	Relocate Route 334 to a new alignment between Maple Street and Wakelee Avenue to provide a direct connection between Route 8 (at Interchange 19 NB off-ramp) and downtown Ansonia. Includes Interchange 19 and Wakelee Avenue.	STBG		\$6,000,000	
Route 334	Upgrade Maple Street Bridge over Naugatuck River.	Bridge		\$4,000,000	
<b>Bridgeport</b>					
I-95	Along the Southbound Approach to I-95: Reconstruct and modify to eliminate the weave section created by the entrance to Rt 8/25 from Washington Ave followed by the exit to Myrtle Ave. The project would close the on-ramp from Washington Ave and off-ramp to Myrtle Ave to eliminate the weave section and conflicts between entering, exiting and mainline traffic.				\$15,000,000
Route 127	0015-0335: Widening and geometric revisions at Evers Street.	SIPH	\$3,500,000		
Route 130	State Street 2-way conversion, from Rt. 700 (Fairfield Ave) intersection to Water Street.			\$20,000,000	
Route 130	Stratford Ave & Connecticut Ave 2-way conversion from Seaview Avenue to Bruce Avenue (planning study underway).		\$20,000,000		
Route 700	0015-0368, Realign Lafayette Circle from a large, irregular one-way configuration to several more typical roadway intersections connecting several city streets, SR700 and Rt. 8 to address safety, access and operational concerns. B-directional traffic operations will improve access to the Rt. 8 interchange. Pedestrian access improvements.	LOTICIP & STPB	\$11,600,000		

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Route 8 & Route 25	At the split between Rt 8 and Rt 25, three travel lanes carry Rt 25 north while only two handle Rt 8 traffic. Congestion occurs because of the higher traffic volumes on Rt 8. To facilitate diverging traffic, construct a third lane for Rt 8 northbound from the split to the vicinity of off-ramp to Rt 15.				\$24,000,000
Seaview Avenue	Widen and reconstruct the existing New Haven rail line underpass and provide increased vertical clearance for Seaview Avenue. Include bike/ped facilities. Potentially create an underpass based on Barnum Station configuration.			\$10,000,000	\$10,000,000
<b>Bridgeport, Fairfield, Stratford</b>					
Route 1	Provide lane continuity over its entire length by widening US Route 1 to a uniform four travel lanes with left turn lanes at signalized intersections. From Westport/Fairfield line to Stratford/Milford line.				\$90,000,000
Route 1	Construct intersection improvements, including minor widening and installing turn lanes, at various locations in Fairfield, Bridgeport and Stratford.			\$20,000,000	
<b>Derby</b>					
Route 34	0036-0184: Reconstruct and widen Main Street from Bridge St. to Ausonio Dr. (and Route 8 SB ramps) to 4 travel lanes	STBG, HPP	\$10,000,000		
Route 8	0036-0179: Reconstruct interchanges 16 & 17; extend Pershing Drive & construct local roads. To Route 34. Preliminary design completed	NHPP		\$80,000,000	
<b>Easton</b>					
Route 59	Intersection improvements on Rt. 59 and Rt. 136. Safety improvements and provide minimum sight lines.		\$2,000,000		
Route 59	Intersection improvements on Rt. 59 and Judd Rd. Safety improvements and provide minimum sight lines.		\$1,500,000		

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Fairfield</b>					
Beach area	Evacuation route improvements. Raise Fairfield Beach Road, Beach Road, Reef Road and other low-lying local roads used for evacuation.				\$5,000,000
Beach area	Raise roads for flood resiliency.				\$3,000,000
Fairfield Woods, Woodridge and Stillson	Fairfield Woods, Woodridge, Stillson & Farist intersection improvement. Mostly completed. Add sidewalk to Fairfield Woods Road and look at Woodridge, Fairfield Woods & Stillson intersection.		\$400,000		
Mill Plain Road	Widening/addition of lane to southbound approach from I-95 ramps to US 1. Could involve underpass reconstruction, signal/intersection realignment.				\$30,000,000
Route 1 & Black Rock Turnpike	Interchange 24: Reconstruct and reconfigure the southbound on-ramp and the northbound off-ramp and eliminate US Route 1 traffic circle.				\$38,000,000
Route 1/ Fairfield Center	Implement resiliency measures to address flooding during rain events on Post Road/US 1. These events potentially affect 20,000 vehicles per day. Includes green infrastructure measures.			\$6,000,000	
Route 1/ Fairfield Center	Drainage improvements: Would run from/ across/along Post Road to Pine Creek via Ruane Street, Sherman St, Sanford Street, Miller Street and Reef Road. Fairfield Railroad Station parking lot also affected. Potentially a small pump station.			\$9,000,000	
Route 130 & Route 1	Eliminate the Rt 1 and Rt 130 traffic circle and widen the westbound section to provide bi-directional travel. Realign to form a "T" intersection with Rt 1. A study to evaluate alternatives will begin in 2019.			\$13,000,000	

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Route 15	Interchange 46: Southbound ramps consist of short ramps segments, with the exiting movement along a tight radius loop ramp and the entering movement along a short on-ramp that is stop controlled. Complicating exiting and entering is the proximity of the slip ramps for the rest area located between the ramps. Ramps should be realigned, lengthened and relocated to provide a more efficient connection with Congress St. and Rt. 59, as well as the service area. CTDOT and the Town have implemented low cost improvements on Rt 59 and CTDOT is considering improved signage for curves.				\$20,000,000
Route 58	Implement recommendations from the Black Rock Turnpike Safety Study. Individual projects are detailed in the description of the study.		\$5,000,000	\$10,000,000	\$15,000,000
Route 58	Widen Black Rock Turnpike transition from 2 lanes to 4 in area of Samp Mortar to Tahmore Drive (2 lanes in each direction)		\$300,000		
Route 59	Four corners streetscape		\$1,000,000		
South Benson	South Benson - Fairfield Beach Road Dike. Option to protect roads rather than raising them.			\$10,000,000	
South Benson	Storm system improvements associated with proposed pump station. Would expedite road drainage.			\$7,000,000	
Stratfield Road & Jefferson Street area	Transit, pedestrian, improvements. Upcoming Sacred Heart University expansion could have a major impact on roadway, sidewalk and transit (GBT/SHU) network.			\$2,000,000	
Sturges Highway	Sturges Highway at CT 136: Sight distance improvements. Would involve ROW acquisitions and grade change of intersection. Residents from 3-4 towns (2 RPAs) sensitive to drastic change in roadway.			\$2,000,000	
<b>Monroe</b>					
Route 110	Intersection Safety Improvements at Rt. 110 and Wheeler Rd.		\$150,000		
<b>Monroe &amp; Trumbull</b>					

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Route 25, Route 111 and various side/cross streets	Implement recommendations from the Route 25 and Route 111 Planning and Engineering Study. Individual projects are detailed in the study description. Study begins at Rt. 25 & 111 intersection. Terminates on Route 25 at Route 59 and Route 111 at the Newtown town line.		\$20,000,000	\$20,000,000	\$40,000,000

### Seymour

New Road	Route 42 & Route 67 Connector: Construct new connector arterial (2 lanes) between Route 42 in Beacon Falls and Route 67 in Seymour; includes construction of section of Naugatuck River Greenway		\$11,200,000		
Route 115	Intersection realignment at Pearl Street and at Maple Street, and repair retaining wall between Maple Street and Main Street	STBG		\$6,300,000	
Route 313	Construct a round-about at the intersection with Clinton Road to replace an awkward "Y"	STBG		\$1,350,000	
Route 313	Minor widening from Haddad Rd. to Main St. to provide consistent road width and minimum two-foot shoulders; about 1.25 miles	STBG		\$2,200,000	
Route 334	Route 334 Realignment: Southwest Road & Fountain Lake Road, Realign Fountain Lake Road	STBG		\$2,000,000	
Route 34/ Route 188	Reconstruct and widen intersection at Route 34 and Route 188, including adding turn lanes and improving sight lines	STBG	\$3,200,000		
Route 67	Reconstruct and realign intersection of Route 67 at Silvermine Road and Chatfield Street to eliminate skewed angles	STBG	\$2,300,000		
Route 67	Upgrade, interconnect and place under computer control traffic signals along Route 67 from Oxford TL to Woodbury TL	CMAQ	\$2,800,000		
Route 67/ Route 313	0124-0165, Implement spot Improvements along Route 67 and Route 313 including new traffic signals, minor widening, intersection realignment, pedestrian improvements and access control. On Rt. 67 Swan Ave to Franklin St and on Route 313, Rt. 67 to Broad St.	STBG	\$8,500,000		

\* Known funding sources



## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Route 8	Realign SB lanes between Interchange 19 & 21; modify interchange. Preliminary design completed	NHPP		\$17,500,000	
Route 8	Construct new SB on-ramp at Interchange 22. Preliminary design completed	NHPP		\$7,350,000	
Route 728	Realign intersection of SR 728 (Derby Avenue) at Cedar Street; includes improvements to the ramps at Interchange 21 on Route 8	STBG		\$6,950,000	
<b>Shelton</b>					
Route 108	Route 108: Widen bridge (02609) carrying Shelton Avenue over unnamed stream	Bridge		\$2,150,000	
Route 108	Reconstruct & realign the intersection at Isinglass Road	STBG	\$2,800,000		
Route 110	Realign and improve intersections at Beardsley Road, School Street and Birdseye Road	STBG		\$3,500,000	
Route 714	Construct intersection improvements at Center St. and Long Hill Avenue, including turn lanes and replacement of traffic signal equipment	STBG		\$1,800,000	
Route 8	Construct new SB on-ramp at Interchange 11; widen Bridgeport Avenue. Preliminary design completed	NHPP		\$3,500,000	
Route 8	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	NHPP		\$19,750,000	
Route 714	Widening of Bridgeport Avenue to provide a consistent 4-lane cross section with turn lanes from Trumbull town line to Constitution Boulevard; includes advance traffic signal system & access management	STBG		\$15,500,000	
Huntington Street & Buddington Road	Huntington Street and Buddington Road: Realign and intersection to remove center island and create a "T" intersection. Narrow road and make turning angles less obtuse	STBG			

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Walnut Tree Hill Road	Minor widening to provide minimum two-foot shoulders and spot reconstruction and Improvements at various locations including at the intersection with Ripton Rd; Isinglass Rd to Route 110.	STBG		\$8,650,000	
Huntington Street & Commerce Drive	Construct a round-about at the intersection of Huntington St and Commerce Drive.	STBG	\$1,350,000		
Buddington Road	Spot reconstruction and improvements (Various Locations)	STBG		\$2,500,000	
Long Hill Cross Road	Spot reconstruction and improvements (Various Locations)	STBG		\$2,500,000	
Booth Hill Road	Spot reconstruction and improvements (Various Locations)	STBG		\$2,500,000	

### Stratford

Broad Street over Ferry Creek	Replacement of Structure 138-005: Involves replacing existing bridge/culvert and raising roadway profile at intersection of Ferry Blvd and Broad St. Flood hazard due to inundation at bridge results in significant flooding of up-land areas along Ferry Creek.			\$4,000,000	
I-95	0138-0248, Interchange 33: Reconstruct the partial interchange and replace it with a full-directional, diamond interchange. A new southbound off-ramp and northbound on-ramp would be constructed. Several local roads would be reconstructed and realigned to provide better access to I-95 from the adjacent commercial centers. Work would include additional lanes, turning lanes, minor widening and traffic signal improvements.	NHPP	\$29,500,000		
I-95	Interchanges 31 and 32: These two interchanges are close together, with all ramps intersecting with local roads. To reduce the number of ramps and provide separation of the interchanges, consider consolidating these interchanges and relocating and constructing a new diamond interchange at Route 130. The new interchange would be located between the existing ramps.				\$66,000,000

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Nichols Ave/ Route 108	Construct intersection improvements at Route 108 (Nichols Avenue), Connors Lane and Second Hill Lane, including safety improvements and realignment.		\$1,000,000		
Route 110	Main Street/Putney Intersection Improvements, Main St to 15NB ramps.			\$1,425,000	
Route 110	After the Sikorsky Gate #1 intersection realignment and traffic signal removal (in process), widen Rt 110 to the west for a northbound left turn lane between Navajo Ln and Oronoque Ln and a southbound through-right turn lane starting south of Oronoque Ln and ending in an exclusive right turn lane onto Rt. 15 southbound entrance ramp. Includes increasing storage for turn lanes on Rt. 15 southbound off ramp and on Rt. 110 northbound on ramp to Rt. southbound. Sikorsky Gate 1 to Merritt SB exit ramp."			\$6,000,000	
Route 110	Alltown Mobil / Oronoque Plaza Area Improvements				\$415,000
Route 110	Route 110 (Main Street) at Sikorsky Gate #2 and Warner Hill Road Intersection Improvements		\$400,000		
Route 130	L138-0001: Improvements to exit 31 and Honeyspot Road interchange. Add a roundabout at Stratford Ave, Honeyspot Road & South Ave intersection.	LOTICIP	\$5,000,000		
Route 15 & Route 110	Rt 15 NB Ramps Intersection Improvements			\$1,475,000	
Shore Rd	Shore Rd: Increase roadway elevation and new culvert. Involves elevating the existing road grade, installing a new culvert and constructing sections of retaining walls to create the new road grade.			\$2,500,000	
West Broad / Linden	0138-0241: Construct intersection improvements at West Broad St and Linden Ave, including safety improvements at the I-95 southbound ramp at Linden Ave, and minor roadway improvements from Linden Ave to California St (in construction).	STPB	\$6,236,000		

### Trumbull

\* Known funding sources

## Improvement Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Daniels Farm Road	Daniels Farm Road Improvement: Minor widening to provide a uniform 32-foot road with turn lanes.			\$5,130,000	
Route 127 & Quality Road	Install traffic light at the intersection of Route 127 and Quality Road. Connects 2 commercial areas, as well as a planned extension of the PRT.			\$800,000	
Route 25	Route 25 at Whitney Avenue: Construct an interchange to provide access to and from Whitney Ave and divert some traffic from Daniels Farm Rd to access Route 25.				\$11,800,000
<b>Trumbull &amp; Stratford</b>					
Route 108	0144-0196: Installation of Traffic Control Signals at Silver Lane and Amory Road	SIPH	\$1,280,000		

\* Known funding sources

## Major Projects

Route or Street	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Bridgeport</b>					
Seaview Avenue Corridor	0015-0371, Seaview Avenue corridor: Operational improvements to corridor, and north of Rt 1 to provide access for proposed Lake Success Business Park and future local developments. Street approaches will be reconstructed and new traffic signals and turn lanes will be installed at several intersections. Includes an attractively landscaped linear park along the Yellow Mill Channel, with bicycle and pedestrian pathways.	HPPS &	\$12,400,000		
<b>Bridgeport &amp; Fairfield</b>					
I-95	Northbound Widening Between Exits 19 and 27A (Phase 1 - Rt. 8 Connector)				\$21,000,000
I-95	Northbound Widening Between Exits 19 and 27A (Phase 2 - Exits 19-25)				\$345,000,000
<b>Monroe</b>					
Route 34	0084-0114: Rt. 34 Stevenson Dam Bridge Replacement	NHPP-BRX		\$70,250,000	
<b>Stratford</b>					
MNR/Rt. 1	0138-0245: Replace bridge over Metro North railroad.	State/NHPP-BRX	\$10,910,000		
<b>Regional Projects</b>					
Route 8	Rt. 8 RBC Project - Derby/Ansonia/Seymour - MP 12.88 to MP 19.4				\$80,200,000
<b>Stamford, Darien &amp; Norwalk</b>					
I-95	I-95 Northbound Widening Between Exits 9 and 19 (NEW)				\$330,000,000

\* Known funding sources

## Route 25 & Route 111 Planning & Engineering Study Recommendations

Location	Improvement	Year*
<b>Route 25 &amp; Route 111</b>		
<b>Intersection Alternatives</b>	Single Point Urban Interchange (SPUI) Benefits include reduced congestion with acceptable queues during peak periods, a single intersection for all movements, no delays for Route 25 through movements, and potential improved safety. Issues include the potential for increased speeds and reduced commuter lot capacity.	2035
	Quadrant Roadway with Left-Turn Prohibition at the Route 25 and Route 111 Intersection. Benefits include reduced congestion with acceptable queues during peak periods, at-grade intersection and maintains the commuter lot capacity. Issues include user expectancy, all left turn movements would have to use the quadrant roadway, and increased distances for turning movements	2035
Bicycle & Pedestrian	Sidewalk construction and ADA improvements: Fill in the gaps in walks along the Rt 25 and Rt 111 commercial corridors. Includes a Complete Street Concept along Rt 111 to connect major business in Trumbull and Monroe with each other as well as additional access to PRT.	2025
<b>Route 25</b>		
<b>From Route 111 (Trumbull) to the Monroe-Newtown town line.</b>	Major widening of Main Street (Rt 25) to four lanes with turn lanes at major intersections from the end of the divided section north of Route 111 to the Monroe-Newtown town line. Does not include segment between Judd & Purdy Hill Rd and Brook St in Monroe	2035
	Access Management Program: Implement an access management program to consolidate, close or relocate commercial driveways along various sections of Route 25.	2035
<b>Trumbull</b>		
Tashua Road and Spring Hill Road	Realign Spring Hill Rd across from Tashua Rd to reduce number of closely-spaced intersections. Includes a Complete Street Concept to connect intersection to the PRT.	2025
<b>Monroe</b>		
Pond View at Judd Road and Purdy Hill Road	Standard Widening: Additional Southbound through lane; Widening on Purdy Hill Rd and Judd Rd for an exclusive left, exclusive through, and an exclusive right turn lanes.	2022
Brook Street	Clear/regrade adjacent to intersection to improve sight distance. Realign Brook St approach to be perpendicular with Rt 25.	2022
Crescent Place	Eliminate majority of traffic exiting Crescent Place at the south intersection to avoid conflicts with Victoria Place intersection. Reconfigure north intersection to allow for better turning movements.	2022
Route 25 at Old Turnpike	Realign ends of roadway for improved geometry and sight lines	2022

\* Estimated year based on impact and complexity

## Route 25 & Route 111 Planning & Engineering Study Recommendations

Location	Improvement	Year*
<b>Route 111</b>		
Old Mine Road, Trefoil Plaza, and Woodland Hills Driveway	New local road connection at Old Mine Rd to serve Trefoil Plaza and Woodland Hills (with new traffic signal) at intersection with Rt 111. Exclusive pedestrian crossing for trail at signalized intersection. Convert Woodland Hills Driveway to full access and provide Rt 111 northbound left turn lane.	2022
Purdy Hill Road	Revised phasing for Rt 111 Southbound protected- permitted left turn (currently permitted only). Lengthen westbound left turn lane to accommodate design queue and provide eastbound right turn lane on Purdy Hill Rd.	2022
Purdy Hill Road to Elm Street	Minor widening of Monroe Turnpike (Rte 111) with turn lanes at key intersections from the vicinity of Purdy Hill Road to Elm Street.	2025
Cross Hill Road to Fan Hill Road	Minor widening of Monroe Turnpike (Rte 111) to a 32-foot cross section with drainage improvements from Cross Hill Road to Fan Hill Road.	2025
<b>Pequonnock River Trail</b>		
<b>Route 111 Crossing Alternatives</b>	Preferred alternative: at-grade crossing at Route 111 would include a traffic signal with a pedestrian phase at the shopping center and Complete Streets concepts (\$700k estimate).	2020
	Relocate PRT to a new alignment under Rt 111 Bridge (\$5 million estimate).	2022
Route 111/Trefoil Plaza	Develop commuter lot on town-owned land behind CTDOT Maintenance Facility for PRT and Trefoil Plaza overflow parking.	2022
<b>Local Roads</b>		
<b>Trumbull</b>		
Trefoil Drive	Provide Eastbound Right Turn Lane on Trefoil Drive, at Route 111	2022
<b>Monroe</b>		
Elm Street	Widening on the Elm St approaches: exclusive left, exclusive through, and an exclusive right turn lane. Route 111.	2022
Purdy Hill Road at Cutlers Farm Road	Install traffic signal control.	2025
Spring Hill Road at Cutlers Farm Road	Widen Spring Hill Rd for turn lanes at the Trumbull transfer station. Install a sidewalk along the south side of Spring Hill to connect Trefoil to the PRT and the Rt 25 intersection.	2022
Route 25 and Maple Street	Convert Mill St to one-way eastbound to reduce turning movements on Rt 25 by consolidating movements with Maple St.	2025

\* Estimated year based on impact and complexity

## Black Rock Turnpike Safety Study Recommendations

Location	Improvement	Year*
<b>Route 58</b>		
Black Rock Turnpike, Moritz Place and Whitewood Drive	Provide a 4-leg single-lane roundabout: Modify access with Moritz Pl and Rt. 58 to be right-in/right-out access preceding roundabout. Remove access from Rt 58 to Whitewood Dr (keep access to Rt. 58 from Whitewood Dr). Pedestrian crossings on all corners with warning signage and potential pedestrian activated systems.	2023
Black Rock Turnpike and Burroughs Drive	Reduce Rt. 58 to one travel lane in each direction, provide adequate shoulder width to allow passing of left-turning vehicles.	2030
Burroughs Drive and Katona Drive	Provide a 4-leg single-lane roundabout with a right-turn bypass lane for SB approach at Katona Dr. Burroughs Rd: realign eastbound approach and widen the westbound approach and dedicated left-turn lane. At the NB approach: modify at Burroughs to be 1-through lane with 1 dedicated right-turn lane. Install exclusive pedestrian phase with directional pedestrian crossings at Burroughs and pedestrian crossings on all corners with warning signage & potential pedestrian activated systems.	2030
Shoprite to Stillson Road	Narrow Rt 58 to one through lane in each direction. Offset ShopRite and CVS plaza accesses. Restrict left-turn out access with median; provide full access for plazas with median U-turn. Provide pedestrian refuge island and bus pull-out.	2030
Stillson Road	Provide median south of intersection of Rt. 58 and Stillson Rd. Realign and shorten pedestrian crossings. Provide dedicated right-turn lane on Stillson EB and WB approach.	2025
Stillson Road to Old Navy	Restrict left-turn access with median and remove some driveway access.	2030
Old Navy	Provide a 4-leg roundabout with 2 NB through lanes and a right-turn bypass for the SB approach. Include pedestrian crossings on all corners with warning signage & potential pedestrian activated systems as well as a bus pull-out to allow layover of GBT bus.	2030
Old Navy to Fairfield Woods Road	Narrow Rt. 58 to one through lane in the southbound direction. Restrict left-turn access with median and provide a left-turn pocket to relocated shared driveway for Fairfield Woods Plaza and Duchess.	2030
Fairfield Woods Road	Provided dedicate left-turn lane for southbound approach. Remove access to Fairfield Woods plaza and provide turn at shared drive with Duchess. Realign and shorten pedestrian crossings.	2030
Fairfield Woods Road to Brookside Drive	Formalize left lane southbound as a dedicated left-turn lane	2025
<b>Stillson Road</b>		
Stillson Road	Lengthen Stillson Rd. EB left-turn lane to allow for higher utilization of left-turn signal; provide left-turn pocket at Stillson Place.	2023

\* Estimated year based on impact and complexity



# 5: Bus Transit

## Regional Bus Service

### Greater Bridgeport Transit (GBT)

The Greater Bridgeport Region's bus service is provided predominantly by the Greater Bridgeport Transit Authority (GBT); overseen by a ten-member Board of Commissioners, appointed by the Transit District's member municipalities. GBT provides the Region's fixed route service, complementary services in accordance with the Americans with Disabilities Act (ADA) and dial-a-ride services for seniors, under a State funded program, known as the Municipal Grant Program (MGP).

GBT also provides interregional services and in the case of the Coastal Link, the service is operated jointly by GBT, the Norwalk Transit District, and the Milford Transit District. This partnership provides for a seamless service along a part of Connecticut's Southwest coast, with service between Milford and Norwalk, via the GBT Transit Center.

### Valley Transit District (VTD)

The Valley Transit District (VTD) operates the complementary ADA services for Ansonia, Derby, Seymour and Shelton. While GBT and CTtransit-New Haven operate fixed-route bus services in these communities, VTD mirrors the fixed route services Monday through Friday. GBT and CTtransit-New Haven provide ADA service on weekends.

### Transit District Model

While there are other models for the provision of transit services, many regions of Connecticut depend on Transit Districts as the regional authorities overseeing service operations. Among the benefits that the Transit Districts bring are that they are



designated Federal funding recipients – conduits of Federal transit investment in their respective areas, largely responsible for all bus transit infrastructure outside of the State operations. They also benefit from local and regional community input in the form of their respective boards and regular public meetings. Among the transit operations in the State, they are the exclusive providers of door-to-door services for riders with disabilities and services to seniors under the Municipal Grant Program. Unique to Transit Districts is that they receive operating investment directly from their member municipalities, reducing the demand for State investment in the regions where they operate. These operations maintain their

The Valley Transit District's headquarters are located in Derby (above). GBT provides bus service to municipalities throughout the Greater Bridgeport and Valley Region (below).

own collective bargaining agreements and pension programs and compare favorably to State run operations when considering the total financial cost of operations per hour of service provided. Lastly, and in cooperation with State operated systems, they share administrative expenses in a broad number of areas including the purchase of fuel, training, vehicle procurement, and consortia related to federal compliance, insurance and workers compensation management.

### Service Area & Service Description

The bus service in the Bridgeport Region is centered on GBT's four-member municipalities - Bridgeport, Fairfield, Stratford and Trumbull. However, today the service area extends to Shelton and Derby in the Naugatuck Valley, Milford to the east and Norwalk to the west. A limited express service is provided to a portion of Monroe; bus service is not available in Easton.

CT-Transit New Haven also provides service to the municipalities of Ansonia, Derby, Seymour and Shelton. Route 255 extends from New Haven along Route 34 to serve the downtowns of these municipalities. It has two deviations plus one express route and connects with bus routes operated by GBT and the Waterbury branch line commuter rail service at the Ansonia, Derby-Shelton and Seymour stations. In addition to Route 255, CTtransit-New Haven operates a part-time extension of Route 243 that ends in Seymour at the terminus of Route 255. The route connects New Haven via Whaley Avenue, Route 63 and Route 67 to Woodbridge and Seymour.

### GBT Operations & Ridership Trends

The Region's fixed route service operates 365 days per year with reduced service on weekends and holidays. Typical weekday service begins at 4:30 am and concludes at

Table 3-1: GBT Fixed Route Boardings, FY2011 - Present

	FY 2011	FY 2012	FY2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
July	432,009	437,867	471,137	500,632	518,065	504,357	451,281	419,094	428,100
August	446,760	453,581	513,665	517,382	517,212	511,986	492,121	454,551	458,812
September	459,854	472,633	479,005	514,003	538,488	536,728	486,571	465,201	440,218
October	468,437	486,268	496,463	558,878	560,023	552,249	484,198	489,497	499,643
November	439,723	455,113	484,398	489,037	470,729	493,881	456,618	447,669	
December	419,829	423,353	468,397	464,678	496,432	490,678	443,137	409,726	
January	365,611	423,343	460,888	445,930	425,149	437,663	421,182	390,237	
February	391,185	480,780	368,229	413,378	413,586	447,143	402,795	395,470	
March	470,624	516,742	484,107	496,682	493,226	503,489	440,091	415,470	
April	441,894	476,363	510,209	505,865	500,868	475,192	439,283	422,345	
May	452,137	491,246	504,279	515,578	500,980	473,622	459,748	457,006	
June	450,006	473,133	469,961	494,750	493,364	470,392	443,556	429,117	
<b>Total</b>	<b>5,238,069</b>	<b>5,590,422</b>	<b>5,710,738</b>	<b>5,916,793</b>	<b>5,928,122</b>	<b>5,897,380</b>	<b>5,420,581</b>	<b>5,195,383</b>	

Table 3-2: GBT's Farebox Recovery & Operating Expenses

	FFY2013	FFY2014	FFY2015	FFY2016	FFY2017
Farebox Recovery Ratio	29%	30.5%	29.9%	29.0%	28.1%
State Operating Investment	\$14,029,588	\$14,798,958	\$14,913,862	\$15,387,672	\$14,834,793
Operating Expense/ Hour of Revenue Service	\$107.94	\$110.40	\$116.67	\$109.81	\$104.31
Operating Expense/ Unlinked Passenger Trip	\$3.07	\$3.12	\$3.14	\$3.11	\$3.27

\* Source: National Transit Database- Agency Profiles 2013-2017

approximately 11:30 pm. Frequencies range from hourly to twenty minutes service on some of the most heavily utilized routes and on some occasions, buses are operating at full capacity.

Generally, ridership on the fixed route service peaked in 2015, when ridership reached 5,928,122 boardings or approximately 19,000 boardings daily. More recently and likely in response to the long decline in gasoline prices, ridership has dipped to 5,191,383, or approximately 16,000 boardings daily. During the first several months of FY 2019, the trend in reduced ridership began to flatten and the agency is today providing an average of approximately 17,000 boardings monthly.

### CT Transit-New Haven Operations & Ridership Trends

CT Transit's Route 255 operates Monday through Saturday. On weekdays, there are 16 round trips daily to Seymour with 30-minute headways during the peak periods and 60-minute in the off-peak timeframe. The Saturday frequency is 60 minutes. Route 255 performs above the average for the system based on the number of passengers per trip and the maximum load, but it performs below

the system average for passengers per hour and passengers per mile. These measures indicate that passengers are traveling longer distances. The route travels through a mix of built up residential and commercial land uses as well as more rural areas and experiences traffic congestion through downtown Shelton and along Route 34 in Derby.

On Route 243, two trips are made in the morning time period from New Haven each day Monday through Friday and one return trip is offered in the evening. At other times, connections can be made to Route 255. The extension does not operate on the weekend.

### Operating Investment & Efficiency Improvements

Funding for the operation of the bus services is derived from three primary sources; State operating investment, fare box proceeds, and contributions from member municipalities, with State investment representing the majority of operating funding. Over the past several years and in response to the State's fiscal crisis, State investment in GBT services has generally declined. Today, operations are conducted with FY2014 funding levels.

In response to this, GBT instituted a series of austerity measures designed to preserve the most productive “core” services. These measures included internal process improvements, the reduction in administrative expenses, staff reductions and, service reductions. As a result of these measures, GBT has been able to maintain the majority of its services, increase efficiency, preserve a high fare box recovery ratio and reduce the overall cost of an hour of bus service.

### The Region’s Bus Fleet: Moving to Cleaner Propulsion Systems

GBT operates a fleet consisting of fifty-seven fixed route buses and twenty-six demand responses buses. This fleet is funded through the Federal Transit Administrations (FTA) Section 5307 formula funding program (80%) with the requisite local match (20%), provided by the Connecticut Department of Transportation (CTDOT). The current average age of the fixed route fleet is approximately four years, while the demand response fleet was recently replaced and averages two years of age. Through the most recent purchase, GBT included several important safety features, including a driver protective barrier, a surveillance system, consisting of twelve cameras on-board every fixed route bus, and a “Protran” exterior announcement system, aimed at notifying pedestrians outside of the bus, through an announcement, that the bus will be turning.

GBT has also incorporated cleaner propulsion systems into the Region’s fleet. In 2012, GBT purchased two hybrid (diesel electric buses) for test operation in the service area. In 2017, GBT purchased an additional twenty hybrid buses, increasing the percent of hybrid buses in the fleet to 38%. GBT, in partnership with the Connecticut Department of Transportation, is currently undertaking a

---

**“Transportation emissions significantly impact the State’s air quality and attainment designation, being the source of 67% of the State’s NOx emissions and 41% of its greenhouse gas emissions.”**

*- State of Connecticut Mitigation Plan, Connecticut Department of Energy & Environmental Protection.*

---

project aimed at incorporating up to eleven full electric, battery operated, zero emission buses in the Region’s fleet. This project is being partially funded by the recent award of a Low-No Emission Grant of \$1,450,000, from the Federal Transit Administration (FTA). Delivery of the first zero emission bus is expected in the spring of 2020, with the fleet of electric buses expanding to eleven by 2025.

### GBT Facilities

In support of bus operations in the Region, GBT manages two transit facilities including the Agency’s Administrative and Maintenance facility located on Cross Street in Bridgeport and a public bus station (Water Street Station), which is a part of the Downtown Bridgeport Intermodal Transportation Center.

#### **Administrative & Maintenance Facility**

The administrative and maintenance facility was built in 1987 and has been in continuous service since that time. It consists of the maintenance garage, a storage facility for all of the fleet and administrative offices. While the building is more than thirty years old, GBT, in partnership with FTA and CTDOT have recently made major investments in the facility, to ensure it is in a state of good repair. Recent projects have included: the replacement of an 80,000 square foot roof on the maintenance building, the removal and replacement of five underground storage tanks (diesel fuel, gasoline and waste oil),



the replacement of the bus wash and chassis steam room, the replacement of the property's perimeter fencing and the replacement of all maintenance lifts. These projects help to ensure that the fleet and equipment can be kept secure and in a state of good repair and the continuity of the operations.

### **Downtown Bridgeport Bus Station**

The Downtown Bridgeport Bus Station completed construction on September 2007 and has been in continuous service since that time. The recipient of the Boston Society of Architects Design Award for Excellence, the facility includes 10,000 square feet of interior space, with a large passenger facility, bathrooms, concessions, ticketing for GBT and interregional bus services, real time information system and heated shelters on the platforms. There are seventeen bays for GBT and interregional buses. The facility also includes a community meeting room, which has served as a location for meetings of the GBT governance board and for numerous community engagement activities.

GBT's bus station is located in Downtown Bridgeport and is connected to the New Haven Line of the Metro-North Railroad and Amtrak by pedestrian bridges, making bus and rail connections convenient for passengers. To make the service more convenient for bus riders connecting to rail services, Metro North offers a Uni-ticked or combined bus/rail pass which provides rail riders unlimited access to the GBT bus services. Riders ask for the Uni-ticket endorsement at the time of purchase. Approximately 200 train riders take advantage of the program every month.

### **Recent Planning Projects & Current Service Planning Focus**

It is noteworthy that, through partnerships with MetroCOG and member municipalities, the region has a hearty ongoing service monitoring and planning program. In 2007, GBT completed a redesign of its routes and schedules, leading to the pulse system in operation today. Since that time, in addition

GBT's Downtown Bridgeport bus station.

to GBT's on-going service planning, there have been several other studies.

### Coastal Link Alternative Modes Study

In 2014, the regional partners completed an alternative modes analysis of service along what is today the Coastal link. The Coastal Link was implemented in 1998 and since that time has grown to provide more than 100,000 boardings monthly. Over time, the route began to suffer from overcrowding, corridor congestions problems and headway management difficulties. This study focused on the introduction of BRT "light" service in this corridor.

### GBT Long Range Bus Transit Plan

Also in 2014, the regional partners completed a Long-Range Transit Plan. This undertaking made use of the newly available data from GBT's Automatic Vehicle Location system and Automatic Passenger Counters. It resulted in a series of short, medium and long-term recommendations for transit improvements and serves as a guide for service planning underway today.

Today, after several years of declining or flat funding and after several iterations of austerity measures, GBT staff are focusing on improvements to high ridership and core services. Additionally, GBT is beginning to investigate the use of micro-transit services in the region. Micro-transit is a form of demand response public transportation, which uses technology to enable transit providers to offer flexible routing and scheduling of transit vehicles. Micro-transit services are now being used to offer transit services in locations and at times where densities and demand are not supportive of fixed route service. It is noteworthy that the CTDOT, working in cooperation with two Transit Districts (9-Town and Norwalk Transit District), is currently conducting pilot projects to test the impact and

efficiency of innovative micro transit service plans and this work is expected to inform future State investment in similar programs.

### Route 8 & Waterbury Branch Line Corridor TOD & Alternate Modes Assessment

The Naugatuck Valley Council of Governments (NVCOG) is working on an assessment of possible alternate transportation modes to better serve the Route 8 and Waterbury branch rail line corridors ([www.rt8corridorstudy.com](http://www.rt8corridorstudy.com)). A key focus area of the study is to investigate transit enhancements to the Bridgeport Avenue corporate corridor in Shelton. The corridor is home to a mix of corporate office parks, retail centers and higher density residential developments, including a recently completed high-rise complex. About 11,000 people work within the corridor, with roughly 17% traveling from the Naugatuck Valley area. Because of the limited transit options, commuters are auto-dependent.

### GBT's Route 22X

Currently, the GBT Route 22X provides express service between the Bridgeport Transit Center (BTC) in downtown Bridgeport and the Shelton Business Park. The service currently operates during the morning and afternoon peak periods, operating with three trips in the morning and four in the afternoon. The route is oriented toward downtown Bridgeport with service providing a connection from Bridgeport to the Shelton Corporate Park in the morning and the reverse commute in the evening. A 60-minute headway is provided with the first morning trip leaving the BTC at 6:35 am. The route is aligned along the Route 8 Expressway from Downtown Bridgeport to exit 11, where it continues service along Bridgeport Avenue.

To improve connections and access along Bridgeport Avenue, service and operations on GBT Route 22X would be enhanced by continuing the current routing north to the Derby/Shelton Station, thereby, providing a contiguous route between the BTC and the Derby/Shelton Station. The connection from the Shelton Corporate Park area would operate either along Bridgeport Avenue, through Downtown Shelton to the Derby/Shelton Station or on Route 8. In either option, the buses would operate in general travel lanes. To attain good travel times and institute a service similar to a BRT system, the number of total stops would be limited. This service would facilitate both southbound and northbound trips. The current GBT Route 22X service is more conducive for those traveling north in the morning and south in the evening. Additional buses would be operated to permit the same levels of service in each direction. Separate southbound service would be operated simultaneously with the northbound operations, instead of the current structure, whereby the northbound bus reverses its direction and operates as the southbound bus. Adding buses to the route will permit more frequent service and shorter headways. The major advantage to this style of system is that it would only require route definition and asset allocation to implement.

### GBT Asset Management & State of Good Repair Program & Transit Enhancements

While the GBT capital program has included extensive state of good Repair work to its facilities, the Agency has also been implementing a hearty program for improving amenities for the convenience of current riders and to attract prospective riders. In 2015, GBT opened a new transit hub, at the Westfield Mall in Trumbull. This hub includes new longer platforms, is able to accommodate four



buses, has five new shelters and updated landscaping. Today, it is serviced by four GBT routes and is the most active transfer point after the Water Street Station.

GBT's Westfield Mall transit hub, Trumbull. Source: Susan Rubinsky

### Passenger Shelters

During the past four years, GBT has installed twenty-five new passenger shelters throughout the service area, some in new locations and some replacing aging shelters. This program is funded through a grant from the FTA, with match funding from CTDOT. GBT will be continuing its transit amenity and enhancement program with the following projects in various stages of completion:

- Installation of up to twenty additional bus shelters – currently in planning;
- Installation of new on-street, real-time arrival and departure signs throughout the service area – currently in planning;
- The design and construction of up to six “super bus stops”, on Trumbull Avenue, in Bridgeport’s North End – currently in design.

Table 3-3: GBT Fixed Route Complaints/100,000 Boardings 2014-Present

	FY2015	FY2016	FY2017	FY2018	FY2019
July		7.73	6.87	5.01	11.91
August		11.9	6.7	6.66	5.77
September		9.14	8.62	8.38	8.86
October		7.6	7.02	5.31	12.4
November		8.11	7.25	8.93	
December	4.02	5.91	5.54	5.13	
January	11.29	5.26	5.7	6.15	
February	9.91	6.03	6.71	10.36	
March	10.40	6.16	4.4	9.14	
April	7.00	4.8	4.2	7.58	
May	10.00	5.5	6.31	8.31	
June	6.28	5.5	6.99	7.92	

Nearly all plans of conservation and development, transit studies and Neighborhood Revitalization Zone plans in the region recommend enhancements to transit amenities including shelters, bike racks, benches and real-time bus arrival/departure signage. While GBT and other agencies in the region have been working to improve amenities, additional work is needed in this area. In order to attract new riders and for the convenience of all current riders, these types of amenities should be made a more formal element in transit planning and capital programming throughout the region and efforts should be made to secure the resources necessary.

### Community Engagement & Customer Feedback

Community engagement and the opportunity for rider feedback is an important element of GBT's service model. To this end, the agency has developed and uses a broad array of

tools to inform riders of service changes, assess rider satisfaction with the service and turn rider input into service improvements.

### Website Update

GBT has a powerful website, which offers riders real-time tracking of bus arrival and departure information. The site also includes a Google Transit based trip planning tool to help current riders and those new to the system understand how to make the most of the service. The site is visited more than 3,000 times daily. GBT is in the process of updating the website to highlight the tools most often used by site visitors and to make the site more mobile friendly on today's devices.

### Social Media

Many of GBT riders prefer to receive service change information via social media. For more than ten years, GBT has been actively using the Twitter and Facebook social media platforms. These have become an invaluable tool for notifying riders of service changes due to severe weather or other emergencies.

### Community Meetings

Beyond conducting the required public hearings for service changes or fare increases, GBT follows a more extensive community engagement program. Proposals for service changes are typically vetted through a series of public meetings (four or five) concluding with a public hearing. All comments received during the process are considered equally. Importantly, information advertising the meetings is bi-lingual and GBT makes extensive use of the social media platforms, scrolling signage on-board buses and on platforms, radio interviews, print and television media and seat-drops. As a result, GBT typically receives extensive and helpful information from its community engagement efforts.



## Complaints and Rider Feedback

GBT tracks rider complaints about the quality of service, using a rate reflecting the number of passenger complaints per 100,000 boardings. The tracking of this metric began in 2014 and since that time, there has been a general downward trend. The average number of complaints since the tracking began is approximately eight per 100,000 customers.

## Safety & Upcoming Public Transportation Agency Safety Plan

In July 2018, the US DOT promulgated new rules requiring all public transit agencies receiving federal funding to develop Public Transportation Agency Safety Plans (PTASP). These plans are to be based on Safety Management System (SMS) principles and modeled after the National

Public Transportation Safety Plan (NPTAS), released in January 2017. SMS principles include:

- the development of a safety policy,
- the assessment of risks and programs for their management,
- the assurance that safety plans and mitigation measures are being followed, and
- the promotion of safety programs across all staff members.

GBT has made great efforts to improve its safety record and the safety of its employees beginning with the restructuring of its safety program in 2013. Since that time, the Agency has put in place all of the elements required in the PTASP and has reduced the number and the severity of preventable accidents by more than 50%.

Table 3-4: GBT Preventable Accidents/100,000 Miles

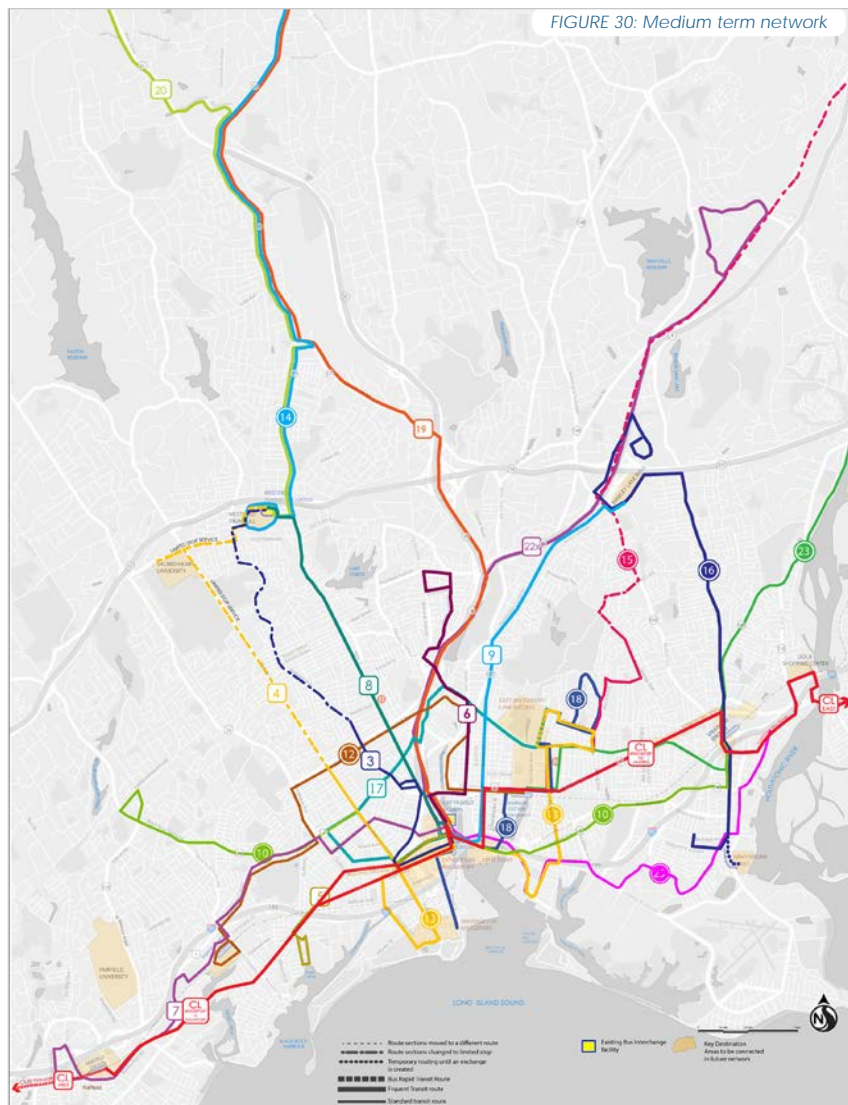
	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
July	1.64	3.2	0	3.1	3.3	1.27	0
August	2.08	1.05	0.53	2.13	0.51	0.62	0.617
September	1.74	1.71	1.104	0.55	1.57	3.16	2.68
October	2.25	3.6	0.5	1.5	2.85	1.08	3.04
November	3.9	1.68	0	1.7	1.91	2.54	
December	6.7	2.18	2.16	1.6	0	1.28	
January	4.3	3.25	1.14	1.71	0.65	1.92	
February	2.78	3.72	4.49	2.27	2	1.92	
March	3.24	0	7.4	1.05	1.1	0	
April	2.16	1.62	1.6	2.19	1.92	0	
May	3.14	1.6	1.6	1.6	0.602	0	
June	3.32	2.18	2.77	2.12	1.851	1.28	
<b>Total</b>	<b>3.10</b>	<b>2.15</b>	<b>1.94</b>	<b>1.79</b>	<b>1.52</b>	<b>1.26</b>	

## Long Range Plan Initiative Summary

### Bus Transit Service Planning

Completed in January 2017, The Regional Transit Oriented Development Pilot Program – Long Range Transit Plan, concluded with a series of short, medium and long-range bus transit service initiatives. The short-term changes generally focused on frequency improvements to improve schedule adherences and to alleviate crowding. The medium-term changes included the introduction of several new routes and the realignment of others.

Medium-term changes proposed by the Regional Transit Oriented Development Pilot Program – Long Range Transit Plan



### Medium-Term Changes

Two important elements of the medium-term changes were the introduction of a second cross-town service (Route 12) generally providing service between the proposed new Barnum Rail Station and the Fairfield Metro Center Station and, the introduction of Route 18, providing new service to Bridgeport's East End and East Side and the Lake Success area.

### Long-Term Initiatives

The long-term initiatives, also detailed in the plan, include the introduction of Bus Rapid Transit (BRT) type services generally without an exclusive right of way (commonly referred to as BRT "Light") and the introduction of a third cross-town service:

#### Coastal Link

Combine GBT Route 1 and the Coastal Link on the current Coastal Link alignment, with the introduction of greater frequency (minimum of 20 minutes), the installation of new amenities and select intersection improvements, to reduce overall travel time.

#### GBT Route 8 (Main Street, Bridgeport)

Increase the frequency of Route 8 (minimum of 20 minutes), to alleviate crowding and improve schedule adherence, introduction of new passenger amenities and select intersection improvements, to reduce the travel times.

#### Route 17 Extension

This proposal includes extending current route 17 through the Lake Success Area and north to the Hawley Lane Mall.

#### New Route 24

This proposal calls for the introduction of a new route across the service area, connecting Bridgeport's North End to the Fairfield Metro Center, with connections to GBT Routes 3,4,6 and 8 along the new alignment.

All of the short, medium and long-term proposals can be found in detail, along with the supporting data and information, which lead to their development, in the final January 2017 report.

## Consideration of Microtransit Demand Response Service

While much of the future planning of the bus service in the region is focused on the customer experience and growing ridership and takes the form of frequency improvements, there are other bus transit needs, which cannot be met efficiently through the introduction of fixed route services. These areas include portions of Stratford, Fairfield, Trumbull and Monroe. As a result, microtransit service is being considered for these locations. Today, GBT is exploring the software and service planning needed for these areas, with the goal of providing mobility to areas of the region, which do not have traditional transit-supportive densities but do have mobility needs.

## Mobile Fare Collection

Today GBT offers a family of bus passes. Since the introduction of the current fare system in 2006, new methods for customer payments have become available, including "smart cards" and more recently, mobile ticketing. It is recommended that GBT explore these methods of fare payment, offering new options to riders.

The Connecticut Department of Transportation, through its state-run transit operations, has already introduced a smart card for their riders. The statewide application of this system, including the GBT service area, would eliminate one of the largest barriers to a seamless public transit system in Connecticut.

## Facility Relocations

The relocation of any bus transit maintenance and administrative facility is a long-term project including site selection, procurement, design and construction. While GBT and its funding partners have invested in SGR projects to keep the Region's bus system operating over the next fifteen to twenty years, the facility cannot effectively and efficiently be expended to meet long term needs and accommodate operational growth. As a result, GBT, through a consultant and in cooperation with MetroCOG, will be undertaking a site selection process aimed at identifying a new location for its maintenance and administrative activities using the general criteria:

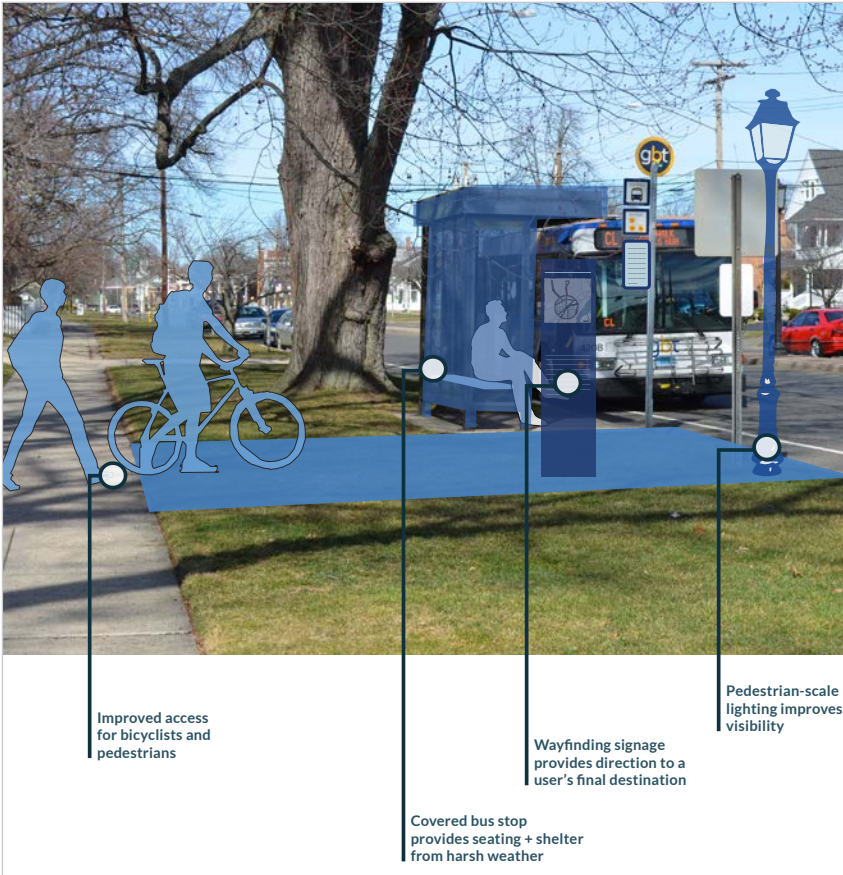
- Eighteen to twenty-four acres;
- Above the 500-year flood plain;
- Minimal negative impact on neighboring properties; and
- Proximity to current services

## Development Potential, Planning & Emerging Transit Demand

While the recommendations above focus on improvements to existing bus transit service related to service span and frequency, there are numerous locations throughout the region for which new development plans are being created. Some of these locations represent large, transit supportive development densities and will require the planning, design and implementation of new bus routes. These new development sites along with emerging transit corridors in the region are summarized below.

### Lake Success Eco Business Park (Bridgeport/Stratford)

This location is a 422-acre developable property, of which 344 acres are in Bridgeport and



Transit shelter improvements recommended by the Stratford Center Complete Streets Plan.

78 acres are in Stratford. Mixed use development is being planned for this site. There is no transit service provided to this location today and additional service will be needed as the development progresses.

### Proposed Barnum Avenue Train Station (Bridgeport)

In 2013, the City of Bridgeport and MetroCOG conducted a study which demonstrated the feasibility of a new train station on Barnum Avenue in the City's East Side. This is a 16.7-acre development site, which would serve as the center of a larger mixed-use Transit Oriented Development effort in the area including the East Bridgeport Development Corridor. This site is currently served by bus transit. However, enhancements would be required to accompany new development.

### Former Stratford Army Engine Plant (Stratford)

This waterfront property in southern Stratford is a 77-acre former industrial development. Mixed use development plans are being prepared for this site including residential apartments, retail, entertainment and recreation. There is no transit service provided to this location today (or to the Lordship area further south) and additional service will be needed as development progresses.

### Stratford Transit-Centered Development

In December of 2018, MetroCOG completed a Transit Oriented Development Pilot Program in Stratford. This plan identified strategies to position Stratford Center to accommodate new mixed-use development with an increased density. This area is currently served by bus transit and rail. However, enhancements would be required to accompany new development.

### Ferry Boulevard (Stratford)

Another location in Stratford with the potential for transit supportive density is Ferry Boulevard. Land Use along Ferry Boulevard today is mixed-use with office and retail space which should be better served by transit. Additionally, 300 residential units are approved for this area.

### Metro Center - Commerce Park (Fairfield)

The Town of Fairfield recently completed a Transit Oriented Development study for the Fairfield Metro Center vicinity. The project's market analysis indicated near-term development potential of 900-1000 residential units, 20,000 - 30,000 square feet of retail and 60,000-150,000 sf of retail and a long-term development potential of up to 1 million square feet of office space. Today, a number

of mixed-use development scenarios are being considered. There is no transit service provided to this location today and new service will need to be introduced as development progresses.

### Trumbull Town Center Area, Trumbull Town Hall Area and Long Hill Green

In its most recent Plan of Conservation and Development (POCD), the Town of Trumbull identified these areas as having the potential for new mixed-use development. The plan proposed creating a new Town Center District along White Plains Road, a new Village Commercial Zone on Main Street/Old Church Hill Road, and a Professional Overlay Zone on Main Street north of Whitney Avenue. While there is some transit service to these areas today (19X), it is limited and would need to be improved to serve these sites as development progresses. It is noteworthy that Trumbull's 2014 POCD also recommends:

- Expanding the range of transportation choices in Trumbull; and
- Enhancing bus service within Trumbull and the region in order to make transportation and mobility available to those who need it.

### Route 25 Corridor (Trumbull/Monroe)

While GBT introduced transit service to this corridor in 2014, the service has since been suspended due to low ridership and funding constraints. However, the development potential along Route 25, most notably in the area straddling the Trumbull/Monroe Border, warrants the re-consideration of the introduction of transit service to this area as development projects are completed. Additionally, there is a potential need for transit service to the emerging industrial park located on Pepper Street in Monroe.

### Bridgeport Avenue and River Road (Shelton)

There has been steady development along GBT routes extending from Bridgeport to Shelton and Derby. Both Bridgeport Avenue and River Road are currently served by GBT bus routes (15,22X and 23). However, the frequencies and service spans (midday gaps in service) of these routes are problematic and will need improvement to keep pace with growth. Recommendations to improve this service are described earlier in this section and below.

### Route 8 & Waterbury Branch Line Corridor TOD & Alternate Modes Assessment:

#### Bus Rapid Transit

As part of the alternate transportation assessment, a longer term vision for enhanced bus service along the Route 8 corridor is being considered. This option involves the development and implementation of a Bus Rapid Transit (BRT) system between Derby/Shelton rail station to the Bridgeport station. While commuter rail service is provided on the Waterbury branch line between these stations, the line is located on the east side of the Housatonic River and trains must merge onto the main New Haven rail line. This alignment limits the number and frequency of trains that can be operated and increases travel times.

A BRT would provide a more frequent and direct connection between the Naugatuck Valley and downtown Bridgeport, as well provide a high quality transit service to the office and industrial parks located along Route 8. The BRT system options address and focus on travel between the Derby/Shelton station and downtown Bridgeport and opportunities to provide better and more attractive public

transit service along the Bridgeport Avenue corporate, commercial, retail and residential corridor. The existing bus services are limited, operating at 60-minute headways and either providing only peak period service or operating all day with long travel times. The BRT concepts would provide improved and extended service, shorter headways and shorter travel times.

### Two BRT systems are being considered:

**Shoulder Running BRT:** This type of BRT system would operate within and along the outside shoulder of Route 8. In this case, the right hand shoulder would be designated as a bus only lane. The BRT would operate in an express fashion with a very limited number of stops located in close proximity to the bus lane. The intent is to maximize travel speeds and minimize delays caused by station stops and off-route diversions. The BRT would function similar to the GBT Route 22X Enhanced, as described above, except it would operate on dedicated bus

only lanes, as opposed to operating in the general purpose travel lanes. The bus only lane, typically referred to as a “reserved bus lane” or “bus on shoulders,” would afford the buses an opportunity to by-pass congestion and maintain a free-flow speed.

The major concern with a shoulder-running BRT is the shoulder width. Along some sections, the BRT might have to travel within the general purpose travel lanes, which would expose the buses to the same level of congestion as experienced by general traffic. When it exits Route 8, it would operate along Bridgeport Avenue and merge into general traffic and use more traditional bus stops.

**Median Running BRT:** This type of BRT system is comprised of a wholly separated facility running down the center of Route 8. The proposal is to construct a busway within the center right-of-way of Route 8. Unlike the shoulder running system, no adjustments would be made to the shoulder area of the highway. Instead, a new, dedicated busway would be constructed. This system will largely eliminate conflicts with merging traffic and roadway congestion. Access to and from the busway would be via grade-separated ramps that connect to an adjacent station stop or local roads.

The recommended width of the busway is 16 feet. The unobstructed vertical clearance over a busway is a minimum 15.5 feet with a preferred clearance of 16.5 feet. For a bi-directional, two lane busway, a raised separator should be installed. This would result in typical cross section width of 34 feet.

Route 8 south of the Commodore Hull Bridge is a combination of an older section built in the 1960s and newer sections completed in the early 1980s. The advantage of the newer section, approximately from the underpass of Constitution Boulevard to the merge with Route 25, is that the median ranges between

An example of Bus Rapid Transit in Connecticut.



approximately 65 feet and over 100 feet, more than sufficient space to accommodate a two-lane, bi-directional busway. The constrained section is from the Commodore Hull Bridge to the Constitution Boulevard underpass, a distance of just under one mile ( $\pm 0.91$  miles). The northbound and southbound travel lanes are separated by a "Jersey" style barrier; no median is provided.

BRT buses would travel along the separated facility for about 6.5 miles where the facility would end and merge into the overlap section of Route 8/25. At that point, BRT buses would use the general travel lanes and exit the expressway at exit 3 (Main Street) in Bridgeport. Local streets would be used to travel to the Bridgeport Transit Center, the terminus of the BRT route and transfer point to local bus service operated by the GBT and commuter rail service operated along the New Haven main line.

The median running BRT system would function more similar to a rail system and stations would be located directly along the busway or in close proximity. Strategically located transit hubs could be built to provide a convenient station with circulator shuttles utilized to bring riders to and from their final destinations.

### Derby to Waterbury Express Bus Service:

While the goal of the alternate transit modes assessment is to promote increased operations along the Waterbury branch line, including minimum 30-minute headways during the peak hours, and acquisition of new equipment, short term transit options within the corridor continue to be limited. To address the lack of service, an express bus service, operated along Route 8, could be implemented to serve the WBL trains stations. The service would supplement existing rail service and operate at times between scheduled rail

**GBT Access**  
Door-to-Door  
Public Transportation Service  
for Riders with Disabilities

ADA Transportation Services  
under the Americans with Disabilities Act (ADA)

Published: February 2018

goGBT.com  
facebook.com/GreaterBridgeportTransit  
twitter.com/gogbt

GBT  
GREATER  
BRIDGEPORT  
TRANSIT

times. Currently, the WBL trains operate at 2½-hour headways. The new express buses would operate every 30 minutes during the gaps between train departures. The service would provide greater choice for travelers and greater confidence that a public transit mode would be available to make a trip at a desired time.

### Bus Service Under the Americans With Disabilities Act (ADA)

#### Greater Bridgeport Transit

The service area covered for the purpose of compliance with the ADA consists of a ¾ mile area around all of GBT's local routes. Under the ADA Paratransit Program, GBT provides for riders who, because of their disability, cannot access or benefit from the public fixed route service. Under the ADA program, GBT provides door-to-door service for riders with

the following service criteria:

- Services is provided in the same geographic area of the fixed route service;
- Service is provided during the same days and hours of operation as the fixed route service;
- GBT does not charge more than twice the base fare charged on its fixed route services; and
- GBT does not deny requests for trips because of a capacity constraint.

Today, GBT provides approximately 94,000 door-to-door rides under its ADA paratransit program.

### Valley Transit District

The VTD responsibilities include interviewing and certifying ADA eligible clients, scheduling trips, filing complaints, and operating and maintaining the ADA fleet of vehicles. It also coordinates with GNHTD and NET to provide inter-district trips. In both cases VTD will provide the outgoing trip and the rider must coordinate with the relevant partner district to schedule the return trip.

The NVCOG is the direct recipient for funding from the Federal Transit Administration for capital and planning projects within the lower Valley area. As such, the NVCOG owns all the capital equipment and rolling stock for the VTD, while the VTD is the operator for the transit district. Fourteen handicapped accessible minivans are operated by the VTD.

The VTD also operates free shuttle buses from Derby/Shelton rail station to job centers along Bridgeport Avenue. This service is funded under the FTA's Jobs Access Reverse Commute (JARC) program.

### Special Services for Seniors - The Municipal Grant Program

The Municipal Grant Program is a State funded formula program, providing grants to all

Connecticut municipalities, for transportation of seniors. The original intent of this program was to address the inconsistent availability of transportation across the state for seniors and the disabled. The program equalized funding among municipalities with dial-a-ride programs and provided opportunities for dial-a-ride services in municipalities where they were not currently available. The goals of the program include:

- Provide a uniform funding source available to all municipalities in the State;
- Provide new transportation services to enhance access to the community for seniors and people with disabilities where transportation services do not exist;
- Expand transportation services to enhance access to the community in areas where transportation is already available;
- Encourage efficient use of limited resources through coordination.

All GBVMPO municipalities provide some type of dial-a-ride service to their residents, which is typically funded through a mix of state MGP and federal funds. Projects and activities funded under these programs must come from and be included in a locally-developed human service transportation coordinated plan, referred to LOCHSTP. The Bridgeport/Stamford Urbanized Area Locally Coordinated Human Services Transportation Plan has identified a number of opportunities to improve services. Individual municipalities, non-profits and various partnerships continue to implement projects identified in the plan.

### Regional Coordination of the MGP

GBT, in partnership with the City of Bridgeport and the Towns of Fairfield and Trumbull, operates a special door-to-door service for senior citizens. For this service, GBT staff work closely with representatives of senior centers to coordinate trips for seniors, for access to important community services, as well as entertainment. Every year under this



program, GBT provides approximately 6,000 passenger trips.

For the municipalities of Ansonia, Derby, Seymour and Shelton, VTD is the local provider of most elderly and disabled transit services. As such, member municipalities generally do not operate extensive municipal bus services. Member towns have allocated their respective MGP allocations to the VTD to expand its the existing service and provide certain rides free of charge during all hours of operation. Municipal dues are used as a match for the MGP.

### Non-ADA Paratransit Service

In addition to the required complimentary ADA paratransit services, expanded paratransit services are provided within the region. These services are referred to as “non-ADA paratransit dial-a-ride service” to differentiate it from the services required by the ADA. The municipalities of Bridgeport, Easton, Fairfield, Monroe, Stratford and Trumbull all provide various types of expanded services to their residents, typically through their local senior centers. In addition,

local nonprofits also provide job access and transportation services through a mix of private and federal funds.

The VTD operates a dial-a-ride service Monday through Friday, 6:00 am to 5:30 pm. The program is operated independently from the complementary ADA service, because the two programs have different funding sources. This service is available for both the general public and elderly and disabled riders. However, the fare for the general public is \$4.50 per trip. ADA-eligible riders and those using the service to commute to work or to travel to a medical appointment pay \$3.50 per trip. Reservations must be made one day in advance.

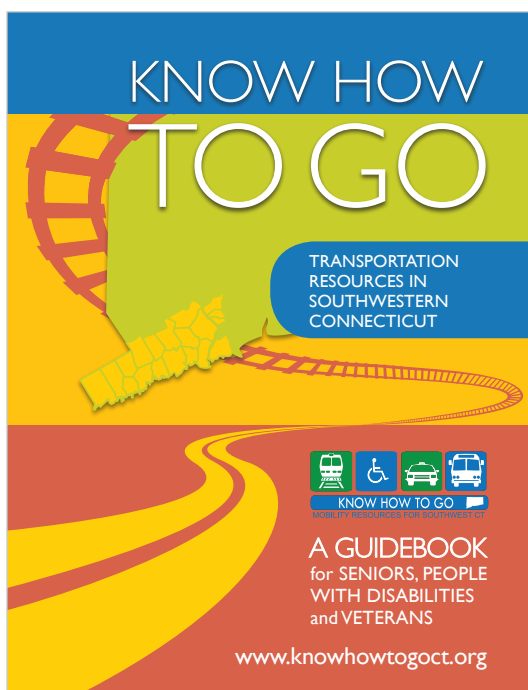
### The Kennedy Center

The Kennedy Center is a private, community-based rehabilitation organization that actively responds to needs of persons with disabilities by offering innovative, comprehensive community services to persons with disabilities and special needs, from birth to senior years. Mobility services include travel training for persons with a disability and seniors, assistance to paratransit applicants, and consultation services to paratransit agencies.

Originally identified through the LOCHSTP process, the Kennedy Center’s Mobility Management Program is a “one-stop shop” for individuals to find solutions to their transportation challenges. The program coordinates transportation options for people with disabilities, seniors and veterans in Southwestern Connecticut, identifies gaps in service, and helps to implement new service where it is most needed.

### Southwestern CT Agency on Aging (SWCAA)

As designated by the Older Americans Act, SWCAA coordinates surveys, focus groups and provider information sessions to identify



the needs and develop plans designed to keep older adults independent. In 2017, SWCAA coordinated a Transportation Coalition to help identify transportation access issues and to seek coordinated, regional solutions wherever possible. The GBVMPO (as MetroCOG) and the Southwestern Connecticut MPO participated in this process.

Datahaven's Fairfield County Community Wellness Indicator found that over the next decade, older adults (ages 65 and over) are projected to be the only group to increase significantly in size. From 2014 to 2025, the older adult population will grow by 37 percent, or 47,700. This presents both a challenge and an opportunity to align municipal transportation resources that support the independence and higher quality of life for older adults and persons with disabilities.

SWCAA made the following recommendations to supplement or strengthen existing transportation services.

- **Municipal Grant Program:** Increase regional coordination of MGP funds to support paratransit needs not covered by transit districts due to the individual living more than the maximum  $\frac{3}{4}$  mile from the transit stop.
- **Increased capacity for the Mobility Manager Program:** the position is staffed by one person and leaves gaps in service when the staff is away or otherwise unavailable as he supports other clients. A call center could help older adults navigate the best transportation alternative to help get travelers to public transit, bus and/or rail- that would suit their needs.
- **Public/Private partnerships:** As consumers age, a growing number of seniors are no longer confident driving on the highway or walking to public transit locations due to reduced vision and/or other physical constraints but who do not

yet qualify as "disabled". These individuals are in need of assistance getting to healthcare appointments, grocery stores or for general social and recreational activities. As funds for paratransit shrink, the needs for individuals fitting this profile increase. The introduction of some private/public partnerships to include Lyft and UBER may help fill the void if CTDOT would allow non-traditional (off hours) or across boundary trips, particularly for individuals slightly over paratransit eligibility.

## Intercity Private Buses

Greyhound provides privately operated intercity bus service via the Bridgeport Bus Terminal. Peter Pan serves the Waterbury area.

## Bus Transit Projects

Service Area & Project	Funding Source	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Greater Bridgeport Transit</b>				
<b>Operating, 0410-XXXX</b>				
ADA Operating	State	\$10,267,868	\$17,484,258	\$70,236,619
Coastal Link Operating	State	\$1,042,263	\$1,774,779	\$7,129,524
Fixed Route Operating	State	\$44,093,705	\$75,083,330	\$301,619,852
Rt 110 Local Operating	State	\$942,968	\$1,605,697	\$6,450,303
Shelton Flyer Commuter Operating	State	\$334,357	\$569,347	\$2,287,145
<b>Capital, 0410-XXXX</b>				
Administrative Equipment	5307C	\$650,000	\$600,000	
Bridgeport Intermodal Transportation Center Bus Station	5307C	\$800,000	\$600,000	
Computer Software and Hardware	5307C	\$450,000	\$450,000	\$150,000
Replacement of 15 Fixed Route Buses - hybrid buses	5307C		\$11,790,000	
Replacement of 40 Fixed Route Buses, 40 hybrid at \$884,000	5307C		\$35,563,000	
Replacement of 26 Paratransit Vehicles	5307C	\$2,964,000	\$3,432,000	
Replacement of 5 Paratransit Vehicles	5307C	\$520,000	\$1,305,000	
Shelter Capital Improvement	5307C	\$150,000		
Shop Tools and Maintenance Equipment	5307C	\$750,000	\$900,000	\$150,000
Support Vehicles	5307C	\$528,000	\$857,200	\$239,580
<b>Capital Plan, 0410-XXXX</b>				
Bridgeport Intermodal Center Improvements FY19 - FY20	5307	\$300,000		
Midlife Repower/Overhaul 15 Gilligs	5307	\$915,000		
Replace Buses (Replace 17 2011& 2012)	5307		\$13,750,000	
Paratransit Vehicle Replacement FY19 - FY20	5307	\$3,645,000		
Admin Capital/Misc Support FY19-FY23	5307	\$2,200,000	\$625,000	
<b>Capital Plan, project 0410-0086</b>				
Cross St. Facility-Remove/Replace Shed (CT-2018-003)	5307	4,050,000		
<b>Capital Plan, project 0410-0087</b>				
Intermodal Center Improvements (CT-2018-003)	5307	\$100,000		
Admin Capital/Misc Support (CT-2018-003)	5307	\$700,000		

## Bus Transit Projects

Service Area & Project	Funding Source	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Valley Transit District</b>				
<b>Capital, project 0036-XXXX, Based on life-cycle replacement</b>				
Administrative Capital Projects.	5307	\$750,000	\$1,365,047	\$5,483,579
Identify shelter needs and locations for construction or replacement.	5307	\$250,000	\$250,000	\$400,000
Replace rolling stock and maintenance & administrative vehicles.	5307	\$964,861	\$1,631,377	\$6,553,460
<b>Operating, project 0420-XXXX, Annual Project funds extrapolated for 25 years</b>				
Provide Annual Operating funds for Dial-a-Ride service.	State	\$3,167,006	\$5,511,151	\$22,139,036
Provide Annual Operating funds for Paratransit/ADA service.	State	\$1,192,334	\$2,074,872	\$8,335,040
<b>Regional</b>				
Bridgeport & Stratford: new BRT-Like Service	State/Federal			\$50,000,000
Human service transit improvements	State/Federal	\$5,000,000	\$5,000,000	\$10,000,000
<b>Statewide</b>				
Bus Fleet Overhauls & Replacements - All Other Buses	State/Federal	\$85,000,000	\$20,000,000	\$140,000,000
Bus Maintenance Facility Improvements - All Other Bus Facilities SOGR	State/Federal	\$60,000,000	\$40,000,000	\$80,000,000
Multimodal Fare Technology Improvements	State/Federal		\$60,000,000	\$135,000,000
Bus Fleet Expansion in Urban Areas, Including Real-Time Scheduling and Smart Card Fare Boxes	State/Federal		\$19,800,000	\$62,700,000
Systemwide Technology Upgrades for Buses	State/Federal	\$15,000,000	\$15,000,000	\$60,000,000

## 6: Rail Transit

### Commuter Rail Service

Commuter rail service offers a vital alternative for travel within and beyond Connecticut, especially Fairfield County and New York City. The Metro-North Railroad, a subsidiary of the New York Metropolitan Transportation Authority, operates commuter trains through the Region on the electrified New Haven Main Line (NHL-ML). The NHL-ML is one of five commuter rail lines operated by Metro-North Railroad in the New York Metropolitan area. Combined, they are one of the busiest commuter railroads in North America.

The NHL-ML runs east-west along the southwestern shoreline of the state between New Haven and New York City. This area is the most heavily developed and populated portion of the state. Commuter rail service is oriented towards travel to and from New York City. Peak service consists of trains headed inbound toward New York City (Grand Central Terminal) in the morning and outbound from New York City during the evening. Based on data from the Connecticut Commuter Rail Council, total ridership in 2017 on the NHL-ML was 40,169,325, a 0.5% decrease over 2016.

The Waterbury branch rail line (WBL) provides commuter service north-south from Waterbury to Bridgeport, where it connects to the NHL-ML. In lower Fairfield County, the NHL-ML provides north-south connections via the Danbury and New Canaan branch lines.

### Shore Line East & Amtrak

Shore Line East, which is operated by the Connecticut Department of Transportation (CTDOT) east of New Haven, continues past New Haven and makes stops at Bridgeport and Stamford. Amtrak operates inter-city and

inter-state service over the NHL-ML under an agreement with CTDOT, making Northeast Regional service stops at Bridgeport.

### Future Service Delivery

Although commuter rail service is oriented to New York City, intrastate trips have increased steadily over the years and account for a larger proportion of total ridership. The state has implemented services and programs that better accommodate and better serve intrastate commuter rail trips.

Cost containment and efficient ways to deliver rail service will depend on resource identification, process improvement, technology advances, tracking human resources and financial data.

The Metropolitan Transportation Plan includes state actions to maintain, improve and modernize the New Haven Main Line, Waterbury Branch Line, facilities and rail cars. The Plan focuses on efforts within the region to rehabilitate station infrastructure, expand parking opportunities and develop new rail-related facilities.

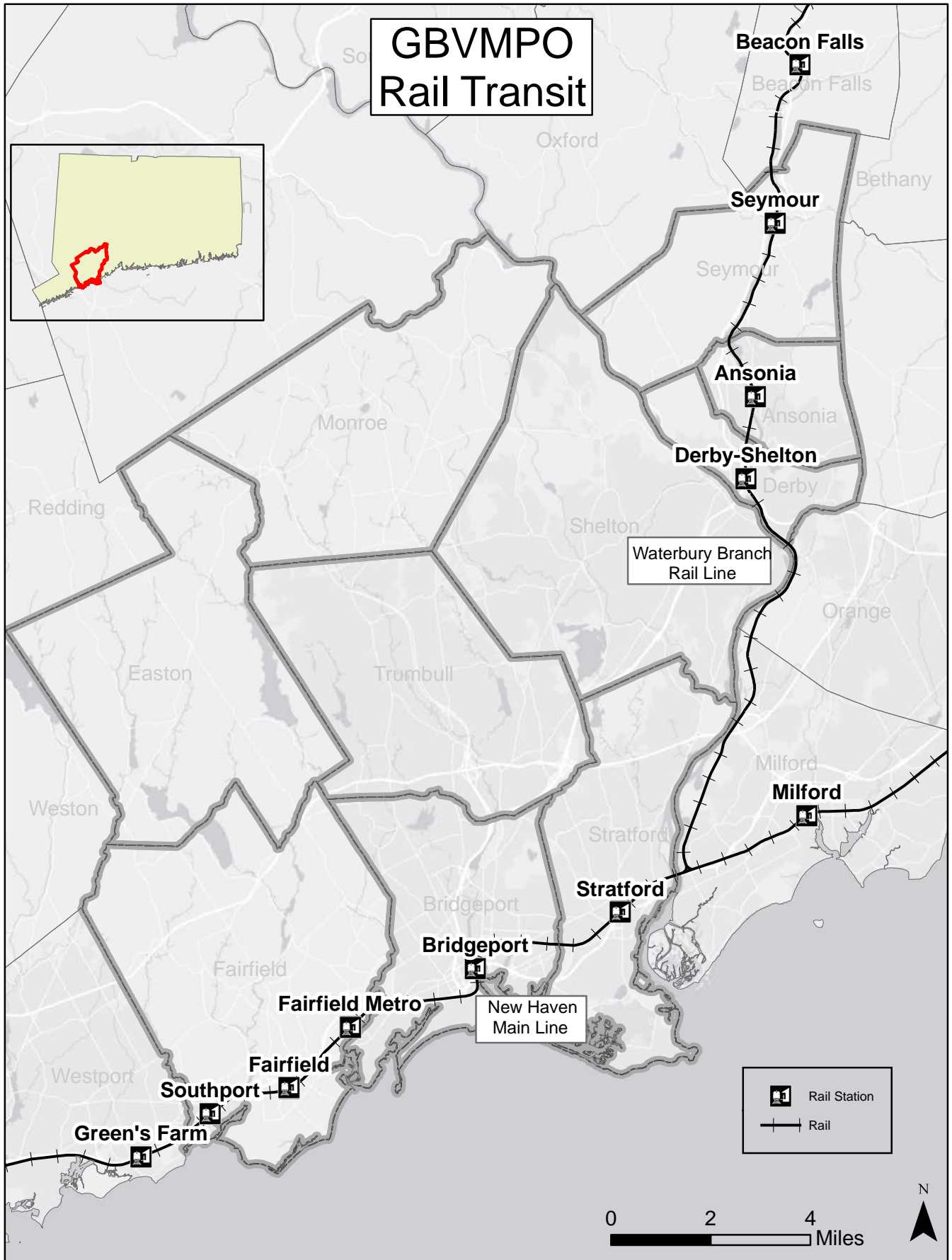
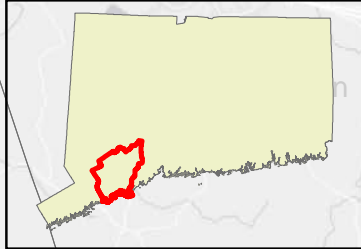
### Stations, Equipment & Infrastructure

Both the NHL-ML and the WBL are owned by the State of Connecticut and operated by Metro-North Railroad (MNR) under a service agreement with the Connecticut Department of Transportation. The agreement also requires MNR to maintain the right-of-way, maintenance facilities and equipment.

### New Haven Main Line (NHL-ML)

The New Haven Main Line (NHL) between the Connecticut/New York state line and New Haven is approximately 46.8 miles. There are

# GBVMPO Rail Transit



20 stations along the NHL-ML, five located in the Greater Bridgeport Valley region: Stratford, Bridgeport, Fairfield Metro, Fairfield Downtown, and Southport. The right-of-way is comprised of four main tracks (three in one section), constructed with continuous welded rail. It is maintained at Federal Railroad Administration (FRA) Class 4 track standards, with maximum allowable operating speeds of 80 mph for passenger trains. The entire NHL-ML is electrified using overhead catenary wires that provides the source of electric power for all trains operated in daily service. Power is supplied by the local electric utility companies, which provides power to three points at 115 kV. Transformers reduce the voltage to a level acceptable for train operations which is then distributed via railroad wayside substations.

### **Waterbury Branch Rail Line (WBL)**

The Waterbury Branch Line (WBL) extends from Waterbury to the interlocking on NHL-ML at Devon. Waterbury branch line trains continue the main line making stops at Stratford and Bridgeport. The WBL consists of six stations, with three located in the Greater Bridgeport Valley Region – Ansonia, Derby/Shelton & Seymour. The 27.1 miles that make up the WBL is non-electrified and single-track, thus resulting in diesel – hauled rail equipment.

### **Need for Signalization & Passing Sidings**

The WBL is maintained at FRA Class 3 track standards. This classification limits speeds on the line to a maximum of 59 mph. The line consists of an unsignalized, non-electrified single track with no passing sidings. Because of the lack of signals, the WBL is considered “dark” territory. These physical characteristics limit and constrain the level of service provided on the line as northbound and southbound trains are unable to pass one another, and, since the WBL is “dark” multiple trains and

cannot operate simultaneously on the line. The most frequent service that can be operated on the WBL is about every two hours in each direction.

### **Rolling Stock**

Locomotives and passenger coaches are referred to as rolling stock. Ownership of rolling stock used along the two lines is split between CTDOT and MTA/MNR.

### **Infrastructure**

CTDOT holds 100% capital responsibility for all fixed infrastructure along the Connecticut portion of the NHL-ML which includes maintenance facilities, numerous rail stations, platforms, tracks, communications and catenary systems and equipment. NHL-ML infrastructure includes the East Bridgeport Rail Yard, which is home to a two-story facility housing Metro-North Railroad offices for track, structures, communications, signals, and coach cleaning operations.

### **Station Parking**

More than 24,000 parking spaces are available among the passenger rail stations located in Connecticut. The number of parking spaces at each station varies, with Bridgeport, Fairfield and Fairfield Metro offering over 1,000 spaces at each station. On the Main Line, the parking utilization rate is extremely high. Parking for rail commuters at NHL-ML stations has been a critical issue for many years. The amount available is constrained at almost every station and actions to expand the supply have been difficult to implement. Parking availability varies at the three WBL stations. Some commuter parking is available in Seymour and Ansonia, while the Derby-Shelton has a large parking lot. Increasing parking capacity at stations along the NHL-ML and the WBL is a vital objective of the state’s strategy to attract and



Stratford rail station, outbound platform.

maintain riders on Connecticut's commuter rail network. Efforts have been completed, are underway and are planned to address commuter parking needs.

### Crossings

The New Haven Main Line consists of approximately 59 crossings in Bridgeport, Fairfield and Stratford, including 46 railroad bridges over roadways, 8 railroad bridges over waterways, 2 moveable railroad bridges over waterways and 3 railroad bridges over structures. Along the Waterbury Branch Line, there are numerous crossings, including road overpasses and at-grade crossings. The WBL crosses over nine public roads and six river crossings. In addition, both the NHL and WBL cross over below-grade structures including culverts, pipes and other underground structures. At-grade crossings of public roads have signs, lights and gates to protect crossing traffic when activated. However, private road crossings are either unprotected or only have signs installed. In either case, there are no active warning systems in place.

## Station Descriptions & Needed Improvements

### New Haven Main Line

#### Stratford

The Stratford Rail Station is in the town center and lies about 4.3 miles west of the Milford station and 3.6 miles east of Bridgeport. The station consists of two wooden structures that date from when the New Haven line was built. A small, in-door waiting area is provided in the inbound station building. No ticket office is available, and passengers need to use a ticket vending machine to purchase tickets or buy them on the train at a premium. High level platforms provide direct boarding access to the trains. A canopy along the inbound platform has recently been installed to replace bus-type shelters. Service at Stratford includes a total of 75 trains stopping each day. Parking at the Stratford station consists of two surface lots. Commuters also park in adjacent private lots and along several nearby streets. As with most NHL-ML stations, parking usage is high. A parking waiting list is maintained by the Town and commuters complain about the lack of parking.

#### Improvements:

- Additional parking: an expansion of the westbound side parking was recently constructed. However, more parking is needed. Past proposals have included a parking garage (abandoned due to cost) and additional surface parking on the eastbound side (abandoned due to the cost of dealing with contaminated material).
- Eastbound side platform extension: would lengthen the platform to better accommodate off-loading of passengers. A canopy extension is also necessary.
- Pave and remediate the north parking lot.





## Bridgeport

The Bridgeport Rail Station in Downtown Bridgeport is about 3.6 miles west of the Stratford station and 1.5 miles east of Fairfield Metro. The station is housed in a concrete air-rights structure over Water Street. It was constructed in the early 1970s and is a component of an intermodal transportation district that includes commuter parking facilities, the new GBT bus terminal and the Water Street Dock (passenger ferry services). Elevated walkways connect the train station with the bus terminal and parking garage. A large passenger waiting area, rail offices and a ticket sales office are located on the second level and provides direct access to inbound (New York) service. A third tower is located on the east side of the main line and contains a small waiting area for outbound (New Haven) passengers. High level platforms provide direct boarding access to the trains and are sufficiently long to handle a 10-unit train. The inbound platform is covered to provide protection from the weather. The outbound platform is unprotected.

The Bridgeport Rail Station is one of the busiest stops on the NHL-ML and is served

by 92 trains each day. Four of these trains are extensions of the Shoreline East service operating between New Haven and New London.

### Bridgeport Intermodal Transportation Center (ITC) Project:

The City of Bridgeport initiated construction of a regional, multi-modal transportation center in Downtown Bridgeport several years ago. The project is intended to improve the connection to the bus terminal, expand commuter parking opportunities, and physically and functionally integrate the various intermodal components. Several elements have been completed and the facilities are connected by an elevated walkway. The concept for a new rail station is being reviewed and a decision will be made to either continue with the project or reallocate funds to other aspects of improving and enhancing the downtown environment in and around the Intermodal Transportation Center (ITC). If the replacement of the rail station is deferred, the existing facility needs to undergo a major renovation and upgrade to ensure its maintenance in a state-of-good-repair. Various electrical, mechanical and structural

Rendering of the Bridgeport ITC Project, ferry entrance looking north.  
Source: BL Companies

elements at the station are being repaired as part of the state's station rehabilitation program. However, additional elements need attention, including installing a canopy along the outbound platform.

In addition to the rehabilitation of the rail station, the area around the station and other components of the ITC need to be enhanced to promote non-motorized modes, foster mobility, facilitate access to multi-modal transportation modes and enhance the aesthetic, visual, physical environment in and around the downtown area. The following actions support the vision of transforming the downtown Bridgeport area into a unique and functioning transit-oriented district:

1. Develop, design and implement a comprehensive sign program for identification, information and wayfinding.
2. Install static and dynamic information signage at the rail station, bus terminal and ferry terminal.
3. Develop, design and implement decorative lighting within the downtown area that complements and supplements existing efforts and illuminates, accentuates and highlights key facilities.
4. Streetscaping and landscaping enhance-

ments along Water Street, Main Street, North and South Frontage Roads, State Street, John Street and Fairfield Avenue.

5. Create a pedestrian friendly and inviting linkage along Main Street, Water Street and Broad Street from the Transit Garage and Harbor Yard Arena area and the ITC, and install lighting that makes these spaces more appealing and less uninviting.
6. Improve the pedestrian safety and access to the Bridgeport Bus Terminal from the downtown area by constructing various traffic calming enhancements including texture pavement treatments and reducing the number of traffic lanes.
7. Improve and enhance the existing rail underpass leading to the Water Street Dock.
8. Install new fencing and reconstruct and reconfigure the diverge area between Water Street and North Frontage Road, add new sidewalks, provide handicapped parking spaces and install a more accessible connection with the rail station.
9. Install artwork on large expanses of fencing along Water Street..

### Bridgeport's Barnum Station

In addition to improvements to existing stations, a second train station has been proposed for the City of Bridgeport. Barnum Station will be located along the Metro-North Railroad New Haven line in East Bridgeport. With a center track platform, the station would accommodate express and local Metro North service, as well as possible Amtrak service.

After the initial feasibility study was completed in 2012, the City of Bridgeport conducted the Barnum Station Transit Oriented Development Plan and the Tower Place Adaptive Reuse Strategy. The station is envisioned as a pedestrian friendly, attractive transit hub

Site of the future Barnum Station Source: Barnum Station Feasibility Study, VHB



that will anchor the station area, unite the East Side, Mill Hill, and East End neighborhoods and link residents to jobs and other destinations in the region. In addition to serving as an anchor for East Bridgeport, the station will also provide over 1,000 parking spaces.

Station components include:

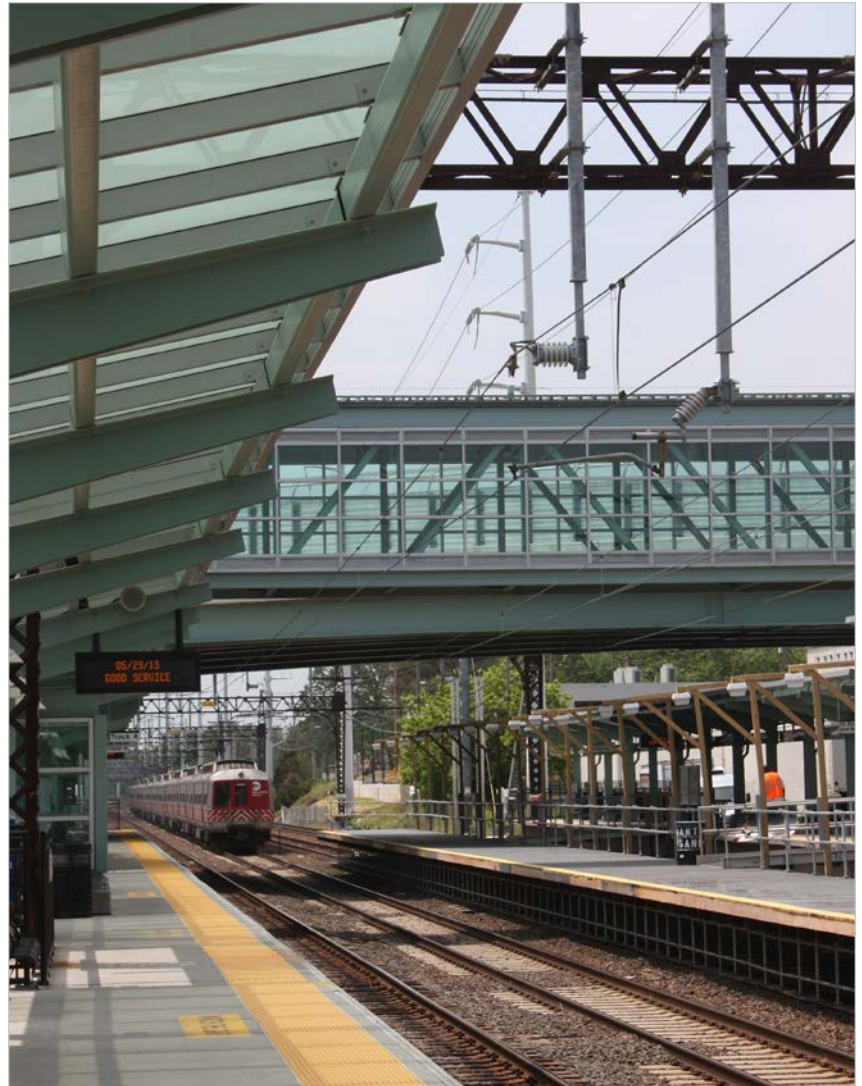
- Attractive, high-quality pedestrian connection to the Yellow Mill Greenway multi-use path under the tracks.
- Distinctive and attractive new bus stop shelters and rail bridges that are integrated with the station design.
- Pedestrian, transit and bike facilities.
- Landscaping improvements along streets adjoining the station site.
- The proposed Barnum Station is further described in Section 10, Intermodal.

### Fairfield

The **Fairfield Metro Station** was constructed on a vacant industrial parcel near the intersection of Commerce Drive and Black Rock Turnpike and at the Bridgeport City Line. It is only about 1.5 miles from the Bridgeport Rail Station. A 1,500-space parking lot for rail commuters was built as part of the project. Longer platforms are provided to accommodate train-sets of eight to ten cars.

**Station Improvements:** Enhanced passenger amenities, including restrooms.

The **Fairfield Rail Station** is located in the town center area, about 4.8 miles west of the Bridgeport station and 1.7 miles east of Southport. Unlike the Stratford and Bridgeport stations, which are located along and have direct access to a state highway, access to the Fairfield rail station is via several short, narrow local roads from US Route 1. The station consists of two wooden structures that date from the time of when the New Haven line was built. The inbound building provides an in-door waiting area



Fairfield Metro Station

and ticket office. However, the ticket office is only open during the morning peak period. High level platforms provide direct boarding access to the trains. Only bus-type shelters are in place along the platforms to protect passengers waiting for trains. New staircases were built in recent years to provide an improved connection between the inbound and outbound platforms.

A total of 80 trains stop at the Fairfield station each day, providing a good level of service. The town provides rail commuters a variety of parking options, including two, large surface lots, one on each side of the tracks, and a nearby satellite lot. A limited amount



A rendering of the proposed rail station in Ansonia.

of on-street parking is available near the station. The town over-subscribes its parking permits and maintains an extensive waiting list. There are a number of non-designated parking areas and private pay facilities in the vicinity of the Fairfield station to supplement the official rail commuter parking lots and handle excess demand.

The **Southport Rail Station** is in the Southport section of Fairfield, in a predominately residential area. It is about 1.7 miles west of the Fairfield town center station and 1.7 miles east of the Greens Farm station in Westport. The station consists of two wooden structures that date from the time of when the New Haven line was built. The buildings are offset by about 700 feet and the pedestrian connection between them is via Railroad Street and an underpass along a narrow sidewalk. No indoor waiting area is provided, and passengers need to purchase tickets on the train. High level platforms provide direct boarding access to the trains, but they can only accommodate four cars at a time. Only bus-type shelters are in place along the

platforms to protect passengers waiting for trains.

Service to and from the Southport station is more limited with only 48 trains stopping each day. Two surface parking lots, one on each side of the tracks, accommodates rail commuters and a nearby church parking is designated as a satellite lot. The lots at the rail station are well utilized but excess space is available at the satellite location.

## Waterbury Branch Line

### Ansonia

The **Ansonia Rail Station** is located on West Main Street in downtown Ansonia, one block from Main Street (Route 115) and along the east bank of the Naugatuck River. The station is not readily accessible from Route 8. Storefronts line the street east of the station and flood control walls line the opposite side of the tracks. Between the flood control wall and the tracks is an abandoned roadway. Weeds have overtaken the old pavement. The boarding area consists of bituminous pavement and a low-level wooden platform.



An old wooden canopy covers the boarding area. Three Plexiglas glass shelters line the boarding and provide some protection for passengers. Several shrubs are planted along the backside of the shelters and partially obscure them from the street. Sidewalks connect the downtown Ansonia area and the station. Commuter parking is available just south of the station. Passenger amenities are limited, and no ticket vending machine is available. One local bus route passes through the Ansonia downtown area and serves the station. It is operated by the New Haven division of CTTransit and connects the lower Valley towns with New Haven.

**Station Improvements:** Construct new station building and waiting area with high level platforms and passenger amenities.

### Seymour

The **Seymour Rail Station** is located on Main Street (Route 115) in the heart of downtown Seymour. The station consists of a low-level platform and a shelter. The shelter is unique among the WBL stations in that it is a brick structure with windows and

sufficient roof overhang to protect patrons from the elements. Parking for commuters is available in front of the station, but patrons to local businesses can also park in the area. Additional commuter parking can be found in nearby mixed-use parking lots. However, commuter rail parking is not readily identified and difficult to find. A two-hour time limit is posted at the lot and the mixed use of spaces restricts parking supply. Access to the station is directly from Main Street, with connections to and from Route 8 nearby. However, way-finding signage is limited and could easily be missed amid the normal sign clutter found in an urban environment. Passenger amenities are limited, and no ticket vending machine is available. One local bus route serves the station; operated by the New Haven division of CTTransit. It connects the lower Valley towns with New Haven. The Town of Seymour is working on a long-term plan to relocate the station from its constrained downtown location to an area north of the downtown as part of a TOD development.

**Station Improvements:** The Town of

A rendering of the proposed rail station in Seymour.



The Derby-Shelton rail station.

Seymour is working on a long-term plan to relocate the station from its constrained downtown location to an area north of the downtown as part of a TOD development. The proposed location is north of Route 67.

### Derby/Shelton

The **Derby-Shelton Rail Station** is located on the eastern edge of downtown Derby and is within walking distance of downtown Shelton, which is about a quarter-mile from the station. It is easily accessible from Route 8 and Route 34. The station is also referred to as the Derby-Shelton Multi-Modal Center (DSMMC) because of the local bus transfer point located at the station. Multi-modal connections are made to fixed-route bus service operated by GBT – Route 15 and Route 23 – and CTTransit New Haven Division – Route 255. The administrative offices and maintenance facility of the Valley Transit District (VTD) are located on the same site as the station. A relatively large parking lot, with space for about 75 vehicles, is available at the station. No fee is required to park at the station. In addition, a canopy covers the low-level platform. The only passenger shelter is a small, unheated Plexiglas shelter.

While the station functions adequately, passenger amenities are minimal. The existing shelter provides only minimal protection from the elements, as it is open on one side. While a station gateway sign has been installed at the entrance to the area, signage directing users to the station and parking is minimal. No ticket-vending kiosk is available, and train and bus information is limited.

**Station Improvements:** Construct station area renovations, including rehabilitation of the building, a new commuter parking lot, bus bays & an intermodal transfer point, information kiosk, high level platforms, accessible walkways and a heated shelter.

### Long Term Programmed Improvements

The Metropolitan Transportation Plan recognizes the importance of commuter rail services to a balanced transportation system and its complementary role in serving the mobility needs of travelers in southwestern Connecticut. It is essential to preserve and maintain commuter rail services, maintain the Metro North New Haven Main Line and the Waterbury Branch Line right-of-way in a state of good repair, and modernize, rehabilitate and replace equipment and trains consistently. Over 8,100 commuters board New Haven line trains from the region bound to points west. The line is critical to the economic well-being of the region and provides a major link to the core of the New York metropolitan area and the global market. The region's economy relies on this connection and linkage. Along the NHL-ML, high frequency, high capacity and fast service to and from New York City, with multi-modal access to rail stations is crucial. A modernized WBL, with improved service, upgraded stations, and increased parking is necessary to serve the Naugatuck Valley.

System wide programmed improvements to the Metro North service area include real-time information at the stations, a new fleet, and upgraded ticket vending machines. Real-time information will be installed at all NHML stations by the end of 2020. CTDOT has estimated that \$902 million will be needed to ramp up the entire fleet and has spent \$10 million on designing and procuring the new M-8 rail fleet.

Long term programmed improvements, as part of the 30 year plan for Let's Go CT!, include improving service on the branch lines, providing feeder bus routes to rail stations, new diesel fleet equipment, fleet expansion, and maintenance facilities and yards on the branch lines. To improve service along the main line and branch lines the fleet of diesel equipment will be replaced and expanded at a cost of \$530 million over the next 30 years. CTDOT is analyzing diesel hauled equipment purchases to replace the aging fleet and is planning to phase in purchases based on need and funding availability.

The following programs and projects represent Preservation and Enhancement along the rail corridor of the Greater Bridgeport & Valley Metropolitan Planning Organization:

## New Haven Main Line

### Station Improvements

- **New Stations and Parking:** Construct new stations and parking on NHL-ML. Includes construction of new stations in Bridgeport (Barnum) and Milford (Devon).
- **Stations/Parking:** Systemwide Technology Upgrades for Rail at Stations
- **Existing Station and Parking Improvements:** Improvements and upgrades to existing stations and parking on the New Haven Line, including mainline and branch line improvements.



### Rolling Stock:

- **Electric Fleet Midlife Overhauls & Replacements:** Critical systems replacement of existing electric fleet on New Haven Line to maintain a state of good repair (Connecticut's share).
- **Electric Fleet Replacement:** Future life-cycle replacement of existing electric fleet for use on the New Haven Line (Connecticut's share).
- **Diesel Fleet Replacement:** Replace existing diesel locomotive and coaches for use on the New Haven Line.
- **Electric Fleet Expansion:** Expansion of existing electric fleet for use on the New Haven Line.
- **Diesel Fleet Expansion:** Expansion of existing diesel locomotives and coaches for use on the New Haven Line, including mainline and branch lines.

### Infrastructure & Equipment:

- **Maintenance Facility and Yard Improvements:** Rehab and improve existing rail maintenance facilities and yards on the New Haven Line, including Bridgeport.

Fixed-rail bridge through Downtown Stratford with an M-8 rail car.



Catenary system in Bridgeport

- **Communications and Signal Upgrades – State of Good Repair:** Upgrade rail communications and signals on the New Haven Line to reach a state of good repair (SOGR). Upgrades include positive train control (PTC), network infrastructure and upgrades, communication and signal system replacements and rail communications and signal improvements for mainline and branch lines.
- **Catenary Replacements and Power Upgrades:** Life cycle replacement of superstructure and wiring (includes substations) due to age and condition.
- **Fixed Rail Bridges – State of Good Repair:** Rehab and or replace all fixed rail bridges on the New Haven Line to attain state of good repair. This includes all fixed rail bridges on mainline and branch lines.
- **Moveable Rail Bridges – State of Good Repair:** Rehab and/or replace all moveable rail bridges on New Haven Line to attain state of good repair.
- **Rail Track Improvements – State of Good Repair:** Improvements and upgrades to existing tracks on the New

Haven Line including concrete tie repair, interlocking, drainage, track, ties, rail and road bed.

- **New Rail Maintenance Facilities and Yards on Branch Lines:** Construction of new rail maintenance facilities and yards on the New Haven Line (NHL) branch lines will allow for expanded branch line rail service to and from mainline.
- **Full Capacity New Haven Line:** Realign Connecticut's existing tracks and stations between New Haven and New York to provide significant frequency and speed enhancements on the New Haven Line. This project would result in a two-track local and two-track express service on the mainline, with center island platforms at key locations between New Haven and New York. It includes communications and signal enhancements.

### Waterbury Branch Line (WBL)

CTDOT has committed to the design and installation of a Central Traffic Control (CTC) system along the WBL (in design) and construction of by-pass sidings along four sections of track – north of the Devon wye (Milford), Derby, Beacon Falls and south of Waterbury. Full signalization, in conjunction with installing Positive Train Control, is expected to be implemented by the end of 2019 and will allow for communication to occur whereby opposing trains can safely divert and communicate with each other on the line. The signal system, which would be controlled by rail traffic controllers at the existing GCT Dispatch Center, would allow two trains heading in the same direction to operate on the branch at the same time. The passing sidings would be fully integrated with the signal system to allow trains to enter and exit the sidings seamlessly. These projects will permit more frequent service and allow trains to operate on the line simultaneously in opposite directions.



Specifically, for the Waterbury branch line service, the aging fleet of locomotives and coaches currently operating on the line require replacement. To take advantage of the new signalization system and passing sidings, at least three new train sets, consisting of a locomotive, a push-pull cab and two passenger coaches, are needed. Each new train set is estimated at \$16 million.

Recent capital improvements include creating a new passenger entrance and off-street passenger drop zone at the Waterbury Station, improvements to the New Haven Storage Yard, upgrading of crossings, and the deployment of a mobile ticketing platform. In 2014 the SNET Building was demolished at the Waterbury Station and a new passenger entrance was added; The project included increased parking.

### **Storage & Servicing Yard in Waterbury**

To increase ridership on the WBL and divert commuters from their vehicles, the infrastructure, equipment and facilities along the WBL needs to be replaced, upgraded and enhanced. While the new signal system and by-pass sidings will permit more trains to operate on the WBL, additional trainsets are required to provide the increased service. However, the critical limiting factor is the lack of equipment storage and servicing space. Currently, equipment operated on the WBL is serviced, fueled and stored at the Stamford yard, and there is no available capacity to accommodate an increase in the fleet. Yard constraints are a systemwide problem and not limited to the Stamford yard. The preferred alternative would be constructing a new storage and servicing yard along WBL.

### **Permanent Devon Transfer Station**

A critical goal of the MTP is to improve operations along the WBL. Despite the future ability to operate more trains, a limiting issue will continue to be the number of available



Existing train set on the Waterbury Branch Line.

slots on the New Haven main line. While more trains could operate on the WBL after signals are installed, increasing the number of trains with direct service to Bridgeport or Stamford may not be possible. In addition, the existing interlocking at Devon between the NH-ML and the WBL does not allow service to New Haven. WBL passengers wishing to travel to New Haven must continue west to Bridgeport, and transfer to an outbound train and backtrack toward New Haven. The schedules are not set up to coordinate this inbound-to-outbound connection.

To increase the frequency of service on the WBL and expand potential transfers and connections with NHLML trains, construction of a new, permanent transfer station at the Devon junction is recommended. The new station would provide the ability to increase service to mainline destinations without taking up additional schedule slots on the New Haven Line. Waterbury branch line service would be altered to operate more like a shuttle service. Operations would terminate trains at Devon and the schedule would be retooled to facilitate the transfers. Southbound WBL trains would arrive at Devon several min-

utes before a NHLML train is due to arrive. Similarly, northbound trains would depart Devon after the arrival of a NHLML train. The new Devon station would also allow WBL riders to access outbound trains and travel to New Haven without the need to travel in the opposite direction to Bridgeport.

In addition to the expanded shuttle-type service, some WBL trains would continue as through trains on the main line to provide direct service to Bridgeport and Stamford.

The proposed alternative would locate a new Devon station within the Devon “wye” between the WBL track and the interlocking with Track 3 (inbound, local track) of the NHLML. High level platforms would be installed along the WBL track and the inbound and outbound local tracks on the NHLML. The platforms would be connected to provide seamless transfers. The NHLML platforms would be connected via an elevated up-and-over walkway. The connection will require the installation of elevators on both platforms to ensure it is fully accessible. Vehicle parking would be minimal and limited. While a vehicle drop-off and pick-up drive would be provided from Naugatuck Avenue, the intent is to limit access to the station primarily to passengers transferring between the WBL and NHLML trains. However, given the proximity of residential neighborhoods, pedestrian access would be accommodated.

The bridge carrying Naugatuck Avenue over the NHLML is scheduled to be replaced as part of the planned Devon draw bridge project. The design of this project has not yet started. This presents an opportunity to incorporate the proposed Devon transfer station concept into the Naugatuck Avenue Bridge replacement project to ensure access from Naugatuck Avenue into the site and assess the feasibility of using the bridge as the “up-and-over” between the two platforms.

#### List of Improvements:

- **Purchase of three new locomotives and train sets** (2 coaches + 1 push-pull cab) to operate on the WBL to expand service; Purchase of four new locomotives and train sets (2 coaches + 1 push-pull cab) to operate on the WBL to replace old equipment.
- **Operations:** Expand Service along the Waterbury Branch Line to provide 30-minute headways during the AM & PM peak periods.
- **Track Modernization Program:** Replace ties, install continuously welded rail, and maintain bed.

## Rail Transit Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>New Haven Line</b>					
Bridgeport	NHL - New Stations/Parking - Barnum	State/Federal	\$100,000,000		
Bridgeport	Moveable Bridges - PECK Replacement	State/Federal			\$1,500,000,000
Milford & Stratford	0301-0168: Devon Movable Bridge (Additional PE), Capital Plan	5307/5337	\$28,750,000		
Milford & Stratford	0083-0267: Moveable Bridges, Devon Replacement	State/Federal	\$50,000,000	\$1,300,000,000	
Milford	New Stations/Parking - Devon	State/Federal		\$100,000,000	
GBVMPO Region	Replace, rehabilitate and restore various bridges determined to be deficient.		\$15,000,000	\$15,000,000	\$20,000,000
Various	Rail Yard Improvements Statewide	State/Federal			\$905,000,000
Various	Fixed Bridge SOGR	State/Federal	\$50,000,000	\$700,000,000	\$625,000,000
Various	Communications/Signal Upgrades SOGR	State/Federal	\$138,000,000	\$272,500,000	\$1,200,000,000
Various	Track Improvements SOGR	State/Federal	\$110,000,000	\$130,000,000	\$340,000,000
Various	Catenary SOGR / Power Upgrades	State/Federal	\$15,000,000	\$10,000,000	\$10,000,000
Various	Stations/Parking-Systemwide Technology Upgrades for Rail at Stations	State/Federal	\$73,000,000		\$10,000,000
Various	Stations/Parking - Improvement Program	State/Federal	\$10,000,000	\$20,000,000	\$50,000,000
Various	New Rail Maintenance Facility and Yard for Intercity Rail Service	State/Federal	\$50,000,000		\$20,000,000
Various	Full Capacity New Haven Line Service	State/Federal			\$270,000,000
Various	Future Station Improvements for More Efficient Express Service to NYC	State/Federal		\$3,000,000	\$297,000,000
Various	Electric Fleet Mid-Life Overhauls & Replacements	State			\$1,400,000,000
Various	0301-0154: Signal System Replacement Phases 3 & 4, Capital Plan	5307/5337	\$146,875,000	\$25,000,000	

\* Known funding sources

## Rail Transit Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Waterbury Branch Line</b>					
Ansonia	Ansonia Station: Construct new station building and waiting area with high level platforms and passenger amenities	5309		\$25,000,000	
Derby/ Shelton	Construct station area renovations, including rehabilitation of building, new commuter parking lot, bus bays & inter-modal transfer point, information kiosk, high level platforms, accessible walkways and heated shelter.	5309	\$25,000,000		
Seymour	Relocate the Seymour rail station to north of Route 67 as part of TOD redevelopment project	5309	\$25,000,000		
Various	Purchase three new locomotives and train sets (2 coaches + 1 push-pull) to operate on the WBL to expand service	5309/State		\$48,000,000	
Various	Purchase four new locomotives and train sets (2 coaches + 1 push-pull) to operate on the WBL to replace old equipment	5309/State		\$64,000,000	
Various	Operations: Expand service along the WBL to provide 30-minute headways during the AM & PM peak periods	State		\$10,500,000	\$52,326,000
Various	Annual track modernization program – replace ties, install continuously welded rail, and maintain bed	State	\$10,000,000	\$20,000,000	\$20,000,000
Various	High Level Platforms	State/Federal		\$150,000,000	\$50,000,000
Waterbury	New Rail Storage Yard	State/Federal		\$5,000,000	\$50,000,000
<b>Freight Network</b>					
Statewide	Annual Funding Program (SOGR)	State	\$30,000,000	\$10,000,000	

\* Known funding sources

# 7: Active Transportation

## Benefits of Active Transportation

Active transportation is a low-cost, healthy and sustainable form of transportation that accommodates almost all users. A multi-modal transportation system integrates **safe, accessible and efficient facilities for pedestrian and bicyclists**, both as part of the road and transit network and as stand-alone infrastructure.

## Infrastructure Oriented to People

Often, driving is the most safe and convenient method of travel, since much of the current transportation system is oriented to the automobile. Many of the transportation improvements and infrastructure investments that occurred in the 20th century focused on **the efficient flow of traffic**. **Overbuilt roadways, multiple lanes of travel, exclusive turn lanes, and traffic signal phasing typically favor vehicles**. The resulting infrastructure encourages high vehicle speeds but provides few accommodations for bicyclists and pedestrians.

## Statewide Policies & Programs

If provided safe and attractive facilities, people will bike and walk more. Regardless of the mode of travel, even vehicular trips require some time spent walking, typically **at the first or last mile**. Federal transportation acts have provided dedicated funding for active transportation projects and new Connecticut policies require transportation projects to consider the needs of bicyclists and pedestrians. **Specific changes to state policies and how transportation projects consider the needs of pedestrians and bicyclists include:**

### Connecticut Bicycle and Pedestrian

**Advisory Board:** The Board was established in 2009 by Public Act 09-154 and codified in the General Statutes as Section 13b-13a. Its primary duties are to examine the need for pedestrian and bicycle transportation, promote pedestrian and bicycle programs and advise state agencies on policies, programs and facilities for bicyclists and pedestrians. CTDOT is required to assist the Board in carrying out its responsibilities.

**Complete Streets Policy:** In accordance with state General Statute Section 13a-153f (a)(d), CTDOT prepared and executed a policy statement to consider users of all abilities and ages in the planning, programming, design and construction of all road projects. The policy was signed in October, 2014.

### Bicycle and Pedestrian Travel Needs

**Assessment Form:** To demonstrate that the needs of users of all ages and abilities are considered in the planning, design and construction of all road projects, in accordance of the Complete Streets Policy, CTDOT requires the completion of this form.

**Share the Road CT:** Effective October, 2008, Connecticut requires motorists to allow at least three feet of separation when overtaking and passing cyclists. **Failure to do so could cause motorists to receive a fine under the motor vehicle code "failure to grant the right of way to a bicycle" (14-242)**. The Share the Road program strives to improve the knowledge of all roadway users and promote safe travel and minimize the likelihood of crashes.

**Bicycle Safety Bill:** This law, enacted as Public Act 15-41, requires bicyclists to ride as close to the right side of the road "as is safe, as judged by the cyclist." This supersedes the previous law that required cyclists to ride



Stratford Center

as far right “as practicable”, which could have included instances where a bicyclist is preparing to make a left turn at an intersection or onto a private road. Drivers are also allowed to cross double yellow lines to pass slower moving bicyclists when it’s safe to do so. Additionally, this law allows two-way bicycle lanes, buffered bike lanes, and cycle tracks to be designed in Connecticut.

**Community Connectivity Program:** As part of the Let’s Go CT! program, CTDOT initiated the Community Connectivity Program. It focuses on improving pedestrian and bicyclist safety by implementing various low-cost road, sidewalk and intersection projects. The first step was the conduct of Road Safety Audits to identify problems and develop low- and high-cost actions to address safety deficiencies. Statewide, 80 RSA’s were conducted. Subsequently, funding was provided to construct projects ranging in cost between \$75,000 and \$400,000, with funding provided to 40 cities and towns across the state.

The GBVMPO is committed to providing

an active transportation system that will accommodate a range of different skills and abilities. This section of the MTP will identify projects that:

- Connect activity centers and provide safe connections between where people live and where they want to go with well-defined, continuous and direct pathways.
- Accommodate bicycle users on the existing highway system in a safe manner.
- Install pedestrian enhancements, provide well-maintained, accessible sidewalks, and implement other ADA compliant features, such as curb ramps and audible pedestrian signals.
- Continue the development of a connected, shared use trail system.
- Utilize a context sensitive approach during the planning, design and enhancement of active transportation facilities, which identifies the unique needs of each place and considers a range of solutions.
- Calm and slow traffic.
- Encourage access management as parcels and sites are redeveloped.

## On-Road Accommodations for Pedestrians & Bicyclists

### Complete Streets

A complete street is designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Integrating the complete streets model into the transportation system requires changes to how the street environment is planned, designed and built, as well as how it is used.

In addition to sidewalks, a complete street implementation extends beyond the pavement to include space along the roadway. Wide streets with little or no landscaping

induce drivers to travel quickly through the area and provide no sense of place. Suitable landscaping has the effect of “visually” narrowing the road with a more pleasant street environment. Each complete street implementation is unique and utilizes a context sensitive approach.

### **Complete streets elements typically include:**

- Bicycle facilities: bicycle routes and lanes, signage, bicycle racks, and appropriate pavement markings and symbols.
- Bus features and amenities: bus pull-outs, shelters, and clear and accessible paths.
- Pedestrian enhancements: crosswalks, signal enhancements, curb ramps, and sidewalks.
- Traffic calming actions: textured material, intersection bump-outs, curb extensions, center refuge islands, and raised intersection tables.
- Streetscape environment: appropriate trees, landscaping, bio-swales and rain gardens, permeable paving material, and buffers between the street and sidewalk.
- ADA compliant features: curb ramps, detectable tactile cues and warnings, accessible pedestrian signals, and longer walk intervals.
- On-street parking treatments: delineated parking spaces and curb/sidewalk bump-outs.
- Access management: driveway consolidations, modifications and closures.

### **Traffic Calming**

Traffic Calming actions utilize an engineering approach to slow traffic speeds and/or divert traffic. Traffic problems are perceived differently depending on the location and function of the road. Motorists want efficient operations and to be able to travel at a good rate of speed. Often, these objectives are counter

to the quality of life for residential neighborhoods and non-motorized users. In areas with a large residential population, or with a significant number of bicyclists and pedestrians, short travel times and minimal congestion for drivers must be balanced by slower speeds, fewer cars and quieter streets.

Each traffic-calming project is different and addresses specific local concerns. Often, physical devices are installed in the roadway to cause a change in driver behavior and improve the conditions for non-motorized street users. Projects should only be implemented after a thorough investigation.

### **The key elements of Traffic Calming are:**

- Volume control measures that divert some or all of the traffic in a different direction: street closures, diverters, median barriers and forced turn islands.
- Vertical speed control measures that force traffic to slow down: speed humps, speed tables, raised crosswalks, raised intersections and textured pavement.
- Horizontal speed control measures that deflect the movement of traffic: mini traffic circles, chicanes, lateral shifts and realigned intersections.
- Road narrowing speed control measures that affect the driver's perception of road width: neck downs, center islands and chokers.
- Modern roundabouts.
- Reallocation of roadway width: converting one-way streets to two-way, creating “gateways” and installing bicycle lanes.

### **Safe Routes to School Program**

Previously a standalone program, the federal Safe Routes to School Program (SRTS) now falls under the Transportation Alternative Program. The focus of SRTS is on the school environment and the travel paths of students from home to school. The SRTS program is local and is targeted to an individual school.

It requires the active participation and commitment of parents, teachers, and school administrators, as well as a local transportation/traffic engineer. Since improvements should reflect the issues, concerns and needs of the students walking and bicycling to a specific school, the SRTS team must have a complete understanding of conditions in the school's vicinity. Possible SRTS physical improvements encompass a wide range of pedestrian enhancements and traffic calming actions as well as education and encouragement programs.

As the SRTS is led by a specific school community, the projects detailed in this section were not developed through the SRTS process. However, these projects take into account the safety and access needs of all users, including students on their way to school.

### On-Road Bicycle Facilities

Sidewalks are designed for pedestrians and for their speed and maneuverability. Sidewalks are not considered acceptable for use by most bicyclists and designating a sidewalk as a bicycle path is not a satisfactory policy. The higher speeds of bicycles cannot be safely accommodated on sidewalks. The commingling of pedestrians and bicyclists can result in conflicts. Sudden changes in direction by pedestrians leave bicyclists little time to react and pedestrian are sometimes uncertain where on-coming bicyclists are going.

To a varying extent, bicycles will be ridden on all roadways where they are permitted. Therefore, the most common bikeway is a shared roadway facility. All roads open to bicyclists should incorporate design treatments that will enhance bicycle riding qualities and should be maintained and upgraded to ensure bicycle travel can occur safely and conveniently. Bicycle accommodations also depend on the type of road and character-

istics of traffic. On low volume, residential streets, bicyclists can easily become integrated with the few vehicles on the road and may not require any separation. The road is a shared-space used by vehicles, bicyclists and pedestrians. At the other end of the road system, special treatments are necessary and greater separation is required to accommodate bicyclists on higher-volume, higher-speed arterials.

### Bicyclist Skills & Abilities

Bicyclists can be grouped into one of three categories, ranging from young children to the advanced bicyclist. In between are basic bicyclists who represent the average adult rider. Because of their abilities, advanced bicyclists can best be and more easily accommodated on existing roads with the proper accommodations. They are generally able to operate within the road's right-of-way and under most traffic conditions. The design treatments necessary to accommodate both basic bicyclists and children are similar, as they are generally less confident of their ability to ride in traffic and feel unsafe riding on higher volume and higher speed roads. They prefer low volume, low speed roads or designated bicycle facilities with well-defined separation from motorized vehicles. These riders are often best served by a network of neighborhood streets and designated bicycle facilities.

The adopted design approach reflects the skill of the bicyclist and traffic characteristics of the adjacent roadway. The minimum operating space of a bicyclist is assumed to be about 40 inches, resulting in a minimum width for a bicycle facility of four feet. The vertical clearance from any overhead obstructions should be at least 100 inches, or a little more than eight feet. High traffic volumes and operating speeds represent greater potential risk from passing motorized vehicles. Generally, the higher the traffic



volume and speed, the greater need to implement more extensive design treatments to accommodate basic bicyclists. Children and young bicyclists should avoid these roads all together.

## Bicycle Facilities

Shared roadway facilities and bicycle lanes are located on-the-road and either share space with motorized vehicles or occupy an exclusive space along the edge of the road. Shared use paths are specialized, off-road facilities on a separate right-of-way that accommodate multiple users. The types of shared-road bicycle facilities include:

- **Bicycle Route:** Provides the minimum level of route designation and separation from motorized vehicles. Bicyclists share the road with motorized traffic and are carried in the same direction of traffic. No special treatments are made at intersections or where there is on-street parking. These facilities are most often designated with a standard bicycle route sign along both sides of the road and need to be at least four feet wide. A five-foot width is necessary if a guard rail is present.
- **Shared Roadway:** The bicycle uses the same lane as motorized vehicles and are acceptable in low volume, low speed neighborhoods. These generally do not require special signing unless the road is used to connect special bicycle facilities.
- **Wide Shoulder Lane:** The bicycle uses the curb edge of an outside travel lane that is sufficiently wide (at least 14 feet) to accommodate both motorized vehicles and bicycles.
- **Shoulder Bikeway:** The bicyclist uses the paved portion of the road to the right of the edge line. The shoulder lane provides some level of separation between traffic and bicycles because of the edge line.



A bike rack by the GBT station in Downtown Bridgeport

- **Bicycle lane:** Defined as the portion of the road specifically designated by striping and signing for preferential or exclusive use by bicycles. Bicycle lanes are always one-way facilities and carry bicycles in the same direction as adjacent traffic lanes. Parking within the bike lane is prohibited. Where on-street parking is designated, the parking lane should be located to the right of the bicycle lane with the bicycle lane between the travel and parking lanes. The minimum width of a bicycle lane is five feet. At intersections, the striping and signing must encourage positioning bicyclists in the proper lane whether to go straight, turn left or turn right
- **Shared Lane Pavement Marking:** When the lane is not wide enough to accommodate another type of on-road bicycle facility as described above, a Shared Lane Marking may be used to assist bicyclists with lateral positioning in a shared lane that is too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane. The marking also alerts road users of the lateral location bicyclists that are likely to be sharing the traveled way, encourages safe passing of bicyclists by motorists, and reduces the incidence of wrong-

way bicycling. It is commonly referred to as a “sharrow.” The MUCTD provides guidance on the appropriate use of the shared lane marking. The symbol should not be placed on roadways that have travel lanes at least fourteen feet wide or where the speed limit is above 35 mph. The symbol should not be used on shoulders or designated bicycle routes or lanes.

The following projects, policies and plans will improve the road system to enable safe, convenient, and comfortable travel and access for users of all ages and abilities regardless of their transportation mode.

### Bridgeport

MetroCOG assisted the City of Bridgeport with a **Complete Streets Policy and Plan** in 2012. Several corridors were evaluated for the feasibility of installing bicycle lanes and the practicality of using permeable paving material instead of non-pervious asphalt. The plan recommended several immediate actions to serve as demonstration projects for the effectiveness of implementing complete streets city-wide.

**Ash Creek Pedestrian Bridge (between the Black Rock Neighborhood & Fairfield Metro Station, L015-0001):** Ash Creek separates the City of Bridgeport’s Black Rock neighborhood from the Fairfield Metro

Rail Station. The station is located in the Town of Fairfield and residents of the Black Rock neighborhood do not have safe and direct pedestrian access. Currently, the most convenient route to the station has heavy vehicular traffic and narrow sidewalks. Those with limited mobility are especially challenged by these conditions and face additional difficulties due to obstructions along sidewalks. A pedestrian bridge over Ash Creek will connect Black Rock with the Fairfield Metro station and Metro North’s New Haven line.

This LOTCIP funded project will construct a pedestrian bridge from Fox Street in Bridgeport, across Ash Creek and to an existing trail in Fairfield which leads to the Fairfield Metro station. Complete streets will be implemented on Fox Street to provide accessible travel from Fairfield Avenue to the bridge. The project is based on concepts developed through the Ash Creek Bridge Feasibility Study, which was completed in 2014.

### Easton

**Route 59:** Implement Complete Streets at the Town Center (Center Road) to include pedestrian enhancements, bicycle facilities, streetscapes, ADA compliant features and traffic calming measures.

**Shared, multi-use trail:** From Flat Rock Road, to Keller Middle School and the Town

A concept for the bridge over Ash Creek would connect Bridgeport’s Black Rock neighborhood to the Fairfield Metro Center.





Center (Center Road). The trail would continue along Center Road to the Town Hall/Library, then along Morehouse Road to Staples Elementary school, and along Banks Road to the Town Center. The trail would connect students with safe access from home to school by walking and bicycling. Further project development is a good candidate for the Safe Routes to School process.

## Fairfield

The **Fairfield Complete Streets Policy** was endorsed in 2018. The policy covers all users of the streets in town to ensure that each has a safe, efficient, and comfortable passage. The policy recognizes that users include children, seniors, people of all abilities, people of all incomes, commercial vehicles, emergency responders, and freight. The policy addresses streets and other travel ways, bridges, lighting, trails and sidewalks. In addition to project prioritization, the policy covers new construction within the town's roadways, maintenance, and reconstruction of transportation infrastructure.

The Policy was influenced by the **Fairfield Bicycle and Pedestrian Plan**. Endorsed by the Town in 2013, MetroCOG (as GBRPA) assisted the town's bicycle and pedestrian

advisory committee in developing a town-wide plan to install, enhance and provide bicycle and pedestrian facilities. The planning effort was expanded to include complete streets concepts and principles. The committee sponsored an opinion survey of town residents on their concerns regarding biking and walking in town, the need to improve facilities and willingness to support construction of new facilities. Public charettes were conducted to identify critical target areas and develop near-term demonstration projects.

Fairfield continues to implement recommendations from the Bicycle and Pedestrian Plan. Even prior to the endorsement of the Complete Streets Policy, the Town has been proactive in their implementation of Complete Streets.

**Improvements along King's Highway** have been jointly funded through LOTCIP (L050-0001) and federal (0050-0218) funds. Located within 3/4 of a mile of the Fairfield Metro Rail Station, the existing sidewalk facilities along Kings Highway East were in poor condition. Pedestrian improvements have been made along both sides of Kings Highway East, from Brentwood Avenue north to Fairchild Avenue and Villa Avenue.

Potential development and associated improvements for Commerce and King's Highway in Fairfield.  
Source: Goody Clancy

Improvements included sidewalk replacement, new concrete curbing and ADA ramps, enhancement of center medians, pedestrian signal improvements and street and bicycle amenities.

In the future, this project should be extended from Villa Avenue to the Bridgeport city line.

**Southport, Route 1, Westport line to Renell Drive:** The Town was recently awarded a Community Connectivity grant to jump start construction of this long-term project along Route 1. The first project phase will combine confusing traffic islands by eliminating some access lanes, realign intersections, reduce excessive pavement width, and add green infrastructure, landscaping, streetscape, transit and pedestrian improvements. The feasibility of bike lanes will also be assessed. Improvements are based on a 2017 Road Safety Audit.

**Grasmere neighborhood, Route 130, from the Route 1 rotary to the Bridgeport city line:** This project was approved for LOTCIP funding; planned improvements are based on a 2017 Road Safety Audit. Improvements will include pedestrian/bicycle access, safety and the visual appearance of the neighborhood. Streets include Post Road, Grasmere Avenue, Kings Highway East and the Post Road “jughandle.”

**Black Rock Turnpike Safety Study:** A key component of this study is to improve the safety of pedestrians, transit users and bicyclists along this heavily travelled corridor. Although bicycling and pedestrian use is relatively light when compared against the volume of vehicular traffic, non-motorized activity is present and would likely be higher if conditions to improve the comfort and safety of those travel modes were made.

The concepts developed through the study include additional pedestrian crossings with protected signal phases and pedestrian

refuge islands. By reducing the number of travel lanes and slowing traffic speeds with roundabouts and other traffic calming features, pedestrians can more confidently and comfortably walk along and cross Black Rock Turnpike. The overall plan is highlighted in the Highways section.

**Fairfield Woods Road:** add sidewalks.

## Stratford

**Stratford’s Complete Streets Policy** was endorsed in 2017. To the maximum extent practical, the Town will utilize this policy to design, construct, maintain, and operate streets to provide for a comprehensive and integrated street network of facilities to achieve the following objectives:

- Increase safety and access for all ages, abilities, and modes.
- Create better connections between residential and commercial areas.
- Ensure Stratford Center will support future development and growth.
- Improve access to and between public transit systems (e.g., rail and bus).
- Develop safe routes to school for students.
- Explore design interventions that create a sense of place, reflect the character of Stratford’s different neighborhoods, and evoke a sense of safety and vibrancy.
- Soften existing barriers (e.g., I-95 and rail corridor).
- Embrace Stratford’s cultural arts, history, and natural resources.
- Integrate traffic calming measures to slow traffic and encourage active transportation in key areas.
- Incorporate green infrastructure, and support of the town’s MS4 program for stormwater management.

The Policy was a recommendation of the **Stratford Complete Streets Plan**, which

identified strategies to connect residential and commercial areas, support multiple modes of transportation, increase safety and accessibility, and foster healthy lifestyles. The study area for the Complete Streets Plan included all streets within a one-half mile radius of the Stratford Rail Station. In order to address connectivity between Stratford Center and neighboring residential and commercial areas, the study area extended north along Main Street to Paradise Green and northwest along Nichols Avenue to Lincoln Street. Site-specific analysis and design recommendations focused on nine key street corridors, all of which provide connectivity between local and regional destinations.

The plan was finalized in 2017 and the recommendations for **Main Street (Route 113) between East Broadway and Barnum Avenue** are in design, with construction funds secured through LOTCIP. The project will narrow Main Street from four lanes to three, expand sidewalks, increase the landscaped buffer, and add buffered bike lanes. Green infrastructure and other traffic calming elements will be installed, as well as ADA compliant crossings and bicycle/pedestrian safety enhancements. Future projects recommended by the Plan include:

**Main Street/Route 113:**

- **Barnum Avenue to Fenelon Place:** Narrow Main Street from four lanes to three, add buffered bike lanes, expand sidewalks and increase the landscaped buffer. Green infrastructure and other traffic calming elements will be installed, as well as ADA compliant crossings and bicycle/pedestrian safety enhancements. Potentially realign Huntington Road.
- **East Broadway to Stratford Avenue:** Narrow travel lanes, add buffered bike lanes, expand sidewalks and add ADA compliant crossings and bicycle/pedestrian safety enhancements.



**Broad Street, from Ferry Boulevard West to Linden Avenue:** Install a 10-foot wide multi-use path on the south side of Broad Street and a buffered sidewalk along the north side. On West Broad Street, narrow travel lanes to provide space for 6-foot east and west bound bike lanes, expand sidewalks under I-95 into 10-foot multi-use paths and add bicycle/pedestrian safety enhancements. ADA compliant crossings should be added in appropriate locations.

**Ferry Boulevard /Route 130 from Main Street to I-95 exit 33 off-ramp:** Narrow travel lanes, add buffered sidewalks to both sides of the street, install a two-way bike lane separated by a vegetated buffer, add ADA compliant crossings and bicycle/pedestrian safety enhancements, and install green infrastructure and other traffic calming elements.

**Nichols Avenue/Route 108, from Barnum Avenue North to Lincoln Street:** Install separated bicycle and pedestrian facilities where space allows. In constrained areas, merge facilities into a multi-use path. Add ADA com-

Rendering of Main Street south of the I-95 overpass in Stratford. Source: ALTA



Enhancement plan for the Long Hill Green and Village District, Trumbull. Source: Stantec

pliant crossings and bicycle/pedestrian safety enhancements, and install green infrastructure and other traffic calming elements.

In addition to the Complete Streets Plan for the Stratford Center area, Complete Streets should be implemented along Honeyspot Road, Barnum Avenue (Route 1), Stratford Avenue (Route 130) and Lordship Boulevard (Route 130).

The **Route 110 Planning and Engineering Study** recommends several pedestrian and bicycle accommodations, including bus stops with shelter amenities on both sides of Route 110 and a shared-use path with additional in-fill sidewalk:

- At the realigned Main Street – Putney intersection, the shared use path would cross to the east side of Route 110 to the Route 15 southbound off-ramp.
- The shared use path would cross to the western side of Route 110 at the Navajo Lane/ Route 15 southbound off-ramp and would continue north of Warner Hill Road.

- On the eastern side of Route 110, a sidewalk would be provided from the Route 15 southbound off-ramp and past the realigned Sikorsky Gate #1 to a bus shelter.
- A tunnel would be installed on the eastern abutment of the Merritt Parkway overpass to accommodate the shared path.

## Trumbull

**Long Hill Green & Village District Enhancement Plan.** Located along Route 111, Long Hill Green is a neighborhood commercial center in Trumbull which currently does not provide suitable access for bicyclists and pedestrians. Excessive curb cuts, a narrow sidewalk network with intermittent gaps, and no crosswalks are exacerbated by periods of high traffic congestion. The area also lacks bike lanes. Recent developments have created an opportunity to realize a distinct village destination and community gathering area (the Village Green) which can accommodate all modes of transportation.

A continuous network of sidewalks, radiating from the Village Green, to Route 111 and local roads would improve connectivity for nearby residents. A signalized intersection, exclusive left turn lane and crosswalk at Main Street and Whitney Avenue would further improve pedestrian safety and comfort while reducing traffic congestion. Additional improvements include reduced shoulders to accommodate wider sidewalks (and encourage lower speeds) and a connection to the Pequonnock River Trail (PRT).

**Spring Hill Road/Tashua Road Realignment** will include a Complete Street concept to provide access to the Pequonnock River Trail.

**Route 111 & Whitney Avenue:** The traffic light installation project will include a Complete Street concept with sidewalks to connect major commercial development to residential developments.

## Regional Projects

### **Bridgeport, Fairfield, Stratford & Trumbull, Old Town Road:**

Old Town Road is on the border of Trumbull and Bridgeport and is a major east/west corridor alongside the Merritt Parkway connecting major developments, such as Sacred Heart University and the Trumbull Mall. In Fairfield, Old Town Road becomes Jefferson Street and intersects Route 59. The upcoming Sacred Heart University expansion is anticipated to have a major impact on use of the roadway, sidewalk and transit. By reconstructing Old Town Road to a "Complete Street," bicyclists and pedestrians from the four communities would be better connected to several regionally significant developments.

### **Monroe & Trumbull, Route 25 & Route 111:**

Sidewalk construction and ADA improvements. Currently, there are gaps in the sidewalks along the two commercial corridors. Complete street concepts will be implemented along Route 111 to connect major businesses in Trumbull and Monroe and provide additional access to the PRT.

### **All Municipalities:**

Provide appropriate accommodations for bicyclists and pedestrians of all ages and ability. These improvements should include traffic calming, complete streets implementation and ADA accessibility. Over the long term, the entire streetscape should be comprehensively evaluated for active transportation facilities. Identifying priority locations for both short- and long-term pedestrian improvement actions, and opportunities for intermodal connectivity can be supported through MetroCOG's GIS transportation layer, which includes sidewalks and crosswalks. This application is further described in Section 10.

#### **Short term actions:**

- Rehabilitate and improve sidewalks, paths and crosswalks.

- Close gaps in the sidewalk network.
- Upgrade, modify and maintain traffic and pedestrian signals, including installing countdown signals, vibrotactile warnings and audible indicators.
- Install and modify regulatory and warning signs, such as no right turn on red and pedestrian crosswalk signs.
- Assist municipalities with Safe Routes to School programs.

#### **Long term actions:**

- Modify road design to better accommodate pedestrians, such as narrowing the road, reducing the number of lanes and reallocation of the right-of-way.
- Construct intersection treatments such as bulb-outs, curb extensions and median barriers.
- Implement pedestrian-related traffic calming projects such as raised crosswalks, raised intersections and textured pavement.
- Construct new and extended sidewalks and walkways.
- Enhance traffic signals such as a leading pedestrian interval and ITS applications that automatically detect the presence of pedestrians.
- Embed warning lighting in mid-block crosswalks to enhance visibility and alert motorists of the presence of pedestrians.
- Modify commercial driveways, such as consolidating, closing, narrowing and reducing curb radii.

## Regional Shared-Use Trail Network

A shared-use trail or path is physically separated from the road and follows an independent right-of-way. Two-way flow is provided and a range of users, including bicyclists, walkers, in-line skaters, wheelchairs and strollers are accommodated. Although these

trails provide a low stress and safe area separated from motorized vehicles, the mix of different users and varying skill levels often creates a challenging environment with a variety of potential conflicts. Care and attention need to be given to the design, and user rules need to be established and enforced.

### Design Considerations

Shared use paths require special design considerations. The guidelines developed by the American Association of State Highway Transportation Officials (Guide for the Development of Bicycle Facilities) should be used and followed when designing and building these facilities. However, sound engineering judgment is also important to provide flexibility in design when the guidelines cannot be met. The basic design guidelines include a minimum trail width of ten feet with adequate shoulders and clear zones, good separation from a roadway (at least five feet or an acceptable barrier), minimal grades (maximum of 3%-to-5%), horizontal alignment to provide adequate stopping sight distances, a minimum eight-foot vertical clearance, and special treatments at intersections to slow

bicyclists down and prevent incursion onto the trail by motorized vehicles.

To ensure maximum use of the trail system, various amenities need to be installed, including directional and informational signs, rules and regulations, trail maps and guides, and benches and other rest areas at periodic intervals. Adequate parking at convenient locations is also essential. Regulatory, warning and information signs, as well as pavement markings must conform to the Manual on Uniform Traffic Control Devices (MUTCD).

The following projects are intended to complement the on-road bicycle route system and provide high quality facilities for non-motorized traffic. Past, current and future designs adhere to the design approach discussed above and meet minimum AASHTO guidelines as much as practical.

### Pequonnock River Trail (PRT)

The PRT will ultimately provide a 16-mile, continuous shared-use trail from Long Island Sound in Bridgeport, through Trumbull to the Monroe-Newtown town line. Much of the trail is aligned along the Pequonnock River and the path of the abandoned Housatonic Railroad line that extended from Bridgeport to Newtown.

Currently, the trail provides connectivity to commercial centers and passive recreation areas. In Bridgeport, the PRT runs through Beardsley Zoo and Beardsley Park. In Trumbull, the trail connects to the Pequonnock River Valley and in Monroe, the trail runs through Wolfe Park to the Newtown border.

Improvements to both wayfinding and the overall connectivity of the trail should be considered as part of both short term and long term projects. Future opportunities to realize a connected, off-road trail in Bridgeport should also be pursued over the long-term.

The Pequonnock River Trail, Trumbull





## Pequonnock River Initiative

Development of the PRT has been informed by the Pequonnock River Initiative (a regional collaboration between Bridgeport, Monroe and Trumbull) and the Pequonnock River Watershed Based Plan (2011). The water quality in approximately 80% of the Pequonnock River currently does not meet minimum standards for recreation or habitat for fish, other aquatic life, and wildlife. Flooding is also common along the Pequonnock River and many of its tributaries. The primary objective of the plan was to identify specific, measurable actions to address water quality impairments in the Pequonnock River and Bridgeport Harbor. The plan supports the continued development of the greenway network within the watershed, without adversely impacting water quality and natural resources.

### Near-Term Projects:

**Bridgeport (0015-0374):** A 3.3 mile bicycle path between Beardsley Park and Seaside Park is currently in design. This project will connect the PRT to Long Island Sound via Seaside Park and will consist of shared use paths and dedicated bicycle lanes on local roads. The trail will run through Downtown Bridgeport and provide connections to rail, bus and ferry service.

**Monroe (L084-0001):** This is a LOTCIP project that will connect to completed sections of the trail in the Maple Drive vicinity and Wolfe Park. Currently, users connect to the trail via local roads and the park entrance/exit drive. The total length of this section trail is approximately 4,500 feet and includes the existing bridge crossing of the West Branch of the Pequonnock River.

### Trumbull:

- **Project 0144-0192:** This section (A-2) will connect the trailhead at Taits Mill Road to Twin Brooks Park. The connection will run through Trumbull Center,

along Taits Mill Road and Route 127/ White Plains Road.

- **Route 111:** Currently, the PRT crosses Route 111 at grade. This is a four-lane state arterial that carries over 22,000 vehicles per day. Pedestrian actuated flashing lights and a raised median have been installed to provide protection and refuge for users crossing at this location. Due to the high volume and speed of traffic, other options have been investigated. The preferred option is to install a traffic light at the Trefoil Plaza driveway which will include an exclusive pedestrian crossing. Other options that have been evaluated include a culvert tunnel under Route 111 and a new local road opposite Old Mine Road with a signalized intersection.
- **Route 127/Church Hill Road:** Install a trailhead and PRT extension from the Pequonnock River Valley to commercial developments in the vicinity of Town Hall.
- **Unity Park:** Install a walking bridge over the Pequonnock River to enter Unity Park from the PRT. The bridge would connect trail users to Unity Park.
- **Parking:** Install parking lots at various locations along the PRT, such as a commuter lot on town-owned land behind the CTDOT Maintenance Facility (would also provide overflow parking for Trefoil Plaza.)

### Recently Completed Projects:

**Trumbull, PRT connection from Twin Brooks Park to an existing trail on Quarry Road.** The project included the rehabilitation of a historic railroad bridge that runs over the Merritt Parkway, culvert tunnels under two exit/entrance ramps of Route 15 and Route 25, sidewalks, lighting and landscaping.

## Housatonic River Greenway

A short section of this multi-use trail has been constructed along the Housatonic River



The Housatonic River Greenway, Stratford

in Stratford, in the vicinity of DeLuca Field. MetroCOG (as GBRPA) has provided past assistance to the Town in developing a plan (endorsed in 2008) for a 16-mile pathway that would run along the Housatonic River from the south end of town at Long Beach to Roosevelt Forest in the north end. The greenway would include off-road sections and on-road bicycle routes, with connections to Stratford Center, Roosevelt Forest, the East Coast Greenway, the Sikorsky Memorial Bridge (which carries the Merritt Parkway over the Housatonic River) and other local points of interest.

The vision for the Housatonic River Greenway also provides an opportunity to integrate resiliency and flood control components into future sections that are in close proximity to Long Island Sound and the Housatonic River. The **Town of Stratford's Coastal Community Resilience Plan** (2016) identified the following sections:

- **Stratford Point to Short Beach:** A 1.16 mile long multi-use trail to connect Stratford Point to the Marine Basin. The section would be constructed as close to the Housatonic waterfront as possible

- and a large portion of the trail would run through Short Beach park.
- **Stratford Point to Long Beach:** Over 4 miles of multi-use, boardwalk and bicycle routes to provide connections from Stratford Point to Long Beach. A walkway from Short Beach would connect with bicycle routes along Riverdale Drive, Prospect Street and Oak Bluff Avenue, and then connect to an off-road trail along Long Beach.
- **Short Beach to Birdseye Street Boat Launch:** A 1.56 mile multi-use trail to provide access to the Housatonic waterfront. The section would extend from Short Beach Park through the Stratford Army Engine Plant (SAEP) property, the Hunter Haven parcel and the Water Pollution Control Facility (WPCF), and then connect to the Birdseye Dock. The Stratford Army Engine Plant Redevelopment berm elevation increase could be designed as a joint project with the greenway. The northern end of the trail would connect to the planted revetment with earth berm, and extend to the WPCF to the south.

### Naugatuck River Greenway Trail

When complete, the Naugatuck River Greenway (NRG) Trail will follow the Naugatuck River for approximately 44 miles and will link 11 municipalities. The trail will help to reclaim the Naugatuck River for recreation, provide an alternate mode of transportation, support tourism and economic development in the region, and improve the quality of life of valley residents. The NRG will start in Torrington and follow the river south through Litchfield, Harwinton, Thomaston, Watertown, Waterbury, Naugatuck, Beacon Falls, Seymour, Ansonia and Derby. As of 2018, there are six sections of NRG Trail open to the public in Watertown, Naugatuck, Beacon Falls, Seymour, Ansonia and Derby representing approximately 11%

of the total length of planned trail. Additional sections are in various phases of design with plans for construction.

### Conservation & Recreation

Long dismissed as a polluted and dead river due to a legacy of industrial abuse, the Naugatuck River has made a remarkable comeback over the last several decades, and is increasingly a destination for anglers, paddlers and sightseers. The NRG Trail will reconnect communities to the river, with waterfront promenades, overlooks, boat launches, and fishing access points all figuring into greenway plans. The multiuse trail will provide a high quality and attractive corridor that will accommodate both walkers and cyclists safely.

The NRG Trail will give area residents a place closer to home to use for active transportation rather than traveling to trails elsewhere. Convenient access to the trail will encourage more use and will help improve the health and quality of life of those who use it. Since many of the communities along the planned route are in close proximity to each other, the trail will provide a viable safe and convenient non-motorized alternative for commuting for those who cannot or would rather not use a personal motor vehicle or public transit. These benefits have already been borne out on open sections of NRG, as the trail has become a popular destination and meeting place among residents and non-residents alike, and as a means for transportation. These economic and quality of life benefits will increase as more trail sections are built.

### Trail Data Collection

Automated trail user counts conducted by NVCOG and the CT Trail Census, a collaborative statewide volunteer data collection program (<https://cttrailcensus.uconn.edu/>), have calculated annual estimated trips taken

at several trail locations on the greenway. There have been over 300,000 trips recorded each year since 2015 in Derby near the Division Street trailhead making it the busiest NRG section and likely the busiest multiuse trail in the state.

### Planning, Design & Construction

Design and construction of the NRG Trail is being undertaken at the local level, with oversight and guidance by the NRG Steering Committee (NRGSC). Hosted by the Naugatuck Valley Council of Governments (NVCOG), the NRGSC is a volunteer group that consists of members from the eleven NRG host communities, along with regional, state and federal representatives and stakeholders. In 2015, the NRGSC commissioned a study to investigate the economic benefits that the completion of the trail would have on the host communities. The study, conducted in partnership with UConn Extension and the UConn Center for Economic Analysis (CCEA), concluded with the publication of "Pathway to Revitalization: Economic Impacts of the Phased Completion of the Naugatuck River Greenway" in March 2017. The study detailed the substantial economic, health and quality of life benefits of constructing the NRG Trail, and that the cost of constructing the trail

Rendering of the Naugatuck River Greenway Trail, Shelton



would be outweighed by benefits.

Since much of the planning and construction will be implemented at the local level, the materials, feel and look of the trail may undoubtedly vary from town-to-town based on local needs and desires. Regardless of these differences, it is important to emphasize that the NRG is a single entity that will traverse 11 communities. The NVCOG is working with communities to implement trail standards as they design and construct new sections of trail. With support and assistance from the NRGSC, a uniform signage and wayfinding design manual was developed (“Naugatuck River Greenway Uniform Signage and Wayfinding Design Manual,” November 2016). The manual includes templates for a wide range trail head, route designation, directional, and informational signs. The family of signs is based on and is consistent with MUTCD standards and guidelines.

The goal of the MTP is to complete the construction of the entire length of the NRG. The NRGSC has endorsed priorities for construction going forward (“Naugatuck River Greenway Project Priorities,” October 2015). It highlights currently active design and construction projects, Tier 1 projects which include projects for which advanced planning and design have been either completed or is underway, and Tier 2 projects which include remaining trail sections for which a preliminary routing has been identified. The following active projects are located in the municipalities of the GBVMPO:

**Ansonia: Riverwalk Segments 2a, 2b, 3 and 4.** The project will extend the trail from the recently completed overpass of the Waterbury branch rail line to downtown Ansonia. Design is underway with construction anticipated in 2020.

**Derby-Shelton: Renovation of the Derby-Shelton Bridge.** The project will imple-

ment bicycle and pedestrian enhancements along the bridge and make a connection between the Shelton RiverWalk and the Derby Greenway. Design is underway and construction is expected in June 2019.

## Additional Off-Road Projects

These projects will further support local and regional off-road connections:

### Bridgeport

#### **Seaview Avenue Corridor (0015-0371):**

This road improvement project will include an attractively landscaped linear park along the Yellow Mill Channel, with bicycle and pedestrian pathways.

**South End** greenbelt and resiliency corridor.

### Stratford

**Stratford Resiliency Corridor:** Daylight various watercourses throughout the Town and add in multiuse paths with amenities adjacent to the newly exposed watercourse. The Town looks to focus on portions of Bruce Brook, Long Brook and area of the South End to mitigate flooding and improve resiliency on roadways and neighborhoods prone to flooding.

### Regional:

**Continue the development of the region-wide multi-use trail and bicycle route network.** Opportunities to connect with the East Coast Greenway should be assessed, as well as other local trails and points of interest. Parking areas for trail users should continue to be identified.

**Merritt Parkway Greenway Trail:** The feasibility of a 37.5 mile continuous path adjacent to the Merritt Parkway continues to be assessed by CTDOT.

The **East Coast Greenway** is a planned multi-use trail system, spanning nearly 3,000 miles between Canada and Key West, Florida which links all the major cities of the

eastern seaboard. The 198 miles that exist in Connecticut connect the major cities of Hartford, New Haven, Bridgeport, and Stamford through a series of rail trails and interim on-road routes. The Connecticut ECG has made

significant progress in recent years. To date, 43 percent of the 200 miles in Connecticut has been completed as off-road “spine” trail while another 32 percent is currently in development.

## Active Transportation Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Ansonia</b>					
<b>Naugatuck River Greenway</b>	Ansonia Riverwalk: Northern extension from Downtown Ansonia to Downtown Seymour.	TA			\$5,500,000
	Ansonia Riverwalk: Construct pedestrian & streetscape enhancements in downtown Ansonia. Master plan prepared	TA	\$2,000,000		
	Ansonia Riverwalk: Construct Phase II of the Greenway, north to downtown. Master plan prepared.	TA	\$3,000,000		
	Construct Phase III and IV. These sections will both provide better access from downtown Ansonia to the NRG and better connect downtown with the Naugatuck River. Flood control wall (USACE) along the east side of the Naugatuck River.	TA		\$2,000,000	
East Main Street Corridor	Pedestrian improvement project to formalize on-street parking and improve pedestrian access and mobility throughout the East Main Street from Kingston Drive to Main Street. State St: Main St to Pleasant St; S. Cliff St: State St to William St.	State CC**		\$1,364,800	
South Cliff & State Street	Safety Improvement Project to improve pedestrian access and mobility in the State Street and South Cliff Street neighborhood.	State CC**		\$500,000	
<b>Bridgeport</b>					
<b>Pequonnock River Trail</b>	0015-0374: 3.3 miles bicycle path consisting of both off and on road facilities between Beardsley Park and Seaside Park.	CMAQ	\$1,600,200		
Ash Creek	L015-0001 Ash Creek Pedestrian Bridge, between Black Rock Neighborhood and Fairfield Metro rail).	LOTICIP	\$3,840,000		
South End	Green belt and resiliency corridor, University Ave.		\$2,500,000	\$2,500,000	\$5,000,000
Various	Short and long term pedestrian enhancements.		\$2,500,000	\$5,000,000	\$10,000,000

\* Known funding sources \*\*State Community Connectivity Program

## Active Transportation Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Derby</b>					
Route 34	Derby Greenway Connection: Construct a connection between the Derby Greenway and the Derby-Shelton rail station. Route 34: Route 8 NB on-ramp to rail station	State CC**	\$750,000		
<b>Easton</b>					
Route 59	Implement Complete Streets at Town Center (Rt. 59 at Center Rd.) to include pedestrian enhancements, bicycle facilities, streetscapes, ADA compliant features and traffic calming measures.		\$900,000		
Route 59	Multi-use trail on Rt. 59 from Flat Rock Rd to Keller Middle School to Town Center (at Center Rd.). The trail would continue along Centre Rd to the Town Hall/Library, then from Morehouse Rd to Staples Elementary school, and from Banks Rd to the Town Center. Will connects students with safe access from home to school by walking/biking.		\$1,750,000		
<b>Fairfield</b>					
Route 1, Westport line to Rennell Drive	Complete Street features in Southport. Includes combining confusing traffic islands by eliminating some access lanes, realigning intersections, reducing excessive pavement width, consider bike lanes, increase green infrastructure, landscaping, streetscape, transit and pedestrian improvements. The Town was recently awarded a Community Connectivity grant to jump start this long term project. Recommendations based on a 2017 RSA.	State CC**	\$4,000,000		
Route 58/ Black Rock Turnpike	Implement recommendations to improve bicycle and pedestrian safety and access from the Black Rock Turnpike Safety Study, see <i>Section 4</i> .				
Route 130	Improve pedestrian/bicycle access, safety and visual appearance of the Grasmere Neighborhood. Covers Post Rd, Grasmere Ave., Kings Highway East, and Post Rd "jughandle," from the Route 1 rotary to the Bridgeport city line. Based on a 2017 RSA.	LOTICIP	\$2,050,000		
King's Highway	Phase 3 pedestrian improvements. Continues previous project from Villa Ave. to Bridgeport line.			\$3,500,000	

\* Known funding sources \*\*State Community Connectivity Program

## Active Transportation Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Various	Various bicycle and pedestrian improvements throughout Town. Implement recommendations from Fairfield's Bicycle and Pedestrian Plan.		\$800,000		
<b>Monroe</b>					
<b>Pequonnock River Trail</b>	Linkage between Maple Drive and Wolfe Park: Design and construct a multi-use trail to match and connect with completed sections of trail at both ends of the project area.	LOTICIP	\$1,500,000		
<b>Seymour</b>					
<b>Naugatuck River Greenway</b>	Construct pedestrian & streetscape enhancements in downtown Seymour; construct pedestrian bridge over the Naugatuck River at Tingué Dam. Master plan prepared.	TA	\$4,500,000		
	Construct extension from Beacon Falls to downtown Seymour as part of the Route 42/67 Connector Road Project.	TA	\$3,400,000		
Church Street	Connect sidewalks along Church Street from the Seymour Library to Route 67.	State CC**	\$150,000		
Main Street & Deforest Street	Pedestrian Improvements at Main Street and Deforest Street to normalize grades between sidewalk and roadway Main St (RTE 115) & Deforest St	State CC**	\$250,000		
Route 67 & Route 313	Pedestrian and sidewalk Improvements, including completing gaps in the section along Route 67 from the Oxford TL to about North Street	State CC**	\$650,000		
<b>Shelton</b>					
Canal Street	Shelton River Walk: Extend river walk along Canal Street West; construct pedestrian improvements on Wooster Street & provide connections into Riverview Park	TA	\$3,500,000		
Canal Street	Shelton River Walk: Widen Canal Street & install various pedestrian & bicycle facilities & amenities	TA	\$2,100,000		
Route 108	Shelton Avenue Sidewalks: Construct a sidewalk on the north side and replace sidewalk on north side west of the Shelton Lakes Recreational Path parking lot. Meadow St to Wooster St	State CC**	\$850,000		

\* Known funding sources \*\*State Community Connectivity Program

## Active Transportation Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Route 110	Downtown Shelton: Construct pedestrian & streetscape enhancements along Route 110 & Bridge Street	State CC**	\$1,200,000		
<b>Stratford</b>					
<b>Housatonic River Greenway</b>	Realize a fully connected facility that runs through the Town in a north-south alignment. The greenway will include connections to Stratford Center, Roosevelt Forest, the Housatonic River, the East Coast Greenway, and other local points of interest.		\$2,500,000	\$7,500,000	
	Park Path/Greenway Planted Revetment. Construct a shoreline revetment with low berm, connecting to the existing Stratford Army Engine Plant levee.		\$7,000,000		
Honeyspot Road	Honeyspot Road Complete Street Implementation				\$5,000,000
Route 1	Barnum Avenue Complete Street Implementation				\$5,000,000
Route 130	Lordship Blvd. Complete Street Implementation				\$5,000,000
Route 130	Stratford Ave Complete Street Implementation				\$5,000,000
Route 110, Putney to Warner Hill	Route 15 interchange area: Pedestrian and bike accommodation, including a shared use path. From Route 110 Planning & Engineering Study.				\$3,250,000
Various	Daylighting of watercourses throughout Town and add in multiuse paths with amenities adjacent to the newly exposed watercourse. The Town looks to focus on portions of Bruce Brook, Long Brook and area of the South End to mitigate flooding and improve resiliency on roadways and neighborhoods prone to flooding.		\$30,000,000	\$15,000,000	\$15,000,000
<b>Stratford Center Complete Streets Plan</b>					
Ferry Boulevard/ Route 130: Main Street to I-95 x33 off-ramp.	Narrow travel lanes, add buffered sidewalks to both sides of the street, install a two-way bike lane separated by a vegetated buffer, add ADA compliant crossings and bike/ped safety enhancements, and install green infrastructure and other traffic calming elements.			\$4,900,000	

\* Known funding sources \*\*State Community Connectivity Program



## Active Transportation Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
Broad Street: Ferry Boulevard W to Linden Avenue	On Broad St., install 10 ft wide multi-use path on the south side, add a buffered sidewalk to the north side and add ADA compliant crossings. On W. Broad St., narrow travel lanes to provide space for 6 ft east and west bound bike lanes, expand sidewalks under I-95 into 10 ft multi-use paths, add ADA compliant crossings and bike/ped safety enhancements.			\$1,300,000	
Main Street/ Route 113: E. Broadway to Stratford Avenue	Narrow travel lanes, add buffered bike lanes, expand sidewalks, add ADA compliant crossings and add bike/ped safety enhancements.			\$2,000,000	
Main Street/ Route 113: E. Broadway Street to Barnum Avenue	Narrow Main St. from 4 lanes to 3, add buffered bike lanes, expand sidewalks and increase landscaped buffer, add ADA compliant crossings and bike/ped safety enhancements, install green infrastructure and other traffic calming elements. Currently being implemented as a LOTCIP funded project.	LOTICIP	\$2,200,000		
Main Street/ Route 113: Barnum Avenue to Fenelon Place	Narrow Main St. from 4 lanes to 3, add buffered bike lanes, expand sidewalks and increase landscaped buffer, add ADA compliant crossings and bike/ped safety enhancements, install green infrastructure and other traffic calming elements. Potential realignment of Huntington Rd.			\$3,500,000	
Nichols Avenue/ Route 108: Barnum Avenue to Lincoln Street	Complete Street Implementation: Install separated bicycle and pedestrian facilities where space allows. In constrained areas, merge facilities into a multi-use path. Add ADA compliant crossings and bike/ped safety enhancements, and install green infrastructure and other traffic calming elements.			\$5,000,000	
<b>Trumbull</b>					
<b>Pequonnock River Trail</b>	At-grade crossing at Route 111: A traffic signal with a pedestrian phase at the shopping center is preferred (\$700k). An alternative is a tunnel (\$5m).		\$5,000,000		
	0144-0192: Complete the trail section through the Trumbull Center shopping plaza (A2).		\$2,000,000		

\* Known funding sources \*\*State Community Connectivity Program

## Active Transportation Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Pequonnock River Trail</b>	Install extension from the Pequonnock River Valley to commercial developments in the vicinity of Town Hall (Route 127/ Church Hill Road).			\$2,000,000	
	Walking bridge over the Pequonnock River to connect Unity Park to the PRT near Route 15. The PRT was recently extended across Route 15 to connect through Quarry Road and extends into Bridgeport.			\$2,000,000	
	Install parking lots at various locations.		\$400,000		
Route 111 & Whitney Avenue	Install traffic light at the intersection of Rt. 111 and Whitney Ave. Includes a Complete Street concept with sidewalks to connect major commercial development to residential developments.		\$600,000		
<b>Bridgeport, Fairfield, Stratford &amp; Trumbull</b>					
Old Town Road (Jefferson in Fairfield & Broadbridge in Stratford)	Reconstruct Old Town Road to a "Complete Street". The roadway is on the border of Trumbull and Bridgeport and is a major east/west corridor alongside the Merritt Parkway connecting major development within the community, from Fairfield to Stratford.			\$9,000,000	
<b>Monroe &amp; Trumbull</b>					
Route 25 & Route 111	Implement recommendations from the Route 25 & Route 111 Planning and Engineering study. Includes sidewalk construction and ADA improvements, a Complete Street concept along Route 111 to connect major business and additional access to the PRT, <i>see Section 4</i> .				
<b>Region</b>					
Various	Long-term pedestrian enhancements, traffic calming, Complete Streets improvements & ADA accessibility		\$5,000,000	\$5,000,000	\$10,000,000
Various	Region-wide multi-use trail and bicycle route network		\$5,000,000	\$5,000,000	\$10,000,000

\* Known funding sources \*\*State Community Connectivity Program



Bridgeport Harbor

## 8: Ferry & Aviation

### Passenger Ferry Services

The Bridgeport Port Authority operates and maintains the Water Street Dock (formerly the Union Square Dock) on the westerly shore of the Bridgeport Inner Harbor just below the P.T. Barnum Bridge carrying I-95 over the Harbor. Facilities include a docking berth for passenger and vehicular ferries, additional berthing space for small vessels, passenger terminal, and vehicle staging area. The Dock has about 255 feet of berth space with 16-to-20 feet of depth. The Ferry Terminal dates back to 1883 when it was used for the commercial exchange of industrial products made in Connecticut for agricultural products

of Long Island. Passengers were also transported from the Dock via ferries.

The Water Street Dock is strategically located in Downtown and is connected via elevated walkways and sidewalks to the Bridgeport Intermodal Transportation Center, the City of Bridgeport's transportation hub. The former Ballpark at Harbor Yard, which is being converted into an amphitheater, and the Arena at Harbor Yard are directly adjacent to the Water Street Dock. The Dock has undergone several renovations over the last twenty years, including construction of the new ferry terminal. The terminal houses the offices of the Bridgeport Port Authority, a cafeteria, and ferry information center. Other improvements



Waterfront Park, rail station access.

and enhancements include reconstruction of the dock and bulkhead, construction of a new access road, rehabilitation and restoration of the timber piers, expansion of the ferry berth, and enhancement and development of a pedestrian walkway along the dock.

The Bridgeport and Port Jefferson Steamboat Company operates passenger and vehicle ferry service to Long Island and leases the Water Street Dock for loading and unloading. The Company provides daily service across Long Island Sound with up to 16 round trips varying between weekday and weekend schedules. A cross-sound trip (26 miles) takes about one hour and fifteen minutes. The fleet ranges in age from fifteen years to 32 years. Use of the ferry service has been increasing steadily over the past 10 years. As of 2017 the Bridgeport and Port Jefferson Ferry carried approximately 1.3 million passengers and  $\pm 500,000$  vehicles annually.

The Bridgeport and Port Jefferson Steamboat Company announced a plan in 2013 to move the ferry terminal across Bridgeport Harbor to a larger facility off of Seaview Avenue in the City's East End Neighborhood. The plan was approved by the City of Bridgeport in 2014 with an expected launch in 2020. To date the ferry company has not submitted final permit

applications to the City of Bridgeport so the commencement of ferry operations at the new terminal is not yet known.

The Water Street Dock and its associated passenger ferry service is an important transportation facility and contributes to Downtown Bridgeport's designation as a regional transportation hub. Renovations have made the Dock an attractive destination for residents and visitors alike and were essential in providing and maintaining an efficient waterborne service. However, the Dock needs to be maintained and enhanced to accommodate future service demands and needs. A critical planned project is the construction of parking on site. Currently, almost all passenger parking is handled off-site. Accommodating parking on site will be more convenient for customers and make the ferry service more accessible. In addition, the dock has only one berth for passenger ferry service. This limits service and operating hours.

Proposed improvements at the Water Street Dock include the following actions:

### **Second Vessel Berth Facility:**

The proposed secondary offload ramp/berthing facility would accommodate berthing a vessel in one of three configurations at the same location. The configuration would depend on the type of vessel and the vessel operator's preference. The proposed berth would be located along the southern section of the Water Street Dock. The location would border the site of the proposed parking garage. The berth would be able to handle vessels with up to a 40-foot beam, 280-foot length and 18-foot draft and would accommodate loading and unloading of passengers, freight, trucks and passenger vehicles.

### **Rehabilitate Ramp and Apron Area:**

Despite regular maintenance, the reinforced concrete decking of the ramp and apron is in

a chronic state of disrepair. The deteriorated conditions are due to high traffic volume (about 500,000 vehicles are loaded and unloaded annually) and the saltwater environment impact on the deck materials. The planned project will rehabilitate and upgrade the ramp and apron structure using materials better suited for a marine environment and for high traffic volumes. It will ensure a stable and safe loading operation into the future.

### Parking Garage:

The Bridgeport Port Authority acquired the land needed to construct the garage from the adjacent power generating facility. The project will provide about 200 parking spaces for ferry customers at the dock with a pedestrian connection to the terminal building.

### Extend Waterfront Park:

The Waterfront Park extends from Stratford Avenue to the stair access to the outbound platform of the Bridgeport Rail Station. This project would extend the boardwalk along the Pequonnock River to link with the Water Street Dock, completing the gap in the Waterfront Park behind the New Haven bound side of the railroad tracks. It would improve and enhance the existing waterfront park and Water Street Dock.

### New Water Street Dock Access:

The proposed project would enhance and improve the existing rail underpass leading to the Water Street Dock and re-open it as a secondary egress point for passenger vehicles. The location was the original access roadway to the Dock but it was closed when a new access road was opened to the south of the Dock. Low vertical clearance limits the use by larger trucks, buses and recreational vehicles, but passenger vehicles would use it during peak time to avoid conflicts with Harbor Yard related traffic and improve



Bridgeport & Port  
Jefferson Ferry

downtown circulation. The rail bridge would be painted and a “Welcome to Downtown Bridgeport” sign would be installed. Other enhancements would include textured pavement treatments, dynamic message signs, directional and wayfinding signage, plantings, wooden guardrails and decorative lighting. Pedestrian walkways would also be provided and enhanced to provide separation from vehicles.

### High Speed Ferry Service

The Bridgeport Port Authority has been advancing discussions on planning for and developing a high-speed ferry service that would operate between Bridgeport, Stamford and New York City. Market studies have demonstrated that the cost to commute by high speed ferry would be competitive with other modes and that the service could attract a sufficient number of passengers so that no operating subsidies would be required. Travel times would also be comparable to both rail and auto. Initial concepts have identified three possible landing sites on the East Side of Lower Manhattan (the Financial District): 34th Street Pier, Pier #11 and Pier #5. An intermediate stop at LaGuardia Airport is also being considered.

The proposed service would be operated by

a private entity similar to the arrangement between the Bridgeport Port Authority and the Bridgeport and Port Jefferson Steamboat Company. The high-speed ferry service would utilize next generation boats – very maneuverable, state-of-the-art navigation and advance radar plotting aids, computer-controlled, able to achieve stable movement in all weather conditions, low noise water-jet propelled engines and low emissions. Other passenger amenities include fully reclining airline-style seating, large screen TVs, food services and computer data ports. In first class, seats are arranged in clusters with tables.

### Water Street Dock:

The existing demarcation and embarkation point for traditional ferry service operated by the Bridgeport and Port Jefferson Steamboat Company. The potential relocation of the current passenger ferry service across Bridgeport Harbor may decrease the investment necessary to initiate a high-speed ferry service at the Water Street Dock.

### Ferry Terminal

The Bridgeport Port Authority is in the final design stage of CTDOT Project 15-312 with one outstanding permit required before the project can be bid for construction. This project will construct a new high-speed ferry terminal on a portion of the existing Water St. Dock and will also address several deficiencies at the existing dock. The new terminal will provide an ADA compliant walkway under the Metro North Rail viaduct to the terminal. The existing dock/deck experience storm related and extreme tidal flooding. The new dock/deck will be at elevation 13, one foot of the FEMA base flood elevation for the new terminal footprint. The new dock will be multi-use with the capacity to serve high speed ferried and vessels up to and including those operated by the Bridgeport and Port

Jefferson Steamboat Company. However, this dock would only be able to accommodate passenger service.

### Sikorsky Memorial Airport

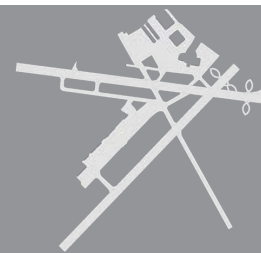
The Igor I. Sikorsky Memorial Airport is the Greater Bridgeport Region's aviation gateway, serving the needs of the area's general aviation users, as well as a substantial amount of corporate activity. It provides aviation opportunities not only for the residents of the region but also to neighboring parts of southwestern Connecticut. It is an important transportation facility and the quality of its facilities attracts many area and out-of-area travelers and pilots. Sikorsky Memorial Airport is an underutilized transportation asset in the region with great potential to serve the commercial aviation needs of the residents in the region.

The Sikorsky Memorial Airport is owned and operated by the City of Bridgeport but it is located in the Lordship section (South End) of Stratford, which has made it difficult for the airport to upgrade and enhance services, facilities and infrastructure and has created some land use and zoning incompatibilities.

The service area, as defined in the state airport plan is depicted in the following map.

The three-letter Federal Aviation Administration (FAA) code for Sikorsky Memorial Airport is BDR. The State of Connecticut airport plan defines BDR as primarily a general aviation airport accommodating a significant amount of corporate activity, as well as, some regional-type charter service. Scheduled air service was suspended in 1999. The FAA also classifies airports based on their ability to safely accommodate certain types of aircraft. The Airport Reference Code is based on the approach speeds to the airport and the minimum and maximum wingspan of aircraft that can safely land at the airport. The ARC

# Igor I Sikorsky Memorial Airport (BDR)



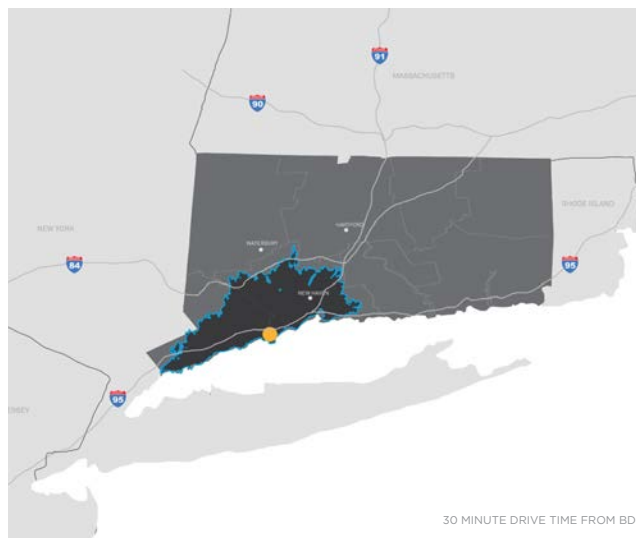
Bridgeport, Fairfield County

9.0FT MSL - 800 Acres

41-09-48.5000N, 073-07-34.2000W 3 miles SE of Bridgeport

NPIAS Role: General Aviation, National

Owner: Municipally-Owned, City of Bridgeport ARC: C-II



30 MINUTE DRIVE TIME FROM BDR

RUNWAY 6-24	4,677' x 150'	1,2	
	<b>Runway 6</b>	<b>Runway 24</b>	
Approaches	GPS/ILS/VOR	GPS/VOR	
Lowest Minimums	300 - 1	500 - 1	
Lighting	PAPI, REIL, HIRL	VASI, REIL, HIRL	

RUNWAY 11-29	4,761' x 150'	1,2	
	<b>Runway 11</b>	<b>Runway 29</b>	
Approaches	NONE	GPS/VOR	
Lowest Minimums	N/A	400 - 1	
Lighting	REIL, HIRL	VASI, REIL, HIRL	

**FACILITIES<sup>1</sup>**  
FBO, hangars and tie-downs.

**SERVICES<sup>1,2</sup>**  
ATCT (6:30 AM – 10 PM), fuel, maintenance, air freight, air charter, aircraft rental and sales, flight training

## STATISTICS

Based Aircraft	190 (2010) <sup>2</sup>
Operations	62,929 (2013) <sup>6</sup>
Enplanements	NONE

## FAIRFIELD COUNTY

Population <sup>3</sup>	939,904	Growth by	2020 0.08%	2025 0.79%
Median Income <sup>4</sup>	\$82,362			
Businesses <sup>4</sup>	33,728			
Jobs <sup>4</sup>	413,404			
Special Industries <sup>5</sup>	Investments, Appliance Manufacturing, Transit & Passenger Transportation			
Access	Interstate 95, Route 25			
	30% of population within 30 minute drive time			

<sup>1</sup>FAA Airport/Facility Directory

<sup>2</sup>Airport Master Record, FAA Form 5010

<sup>3</sup>United States Census State and County Quickfacts

<sup>4</sup>Connecticut Department of Labor, Quarterly Census of Employment and Wages

<sup>5</sup>Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

<sup>6</sup>Air Traffic Activity System

for Sikorsky is C-II indicating approaches between 121 knots and 140 knots with wing-spans of 49-to-79 feet. The airspace around the airport is controlled by the tower when it is open and extends to 2,500 feet above ground level for a radius of five miles. When the tower is closed, the airspace is extended and covered by radar.

The Airport consists of about 800 acres. Facilities and infrastructure include two runways, taxiways, aprons, tie-down areas, hangars, terminal, control tower and a number of related buildings and businesses. Runway 06-24 is 4,677 feet long with a displaced threshold, on the 24 approach, of 320 feet. Runway 11-29 is 4,761 feet long with a displaced threshold, on the 29 approach, of 364 feet.

A Runway Safety Area (RSA) is the land at the ends of the runways that provide a place for aircraft that undershoot, overrun or veer off the runway to safely come to a stop. The FAA has established standards for RSAs and requires all federally certified airports to conform to the RSA requirements to the extent practical. At BDR, the required size of the RSA is 1,000 feet long by 500 feet wide for both runways.

A project was completed in 2016 to address deficiencies to the RSA for Runway 6-24 including the installation of an Engineered Material Arresting System (EMAS) arresting bed. The bed is a supplement to the RSA at airports with space constraints. The EMAS installation necessitated the relocation of State Route 113. During relocation, the road was raised slightly to provide enhanced wetland drainage and reduce flooding. Additionally, the surface of Runway 6-24 was repaved and narrowed from 150 feet to 100 feet, based on the design aircraft at the time.

Currently, the airport is updating the Airport Master Plan, Pavement Management

Program and Part 150 Noise Study which will identify additional improvements to shape the airport moving into the future. As these updates are in progress, the full evaluation and development of alternatives will not be made public until later in 2019 or early 2020. The airport was recently awarded a \$7 million grant from the State of Connecticut Department of Economic and Community Development to address some known deficiencies in support of existing private and business, as well as future scheduled commercial passenger service.

## Airport Improvements

The critical needs and recommendations at the Airport are:

- Rehabilitate the pavement and runway safety area upgrades to Runway 11-19;
- Reconfigure surface parking lot;
- Construct a new terminal and other associated TSA requirements for commercial passenger service;
- Improve taxiway and runway apron;
- Construct new ramp areas and hangars; and
- Purchase various capital equipment.



## Ferry & Aviation Projects

Location	Project Description	Funding Source*	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Bridgeport</b>					
Bridgeport Harbor	High speed ferry.	HPPS & FBD	\$6,500,000		
Bridgeport Harbor	Maintenance dredging of Bridgeport Harbor, its entry channel, turning basin and connect-ed channels.		\$10,000,000	\$15,000,000	\$45,000,000
Bridgeport Harbor	Parking Garage: The Bridgeport Port Author-ity acquired the land needed to construct the garage from the adjacent power generating facility. The project will provide about 200 parking spaces for ferry customers at the dock with a pedestrian connection to the terminal building.			\$10,000,000	
Bridgeport Harbor	Rehabilitate Ramp and Apron Area: Despite regular maintenance, the reinforced concrete decking of the ramp and apron is in a chronic state of disrepair. The deteriorated conditions are due to high traffic volume (about 470,000 vehicles are loaded and unloaded annually) and the saltwater environment impact on the deck materials. The planned project will rehabilitate and upgrade the ramp and apron structure using materials better suited for a marine environment and for high traffic vol-umes. It will ensure a stable and safe loading operation into the future.		\$4,500,000		
<b>Region</b>					
Various	Aviation improvements		\$20,000,000	\$25,000,000	\$30,000,000
Various	Ferry improvements		\$15,000,000	\$15,000,000	\$20,000,000
Various	Long-term freight enhancements (road, ferry, & air)**		\$20,000,000	\$25,000,000	\$30,000,000

\*Known funding sources \*\*Included in freight section

# 9: Freight

## Overview

The movement of goods and freight impacts every aspect of our lives. More than nineteen billion tons of commodities, valued over \$13 trillion, are moved across the US transportation system each year. On average, 53 million tons of goods and freight, valued at \$36 billion, are moved around the country each day.

Freight planning is integrated into the transportation planning process because it has significant implications on the capacity of key transportation assets. To better understand the movement of goods through the region the principal modes are identified and analyzed. The overall objective of this effort is to recommend capital projects, policies and programs to enhance freight movement, improve physical infrastructure, encourage multi-modal shipments and expand alternative modes and access to freight terminals and the port.

## Trends

One of the fastest growing freight segments is the rail-truck intermodal shipment. Increasingly, containers are being loaded onto and shipped via rail and transferred to trucks at a large intermodal yard. Other intermodal movements are also increasingly being used, including truck-water and rail-water combinations.

Public roads make up the largest component of the nation's transportation infrastructure, totaling nearly four million miles and consisting of interstates, expressways, and other principal arterials. Historically, railroads were a vital transportation mode, but the development of the interstate highway system and low cost trucking replaced rail as the dominant mode. However, rail is a very efficient mode on the ton-mile basis and is capable

of carrying very heavy loads long distances. A strong and competitive market exists for freight rail shipments by long-haul Class I railroads and their regional and short-line partners.

The maritime transportation system is comprised of waterways, ports and land-based infrastructure (roadways, railroads and pipelines) that connects the waterborne system to the rest of the nation. Waterborne commerce is largely concentrated at the top 50 ports that handle about 82% of the total annual waterborne domestic and foreign shipments by weight.

Pipelines are essential in transporting raw petroleum and gas products, as well as, refined products.

## The Regional Context

The Greater Bridgeport Region is located between New York City and Boston, Massachusetts; situated along New England's main travel corridor. Freight and goods are moved and shipped using a diverse transportation system, with a range of modal options. The freight transportation system consists of:

### Highway

Interstate Route 95 for the transportation of goods by motor carriers, plus the Route 8 and Route 25 Expressways and several other arterials.

### Water

Port of Bridgeport, a commercial harbor, and related land side facilities and infrastructure that provide access to Long Island Sound and connection with the nation's maritime transportation system.

### Rail

Rail lines consisting of the New Haven main rail line running between New York City and

New Haven, with connections to the Northeast Corridor, and the Derby Branch freight rail line operated by the Housatonic Railroad.

## Air

Sikorsky Memorial Airport, a regional general aviation airport that supports a variety of air carrier services.

## Surface Roads

Motor truck carriers are by far the most important and critical transportation mode for moving freight in the region. Freight shipped into, from and through the region by trucks relies on the surface transportation network comprised of interconnected interstates, highways and other public roads. The operational capacity of the surface transportation system affects the cost and efficiency of freight movement.

The majority of commercial truck travel utilizes higher class roads that offer a high level of service and high mobility between activity centers. These include I-95, Route 8, Route 25, and US Route 1. Trucks are prohibited from using Route 15 (Merritt Parkway) which reduces the principal arterial route mileage open to commercial trucks to  $\pm 56$  miles. Of this total 45 miles are included on the National Highway System.

The Truck Travel Time Reliability Performance Measure is discussed in detail in Section 11 and Section 12.

Trucks carry a high proportion of the goods and freight that originates in the area (Connecticut part of the NY-NJ-CT-PA Combined Statistical Area, or CSA) as well as those goods shipped to the area. Shipments are somewhat evenly divided between origins and destinations. About 74.4% of all shipments to and from the area were moved by commercial trucks, with a value of about \$78.8 billion.

The vast majority, about 95% by weight, of shipments moved by motor carriers was domestic. Although some long distance trucking occurs, most truck shipments have a relatively short travel distance. Data from the Commodity Flow Survey indicated that, on average, truck shipments originating in the Connecticut part of the CSA traveled only about 116 miles and only 4.4% of the shipments by weight were moved over a distance greater than 500 miles. By contrast, the average travel distance by all modes was approximately 1,187 miles. The same travel pattern is evidenced for shipments to the area.

Trucks were also the primary mode used to move foreign freight and goods to and from ports of entry. About 48.1% of foreign freight that moved through a domestic port was then distributed by motor carriers, although a higher proportion was moved by unknown modes.

Diverting goods movement to other modes may be difficult despite various alternatives. The region's proximate location to one of the largest and most active ports in the nation (Port of New York and New Jersey) the amount of freight that could be shipped directly to Bridgeport by water. Containerized goods and break-bulk cargo from foreign ports or moved along the intercoastal waterway are more efficiently shipped to the Port of New York and New Jersey for off-loading and regional distribution. Regional freight movement will most likely continue to be dominated by motor carriers and any diversion of goods to other modes is likely to have only a marginal impact on modal share and minimal effect on highway congestion. Therefore, the focus of freight and goods mobility is on improvements to the surface transportation network.

Given the high proportion of freight moved by motor carrier, actions to address both passenger vehicle and truck are necessary to

optimize the functionality of the region's arterial road network. The key elements include the following actions:

### **Infrastructure Investments**

Targeted at the critical freight corridors to facilitate movement along I-95 and other principal truck routes through the region. Improve access to key commercial and industrial areas, including Bridgeport Foreign Trade Zone and Urban Enterprise Zone, and enhance connections to the Port of Bridgeport. Actions include rehabilitating pavement structure and markings, retiming, interconnecting and placing traffic signals under computer control, installing large curb radii along truck corridors and installing directional signage.

### **Long Term Infrastructure Investments**

I-95 is considered a Strategic Freight Corridor and is critical to the movement of goods into, from and through the region. However, the capacity of I-95 is restricted and congestion is recurring and exacerbated by weaving conflicts, inadequate acceleration areas, and lane use development. The congestion encountered by commercial trucks degrades the predictability and reliability of freight shipments. In addition, truck traffic worsens congestion due to their size and operating characteristics – trucks occupy more space on the highway, need to begin slowing down on the highway when exiting and take a longer time to attain travel speed of traffic when entering the highway. Also, the overuse of the center lane creates a pronounced wear pattern in the pavement structure.

Proposed medium to long term actions are intended to enhance truck operations along I-95 by rehabilitating and reconstructing several interchange areas and providing lane continuity where feasible. Other actions include: service area expansion and enhancement of the incident management sys-

tem. While I-95 facilitates inter-regional and interstate freight movement, the US Route 1 corridor runs parallel to I-95 over most of its length and serves as a secondary freight corridor within the region. Various enhancements are proposed over the next twenty years, including minor widening to provide uniform four-lane cross section, traffic signal upgrades, access management actions, and intersection improvements. Other projects include the construction of truck staging areas to streamline truck processing, and the development of a model, which can be used to evaluate alternative improvement projects.

### **Seaview Avenue Corridor Project**

The City of Bridgeport has developed plans to relocate Seaview Avenue on a new alignment to better accommodate truck movement and provide better access to industries in the area. Seaview Avenue is an important local freight and intermodal connector between I-95 and the marine terminals of the Port of Bridgeport, however, access to industrial sites, including the Foreign Trade Zone and the Lake Success Business Park area, is constrained by the physical condition of the road, especially by the low vertical clearance under the New Haven rail line. The project will construct a new limited access arterial and provide a new under pass of the rail line. The project will also become the main travel corridor of the proposed east side transit oriented redevelopment project and link the Steel Pointe area with the Lake Success Business Park.

### **Freight and Fleet Management ITS Initiatives:**

Various freight and vehicle ITS services have been identified to enhance goods movement by motor truck carriers. Many of these systems would be implemented by fleet and freight management and located on commer-

cial vehicles. These include: fleet and freight administration systems that track the movement of cargo, electronic clearance systems that provide automated clearance at roadside check facilities (such as weigh stations), roadside and on-board safety and security systems, and HAZMAT tracking and security systems. Some public sector ITS elements would also benefit commercial trucking, such as, incident management systems and traveler information systems.

## Bridgeport Harbor

The Port of Bridgeport is one of three deep water ports in Connecticut. Petroleum products are currently transported to a fuel terminal and tank farm via the port. Other activities within the harbor include recreational boating and support facilities, commercial fishing, dry dock and boat repair facilities, tug boat docking and passenger and vehicle ferry service.

The Port of Bridgeport is classified as a Commercial harbor and is divided into an inner and outer harbor. The outer harbor extends one mile from the mouth at Long Island Sound and is protected by two breakwaters. The inner harbor extends from Tongue Point and Pleasure Beach and includes the navigable reaches of the Pequonnock River, Yellow Mill Channel and Johnson's Creek (Lewis Gut). It is roughly triangular in shape and about one mile wide.

The depth and size of the channel within the harbor and the turning basin are the result of an US Army Corps of Engineers navigation project. According to official specifications, the authorized depth of the main channel is 35 feet and 400 feet wide, and the turning basin is about 900 feet wide. The channel of the Pequonnock River is 18 feet deep and between 125 feet and 200 feet wide. The navigable portion was recently modified to



Bridgeport Harbor

end at the former Congress St. bridge crossing, allowing for a much less costly fixed bridge replacement. Eighteen foot and 15 foot deep channels are maintained along the Yellow Mill Channel and Johnson's Creek, respectively. The CTDOT identified Port of Bridgeport dredging as action to remove the shoaling and return the harbor to its federally authorized depth.

The authorized depths of Bridgeport harbor were established in the River and Harbor Act of 1958. Federal dredging projects to attain these depths were completed in 1964. However, there has not been dredging within the harbor since then and shoaling has reduced the actual depths by four to seven feet less than the authorized depths. The reduced depth of the navigable channels increases the transportation costs for shippers and limits the harbor's attractiveness. As the Harbor slowly fills, the draft of vessels that could safely be brought into the harbor would decrease, limiting the range of possible uses for the Harbor. In addition, a shallower harbor risks deep-draft vessels running aground or requiring the vessels to time their entrances and exits into the harbor based on tidal fluctuations

The city has proposed a Federal Navigation Project to perform maintenance dredging of

Bridgeport harbor, its entry channel, turning basin and connected channels. The project would remove the material that is located above the authorized depths. The US Army Corps of Engineers has estimated that about 1.78 million cubic yards of dredge material would be removed. Three disposal methods and locations have been proposed for the dredge material. About 670,000 cubic yards have been deemed suitable for open water placement in a designated area within Long Island Sound. The remaining material has been deemed unsuitable for open water placement and alternative, protected sites need to be used. The plan proposes to dispose of about 913,000 cubic yards of dredge material (51.3% of the total) by creating two Confined Aquatic Disposal (CAD) cells within Bridgeport harbor. CAD cells are deep underwater pits constructed beneath the harbor bottom and used for the disposal of unsuitable material. Once the dredged material is placed in the CAD cell, they are capped with clean, typically harbor sediments, to minimize any future exposure of the unsuitable material. The development of CAD cells in Bridgeport harbor places the disposal site close to the dredge operation. The remaining unsuitable material (about 197,000 cubic yards or 11.1% of the total) is proposed for disposal in existing borrow pits in Morris Cove in New Haven harbor.

In addition to the shoaling that has reduced the depth of the navigable channel, there are a number of sunken vessels, including multiple coal barges that pose hazards to navigation.

The Bridgeport Port Authority, with the cooperation of the Port Authority of New York and New Jersey (PANY&NJ), have been investigating the implementation of a feeder barge operation for containerized freight from the New York and New Jersey ports to Bridgeport. The proposed operation

would offload containers at the New Jersey ports onto barges and transport the barges to Bridgeport for offloading onto trucks. It is estimated that between 60 and 80 containers could be shipped each day, totaling between 150,000 and 200,000 annually. This could remove about 33,000 trucks from I-95 through Fairfield County each year.

The container terminal site in Bridgeport is strategically located near several major highways, which would facilitate easy movement of goods to their final destination. Interstate 95 is only about one-quarter mile from the BRMC. Truckers could travel east about 17 miles to reach I-91 and travel north to Meriden, Hartford and Springfield, or west a few miles to access the Route 8/25 Expressway, which leads to Shelton, Waterbury and I-84. Continuing east on I-95 connects with New London, Providence and Boston, as well as I-395 to Norwich, Worcester and Massachusetts Turnpike (I-90).

There is a need to develop the land-based infrastructure in Bridgeport to accommodate the new service. Although it would initially use the Cilco Terminal, permanent facilities would need to be constructed on the adjacent Bridgeport Regional Maritime Complex property. Land based improvements include bulkheads (alignment of adjoining property), terminal improvements (paving, utilities, buildings, rolling equipment and ramps), scales and gatehouse, security fencing and storage areas. Additional property may be needed and the port area reconfigured as the system develops and expands. Complementary facilities may need to be developed to support additional services required for a port feeder service.

## Freight Railroads

While Connecticut is home to eight freight railroads that operate on about 330 miles of

track, rail freight infrastructure in the Greater Bridgeport Region is limited to the New Haven rail line and a short section of the Derby Branch line that passes through the Town of Monroe.

The majority of freight carried by railroads in the region is made up of bulk materials with a low value to volume ratio, including waste and scrape, stone, gravel and sand, lumber, iron, steel and chemicals.

CSX is the only Class I railroad operating in Connecticut and has trackage rights along the NHL-ML from New York to New Haven to provide both local and through service. CSX must pay for using the NHL-ML which increases its shipping costs and reduces its competitiveness. About 10,900 carloads are handled by CSX each year in Connecticut. An intermodal yard is located in North Haven for the transfer of freight to and from trucks and consolidated onto rail cars. The Providence and Worcester Railroad can only operate through service along the NHL-ML. The Housatonic Railroad (HRRC) provides through and local service on the Derby Branch Line.

The opportunities to expand freight services in the region are limited. Conflicts with passenger rail service restrict when freight railroads can use the track and the frequency of freight rail movements. In addition, the costs of using the NHL-ML make it more likely that CSX would move freight along company-owned rail lines north of the region to access other Connecticut and New England markets. Similarly, the Providence and Worcester railroad has rights to travel on the New Haven rail line but can only provide through service; no local service is permitted.

The trend in rail freight industry is to concentrate on fewer core lines and focus on long-haul, through traffic. Longer and larger consists are also seen as a strategy

to lower costs and increase the competitiveness of rail. New equipment allows double stacking of containers; however, modern double-stacked rail cars require minimum vertical clearance of 22 feet 6 inches. The New Haven rail line, because of limited vertical clearance with road bridges and catenary system, cannot accommodate double-stacked equipment.

To expand and accommodate rail freight into and through the region, the following actions are included in the plan:

- The State of Connecticut needs to investigate and determine whether to support the New York City Economic Development Corporation (NYECD) plans to construct an exclusive rail freight tunnel under the New York Harbor, known as the Cross Harbor Tunnel.
- Investigate and determine the feasibility of facilitating the use of RoadRailer technology to move goods and freight through Penn Station in New York and along the New Haven rail line.
- Improve rail overhead and side clearances to better accommodate newer rail freight equipment and industry innovations.
- Investigate the feasibility and economic viability of constructing a rail spur link between Bridgeport harbor and the New Haven rail line, especially as it could relate to the short-sea container barge service and Seaview Avenue Corridor Project.
- Develop a rail siding for intermodal transfer between truck and rail at the East Bridgeport yard.

## Air Cargo Services

The air cargo industry has experienced a high rate of growth in recent years, transporting a wide range of commodities, primarily those with a high value or time sensitivity. In

Connecticut, air cargo mostly passes through Bradley International Airport in Windsor Locks. It is the only airport in the state that has regularly scheduled commercial freight service. Other regional and general aviation airports may receive occasional small deliveries, primarily for local businesses.

Air cargo services involve shipments by air, but include ground transportation by truck, either motor carriers or air cargo affiliates that operate their own fleet of trucks (UPS, FedEx, etc.).

The Sikorsky Memorial Airport is a general and commercial aviation airport serving general and corporate activity. However, because of its size and function, it is unlikely that air cargo services will expand greatly and account for a larger portion of freight movement in the region. In addition, the proximity of the region to the New York airports and Bradley Airport north of Hartford will limit the amount of air cargo flown directly to and from the region. These nearby airports offer a substantial amount of scheduled air cargo services, numerous freight forwarders and commercial airline services.

## Other Multiple Modes

Freight movement often involves multiple transportation modes, especially between long haul carriers, such as shipping, rail and air, short haul modes, primarily motor carries and parcel services. The primary multiple-mode category is comprised of freight and goods shipped via parcel services (U.S. Postal Service or Courier). In total, about 453.1 million tons of freight were moved using multiple modes, mostly domestically. Overall, this category accounted for only small percentage of total goods movement, about 0.5% of the all domestic shipments, 0.3% of all foreign shipments and 1.7% of all border shipments. The value of goods totaled about \$17.4 billion.

Since shipments using multiple modes use the surface road network, actions that preserve and maintain these services are included in that category.

## Freight Projects

Location	Project Description	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Bridgeport</b>	Modest infrastructure investments targeted at the critical freight corridors to improve access to key commercial and industrial areas, including Bridgeport Foreign Trade Zone and Urban Enterprise Zone, and enhance connections to the Port of Bridgeport. Actions include rehabilitating pavement structure and markings, retiming, interconnecting and placing traffic signals under computer control, installing large curb radii along truck corridors and installing directional signs.	\$5,000,000	\$5,000,000	\$10,000,000
<b>Region</b>	Long-term freight enhancements (includes, road, ferry, & air)	\$20,000,000	\$25,000,000	\$30,000,000
<b>Statewide</b>	Annual state funding program for freight rail network (SOGR)*	\$30,000,000	\$10,000,000	



# 10: An Intermodal Transportation System

The “last mile” is a term used to describe how people travel from their homes to transit stops and/or stations and, once their transit commute ends, onward to their final destination, such as a school or employer. Critical to an efficient intermodal transportation system, the last mile should be safe and reliable. Links could include walking, bicycling, taxis, shuttles, or local bus connections.

Many of the mode-specific improvements discussed throughout the MTP support intermodal connectivity. This section will discuss strategies that strengthen and enhance connections between modes and which are also suitable for implementation at the “last mile” to ensure intermodal connectivity.

## Transit Oriented Development

Transit oriented development (TOD) has become a prominent strategy for building communities that provide more choices for reliable transportation, socially mixed and affordable housing, expanded business and economic opportunities and reinforcing community character. TOD is a proven economic growth strategy that integrates land use, transportation, and the environment and results in new housing, jobs, and more sustainable and walkable communities. TOD is an essential component of any transportation plan, as it is a form of infill development that encourages use of mass transit such as trains and buses, as well as non-motorized travel such as walking and bicycling.

Successful TODs include:

- Compact, mixed-use development, including a range of housing choices, within a 10-minute walk of a transit station or transportation hub.
- A network of streets, ideally in a traditional street grid with short blocks, that

allow for safe walking and bicycling and access to transit stations or transportation hubs.

- Intermodal improvements that facilitate travel mode shift away from single-occupancy cars to train and bus transit, shared vehicles, walking, or bicycling.

## Community Context

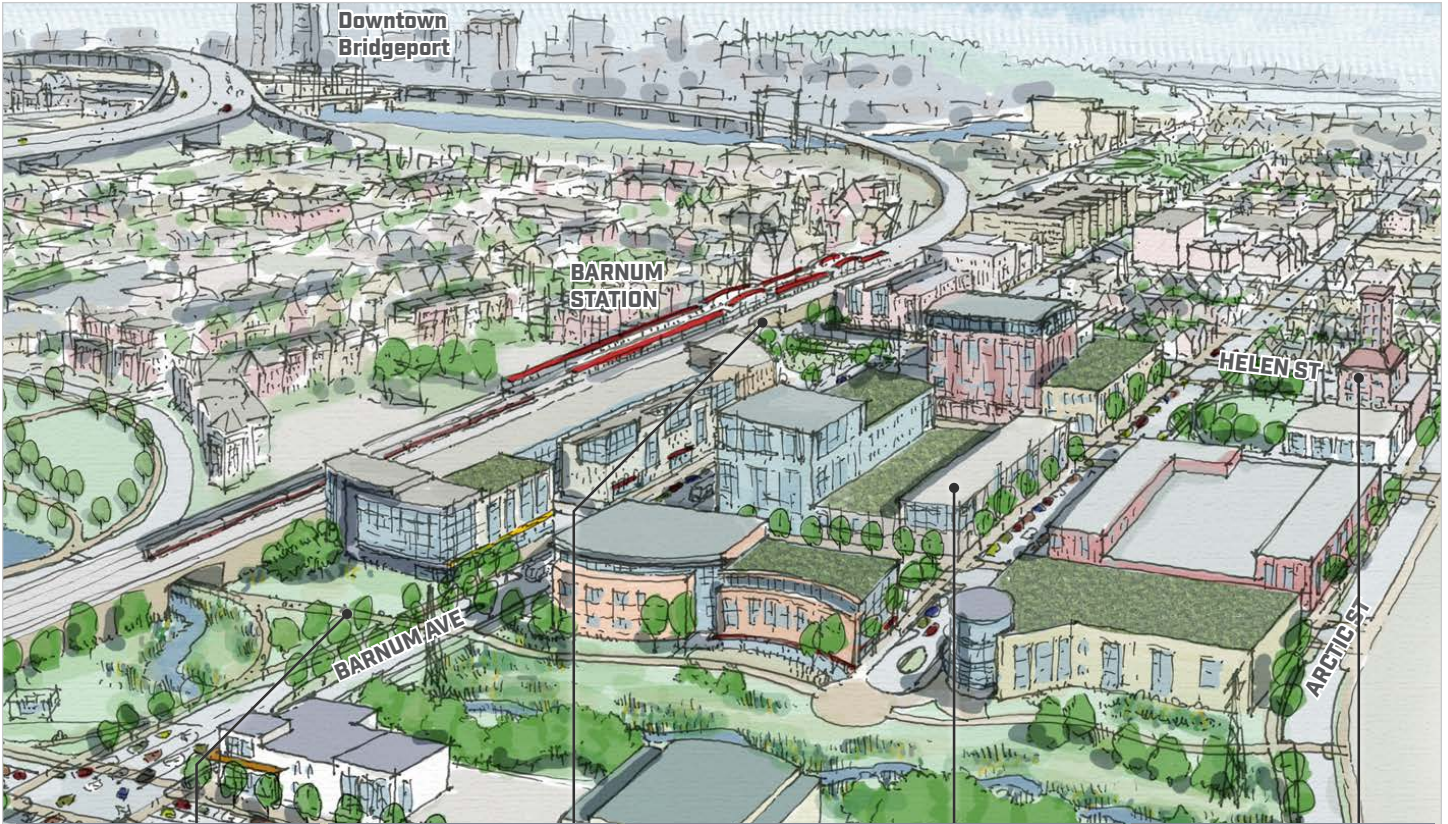
While the goals of TOD, such as increasing economic development opportunities, reducing travel demand by single-occupant automobile travel, optimizing infrastructure, making cities more walkable and connected, and reducing environmental impacts, may be similar from community to community, the way TOD looks and feels should be unique to each community. It is very important that TOD respect and complement the form, density, character, and community values of each station area and downtown. Customizing TOD projects is critical to ensure that the new development is appropriate for their specific urban context and accepted and supported by elected officials and the public, while also achieving a suitable level of building or critical mass to attract private investors.

## TOD Along the New Haven Main Line

Three of the Region’s municipalities are located along the New Haven main line: Bridgeport, Fairfield and Stratford. Each location is well-suited to various scales and densities of TOD. Local opportunities, initiatives and projects are described below.

### Bridgeport

The **City of Bridgeport’s Master Plan** describes Downtown Bridgeport as a relatively small and compact area that offers a wide



<p>Yellow Mill greenway adding recreational amenity, attractive setting, and flood protection</p>	<p>Pedestrian concourse linking East Side neighborhood areas south and north of tracks</p>	<p>Variety of development opportunities on Tower Place and adjoining parcels with emphasis on high-density employment settings like office, health care and research.</p>	<p>Existing Shot Tower, to remain as landmark and connection to the Station District's industrial past</p>
---	--	---	--

Sample concept for Barnum Station district development.  
Source: VHB

range of activities and businesses. The size of the downtown and closeness of various attractions lends itself to convenient and comfortable pedestrian circulation. The city codified the character of the Downtown area by designating it as a Downtown Village District, with the intent to promote the area as a transit-oriented district. Since the Downtown serves as the region's transportation hub, this existing infrastructure will support future plans for mixed-use development.

**Bridgeport Intermodal Transportation Center (ITC)**

Within Downtown Bridgeport, travelers have the option of using local and intercity buses, commuter and interstate rail, and a passenger ferry service, as well as Interstate 95 and Route 8. These four modes are located within close proximity of each other, making

transfers easy and convenient. In addition, the Pequonnock River Trail begins in Downtown and allows access by bicycle. To take advantage of these travel options, the City of Bridgeport initiated the Bridgeport Intermodal Transportation Center (ITC) project. The first phase included a new bus terminal, commuter parking garage, and elevated walkway to connect these components.

The second project phase is underway and will improve the rail station and connections to the Downtown area. These connections will be made physically, aesthetically and functionally and will promote non-motorized modes, foster mobility, facilitate access to multi-modal transportation modes and enhance the overall environment in and around the downtown area.

The ITC project can be further enhanced by establishing pedestrian connections along the waterfront of Bridgeport Harbor and the Pequonnock River.

### **Barnum Station**

In addition to the Downtown station improvements, a second commuter rail station is currently being planned by the City. Barnum Station will be located along the Metro-North Railroad New Haven line in East Bridgeport. The station will enhance regional access to and from East Bridgeport and support the revitalization of the East Side, Mill Hill and East End neighborhoods.

After the initial feasibility study was completed in 2012, the City of Bridgeport conducted the **Barnum Station Transit Oriented Development Plan** and the **Tower Place Adaptive Reuse Strategy**. Partly due to the existing residential density of the neighborhood, the TOD Plan found that the Barnum Station area has significant potential to serve as a regional, intermodal center for residents and businesses:

- The area within three blocks of Barnum Station (or the Barnum Station District) has the potential to become a Regional Center, with office space and related mixed-use development. The District has few parallels along the Northeast Corridor and is a prime opportunity to expand economic growth in southwestern Connecticut.
- Over a 25-year period, the Barnum Station District has the potential to attract and spawn 4,000 or more new jobs within walking distance of the station. Unlike many TOD opportunities where housing primarily drives development, the District is well positioned to serve as an employment center. This stems from the large scale of its development sites, scarcity of other large transit-served sites in Fairfield County, and accessible workforce.

- The broader area within 1/2 mile of the station should also accommodate complementary residential development, light industry and community services for surrounding city neighborhoods. Ongoing mixed-income residential development is already helping reposition vacant blocks and waterfront near the station as attractive places to live.
- Public control of nearly 25 acres of vacant land near Barnum Station – more than at any comparable site in the region – enables efficient, well-planned redevelopment at a sufficient scale to establish a strong position in the real estate market.
- Even before new development is considered, the area around the station already accommodates more than 4,500 jobs and 2,000 households, making it an active mixed-use area that will make extensive use of Barnum Station from its opening day.

### **Fairfield**

Three rail stations are located in the Town of Fairfield: Fairfield Metro Center, Fairfield Center (downtown) and the Southport station. All station areas provide spaces for commuter parking. The Town of Fairfield serves as the parking authority for the Fairfield Center and Southport stations. Both stations have wait lists between two and two and a half years long. However, Southport and Downtown Fairfield are relatively pedestrian friendly environments and the Town is actively pursuing opportunities to further improve both walkability and bikeability, as described in Section 7, Active Transportation.

#### **Fairfield Metro Center**

Fairfield Metro Center is owned by the State of Connecticut and parking is managed independent of the Town. As a regional commuter station, parking for 1,400 cars is provided. Currently, this area is less walkable than the



A sample concept for transit oriented development in Fairfield.  
Source: Goody Clancy

other station areas, but mixed-use development and improved access to Bridgeport's Black Rock neighborhood could improve walkability in the area.

The **Fairfield Transit Oriented Development Planning Study** is currently assessing the feasibility and marketability of TOD in the Fairfield Metro Center and Downtown areas. These two areas have some of the most visible, undeveloped land in Fairfield. The recommendations made by the study will emerge from a combination of community input and technical analysis. The technical components of the study include:

- Real estate market and feasibility studies: potential for commercial and residential development.
- Fiscal impact analysis: how different types of land use could affect Town revenues and expenses.
- Development capacity and design analysis: the types of development could take place under current zoning and potential modifications to zoning.
- Infrastructure capacity analysis: major constraints in street or utility infrastructure that should inform the type, amount, and location of development, and possible infrastructure improvements.

The market analysis was recently concluded and found that the market potential for residential development is robust for both station areas, with demand largely driven by young professionals, empty-nesters and retirees. Despite high vacancy rates elsewhere in Fairfield County, modest growth is forecasted for the office market over the next decade. The report also noted the relative strength of the retail marketplace (especially in the downtown) but concluded that retail potential in the Metro Center area is dependent upon the degree to which the station area evolves and provides additional residential development opportunities.

## Stratford

Stratford residents have access to Metro North's New Haven Line and economic opportunities throughout Southern Fairfield County and New York City via the rail station in Stratford Center. I-95, Route 1 and several regional bus routes intersect Stratford Center as well. However, the economic vitality that should result from the number of visitors to the area has not yet been realized. A combination of public and private projects will realize the economic benefits of residential and commercial redevelopment, enhanced

traffic patterns and improved connections to Stratford Town Center.

During previous planning studies, Stratford residents have voiced dissatisfaction with the lack of shopping, limited parking, and overall aesthetics of Stratford Center. Pedestrian activity is discouraged by gaps in sidewalks, wide streets, few crosswalks and high vehicular speeds. The typical time on the Town's parking permit wait list is about 14 months. A more balanced environment for motorized and non-motorized forms of transportation is necessary to realize an economically vibrant Stratford Center.

### Stratford Complete Streets Plan

The Stratford Complete Streets Plan and various infrastructure projects have been described in the Active Transportation section (7). In addition to infrastructure improvements, Stratford has been actively working to position its downtown for significant redevelopment. The Town's goal is to transform its town center into a modern, urban area that offers new, mixed use development in a pedestrian-friendly environment with public open space and access to public transit service. Past work has included the clean-up of

underutilized brownfield sites, assessing the feasibility of TOD and the adoption of a Transit Oriented Development Overlay District zoning regulation. More recently, the Town developed a Request for Qualifications for a Master Developer for a large parcel in close proximity to the rail station. The existing TOD Overlay Zone will ensure that any new development in Stratford Center is of high quality and blends with the existing historic character of the Town.

### TOD along the Waterbury Branch Line (WBL)

Four Naugatuck Valley communities in the Greater Bridgeport Valley Region are located along the Waterbury branch rail line, and each have neighborhoods well-suited for TOD that are in proximity to a rail station. Through their location on the WBL commuter rail service, these areas provide direct access to employment centers in Bridgeport and Stamford, as well as, New York City. In a north-to-south orientation, the cities and towns on the WBL are:

- Seymour

A complete street concept for Main Street by the Rail Station in Stratford.  
Source: ALTA





Transit oriented development along the Waterbury Branch line.

- Ansonia
- Derby-Shelton

The towns and cities in the Naugatuck Valley are prime candidates for TOD development because they already have compact historic urban centers that developed along the Naugatuck River and around access to the Waterbury rail line. They have the infrastructure, such as public water and sanitary sewer lines, needed to support mixed-use and higher density developments. Also, the key component of Transit-Oriented Development, that is “transit,” already exists within the corridor. In addition to the WBL’s commuter service, fixed-route bus networks are operated by CTtransit and Greater Bridgeport Transit. These transit services provide the Naugatuck Valley a significant advantage because new infrastructure and services do not

need to be built. TOD will also position these communities for revitalization and retrofits to their central business districts.

### Route 8 Alternate Modes Assessment

Through the Route 8 alternate modes assessment, the NVCOG is identifying opportunity sites in proximity to the rail stations that could become TODs, including Ansonia, Seymour and Derby-Shelton. In addition, “Model Blocks” were developed for each community based on the results of public input and visual preference surveys. The “Model Block” concept is not intended to impose a design on any one site, rather, it is an approach that helps towns visualize a form of mixed-use, compact development that optimizes use of valuable downtown infrastructure, complements existing downtown

development, builds a customer base for downtown merchants, builds transit ridership by bringing people closer to transit stations, and enables people to live closer to where they work. The “Model Block” represents a development strategy that can be applied to underutilized parcels.

Land development is only one aspect of TOD. To realize the full potential of this type of development it is imperative to have the complementary transit services. While the Naugatuck Valley benefits by having the rail infrastructure in place, it suffers from the lack of service and poor condition of equipment. In order for TODs to capture a higher density of residents, jobs and businesses, enhancements and improvements along the WBL are essential. Current WBL investments include full signalization, passing sidings, and Positive Train Control. In addition to these investments, new rolling stock, expanded service, station improvements and construction of a transfer station at the Devon wye are necessary. These projects are described in detail in the Rail section.

## Enhancing Suburban Transit Hubs

### Village Districts in Easton, Monroe and Trumbull

The municipalities of Easton, Monroe and Trumbull access rail service from Bridgeport, Fairfield or Stratford. These towns are more suburban and/or rural than their coastal neighbors. Residential and commercial development is much less dense, which limits the range and frequency of bus transit that can be efficiently provided. However, each of the three towns have expressed interest in developing village districts, which would consist of mixed-use development at a slightly higher density than the surrounding area. To ensure walkability, bicycle and pedestrian

improvements from the village centers to residential areas would be necessary. With sufficient employment, retail or even residential density, the village center could potentially be served by enhancements to existing bus service or new bus service in the future.

### Shelton’s Bridgeport Avenue Corridor: Neighborhood Transit Hub

NVCOG’s alternate transit assessment also investigated opportunities to enhance transit services to the Bridgeport Avenue corridor of Shelton. Shelton has enjoyed significant corporate and industrial development in several areas outside the downtown core, with the Bridgeport Avenue corridor a prime area. With ready access to the Route 8 expressway and proximity to corporate and financial markets in Fairfield County and New York City, large tracts of open land were prime and attractive for commercial and corporate development. In the past 40 years, mid-sized retail centers, condominiums, hotels and corporate office parks, including the recently constructed mixed-use development, have been constructed. There is potential for more development in the Bridgeport Avenue corridor, but residents’ concerns about traffic and other growth impacts are refocusing efforts to non-automobile modes to accommodate new growth.

While a traditional TOD node may not be feasible along the corridor, the concept of a “Neighborhood Transit Hub” or NTH was explored. The NTH is a highly interactive transit stop with multi-modal connections, where transit vehicles (public buses, private shuttles, taxis, and shared vehicles) enable passengers to change their mode of travel (from car or taxi to bus, from bus to shuttle, from bicycle to bus or shuttle, or from bus to bus). An NTH can also be a pulse-point where transit vehicles from different routes converge and time their stops to enable

easy and immediate transfer of passengers to another route or service. The provision of effective and predictable transit encourages surrounding development, which, in turn, supports transit. The activity levels associated with transit hubs provides new customers for private development and the activity levels in shops, cafes, and service establishments provides more “eyes on the street” that improves the security of people waiting for buses.

The development of an NTH would require the implementation of new and expanded transit services to the area. While the proposed enhancement of GBT Route 22X might be sufficient to promote and support the development of an NTH, it is more likely necessary to implement a high quality BRT system that uses the NTH as its primary stops.

## Transportation Demand Management

Transportation Demand Management is a

range of congestion management strategies that reduce or modify the demand for transportation, rather than increasing the capacity of the transportation system. Examples of TDM include staggered or flexible work hours to reduce peak demand, employer incentives to use transit and ridesharing services and telecommuting.

### CTRides

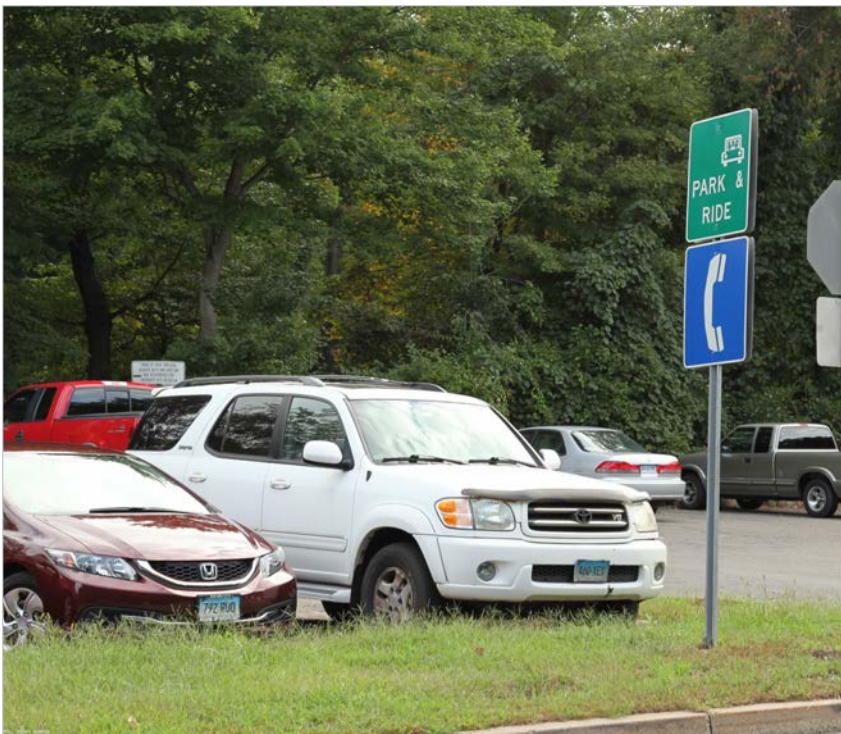
Most of the state’s voluntary TDM programs and initiatives are coordinated through CTRides. A free service of CTDOT, CTRides provides both residents and businesses with information on commuting options. Services include work-site informational sessions, carpool & vanpool events, customer service consultants available via phone, email and on-line chat, a comprehensive website with information on local and express buses, vanpool providers, information on rail, walk, bike and Teleworking as well as a commuter reward program.

### Park & Ride Lots

TDM is further supported by the statewide system of park and ride lots, which provides commuters who carpool or utilize a vanpool service with a place to park. Several park and ride lots are located in the Region:

- Fairfield: Routes 15 and 59 (Exit 46), Routes 15 and 58 east and west (Exit 44), I-95 at Roundhill Rd. (Exit 22) and I-95 at Johnson Drive (Exit 24).
- Seymour: Route 8 at Lower Derby Ave. (Exits 20-21)
- Shelton: Route 8 at Bridgeport Avenue (Exit 13)
- Stratford: Route 15 at Route 110 (Exit 53) and I-95 at Route 113 (Exit 30)
- Trumbull: Route 8 at Route 108, Penny Lane, Route 25 at Route 111 (Exit 10), Route 25 at Daniels Farm Rd. (Exit 9) and Route 15 at Route 127 (Exit 50).

A park and ride lot







A docked bikeshare in Cambridge, MA. Source: pedbikeimages.org

## Regional Shared Mobility

Shared active transportation is made up of a network or system of small vehicles which are placed in the public right-of-way and for rent in short time increments. Vehicles include bikes, e-bikes, scooters, and e-scooters, and complement shared mobility services, such as on-demand rideshare services. Shared mobility provides another option to improve last mile connections from transit and has the added benefit of increasing physical activity.

Initially, these services were station based or docked bike share systems, where customers picked and returned bikes at stations placed strategically throughout the right-of-way and adjacent public and private property. More recently, dockless systems allow for a bike or scooter to be picked up or left anywhere (absent regulation), with rental facilitated through a mobile app. Many companies are moving toward hybrid options, where systems can be station-based, or dockless, or both depending on need.

## MetroShare

Municipalities in the Greater Bridgeport Region have expressed interest in a regional bike share and/or scooter share. MetroCOG and GBT are leading this effort and after significant research into the industry, best practices and local preferences, a service will be planned with these considerations:

- Like TOD, facility placement, infrastructure and branding must reflect the context of the community.
- Use of the public right of way will require coordination with the local traffic authority, and potentially the local parking authority.
- The service should be seamless between municipalities.
- An equitable service will have options for the unbanked and/or customers without cell phones.
- It is difficult to envision future innovations in shared mobility services; both customers and vendors should allow for flexibility.

The Town of Fairfield currently has an agreement with a local bike shop to provide bikes to residents and visitors but is interested in a regional service. Reflecting the growth of this industry, the University of Bridgeport has recently implemented a dockless, shared scooter service.

### Sidewalk Inventory

Identifying priority locations for both short- and long-term pedestrian improvement actions, and opportunities for intermodal connectivity can be supported through MetroCOG’s GIS transportation layer, which includes sidewalks and crosswalks. Utilizing the aerial imagery and planimetrics data developed through a 2013 Regional Performance Incentive Program (RPIP) grant, sidewalk and crosswalk polygons were used to develop a multimodal network. This provided a more realistic model of pedestrian movement throughout the region.

Centerlines were created from the sidewalk/crosswalk polygons and manually connected and assigned a type (either sidewalk, crosswalk, curb ramp, stairs) Along with the sidewalk type, the sidewalk material was assigned through aerial image interpretation. This produced a sidewalk inventory for each town.

All too often ¼ and ½ mile buffers are used as surrogates to model walksheds and accessibility of low-income populations to transit.

This crude approach often has poor results. GBT bus routes and Metro-North rail lines were included in the network to model movement through mass transit. The completed multimodal network is a robust tool that can model movement by pedestrians only, pedestrians using mass transit, and vehicular travel.

- Potential uses of the network include:
- Assessing access to mass transit
- Economic development
- Improve walk-ability
- Make transit more efficient

## Intermodal Projects\*

Location	Project Description	Years 1 to 4	Years 5 to 10	Years 11 to 27
<b>Bridgeport</b>				
Downtown Bridgeport	0015-xxxx Bridgeport Intermodal Center project. Includes new Water St. Dock access, enhanced signage/wayfinding, lighting, streetscape, harbor walk, pedestrian linkages, traffic calming, art-work, bicycle routes and renovations to rail station.	\$5,700,000		

\* Additional Intermodal projects can be found in the Bus (5), Rail (6) and Active Transportation (7) sections.

# 11: Performance Measures & Performance Targets

After passage of MAP-21, and continuing with the FAST Act, FHWA and FTA were required to establish national performance measures to evaluate progress in realizing the national goals for safety, infrastructure condition, congestion reduction, system reliability, freight movement, economic vitality, environmental sustainability and reduced project delivery delays. To measure their progress in supporting the national measures, State DOTs and MPOs became required to establish performance targets. The FHWA defines a “performance target” as a “quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by the Federal Highway Administration (FHWA)”. The FHWA encourages that the target “represent the condition/performance of the transportation network or geographic area.”

The US DOT published the final rule related to implement performance-based transportation planning in May 2016. The rule requires the CTDOT, GBVMPO, and the operators of public transportation to use performance measures to document expectations for future performance. Performance management and performance-based planning and programming increases the accountability and transparency of the Federal-aid Program and offers a framework to support improved investment decision-making by focusing on performance outcomes for national transportation goals.

As part of this new performance-based approach, recipients of Federal-aid highway program funds and Federal transit funds are required to link the investment priorities

contained in the TIP/STIP to achievement of performance targets. The MAP-21 performance-related provisions also require States, MPOs, and operators of public transportation to develop other performance-based plans and processes or add new requirements on existing performance-based plans and processes. These performance-based plans and processes include the Congestion Mitigation and Air Quality Improvement (CMAQ) Program performance plan, the Strategic Highway Safety Plan, the public transportation agency safety plan, the highway and transit asset management plans, and the State Freight Plan.

The GBVMPO has implemented performance measures that have been developed by CTDOT and will invest resources in projects to achieve adopted targets. Each performance measure, related projects and statewide targets are described below.

## Highway Safety

Highway Safety is determined by the interaction between drivers, their behavior and the highway infrastructure. The five performance measures for Highway Safety cover all public roads and include:

- The number of fatalities;
- The rate of fatalities;
- The number of serious injuries;
- The rate of serious injuries; and,
- The number of non-motorized fatalities and serious injuries.

The CTDOT and the GBVMPO will collaborate to program appropriate Highway Safety Improvement Program (HSIP) safety projects in the TIP/STIP to meet the targets set by the CTDOT and agreed upon by the GBVMPO.

## Vision Zero

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. The strategy is a departure from the status quo in two major ways:

Recognizes that people will sometimes make mistakes, so the road system and related policies should be designed to ensure those inevitable mistakes do not result in severe injuries or fatalities. System designers and policymakers are expected to improve the roadway environment, policies, and other related systems to lessen the severity of crashes.

A multidisciplinary approach that brings together diverse stakeholders to address this complex problem. Vision Zero acknowledges that many factors contribute to safe mobility -- including roadway design, speeds, behaviors, technology, and policies -- and sets clear goals to achieve the shared goal of zero fatalities and severe injuries.

- Vision Zero Network, <https://visionzeronetwork.org/>

Projects will include:

- **Programmatic highway safety improvements:** Projects or programs that are conducted regularly throughout the state such as signing and pavement marking programs.
- **Programmatic driver safety activities:** Projects or programs that are conducted regularly on an ongoing basis. These include Highway Safety behavioral programs such as Impaired Driving, Occupant Protection, Distracted Driving, Speeding, Motorcycle Safety, and Teen Driving grants for State and Municipal Police Departments using National Highway Traffic Safety Administration (NHTSA) funds.
- **Location-specific highway safety projects:** This includes roadway safety improvements selected to correct known safety problems at locations with a high frequency or severity of crashes.

Upon review of the 5-year rolling average for each measure, CTDOT has determined the

performance targets in Table 11-1.

The targets were included in the CTDOT Highway Safety Plan sent to the National Highway Traffic Safety Administration (NHSTA) and were approved on August 18, 2017. The targets were also incorporated in the Highway Safety Improvement Program annual report. The HSIP was approved by FHWA on September 26, 2017. The GBVM-PO endorsed the state safety targets January 19, 2018.

## Transit

The Transit Asset Management (TAM) rule requires that recipients and sub-recipients of FTA funds set annual performance targets for federally established State of Good Repair (SGR) measures. SGR performance measures for the four asset categories in the three public transportation modes of rail, bus and ferry are:

1. **Rolling Stock – Revenue Vehicles:** The performance measure for rolling stock is the percentage of revenue vehicles within a particular asset class that have either met or exceeded their useful life benchmark (ULB). ULB is the maximum age of an asset based on operational characteristics (age, mileage, environment) before it is replaced or enters into the SGR backlog.
2. **Equipment – Service Vehicles:** The performance measure for non-revenue, support service and maintenance vehicles equipment is the percentage of those vehicles that have either met or exceeded their ULB.
3. **Infrastructure – Guideway:** The performance measure for rail fixed guideway is the percentage of track segments with speed restrictions.
4. **Facilities:** The performance measure for facilities is the percentage of facili-

ties within an asset class, rated below condition 3 on the FTA Transit Economic Requirements Model (TERM) scale.

CTDOT coordinated with transit providers in Connecticut to develop SGR performance targets in the four asset categories by the deadline of January 1, 2017, as set in the federal rules. Under the FAST Act and MAP-21, “transit providers are required to submit an annual narrative report to the National Transit Database that provides a description of any change in the condition of its transit system from the previous year and describes the progress made during the year to meet the targets previously set for that year.”

Table 11-1: Performance Targets for Highway Safety

Target	Measure
Number of fatalities	257 fatalities/year
Rate of fatalities	0.823 fatalities/100 Million VMT
Number of serious injuries	1,571 serious injuries/year
Rate of serious injuries	5.033 serious injuries/ 100 Million VMT
Number of non-motorized fatalities & non-motorized serious injuries	280 fatalities and serious injuries/year

Table 11-2: Performance Targets for Tier 1 Transit Asset Classes

Asset Class	Default ULB* for SGR**	CT ULB for SGR	SFY19 Target:	Vehicles that Meet or Exceed ULB in SFY19
<b>Bus: Rolling Stock/Revenue Vehicles</b>				
Bus	14 years	12 years	14%	19%
Articulated Bus	14 years	12 years	14%	0%
Over-the-road Bus	14 years	12 years	14%	3%
Cutaway	10 years	5 years	17%	0%
<b>Rolling Stock/Revenue Vehicles (Rail)</b>				
MNR Commuter Rail Locomotive	39 years	35 years	13%	54%
MNR Commuter Rail Passenger Coach	39 years	35 years	13%	0%
Commuter Rail Self-Propelled	39 years	35 years	13%	12%
Passenger Car	39 years	35 years	13%	12%
<b>Service Vehicles</b>				
Trucks	14 years	14 years	7%	26%
Automobiles	8 years	5 years	17%	46%
SUVs	8 years	5 years	17%	30%
Vans	8 years	5 years	17%	54%
Steel Wheel Vehicle (rail support)	25 years	25 years	0%	98%

\*ULB: Useful Life Benchmark \*\*State of Good Repair \*\*\*State Fiscal Year, July 1st to June 30th

CTDOT's Public Transportation Transit Asset Management Plan 2018-2021 was submitted to the FTA on October 1st. A narrative report describing strategies for setting targets and progress on the targets will accompany targets starting 2019.

The TIP/STIP will program projects to meet

the targets set by the CTDOT and agreed upon by the GBVMPO by utilizing the list of capital prioritized projects, based on projected asset conditions, included in the CTDOT TAM and Transit Group Plans. This list of projects will be updated every four years along with the Plans. These prioritized projects will be developed with the aid of

Table 11-3: Performance Targets for all Transit Facilities, TERM Scale\*

Facility Type	Tier 1s <3	GBT <3	VTD <3	SFY19** Target: No facilities <3
Administrative/Maintenance Facility Inventory & Condition	0%	0%	0%	0%
Passenger Facility Inventory & Condition	58%	0%	N/A	0%

\*TERM: FTA's Transit Economic Requirements Model \*\*State Fiscal Year, July 1st to June 30th

Table #-11: Performance Targets for Guideway Infrastructure

Measure	Performance SFY18	Target SFY19
Percentage of track segments with performance restrictions	5%	2%

Table 11-5: Performance Targets for Tier 2 Transit Asset Classes

Asset Class	Default ULB* for SGR**	CT ULB for SGR	SFY19 Target:	Statewide: Vehicles that Meet or Exceed ULB in SFY19	GBT: Vehicles that Meet or Exceed ULB in SFY19	VTD: Vehicles that Meet or Exceed ULB in SFY19
<b>Bus: Rolling Stock/Revenue Vehicles</b>						
Bus	14 years	12 years	14%	24%	9%	NA
Cutaway	14 years	12 years	17%	46%	13%	100%
Minivan	10 years	5 years	17%	0%	NA	NA
<b>Service Vehicles</b>						
Trucks	14 years	14 years	7%	32%	50%	100%
Automobiles	8 years	5 years	17%	100%	100%	NA
SUVs	8 years	5 years	17%	29%	50%	0%
Vans	8 years	5 years	17%	40%	NA	NA

\*ULB: Useful Life Benchmark \*\*State of Good Repair

CTDOT's analytical decision support tool, Transit Asset Prioritization Tool, better known as TAPT.

Table 11-2, 11-3, 11-4 and 11-5 are based on CTDOT's Public Transportation Transit Asset Management Plan (TAMP) 2018-2021 and provides summaries of the performance targets by asset class for Tier 1 and Tier II systems. Tier I transit systems are owned by CTDOT and include assets operated by Metro North Railroad on the New Haven main and branch lines, as well as the CT-transit system which is operated by several private contractors. Tier II systems include the Greater Bridgeport Transit Authority and the Valley Transit District. These targets were adopted by the CTDOT on January 1, 2017 and by the GBVMPO on June 15, 2017.

## Pavement & Bridge Condition

The four performance measures for Pavement condition are:

1. The percentage of the pavement on the Interstate system in Good condition;
2. The percentage of the pavement on the Interstate system in Poor condition, with a maximum percentage of lane miles in poor condition at 5%;
3. The percentage of the pavement on the

non-Interstate National Highway System (NHS) in Good condition; and

4. The percentage of the pavement on the non-Interstate NHS in Poor condition.

Three condition metrics determine the overall condition of pavement: the amount of roughness (International Roughness Index or IRI), surface depression (rutting) and cracking (an unintentional break in the continuous surface of a pavement). Pavement in good condition has low levels of IRI, rutting and cracking. Pavement with high levels of two or more condition metrics is in poor condition. Fair pavement is any other combination of condition metrics. CTDOT utilized their existing Pavement Management System to determine the performance targets in Table 11-6.

The two performance measures for Bridge condition are:

1. The percentage of NHS bridges by deck area in Good condition; and
2. The percent of NHS bridges by deck area in Poor condition, which may not exceed 10%.

The lowest of the National Bridge Inventory (NBI) condition ratings for deck (surface), superstructure (deck support) and substructure (abutments and piers) determines the overall condition of each bridge. Statewide

Table 11-7: Performance Targets for Pavement Condition

<b>Interstate System &amp; National Highway System (NHS) pavement in lane miles</b>	<b>Baseline Condition (State)</b>	<b>2-year targets (2020)</b>	<b>4-year targets (2022)</b>	<b>Current Condition GBVMPO*</b>
% interstate in good condition	66.2%	65.5%	64.4%	62%
% interstate in poor condition	2.2%	2%	2.6%	1%
% non-interstate NHS in good condition	37.9%	36%	31.9%	47.7%
% non-interstate NHS in poor condition	8.6%	6.8%	7.6%	.7%
Overall in good condition				50.9%
Overall in poor condition				.7%

\*CTDOT's 2017 performance measures. The GBVMPO measure is for informational purposes only.

Table 11-6: Performance Targets for Bridge Condition

National Highway System (NHS) condition of bridge	Baseline Condition (State)	2-year targets (2020)	4-year targets (2022)	Current Condition GBVMPO*
% bridges in good condition	18.1%	22.1%	26.9%	23.11%
% bridges in poor condition	15%	7.9%	5.7%	3.5%

\* CTDOT's 2016 inventory performance measures. The GBVMPO measure is for informational purposes only.

percentages are determined by the percentage of all bridges (by length and width) in good, fair and poor condition. For the bridge condition performance measures, FHWA established the baseline condition from the National Bridge Inventory (NBI). The 2-year and 4-year performance targets in Table 11-7 were determined through CTDOT's Bridge Management System:

The pavement and bridge performance targets were adopted by CTDOT on May 20, 2018 and by the GBVMPO on August 30, 2018. In collaboration with GBVMPO, CTDOT will program projects to meet the targets using the Department's Pavement Management System and the Bridge Management System, which uses a systematic look at conditions to develop optimal strategies. These strategies are included in the CTDOT Transportation Asset Management Plan (TAMP). FHWA certified the first TAMP on July 24, 2018

The Transportation Asset Management Plan (TAMP) acts as a focal point for information about the assets, their management strategies, long-term expenditure forecasts, and business management processes. CTDOT is required to develop a risk-based TAMP for the National Highway System (NHS) to improve or preserve the condition of the assets and the performance of the system (23 U.S.C. 119(e) (1), MAP-21 § 1106). MAP 21 defines asset management as a strategic and systematic process of operating, main-

taining, and improving physical assets, with a focus on engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the lifecycle of the assets at minimum practicable cost. (23 U.S.C. 101(a) (2), MAP-21 § 1103).

Pavement and Bridge State of Good Repair needs are identified, quantified, and prioritized through the TAMP process. Projects to address SOGR repair needs are selected from the TAMP for inclusion in the STIP and TIPs.

### System Reliability

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."*<sup>1</sup>

1 See the FHWA's "Travel Time Reliability: Making It There on Time, All the Time" at <https://ops.fhwa.dot.gov/>



Table 11-8: Performance Targets for System Reliability

Percent of person-miles:	Baseline Condition (State)	2-year targets (2020)	4-year targets (2022)	Current Condition GBVMPO*
On the Interstate NHS that are “reliable”	78.3%	75.2%	72.1%	63%
On the non-Interstate NHS that are “reliable”	83.6%	80%	76.4%	75%

\*The GBVMPO metric is for informational purposes only.

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.

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 times are collected in 15 minute intervals for each reporting segment from the National Performance Management Research Data Set (NPMRDS)<sup>2</sup>. Travel times are measured for four time periods:

- Monday-Friday 6 am to 10 am
- Monday-Friday 10 am to 4 pm
- Monday-Friday 4 pm to 8 pm
- Weekends 6 am to 8 pm

The targets in Table 11-8 were adopted by the CTDOT on May 20, 2018 and by the GBVMPO on August 30, 2018:

The CTDOT and the GBVMPO will program projects in the TIP/STIP to meet the targets by considering system reliability in the projects that are selected. Over time, and as quantifiable impacts begin to be observed and measured, the targets will become a formal part of the project selection process.

## Freight Movement

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

publications/tt\_reliability/TTR\_Report.htm#WhatisTTR

<sup>2</sup> The National Performance Management Research Data Set (NPMRDS) is an archived speed and travel time data set that covers the NHS. Source data are the millions of connected vehicles, trucks, and mobile devices that anonymously supply location and movement data on over 400,000 road segments. The dataset is updated monthly.

in more 'buffer' time into their logistics planning for on-time arrivals. [23 CFR 490.607].

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
- Mid-day period
- PM peak period
- Overnight
- Weekends

The targets in Table 11-9 were adopted by the CTDOT on May 20, 2018 and by the GBVMPO on August 30, 2018:

## Air Quality

The USDOT requires that states and MPOs assess the impact of their transportation systems on air quality and specifically the impacts from vehicle exhaust emissions. The performance measure for air quality is based only on an assessment of projects selected for funding under the FHWA's Congestion Mitigation and Air Quality Improvement (CMAQ) program.

The CMAQ program's purpose is to fund transportation projects or programs that contribute to the attainment or maintenance of National Ambient Air Quality Standards (NAAQS). The TIP/STIP will program projects to meet the targets by selecting appropriate CMAQ eligible projects including: congestion reduction and traffic flow improvements; ridesharing; transit improvements; travel demand management; and, bicycle and pedestrian facilities.

The targets in Table 11-10 were adopted by the CTDOT on May 20, 2018 and by the GBVMPO on August 30, 2018.

Table 11-9: Performance Targets for Freight Reliability

Interstate NHS	Baseline Condition (State)	2-year targets (2020)	4-year targets (2022)	Current Condition GBVMPO*
Truck Travel Time Reliability (TTTR) Index	1.75	1.79	1.83	2.62

\*The GBVMPO metric is for informational purposes only.

Table 11-10: Air Quality Performance Measure Targets

Emissions Component	Reductions Produced by CMAQ Projects		Current Measure (2017)		Targets	
	2-Year	4-Year	2-Year (2020)	4-Year (2022)	2-Year (2020)	4-Year (2022)
Volatile Organic Compounds (VOC) cumulative kg/day	10.82	263.89	19.32	30.14		
Nitrogen Oxide (NOX) cumulative kg/day	34.68	462.49	67.69	102.37		
Particulate Matter PM2.5 cumulative kg/day	1.04	12.95	1.632	2.674		

# 12: Congestion Management Process (CMP) Summary

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. Due to newly available datasets, the 2019 CMP represents a major update to previous plans and will be used as a benchmark for future CMPs for the Region. This section is a summary of the full 2019 CMP, which can be found in Appendix A.

The 2019 CMP focused on ten towns that comprise the Greater Bridgeport and Valley MPO (Ansonia, Bridgeport, Derby, Easton, Fairfield, Monroe, Seymour, Shelton, Stratford, and Trumbull).

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

## Objectives:

The CMP provides an analytical process for understanding congestion and developing mitigating strategies in the Greater Bridgeport and Valley Region.

The primary objectives are:

- 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

## CMP Network:

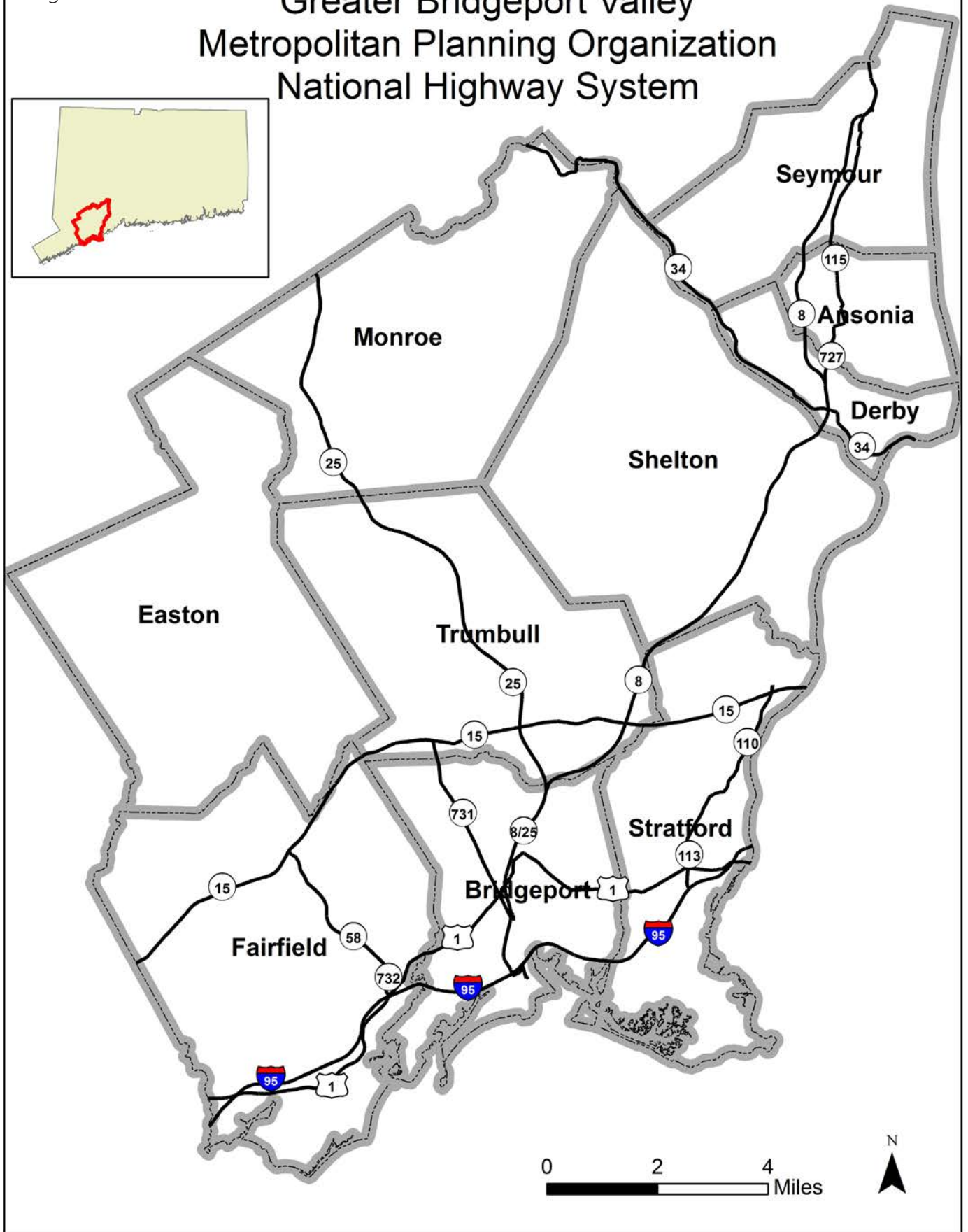
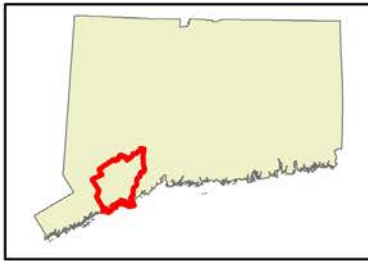
The Bridgeport-Stamford Urbanized Area (BS-UZA) encompasses five MPOs in southwestern Connecticut; Housatonic Valley, Southwestern, Greater Bridgeport and Valley, Central Naugatuck Valley and South Central. The MPOs do not share boundaries with the Council of Governments in CT so the same BS-UZA encompasses four COGs; Western CT, Naugatuck Valley, CT Metropolitan, and South Central CT.

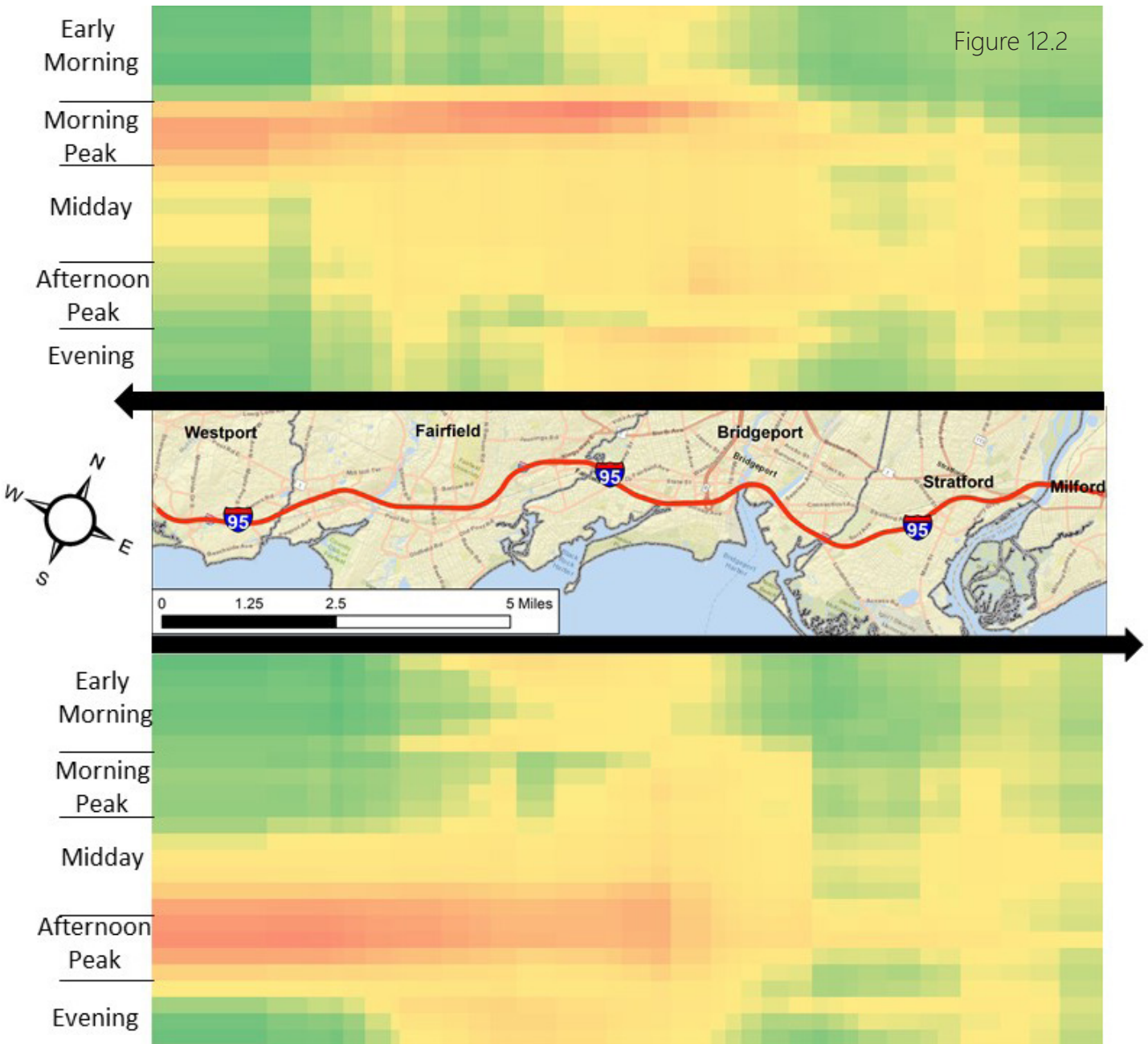
A TMA-wide CMP that covers the entire BS-UZA would have been preferred but unfortunately at this time different update schedules between MPOs prevented the creation of one CMP. The 2019 CMP focused on the Greater Bridgeport and Valley MPO but methodologies have been discussed and agreed upon between staff of the Greater Bridgeport and Valley, Central Naugatuck Valley, Housatonic Valley, and Southwestern MPOs. These agreed upon methodologies will permit the 2019 CMP to be amended to include all the MPOs that encompass the B-S UZA to indeed create one TMA-wide CMP.

The CMP focused on road segments that are included in the FHWA National Performance

Figure 12.1

# Greater Bridgeport Valley Metropolitan Planning Organization National Highway System



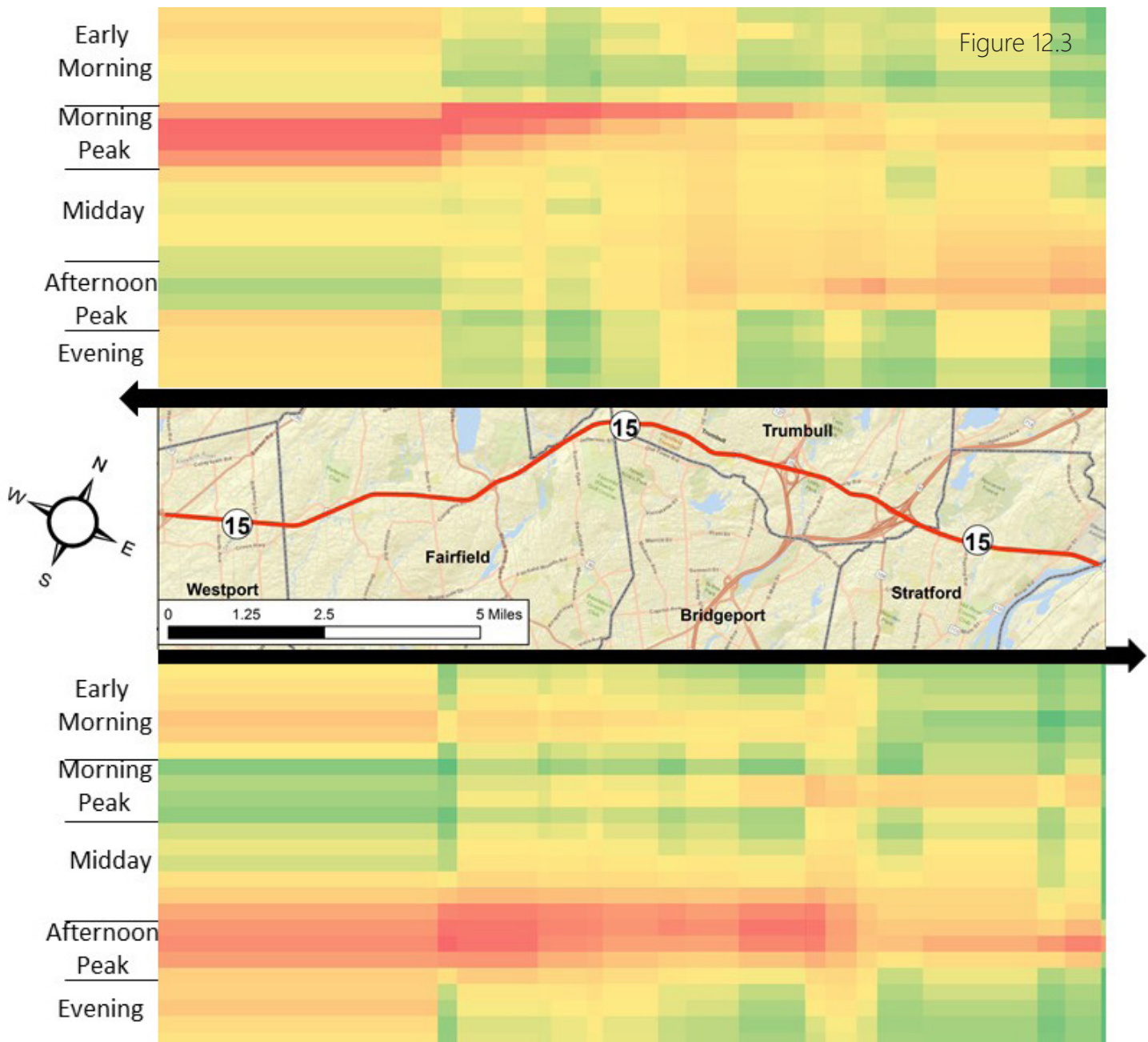


Management Research Data Set (NPMRDS) This dataset encompasses all segments in the enhanced National Highway System along with some additional intersecting road segments. The analysis focused on the large continuous segments that had reliable data in the NPMRDS for 2017 (Figure 12.1). For each roadway a congestion graph was generated to display the speed variation throughout the route and time of day. These

graphs were generated from NPMRDS data collected Monday through Friday for all of 2017.

### Principal Arterials: Interstate

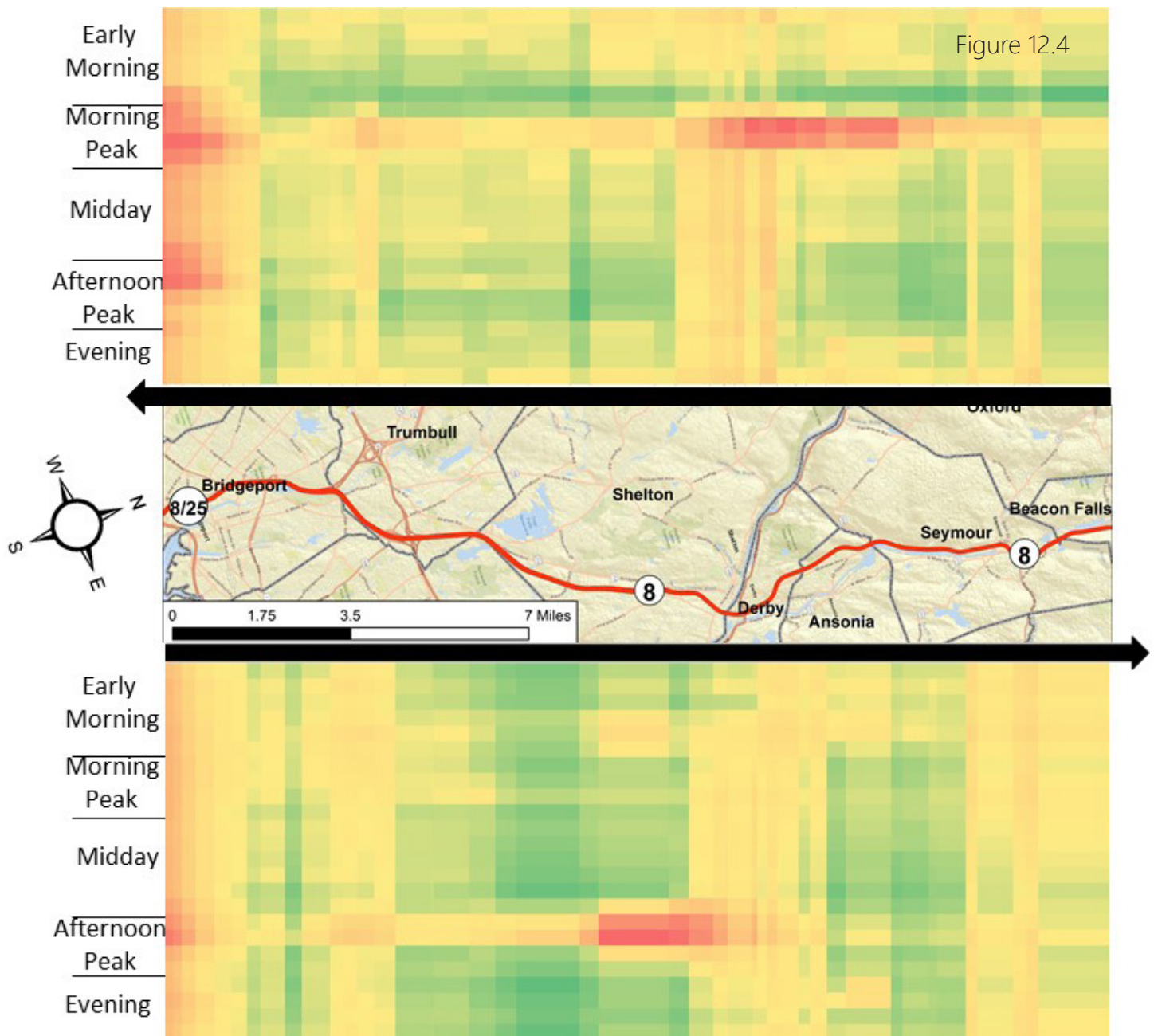
**Interstate 95** runs east-west through three municipalities in the Greater Bridgeport and Valley Region: More detail on I-95 can be found in the Highways section.



In the congestion graph, speed decreases west of the Route 8 interchange in Bridgeport. This traffic is worse southbound during the morning peak as commuters travel to work and worst northbound during the afternoon peak as commuters return home (Figure 12.2).

### Principal Arterials: Other freeways and expressways

**Route 15/Merritt Parkway:** Route 15, or the Merritt Parkway is a limited access, principal expressway that runs 14 miles east-west through Stratford, Trumbull and Fairfield with two lanes in each direction. More detail on Route 15 can be found in the Highways section.



Speed reduction occurs west of the Route 8 intersection similarly to I-95. Congestion is greatest southbound during the morning peak and northbound during the afternoon peak (Figure 12.3).

**Route 8** is the Region's 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. More detail on Route 8 can be found in the Highways section.

On Route 8 speed is reduced as drivers approach the I-95 interchange throughout the day but is exacerbated during morning and afternoon peaks. There also is a slowdown through downtown Derby during the morning peak. Northbound speed reduction also

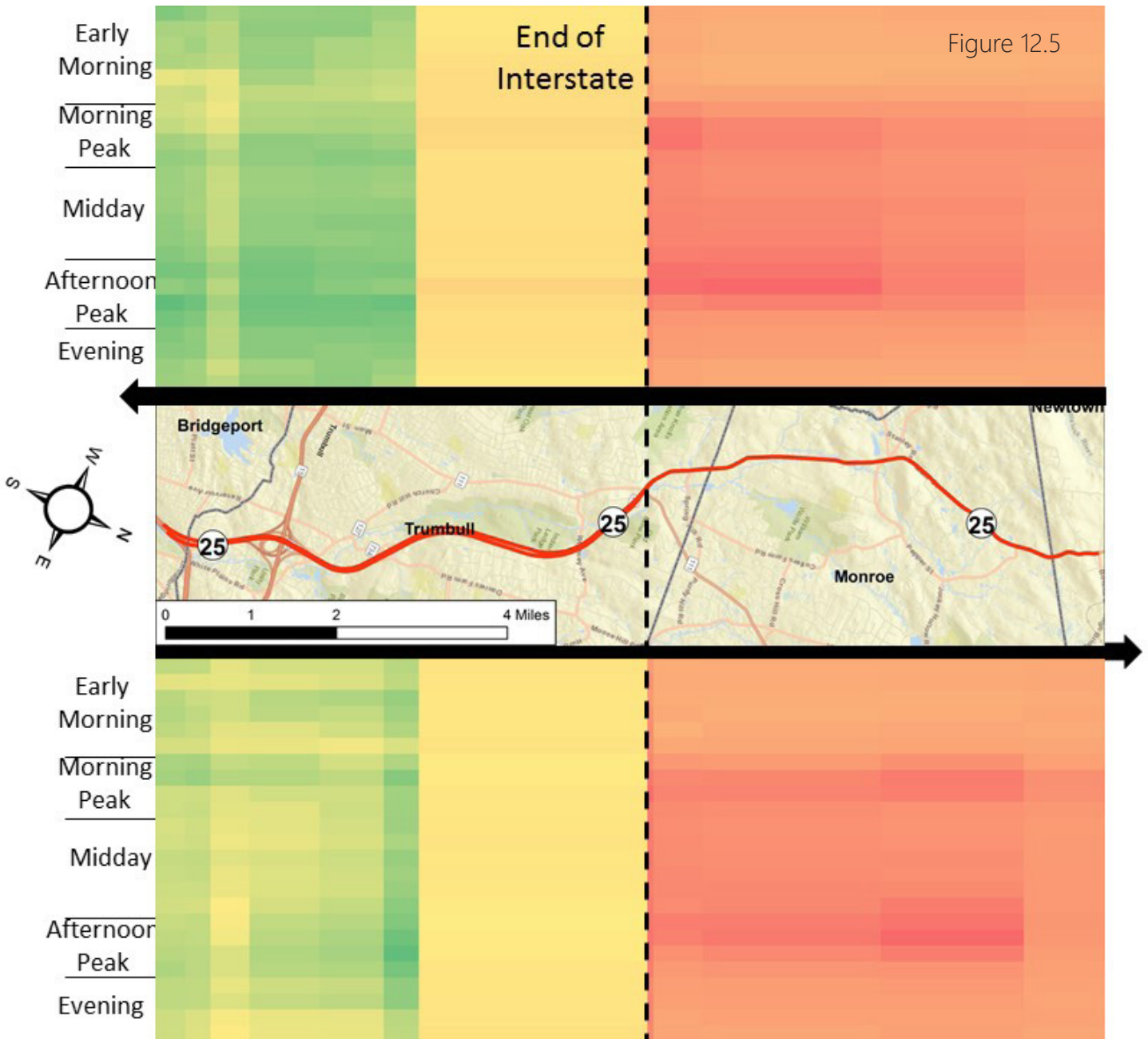


Figure 12.5

occurs as commuters enter Route 8/25 from I-95 while most of the congestion occurs in Shelton during the afternoon peak (Figure 12.4).

**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. More detail on Route 25 can be found in the Highways section.

On Route 25 speed is greatly reduced north of the intersection with Route 111. This is where the Route is a principal arterial instead of an expressway. Speed is also reduced



Table 12-1: Percent Non-Single Occupancy Vehicle Travel, GBVMPO

	Total	Total; MOE*	Drive Alone	Drive Alone; MOE	Non- SOV	Non-SOV; MOE	% Non- SOV	% Non-SOV; MOE
2000 Census	177,479	N/A	139,899	N/A	37,580	N/A	21.17%	N/A
2011 ACS 5yr	186,987	2018.86	143,678	1951.08	43,309	2,807.58	23.16%	1.48%
2016 ACS 5yr	195,262	2052.53	148,316	2228.73	46,964	3,039.87	24.04%	1.53%

\*MOE: Margin of Error

as cars approach or leave the Route 111 intersection (Figure 12.5).

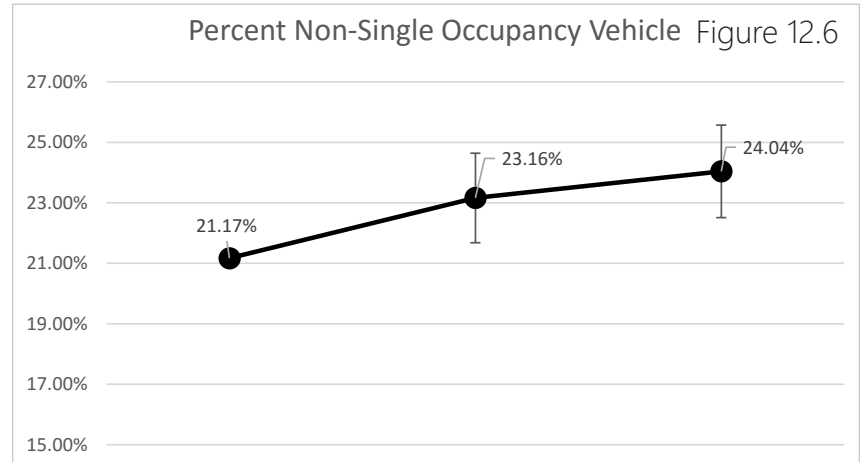
Due to the severe congestion on Route 25, MetroCOG, and the Towns of Monroe and Trumbull partnered to conduct the Route 25 and 111 Engineering and Planning Study. The study has identified multiple strategies to improve traffic operations along the Route 25 and 111 corridors in northern Trumbull and Monroe, especially during peak commuting hours. These strategies were added to the CMP.

### Principal Arterials: Other/NHS

There were nine other routes that were included in the CMP: US Route 1, Route 34, Route 58, Route 110, Route 113, Route 115, Route 727, Route 731, and Route 732. Descriptions of these routes, including congestion graphs, can be found in the full CMP in Appendix \_\_.

### Performance Measures:

Four performance measures were calculated in the Congestion Management Process. Non-SOV travel, Level of Travel Time Reliability, Truck Travel Time Reliability, and Peak Hour Excessive Delay. Datasets and methodology for the measures can be found in the full CMP in Appendix A.



### Non-Single Occupancy Vehicle (Non-SOV)

The Non-SOV measure was calculated to assess the use of other modes of transportation besides single occupancy vehicle travel in the Greater Bridgeport and Valley Region. These other modes include transit, bicycle, or pedestrian travel.

In the Greater Bridgeport and Valley Region the Non-SOV measure was 24.04 % in 2016. There was a 2.87% increase since 2000 (Table 12-1; Figure 12.6).

### 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

# GBVMPO (Travel Time Reliability = 69.9%)

Figure 12.7

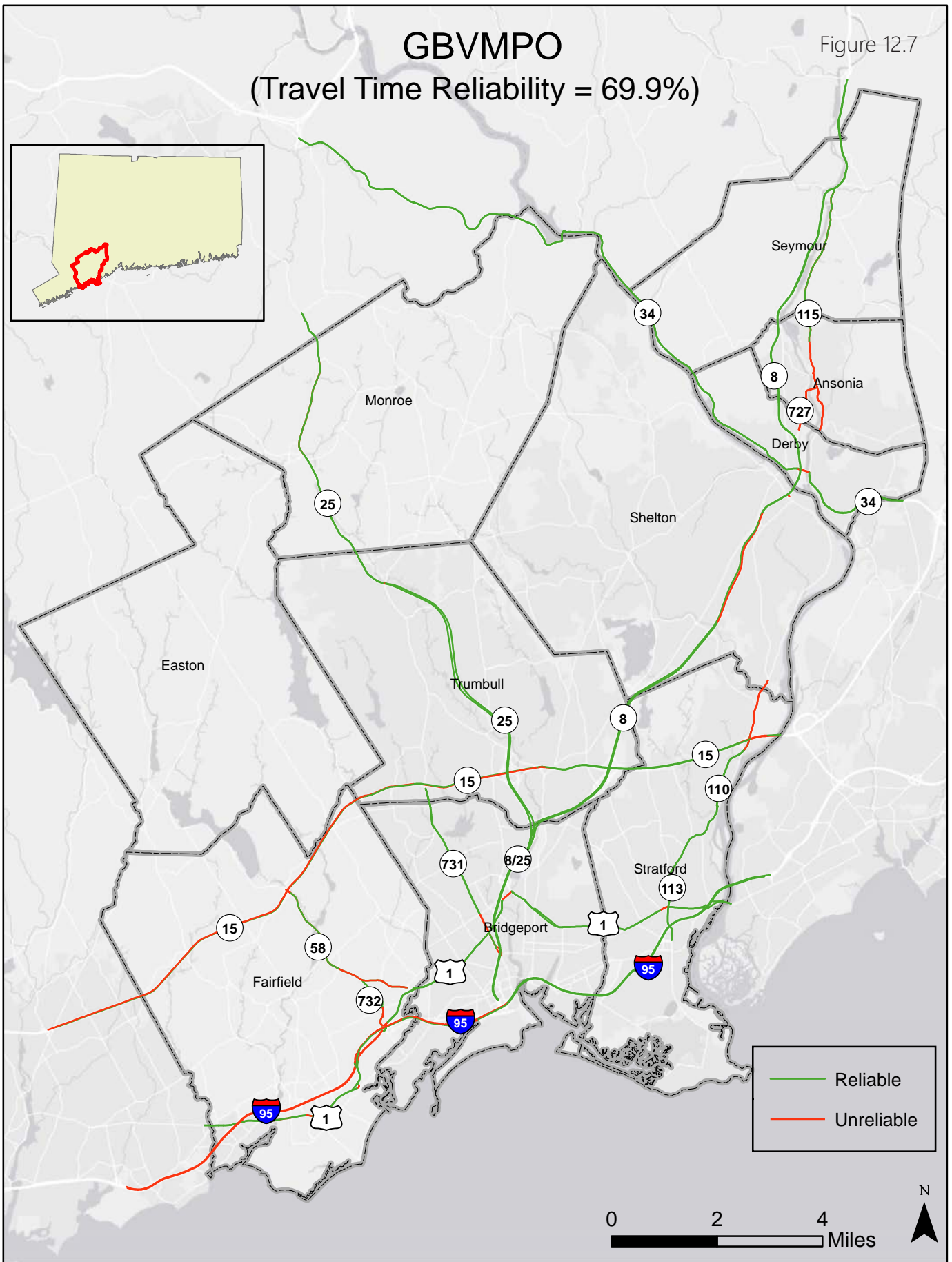
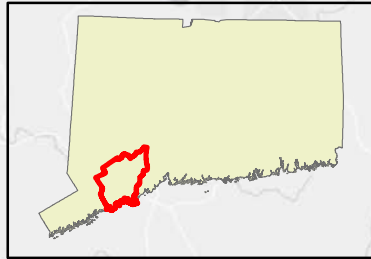
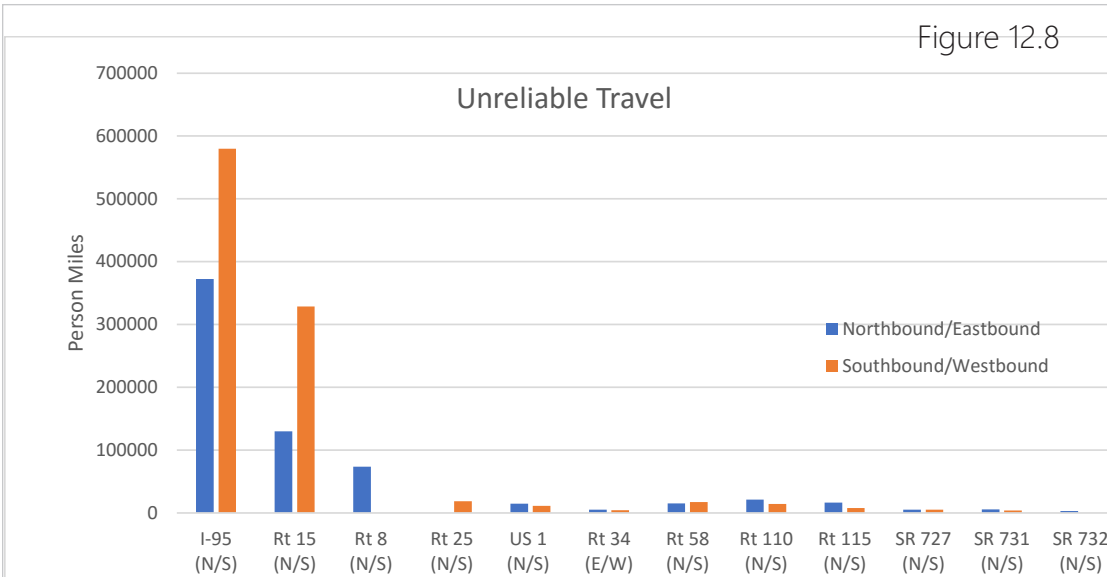


Table 12-2: Performance Targets for System Reliability

Percent of person-miles:	Baseline Condition (State)	2-year targets (2020)	4-year targets (2022)	Current Condition GBVMPO*
On the Interstate NHS that are "reliable"	78.3%	75.2%	72.1%	69.9%

\*The GBVMPO metric is for informational purposes only.



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.”*

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.

The LOTTR (Level of Travel Time Reliability) measure for the region was 69.9%. That is, 69.9% of the NHS person miles traveled were reliable. Figure 12.7 shows the NHS

segments that were calculated as reliable or unreliable..

By comparison the targets in Table 12-2 were adopted by the CTDOT on May 20, 2018 and by the GBVMPO on August 30, 2018..

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. The unreliable segments for I-95 are south of the intersection with Route 8 in Bridgeport. Route 15 has unreliable segments in Fairfield, near the Rt 25 interchange, and near the Sikorsky bridge (Figure 12.8).

The LOTTR analysis was calculated for four different time periods (AM Peak, Midday, PM Peak, Weekday) allowing for the breakdown of unreliable segments by time period. In the chart below, unreliable segments, LOTTR >1.5, for each time period were summed

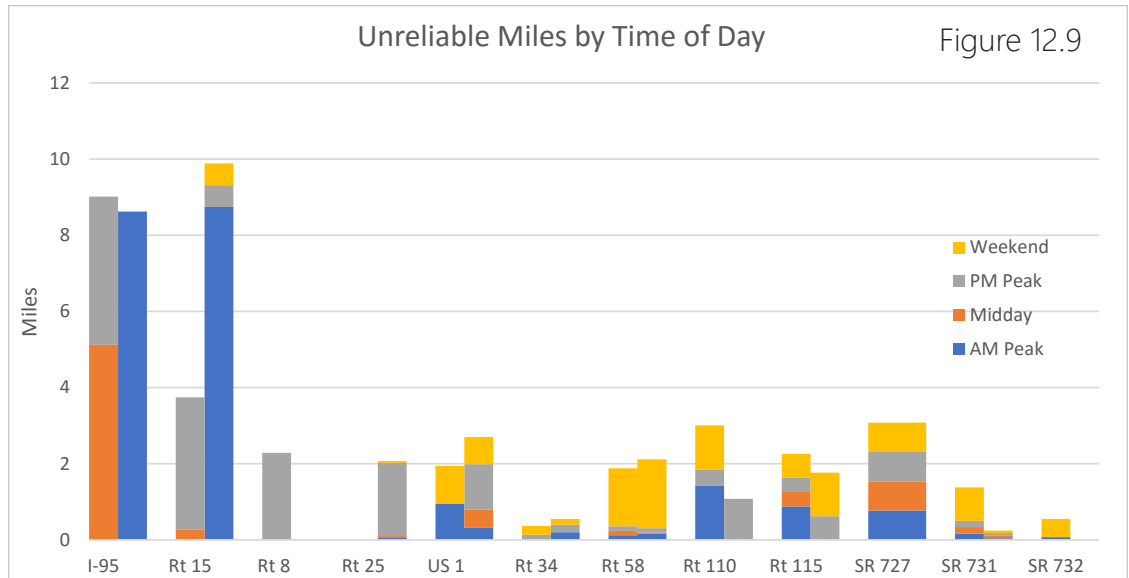


Figure 12.9

by total mileage. This was done instead of using person miles since we were looking at specific time of day instead of the entire day (Figure 12.9).

I-95 and Route 15 have the largest amount of unreliable road mileage in both northbound and southbound directions. This complements 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. Only Route 15 southbound had a small amount of unreliable roadway during the weekend hours, indicating that most of the unreliability can be attributed to weekday commuters.

Route 8 was only unreliable northbound during the PM peak while Route 25 was only

unreliable southbound during the PM peak. The other routes, which are not interstates or expressways, all had some unreliability during the weekend hours. Route 110 southbound was the only non-expressway that was not unreliable on weekends, as it was unreliable only during PM peak hours during the week. Most of the unreliable hours on Route 58 occurred on the weekend.

### 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 Truck Travel Time Reliability was calculated to be 2.35 for the region. Similarly to LOTTR, a score of 1.5 represents reliable travel. (Figure 12.10).

By comparison, the targets were in Table 12-3 were adopted by the CTDOT on May 20, 2018 and by the GBVMPO on August 30, 2018.

Only 93 out of 350 segments had a max

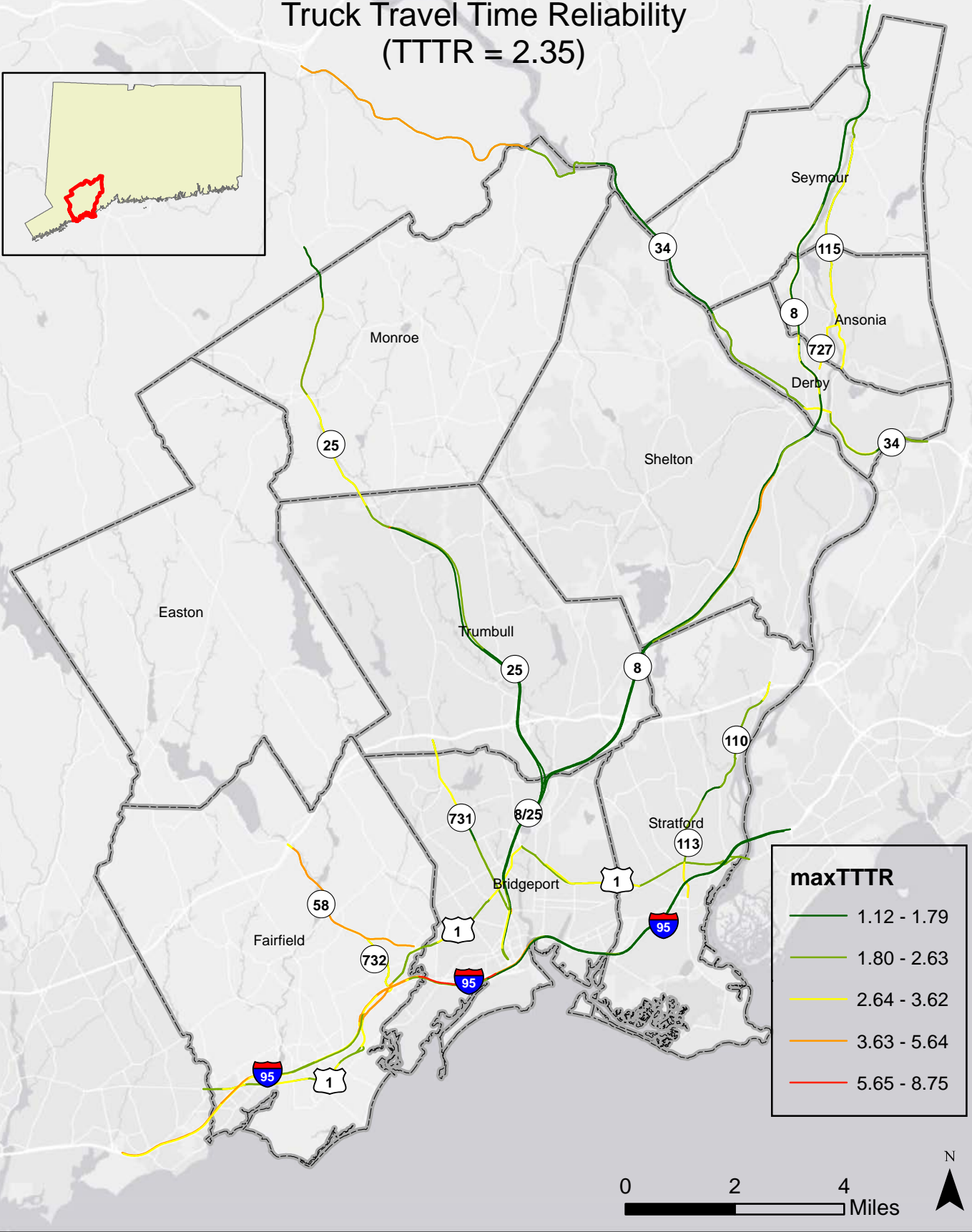
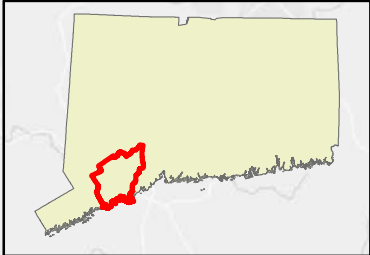
Table 12-3: Performance Targets for Freight Reliability

Interstate NHS	Baseline Condition (State)	2-year targets (2020)	4-year targets (2022)	Current Condition GBVMPO*
Truck Travel Time Reliability (TTTR) Index	1.75	1.79	1.83	2.35

\*The GBVMPO metric is for informational purposes only.

Figure 12.10

# GBVMPO Truck Travel Time Reliability (TTTR = 2.35)



TTTR of less than 1.5. These segments included I-95 east of Route 8, most of Route 8, and small sections on Route 34 and Route 25 (dark green in the map above). All other TMCs had unreliable truck travel. The worst truck travel reliability in the region can be found on I-95 southbound between the Route 8 interchange and Route 1 in Fairfield.

### Peak Hour Excessive Delay (PHED):

The Peak Hour Excessive Delay measure was calculated to assess recurring congestion during commuting hours in the Greater Bridgeport and Valley Region.

The annual hours of peak hour excessive delay per capita for the region was 5.1. This calculation was derived from analysis of delay divided by the total population of the MPO. There were 2,093,171 hours of excessive delay in the MPO region.

High excessive delay occurred in some of the same areas that had high LOTTR and TTTR values such as I-95 and Route 15 in Fairfield. This indicates that these roadways experience both recurring and non-recurring events that delay travel over time (Figure 7.9).

I-95 and Route 15 account for 1,310,425 hours of delay annually, 62.7% of the total delay in the Region. US 1 also had 279,439 hours of delay, 13.3% of delay for the Region. Most of the delay on these roadways occurred west of Route 8. The other 24% of delay in the Region were spread out over the remaining NHS segments (Table 7.6).

In the future, this metric will be compared across time.

### Strategies:

The Congestion Management Process is a data driven approach to develop strategies to mitigate congestion. The performance measures indicate that recurring and non-recur-

ring congestion heavily impact the Region, especially in the western half. The following mitigation strategies are designed to improve travel in the Region that will improve the performance measures 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 strategies were broken down into the four following categories:
  - Demand Management Strategies
  - Public Transportation Strategies
  - Traffic Operations Strategies
  - Road Capacity

These strategies can all be found in the full CMP in Appendix\_.

### Program & Implement:

The CMP is incorporated into this Greater Bridgeport and Valley Metropolitan Transportation Plan (MTP) to help prioritize projects. In future corridor planning studies, there will be an emphasis on congestion mitigation strategies. Currently, many of the CMP proposals have been derived through planning studies and we hope to continue to program short, medium and long term projects, as well as spot improvements with this process.

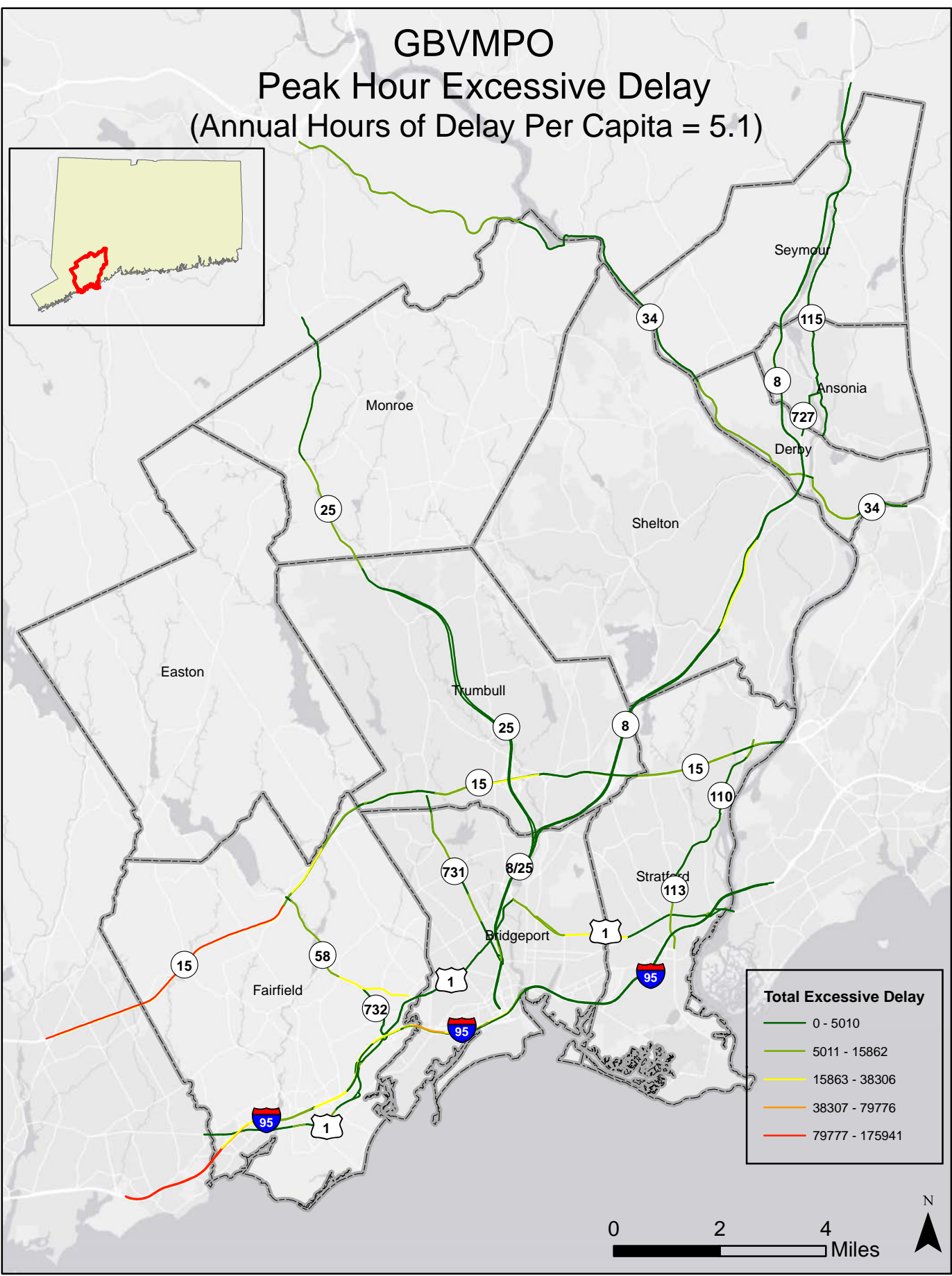
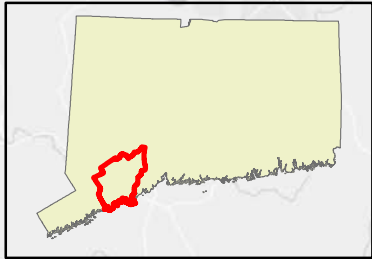
### Monitor & Assess:

In order to assess the effectiveness of the CMP and the resulting strategies, road conditions will need to be monitored. The Greater Bridgeport and Valley Region will continue to obtain NPMRDS data from RITIS and rerun LOTTR, TTTR, and PHED measures using the scripts created for this 2018 CMP. Now that the scripts have been created and the processes run for 2017, the MPO has a baseline that will be able to easily compare the measures to. As projects are completed

# GBVMPO

## Peak Hour Excessive Delay

(Annual Hours of Delay Per Capita = 5.1)



Total Excessive Delay	
—	0 - 5010
—	5011 - 15862
—	15863 - 38306
—	38307 - 79776
—	79777 - 175941

---

the measures can be compared in the project area to gauge the effectiveness. In addition, the 2020 census will provide updated information in which to update the Non-SOV travel. In subsequent years, as the 5-year ACS is generated, the Greater Bridgeport and Valley Region will continue to calculate the Non-SOV travel in the Region.



# 13: Operations

MAP-21 defines Transportation Systems Management and Operations strategies as

*“integrated strategies to optimize the performance of existing infrastructure through the implementation of multi-modal and intermodal, cross-jurisdictional systems, services, and projects designed to preserve capacity and improve security, safety, and reliability of the transportation system.”*

This approach first attempts to solve transportation problems by improving the operational efficiency of the existing system, rather than adding capacity, such as building a new or wider highway. By implementing operational strategies, multi-modal safety can be increased, and vehicular congestion can be reduced.

Many of the projects described in this section have ITS elements and can be funded through the USDOT. Those projects without ITS elements are considered as unfunded needs and serve as illustrative projects, in case funds become available.

## Security

The security of the surface transportation system and infrastructure is a critical issue due to concerns that these facilities are attractive targets to terrorist attacks and vulnerable to natural disasters. The transportation system can also play a key role in responding to an emergency, evacuating affected populations and providing alerts and advisories to travelers. The loss of a critical asset could hamper emergency response efforts, as well as disrupt daily travel patterns.

## Categories of Assets

Critical transportation assets can be divided into four categories:

- **Infrastructure:** Arterial roads, interstates, bridges, overpasses/interchanges, roads on dams, and fixed guideway/rail line.
- **Facilities:** Fuels storage areas, maintenance yards, ports, rest areas, traffic operations centers, terminals (bus and rail stations), parking garages, vehicle inspection stations, and weigh stations.
- **Equipment:** Roadway monitoring equipment, traffic signal control, variable message signs, vehicles (buses and rail rolling stock), and communications systems.
- **Personnel:** Municipal personnel, emergency responders, CTDOT personnel, and rail and bus passengers.

The overall objective of transportation security is to protect the entire system. However, it is not practical or cost effective to safeguard all infrastructure, facilities and equipment. The focus of transportation security varies depending on the transportation asset and the environment in which it is located.

## Traveler Information Systems

Transportation assets are also essential for informing travelers about emergencies and advising them regarding natural and man-made threats. Wide area alerts use driver and traveler information systems, such as dynamic message signs, highway advisory radio, in-vehicle systems, transit displays, 511 traveler information systems, and traveler information web sites, to alert the public in emergency situations. Evacuation and re-entry information can also be transmitted via these devices.

## Critical Mobility Assets

While research suggests that the surface transportation system, in general, has a low

attractiveness value as terrorist targets, there remains a need to emphasize protection of critical mobility assets, such as bridges, tunnels and interchange areas. Transit resources, including rail lines, terminals and vehicles should also be protected. It is equally important to ensure that alerting and advising systems are secure and available when they are needed and that the information provided is accurate, reliable and comes from an authorized source.

### Region 1 Emergency Planning Team (R1EPT)

The Connecticut Department of Emergency Management and Homeland Security (DEMHS) has divided the state into five emergency planning regions. The municipalities of the Connecticut Metropolitan Council of Governments (MetroCOG) have been combined with a portion of the Western Connecticut Council of Governments (WestCOG) to form the DEMHS Region 1. This region is depicted in the following map. The four other municipalities of the GBVMBO (Ansonia, Derby, Seymour and Shelton) are in DEMHS Region 2.

The mission of R1EPT is to provide the high-

est level of emergency preparedness and protection to the citizens of the region as they face new emergency management challenges. The intent is to bring together persons, agencies, first responders and other organizations to better understand the emergency management issues, concerns and threats and better plan and coordinate responses to natural and man-made events. By coming together, the DEMHS Region 1 will be better equipped to respond to and handle a large-scale emergency event. The planning effort has significantly advanced resources, training and capabilities of the Bridgeport-Stamford area to effectively plan, prepare for and respond to man-made and natural disasters. The program has also enhanced interoperable communications among all public safety personnel in DEMHS Region 1 to more effectively coordinate response activities.

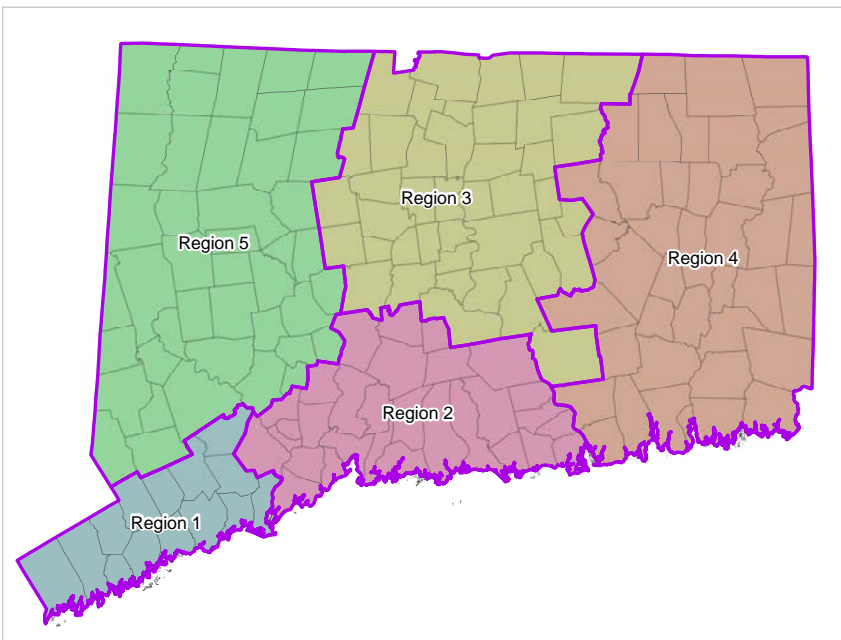
A key component of the R1EPT is the convening of various Emergency Support Function Groups, referred to as ESFs. These ESFs focus their attention on critical discipline-oriented areas. These are working groups tasked with advising and making recommendations to the Regional Emergency Planning Team relative to their specialized area of expertise. The Federal Emergency Response Plan has identified 17 specific ESF areas. In Region 1, the REPT has convened 17 RESFs.

MetroCOG is a member of the R1EPT and participates in bi-monthly meetings, as well as emergency planning workshops. It also is involved in working on and providing technical assistance to appropriate ESFs, primarily RESF-1: Transportation and RESF-3: Public Works. The purpose and scope of RESF-1 is as follows:

#### Regional Emergency Support Function 1 – Transportation

**Purpose:** The purpose of RESF-1: Transportation is to facilitate and coordinate planning

DEMHS Regions in Connecticut



and training activities among regional jurisdictions and agencies concerning transportation issues and activities during a major disaster in Region 1.

**Scope:** The RESF-1 function is intended to focus on disruptions of the regional transportation system requiring inter-jurisdictional coordination and information sharing. Transportation disruptions can occur as a result of direct impacts upon the transportation infrastructure (e.g. disasters and evacuations) or from surges in requirements placed on the system by emergencies in other functional areas. The system developed will be a component of the Region 1 Regional Evacuation and Shelter Guide as well as facilitating interaction with the State Disaster Plan, and National Response Framework (NRF).

### Regional Emergency Support Function 3 – Public Works

**Purpose:** The purpose of Public Works and Engineering: RESF-3 is to develop and implement a system of resources and response capability for handling regional emergencies concerning water supply, wastewater, solid waste, and debris management during and after a potential or actual regional emergency.

**Scope:** RESF-3 is intended to focus on the coordination and communication related to the following situations:

1. Potential or actual disruptions of critical services that have a regional impact.
2. Coordination of emergency restoration of critical public facilities, including the temporary and permanent restoration of water supplies, wastewater treatment systems, and waste management facilities.
3. Coordination of emergency contracting to support public health and safety, such as providing for potable water, ice, power, and/or other temporary support to public health and safety.

4. Coordination of monitoring, tracking and modeling of water and wastewater events, including debris removal that may affect the water supply.

## Safety

A safe, multi-modal transportation system for all modes and abilities is a crucial element of the Metropolitan Transportation Plan. The GBVMPO is committed to transportation projects that facilitate the safe and efficient movement of people and goods across all modes. Mode specific projects that will improve safety are described throughout the MTP.

### Strategic Highway Safety Plan (SHSP)

The Strategic Highway Safety Plan (2017-2021) is the statewide framework that identifies key safety needs and guides investments to reduce roadway fatalities and serious injuries on all public roads. An up to date SHSP is a requirement for the state to receive federal Highway Safety Improvement Program (HSIP) funds.

The plan envisions that:

*“all users of Connecticut’s transportation system will arrive safely at their destinations,”*

and has a mission to:

*“provide a safe transportation system by using partnerships to coordinate education, enforcement, engineering, and emergency response initiatives.”*

The goal of the plan is:

*“reduce the number of fatalities and serious injuries on all public roads in Connecticut 15 percent by 2021.”*

The plan has six emphasis areas with detailed strategies. While many strategies are best implemented at the state level, Metro-COG will continue to identify opportunities to

support all SHSP strategies. Those strategies that align with MetroCOG's role in the region are listed under each emphasis area below.

### **Critical Roadway Locations**

Encompasses intersection and roadway departure crashes. These two infrastructure elements contribute to a significant number of the state's fatal and serious injury crashes.

- Identify and implement spot location-based safety countermeasures on roads using the Suggested List of Surveillance Study Sites (SLOSS) process.
- Identify and implement low-cost, systemic safety countermeasures, and implement location-specific and proven safety countermeasures.
- Incorporate safety elements and countermeasures into all roadway and intersection project designs and maintenance improvements.
- Support and strengthen engineering solutions that can affect driver behaviors that contribute to roadway departure and intersection crashes (e.g., speeding, traffic signal violations).
- Provide education, training, and outreach to safety stakeholders and the public about roadway departure and intersection safety through the Safety Circuit Rider and other similar programs.

### **Driver Behavior**

Lack of seat belt use, driving while impaired by alcohol or drugs, driving aggressively or speeding, and driving without complete attention to the driving task were identified as areas of concern by safety stakeholders.

- Educate the driving public regarding the dangers of distracted driving through media campaigns, public awareness campaigns, grassroots outreach and public information campaigns, and educational programs.

### **Young Drivers**

Drivers between 15 and 25 years of age are involved in a significant number of the state's fatalities and serious injuries.

### **Non-motorized Road Users**

Pedestrians and bicyclists face a significant risk of fatal and serious injury when struck by a motor vehicle.

- Identify and study areas with high incidences of non-motorized serious injuries and/or fatalities. Include recommended countermeasures on a location-specific basis.
- Create methods and plans to improve environments along all public roadways for safe walking and bicycling through implementation of engineering treatments, land-use planning and system wide countermeasures.
- Consider road diets, single-lane roundabouts, refuge islands, bike facilities, countdown and accessible pedestrian signals, sidewalks and traffic calming designs on roadways.
- Increase attention to non-motorized safety issues at the State, local and private levels.
- Improve public awareness of non-motorized users and methods to promote the safety of non-motorized users.

### **Motorcyclist Safety**

Motorcycles represent a small percentage of motor vehicles owned in Connecticut (approximately 6 percent) and are responsible for an even smaller portion of vehicle miles traveled. However, motorcycle operators and passengers represent over one-fifth (22.2 percent) of the State's total traffic fatalities.

### **Traffic incident management (TIM)**

TIM consists of a planned and coordinated multidisciplinary approach to detect, respond to, and clear traffic incidents so that flow may be restored as safely and quickly as possible.

- Promote best practices for traffic incident management and provide accessibility to intelligent transportation systems (ITS) tools.
- Support regular multi-disciplinary TIM training and exercises.
- Evaluate expansion of ITS infrastructure to additional regional corridors based on prioritized need.
- Include Weather Responsive Traffic Management (WRTM) strategies, such as Road Weather Information Systems (RWIS).
- Support the development and tracking of TIM performance metrics following national standards and definitions.

Other topics include improving commercial vehicle, school bus and transit safety, and consideration of rail/highway grade crossings and work zones.

## Regional Transportation Safety Plan

Further focus on safety issues that are regionally and locally specific will be accomplished through the Regional Transportation Safety Plan. For the six MetroCOG municipalities, the plan will commence in 2019, with a year-long planning process anticipated. For the four NVCOG municipalities, the study is anticipated for 2020.

Like the SHSP, the purpose of this Plan is to reduce fatalities and injuries, and increase safety awareness, however, the plan will also support a regional focus on safety issues. The study will be data-driven, multimodal and multidisciplinary, and it will identify collaborative partners. The study will outline effective measures and goals to reduce potential future crashes by using a proactive approach. The study will better position regions to compete for safety funds and focus on regional data and local roads. A regional report and reports specific to municipalities will be produced through the study process.

The Regional Transportation Safety Plan will also be informed by the safety issues and safety improvement projects that have been documented throughout the MTP.

## Statewide & Regional Transportation Geographic Information System (GIS) Data

The ability to accomplish the many goals and targets in this plan are greatly enhanced from a robust geographic information system to model roadway features and conditions into the transportation system's digital twin. The data developed needs to be accurate enough to support a wide range of uses from reporting, planning, research, design, construction, compliance, maintenance, operations, and emergency response. There are several key transportation GIS datasets that need to be constructed as part of this database such as bridges, culverts, signs, guardrails.

## Roadway Centerline Linear Referencing System (LRS)

Most important to this work is a roadway centerline linear referencing system (LRS) supporting a variety of analytical reporting requirements. These transportation GIS datasets are best developed using highly accurate basemap information products such as aerial orthophotography, surveyed or photogrammetrically derived ground features (planimetric mapping) and aerial or terrestrial LiDAR mapping. These features would be ideally updated through transportation project digital deliverables and workflows developed at CTDOT to translate MicroStation Design files into GIS features.

Building the transportation system digital twin is complicated work. The transportation system is comprised of many assets owned, maintained and overseen by a variety of different organizations. To build and main-

tain this data requires a shared and collaborative vision built around standards, strong data governance policy and the financial commitment to consistent and regularly scheduled basemapping activities. These basemapping activities should be supported by multiple benefiting organizations including municipalities, RPO's/MPO's, CTDOT, other state agencies, various federal agencies and public utilities.

### **2016 Statewide Flight**

The State of Connecticut 2016 Statewide Flight was conceived at a meeting of COG/MPO GIS staff. The project was funded partially by CTDOT and the Department of Public Safety but most of the funds were provided by the Office of Policy and Management. The Capital Region Council of Governments was the project management agency and was supported with resources provided by project partners like MetroCOG and NVCOG. Many stakeholders guided this mapping project for a common need: high quality basemapping. The 2016 Statewide Flight should be a model for other mapping efforts such as building transportation GIS asset mapping.

### **State & Regional Collaboration**

MetroCOG and NVCOG staff are active participants in numerous data related discussions with CTDOT Planning, Engineering and IT staff to develop collaboration protocols, data governance policies, and data sharing strategies. This collaboration will be essential to implementing robust data driven transportation analysis tools and products. Data management best practices should be developed to minimize costs associated with building and maintaining transportation GIS data such as those identified by FHWA in these two reports "GIS Data Governance and Data Management Case Study" and "GIS in Maintenance Peer Exchange."

### **Transportation Safety Analysis**

A robust transportation GIS is also necessary to analyze transportation safety. Safety improvements must be based on a data driven process. Data sources will include but are not limited to high quality and complete crash data from the CT Crash Data Repository at [ctcrash.uconn.edu](http://ctcrash.uconn.edu), US Census demographic data, the CTDOT LRS Roadway Information System, CTDOT asset GIS data, and local/regional GIS asset and parcel data. Data analysis should support the accurate identification of safety problems, development of reliable countermeasures, and a clear understanding of effectiveness. The federally required performance measurement and target-setting process places additional emphasis on data quality and analysis.

### **CT Crash Data Repository**

MetroCOG and NVCOG staff has begun to analyze data from the CT Crash Data Repository, which includes crash specifics, vehicle information and persons information. This data provides an opportunity to regionally assess safety issues and will assist municipalities with identifying candidate locations for countermeasures. Crash data analysis will continue on an ongoing basis, including more detailed analysis of intersections, fatal accidents and data gap filling. Currently, gaps in local roadway counts, limit the ability to determine crash rates on local roads. To improve the overall crash data analysis, several improvements are required: improved accuracy of crash locations contained within the CT Crash Data Repository, improved count and VMT data on all roads (to determine crash rates), and more complete Roadway Safety asset data (signs, guardrails, and other physical countermeasure assets). MetroCOG and NVCOG staff are active participants in numerous data related discussions with CTDOT Planning, Engineering and IT staff to develop collaboration

protocols, data governance policies, and data sharing strategies. This collaboration will be essential to implementing a robust data driven transportation analysis tools and products.

## Signals

Traffic signals provide for the safe transfer of right of way and manage the distribution of green time for vehicles, pedestrians and bicycles for signalized intersections on arterial, collector and local roads. When properly timed, traffic signals increase vehicle and pedestrian capacity of an intersection and improve safety and operations for all users. As idling times are reduced, fuel consumption and emissions are reduced as well. Computer controlled signal systems and embedded roadway sensors that actively control the system can further improve the efficiency of the transportation system.

### City of Bridgeport

The City of Bridgeport has been proactive in upgrading the signal systems on several roads. Signals at five intersections on Washington Avenue will be upgraded to new equipment and a time-based system. On Park Avenue, modernization of the system will improve traffic flow, reduce delays and alleviate congestion. These efforts should continue throughout the GBVMPO region.

### Traffic Signal Evaluation & Management (TSEM)

In 2000, the Greater Bridgeport Regional Planning Agency administered a Traffic Signal Evaluation and Management (TSEM) Study for Bridgeport. This study collected information on signalized intersections including the intersecting roadways, signal type and condition, controller type and condition, and cabinet type and condition. The study also provided intersection sketches, intersection pictures and recommendations for

intersection improvements.

In 2015, GBVMPO migrated this information into a more intuitive GIS geodatabase. Intersection polygons were manually created for the study intersections using Rights-of-Way boundaries. Information on signals, controllers, and cabinets were then migrated into their corresponding GIS point features based on a 2013 aerial flight. Some elements that were not collected in the flight were digitized before the attributes were migrated. The elements in the intersection were related to one another through the intersection ID. Pictures and diagrams were also attached to the geodatabase allowing users easy access to them as well. The geodatabase was published into ArcGIS Online allowing for an intuitive online application to assess intersections in Bridgeport. This project can be a model to develop and maintain similar datasets on behalf of CTDOT and other member municipalities.

## Access Management

Significant commercial development along arterial roads often cause impediments to the flow of traffic, resulting in a congested facility and a higher rate of crashes. Vehicles entering an arterial from an adjacent land use travel at slower speeds, which impedes traffic and causes a general slowing of travel speeds. A vehicle waiting to turn into a driveway may block traffic as well (either from behind, or, if making a left turn, oncoming vehicles). As the number of driveways along an arterial increase, turning movements also increase, resulting in a reduced level of service and a greater likelihood of vehicular conflicts (or crashes).

In contrast to an arterial with frequent driveways, arterials managed through access management strategies have fewer accidents and operate at better levels of service. Ac-

cess management facilitates the movement of traffic while maintaining efficient access to adjacent properties – for customers and delivery trucks. A successful access management program will make access to commercial properties safer and easier, even though the closure or reduction in access points may appear to make it less convenient. The program should be locally developed and implemented, with commitment and cooperation by both the municipality and the affected property owners and businesses.

Access management programs typically involve a combination of the following strategies:

- Close driveways;
- Consolidate driveways;
- Narrow driveway openings and better define entrance and exit points;
- Limit allowable movements such as right-turn only entrances and exits;
- Reduce curb radii;
- Provide shared access for adjacent properties.

## Congestion Pricing

For the past several years, CTDOT has been considering tolling as a potential new source of revenue to support its transportation programs. Several studies have been conducted to gain insight into how much revenue tolls might raise, and how tolling can help manage congestion on the state’s busiest highways. Most recently, CTDOT retained the consulting firm of CDM Smith to prepare a Connecticut Tolling Options and Evaluation Study.

## FHWA’s Value Pricing Pilot Program (VPPP)

The addition of new tolling systems on existing toll-free interstate highways is generally prohibited by federal law. However, Connecticut is one of 13 states to participate in the

FHWA’s Value Pricing Pilot Program (VPPP), which requires the use of variable tolls by time of day. Variable tolling is a means by which higher toll rates are charged during both the morning and afternoon peak hours of travel (i.e. ‘rush hours’). Also known as ‘congestion pricing,’ variable tolling can have the following impacts:

- Encourages drivers who do not need to travel during rush hours to shift to off-peak periods;
- Encourages commuters to shift to alternate modes of travel such as car pools, or transit;
- Encourages drivers to combine or consolidate trips, which reduces traffic; and
- Encourages drivers to choose alternative routes or alternate destinations.

## Connecticut Tolling Options & Evaluation Study

The Connecticut Tolling Options and Evaluation Study is intended to provide a summary of the options, costs, revenue potential and impacts associated with a possible state-wide tolling program. The Study suggested that all major expressways and parkways in Connecticut should be included in a potential tolling program. In the Greater Bridgeport Valley Region, this would include I-95, Route 15 and Route 8. A cashless “All Electronic Tolling” (AET) solution with overhead gantries and electronic toll transponders would be utilized. This approach would not require the construction of toll booths, plazas, or any other impediments to traffic flow. Additional considerations in the study included:

- No more than one toll location on a given route within a given city or town boundary in the state (there maybe more than one toll location if there is more than one tolled route in a given municipality);
- Where possible, avoid major cities to minimize traffic diversions and income



equity considerations;

- Generally, follow an overall average toll gantry spacing of six or more miles, with a minimum spacing of not less than five miles;
- When considering spacing, consider gantry locations on interconnecting tolled routes; and
- Implement tolling at generally parallel locations on competing routes to minimize intercorridor traffic diversions.

The study found that the potential deployment of variable rate tolls could reduce congestion on western sections of both I-95 and Route 15. For example, I-95 west (between New Haven and New York) would have average speeds increased from 33 mph under toll-free to about 35 mph with tolls to almost 42 mph with tolls and widening. Increased speeds are anticipated on Route 15 as well. The tolls plus widening provides more than a 25 percent increase in speeds as compared to toll free no-build. Strategic widening on I-95 is described in Section 4: Highway and could be funded through revenues from tolling. Any implementation of tolling in the state is subject to review and approval by the Connecticut Legislature and FHWA.

## Advanced Technologies

Advanced technologies have the potential to make the region's transportation system operate more efficiently and safely and provide more information to travelers. In the previous LRTP, the consideration of advanced systems focus exclusively on Intelligent Transportation Systems (ITS). There was no mention of the advent of connected and autonomous vehicle (CAV) technologies and what effect their introduction would have on how people and goods are moved. Both ITS and connected/autonomous vehicles will be discussed in the following section.

The goals of these advanced technologies are to make travel safer and reduce the number of crashes thus they also have the potential of reducing congestion.

## Intelligent Transportation Systems (ITS)

ITS refers to using advanced technologies to better manage and operate transportation systems. It is defined as: "the application of advanced sensor, computer, electronics, and communication technologies and management strategies—in an integrated manner—to improve the safety and efficiency of the surface transportation system". These advanced systems include computer hardware or software, traffic control devices, communications links, and remote detectors. The intent is to realize a more seamless transportation system with reduced delays and conflicts and increased systems integration, interoperability and communication. ITS projects need to be consistent with the National ITS Architecture and must satisfy a defined set of user services defined by FHWA.

The National ITS Architecture defines eight broad service areas:

- **Advanced Traffic Management Systems (ATMS):** Includes CCTV cameras, computerized traffic signal systems, dynamic message signs, highway advisory radio, and traffic incident management systems.
- **Advanced Public Transportation Systems (APTS):** Includes computer aided dispatch (CAD), automatic vehicle location (AVL), automated payment systems, transit signal priority, and fare technology.
- **Advanced Traveler Information Systems (ATIS):** Includes traveler information websites, 511 travel information call centers.

- **Emergency Management (EM):** Includes service patrols, infrastructure protection, and disaster response and recovery.
- **Maintenance and Construction Management (CM):** Includes vehicle and equipment GPS, route deployment, road weather information systems (RWIS), work zone management and safety management.
- **Archived Data Management (ADM):** Includes data warehouses and ITS databases.
- **Commercial Vehicle Operations (CVO):** Includes roadside enforcement, automated roadside safety inspection, weigh-in-motion technology, vehicle electronic clearance, and on-board safety and security monitoring.
- **Advanced Vehicle Safety Systems (AVSS):** Includes intersection, longitudinal and lateral collision avoidance, vehicle safety monitoring, automated vehicle operations, and vision enhancement systems.

Through the application of ITS, travel conditions can be determined more quickly, traffic controls can automatically respond to changing traffic conditions, and real-time information can be disseminated. In order to realize these benefits, ITS must be fully incorporated into the surface transportation network and work together to deliver transportation services.

### ITS Architecture

The National ITS Architecture provides a common structure for the design of intelligent transportation systems and a framework around which multiple design approaches can be developed, each one specifically tailored to meet the individual needs of the user, while maintaining the benefits of a common architecture. It is a mature product that reflects the contributions of a broad cross-section of the

ITS community (transportation practitioners, systems engineers, system developers, technology specialists, consultants, etc.). The architecture is functionally oriented (not technology specific). It defines what needs to get done (functions) as opposed to how it will be done (technology). In this way, the architecture can remain valid and current even as technology changes

The architecture defines the following elements:

- The functions – gather traffic information or request a route – required for ITS.
- The physical entities or subsystems where these functions reside – the field, roadside or vehicle.
- The information flows and data flows that connect these functions and physical subsystems together into an integrated system.

The intent of developing and deploying intelligent transportation systems is to realize a more “seamless” transportation system with reduced traveler delays, quicker response to highway incidents, better traveler information, enhanced and more efficient transit operations, and improved safety and reduced number of crashes. Integration of these services and seamless communication among operators offers the opportunity of increased traveler efficiency and better management of transportation resources.

In the Greater Bridgeport Valley MPO region, ITS projects conform to the state architecture and focuses on three broad areas:

- **Freeway Incident Management:** The CTDOT operates 24-hour incident management centers in Bridgeport and Newington. The program includes monitoring of traffic and detection of incidents along I-95, I-91 and I-84. The program needs to be expanded to include coverage along Route 8 through the region.

The project would include the installation of video cameras along the highway and speed detectors to monitoring operations and identify incidents. Including Route 8 in the state's incident management system will reduce response time when incidents occur and reduce congestion and delay caused by an incident.

- **Enhanced Highway Corridor Operations:** The proposed program would integrate existing and planned traffic control devices to enhance and coordinate arterial traffic control systems. The intent will be to monitor traffic operations and institute timing changes in response to traffic conditions in real time. The system may also provide transit signal priority.
- **Real Time Traveler Information System:** The proposed system would provide information to transit travelers on vehicle location, schedule adherence, and delays. The project would install interactive information kiosks and dynamic message signs at the region's commuter rail stations.

## Autonomous Vehicles

Currently, most automobile manufacturers offer a range of driver assistance devices that help drivers avoid collisions. The key feature of these systems is that the driver remains in control. The evolution of technology to operate a vehicle and take control from the driver is accelerating. Fully automated cars and trucks that drive themselves are likely to be a reality over the timeframe of this transportation plan. At the same time, wireless communication is increasing the ability to exchange information between vehicles and to and from road side devices. As inter-vehicle communication advances, drivers will become better informed about their surroundings and the position of nearby vehicles.

Autonomous vehicles, or AVs, refer to vehicles that have been mounted with a variety of sensors, cameras and other sensing devices to allow the vehicle to operate with varying degrees of autonomy and driver control. The deployment of AVs is increasing in popularity and many communities are looking at operating AVs. However, since they rely on the ability of sensors and cameras to detect and recognize the road environment, weather, poor road condition and lines of sight have impacted AVs capabilities to move safely and correctly.

### Society of Automotive Engineers (SAE) Levels of Automation

The transition from driver control to vehicle control has been defined by six levels of automation by the Society of Automotive Engineers (SAE), ranging from no automation (Level 0) to full automation (Level 5)<sup>1</sup>:

- **Level 0:** The human driver does all the driving.
- **Level 1:** An advanced driver assistance system (ADAS) on the vehicle can sometimes assist the human driver with either steering or braking/accelerating, but not both simultaneously.
- **Level 2:** An advanced driver assistance system (ADAS) on the vehicle can itself actually control both steering and braking/accelerating simultaneously under some circumstances. The human driver must continue to pay full attention ("monitor the driving environment") at all times and perform the rest of the driving task.
- **Level 3:** An Automated Driving System (ADS) on the vehicle can itself perform all aspects of the driving task under some circumstances. In those circumstances, the human driver must be ready to take back control at any time when the ADS requests the human driver to do so.

<sup>1</sup> Source: National Highway Safety Traffic Safety Administration, <https://www.nhtsa.gov/technology-innovation/autonomous-vehicles-safety#issue-road-self-driving>

In all other circumstances, the human driver performs the driving task.

- **Level 4:** An Automated Driving System (ADS) on the vehicle can itself perform all driving tasks and monitor the driving environment – essentially, do all the driving – in certain circumstances. The human need not pay attention in those circumstances.
- **Level 5:** An Automated Driving System (ADS) on the vehicle can do all the driving in all circumstances. The human occupants are just passengers and need never be involved in driving.

While the AV technology is advancing, acceptance of US drivers will be critical to deployment. A recent survey by the American Automobile Association (December 2017) indicated 63% of US drivers would be afraid to ride in a fully automated vehicle. This is down from the 78% mark for the same question from an earlier survey, but it suggests acceptance has a ways to go. The AAA survey also determined that safety and reliability are the greatest concern about AVs. Education will be critical to increasing AV acceptance. Motorists, passengers and those sharing the road with an autonomous vehicle must be confident that the technology works and is not prone to errors. In order to achieve the level of trustworthiness needed to ensure acceptance, there must be truth in advertising – the sensors must work according to manufacturer claims, transparency and standardization of terminology.

Currently, AV technology is being developed along two, somewhat, separate paths:

- Private ownership
- Shared mobility

#### **Private Ownership**

The approach based on private vehicle ownership is being driven by the auto industry. These companies are developing and offer-

ing driver assistance equipment as options on generally higher end vehicles. Examples include:

- Crossing traffic warning rear and front
- Night vision
- Lateral parking aid
- Distance information
- Lane departure warning
- Wrong way assist
- Lane changing warning
- Approach control warning with braking function
- Speed limit and No Pass information
- Parking assistant – Active park distance control and remote control parking
- Steering and lane control assistant
- Active cruise control with Stop&Go function
- Rear collision prevention

These features are intended to aid the driver and are based on the assumption that the driver remains in control.

#### **Shared Mobility**

The other AV development and deployment path involves technology companies and “ride hailing companies” (also referred to as Transportation Network Companies or TNCs). Technology companies, such as Google, and TNCs, such as Uber and Lyft, are working towards developing driverless vehicles that enhance their businesses. Instead of a private person owning the AV, a company owns a fleet of autonomous vehicles that are shared by many. They would provide on-demand service.

#### **Benefits of AV**

Regardless of which path AV advancement and deployment follows, there are likely to be impacts to the transportation system and how transportation improvement plans are developed. There are numerous benefits to AV technology. Improving road safety is

the paramount benefit expected from AV technology. Roughly 94% of serious crashes (NHTSA) are due to human error. Driver assistance features that warn drivers about the vehicles position relative to other vehicles have the potential to greatly reduce human error from the crash equation and, thereby, greatly reducing the number and severity of vehicle collisions. Other often cited benefits are:

- **Enhanced mobility** – increased deployment of fully automated vehicles will provide new mobility options to persons that are unable to drive, either due to age or disability.
- **Economic** – vehicle crashes cost billions of dollars in economic activity, productivity, loss of life and decreased quality of life due to injuries.
- **Congestion** – vehicles equipped with AV features will result in smoother traffic flows, thereby, reducing impedance and congestion.

### Potential Impacts

Conversely, the potential exists for unintended consequences from the proliferation of AVs. While reduced congestion is perceived as a possible benefit, deployment of AV fleets could potentially clog streets traveling while waiting for a call for a ride, especially in urban/downtown areas. A concern of AVs is the potential impact on transit services. As AVs deployed by TNCs increases, bus ridership may decline. The TNC AV fleet would provide on-demand, point-to-point service, as opposed to fixed-route service offered by public transit. Riders would no longer be captive to a bus schedule, long headway and set route. In this scenario, one bus would be replaced by multiple vehicles with disperse boarding and alighting stops.

However, in the future public transit and TNCs may be able to partner for mutual benefit. The AV fleets could help solve the “first

mile/last mile” problem and fill gaps in regular bus service, especially on weekends and late night hours. In addition, advancements in autonomous technology could result in driverless buses that could help reduce costs to operate services or encourage smaller transit vehicles, operated more frequently.

The potential impact on land use decisions is also uncertain at this time. The deployment of fully automated vehicles may spur interest in denser, mixed use urban centers where a substantial portion of the fleet will be shared. Or, because of the ease of driving and ability to perform other activities instead of driving, interest in development in auto-dependent suburban areas may increase.

### AV Pilot Programs

To help determine which outcome is more likely, many cities and states, including Connecticut, are developing and implementing pilot programs to test AVs. Some of these pilots are testing multi-passenger vehicles or shuttles, while others are requesting vendor proposals to demonstrate the capabilities of individual vehicles. These pilot projects are demonstrating that AV technology can perform as expected, even under more adverse weather conditions. However, these systems rely on sensors, radar and cameras to keep the AV in the correct alignment and path. A key factor to success is the maintenance of pavement markings (line striping), signage, road surface and signals.

### Connected Vehicles

Connected vehicles or CVs rely on wireless communications between vehicles or to and from a vehicle and roadside infrastructure. The communication links provide valuable and timely information to the vehicle regarding the position of other vehicles as well as the status of road devices, such as traffic signals, or roadway conditions. Whereas an AV operates in isolation from other vehicles

using its internal sensors, CVs communicate with nearby vehicles and infrastructure.

When discussing connected vehicle technologies, how the vehicles communicate with the world around them is fundamental. Vehicle communications fall under five categories:

- Vehicle-to-Vehicle – V2V
- Vehicle-to-Cloud – V2C
- Vehicle-to-Infrastructure – V2I
- Vehicle-to-Anything – V2X
- Vehicle-to-Pedestrian – V2P

**Vehicle-to-Vehicle (V2V):** When connected to other vehicles, the communications is referred to as “Vehicle-to-Vehicle” or V2V. This type of connectivity works whenever similarly equipped vehicles encounter one another and is currently being experimented on highways throughout the nation. An advantage of V2V technologies is that they can be implemented with no change to the current roadway.

**Vehicle-to-Cloud (V2C):** Involves the transmission of information from a vehicle to a cloud-based server that then communicates the information to another vehicle. Coordinated Adaptive Cruise Control (CACC) offers a good example of a V2C technology. Currently, this technology is only being tested in good weather on expressways with minimal vertical and horizontal curves. These systems involves two or more vehicles connected to a cloud-based server and allows the vehicles to find each other on the highway and connect in route. The CACC technologies then help the vehicles synchronize their speeds to create a platoon. The lead vehicle broadcasts its actions to all trailing vehicles using V2V communications. Similarly, trailing vehicles broadcast their information to the other vehicles in the platoon.

**Vehicle-to-Infrastructure (V2I):** Communications with roadside devices is referred to

as “Vehicle-to-Infrastructure” or V2I. These systems work where roadside units have been installed. The flow of information is bi-directional and is typically handled by Dedicated Short Range Communication (DSRC) frequency. DSRC is a broadcast mode on a dedicated frequency or channel. The range is short, typically about 900 feet, but provides fast and reliable communications with minimal delay. DSRC can be deployed relatively easily; it is a mature, proven and stable technology. However, the installation of devices to receive and transmit information to and from the vehicle is the responsibility of auto manufacturers and state and local agencies are responsible for installing the road side infrastructure. An example of a V2I system that is being deployed and tested involves communications between vehicles and traffic signal systems. The status of the signal is transmitted to vehicles and allows the vehicle to adjust speed as it approaches the intersection. The intent is to reduce the number of complete stops and improve the traffic flow along the interconnected corridor. Road side infrastructure can also be installed that provide weather and road condition reports. This permits the vehicle to adjust its movement accordingly.

**Vehicle-to-Pedestrian (V2P):** Wireless communications, currently via 4G, are also being developed that rely on smartphone apps to connect roadside units and on board units to pedestrians; Vehicle-to-Pedestrian or V2P communication. It is a non-broadcast mode with unlimited range, with communications processed through a server. These systems can inform vehicles of the pedestrian’s presence and location, as well as transmit a request to activate the pedestrian phase and signal as the pedestrian approaches the intersection.

As with AVs, the primary goal of CV deployment is improved road safety and driver behavior:

### V2V Safety Applications:

- Communicating Radar Cruise Control
- Forward Collision Warning
- Emergency Electronic Brake Light
- Blind Spot Warning
- Lane Change Warning/Assist
- Intersection Movement Assist
- Vehicle Turning Right in Front of Bus Warning

### V2I Safety Applications:

- Traffic Signal Change Advisory
- Right Turn Collision Caution
- Red Light Violation Warning
- Speed Compliance
- Curve Speed Compliance
- Speed Compliance in Work Zone
- Oversize Vehicle Compliance – Prohibited Facilities (Parkways); Over Height warning
- Pedestrian in Crosswalk
- Pedestrian Signal
- Emergency Communications and Evacuation Information

As more and more vehicles become connected to each other and with road side units, congestion relief is expected through the smoothing of the traffic flow. Inter-vehicle communication will help fill gaps in the road and allow cars to seamlessly merge and maintain relative speeds and spacing.

### Challenges to CV Deployment

The principle challenges facing CV deployment are:

- Market penetration – need to get devices installed in vehicles.
- Security – need to encrypt systems to prevent cyber vulnerabilities
- Privacy – need to scrub data to eliminate identity and personal information.
- Mainstream acceptance
- Budget for implementing roadside infrastructure.

- Standardization – there needs to be common technology terminology, data sharing protocols and communication protocols for all AV and CV features

### AV & CV Integration

The integration of AV and CV systems and technologies has the potential to enhance the performance of both. Communication of data from roadside infrastructure to an AV would permit the vehicle to operate more efficiently and it would not have to rely solely on on-board sensors. The use of CV technology would transmit information about surrounding vehicles, location and road environment and has the potential to ameliorate weather, poor road maintenance and lines of sight problems that impede the operation of AVs.

### Connected & Autonomous Trucks

While the prospects for widespread acceptance of connected and autonomous vehicle technologies and systems loom large on the horizon of transportation planning, the potential implication these systems could have on motor carrier freight transportation is enormous. The trucking industry is a \$700 billion industry and truck borne freight has the potential to be revolutionized by the introduction of connected and autonomous trucks.

High fuel costs (about 34% of operating expenses), vehicle crashes (represent about a \$90 billion loss annually), and vehicle emissions (accounting for about 6% of greenhouse gas (GHG) emissions in the United States) contribute to the trucking industry's low profit margin (about 3%). In addition, federal regulations limit the number of hours that drivers can operate a heavy truck, and with truck borne shipping expected to grow at a high rate, there will be demand to hire and train more and more drivers.

### Industry Benefits

These market forces and environmental

concerns make the industry a prime candidate for any advanced technology that can improve operations and performance and reduce costs. Demonstrated benefits include:

- **Safety** – reduce the frequency and severity of commercial vehicle crashes.
- **Fuel savings** – reduced air drag and wind resistance from platooned vehicles improves fuel efficiencies about 10% for the rear vehicle and 4.5% for the front vehicle.
- **Air quality** – reduced fuel consumptions reduces the diesel emissions.
- **Mobility** – improved information for drivers and fleet managers will increase freight throughput and efficiency.

As an intermediate step to fully automated commercial vehicles, many companies are working to deploy level 1 automation in the freight industry. These technologies rely on the driver remaining in control of the vehicle with cameras (video optics), sensors (RADAR and LIDAR) and communications (DSRC and wireless 4G or 5G) equipment to allow information to be broadcast to and from the vehicles. These technologies generally provide for the vehicles to be connected but also afford a certain level of automation.

### Active Safety Systems

Currently, many commercial vehicles and fleets are being installed with a wide range of active monitoring systems to improve safety and reduce the frequency and severity of crashes. Examples of systems:

- Electronic stability control to control speed and traction over curves and poor weather conditions.
- Forward collision avoidance and warning, with automated braking system – RADAR systems can sense and identify obstacles farther in front of a vehicle than the driver and automated braking systems can respond and react faster than the driver.

- Adaptive cruise control – automatically adjusts speed to adjust speed and maintain distance from a vehicle in front of the truck.
- Lane change assist – sensors identify the presence of vehicles in the adjacent lane and warn the driver.
- Lane keeping system – sensors help maintain the vehicle within the travel lane.

### Automated Driving Systems (ADS)

Over the next 20 years, full automation of both heavy duty and light weight vehicles may become a reality. Proponents claim that self-driving trucks will be safer and less costly to operate. While currently private companies are working on ADS units, standardization of communications, backed by new regulations or regulatory buy-in, will likely be required to realize widespread deployment.

In 2016, Otto, a company purchased by Uber, and Volvo teamed up to haul a delivery over 120 miles along I-25 in Colorado. Because the ADS units do not operate in cities and along small rural roads, a driver operated the vehicle from the origin to the interstate and from the interstate to the destination. However, while the truck was traveling along I-25, the ADS was activated and the driver stepped away from the driver's seat to observe from the back of the truck. This was just one trial and the technology is not currently deployed for commercial use. In fact, during the test, escort vehicles traveled in front of and with the truck, and the truck did not attain highway speeds. However, to all watching the industry, it is only a matter of time, perhaps ten years, before this level of automation is broadly deployed, if only in carefully designated regions of the country and only under ideal weather conditions.

### Truck Platoons

Connected and autonomous trucks can closely coordinate their movements to pla-



toon over long stretches of highway. Currently available systems control truck platoons via DSRC communications. With the driver manually steering the truck, the lead vehicle controls longitudinal movement of the platoon via the throttle and brakes. The systems can be disengaged from the trailing vehicles at any time and video is provided to the trailing trucks to allow drivers to see what the lead driver sees. Truck platoons operate almost exclusively on multi-lane, divided limited access highways and interstates and when traffic and weather conditions are acceptable.

Truck platoons cut wind resistance and air drag by maintaining a constant gap between trucks. This reduces fuel consumption for all vehicles by roughly 10% and 4.5% for the trailing trucks and lead truck respectively. Traffic flow also improves as the truck platoon maintains spacing and pace. These systems can also detect a vehicle crossing in between platooned vehicles and automatically adjusts speeds to maintain a safe following distance.

Once these technologies have been thoroughly vetted, in order to employ them on the state highway network, laws pertaining to following distance will need to be set to ensure safety and the driving experience for other road users is not eroded. These regulatory adjustments can be made with no new costs.

### **Industry Standardization**

To coordinate the connected technologies outlined above, the industry is currently working diligently to standardize the frequencies for the DSRC on which they broadcast V2V. A federal recommendation from FHWA to states might help this process. V2I technologies will benefit from the planned 2020 launch of a 5G cellular network. The setting of standards for V2I broadcasting is of equal importance and seems necessary for projects that may, realistically, start receiving federal funding for design and construction in the coming three-to-five years.

## **State & Federal CAV Programs & Pilot Projects**

A number of TNCs, such as Uber and Lyft, auto manufacturers, such as Toyota, GM and Ford, and technology companies, such as Google and Panasonic, are investing in the design and development of CAV systems and technologies, as well as, purchasing vehicle fleets to deploy their ADS. The commonality of these efforts is that they are being made by the private sector with low public involvement. However, a successful path to safe testing and deployment of ADS requires government oversight, engagement of key stakeholders, and development of uniform, consistent and reciprocal policies, regulations and standards. In addition the deployment of V2I road side units will require the investment of public funds.

Nevada was the first state to authorize the operation of autonomous vehicles in 2011. Since then, 20 other states and the District of Columbia have passed legislation related to autonomous vehicles. Governors in five other states have issued executive orders authorizing the safe development, testing and operation of AVs.

These state actions typically establish committees, commissions or work groups to develop guidelines for the testing of AVs on public roads and support deployment of AVs. Some legislation requires the presence of an operator while other states allow fully automated vehicles. Despite differences the goal of the legislation is to encourage partnerships with the private sector to ensure safe testing and ultimate deployment of AVs.

Several cities and states have initiated efforts to test connected and autonomous vehicle systems and technologies, as have a number of transportation coalitions.

## Connecticut

Enacted in 2017, Public Act 17-69 authorized the state to establish and implement a pilot program for testing fully autonomous vehicles, as defined as either Level 4 or Level 5 on the SAE classification scale. Under the program, the Office of Policy and Management will solicit AV proposals and select up to four municipalities to participate in the program. Two of the selected participants need to meet set population thresholds and targets. The program is being initiated in consultation with the Department of Motor Vehicles (DMV), Department of Transportation (DOT), Department of Emergency Services and Public Protection (DESPP) and the Connecticut Insurance Department (CID).

The pilot program aims to encourage and allow for the testing of fully autonomous vehicles on local highways in Connecticut. The municipalities must outline the location and routes where AVs may operate, hours of operation for vehicle testing, as well as record the make, year, and model of the test vehicles. Partnerships with an automated vehicle manufacturer, university and service provider (Lyft, Uber, etc.) are encouraged for purposes of providing shuttle services and other programs. The legislation requires a tester to be seated in the driver's seat and be capable of taking immediate control of the AV, and prohibits testing on limited access highways.

The legislation also established a task force to study fully autonomous vehicles, evaluate the pilot program, and develop recommendations on how Connecticut should promote and regulate AVs in the state.

## I-95 Corridor Coalition

The I-95 Corridor Coalition is a 16-state plus the District of Columbia association tasked with monitoring travel along I-95. Evolving autonomous and connected vehicle technologies have become a focus of the Coalition. Although the Coalition is not sponsoring or testing CAV technology, it has determined that there is a strong need for a dialogue among partners regarding interoperability of these systems across state borders.

## New England Transportation Consortium

The New England Transportation Consortium is comprised of state Departments of Transportation from the six New England states. Its mission is to conduct shared transportation research initiatives. In the area of CAV systems, the Consortium is working to identify multi-state issues related to the testing and deployment of CAVs in New England, document opportunities and challenges and prepare an action plan to minimize challenges and pursue opportunities. A key focus is developing a roadmap to address and overcome cross-border issues and challenges.

GBVMPO will continue to monitor and assess CAV policy and implementation advances where activity is occurring.

## ITS Projects\*

Location	Project Description	Years 1 to 4	Years 5 to 10	Years 11 to 27
Various	ITS improvements (highway and transit)	\$20,000,000	\$25,000,000	\$30,000,000

\* Additional ITS projects can be found in the Highway (3), Bus (4), Rail (6), Freight (9) and Intermodal (10) sections.

# 14: Resiliency & Mitigation

The GBVMPO has been proactive in identifying, assessing and developing strategies to mitigate the impacts of natural hazards. The GBVMPO is fortunate to have resources at the national, state, regional and local levels to understand how natural hazards impact the transportation system. Often, the GBVMPO has often been actively involved in the development of these resources.

Reducing vulnerability to natural hazards, including climate change and sea level rise, is complemented by mitigating the impacts of the transportation system on the natural environment. Improving air quality, reducing storm water and preserving environmentally valuable land can be supported through mode shifts and less impactful development/infrastructure patterns.

Sustainable transportation looks beyond infrastructure investments in highway improvements to consider how transportation decisions made today will affect the health and wealth of communities in the future. When transportation investments take into consideration economic, environmental and social issues, opportunities to improve all travelers' quality of life or livability are created.

This section discusses strategies to strengthen resiliency, reduce vulnerabilities, mitigate environmental impacts and realize a sustainable transportation system. The importance of resiliency and mitigation is established with the findings and recommendations of national and multi-state studies and plans. The section continues with a discussion of issues and recommendations at the state and local levels, based on recently completed natural hazard mitigation and resiliency building plans.

## The Fourth National Climate Assessment

The Global Change Research Act of 1990 mandated that the U.S. Global Change Research Program (USGCRP) deliver a report to Congress and the President no less than every four years that

*"1) integrates, evaluates, and interprets the findings of the Program . . .; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years."*

The entire report is available at <https://nca2018.globalchange.gov/>

## Purpose & Findings

The purpose of the assessment is to help inform decision-makers, utility and natural resource managers, public health officials, emergency planners, and other stakeholders by providing a thorough examination of the effects of climate change on the United States. The assessment includes the impacts of climate change and variability at both the national and regional levels. Twelve summary findings provide a high-level synthesis of the report material. **Findings 3, 4, 10 and 11 are most applicable to the transportation system in the Greater Bridgeport and Valley Region:**

**3. Interconnected Impacts:** Climate change affects the natural, built, and social systems we rely on individually and through their

connections to one another. These interconnected systems are increasingly vulnerable to cascading impacts that are often difficult to predict, threatening essential services within and beyond the Nation's borders.

**4. Actions to Reduce Risks:** Communities, governments, and businesses are working to reduce risks from and costs associated with climate change by taking action to lower greenhouse gas emissions and implement adaptation strategies. While mitigation and adaptation efforts have expanded substantially in the last four years, they do not yet approach the scale considered necessary to avoid substantial damages to the economy, environment, and human health over the coming decades.

**10. Infrastructure:** Our Nation's aging and deteriorating infrastructure is further stressed by increases in heavy precipitation events, coastal flooding, heat, wildfires, and other extreme events, as well as changes to average precipitation and temperature. Without adaptation, climate change will continue to degrade infrastructure performance over the rest of the century, with the potential for cascading impacts that threaten our economy, national security, essential services, and health and well-being.

**11. Oceans & Coasts:** Coastal communities and the ecosystems that support them are increasingly threatened by the impacts of climate change. Without significant reductions in global greenhouse gas emissions and regional adaptation measures, many coastal regions will be transformed by the latter part of this century, with impacts affecting other regions and sectors. Even in a future with lower greenhouse gas emissions, many communities are expected to suffer financial impacts as chronic high-tide flooding leads to higher costs and lower property values.

## Key Messages for the Transportation System

Due to the role of transportation in the economy, the vulnerability of the transportation system to the impacts of climate change, and its contribution to greenhouse gas emissions, the assessment covered transportation as a national topic. Key messages for the transportation system are:

**Transportation at Risk:** A reliable, safe, and efficient U.S. transportation system is at risk from increases in heavy precipitation, coastal flooding, heat, wildfires, and other extreme events, as well as changes to average temperature. Throughout this century, climate change will continue to pose a risk to U.S. transportation infrastructure, with regional differences.

**Impacts to Urban and Rural Transportation:** Extreme events that increasingly impact the transportation network are inducing societal and economic consequences, some of which disproportionately affect vulnerable populations. In the absence of intervention, future changes in climate will lead to increasing transportation challenges, particularly because of system complexity, aging infrastructure, and dependency across sectors.

**Vulnerability Assessments:** Engineers, planners, and researchers in the transportation field are showing increasing interest and sophistication in understanding the risks that climate hazards pose to transportation assets and services. Transportation practitioner efforts demonstrate the connection between advanced assessment and the implementation of adaptive measures, though many communities still face challenges and barriers to action.

## Projections in the Northeast

The Regional chapters of the Fourth National Climate Assessment provide region-specific

detail for current and future risks and what can be done to minimize risk. Projections for the Northeast suggest that sea level rise will be greater than the annual global average of approximately 0.12 inches. The more probable sea level rise scenarios (Intermediate-Low and Intermediate scenarios from a recent federal interagency sea level rise report) project sea level rise of 2 feet and 4.5 feet by 2100. The strongest hurricanes are anticipated to become both more frequent and more intense in the future, with greater amounts of precipitation. Key Messages relative to transportation in the Northeast include:

**Maintaining Urban Areas and Communities and Their Interconnectedness:** The Northeast’s urban centers and their interconnections are regional and national hubs for cultural and economic activity. Major negative impacts on critical infrastructure, urban economies, and nationally significant historic sites are already occurring and will become more common with a changing climate.

**Adaptation to Climate Change Is Underway:** Communities in the Northeast are proactively planning and implementing actions to reduce risks posed by climate change. Using decision support tools to develop and apply adaptation strategies informs both the value of adopting solutions and the remaining challenges. Experience since the last assessment provides a foundation to advance future adaptation efforts.

### FHWA’s Post Hurricane Sandy Transportation Resilience Study in NY, NJ, & CT

Finalized October 2017

The intent of this study is to inform transportation agency efforts to address changing climate conditions and extreme weather events at both the regional and facility levels. The study assessed the resilience of the



Damage to local infrastructure from Sandy.

tri-state region’s transportation system to climate, sea level rise and extreme weather. Lessons learned from Hurricane Sandy and other recent events, as well as future climate projections, were leveraged to identify strategies to reduce and manage future vulnerabilities. Information on damage and disruption to the region’s transportation systems from Hurricane Sandy along with that of Hurricane Irene, Tropical Storm Lee, and Halloween Nor’easter Alfred were also included.

### Southwestern Connecticut Regional Exposure Analysis

The Regional Exposure Analysis for major transportation facilities in Southwestern Connecticut identified wind damage, riverine flooding, sea level rise, and inundation from coastal storm surge as the main climate stressors of concern. Most of the Merritt Parkway (Route 15) and north-south roadways on the NHS are exposed to disruption from wind-blown debris. The expressway portions of Routes 8 and 25, and I-95 are sensitive as well but are less exposed due to the wide rights of way and higher standard of maintenance for trees and signage. Portions of Route 1 and short segments of Metro-North’s New Haven Line near Bridgeport are exposed to flooding from storm surge in a Category 1 hurricane or equivalent Nor’easter. In addition, due to more frequent

extreme heat events predicted in the future, movable bridges, electrical systems and some mechanical components may have to be replaced with more heat-tolerant components in future replacement cycles.

## RPA's Fourth Regional Plan

The intent and purpose of RPA's Fourth Regional Plan (2018) is detailed in the introductory section of the MTP, with many of the relevant transportation recommendations highlighted. In addition to transportation, climate change is also discussed.

*"Climate change is already transforming the region. Reducing the region's greenhouse gas emissions is critical, but it won't be enough. We must accelerate efforts to adapt to the impact of a changing climate.*

*Today, more than a million people and 650,000 jobs are at risk from flooding, along with critical infrastructure such as power plants, rail yards, and water-treatment facilities. By 2050, nearly two million people and one million jobs would be threatened. We must adapt our coastal communities and, in some cases, transition away from the most endangered areas. We will also need to invest in green infrastructure in our cities to mitigate the urban heat-island effect, reduce stormwater runoff and sewer overflows, and improve the health and well-being of residents."*

## Regional Framework for Coastal Resiliency

In the aftermath of Tropical Storms Irene and Sandy, the Greater New Haven and Greater Bridgeport coastal areas (Fairfield east to Madison) recognized a significant level of exposure and vulnerability to their infrastructure, environment, and socio-economic

assets from extreme weather events and a changing climate. To counteract immediate and longer-term risks and broaden dialogue on community resilience building, the Southern Connecticut Regional Framework for Coastal Resilience project was launched. The overarching project goal was to prioritize actions and strengthen partnerships.

## Vulnerability to Coastal Flooding

The risk of coastal flooding continues to increase for coastal populations and infrastructure in the state. Most vulnerable to inundation are coastal areas that have been altered, either through fill or channel alteration. These areas were naturally flooded and thus are often the first areas inundated during storm events. Coastal development also prevents the natural movement of the coast and creates conflict between storms and infrastructure, including the transportation system.

## Legal, Policy & Regulatory Opportunities

A discussion of legal, policy and regulatory opportunities for coastal resilience identified transportation systems as critical to strengthening resilience. Coastal highways are periodically inundated and may be damaged or destroyed by sea level rise, erosion, or other hazards. This infrastructure is essential for access to coastal properties; many state and local roads serve as evacuation routes during storm and flood events. By designing (or redesigning) these facilities with resilience in mind, transportation infrastructure can continue to provide access with reduced exposure to inundation, while also providing ancillary benefits related to flood defense and ecosystem services. These approaches include designing highway systems to reduce strain on storm sewer systems and protecting vulnerable coastal highways from hazards

including flooding and erosion. Natural and green infrastructure can be integrated in both these approaches.

Many sections of coastal roads will need to be elevated to reduce the frequency of flooding. Some coastal roads may be candidates for abandonment, or paved with a pervious surface. In some coastal areas, scour poses a risk to bridges. Depending on the velocity of the channel, hybrid solutions could be utilized to stabilize the impacted area. The following recommended projects can strengthen the resiliency of the transportation system, mitigate some of its impacts, or both.

## Bridgeport

**Downtown Streetscape Improvement Projects:** Over the years, the City has witnessed flooding and poor drainage issues due to its low topography and limited ways for runoff to drain. This project represents a suite of green infrastructure projects scattered throughout the City. The main focus is to install small to medium sized bioretention areas at various locations, with other green infrastructure and hybrid approaches applied as needed. Many of these projects will improve infiltration and reduce stormwater runoff, which will eventually improve the City's stormwater management system and overall aesthetics.

Several projects being implemented through **Rebuild by Design** but also described in the framework are discussed toward the end of this section.

## Fairfield

**Beach Road Green Infrastructure Retrofit:** The project area includes Beach Road parallel to Penfield Beach and the parking lot, which was inundated by Sandy. The area is in FEMA's flood hazard zones with some sections falling below the 100-year flood elevation. Penfield Beach Road is a major access route for residents that live along this

portion of Fairfield's coastline. The project would incorporate green infrastructure to reduce stormwater runoff, erosion, and flooding along Penfield Beach Road. Techniques include bioswales, bioretention areas, curb bump-outs, pervious pavement, and other applications.

### **Fairchild Avenue Green Infrastructure:**

The project site is situated perpendicular from Route 1 (Kings Highway). The Rooster River runs immediately behind the street and the low-lying area contains a high-water table with some sections along the street falling below the 100-year flood elevation. As a result, the area experienced flooding impacts from Sandy. The project would consist of retrofitting the street with bioswales, curb bump-outs, tree box plantings, bioretention areas, pervious pavement, or other green street strategies to improve drainage and mitigate future flooding.

### **Post Road Traffic Circle Green Infrastructure Retrofit:**

This project could potentially be integrated with future improvements recommended in the Post Road Traffic Circle Study, as described in the Roads and Highways section. The project site is in the middle of the Post Road Traffic Circle and immediately adjacent to the McDonalds parking lot. This one-acre, semi-circular grass area contains several catch basins that discharge through an underground culvert. Turney Creek flows from north to south through an 865-foot culvert underneath Route 1 and towards the center of the grass area. The current topography is sloped toward the middle allowing runoff from the McDonald's parking lot to flow towards the middle and discharge underground. This green infrastructure retrofit project will primarily focus on improving the stormwater management system at this site by retrofitting the landscape with bioswales, rain gardens, tree box plantings, and other techniques to improve overall drainage.

**Kings Highway Green Infrastructure and Bank Stabilization:** Kings Highway, or Route 1 is a major access route in Fairfield. The highway contains a few low-lying areas where flooding has previously occurred. During Sandy, sections of the road were flooded resulting in closures of major access routes. Many sections with poor drainage also flood during heavy rainfall events. The project would incorporate green street strategies such as bioswales, rain gardens, bioretention areas, tree box plantings, vegetation, curb bump-outs, and bank stabilization to mitigate future flooding and erosion.

**Reef Road Enhancement:** One of several options for Reef Road. In this alternative, the road would be widened and/or elevated to provide better egress.

### Stratford:

**Sikorsky Estuary Walk Green Infrastructure Retrofit:** This project can be incorporated into various improvements recommended by the Route 110 Planning and Engineering Study. The Sikorsky Estuary Walk is near Ryder Lane and Main Street and extends from Ryder Lane along the bank of the Housatonic River and then travels underneath Route 15. A detention area is in the middle of the parcel with the Estuary Walk rapping around it. The topography of the land is sloped towards the detention area and the river. Many opportunities exist to retrofit the nature walk with additional green infrastructure strategies such as rain gardens, bioretention areas, vegetated swales, tree box plantings, berms, and more.

## Natural Hazard Mitigation Plan

The primary goal of the Natural Hazard Mitigation Plan (NHMP) is to reduce the loss of life, personal injury and damage to property, infrastructure and natural, cultural and economic resources from a natural disaster.

The last Natural Hazard Mitigation Plan for the municipalities of the Greater Bridgeport Region (Bridgeport, Easton, Fairfield, Monroe, Stratford and Trumbull) was adopted in 2014. Concurrent with the update of the MTP, the Greater Bridgeport Region's NHMP is also undergoing an update, which is planned for completion in June 2019. The Plan will identify natural hazards that could occur in the Region, such as Coastal Flooding, Inland Flooding, Hurricanes, Winter Storms, Tornadoes, Earthquakes, Dam Failures, and evaluate the vulnerabilities of structures and populations. The Plan will continue to be used to promote resiliency by emphasizing actions that can be implemented now to reduce and prevent damage from a future natural disaster.

### 2014 Plan Recommendations

As the 2019 Plan is still in development, the 2014 Plan was assessed to identify the hazards that had the most impact to the Region's transportation system at that time. It should be noted that Hurricane Sandy and other significant events occurred prior to the completion of the 2014 Plan. The impacts from and lessons learned during these events were incorporated into the 2014 Plan.

The 2014 NHMP was reviewed to identify key problem areas, critical issues and mitigation actions relative to the transportation System. The following section discusses challenges and mitigation actions at a regional level. The recommendations common to most municipalities are highlighted here. Appendix ## provides the lists of all mitigation actions for each municipality identified by the 2014 plan. This section will be further revised to integrate any major findings as the 2019 NHMP is in development (by February 1st).

### Infrastructure Issues & Recommendations

- Factor climate change impacts into all critical infrastructure improvement plans.





- Elevate roads in areas that experience regular flooding, especially those that are low-lying, located in the 100-year flood plain and/or serve as evacuation routes.
- Improve drainage when completing roadway projects. This includes a Complete Streets approach, the use of pervious road materials, and green infrastructure designs to improve on-site storm water retention and reduce storm water runoff.
- Install, replace or upgrade culverts in areas that experience regular flooding.
- Address flooding at underpasses of the New Haven rail line and I-95.

**Evacuation Route, Access & Education Issues & Recommendations:**

- Use signage and large, visible staffs to indicate depths of water so that vehicles can avoid flooded viaducts when necessary.
- Identify vulnerable neighborhood egress chokepoints and identify alternate access routes to neighborhoods and facilities when those chokepoints are not

passable; harden and flood proof these chokepoints as necessary to ensure they remain open.

- During flood events, install barricades on flooded roads to prevent access.
- Severe winds cause downed trees and limbs, which block evacuation routes. The Region's heavily forested areas in mostly suburban and rural residential neighborhoods are most vulnerable to these impacts. Because of the development patterns in these areas, few alternate routes around downed trees exist, effectively isolating impacted areas.

In addition to regional planning, several municipalities have begun local initiatives to build resiliency.

**Resilient Bridgeport, South End**

Led by the State of Connecticut, Resilient Bridgeport consists of a resilience strategy and pilot projects focused on protecting homes, businesses and infrastructure from chronic and acute flooding. Resilient Bridge-

Concept to protect Bridgeport's South End from future floods. The orange lines indicate areas of defense. Source: Resilient Bridgeport.

port is part of the Connecticut Department of Housing Sandy Recovery and National Disaster Resilience programs funded by the Federal Department of the Housing and Urban Development Community Development Block Grant Disaster Recovery program. The strategy consists of best practices, innovations, and planning and design principles that:

- Provide communities in floodplain areas with opportunities to prepare and adapt in response to climate change and other environmental pressures.
- Improve connections between neighborhoods – these are especially critical during emergencies.
- Enable new development in coastal areas that is sustainable, safe, and supports the economic well-being of the entire city.
- Strengthen local ecosystems through water quality improvements, urban greenways, tree plantings, habitat restoration, and shoreline enhancements.

## Issues & Project Components

Water ponds in low-lying areas throughout Bridgeport. In the South End, this is particularly pronounced along Iranistan Avenue and at the Park Avenue railroad underpass. The flooding disrupts traffic, interrupts business, and diminishes safety and quality of life for neighborhood residents. The ponding that occurs is a result of runoff from surrounding upland areas flowing to low points in the drainage system and the neighborhood, and the drainage system backing up when pipes downstream are already full. The project includes four key components:

- Removing water from the Park Avenue underpass allows Park to be a more reliable entry into the South End.
- Creating “green streets” in upslope areas reduces runoff volumes and flooding

while enhancing neighborhood aesthetics.

- Channeling stormwater via green streets into public parks that are designed to hold stormwater further reduces runoff, while providing new green spaces and recreational areas for neighborhood residents.
- Targeted separation of storm and combined sewer drains and installing a pump that removes excess runoff from the lowest lying areas reduces flood risk.

This suite of resilience improvements will create a more resilient South End community, support its long-term viability, and improve health and safety for the community’s vulnerable populations. The principal targeted outcomes are:

- Lower the risk of acute and chronic flooding,
- Provide dry egress during emergencies, and
- Educate the public about flood risks and sea level rise.

## Stratford Coastal Community Resilience Plan

The Town of Stratford’s Coastal Community Resilience Plan (2016) was a response to the impacts of Hurricane Sandy and sea level rise. Many of Stratford’s 51,500 residents and approximately two-thirds of its commercial properties are located in areas where the ground surface elevation is just a few feet above high tide. The purpose of the Plan is to:

- Introduce the community to the concept of “risk” as it applies to coastal floods, sea level rise, and resiliency;
- Characterize coastal flooding in Stratford including tides, storm surge, and waves, now and in the future;
- Identify the Town’s vulnerability to coastal

flooding, including the consequences of floods;

- Identify strategies, actions, and projects that can be employed to minimize these consequences and create a more resilient Stratford; and
- Introduce coastal resiliency into the Town's planning process including future revisions of the Town's Plan of Conservation and Development and Hazard Mitigation Plan.

### Flood Risk & Flood Protection Projects

While I-95 and the MNR rail were found to have a low probability of flood risk over the next 100 years, state and primary roads were found to have a high probability of flood risk during this time period. The recommended flood protection projects would mitigate flooding in coastal areas as well as other vulnerable interior areas, such as the South End. These include:

**Construction of a new bridge over Ferry Creek** (Broad Street, structure 138-005), including raising of the bridge deck elevation, construction of the new culverts and tide gates and raising of the roadway grades to serve (in combination with the existing pump station) as a flood control levee;

**Construction of a series of flood protection measures** (levees and flood walls) along the Housatonic Riverfront, from the Water Pollution Control Facility to (and including) the Stratford Army Engine Plant. Components of this project could be integrated with the Housatonic Greenway and are described in Section 7, Active Transportation.

### Resiliency in Local Transportation Projects

As part of the Metropolitan Transportation Planning process, these local projects were identified as improving the resiliency of the

Region's transportation system:

#### Fairfield

**Beach area:** Evacuation route improvements. Raise Fairfield Beach Road, Beach Road, Reef Road and other low-lying local roads used for evacuation.

#### Route 1:

- Implement resiliency measures to address flooding during rain events on Post Road/US 1 (Fairfield Center vicinity). These events potentially affect 20,000 vehicles per day. Includes green infrastructure measures.
- Fairfield Center Drainage improvements: Would run from/across/along Post Road to Pine Creek via Ruane Street, Sherman St, Sanford Street, Miller Street and Reef Road. Fairfield Railroad Station parking lot also affected. Potentially a small pump station.

#### South Benson:

- South Benson - Fairfield Beach Road Dike. Option to protect roads rather than raising them.
- Storm system improvements associated with proposed pump station. Would expedite road drainage.

#### Monroe

**Route 25:** Bridge replacements and roadway reconstruction. Replacement of two bridges and raising of the roadway to address flooding issues (0084-0099 and 0084-0100).

#### Stratford

**Shore Road:** Increase roadway elevation and new culvert. Involves elevating the existing road grade, installing a new culvert and constructing sections of retaining walls to create the new road grade.

Various daylighting of watercourses throughout Town and add in multiuse paths with amenities adjacent to the newly exposed

watercourse. The Town looks to focus on portions of Bruce Brook, Long Brook and area of the South End to mitigate flooding and improve resiliency on roadways and neighborhoods prone to flooding.

## Environmental Mitigation

Much of this section has discussed strategies to increase the resiliency of the transportation system, so as to adapt to climate change and sea level rise. Mitigation strategies reduce the impact of the transportation system on the environment. These strategies may slow the need to adapt to climate change and sea level rise.

## Federal Requirements

For many transportation projects, an environmental assessment is often conducted to understand the environmental consequences of the project and take appropriate actions to protect, restore, and enhance the environment. For large scale projects and major transportation investments, environmental impact statements are required that fully document feasible alternatives and describe the impacts to the affected environment.

The FAST Act requires that the metropolitan transportation plan:

*“include a discussion of the types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan.”*

In addition, the Connecticut General Statutes require the preparation of an Environmental Impact Evaluation (EIE) whenever a planned action has the potential to significantly affect the environment (Section 22a-1b(c)). The EIE includes:

- a written evaluation of the potential

environmental impacts of the proposed action,

- a detailed description of the proposed action and the need for the action,
- the direct and indirect impacts of the action, both positive as well as adverse,
- alternatives to the proposed action which were considered,
- the consistency of the action with the state Conservation and Development Policies Plan, and
- the economic, social, and environmental costs and benefits of the proposed action.

The MTP addresses environmental mitigation by supporting regulations that require the conduct of an EIE, environmental assessment or EIS for most highway projects and encouraging the design of projects that follow a flexible design approach as embodied in the Context Sensitive Solutions techniques. In general, environmental mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

## Consultation & Mitigation Actions

Mitigation of potential impacts from a proposed action requires careful study and assessment to determine the extent of impacts, the possibility of altering alignment or scope to avoid impacts, and consultation with

resource and environmental agencies and managers, including the Connecticut Department of Energy & Environmental Protection (DEEP), State Historic Preservation Office (SHPO), State Archaeologist, United States Environmental Protection Agency (EPA), and United States Army Corps of Engineers. Depending on the size and scope of the project, mitigation actions include the following:

- **Property acquisition:** Provide just compensation based on market value and certified appraisal and provide relocation assistance.
- **Noise:** Assess noise impacts from construction and post construction; limit construction activities to daytime hours and standard work schedules; and consider effectiveness of and need for noise barriers.
- **Air quality:** Assess air impacts and adjust project design to ensure improvement in auto-related emissions, if necessary.
- **Surface water:** Install erosion and sedimentation controls during construction; and install stormwater management system to capture, detain and treat storm flows before discharge.
- **Groundwater recharge and water supplies:** Provide temporary, on-site treatment of possible groundwater containments, including heavy metals; and implement primary treatment to remove sediments and secondary treatment to remove heavy metals.
- **Topography:** Minimize alterations to existing grades and provide contours within project area that result in no impact to adjacent properties.
- **Environmental Justice (Social/Neighborhood):** Ensure action has a positive and beneficial impact on the neighborhood and does not result in a disproportionately high impact on the area.

- **Soil and geology:** Remediate any impacts on soils and geology within the project area and minimize contamination of soils.
- **Floodway:** Develop alignment options that cause the least impact to the 100-year floodway and create new flood storage to compensate for any volumetric flood storage loss in the 100-year flood zone caused by the action on a 1:1 basis.
- **Wetlands:** Develop alignment options that cause the least impact to wetlands; loss or impact to wetlands would be mitigated through enhancement, restoration and creation efforts and focus not only on replacing lost wetland types but also for loss of function and value; and efforts would incorporate a combination of hydrologic, vegetative and soil features.
- **Natural environment:** Assess the potential and probable impacts to various elements of the natural environment, including biodiversity, fisheries, aquatic, reptilian, amphibian, avian and mammalian resources, threatened and endangered species, and species habitats, and implement mitigation measures, especially avoidance, as appropriate.

## Green Infrastructure & Low Impact Development

Hard surfaces in urban and suburban environments are a major source of surface water pollution. As rainwater falls on these impervious surfaces, it runs off, usually to a system of gutters, ditches, storm drains and conveyances to be discharged directly into streams, rivers and wetlands. With it, the rainwater carries pollutants including dust, lubricants, tire rubber, animal waste, traction sand, salt, and anything else that may have built up since the last rainfall, depositing it directly into the receiving water. This typical

method of dealing with storm water also causes much heavier than natural peak flows during and shortly after rain events, causes drastic water temperature spikes, and may cause erosion of streambanks and washouts or damage to culverts and bridges, impacting the reliability of the transportation network.

Green infrastructure (GI) and Low Impact Development (LID) are alternative planning, design and construction best management practices (BMPs) that aim to more closely mimic the pre-construction hydrology of a site. The goal of their implementation is to **slow, filter, store, evaporate and/or infiltrate** stormwater close to its source. These methods include non-structural planning and design techniques as well as structural features designed to minimize stormwater impacts.

### Non-structural Solutions

Non-structural techniques begin with good land use planning and design aimed at minimizing the amount of impervious surface associated with a development, and properly siting development with surface water impacts in mind. This can be accomplished through a number of techniques including:

- Clustering development – by minimizing the amount of area that is disturbed by development, natural stormwater infiltration functions can be preserved. Clustered development also minimizes the amount of roadway and other infrastructure needed to serve a development.
- Prioritizing infill development and redevelopment of vacant or under-utilized previously developed properties over development of forest or farmland.
- Minimizing lawn areas in favor of more natural vegetation cover.
- Avoidance of steep grades.
- Designing roads that are not excessively wide and better relate to the service and function they provide. This would allow

narrower street widths and less impervious pavement.

- Smart design of appropriately sized parking lots, promoting shared parking, and incorporating covered garages in order to reduce the amount of impervious parking lot cover.
- Designing with proper materials in mind including natural materials and native plants.

### Structural Solutions

On-site structural green stormwater infrastructure can also greatly reduce the amount of runoff entering traditional storm water systems and surface receiving waters. These GI features are typically built to treat a specific amount of runoff, with overflows built in to default to traditional stormwater systems when overloaded during more extreme events. In some cases, the need for traditional stormwater infrastructure can be eliminated. Some structural GI BMPs include:

**Bioswales/ Bioretention** – shallow vegetated depressions that infiltrate or temporarily store runoff.

**Rain Gardens** – landscaped areas designed to receive and infiltrate stormwater, typically include native plants and are designed to infiltrate water quickly.

**Permeable Pavement** – By eliminating fines in asphalt or concrete, or using pavers with spaces in between, water can flow through the pavement and properly prepared sub-base and into the ground below.

**Tree boxes** – similar in appearance to traditional street tree planters, but designed to retain, filter and infiltrate stormwater. These are often connected to a stormwater system to handle excess flows.

**Storm water planter** – a small, contained vegetated area that collects and treats storm water using bioretention. They typically

contain native, hydrophilic flowers, grasses, shrubs and trees. Treated storm water is either infiltrated into the ground or discharged into a traditional storm water drainage system. The planters are relatively small and do not require a large amount of space. However, they need periodic maintenance, including weeding, plant replacement, cleaning inflow and outflow pipes, watering during dry periods and removing litter.

#### **Rainwater storage and repurposing –**

Cisterns and rain barrels can be used to collect and store runoff so that it can be used at a later date, typically for irrigation. Using rainwater for irrigation has the added benefit of reducing demands on drinking water supplies, and reducing the energy used to treat and deliver drinking water.

**Vegetated roof** – lightweight planter systems can be integrated into rooftops to slow rainwater which is taken up by low maintenance plants. These roofs help insulate buildings and help mitigate the heat-island effect in urban areas.

### Connecticut’s Municipal Separate Storm Sewer System (MS4) General Permit

The new Connecticut “Municipal Separate Storm Sewer System (MS4) General Permit” that went into effect in 2017 applies to all GB-VMPO municipalities. An MS4 is the municipally owned system of drains, conveyances, pipes, outfalls, etc. that transmits runoff to surface waters.

#### **Directly Connected Impervious Area (DCIA)**

As a condition of the permit, municipalities are required to “disconnect” directly connected impervious area (DCIA). Impervious surfaces are considered disconnected if runoff from the impervious surface does not



enter the MS4, or if the volume of runoff generated from one inch of rainfall on a site is infiltrated or treated. Since municipalities do not have direct control of privately owned parking lots, driveways, rooftops and other impervious surfaces, they are left with town owned facilities and roads from which they can directly disconnect DCIA. Retrofitting existing facilities or designing new facilities with GI BMPs is one way in which towns can reach compliance with the permit. Implementing GI BMPs during roadway reconstruction wherever possible will help towns meet the requirements of the MS4 permit and will help restore and preserve surface water quality.

#### **Regulatory Obstacles to Low Impact Development (LID)**

The MS4 permit also requires that municipalities eliminate all obstacles to the implementation of LID in local regulations. By changing local regulations to meet the MS4 permit requirements, municipalities will be in a better position to encourage private de-

Example of green infrastructure  
Source: pedbikeimages.com  
Burden.

velopers to implement LID BMPs during new development and re-development, helping towns reach their DCIA disconnection goals. UConn's Center for Land Use Education and Outreach (CLEAR) provides tools, information and assistance to help municipalities with MS4 compliance and GI implementation.

### GI, LID & Watershed Based Plans

GI and LID techniques are a proven way to protect surface water quality when implemented in new construction, and to improve water quality when traditional stormwater systems are retrofitted. As such, they are promoted by watershed groups and environmentalists. Watershed Based Plans includes examples of GI retrofits that can be implemented to help improve water quality. Many of the examples are within public ROW along roadways and public parking lots and give municipalities options to retrofit portions of the storm water system under their control. These examples are a good place for municipalities to start minimizing the impacts of stormwater from the transportation network. Watershed Based Plans that have been completed for watersheds in the Greater Bridgeport and Valley Region include the following:

- **Pequonnock River:** Bridgeport, Monroe and Trumbull; see a description of the Pequonnock River Trail in Section 7,

Active Transportation for further details.

- **Rooster River:** Bridgeport, Fairfield and Trumbull.
- **Sasco Brook:** Easton, Fairfield and Westport
- **Saugatuck-Aspetuck River:** Bethel, Easton, Fairfield, Monroe, Newtown, Redding, Ridgefield, Weston, Westport, Wilton, and Norwalk.

### Electric Vehicles & Infrastructure

According to the EPA, transportation was responsible for 28.5% of U.S. greenhouse gas emissions in 2016, representing the largest share of greenhouse gas emissions in the nation. Over 90 % of the fuels used in transportation are petroleum based, mainly gasoline and diesel being burned in internal combustion engines (ICEs). Electric Vehicles (EVs) are widely seen as a way to curb these impacts by shifting away from the use of fossil fuels in motor vehicles to those that will be less impactful.

EVs represent several different technologies:

- **Hybrid electric vehicles (HEVs)** have both ICEs and electric motors that provide power for locomotion. These vehicles use energy produced by the IC engine and/or through regenerative braking systems to charge batteries that drive the electric motor.
- **Plug-in hybrid electric vehicles (PHEVs)** have larger batteries that can be charged by plugging into the electric grid to extend range or to reduce ICE use.
- **Battery electric vehicles (BEVs)** only have electric motors powered by a battery that must be charged by plugging into the electric grid.
- **Fuel Cell Electric Vehicles (FCEVs)** are less established than other types of EVs.

Table 14-1: Publicly Available EV Charging Stations

	Type 2	Level 3/ DC	Tesla	24 Hour Availability
Bridgeport	3			2
Easton	1			1
Fairfield	7		1	6
Seymour	1			1
Shelton	1	1		0
Stratford	1	1		1



FCEVs produce electricity using a chemical process that combines hydrogen and oxygen in the air in a fuel cell stack. FCEVs do not rely on combustion and produce no harmful emissions; however, they require hydrogen fuel to operate.

## Infrastructure Needs

HEVs require no special infrastructure to operate and return much better fuel efficiency compared to similar IC vehicles. PHEVs do not necessarily need special infrastructure since they have IC engines to rely on if its battery is depleted, and they can fuel up at any gas station. BEVs and FCEVs, however, need a network of special fueling stations to operate. While BEVs can be charged at a home charging station for routine trips or commuting, publicly available electric charging stations are necessary for longer trips.

There are three general types of EV chargers.

- **Type 1 chargers** use a standard 120 volt AC outlet and 3-prong plug to deliver approximately 2-5 miles of range per hour of charging. Level 1 is good for overnight home charging and requires no special equipment or investment.
- **Type 2 chargers** deliver a charge to batteries more quickly, about 10-to-20 miles of range per hour of charging, but require special 240 volt equipment and a dedicated circuit.
- **Level 3 or DC fast charging stations** can add 60-to-80 miles of range in 20 minutes of charging; however, these charging units are expensive and require substantial investment.

In order to avoid “range anxiety” or the worry that a BEV driver will be stranded with a depleted battery and no recharging option, a robust network of publicly available charging stations is necessary.



A review of EV charger location lists compiled by CTDEEP indicate publicly available EV charging stations in several GBVMPO municipalities, as described in Table 14-1.

An electric vehicle charging station.

## The Electric Vehicle Charging Station Incentive Program

EVConnecticut, a Department of Energy and Environmental Protection (CTDEEP) program focusing on the expansion of EV technology in the state, has provided funding to expand the network of charging stations. The Electric Vehicle Charging Station Incentive Program has provided several rounds

of funding to businesses and municipalities for the installation of publicly accessible charging stations. The program offered full reimbursement of charging equipment and installation, as long as the charger was made available to the public and was available free of charge for a period of time. However, there have been barriers to implementation. While the program would in most cases cover installation and equipment fees, there is substantial work involved in the grant application, siting, procurement, and oversight that many municipalities do not have the capacity to handle. There were also questions about ongoing electric and maintenance costs associated with the chargers, and many municipalities were uneasy with the uncertainty.

### Fuel Cell Electric Vehicles (FCEVs)

With respects to FCEVs, there are no known public hydrogen fueling stations in the region or in Connecticut. FCEVs are an emerging technology with some limited adoption in southern California, where a network of hydrogen fueling stations is developing. In 2018, CTDEEP solicited applications for funding to develop a retail hydrogen refueling station in the greater New Haven area with the goal of beginning to establish supportive infrastructure for FCEVs.

### Consumer & Municipal Incentives

There are additional incentives encouraging consumers to purchase EVs. The Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR) offers a rebate to help offset additional costs associated with EV purchase, and there are also federal rebates available for hydrogen and EV consumers. CTDEEP provided funding to offset the additional cost of EVs purchased for municipal fleet vehicles as well.

Improving technology, extended ranges, and

an expanding charging network and purchase incentives are all driving the increased popularity of EVs in general and BEVs more specifically. Electric vehicles are increasing as a percentage of the American motor vehicle market. As battery capacity increases and longer range BEV vehicles become available and affordable, a larger portion of these vehicles will be predominantly charged at home since consumers will likely “right-size” their vehicle to confidently accommodate their daily driving needs. As more PHEVs and BEVs enter the market, however, there will be more long distance trips taken using these vehicles. There will be increased demand for additional charging infrastructure, and for that infrastructure to be located in convenient locations and have adequate capacity. More Level 3 or DC fast charge infrastructure will be needed along interstate and long-distance highway corridors, and more Level 2 or Level 3 infrastructure will be needed at destinations of long distance travel.

### Regional Support for EVs

The GBVMPO will continue to work with municipalities to accommodate electric vehicles, specifically:

- Monitor the need for EV charging stations along I-95, Route 15, Route 8 and Route 25.
- Work with municipalities to fully utilize funding opportunities for the installation of EV Charging infrastructure and purchase of EV fleet vehicles.
- Work with CTDEEP to improve grant funding delivery to better reach communities with less capacity to site and install chargers where EV infrastructure is needed.
- Work with CTDEEP and municipalities to properly site EV charging infrastructure.
- On projects under the purview of Metro-

COG, NVCOG of the GBVMPO, consider the inclusion of EV charging infrastructure to any roadside or lot parking as appropriate.

- Encourage the installation of EV chargers at train stations and commuter parking lots; CTDEEP recommends that 3% of all new commuter parking spaces should be EV-ready.

## Sustainable CT

Sustainable CT is a voluntary municipal certification program that recognizes Connecticut municipalities that take local actions toward sustainability. One of the program's goals is to broaden the understanding of sustainability, looking beyond the environmental to include the economy, housing, transportation, culture, equity and public services and events. Municipalities choose Sustainable CT actions, implement them, and earn points toward certification. Every Sustainable CT action can produce multiple community benefits, demonstrating how local action can have a statewide impact. This perspective on sustainability echoes the six livability principles identified by the Partnership for Sustainable Communities.

Of the ten GBVMPO municipalities, the Town of Fairfield received a silver certification (the highest certification). Trumbull and Seymour are registered participating communities.

## Clean & Diverse Transportation Systems & Choices

Transportation is one of the nine Sustainable CT action categories. More specifically, the "Clean and Diverse Transportation Systems and Choices" category includes many sub-categories and actions which municipalities and the GBVMPO may collaborate on to improve the sustainability of the transportation system regionwide. This category includes actions taken to implement

complete streets, promote effective parking management, encourage smart commuting, support zero emissions vehicle deployment, and promote public transit and other mobility strategies. These transportation related sustainable actions can be locally implemented to achieve Sustainable CT certification:

- **Implement complete streets:** From training and planning to project construction, this sub category affords municipalities opportunities to score points when they are in the process of adding complete streets to their community.
- **Promote effective parking management:** Parking supports the vitality of commercial districts. However, effective parking management can also mitigate environmental impacts, including excessive land consumption, degraded water quality, and exacerbated heat island effects and reduce greenhouse gas emissions by encouraging alternative modes of transit.
- **Encourage smart commuting:** Communities demonstrate they are making efforts and providing options to their employees to use alternative modes of transportation for their commutes.
- **Support zero emissions vehicle deployment:** Encourages communities to transition their municipal vehicle fleet and create infrastructure for zero emission vehicles (ZEV) that city officials, residents, businesses, and travelers may use. While the goal is increased deployment of ZEVs within the municipal fleet, there are many intermediate steps municipalities can take including inventorying existing infrastructure.
- **Promote public transit and other mobility strategies:** For most travelers, public transportation is the best alternative to single occupancy vehicle commuting. Sustainable CT will reward actions

taken to promote and enhance public transportation, including steps taken to better coordinate public transportation with walking and bicycling.

- **Equity:** Fairness and the ability of everyone to get what they need in order to improve their quality of life. It is a practice which underlies the six livability principles and, as such, is a component and benefit of a sustainable action. Sustainable CT views Equity benefits as new, improved, and valued relationships between different members of the community. In the context of transportation systems and planning, the Title VI regulations prescribe equity policy for more inclusive decision-making and improved access to services and sharing of benefits with all residents, both current and future, regardless of race, income, ability, age, gender, sexual orientation, etc. Sustainable CT attempts to advance equity by asking municipalities to demonstrate its application in municipal decision-making processes.

### Local Plans for Sustainability

In addition to work at the regional and state level, several municipalities in the Greater Bridgeport and Valley Region have proactively planned to reduce the environmental impacts of their local transportation systems by improving alternatives to driving and encouraging fuel efficient and/or electric vehicles.

### BGreen 2020: A Sustainability Plan for Bridgeport, CT

The BGreen Plan established goals and objectives to promote and encourage development that would reduce the City's carbon footprint, rely on alternative energy sources and change how people move about the City. The plan's overriding theme stresses that climate change and rising sea levels are

occurring and will continue in the future. The City will face long term consequences that include stronger storm surges and greater coastal flooding. These hazards will threaten the City's infrastructure and vulnerable populations. The Plan includes a number of actions and strategies to reduce storm water runoff, increase resiliency to climate change, sea level rise and storm surges, and encourage sustainable development. The following strategies for the transportation system were identified by the plan:

- **Enact a Transit First policy:** Establish public transit, walking and biking as priority policies for a balanced transportation system. Reduce parking requirements and require that new development be designed for easy use by transit users, bicyclists and pedestrians, with review by GBT to ensure that bus access is enhanced and not hindered by site plans or street designs.
- **Assess transportation demand to prioritize infrastructure investment:** Work with the GBVMPO to analyze existing travel data, determine transportation demand throughout the city, and develop a more complete picture of potential transit service routes.
- **Construct a train station in the East Side:** This project is further detailed in the Rail (6) and Intermodal (10) sections.
- **Work with large employers to reduce the need to drive:** Work with the GBT and large job centers to identify workable strategies, programs and incentives, such as "eco passes," shared cars on-site and van shuttle services.
- Specific projects for the following are further detailed in **Section 7, Active Transportation:**
  - ◇ **Make Bridgeport's roadways "Complete Streets:"** Require that public infrastructure be constructed

with the needs of all users in mind, not just drivers.

◇ **Promote walking and develop pedestrian infrastructure:** Inventory existing sidewalks and crosswalks to identify priority improvement areas. Develop a Pedestrian Infrastructure Improvement Master Plan that includes long-term plans for partners, projects and funding.

◇ **Promote bicycling and develop bicycle infrastructure:** Conduct a Master Plan for Bicycling, work with MetroCOG to develop regional bikeway connections, and establish annual goals for the expansion of bike infrastructure in the city. Slowly incorporate striped bike lanes, bike racks near employers and striped routes to schools.

• **Establish a Mobility Authority:** Leverage revenues from Bridgeport's public parking facilities to more efficiently utilize existing parking resources and mitigate the need for the construction of additional parking. Downtown, revenue might be used to cover or light the top level of garages to improve safety and utilization, enhance pedestrian connections to garages farther from destinations to enable "parking once" for multiple downtown destinations, and/or pay for a transit circulator.

• **Reduce emissions through anti-idling and fuel standard regulations and education:** The city can replace, retrofit, or re-fuel its own municipal fleet with cleaner vehicles, and consider fuel use by subcontractors providing city services. Stakeholders and city partners can also support development of alternative fuel infrastructure in Bridgeport such as natural gas fueling or electric charging stations. City policies can incentivize the purchase and operation of fuel-efficient

private vehicles, through reduced sales or property tax rates or preferential parking privileges.

## Fairfield's Sustainability Plan

The Town of Fairfield's Sustainability Plan (2018) was put together by the Sustainable Fairfield Task Force, Town officials and other stakeholders to advance the broader use of clean, renewable energy sources Town-wide, help safeguard the Town's natural environment, and make Fairfield a more sustainable community.

Many of the recommendations are directly or indirectly linked to mitigating the environmental impacts of the region's transportation system. The Plan identifies the impact of two-car households on carbon emissions, and the role mass transit, bicycling, walking and fuel efficient/electronic vehicles have in reducing emissions. Increasing the use of electronic vehicles (both town-owned and privately-owned), providing EV chargers, supporting transit, transit oriented development and

Perry's Mill Pond  
Source: Town of Fairfield



---

rideshares are goals for 2020, with the long term (2050) goal of reduced traffic and 100% of transportation provided by sustainable sources.

The Plan recognizes that supporting a safe environment for walking and biking is crucial to encouraging active transportation. Many of the recommendations made regarding walkability and bikeability are detailed in Section 7, Active Transportation. These include the Complete Streets policy, applying the policy to new projects and fully implementing the bike route plan and complete streets plan.

# 15: Metropolitan Transportation Plan Financials & Funding Sources

## Transportation Funding in Connecticut

In Connecticut, transportation funds come from a variety of sources including the federal government, state government, and local governments. Federal funds for transportation play a critical role in Connecticut and are determined by federal surface transportation authorizations. The Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) was signed into law on December 4, 2015 and authorizes \$305 billion over fiscal years 2016 through 2020 for highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs.

Most federal transportation program funds are apportioned by formula using program-specific factors. Some transportation funding is provided through discretionary programs. Explanations of the highway and transit funding programs most relevant to this Region are discussed below. Details include eligible uses of funds, limitations, federal and state funding ratios, and availability.

In Connecticut, state funding for transportation is provided through the Special Transportation Fund (STF), which supports debt service on state bonds issued to pay for transportation projects (including matching federal funds), as well as a small program of pay-as-you-go activities. The major sources of STF dollars are the motor fuels tax and motor vehicle receipts. In addition to CTDOT, other state agencies also provide funds that can be used toward transportation improvements.

Due to funding uncertainties at both the federal and state levels, it is difficult to estimate anticipated resources for 25 years based on past and current activities. Both cost and revenue estimates are inexact and will most likely need adjustment in the future. The following financial plan is an approximate, but realistic, estimate of total program cost; and a similar estimate of total revenues that the Region can expect to receive over the next 25 years. A goal of this process is to prepare a "financially constrained plan" whose costs can be paid from the 25-year revenue stream.

## FHWA Allocations

CTDOT calculated the total estimated FHWA funds for Connecticut (\$34,695,756,610) for the period 2019-2045 by compounding the estimated federal funds for federal fiscal year 2018 (\$827,450,352) at 3% for 27 years. \$5,982,081,009 was deducted from this total for "major projects of statewide significance".

Of the balance of the total estimated funds (\$28,713,675,601), CTDOT's Office of Statewide Coordination and Modeling, STIP Unit allocated 60% for System Preservation (\$17,228,205,360), and 40% for System Improvement (\$11,485,470,240). System Preservation projects include repaving roadways, bridge repair or replacement, and any other form of reconstruction in place. System improvement projects are projects that enhance safety, improve mobility, increase system productivity or promote economic growth.

Five percent each of the System Preservation and System Improvement funds were distributed equally to each of the MPOs and the RPOs. This provided each of the 10 plan-

Table 15-1: Projects Programmed for FHWA Funding

	Years 1 to 4	Years 5 to 10	Years 11 to 27	Total
Highway Preservation	\$230,120,133	\$164,500,000	\$144,500,000	\$539,120,133
ITS	\$20,000,000	\$25,000,000	\$30,000,000	\$75,000,000
<b>Total Preservation:</b>	<b>\$250,120,133</b>	<b>\$189,500,000</b>	<b>\$174,500,000</b>	<b>\$614,120,133</b>
Highway Improvement	\$153,016,000	\$346,830,000	\$368,215,000	\$868,061,000
Active Transportation	\$106,990,200	\$73,564,800	\$78,750,000	\$259,305,000
Intermodal	\$5,700,000	\$4,500,000	\$10,000,000	\$20,200,000
<b>Total Improvement:</b>	<b>\$265,706,200</b>	<b>\$424,894,800</b>	<b>\$456,965,000</b>	<b>\$1,147,566,000</b>
<b>Total Highway:</b>	<b>\$515,826,333</b>	<b>\$614,394,800</b>	<b>\$631,465,000</b>	<b>\$1,761,686,133</b>

Table 15-2: FHWA Programmed Projects & Allocation

	Total Projects	FHWA Allocated	Remainder
Preservation + ITS	\$614,120,133	\$1,486,859,506	<b>\$872,739,373</b>
Highway, Active Transportation & Intermodal	\$1,133,066,000	\$1,581,238,578	<b>\$448,172,578</b>

ning organizations with a minimum allocation of funds. Weighted variables were used to distribute the remainder of the funds. The variables used were Vehicle Miles of Travel (VMT), Volume to Capacity (V/C), and Lane Miles (LM).

- **For System Improvement funds:** .25 weight for VMT and .75 weight for V/C.
- **For System Preservation funds:** .25 weight for VMT and .75 for LM.

The amounts allocated to these variables for each category were then distributed to each MPO/RPO in proportion to its respective percentage to the total of the variables.

### Estimated FHWA Allocation for the GBVMPO

Based on these calculations, the Greater

Bridgeport and Valley Planning Region can anticipate \$1,581,238,578 (federal) in System Improvement funds and \$1,486,859,506 System Preservation funds through 2045. \$686,694,808 is estimated for major projects of statewide significance in the Greater Bridgeport and Valley area.

The fiscally constrained highway projects listed in this plan fall below the anticipated funds (Tables 15-1 and 15-2). However, illustrative projects outside of the fiscally constrained lists are detailed in the Operations (13) and Resilience & Mitigation (14) sections of the MTP. These projects should be considered to fill this gap. Transit projects that strengthen the intermodal network should also be evaluated as candidates.

The needed transit funds were estimated from existing capital plans and operating costs. A total of \$1.5 billion is necessary for bus transit, which includes some statewide costs (Table 15-3). A total of \$10.6 billion is anticipated for improvements to the New Haven Line, Waterbury Branch Line and the freight rail network (Table 15-4). \$13.8 billion in transit funds, through both state and federal sources are anticipated to support bus and rail service (Table 15-5).



Table 15-3: Bus Projects Programmed for FTA Funding

	Years 1 to 4	Years 5 to 10	Years 11 to 27	Total
GBT	\$75,403,161	\$166,389,611	\$388,263,023	\$630,055,795
VTD	\$6,324,201	\$10,832,447	\$42,911,115	\$60,067,763
BRT, Stratford & Bridgeport	\$0	\$0	\$50,000,000	\$50,000,000
Statewide	\$165,000,000	\$159,800,000	\$487,700,000	\$812,500,000
<b>Total Bus</b>	<b>\$246,727,362</b>	<b>\$337,022,058</b>	<b>\$968,874,138</b>	<b>\$1,552,623,558</b>

Table 15-4: Rail Projects Programmed for FTA Funding

	Years 1 to 4	Years 5 to 10	Years 11 to 27	Total
NHL	\$786,625,000	\$2,575,500,000	\$6,647,000,000	\$10,009,125,000
WBL	\$60,000,000	\$322,500,000	\$172,326,000	\$554,826,000
Freight	\$30,000,000	\$10,000,000	\$0	\$40,000,000
<b>Total Rail</b>	<b>\$876,625,000</b>	<b>\$2,908,000,000</b>	<b>\$6,819,326,000</b>	<b>\$10,603,951,000</b>

Table 15-5: Anticipated FTA Revenues by Location & Source, with Expenditures

Revenue	FTA	State Match	State Only	Total
GBVMPO Region	\$1,404,480,000	\$351,120,000		\$1,755,600,000
Statewide	\$1,358,000,000	\$339,500,000	\$2,946,500,000	\$4,644,000,000
NHL Systemwide (MPOS 1,2,5,7,8)	\$3,530,800,000	\$882,700,000	\$1,400,000,000	\$5,813,500,000
CNVMPPO, GBVMPO & SCRCOG	\$204,000,000	\$51,000,000		\$255,000,000
GBVMPO & SCRCOG	\$1,080,000,000	\$270,000,000		\$1,350,000,000
<b>Total Anticipated Revenue</b>	<b>\$7,577,280,000</b>	<b>\$1,894,320,000</b>	<b>\$4,346,500,000</b>	<b>\$13,818,100,000</b>
<b>Anticipated Bus+Rail Expenditures</b>				<b>\$12,156,574,558</b>
<b>Remainder</b>				<b>\$1,661,525,442</b>

Finally, \$95 million is estimated for freight improvements and \$201 million for improvements to the Region's ferry and airport facilities (Table 15-6).

The types of funding sources that make up the anticipated FHWA and FTA federal funds

Table 15-6: Freight, Ferry & Aviation

	Years 1 to 4	Years 5 to 10	Years 11 to 27	Total
Freight	\$25,000,000	\$30,000,000	\$40,000,000	\$95,000,000
Ferry + Aviation	\$51,500,000	\$55,000,000	\$95,000,000	\$201,500,000

are described next. This section concludes with a description of state and local programs that may also fund transportation.

## FTA & FHWA Funding Programs

### Better Utilizing Investments to Leverage Development (BUILD, 80-20)

Previously the Transportation Investment Generating Economic Recovery (TIGER) grant program, BUILD grants are awarded on a competitive basis for capital investments in surface transportation projects that have a significant national, regional, and local impact.

Project selection criteria includes safety, economic competitiveness, quality of life, environmental protection, state of good repair, innovation, partnership, and additional non-Federal revenue for infrastructure investments.

### Congestion Mitigation and Air Quality Program (CMAQ, 80-20)

CMAQ is a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas).

All CMAQ funded projects and programs require an assessment and documentation of air quality benefits by the State. For a State that has a nonattainment or maintenance area for fine particulate matter (PM2.5), an amount equal to 25% of the amount of

State's CMAQ apportionment attributable to the weighted population of such areas in the State is set aside for use only in the PM2.5 designated area.

### Ferry Boat Program (FBP, 80-20)

This program is administered by the FHWA to fund the construction of ferry boats and ferry terminal facilities. The FAST Act modifies the formula, now giving more weight to the number of passengers carried by ferry systems.

### Highway Bridge Replacement and Re- habilitation Program, Bridge Program, OFF System (BRZ) (80-20)

This program provides funds to replace or rehabilitate deficient bridges on the National Bridge Inventory (NBI) that are not on the Federal-Aid road system, therefore bridges on local roads or rural minor collectors. CTDOT has a program of regularly inspecting and rating the condition of State and local bridges on the NBI. Candidate projects are selected from the list of local and State bridges with poor or fair condition ratings. Since most State roads are on the Federal-Aid road system, they are not qualified for this program. The majority of projects are on municipal bridges.

### Highway Infrastructure Program (HIPA, 90-10 or 80-20)

HIPA provides for construction of highways, bridges, tunnels and local access roads.

### Highway Safety Improvement Program (HSIP, 90-10)

The HSIP provides funds to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The program requires a data-drive, strategic approach to improving highway safety on all public roads that focuses on performance.

## National Highway Performance Program (NHPP, 80-20)

The NHPP provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS. NHPP projects must be on an eligible facility and support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and be consistent with Metropolitan and Statewide planning requirements.

## National Highway Freight Program (NFRP, 90-10 or 80-20)

The NFRP is focused on improving the efficient movement of freight on the National Highway Freight Network (NHFN). Funds are distributed to States by formula for eligible activities, such as construction, operational improvements, freight planning, and performance measurement. Although the program is highway-focused, each State may use up to 10 percent of its NFRP funds for each fiscal year for public or private freight rail, water facilities (including ports), and intermodal facilities. States must have a State Freight Plan (compliant with 49 U.S.C. 70202 and approved by DOT) to obligate NFRP funds.

## National Highway Traffic Safety (NHTS) / Section 154 Penalty Funds (Sect 154, 100%)

The State of Connecticut is currently assessed a 2.5% annual penalty from its NHPP and STP programs where funds are transferred to the State's 402 Safety Program because it does not meet Federal Open Container Legislation Requirements under 23

U.S.C. 154. The Department programs these funds towards Impaired Driving and Hazard Elimination Programs. These Programs are intended to change behaviors, save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, and roadway safety improvements.

## Surface Transportation Program / Surface Transportation Block Grant Program (STP, 80-20)

The Surface Transportation Program provides flexible funding to best address State and local transportation needs. STP funds may be used for roadway improvements on roads that are functionally classified as a rural major collector or above. The program has a variety of subcategories defined below.

### Surface Transportation Program – Urban (STP-U)

STP-U is the largest of all the STP programs. Funds are suballocated for use in different areas of the State according to a formula based on the area's relative share of the State's population. The Bridgeport/Stamford UZA has a population of well over 200,000 people and the GBVMPO receives funds through STP Bridgeport/Stamford (STPBS). Areas with population greater than 5,000 but no more than 200,000 qualify for STP-Other Urban funds (STPO).

The STP-Urban Program provides funds for improvements to eligible roads in urban areas. The eligibility guidelines for STP-Urban funds are flexible. Funds can be used for a wide range of projects, such as roadway widening, roadway reconstruction, transit projects and ridesharing projects.

### STP Anywhere (STPA)

STPA funds can be used for improvements to eligible roads anywhere in the state, regardless of rural or urban designation. Project eligibility is the same as the STP-U program.

### **STP Rural (STPR)**

STPR funds can be used for improvements to eligible roads in the rural areas of the State, which are those areas with population of 5,000 or less. Roads classified as rural minor collector or rural local are excluded from the program.

### **Repurposed Earmark Program (REP, 80-20)**

The Consolidated Appropriations Act of 2016 allowed States to repurpose certain funds originally earmarked for specific projects more than 10 years ago; more specifically, any earmark that was designated on or before September 30, 2005, and was less than 10 percent obligated or final vouchered and closed. These earmark funds could be repurposed to a new or existing STP eligible project in the State within 50 miles of the original earmark designation. Funds under the REP must be obligated before the close of FFY 2019.

### **Transportation Alternatives Program (TAP, 80-20)**

TAP provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvements such as historic preservation, environmental mitigation related to storm water and habitat connectivity; recreational trails; and safe routes to school projects. Similar to STP, a portion of TAP is sub-allocated based on population and the and the GBVMPO receives funds through TAP Bridgeport/Stamford (TAPBS). TAP projects are selected through a competitive process.

### **FTA Section 5307 Capital and Subsidy (Operating) Program (80-20)**

5307 funds are primarily for capital assistance projects, such as the purchase of new buses. A small portion of these funds is reserved to help defray transit operating expenses.

Funds are allocated to individual urbanized areas according to a formula based on the size of the population. However, the Section 5307 funds, apportioned to Connecticut's Urbanized Areas (UZAs), are pooled and then first applied to the highest priority bus needs, as reflected in the various TIPs and the STIP. CTDOT provides the non-federal share of FTA capital grants for maintenance facilities and the purchase of replacement buses for all the local bus systems in Connecticut

### **FTA Section 5309 Capital Investment Grants (80-20)**

A discretionary grant program, this is FTA's primary program for funding major transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit. Projects seeking CIG funding complete a series of steps over several years to be eligible for funding

### **FTA Section 5310 Capital Program (80-20)**

The FTA Section 5310 Program provides capital assistance to nonprofit organizations and public agencies that provide specialized transportation services to elderly persons and persons with disabilities.

### **FTA Section 5317 New Freedoms Initiative (50-50 Operations, 80-20 Capital)**

This program provides funds that assist individuals with disabilities with transportation. Eligible activities include new public trans-

portation services and public transportation alternatives beyond those required by the ADA.

### **FTA Section 5339 Bus and Bus Facilities Formula Grants (80-20)**

This program provides capital funding to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. In addition to the formula allocation, this program includes two discretionary components: The Bus and Bus Facilities Discretionary Program and the Low or No Emissions Bus Discretionary Program.

### **SAFETEA-LU**

This section gives a brief explanation on SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) programs with funds that are still available (carry-over) under the FAST Act and the eligible uses of each category.

### **High Priority Projects (HPPS, 80-20)**

High Priority Project funds are made available for specific projects identified by Congress. These projects are referred to as demonstration projects. MAP-21 repealed this program; no changes were made to the program under the FAST Act.

### **Ferry Boat Discretionary (FBD, 80-20)**

FBD is administered by the FHWA to fund the construction of ferry boats and ferry terminal facilities. Moving Ahead for Progress in the 21st Century (MAP-21) ended the discretionary program and replaced it with the Ferry Boat and Ferry Terminal Facilities Program (FBP), a formula program.

### **National Scenic Byways Program (SB, 80-20)**

Neither MAP-21 nor the FAST Act provided

funding for this program, but no other changes were made. The intent of the program was to provide funds for the designation by the Secretary of Transportation of roads that have outstanding scenic, historic, cultural, natural, recreational and archaeological qualities as All-American Roads or National Scenic Byways. The program had also provided funds for projects on existing Scenic roadways and for planning, designing, and developing State scenic byway programs.

### **Section 330, 115,117, 112, 120 & 378:**

This program is dedicated for those projects that are established by congressional designation and the funds are available until expended.

### **Transportation and Community and System Preservation Program (TCSP, 80-20)**

This program provides funding for the planning and implementation of projects that address the relationships between transportation and the community. Projects should include improving the efficiency of the transportation system; reducing the impacts of transportation on the environment; reducing the need for costly future public infrastructure investments; ensuring efficient access to jobs, services and center of trade; and examining and encouraging private sector development patterns which meet these purposes.

### **Value Pricing Pilot Program (VPPP, 80-20)**

This was an experimental program to learn the potential of different value pricing approaches for reducing congestion. The grant program supported efforts by State and local governments or other public authorities to establish, monitor and evaluate value pricing projects, and to report on their effects. A pricing project under this program may include

tolls on Interstate highways. Federal funds can be used to support pre-implementation costs, including costs of public participation and pre-project planning for up to 3 years, and to support project implementation costs for up to 3 years.

## State Funding Programs

### Community Connectivity Grant Program (CCGP, 100%)

The CCGP was developed to provide funding for targeted infrastructure improvements that are commonly identified through Road Safety Audits (RSAs), or other transportation planning initiatives. The purpose of the CCGP is to provide funding directly to Municipalities to perform smaller scale infrastructure improvements that are aligned with the overall program goal. Municipalities are responsible for all design costs and the state is responsible for 100 percent of construction costs.

### Local Transportation Capital Improvement Program (LOTICIP, 100%)

This state program is intended to address regional transportation priorities through capital improvement projects prioritized and endorsed by the COGs. Projects must meet the eligibility requirements of the Federal STP-Urban Program, such as being located on a roadway classified as a collector or higher. Municipalities are responsible for all design costs and the state is responsible for 100 percent of construction costs.

### Local Bridge Program (50-50)

Municipally-owned bridges under 20 feet in length are funded by the Local Bridge Program. To qualify for the Local Bridge Program, a bridge must carry a certified local road and be structurally deficient according to Federal Highway Administration criteria. Bridges must be located on roads function-

ally classified as “rural local roads,” “rural minor collectors,” or “urban local roads.”

### Transit-Oriented Development/Responsible Growth Planning Grant (100%)

Provided through the Office of Policy and Management (OPM), this grant funds municipal plans to further Transit-Oriented Development and Responsible Growth. TOD is defined as the “development of residential, commercial and employment centers within one-half mile or walking distance of public transportation facilities, including rail and bus rapid transit and services, that meet transit supportive standards for land uses, built environment densities and walkable environments, in order to facilitate and encourage the use of those services.”

### Connecticut Recreational Trails Program Grant (80-20)

Provided through the Department of Energy and Environmental Protection, this grant provides funds to a variety of entities for the following activities:

- Planning, design and construction of new trails (motorized and non-motorized).
- Maintenance and restoration of existing trails (motorized and non-motorized).
- Access to trails by persons with disabilities.
- Purchase and lease of trail construction and maintenance equipment.
- Acquisition of land or easements for a trail, or for trail corridors.
- Operation of educational programs to promote safety and environmental protection as related to recreational trails.

# Resolutions

## **GREATER BRIDGEPORT AND VALLEY METROPOLITAN PLANNING ORGANIZATION**

Ansonia●Bridgeport●Derby●Easton●Fairfield●Monroe●Seymour●Shelton●Stratford●Trumbull

---

### **RESOLUTION 2019-06 RESOLUTION ON CONFORMITY WITH THE CLEAN AIR ACT OZONE**

**WHEREAS**, the Greater Bridgeport and Valley Metropolitan Planning Organization (GBVMPO) is required to submit an Air Quality Conformity Statement to the US Federal Highway Administration (FHWA) and to the US Environmental Protection Agency (EPA) in accordance with the final conformity rule promulgated by EPA (40 CFR 51 and 93) when adopting an annual Transportation Improvement Program (TIP) or when effecting a significant revision of the Metropolitan Transportation Plan (MTP); and

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

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

**WHEREAS**, it is the opinion of the Greater Bridgeport and Valley Metropolitan Planning Organization that the plans and programs approved today, *March 28<sup>th</sup>, 2019* and submitted to FHWA and EPA conform to the requirements of Title 42, Section 7506 (3) (A) as interpreted by EPA (40 CFR 51 and 93); and

**WHEREAS**, The State of Connecticut has elected to assess conformity in the Connecticut portion of the New York-Northern New Jersey-Long Island, NY-NJ-CT Ozone Moderate Nonattainment area (Fairfield, New Haven and Middlesex Counties) and the Connecticut Department of Transportation has jointly assessed the impact of all transportation plans and programs in this Nonattainment areas (Ozone and PM2.5 Air Quality Conformity Determination February 2019); and

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

**NOW THEREFORE BE IT RESOLVED** that the Greater Bridgeport and Valley Metropolitan Planning Organization finds that the *2019-2045 Metropolitan Transportation Plan* and the *FFY 2018 – 2021 Transportation Improvement Program (TIP) for the Greater Bridgeport and Valley Metropolitan Planning Organization* and all Amendments conform to air quality requirements of the U.S. Environmental Protection Administration (40 CFR 51 and 93), related U.S. Department of Transportation guidelines (23 CFR 450) and with Title 42, Section 7506 (3) (A) and hereby approves the existing Ozone and PM2.5 Air Quality Conformity Determination, dated February 2019, contingent upon no major adverse comments are received during said period.

This resolution shall become effective as of March 28th, 2019

CERTIFICATE

The undersigned duly qualified and co-secretaries of the Greater Bridgeport and Valley Metropolitan Planning Organization certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the Greater Bridgeport and Valley Metropolitan Planning Organization on March 28th, 2019.

Respectfully submitted,



---

Matt Fulda, Executive Director  
MetroCOG – MPO Co-Secretary

---

Richard T. Dunne, Executive Director  
NVCOG – MPO Co-Secretary

Date: March 28th, 2019

---

**Responsible Metropolitan Transportation Planning Agencies**

**CONNECTICUT METROPOLITAN COUNCIL OF GOVERNMENTS**

1000 Lafayette Boulevard, Suite 925  
Bridgeport, Connecticut 06604-4902  
Phone: (203) 366-5405 Fax: 366-8437  
E-mail: mfulda@ctmetro.org

**NAUGATUCK VALLEY COUNCIL OF GOVERNMENTS**

49 Leavenworth Street, Suite 301  
Waterbury, Connecticut 06702  
Phone: (203) 757-0535 Fax: 756-7688  
E-mail: rdunne@nvcogct.org



**GREATER BRIDGEPORT AND VALLEY METROPOLITAN PLANNING ORGANIZATION**  
Ansonia●Bridgeport●Derby●Easton●Fairfield●Monroe●Seymour●Shelton●Stratford●Trumbull

---

**RESOLUTION 2019-07**  
**RESOLUTION ON CONFORMITY WITH THE CLEAN AIR ACT, PM 2.5**

**WHEREAS**, the Greater Bridgeport and Valley Metropolitan Planning Organization (GBVMPO) an Air Quality Conformity Statement to the US Federal Highway Administration (FHWA) and to the US Environmental Protection Agency (EPA) in accordance with the final conformity rule promulgated by EPA (40 CFR 51 and 93) when adopting an annual Transportation Improvement Program (TIP) or when effecting a significant revision of the Metropolitan Transportation Plan (MTP); and

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

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

**WHEREAS**, it is the opinion of the Greater Bridgeport and Valley Metropolitan Planning Organization that the plans and programs approved on *March 28<sup>th</sup>, 2019* and submitted to FHWA and EPA conform to the requirements of Title 42, Section 7506 (3) (A) as interpreted by EPA (40 CFR 51 and 93); and

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

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

**WHEREAS**, The results of the required emissions analysis performed by the Connecticut Department of Transportation on the *2019-2045 Metropolitan Transportation Plan* and the *FFY 2018 – 2021 Transportation Improvement Program (TIP) for the Greater Bridgeport and Valley Metropolitan Planning Organization* and Amendments show that the implementation of the projects contained therein will result in emissions of PM2.5 in each analysis year that are less than the emissions of the baseline year; and

**NOW THEREFORE BE IT RESOLVED**, That the Greater Bridgeport and Valley Metropolitan Planning Organization finds that the *2019-2045 Metropolitan Transportation Plan* and the *FFY 2018 – 2021 Transportation Improvement Program (TIP) for the Greater Bridgeport and Valley Metropolitan Planning Organization* and Amendments conform to air quality requirements of the U.S. Environmental Protection Administration (40 CFR 51 and 93), related U.S. Department of Transportation guidelines (23 CFR 450) and with Title 42, Section 7506 (3) (A) and hereby

approves the existing Ozone and PM2.5 Conformity Determination, *March 28<sup>th</sup>, 2019* on the Ozone and PM2.5 Air Quality Conformity Determination dated February 2019 contingent upon no major adverse comments are received during said period.

**CERTIFICATE**

The undersigned and duly qualified co-secretaries of the Greater Bridgeport and Valley Metropolitan Planning Organization certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the Greater Bridgeport and Valley Metropolitan Planning Organization on March 28th, 2019.

Respectfully submitted,



---

Matt Fulda, Executive Director  
MetroCOG – MPO Co-Secretary



---

Richard T. Dunne, Executive Director  
NVCOG – MPO Co-Secretary

Date: March 28th, 2019

---

**Responsible Metropolitan Transportation Planning Agencies**

**CONNECTICUT METROPOLITAN COUNCIL OF GOVERNMENTS**

1000 Lafayette Boulevard, Suite 925  
Bridgeport, Connecticut 06604-4902  
Phone: (203) 366-5405 Fax: 366-8437  
E-mail: mfulda@ctmetro.org

**NAUGATUCK VALLEY COUNCIL OF GOVERNMENTS**

49 Leavenworth Street, Suite 301  
Waterbury, Connecticut 06702  
Phone: (203) 757-0535 Fax: 756-7688  
E-mail: rdunne@nvcogct.org

**GREATER BRIDGEPORT AND VALLEY METROPOLITAN PLANNING ORGANIZATION**  
Ansonia●Bridgeport●Derby●Easton●Fairfield●Monroe●Seymour●Shelton●Stratford●Trumbull

---

---

**RESOLUTION 2019-08**

**ENDORSEMENT**  
**METROPLITAN TRANSPORTATION PLAN: 2019 ~ 2045**  
**FOR THE GREATER BRIDGEPORT AND VALLEY PLANNING REGION**

**WHEREAS**, the Greater Bridgeport and Valley Metropolitan Planning Organization (GBVMPO) is designated by the US Department of Transportation as the transportation planning agency for the Greater Bridgeport and Valley Planning Region, and conduct the transportation planning process in accordance with Section 34 of Title 23 of the United States Code, as amended by the *Fixing America's Surface Transportation Act (FAST Act)* and related US Department of Transportation planning regulations;

**WHEREAS**, the *2019-2045 Metropolitan Transportation Plan* was prepared by the GBVMPO in 2018 and 2019 and endorsed by the Greater Bridgeport and Valley Metropolitan Planning Organization at its *March 28th, 2019*, meeting,

**WHEREAS**, the *FAST Act* requires MPOs to prepare and develop long range transportation plans every four years that reflect at least a 20-year planning horizon, are financially constrained, comply with federal planning guidelines, consider ten planning factors, consider six livability principles and conform to the *Clean Air Act Amendments of 1990* and Connecticut's *State Implementation Plan for Air Quality*, as revised;

**WHEREAS**, the GBVMPO completed an update of its existing long range transportation plan and the new *Plan* was prepared through the transportation planning process and in conformity with *FAST Act* planning guidelines;

**WHEREAS**, the GBVMPO conducted a proactive public involvement process that followed the procedures set forth in the GBVMPOs *Public Participation Program* handbook, as revised, including making the draft plans available to the public electronically (on the web), notifying the public of the new plans and soliciting review and comment, providing at least a 30-day review period, holding public information meetings (March 18th, 2019 at the MetroCOG office)), recording comments from the public and considering and responding to comments;

**WHEREAS**, the proposed program of projects recommended in the Metropolitan Transportation Plan was assessed for its impacts on air quality and the State's ability to attain *8-Hour Ozone and PM<sub>2.5</sub> National Ambient Air Quality Standards*;

**WHEREAS**, the regional emissions assessments demonstrate that the proposed projects will not have an adverse impact on air quality.

**NOW, THEREFORE BE IT RESOLVED** that the Greater Bridgeport and Valley Metropolitan Planning Organization, after reviewing the final draft *2019-2045 Metropolitan Transportation*

**Plan** find that the **Plan** and all Amendments conform to air quality requirements of the U.S. Environmental Protection Agency (40 CFR 21 and 93), related U.S. Department of Transportation guidelines (23 CFR 450) and with Title 42, Section 7506 (3) (A) and hereby endorses these plans as the MPO's official long range transportation plans for the Greater Bridgeport and Valley Planning Region, respectively contingent upon no major adverse comments being received during the 30-day public comment period.

This resolution shall become effective as of **March 28th, 2019**.

We, the undersigned co-secretaries of Greater Bridgeport and Valley Metropolitan Planning Organization (GBVMPO), Connecticut, do hereby certify that the resolution adopted by the GBVMPO at a public meeting held on March 28th, 2019, at which a quorum was present and that the same is a correct and true transcript from the original thereof.

Respectfully submitted,



---

Matt Fulda, Executive Director  
MetroCOG – MPO Co-Secretary

---

Richard T. Dunne, Executive Director  
NVCOG – MPO Co-Secretary

Date: March 28th, 2019

---

**Responsible Metropolitan Transportation Planning Agencies**

**CONNECTICUT METROPOLITAN COUNCIL OF GOVERNMENTS**

1000 Lafayette Boulevard, Suite 925  
Bridgeport, Connecticut 06604-4902  
Phone: (203) 366-5405 Fax: 366-8437  
E-mail: mfulda@ctmetro.org

**NAUGATUCK VALLEY COUNCIL OF GOVERNMENTS**

49 Leavenworth Street, Suite 301  
Waterbury, Connecticut 06702  
Phone: (203) 757-0535 Fax: 756-7688  
E-mail: rdunne@nvcogct.org

# Acknowledgements

## Greater Bridgeport & Valley Metropolitan Planning Organization

---

Ansonia Mayor David Cassetti

---

Monroe First Selectman Ken Kellogg

---

Bridgeport Mayor Joseph P. Ganim

---

Seymour First Selectman W. Kurt Miller,

---

Derby Mayor Richard Dziekan

---

Shelton Mayor Mark Lauretti, Vice-Chair

---

Easton First Selectman Adam W. Dunsby

---

Stratford Mayor Laura Hoydick, Chair

---

Fairfield First Selectman Mike Tetreau

---

Trumbull First Selectman Vicky Tesoro

---

Greater  
Bridgeport Michael Mears  
Transit

---

Valley  
Transit Mayor Mark Lauretti, Vice-Chair  
District

---

### MetroCOG Staff

Patrick Carleton, Deputy Director

Lawrence Ciccarelli,  
Administrative Services Director

Devin Clarke, Regional Planner

Matt Fulda, Executive Director

Mark Goetz, GIS Director

Mark Hoover, GIS Specialist

Colleen Kelleher,  
Deputy Finance Director

George B. Obeng,  
GIS Specialist

Meghan A. Sloan, AICP,  
Planning Director

---

### NVCOG Staff

---

Trish Bauer,  
Office / Financial Manager

Aaron Budris,  
Senior Regional Planner

Arthur Bogen, Environmental  
Planner-Brownfields

Richard Crowther Jr.,  
GIS Planning Assistant

John DiCarlo, Municipal Shared  
Services Director

Rick Dunne,  
Executive Director

Christian Meyer, Supervising  
Transportation Planner

Mark Nielsen, Director of  
Planning/Assistant Director

---

---

Mark Pandolfi,  
Transit Capital Administrator

Max Tanguay-Colucci,  
Regional Planner

Glenda Prentiss,  
GIS Program Coordinator

Lauren Rizzo, Administrative  
Services Coordinator

Joanna Rogalski, Senior Regional  
Planner/Emergency Management

Karen Svetz, P.E.,  
Regional Transportation Engineer

Michael Szpryngel,  
Finance Director

---

